

## Altivar 320

Variable speed drives for asynchronous and sychronous motors

Programming manual



Distributor for:





## **EPA** Drives

Thank you for choosing	to work with EPA!
------------------------	-------------------

EPA - your competent partner for Schneider Electric when it comes to **individual service** & **comprehensive services**.

If you have any questions about the product, please feel free to call us: Tel: +49 (0)6181 – 9704 – 0

You can find the latest information about us and our products at **www.epa.de**.

Sales department: **EPA** GmbH

Fliederstraße 8, D-63486 Bruchköbel Deutschland / Germany Telefon / Phone: +49(0)6181 9704-0 Telefax / Fax: +49(0)6181 9704-99 E-Mail: info@epa.de Internet: www.epa.de

Author: Schneider Electric

Release: 04/2018

Article: ATV320



The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

No part of this document may be reproduced in any form or by any means, electronic or mechanical, including photocopying, without express written permission of Schneider Electric.

All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

© 2017 Schneider Electric. All rights reserved.

## **Table of Contents**



	Safety Information	. 7
	About the Book	11
Gen	eral Overview	. 15
Chapter 1	Overview	. 17
-	Factory configuration	18
	Application functions	19
	Basic functions	23
	Graphic display terminal option	
	Powering up the drive for the first time	
	Remote display terminal option	
	Structure of the parameter tables	
	Finding a parameter in this document	
	Description of the HMI	
	Structure of the menus	35
Chapter 2	Setup	. 37
•	Steps for setting-up the drive	38
	Initial steps	39
_		
Prog	gramming	. 41
Chapter 3	Reference Mode (rEF)	. 43
-	Introduction	44
	Organization tree	45
	Menu	46
Chapter 4	Monitoring Mode (MOn)	. 47
	Introduction	
	Organization tree	
	Menu	
	[MONIT. MOTOR]	
	[I/O MAP]	
	[MONIT. SAFETY]	
	[MONIT. FUN. BLOCKS]	
	[COMMUNICATION MAP] [MONIT. PI]	
	[MONIT. PI]	
	[ALARMS]	
	[OTHER STATE]	
	[DIAGNOSTICS]	
	[PASSWORD]	
Chapter 5	Configuration Mode (ConF)	77
Shupter V	Introduction	
	Organization tree	
	My Menu	
		00

	[INPUTS / OUTPUTS CFG]         [COMMAND]         [FUNCTION BLOCKS]         [APPLICATION FUNCT.] (FUn-)         REFERENCE SWITCHING         REFERENCE OPERATIONS         RAMP.         STOP CONFIGURATION.         AUTO DC INJECTION.         JOG         PRESET SPEEDS.         +/- SPEED         +/- SPEED         +/- SPEED AROUND A REFERENCE         REFERENCE MEMORIZING         FLUXING BY LOGIC INPUT         BRAKE LOGIC CONTROL         EXTERNAL WEIGHT MEASUREMENT         HIGH SPEED HOISTING         PID REGULATOR         PID PRESET REFERENCES         TORQUE LIMITATION         2ND CURRENT LIMITATION	82 85.89 105125 154 1582167 168170 173176 1780173 176178 184188 1891199 20142215 21892222 22242222 22242222 222422222222222
	[FAULT MANAGEMENT] [COMMUNICATION]	275
Chapter 6	Interface (ItF)         Access Level (LAC)         Language (LnG)         Monitoring Configuration (MCF)         Display configuration (dCF)	282 284 285
Chapter 7	Open / Save as (trA)	297
Chapter 8	Password (COd)	301
Chapter 9	Multipoint Screen	303
Mainte	nance and Diagnostics	305
Chapter 10	Maintenance	307
Chapter 11		310 310

	Fault detection codes that are cleared as soon as their cause disappears         Option card changed or removed         Control block changed         Fault detection codes displayed on the remote display terminal	316 316
Annex		319
Chapter 12	Index of Functions	321
Chapter 13	Index of Parameter Codes	323
Chapter 14	Glossary	343

## **Safety Information**



### Important Information

### NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a DANGER or WARNING safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid a possible injury or death.

## **DANGER**

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

## **WARNING**

**WARNING** indicates a hazardous situation, which, if not avoided, **could result** in death, serious injury, or equipment damage.

## **A**CAUTION

**CAUTION** indicates a potentially hazardous situation, which, if not avoided, **could result** in minor or moderate injury, or equipment damage.

## NOTICE

NOTICE is used to address practices not related to physical injury.

### PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

#### **Qualification Of Personnel**

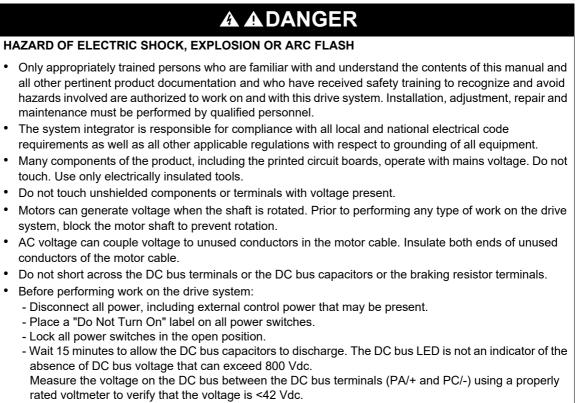
Only appropriately trained persons who are familiar with and understand the contents of this manual and all other pertinent product documentation are authorized to work on and with this product. In addition, these persons must have received safety training to recognize and avoid hazards involved. These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product, by changing the settings and by the mechanical, electrical and electronic equipment of the entire system in which the product is used. All persons working on and with the product must be fully familiar with all applicable standards, directives, and accident prevention regulations when performing such work.

### Intended Use

This product is a drive for three-phase synchronous and asynchronous motors and intended for industrial use according to this manual. The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements and the technical data. Prior to using the product, you must perform a risk assessment in view of the planned application. Based on the results, the appropriate safety measures must be implemented. Since the product is used as a component in an entire system, you must ensure the safety of persons by means of the design of this entire system (for example, machine design). Any use other than the use explicitly permitted is prohibited and can result in hazards. Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.

### Product related information

Read and understand these instructions before performing any procedure with this drive.



- If the DC bus capacitors do not discharge properly, contact your local Schneider Electric representative. Do not repair or operate the product.
- Install and close all covers before applying voltage.

### Failure to follow these instructions will result in death or serious injury.

Drive systems may perform unexpected movements because of incorrect wiring, incorrect settings, incorrect data or other errors.

## 

### UNEXPECTED EQUIPMENT OPERATION

- Carefully install the wiring in accordance with the EMC requirements.
- Do not operate the product with unknown or unsuitable settings or data.
- Perform a comprehensive commissioning test.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Damaged products or accessories may cause electric shock or unanticipated equipment operation.

## **A DANGER**

ELECTRIC SHOCK OR UNANTICIPATED EQUIPMENT OPERATION

Do not use damaged products or accesssories.

Failure to follow these instructions will result in death or serious injury.

Contact your local Schneider Electric sales office if you detect any damage whatsoever.

## 

### LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop, overtravel stop, power outage and restart.
- · Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.<sup>1</sup>
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

 For USA: Additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems".

## NOTICE

### DESTRUCTION DUE TO INCORRECT MAINS VOLTAGE

Before switching on and configuring the product, verify that it is approved for the mains voltage.

Failure to follow these instructions can result in equipment damage.

## **A**WARNING

### HOT SURFACES

- Ensure that any contact with hot surfaces is avoided.
- Do not allow flammable or heat-sensitive parts in the immediate vicinity of hot surfaces.
- Verify that the product has sufficiently cooled down before handling it.
- Verify that the heat dissipation is sufficient by performing a test run under maximum load conditions

Failure to follow these instructions can result in death, serious injury, or equipment damage.

## **WARNING**

### **EXPLOSION HAZARD**

Only use this device outside of hazardous areas (explosive atmospheres).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

## About the Book



### At a Glance

### Document scope

The purpose of this document is to:

- help you to set-up the drive,
- show you how to program the drive,
- show you the different menus, modes and parameters,
- · help you in maintenance and diagnostics.

### Validity note

**NOTE**: The products listed in the document are not all available at the time of publication of this document online. The data, illustrations and product specifications listed in the guide will be completed and updated as the product availabilities evolve. Updates to the guide will be available for download once products are released on the market.

This documentation is valid for the Altivar Machine drive.

The technical characteristics of the devices described in this document also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page www.schneider-electric.com.
2	<ul> <li>In the Search box type the reference of a product or the name of a product range.</li> <li>Do not include blank spaces in the reference or product range.</li> <li>To get information on grouping similar modules, use asterisks (*).</li> </ul>
3	If you entered a reference, go to the Product Datasheets search results and click on the reference that interests you.         If you entered the name of a product range, go to the Product Ranges search results and click on the product range that interests you.
4	If more than one reference appears in the <b>Products</b> search results, click on the reference that interests you.
5	Depending on the size of your screen, you may need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click <b>Download XXX</b> product datasheet.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

### **Related documents**

Use your tablet or your PC to quickly access detailed and comprehensive information on all our products on www.schneider-electric.com.

The internet site provides the information you need for products and solutions

- The whole catalog for detailed characteristics and selection guides
- The CAD files to help design your installation, available in over 20 different file formats
- All software and firmware to maintain your installation up to date
- A large quantity of White Papers, Environment documents, Application solutions, Specifications... to gain a better understanding of our electrical systems and equipment or automation
- And finally all the User Guides related to your drive, listed below:

Title of Documentation	Reference Number
ATV320 Getting Started	NVE21763 (English), NVE21771 (French), NVE21772 (German), NVE21773 (Spanish), NVE21774 (Italian), NVE21776 (Chinese)
ATV320 Getting Started Annex (SCCR)	NVE21777 (English)
ATV320 Installation manual	NVE41289 (English), NVE41290 (French), NVE41291 (German), NVE41292 (Spanish), NVE41293 (Italian), NVE41294 (Chinese)
ATV320 Programming manual	NVE41295 (English), NVE41296 (French), NVE41297 (German), NVE41298 (Spanish), NVE41299 (Italian), NVE41300 (Chinese)
ATV320 Modbus Serial Link manual	NVE41308 (English)
ATV320 Ethernet IP/Modbus TCP manual	NVE41313 (English)
ATV320 PROFIBUS DP manual (VW3A3607)	NVE41310 (English)
ATV320 DeviceNet manual (VW3A3609)	NVE41314 (English)
ATV320 CANopen manual (VW3A3608, 618, 628)	NVE41309 (English)
ATV320 EtherCAT manual (VW3A3601)	NVE41315 (English)
ATV320 Communication Parameters	NVE41316 (English)
ATV320 Safety Functions manual	NVE50467 (English), NVE50468 (French), NVE50469 (German), NVE50470 (Spanish), NVE50472 (Italian), NVE50473 (Chinese)

You can download these technical publications and other technical information from our website at http://download.schneider-electric.com

### Terminology

The technical terms, terminology, and the corresponding descriptions in this manual normally use the terms or definitions in the relevant standards.

In the area of drive systems this includes, but is not limited to, terms such as **error, error message, failure,** fault, fault reset, protection, safe state, safety function, warning, warning message, and so on.

Among others, these standards include:

- IEC 61800 series: Adjustable speed electrical power drive systems
- IEC 61508 Ed.2 series: Functional safety of electrical/electronic/programmable electronic safety-related
- · EN 954-1 Safety of machinery Safety related parts of control systems
- EN ISO 13849-1 & 2 Safety of machinery Safety related parts of control systems.
- · IEC 61158 series: Industrial communication networks Fieldbus specifications
- IEC 61784 series: Industrial communication networks Profiles
- · IEC 60204-1: Safety of machinery Electrical equipment of machines Part 1: General requirements

In addition, the term **zone of operation** is used in conjunction with the description of specific hazards, and is defined as it is for a **hazard zone** or **danger zone** in the EC Machinery Directive (2006/42/EC) and in ISO 12100-1.

Also see the glossary at the end of this manual.

## **General Overview**

# I

### What's in this Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
1	Overview	<u>17</u>
2	Setup	<u>37</u>

## Overview

## 1

### What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Factory configuration	<u>18</u>
Application functions	<u>19</u>
Basic functions	<u>23</u>
Graphic display terminal option	<u>24</u>
Graphic display terminal optionì	<u>24</u>
Powering up the drive for the first time	<u>27</u>
Remote display terminal option	<u>30</u>
Structure of the parameter tables	<u>31</u>
Finding a parameter in this document	<u>32</u>
Description of the HMI	<u>33</u>
Structure of the menus	<u>35</u>

### **Factory configuration**

### **Factory settings**

The Altivar 320 is factory-set for common operating conditions:

- Display: drive ready [Ready] (r d y) when motor is ready to run and the output frequency when motor is running.
- The LI3 to LI6 logic inputs, AI2 and AI3 analog inputs, LO1 logic output, AO1 analog output, and R2 relay are unassigned.
- Stop mode if error is detected: freewheel.

Code	Description	Factory settings values	Page
bFr	[Standard mot. freq]	[50Hz IEC]	<u>86</u>
FCC	[2/3 wire control]	[2 wire] (2 L): 2-wire control	<u>85</u>
EEE	[Motor control type]	[Standard] (5 L d): standard motor law	<u>105</u>
A C C	[Acceleration]	3.0 seconds	<u>87</u>
dEC	[Deceleration]	3.0 seconds	<u>87</u>
LSP	[Low speed]	0 Hz	<u>87</u>
HSP	[High speed]	50 Hz	<u>87</u>
i E H	[Mot. therm. current]	Nominal motor current (value depending on drive rating)	<u>87</u>
Sac I	[Auto DC inj. level 1]	0.7 x nominal drive current, for 0.5 seconds	<u>93</u>
SFr	[Switching freq.]	4 kHz	<u>94</u>
Frd	[Forward]	[LI1] (L , I): Logic input LI1	<u>126</u>
r r 5	[Reverse assign.]	[LI2] (L , 2): Logic input LI2	<u>126</u>
Frl	[Ref.1 channel]	[Al1] ( <i>R</i> / <i>I</i> ): Analog input Al1	<u>154</u>
r 1	[R1 Assignment]	<b>[No drive fit]</b> ( <i>F L L</i> ): The contact opens when a fault is detected or when the drive has been switched off	<u>138</u>
br A	[Dec ramp adapt.]	[Yes] ( <i>J E</i> 5): Function active (automatic adaptation of deceleration ramp)	<u>172</u>
Atr -	[Automatic restart]	[No] (n a): Function inactive	<u>252</u>
5 <i>E E</i>	[Type of stop]	[Ramp stop] ( r II P): On ramp	<u>173</u>
CFG	[Macro configuration]	[Start/Stop] (5 £ 5)	<u>82</u>

**Note:** If you want to keep the drive presettings to a minimum, select the macro configuration [Macro configuration] ( $\Gamma F \Gamma$ ) = [Start/stop] (5 L 5) followed by [Restore config.] ( $F \Gamma 5$ ) = [Config. CFG] ( $\tau \sigma \tau$ ). For more information, see page <u>82</u>.

Check whether the values above are compatible with the application.

### **Application functions**

The tables on the following pages show the combinations of functions and applications, in order to guide your selection.

The applications in these tables relate to the following machines, in particular:

- Hoisting: cranes, overhead cranes, gantries (vertical hoisting, translation, slewing), lifting platforms
- Handling: palletizers/depalletizers, conveyors, roller tables
- Packing: carton packers, labeling machines
- · Textiles: weaving looms, carding frames, washing machines, spinners, drawing frames
- Wood: automatic lathes, saws, milling
- Process

Each machine has its own special features, and the combinations listed here are neither mandatory nor exhaustive.

Some functions are designed specifically for a particular application. In this case, the application is identified by a tab in the margin on the relevant programming pages.

### Motor control functions

Functions	Page	Appli	Applications						
		Hoisting	Handling	Packing	Textiles	Wood	Process		
V/f ratio	<u>105</u>								
Sensorless flux vector control	<u>105</u>								
2-point vector control	<u>105</u>								
Open-loop synchronous motor	<u>105</u>								
Output frequency up to 599 Hz	<u>105</u>								
Motor overvoltage limiting	<u>120</u>								
DC bus connection (see Installation manual)	-								
Motor fluxing using a logic input	<u>189</u>								
Switching frequency of up to 16 kHz	<u>94</u>								
Auto-tuning	87								

### Functions on speed references

Functions	Page	Page Applications					
		Hoisting	Handling	Packing	Textiles	Mood	Process
Differential bipolar reference	<u>129</u>						
Reference delinearization (magnifying glass effect)	<u>132</u>						
Frequency control input	<u>154</u>						
Reference switching	<u>167</u>						
Reference summing	<u>168</u>						
Reference subtraction	<u>168</u>						
Reference multiplication	168						
Adjustable profile ramp	<u>170</u>						
Jog operation	<u>178</u>						
Preset speeds	180						
+ speed / - speed using single action pushbuttons (1 step)	<u>184</u>						
+ speed / - speed using double action pushbuttons (2 steps)	<u>184</u>						
+/- speed around a reference	<u>187</u>						
Save reference	188						

### **Application-Specific functions**

Functions	Page	Applications						
		Hoisting	Handling	Packing	Textiles	Mood	Process	
Fast stop	<u>173</u>							
Brake control	<u>191</u>							
Load measurement	<u>199</u>							
High-speed hoisting	<u>201</u>							
Rope slack	<u>204</u>							
PID regulator	<u>206</u>							
Motor/generator torque limit	<u>215</u>							
Load sharing	<u>122</u>							
Line contactor control	<u>220</u>							
Output contactor control	<u>223</u>							
Positioning by limit switches or sensors	224							
Stop at distance calculated after deceleration limit switch	226							
Parameter switching	<u>229</u>							
Motor or configuration switching	232							
Traverse control	<u>237</u>							
Stop configuration	<u>173</u>							

### Safety functions/Fault management

Functions		Applie	Applications					
		Hoisting	Handling	Packing	Textiles	Nood	Process	
Safe Torque Off (STO) (Safety function, see dedicated document)	-							
Deferred stop on thermal alarm	<u>258</u>							
Alarm handling	<u>145</u>							
Fault management	<u>250</u>							
IGBT tests	<u>260</u>							
Catch a spinning load	<u>253</u>							
Motor protection with PTC probes	<u>250</u>							
Undervoltage management	<u>259</u>							
4-20 mA loss	<u>260</u>							
Uncontrolled output cut (output phase loss)	<u>256</u>							
Automatic restart	<u>252</u>							
Use of the "Pulse input" input to measure the speed of rotation of the motor	<u>265</u>							
Load variation detection	<u>267</u>							
Underload detection	<u>270</u>							
Overload detection	<u>272</u>							
Safety Integrated functions (see related documents page 12)								

### **Basic functions**

### **Drive ventilation**

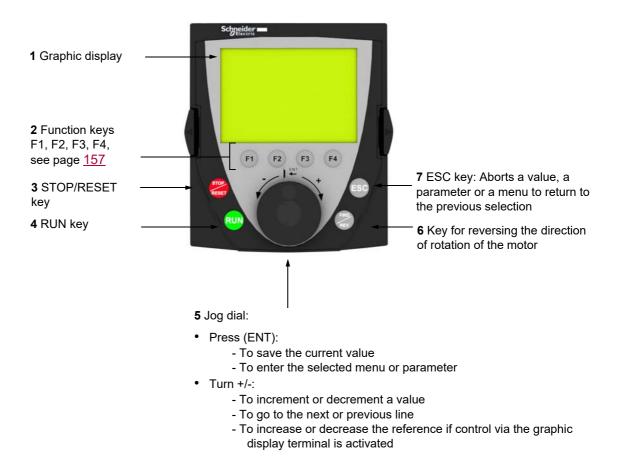
The fan starts automatically when the drive thermal state reaches 70% of the maximum thermal state and if the **[Fan Mode]** ( $F F \Pi$ ) is set to **[Standard]** (5 E d).

For ATV320

### Graphic display terminal option

### Description of the graphic display terminal

With the graphic display terminal, which works with FLASH V1.1IE26 or higher, it is possible to display more detailed information than can be shown on the integrated display terminal.



Note: Keys 3, 4, 5 and 6 can be used to control the drive directly, if control via the graphic display terminal is activated.

To activate the keys on the remote display terminal, you first have to configure **[Ref.1 channel]** (F = I) = **[HMI]** ( $L \subseteq L$ ). For more information, see page <u>154</u>.

### Example configuration windows:

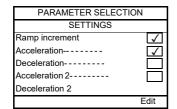
Single selection



When powering up the graphic display terminal for the first time, the user has to select the required language.

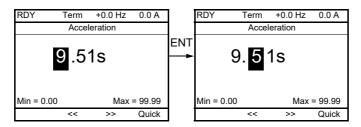
When only one selection is possible, the selection made is indicated by  $\checkmark$  . Example: Only one language can be chosen.

### Multiple selection



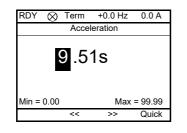
When multiple selection is possible, the selections made are indicated by  $\checkmark$ . Example: A number of parameters can be chosen to form the [USER MENU].

### Example configuration window for one value:



The << and >> arrows (keys F2 and F3) are used to select the digit to be modified, and the jog dial is rotated to increase or decrease this number.

### Example visualization of function blocks state:



- $\bigotimes~$  OFF light: A valid function blocks program is in the ATV320 in stop mode.
- ON light: A valid function blocks program is in the ATV320 in run mode. The drive is considered as being in running state and configuration parameters cannot be modified.

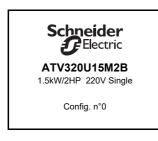
### Powering up the drive with Graphic display terminal for the first time

When powering up the graphic display terminal for the first time, the user has to select the required language.



Display after the graphic display terminal has been powered up for the first time. Select the language and press ENT.

١	ENT



The drive's rating details will now appear.

3 seconds

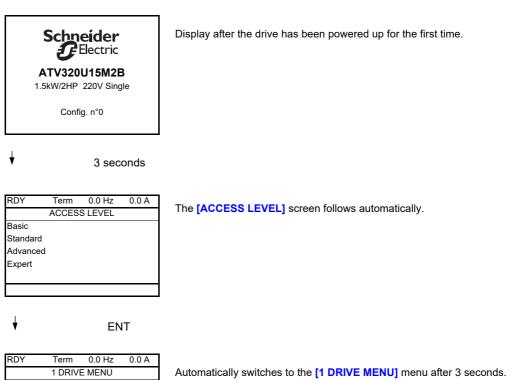
RDY	Term	0.0 Hz	0.0 A
ACCESS LEVEL			
Basic			
Standard			$\checkmark$
Advanced			
Expert			

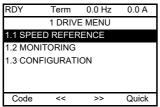
### ♦ ENT

Term	0.0 Hz	0.0 A		
1 DRIV	E MENU			
1.1 SPEED REFERENCE				
1.2 MONITORING				
1.3 CONFIGURATION				
<<	>>	Quick		
	1 DRIVI ED REFER	1 DRIVE MENU ED REFERENCE IITORING IFIGURATION		

### Powering up the drive for the first time

With the integrated display terminal, when powering up the drive for the first time, the user immediately accesses to [Standard mot. freq] ( $_{B}F_{r}$ ) (see page <u>86</u>) in the menu (COnF > FULL > SIM).





Select the menu and press ENT.

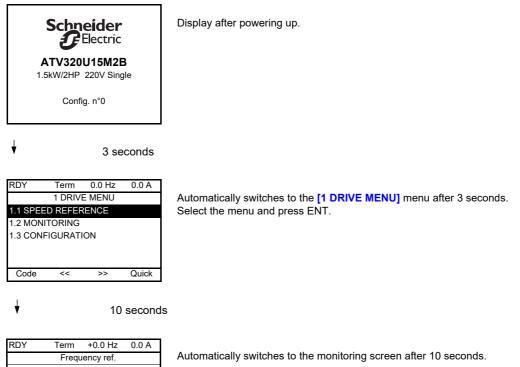
ESC

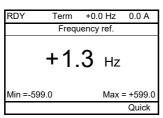
	MAIN MENU
1	DRIVE MENU
2	IDENTIFICATION
3	INTERFACE
4	OPEN / SAVE AS
5	PASSWORD

The MAIN MENU appears on the graphic display terminal if you press the ESC key.

### Subsequent power-ups

With the integrated display terminal, at subsequent power-ups of the drive for the first time, the user immediately accesses to the drive state (Same liste than [Drive state] (H = 1) page 65). Example : Ready (rdY).





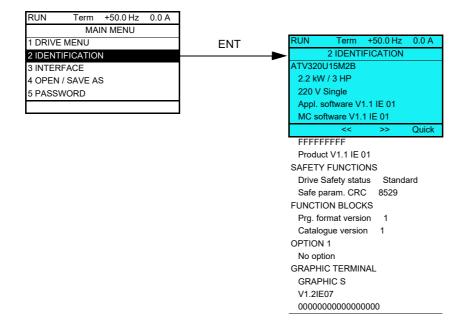
NVE41295 04/2018

### Identification menu

The [2 IDENTIFICATION] ( \_ , d - ) menu can only be accessed on the graphic display terminal.

This is a read-only menu that cannot be configured. It enables the following information to be displayed:

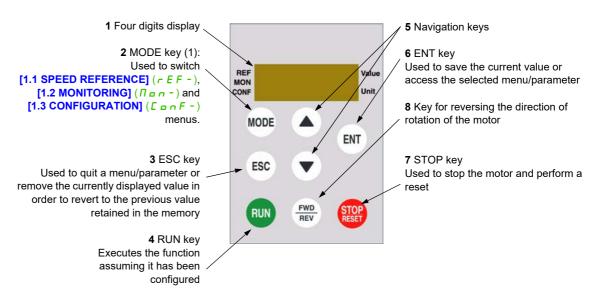
- Drive reference, power rating and voltage
- Drive software version
- Drive serial number
- Safety function status and checksum
- Function blocks program and catalogue version
- · Type of options present, with their software version
- Graphic display terminal type and version



### Remote display terminal option

### Description of the remote display terminal

This remote display terminal is a local control unit which can be mounted on the door of the wall-mounted or floor-standing enclosure. It has a cable with connectors, which is connected to the drive serial link (see the documentation supplied with the remote display terminal). With this remote display terminal, up and down arrows are used for navigation rather than a jog dial.

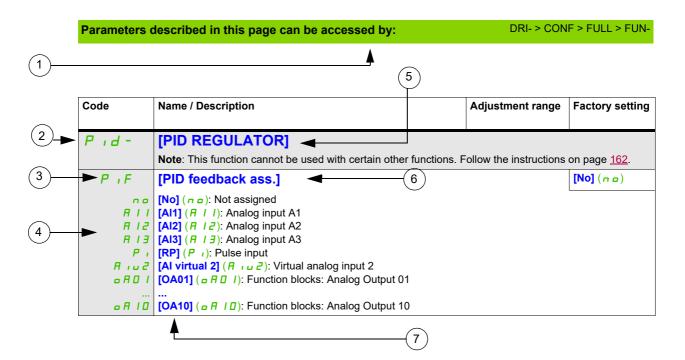


(1) If the drive is locked by a code ([PIN code 1] ( $[ \_ \_ \_ \_ ]$ ) page 302), pressing the MODE key enables you to switch from the [1.2 MONITORING] ( $[ \_ \_ \_ \_ ]$ ) menu to the [1.1 SPEED REFERENCE] ( $\_ \_ \_ \_ ]$ ) menu and vice versa.

To activate the keys on the remote display terminal, you first have to configure [Ref.1 channel] (F - I) = [HMI] ( $L \subseteq C$ ). For more information, see page <u>154</u>.

### Structure of the parameter tables

The parameter tables contained in the descriptions of the various menus are organized as follows. Example:



1. Way to access the parameters described in this page

- 2. Submenu code on 4-digit 7-segment display
- 3. Parameter code on 4-digit 7-segment display
- 4. Parameter value on 4-digit 7-segment display
- 5. Name of submenu on graphic display terminal
- 6. Name of parameter on graphic display terminal
- 7. Value of parameter on graphic display terminal

Note: The text in square brackets [] indicates what you will see on the graphic display terminal.

A menu followed by the mention "(continued)" appears sometimes to locate you in the structure. Example:

Fun-	[APPLICATION FUNCT.] (continued)		
Pid-	[PID REGULATOR]		
	Note: This function cannot be used with certain other functions. Follow the instructions on page <u>162</u> .		

In this case, the mention "(continued)" indicates that the [APPLICATION FUNCT.] submenu is above the [PID REGULATOR] submenu in the structure.

A parameter can contain some pictograms. Each pictogram has its legend at the end of the table. Main mictograms:



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



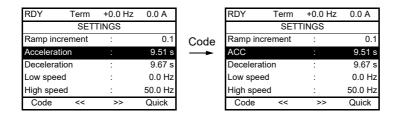
To change the assignment of this parameter, press the ENT key for 2 s.

### Finding a parameter in this document

The following assistance with finding explanations on a parameter is provided:

- With the integrated display terminal and the remote display terminal: Direct use of the parameter code index, page <u>323</u>, to find the page giving details of the displayed parameter.
- With the graphic display terminal: Select the required parameter and press F1 (F1) : [Code]. The parameter code is displayed instead of its name while the key is held down.

Example: ACC



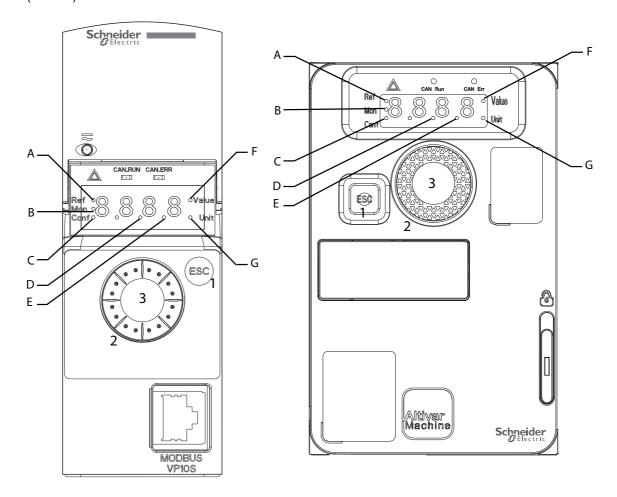
• Then use the parameter code index, page <u>323</u>, to find the page giving details of the displayed parameter.

### **Description of the HMI**

### Functions of the Display and the Keys

1 The ESC key is used for menu navigation (backward) and parameters adjustment (cancel)

2 The Jog dial is used for menu navigation (up or down) and parameters adjustment (increase/decrease value or element choice). It can be used as Virtual analogic input 1 for drive frequency reference.
3 The ENT key (push on the Jog dial) is used for menu navigation (forward) and parameters adjustment (validate)



А	REF mode selected (r E F -)	Е	Dot used to display parameter value (1/10 unit)
В	MON mode selected (	F	Current display is parameter value
С	CONF mode selected ( [ o r F )	G	Current display is parameter unit
D	Dot used to display parameter value (1/100 unit)		

### Normal display, with no error code displayed and no startup:

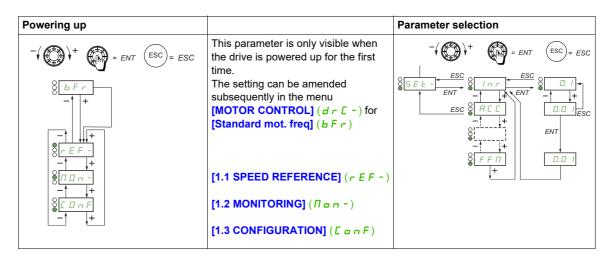
Displays the parameter selected in the [1.2 MONITORING] ( $\Pi \Box \Box -$ ) menu (default: [Frequency ref.] ( $F \subset H$ )).

- , , , E : Initialization sequence (only on remote display terminal)
- Lun: AutoTuning
- d C b: Injection braking
- r d 9: Drive ready
- n 5 L : Freewheel stop control
- *L* : Current limit
- F 5 L : Fast stop
- F L u: Fluxing function is activated
- n L P: Control is powered on but the DC bus is not loaded
- *L L* : Controlled stop

- **b r** : Adapted deceleration
- **5** *c* : Stand by output cut
- J 5 R: Undervoltage alarm
- 5 5 I: Safety function SS1
- 5 L 5: Safety function SLS
- 5 L o: Safety function STO
- 5 // 5: Safety function SMS
- **G** d L : Safety function GDL

In the event of a detected error, the display will flash to notify the user accordingly. If a graphic display terminal is connected, the name of the detected error will be displayed.

### Structure of the menus

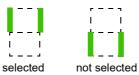


On the 7-segment display, a dash after menu and submenu codes is used to differentiate them from parameter codes.

Example: [APPLICATION FUNCT.] (F un -) menu, [Acceleration] (R [ ]) parameter

### Selection of multiple assignments for one parameter

Example: List of group 1 alarms in **[INPUTS / OUTPUTS CFG]** ( , , , , , ) menu A number of alarms can be selected by "checking" them as follows. The digit on the right indicates:



The same principle is used for all multiple selections.

## Setup

# 2

#### What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Steps for setting-up the drive	<u>38</u>
Initial steps	<u>39</u>

#### Steps for setting-up the drive

## **INSTALLATION**

1. Please refer to the installation manual.





## **PROGRAMMING**

2. Apply input power to the drive, but do not give a run command.

#### 3. Configure:

- The nominal frequency of the motor
   [Standard mot. freq] (*b F r*) page <u>86</u> if this is not 50 Hz.
- The motor parameters in the [MOTOR CONTROL] (d r [ -) menu, page <u>105</u>, only if the factory configuration of the drive is not suitable.
  - The application functions in the **[INPUTS / OUTPUTS CFG]** ( $r_{-}$   $c_{-}$ ) menu, page <u>125</u>, the **[COMMAND]** ([L L -) menu, page <u>154</u>, and the **[APPLICATION FUNCT.]** ( $F_{-}$   $c_{-}$ ) menu, page <u>167</u>, only if the factory configuration of the drive is not suitable.

## 4. In the [SETTINGS] (5 E E -) menu, adjust the following parameters:

- [Acceleration] (*FL C*), page <u>87</u> and [Deceleration] (*d E C*), page <u>87</u>.
- [Low speed] (L 5 P), page <u>87</u> and [High speed] (H 5 P), page <u>89</u>.
- [Mot. therm. current] ( I E H), page 87.
- 5. Start the drive.

#### Tips:

- Before beginning programming, complete the customer setting tables, page <u>323</u>.
- Use the [Restore config.] (F [ 5) parameter, page <u>81</u>, to return to the factory settings at any time.
- To locate the description of a function quickly, use the index of functions page <u>321</u>.
- Before configuring a function, read carefully the "Function compatibility" section page <u>165</u>.

**Note**: The following operations must be performed for optimum drive performance in terms of accuracy and response time:

- Enter the values indicated on the motor rating plate in the [MOTOR CONTROL] (dr [-) menu, page <u>105</u>.
- Perform auto-tuning with the motor cold and connected using the [Auto-tuning] (Lun) parameter, page <u>87</u>.

#### Initial steps

If the drive was not connected to mains for an extended period of time, the capacitors must be restored to their

full performance before the motor is started.



#### REDUCED CAPACITOR PERFORMANCE

- Apply mains voltage to the drive for one hour before starting the motor if the drive has not been connected to mains for the following periods of time:
  - 12 months at a maximum storage temperature of +50°C (+122°F).
  - 24 months at a maximum storage temperature of +45°C (+113°F)
- 36 months at a maximum storage temperature of +40°C (+104°F).
- · Verify that no Run command can be applied before the period of one hour has elapsed.
- Verify the date of manufacture if the drive is commissioned for the first time and run the specified procedure if the date of manufacture is more than 12 months in the past.

Failure to follow these instructions can result in equipment damage.

If the specified procedure cannot be performed without a Run command because of internal mains contactor control, perform this procedure with the power stage enabled, but the motor being at a standstill so that there is no appreciable mains current in the capacitors.

#### Before powering up the drive

## **WARNING**

#### UNANTICIPATED EQUIPMENT OPERATION

Before switching on the device, verify that no unintended signals can be applied to the digital inputs that could cause unintended movements.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

#### **Drive locked**

If a Run command such as Run forward, Run reverse, DC injection is still active during:

- · I A product reset to the factory settings,
- I A manual "Fault Reset" using [Fault Reset] (r 5 F),
- I A manual "Fault reset" by applying a product switched off and on again,
- I A stop command given by a channel that is not the active channel command (such as Stop key of the display terminal in 2/3 wires control).

The drive is in a blocking state and displays [Freewheel stop] (n 5 E). It will be necessary to deactivate all active Run commands prior to authorizing a new Run command.

#### Mains contactor

### NOTICE

#### **RISK OF DAMAGE TO THE DRIVE**

Do not switch on the drive at intervals of less than 60 s.

Failure to follow these instructions can result in equipment damage.

#### Using a motor with a lower rating or dispensing with a motor altogether

With the factory settings, motor output phase loss detection is active ([Output Phase Loss] ( $_{a}PL$ ) = [Yes] ( $_{2}E$  5), page 256). To avoid the usage of a motor with the same rating as the drive when testing the drive or during a maintenance phase, deactivate the motor output phase loss detection ([Output Phase Loss] ( $_{a}PL$ ) = [No] ( $_{n}a$ )). This can prove particularly useful if very large drives are being tested with a small motor.

Set [Motor control type] (*L L L*), page <u>105</u>, to [Standard] (5 *L d*) in [Motor control menu] (*d r L* -).

### NOTICE

#### MOTOR OVERHEATING

Install external thermal monitoring equipment under the following conditions:

- If a motor with a nominal current of less than 20% of the nominal current of the drive is connected.
- If you use the function Motor Switching.

Failure to follow these instructions can result in equipment damage.

## A A DANGER

#### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

If output phase monitoring is disabled, phase loss and, by implication, accidental disconnection of cables, are not detected.

• Verify that the setting of this parameter does not result in unsafe conditions.

Failure to follow these instructions will result in death or serious injury.

## Programming

# П

#### What's in this Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
4	Reference Mode (rEF)	<u>43</u>
5	Monitoring Mode (MOn)	<u>47</u>
6	Configuration Mode (ConF)	77
7	Interface (ItF)	<u>281</u>
8	Open / Save as (trA)	<u>297</u>
9	Password (COd)	<u>301</u>
10	Multipoint Screen	<u>303</u>

Incorrect wiring, unsuitable settings or unsuitable data may trigger unanticipated movements, trigger signals or damage parts and disable monitoring functions.

## 

#### UNANTICIPATED EQUIPMENT OPERATION

- Do not operate the drive system with unknown settings or data.
- Never modify a parameter unless you fully understand the parameter and all effects of the modification.
- When commissioning the product, carefully run tests for all operating states and potential error situations.
- Verify that a functioning emergency stop push-button is within reach of all persons involved in running tests.
- Verify the functions after replacing the product and also after making changes to the settings or data.
- Anticipate movements in unintended directions or oscillation of the motor.
- Only operate the system if there are no persons or obstructions in the zone of operation.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If the power stage is disabled unintentionally, for example as a result of power outage, errors or functions, the motor is no longer decelerated in a controlled way.

### 

#### **MOVEMENT WITHOUT BRAKING EFFECT**

Verify that movements without braking effect cannot cause injuries or equipment damage

Failure to follow these instructions can result in death, serious injury, or equipment damage.

## Reference Mode (rEF)

# 3

#### What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>44</u>
Organization tree	<u>45</u>
Menu	<u>46</u>

#### Introduction

Use the reference mode to monitor and, if the reference channel is the analog input 1 ([Ref.1 channel] (F - I) page <u>154</u> set to [Al virtual 1] (R + I), adjust the actual reference value by modifying the analog input voltage value.

If local control is enabled (**[Ref.1 channel]** (F 
ightharpoonup I) page <u>154</u> set to **[HMI]** (L 
ightharpoonup L)), the jog dial on the remote display terminal or the Up/Down Navigation keys on the remote display terminal acts as a potentiometer to change the reference value up and down within the limits preset by other parameters (**[Low speed]** (L 
ightharpoonup P)).

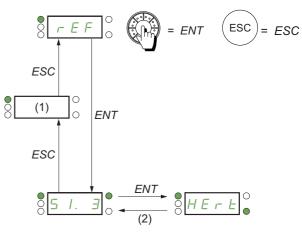
There is no need to press the ENT key to confirm the change of the reference.

#### **Organization tree**

(1) Depending on the active reference channel

Possible values: (*H* · *u l*) (*L F r*) (*T F r*) (*r P i*) (*F r H*) (*r P L*)

(2) 2 s or ESC



Value – Unit

Displayed parameter value and unit of the diagram are given as examples.

DRI- > REF

#### Menu

Code	Name / Description	Adjustment range	Factory setting	
dr i-	[1 DRIVE MENU]			
rEF-	[1.1 SPEED REFERENCE]			
	Displayed parameters depend on drive settings.			
A I I	[Image input AIV1]	0 to 100% of HSP-LSP	0%	
*	First virtual AI value.	:-1		
$\mathbf{O}$	This parameter allows to modify the frequency reference with the embedded jog d	Ial.		
(1)				
LFr	[HMI Frequency ref.]	-599 to +599 Hz	0 Hz	
* 0	HMI frequency reference (signed value). This parameter allows to modify the frequency reference with the remote HMI.			
(1)			-	
ΠFr	[Multiplying coeff.]	0 to 100%	100%	
* 0	Multiply frequency variable. Multiplying coefficient, can be accessed if <b>[Multiplier ref]</b> ( <i>П R 2</i> , <i>П R 3</i> ) page <u>16</u>	<u>39</u> has been assigned to th	ne graphic terminal.	
r P i	[Internal PID ref.]	0 to 32,767	150	
★ () (1)	PID: Internal reference PI. This parameter allows to modify the PID internal reference with the jog dial. Internal PID reference is visible if [PID feedback] ( $P \downarrow F$ ) is not set to [No] ( $n \Box$ ).			
FrH	[Frequency ref.]	-599 to +599 Hz	-	
*	Frequency reference before ramp (signed value). Actual frequency reference applied to the motor regardless of which reference channel has been selected. This parameter is in read-only mode. Frequency reference is visible if the command channel is not HMI or virtual AI.			
r P C	[PID reference]	0 to 65,535	-	
*	PID: Setpoint value. PID reference is visible if [PID feedback] ( $P \rightarrow F$ ) is not set to [No] ( $n \square$ ).		1	

(1) It is not necessary to press the ENT key to confirm the modification of the reference.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

## Monitoring Mode (MOn)

4

#### What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>48</u>
Organization tree	<u>49</u>
Menu	<u>50</u>

#### Introduction

The parameters can be accessed when the drive is running or stopped.

Some functions have numerous parameters. In order to clarify programming and avoid having to scroll through endless parameters, these functions have been grouped in submenus. Like menus, submenus are identified by a dash after their code.

When the drive is running, the value displayed is one of the monitoring parameters. By default, the value displayed is the input frequency reference ([Frequency ref.] (F 
ightarrow H) parameter page <u>50</u>).

While the value of the new monitoring parameter required is being displayed, press a second time on the jog dial key to display the units or press and hold down the jog dial (ENT) again (for 2 seconds) to confirm the change of monitoring parameter and store it. From then on, it is the value of this parameter that will be displayed during operation (even after powering down).

Unless the new choice is confirmed by pressing and holding down ENT again, the display will revert to the previous parameter after powering down.

**Note:** After the drive has been turned off or following a loss of supply mains, the parameter displayed is the drive status (example: **[Ready]** (r d 4)). The selected parameter is displayed following a run command.

#### Organization tree

			0 0 0 0 0 0	
Displayed parameters of the diagram are given as examples.		-( ( )+	= ENT	ESC = ESC
Displayed parameters of the diagram are given as examples.	O Values O units		$F_{r} H = 0$ $F_{r} H = 0$ $F_{r} = 0$	ESC = ESC
		8	↓+ □ d - ○ ↓	

DRI- > MON-

#### Parameters described in this page can be accessed by:

#### Menu

Code	Name / Description	Unit	
Non-	[1.2 MONITORING]		
A iu l	[Image input AIV1]	%	
(	First virtual AI value. This parameter is read-only. It enables you to display the speed reference applied to the motor.		
FrH	[Frequency ref.]	Hz	
	Frequency reference before ramp (signed value). This parameter is read-only. It enables you to display the speed reference applied to the motor, regardless of which reference channel has been selected.		
SEFr	[Stator Frequency]	Hz	
	Displays the estimated stator frequency in Hz (signed value)		
LFr	[HMI Frequency ref.]	Hz	
	HMI frequency reference (signed value). This parameter only appears if the function has been enabled. It is used to change the speed reference from ENT does not have to be pressed to enable a change of reference.	n the remote control.	
ΠFr	[Multiplying coeff.]	%	
*	Multiply frequency variable.		
0	Multiplying coefficient, can be accessed if [Multiplier ref] ( <i>П</i> Я 2, <i>П</i> Я 3) page <u>169</u> has been assigned.		
ΠΠΕ	[Measured output fr.]	Hz	
	Measured motor frequency (signed value) The measured motor speed is displayed if the speed monitoring card has been inserted. (VW3A3620)		
rFr	[Output frequency]	Hz	
	Estimated motor frequency (signed value).		
F 9 5	[Pulse in. work. freq.]	Hz	
*	Measured frequency of the "Pulse input" input (see page <u>265</u> ).		
υLn	[Mains voltage]	V	
	Main voltage (from DC bus). Mains voltage based on DC bus measurement, motor running or stopped.		
EHr	[Motor thermal state]	%	
	Motor thermal state. 100% = Nominal thermal state, 118% = "OLF" threshold (motor overload).		
ĿНd	[Drv.thermal state]	%	
	Drive thermal state. 100% = Nominal thermal state, 118% = "OHF" threshold (drive overload).		
ΠΠם-	[MONIT. MOTOR]		
SPd	[Motor speed]	rpm	
	Motor speed in rpm. (Estimated value)		
u o P	[Motor voltage]	V	
	Motor voltage. (Estimated value)		
o P r	[Motor power]	%	
	Output power monitoring (100% = nominal motor power, estimated value based on current measure).		
otr	[Motor torque]	%	
	Output torque value (100% = nominal motor torque, estimated value based on current measure).		
LEr	[Motor current]	А	
	Estimated motor current. (Value measured)		

DRI- > MON- > IOM- > LIA-

Code	Name / Description	Unit
Non-	[1.2 MONITORING] (continued)	
ΠΠο-	[MONIT. MOTOR] (continued)	
, 2 E П	[l <sup>2</sup> t overload level]	%
	Monitoring of I <sup>2</sup> t overload level This parameter can be accessed if <b>[I<sup>2</sup>t model activation]</b> ( , , , , , , , , , , , , , , , , , ,	
т <u>о</u> П-	[I/O MAP]	
L,A-	[LOGIC INPUT CONF.] Logic input functions.	
LıA	[LI1 assignment] Read-only parameters, cannot be configured. It displays all the functions that are assigned to the logic input in order to check for multiple assignments. If no functions have been assigned, [No] (n a) is displayed. Use the jog dial to scroll through the functions. The use of graphic display terminal allows to see the delay [LI1 On Delay] (L I d). Possible values are the sat configuration menu page <u>127</u> .	ne than in
L2A to L6A LAIA LAZA	[L assignment] All the logic inputs available on the drive are processed as in the example for LI1 above.	
L , S /	[State of logic inputs LI1 to LI6] Can be used to visualize the state of logic inputs LI1 to LI6 (display segment assignment: high = 1, low = 0).	
	State 1	
	Example above: L11 and L16 are at 1; L12 to L15 are at 0.	
L , 5 2	[State of Safe Torque Off] Can be used to visualize the state of LA1, LA2 and STO (Safe Torque Off) (display segment assignment: high	= 1, low = 0).
	State 1	
	Example above: LA1 and LA2 are at 0; STO (Safe Torque Off) is at 1.	

DRI- > MON- > IOM- > AIA-

Code	Name / Description	Unit
A , A -	[ANALOG INPUTS IMAGE]	
	Analog input functions.	
A , IC -	[Al1]	V
	Al1 customer image: Value of analog input 1.	L
8 , 18	[Al1 assignment]	
	Al1 functions assignment. If no functions have been assigned, <b>[No]</b> (n a) is displayed. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
	[No] (n a): Not assigned	
Fr		
Fra SRa		
P i	[PID feedback] (P, F): PI feedback (PI control)	
ERI	<b>[Torque limitation]</b> ( <i>L R R</i> ): Torque limitation: Activation by an analog value	
dRe		
ר, P FP		
58		
Fr 11		
dR: FLol	······································	
С - С - С - С - С - С - С - С - С		
ПЯ	[Ref. 3 multiplier] ( <i>Π</i> R 3): Multiplying reference 3	
PES		
, A D	[IA01] ( , R I I): Functions blocks: Analog Input 01	
י איז.	[IA10] ( , F I D): Functions blocks: Analog Input 10	
u i L T	[Al1 min value]	V
	Voltage scaling parameter of 0%.	
ы iH I	[Al1 max value]	V
	Voltage scaling parameter of 100%.	L
A , IF	[Al1 filter]	S
	Interference filtering cut-off time of the low-filter.	
A ,A-	[ANALOG INPUTS IMAGE] (continued)	
	Analog input functions.	
A '5C	[Al2]	V
	Al2 customer image: Value of analog input 2.	
A '54	[Al2 assignment]	
	Al2 functions assignment. If no functions have been assigned, <b>[No]</b> ( <i>n</i> <b>c</b> ) is displayed. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
	Identical to [All assignment] (R , IR) page 52.	
u 112	[Al2 min value]	V
	Voltage scaling parameter of 0%.	L
<u>ы , Н 2</u>	[Al2 max value]	V
	Voltage scaling parameter of 100%.	L
8 .2F	[Al2 filter]	S
	Interference filtering cutoff time of the low-filter.	L

DRI- > MON- > IOM- > AIA-

Code	Name / Description	Unit	
Code A , A -	Name / Description	Unit	
H 1 H -	[ANALOG INPUTS IMAGE] (continued) Analog input functions.		
R , 3C	[Al3]	V	
	Al3 customer image: Value of analog input 3.		
Я,ЭЯ			
	Al3 functions assignment. If no functions have been assigned, <b>[No]</b> (n c) is displayed. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.		
	Identical to [All assignment] ( <i>H</i> , <i>I H</i> ) page <u>52</u> .		
ErL3	[Al3 min value]	mA	
	Current scaling parameter of 0%.		
ErH3	[Al3 max value]	mA	
	Current scaling parameter of 100%.		
A , 3F	[Al3 filter]	s	
	Interference filtering cutoff time of the low-filter.		
ı o П -	[I/O MAP] (continued)		
A A -	[ANALOG OUTPUTS IMAGE]		
	Analog output functions. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.		
R = 1C ()	[AO1C] AO1 customer image: Value of analog output 1.		
A o I	[AO1 assignment]		
	AO1 functions assignment. If no functions have been assigned, [No] ( n o) is displayed.		
	Identical to [AO1 assignment] ( $\Pi \circ I$ ) page <u>144</u> .		
u o L I	[AO1 min Output]	V	
*	Voltage scaling parameter of 0%. Can be accessed if [AO1 Type] ( $\Pi \Box IE$ ) is set to [Voltage] ( $I\Box \Box$ ).		
u o H I	[AO1 max Output]	V	
*	Voltage scaling parameter of 100%. Can be accessed if [AO1 Type] (R o I L) is set to [Voltage] (I D u).		
A.L.I	[AO1 min output]	mA	
*	Current scaling parameter of 0%. Can be accessed if [AO1 Type] ( <i>R</i> = <i>I E</i> ) is set to [Current] ( <i>D R</i> ).		
A . H I	[AO1 max output]	mA	
*	Current scaling parameter of 100%. Can be accessed if [AO1 Type] ( $R = IE$ ) is set to [Current] ( $BR$ ).		
ASL I	[Scaling AO1 max]	%	
	Minimum scaling value for AO1.	1	
ASH I	[Scaling AO1 min]	%	
	Maximum scaling value for AO1.	<u>I</u>	
A .IF	[AO1 filter]	s	
	Cutoff time of the low-filter.	<u> </u>	

DRI- > MON- > IOM- > FSI-

Code	Name / Description	Unit
т <u>о</u> П-	[I/O MAP] (continued)	
F5,-	[FREQ. SIGNAL IMAGE] Frequency signal image. This menu is visible only on graphic display terminal.	
PFrE	[RP input]	Hz
	Filtered customer pulse input frequency reference. Following parameters are visible on the graphic display terminal by pressing the ENT key on the parameter.	
P,R	[RP assignment]	
	Pulse input assignment. If no functions have been assigned, <b>[No]</b> (n a) is displayed.	
	Identical to [All assignment] ( <i>H</i> , <i>I H</i> ) page <u>52</u> .	
PiL	[RP min value]	kHz
	RP minimum value. Pulse input scaling parameter of 0%.	L
PFr	[RP max value]	kHz
	RP maximum value Pulse input scaling parameter of 100%.	<u>.</u>
PF ,	[RP filter]	ms
	Interference filtering pulse input cutoff time of the low-filter.	I
Non-	[1.2 MONITORING] (continued)	
58F-	[MONIT. SAFETY]	
	For more details on Integrated Safety Functions, please refer to dedicated Safety manual.	
5605	[STO status] Status of the Safe Torque Off safety function.	
id LE SE o FLE	[Idle] ( , d L E): STO not in progress [Safe stop] (5 L o): STO in progress [Fault] (F L L): STO error detected	
5155	[SLS status] Status of the Safely-limited speed safety function.	
, a , dLE WR, t 55, t 55, t 51, 5 55, a FLE	[Not config.] (n o): SLS not configured [Idle] ( r d L E): SLS not in progress [SLS wait time] (W R L E): SLS waiting for activation [SLS start] (5 E r E): SLS in transient state [Safe ramp] (5 5 I): SLS ramp in progress [Spd limited] (5 L 5): SLS speed limitation in progress [Safe stop] (5 E o): SLS safe torque off request in progress [Fault] (F L E): SLS error detected	
55/5	[SS1 status] Status of the Safe Stop 1 safety function.	
, n a i d L E 5 5 1 5 5 a F L E	[Idle] ( , d L E): SS1 not in progress	
5 // 5 5	[SMS status] Status of the Safe Maximum Speed safety function.	
off ft i fto		

DRI- > MON- > SAF-

Code	Name / Description	Unit
Gals	[GDL status] Status of the Guard Door Locking safety function.	
off SEd LGd LFE	[Not Set] (n n): GDL not set [Inactive] (n F F): GDL inactive [Short Delay] (5 E d): Short Delay In Progress [Long Delay] (L G d): Long Delay In Progress [Active] (L G d): GDL active [Internal Err.] (L G d): GDL internal error	
5 F F E	[Safety fault reg.]	
	Safety function error register. Bit0 = 1: Logic inputs debounce time-out (verify value of debounce time LIDT according to the application) Bit1 Reserved Bit2 = 1: Motor speed sign has changed during SS1 ramp Bit3 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp. Bit4: Reserved Bit5: Reserved Bit5: Reserved Bit6 = 1: Motor speed sign has changed during SLS limitation Bit7 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp. Bit8: Reserved Bit9: Reserved Bit10: Reserved Bit10: Reserved Bit11: Reserved Bit12: Reserved Bit12: Reserved Bit13 = 1: Not possible to measure the motor speed (verify the motor wiring connection) Bit4 = 1: Motor ground short-circuit detected (verify the motor wiring connection) Bit15 = 1: Motor phase to phase short-circuit detected (verify the motor wiring connection)	
Non-	[1.2 MONITORING] (continued)	
ПҒЬ-	[MONIT. FUN. BLOCKS] For more details on Function Blocks, please refer to dedicated Function Blocks manual.	
FbSt	[FB status] Function Block Status.	
idLE CHEC StoP init run Err	[Idle] ( IdL E): Idle state [Check prog.] ( <i>L</i> H E <i>L</i> ): Check program state [Stop] (5 L o P): STOP state [Init] ( In IL): Initialization state [Run] ( r u n): RUN state [Error] (E r r): Error state	
FbFt	[FB fault] Status of the function blocks execution.	
  PAr EAL EoRu EoPP AdL	[No] (n a): No error detected [Internal] ( n b): Internal error detected [Binary file] (b n): Binary error detected [Intern para.] ( n P): Internal parameter error detected [Para. RW] (P R r): Parameter access error detected [Calculation] (E R L): Calculation error detected [TO AUX] (E a R u): TimeOut AUX task [TO synch] (E a P P): TimeOut in PRE/POST task [Bad ADLC] (R d L): ADLC with bad parameter [Input assign.] ( n): Input not configured	
FB /-	[FB IDENTIFICATION]	
buEr ★	[Program version] Program user version. Can be accessed if [FB status] (F b 5 b) is not set to [Idle] ( , d L E).	
6 n 5	[Program size] Program file size. Can be accessed if [FB status] (F b 5 b) is not set to [Idle] ( + d b b).	

DRI- > MON- > FBI-

Code	Name / Description Unit	
Бпи	[Prg. format version] Binary format version of the drive. Can be accessed if [FB status] (F b 5 b) is not set to [Idle] ( , d L b).	
נבי	[Catalogue version] Catalog version of the drive.	
Non-	[1.2 MONITORING] (continued)	
спп-	[COMMUNICATION MAP] This menu is visible only on graphic display terminal, except for [COM. SCANNER INPUT MAP].( + 5 R - ) and [COM S MAP].( = 5 R - ) menus.	CAN
[]]]	[Command channel] Active command channel.	
ΕΕΓΠ ΗΠι ΠαΒ ΕΠη Ευα ηΕΕ Ρ 5	[HMI] (H I i): Graphic display terminal or remote display terminal [Modbus] (I d b): Integrated Modbus [CANopen] (L R n): Integrated CANopen® [+/- speed] (L u d): +/- speed command [Com. card] (n E b): Communication card (if inserted)	
СПА	[Cmd value]         DRIVECOM command register value.         [Profile] ( [ H [ F ]) is not set to [I/O profile] ( , c), see page 154.	
	Possible values in CiA402 profile, separate or not separate mode. Bit 0: "Switch on"/Contactor command Bit 1: "Disable voltage"/Authorization to supply AC power Bit 2: "Quick stop"/Emergency stop Bit 3: "Enable operation"/Run command Bit 4 to Bit 6: Reserved (set to 0) Bit 7: "Fault reset"/error acknowledgment active on 0 to 1 rising edge Bit 8: Halt Stop according to the [Type of stop] (5 L L) parameter without leaving the Operation enabled state Bit 9: Reserved (set to 0) Bit 10: Reserved (set to 0) Bit 10: Reserved (set to 0) Bit 11 to Bit 15: Can be assigned to a command	
	Possible values in the I/O profile. On state command [2 wire] (2 [). Bit 0: Forward (on state) command = 0: No forward command = 1: Forward command The assignment of bit 0 cannot be modified. It corresponds to the assignment of the terminals. It can be switched. Bit 0 ( <i>I</i> is only active if the channel of this control word is active. Bit 1 to Bit 15: Can be assigned to commands.	C d D D)
	On edge command [3 wire] ( J [). Bit 0: Stop (run authorization). = 0: Stop = 1: Run is authorized on a forward or reverse command Bit 1: Forward (on 0 to 1 rising edge) command The assignment of bits 0 and 1 cannot be modified. It corresponds to the assignment of the terminals. It can be switched ([ d ]]) and 1 ([ d ]]) are only active if the channel of this control word is active. Bit 2 to Bit 15: Can be assigned to commands	d. Bits 0
rFEE	[Active ref. channel] HMI reference channel.	
ΕΕΓΠ ΙοΣ ΗΠι ΠαΒ ΕΠη Ευα ηΕΕ	[Local] (L o E): Jog dial         [HMI] (H III): Graphic display terminal or remote display terminal         [Modbus] (II d b): Integrated Modbus         [CANopen] (E IIII): Integrated CANopen®         [tUd] (L u d): +/- speed command	

DRI- > MON- > CMM-

Code	Name / Description	Unit
FrH	[Frequency ref.]	Hz
	Frequency reference before ramp.	
EER	[ETA state word] DRIVECOM status word.	
	Possible values in CiA402 profile, separate or not separate mode. Bit 0: "Ready to switch on", awaiting power section supply mains Bit 1: "Switched on", ready	
	Bit 2: "Operation enabled", running Bit 3: "Fault" = 0: No fault	
	= 1: Fault Bit 4: "Voltage enabled", power section supply mains present	
	<ul> <li>= 0: Power section supply mains absent</li> <li>= 1: Power section supply mains present</li> <li>When the drive is powered by the power section only, this bit is always at 1.</li> </ul>	
	Bit 5: Quick stop/Emergency stop Bit 6: "Switched on disabled", power section supply mains locked Bit 7: Alarm	
	= 0: No alarm = 1: Alarm Bit 8: Reserved (= 0)	
	Bit 9: Remote: command or reference via the network = 0: Command or reference via the graphic display terminal or the remote display terminal = 1: Command or reference via the network	
	Bit 10: Target reference reached = 0: The reference is not reached = 1: The reference has been reached	
	When the drive is in speed mode, this is the speed reference. Bit 11: "Internal limit active", reference outside limits = 0: The reference is within the limits	
	<ul> <li>= 1: The reference is not within the limits</li> <li>When the drive is in speed mode, the limits are defined by the [Low speed] (L 5 P) and [High speed] (H 5 P)</li> <li>Bit 12 and Bit 13: Reserved (= 0)</li> <li>Bit 14: "Stop key", STOP via stop key</li> <li>= 0: STOP key not pressed</li> </ul>	parameters.
	<ul> <li>= 1: Stop triggered by the STOP key on the graphic display terminal or the remote display terminal</li> <li>Bit 15: "Direction", direction of rotation</li> <li>= 0: Forward rotation at output</li> <li>= 1: Reverse rotation at output</li> </ul>	
	The combination of bits 0, 1, 2, 4, 5 and 6 defines the state in the DSP 402 state chart (see the Communication Possible values in the I/O profile.	manuals).
	<b>Note:</b> The value is identical in the CiA402 profile and the I/O profile. In the I/O profile, the description of the valu and does not refer to the CiA402 (Drivecom) state chart. Bit 0: Reserved (= 0 or 1)	ues is simplified
	Bit 1: Ready = 0: Not ready = 1: Ready	
	Bit 2: Running = 0: The drive will not start if a reference other than zero is applied. = 1: Running, if a reference other than zero is applied, the drive can start.	
	Bit 3: Fault = 0: No fault = 1: Fault	
	Bit 4: Power section supply mains present = 0: Power section supply mains absent = 1: Power section supply mains present	
	Bit 5: Reserved (= 1) Bit 6: Reserved (= 0 or 1) Bit 7: Alarm	
	= 0: No alarm = 1: Alarm Bit 8: Reserved (= 0)	
	Bit 9: Command via a network = 0: Command via the terminals or the graphic display terminal = 1: Command via a network	

Code	Name / Description	Unit
ooue	Bit 10: Reference reached	onn
	= 0: The reference is not reached	
	= 1: The reference has been reached	
	Bit 11: Reference outside limits	
	= 0: The reference is within the limits = 1: The reference is not within the limits	
	When the drive is in speed mode, the limits are defined by LSP and HSP parameters.	
	Bit 12 and Bit 13: Reserved (= 0)	
	Bit 14: Stop via STOP key = 0: STOP key not pressed	
	= 1: Stop triggered by the STOP key on the graphic display terminal or the remote display terminal	
	Bit 15: Direction of rotation	
	= 0: Forward rotation at output = 1: Reverse rotation at output	
Nnd-	[MODBUS NETWORK DIAG]	
	Modbus network diagnostic.	
Паві	[COM LED]	
	View of the Modbus Communication.	
ΠΙΓΕ	[Mb NET frames nb.]	
	Modbus network frame counter: Number of processed frames.	
ΠΙΕΓ	[Mb NET CRC errors]	
	Modbus network CRC error counter: Number of CRC errors.	
спп-	[COMMUNICATION MAP] (continued)	
, S A -	[COM. SCANNER INPUT MAP]	
	Used for CANopen® and Modbus Network.	
<u>п</u> П I	[Com Scan In1 val.] Value of the 1st input word.	
- N 2	[Com Scan In2 val.]	
	Value of the 2nd input word.	
пПЭ	[Com Scan In3 val.]	
	Value of the 3rd input word.	
<u>п П Ч</u>	[Com Scan In4 val.]	
	Value of the 4th input word.	
<u>п П 5</u>	[Com Scan In5 val.]	
	Value of the 5th input word.	
<u>п П Б</u>	[Com Scan In6 val.]	
	Value of the 6th input word.	
пΠЛ	[Com Scan In7 val.]	
	Value of the 7th input word.	
<u>п П В</u>	[Com Scan In8 val.]	
	Value of the 8th input word.	
спп-	[COMMUNICATION MAP] (continued)	
o 5 A -	[COM SCAN MAP]	
n [ ]	[Com Scan Out1 val.]	
	Value of the 1st output word.	
n [ 2	[Com Scan Out2 val.]	
	Value of the 2nd output word.	
n E J n	[Com Scan Out3 val.]	
	Value of the 3rd output word.	
n E 4	[Com Scan Out4 val.]	
	Value of the 4th output word.	
n C 5	[Com Scan Out5 val.]	
	Value of the 5th output word.	

DRI- > MON- > CMM- > OSA-

Code	Name / Description	Unit
n [ 6	[Com Scan Out6 val.] Value of the 6th output word.	
ר] ה	[Com Scan Out7 val.] Value of the 7th output word.	
n [ 8	[Com Scan Out8 val.] Value of the 8th output word.	
СПП-	[COMMUNICATION MAP] (continued)	
E (-	[CMD. WORD IMAGE] Command word image: Only accessible via graphic display terminal.	
спа і	[Modbus cmd.] Modbus command word image.	
спаа	[CANopen cmd.] CANopen® command word image.	
ЕГЛЭ	[COM. card cmd.] Communication card command word image.	
СПП-	[COMMUNICATION MAP] (continued)	
r (-	[FREQ. REF. WORD MAP] Frequency reference image: Only accessible via graphic display terminal.	
LFrl	[Modbus ref.]	Hz
	Modbus frequency reference image.	<u>.</u>
LFr2	[CANopen ref.]	Hz
	CANopen® frequency reference image.	
LFrJ	[Com. card ref.]	Hz
	Communication card frequency reference image.	
СПП-	[COMMUNICATION MAP] (continued)	
С п П -	[CANopen MAP]	
	CANopen® image: Only accessible via graphic display terminal.	
[ on	[RUN LED] View of the CANopen® RUN Led Status.	
EAnE	[ERR LED] View of the CANopen® Error Led Status.	
P = 1-	[PDO1 IMAGE] View of the RPDO1 and TPDO1.	
- P I I	[Received PD01-1] First frame of the received PD01.	
 	[Received PDO1-2]	
*	Second frame of the received PDO1.	
r P   3	[Received PDO1-3]	
*	Third frame of the received PDO1.	
r P 14	[Received PDO1-4]	
*	Fourth frame of the received PDO1.	
EPII	[Transmit PDO1-1]	
*	First frame of the transmit PDO1.	

DRI- > MON- > CMM- > CNM- > P01-

Code	Name / Description Unit
EP 12	[Transmit PDO1-2]
*	Second frame of the transmit PDO1.
EP 13	[Transmit PDO1-3]
	Third frame of the transmit PDO1.
*	
EPIY	[Transmit PDO1-4]
*	Fourth frame of the transmit PDO1.
Е п П -	[CANopen MAP] (continued)
	CANopen® image: Only accessible via graphic display terminal.
P = 2 -	[PDO2 IMAGE]
	View of the RPDO2 and TPDO2: Same structure as [PDO1 IMAGE] (P a 1 - ).
r P 2 I	[Received PDO2-1] First frame of the received PDO2.
*	
r P 2 2	[Received PDO2-2]
*	Second frame of the received PDO2.
r P 2 3	[Received PDO2-3]
*	Third frame of the received PDO2.
c P 2 4	[Received PDO2-4]
*	Fourth frame of the received PDO2.
EPZI	[Transmit PDO2-1] First frame of the transmit PDO2.
*	
EP22	[Transmit PDO2-2]
*	Second frame of the transmit PDO2.
EP23	[Transmit PDO2-3]
*	Third frame of the transmit PDO2.
EP24	[Transmit PDO2-4]
*	Fourth frame of the transmit PDO2.
	[CANopen MAP] (continued)
L n 11 -	CANopen mar (continued) CANopen® image: Only accessible via graphic display terminal.
P = 3 -	[PDO3 IMAGE]
	View of the RPDO3 and TPDO3: Same structure as [PDO1 IMAGE] (P o 1 - ).
r P 3 1	[Received PDO3-1]
*	First frame of the received PDO3.
r P 3 2	[Received PDO3-2]
*	Second frame of the received PDO3.
r P 3 3	[Received PDO3-3]
	Third frame of the received PDO3.
*	
r P 3 4	[Received PDO3-4]
*	Fourth frame of the received PDO3.

DRI- > MON- > CMM- > CNM- > P03-

Code	Name / Description	Unit
EPJI	[Transmit PDO3-1]	
*	First frame of the transmit PDO3.	
EP32	[Transmit PDO3-2]	
*	Second frame of the transmit PDO3.	
EP33	[Transmit PDO3-3]	
*	Third frame of the transmit PDO3.	
ЕРЭЧ	[Transmit PDO3-4]	
*	Fourth frame of the transmit PDO3.	
СпП-	[CANopen MAP] (continued)	
	CANopen® image: Only accessible via graphic display terminal.	
n N E S	[Canopen NMT state]	
	Drive NMT State of the CANopen® slave.	
boot	[Boot] ( b c c L ): Bootup	
StoP	[Stopped] (5 L o P): Stopped	
o P E B o B E	[Operation] ( ¬ P E): Operational [Pre-op] ( P ¬ P E): Pre-Operational	
nbtP	[Number of TX PDO]	
	Number of transmit PDO.	
n b r P	[Number of RX PDO]	
	Number of receive PDO.	
ErCo	[Error code]	
	CANopen® error register (from 1 to 5).	
r E C I	[RX Error Counter]	
	Controller Rx error counter (not stored at power off).	
EEC I	[TX error counter]	
	Controller Tx error counter (not stored at power off).	

DRI- > MON- > MPI-

Code	Name / Description	Unit
Non-	[1.2 MONITORING] (continued)	
ΠΡ	[MONIT. PI]	
*	PID management. Visible if [PID feedback ass.] $(P , F)$ is not set to [No] $(n a)$ .	
r P i	[Internal PID ref.]	
()	Internal PID reference: As a process value.	
*		
r P E	[PID error]	
*	PID error value.	
r P F	[PID feedback]	
*	PID feedback value.	
r P C	[PID reference]	
*	PID setpoint value via graphic display terminal.	
r P o	[PID Output]	Hz
	PID output value with limitation.	
Non-	[1.2 MONITORING] (continued)	
PEE -	[MONIT. POWER TIME]	
A P H	[Consumption]	Wh, kWh, MWh
	Energy consumption in Wh, kWh or MWh (accumulated consumption). If you read this parameter via fieldbus, the unit of this parameter is given by the parameter <b>[Unit]</b> (UNT). See the Parameters file.	e Communication
r E H	[Run time]	s, min, h
	Run elapsed time display (resetable) in seconds, minutes or hours (length of time the motor has been switched If you read this parameter via fieldbus, the unit of this parameter is given by the parameter [Unit] (UNT). See the Parameters file.	,
PEH	[Power on time]	s, min, h
	Power elapsed time display in seconds, minutes or hours (length of time the drive has been switched on). If you read this parameter via fieldbus, the unit of this parameter is given by the parameter [Unit] (UNT). See the Parameters file.	Communication
r P r	[Operating t. reset]	
0	Reset of run elapsed time.	
8 P H r E H		
PEH		
Ποη-	[1.2 MONITORING] (continued)	
EnFS	[Config. active] View of the active configuration.	
no EnFO		
EnFl		
C n F 2		
CFPS	[Utilised param. set]	
*	Configuration parameter status (can be accessed if parameter switching has been enabled, see page 229).	
	1	

DRI- > MON- > ALR-

Code	Name / Description Unit
n 0	[None] ( ח ם): Not assigned
	[Set N°1] ( <i>C F P I</i> ): Parameter set 1 active
	[Set N°2] ( <i>C F P 2</i> ): Parameter set 2 active
C F P 3	[Set N°3] ( <i>L F P 3</i> ): Parameter set 3 active
ALGr	[Alarm groups]
	Current impacted alarm group numbers.
	Group of alarms could be user defined in [INPUTS / OUTPUTS CFG] ( , ) page <u>125</u> .
	[] (): No alarm group impacted
1	[1] ( /): Alarm group 1
- 2 -	[-2-](-2-): Alarm group 2
	[3] ( 3): Alarm group 3
	[1-3] (I - 3): Alarm group 1 and 3
E 5 -	[-23] (
	[123] ( 123): Alarm group 1, 2 and 3
SPdi	[Cust. output value]
or	
SPd2	[Content output velocity] (S. R. J. J.) [Content velocity] (S. R. J. Z.) as [Content velocity] (S. R. J. Z.) depending on the [Content velocity]
	[Cust. output value] ( $5PdI$ ), [Cust. output value] ( $5Pd2$ ) or [Cust. output value] ( $5Pd3$ ) depending on the [Scale factor
or	display] (5 d 5) parameter, page <u>104</u> ([Cust. output value] (5 P d 3) in the factory setting)
95733	
ALr-	[ALARMS]
	List of current alarms.
	If an alarm is present, a $\checkmark$ appears on the graphic display terminal.
nefl	
PECL	[PTC alarm] (PECL)
ELF	
S <i>A</i>	
	[I attained] ( <i>L L R</i> ) [Freq. Th. attain.] ( <i>F L R</i> )
FZA	
SrA	
E S A	
£52	
£53	
	[Underv. prev.] ( PR)
FLR	
	[Al. °C drv] (È H R)
	[Alarm group 1] (AL I)
R G 2	[Alarm group 2] (F G 2)
R G 3	[Alarm group 3] (F G 3)
PEE	[PID error al] (PEE)
PFA	[PID fdbk al.] ( <i>P F R</i> )
RP 3	[AI3 AI. 4-20mA] ( <i>H P 3</i> )
5 S A	[Lim T/l att.] (55 R)
EAA	[Th.drv.att.] ( <i>L R d</i> )
E J R	[IGBT alarm] ( <i>L</i> J <i>R</i> )
6 - A	[Brake R. al.] (b o R)
ULA .	[Underload. Proc. Al.] ( L R)
a L A	[Overload. Proc. Al.] ( L R)
r SdR	[Rope slack alarm] (r 5 d R)
EEHA	[High torque alarm] ( <i>E E H R</i> )
EELA	[Low torque alarm] (L L L R)
dldR F9LR	[Dynamic load alarm] (d L d R) [Freq. meter Alarm] (F 9 L R)
	[prog. motor Alami) (F 1 L n)

DRI- > MON- > SST-

Code	Name / Description	Unit
55£-	[OTHER STATE]	
	List of secondary states.	
	This menu is visible only on graphic display terminal.	
F L	[In motor fluxing] (F L )	
PECL	[PTC Alarm] (P L [ L )	
FSE CEA	[Fast stop in prog.] (F 5 L) [Current Th. attained] (C L R)	
FER	[Freq. Th. attained] (F L R)	
F2A	[Freq. Th. 2 attained] (F 2 R)	
ScA	[Frequency ref. att.] (5 r R)	
E 5 A E E F	[Motor th. state att.] (E 5 R) [External fault alarm] (E E F)	
Ruto	[Auto restart] ( $P \sqcup E \Box$ )	
FEL	[Remote] (F E L )	
t un	[Auto-tuning] (L u n)	
	[Undervoltage] (u 5 R) [Config. 1 act.] (L n F I)	
EnF2	[Config. 2 act.] ( <i>L</i> n <i>F 2</i> )	
FLR	[HSP attained] (F L R)	
	[Set 1 active] (E F P I)	
C F P 2 C F P 3	[Set 2 active] ( <i>L</i> F P 2) [Set 3 active] ( <i>L</i> F P 3)	
6 r 5	[In braking] $(b - 5)$	
dьL	[DC bus loading] (d b L)	
E E H A E E L A	[High torque alarm] ( <i>L L H R</i> ) [Low torque alarm] ( <i>L L L R</i> )	
ΠFrd	[Forward] ( $\Pi$ F $r$ d)	
Nrr5	[Reverse] (Л r r 5)	
F9LA	[Freq. metre Alarm] (F 9 L R)	
dGE-	[DIAGNOSTICS]	
	This menu is visible only on graphic display terminal.	
PFH-	[FAULT HISTORY]	
	Shows the 8 last detected faults.	
dP I	[Past fault 1]	
	Fault record 1 (1 is last).	
neF	[No fault] (n p F): No detected fault stored	
RSF	[Angle error] ( <i>H</i> 5 <i>F</i> ): Angle setting detected fault [Brake control] ( <i>L L F</i> ): Brake's motor 3-phases loss	
brF	<b>[Brake feedback]</b> ( $b = F$ ): Brake contactor detected error	
L F F	[Incorrect config.] ( <i>L</i> F F ): Invalid configuration at power on	
CF 12	[Bad conf] ( <i>LF</i> , <i>L</i> 2): Configuration transfer detected error	
Enf Eaf	[Com. network] ( $L \sqcap F$ ): NET option communication interruption [CAN com.] ( $L \sqcap F$ ): CANopen® communication interruption	
E r F	[Capa.charg] ( <i>L</i> ~ F): Load relay detected fault	
C S F	[Ch.sw. fault] ( <i>E</i> 5 <i>F</i> ): Channel switching detected error	
alf Eefi	[Load fault] ( <i>d</i> L F): Dynamic load detected error [Control EEprom] ( <i>E</i> E F I): Control EEprom detected error	
EEF2	[Power Eeprom] (E E F 2): Power EEprom detected error	
EPF I	[External fault LI/Bit] (EPF I): External detected fault from LI or local link	
EPFZ	<b>[External fault com.]</b> ( <i>E P F 2</i> ): External interruption from communication board <b>[FB fault]</b> ( <i>F b E</i> ): Function block detected error	
F 6 E 5	<b>[FB stop fly.]</b> ( <i>F b E 5</i> ): Function block stop detected error	
FEFI	[Out. contact. stuck] ( <i>F L F 1</i> ): Output contactor: closed contactor	
FEF2	[Out. contact. open.] (F [ F 2): Output contactor: opened contactor	
HCF HdF	[Cards pairing] ( <i>H</i> [ F): Hardware configuration detected error	
i L F	[IGBT desaturation] ( <i>H</i> d <i>F</i> ): Hardware detected error [Option int link] ( <i>I</i> L <i>F</i> ): Option internal link interruption	
11.5	[Rating error] ( In F I): Unknown drive rating	
in F T		
inFl inF2	[PWR Calib.] ( In F 2): Unknown or incompatible power board	
inFl inF2 inF3	[PWR Calib.] ( I n F 2): Unknown or incompatible power board [Int.serial link] ( I n F 3): Internal serial link communication interruption	
inFl inF2	[PWR Calib.] ( In F 2): Unknown or incompatible power board	

#### DRI- > MON- > DGT- > PFH-

_		
E F h [Internal_th sc	s circuit] ( , n F R): Input phase loss circuit detected error	
	ensor] ( In F b): Thermal sensor detected error (OC or SC)	
	( In FE): CPU detected fault (ram, flash, task)	
	r] (L [F): Line contactor detected error	
	ss] (L F F 3): Al3 4-20 mA loss	
-	( <b>b F</b> ): Overbraking	
	<b>C F</b> ): Overcurrent	
	t] ( <i>a H F</i> ): Drive overheating	
	<ul> <li>I Flt] ( L L ): Torque overload</li> <li>d] ( L L ): Motor overload</li> </ul>	
	e loss] (  PF I): Motor 1-phase loss	
	( a P F 2): Motor 3-phases loss	
	tage] ( <u><u>o</u> 5 F): Oversupply detected fault</u>	
	<i>F L</i> ): Motor overheating detected error from PTCL: standard product	
	iss] ( <i>P</i> H F): Main input 1-phase loss	
	e] ( <i>P L F L</i> ): PTCL detected error (OC or SC)	
	F): Safety function	
	rcuit] (5 [ F ]): Motor short circuit (hard detection)	
5 [ F 3 [Ground short	circuit] (5 [ F ]): Direct ground short-circuit (hard detection)	
5 C F 4 [IGBT short cir	cuit] (5 [ F 4): IGBT short-circuit (hard detection)	
5 C F 5 [Motor short ci	rcuit] (5 [ F 5): Load short-circuit during Igon load sequence (hard detection)	
	(5 L F I): Modbus local serial communication interruption	
	F 2): PC Software communication interruption	
	<b>F 3</b> ): Remote terminal communication interruption	
	F): Overspeed	
	loss] (5 P F): Speed feedback loss	
	t lim] (5 5 F): Torque current limitation detected fault	
_	t] ( <i>L J F</i> ): IGBT overheating	
	En F): Tune detected fault	
	Flt] ( u L F ): Torque underload         ( u 5 F ): Undervoltage	
H 5 I [Drive state]		
HMI Status of th	ne detected fault record 1.	
Eun [Auto-tuning] (	d [ b): Injection braking	
d [ b   [In DC inject.] ( ィ d ソ   [Ready] (ィ d ソ		
	5 <i>L</i> ): Freewheel stop control	
	ר ע ה): Motor in steady state or run command present and zero reference	
	<i>L</i> ): Acceleration	
d E C [In decel.] (d E		
	L (): Current limit	
	a synchronous motor, if the motor does not start, follow the procedure page <u>112</u> )	
F5E [Fast stop] (F		
	FLu): Fluxing function is activated	
	n L P): Control is powered on but the DC bus is not loaded	
	<i>L L</i> ): Controlled stop	
	<b>b b r</b> ): Adapted deceleration	
	E C): Stand by output cut	
	5 R): Undervoltage alarm	
	<ul> <li>E ): TC indus mode activated</li> <li>E ): Self test in progress</li> </ul>	
	F R): Self test detected error	
	( <i>YE</i> 5): Self test OK	
	<i>E P</i> ): Self test Eeprom detected error	
	): Product has detected a fault	
	5 I): Safety function SS1	
5 L 5 [SLS active] ( 9	L 5): Safety function SLS	
	i Ε α): Safety function STO	
	БЛ5): Safety function SMS	
L   [GdL active] (L	i d L ): Safety function GdL	
EPI [ETA state v	vord]	
	tus register of detected fault record 1 (same as [ETA state word] (E E R) page 57).	
, P I [ETI state w		
Extended status	s register of detected fault record 1 (see the communication parameters file).	

DRI- > MON- > DGT- > PFH-

Code	Name / Description	Unit
спр і	[Cmd word]	
	Command register of detected fault record 1 (same as [Cmd word] ( [ ] d) page 56).	
LCPI	[Motor current]	Α
	Estimated motor current of detected fault record 1 (same as [Motor current] (L [ r ) page 50).	
rFP I	[Output frequency]	Hz
	Estimated motor frequency of detected fault record 1 (same as [Output frequency] (r F r) page 50).	
r E P I	[Elapsed time]	h
	Elapsed run time of detected fault record 1 (same as [Elapsed time] (r E H) page 62).	
uLP I	[Mains voltage]	V
	Main voltage of detected fault record 1 (same as [Mains voltage] ( u L n) page 50).	L
EHP I	[Motor thermal state]	%
	Motor thermal state of detected fault record 1 (same as [Motor thermal state] ( $E H r$ ) page <u>50</u> ).	
d C C I	[Command Channel]	
	Command channel of detected fault record 1 (same as [Command channel] ( $\Box \sqcap d \Box$ ) page <u>56</u> ).	
dr[]	[Channel ref. active]	
	Reference channel of detected fault record 1 (same as [Channel ref. active] (r F [ [ ]) page 56).	
5-11	[Saf01 Reg n-1]	
	SAF1 Register x (1 is last)	
5-21	[Saf02 Reg n-1]	
	SAF2 Register x (1 is last)	
SrAI	[SF00 Reg n-1] SF00 Register x (1 is last)	
5-61	[SF01 Reg n-1]	
3601	SF01 Register x (1 is last)	
SrEl	[SF02 Reg n-1]	
	SF02 Register x (1 is last)	
Srdl	[SF03 Reg n-1]	
	SF03 Register x (1 is last)	
SrEl	[SF04 Reg n-1] SF04 Register x (1 is last)	
SrFI	[SF05 Reg n-1]	
	SF05 Register x (1 is last)	
SrG /	[SF06 Reg n-1]	
	SF06 Register x (1 is last)	
SrHI	[SF07 Reg n-1] SF07 Register x (1 is last)	
5-1	[SF08 Reg n-1]	
5611	SF08 Register x (1 is last)	
SrJI	[SF09 Reg n-1]	
	SF09 Register x (1 is last)	
5 r K 1	[SF10 Reg n-1]	
	SF10 Register x (1 is last)	
Srll	[SF11 Reg n-1] SF11 Register x (1 is last)	

DRI- > MON- > DGT- > PFH-

Code	Name / Description	Unit
PFH-	[FAULT HISTORY] (continued)	
	Shows the 8 last detected faults.	
4 P 2	[Past fault 2]	
	[Saf1 Reg n-2] ( $5 r l 2$ ), [Saf2 Reg n-2] ( $5 r 2 2$ ), [SF00 Reg n-2] ( $5 r R 2$ ), [SF01 Reg n-2] ( $5 r b 2$ ), and [SF02 Reg n-2] ( $5 r L 2$ ) to [SF11 Reg n-2] ( $5 r L 2$ ) may be visible with this parameter. Identical to [ <b>Past fault 1</b> ] ( $d P l$ ) page <u>64</u> .	
d P 3	[Past fault 3]	
	[Saf1 Reg n-3] ( $5 r I J$ ), [Saf2 Reg n-3] ( $5 r 2 J$ ), [SF00 Reg n-3] ( $5 r R J$ ), [SF01 Reg n-3] ( $5 r L J$ ), and [SF02 Reg n-3] ( $5 r L J$ ) to [SF11 Reg n-3] ( $5 r L J$ ) may be visible with this parameter. Identical to [Past fault 1] ( $d P I$ ) page <u>64</u> .	
d Р Ч	[Past fault 4]	
	[Saf1 Reg n-4] ( $5 r I 4$ ), [Saf2 Reg n-4] ( $5 r 2 4$ ), [SF00 Reg n-4] ( $5 r 4$ ), [SF01 Reg n-4] ( $5 r 4$ ), and [SF02 Reg n-4] ( $5 r 4$ ) to [SF11 Reg n-4] ( $5 r 4$ ) may be visible with this parameter. Identical to [Past fault 1] ( $d P I$ ) page $\underline{64}$ .	
d P S	[Past fault 5]	
	[Saf1 Reg n-5] ( $5 r I 5$ ), [Saf2 Reg n-5] ( $5 r 2 5$ ), [SF00 Reg n-5] ( $5 r R 5$ ), [SF01 Reg n-5] ( $5 r L 5$ ), and [SF02 Reg n-5] ( $5 r L 5$ ) to [SF11 Reg n-5] ( $5 r L 5$ ) may be visible with this parameter. Identical to [Past fault 1] ( $d P I$ ) page <u>64</u> .	
d P 6	[Past fault 6]	
	[Saf1 Reg n-6] ( $5 r I B$ ), [Saf2 Reg n-6] ( $5 r 2 B$ ), [SF00 Reg n-6] ( $5 r B B$ ), [SF01 Reg n-6] ( $5 r B$ ), and [SF02 Reg n-6] ( $5 r C B$ ) to [SF11 Reg n-6] ( $5 r L B$ ) may be visible with this parameter. Identical to [ <b>Past fault 1</b> ] ( $d P I$ ) page <u>64</u> .	
d P J	[Past fault 7]	
	[Saf1 Reg n-7] ( $5 r I 7$ ), [Saf2 Reg n-7] ( $5 r 2 7$ ), [SF00 Reg n-7] ( $5 r R 7$ ), [SF01 Reg n-7] ( $5 r L 7$ ), and [SF02 Reg n-7] ( $5 r L 7$ ) to [SF11 Reg n-7] ( $5 r L 7$ ) may be visible with this parameter. Identical to [Past fault 1] ( $d P I$ ) page <u>64</u> .	
dPB	[Past fault 8]	
	[Saf1 Reg n-8] ( $5 r IB$ ), [Saf2 Reg n-8] ( $5 r 2B$ ), [SF00 Reg n-8] ( $5 r BB$ ), [SF01 Reg n-8] ( $5 r B$ ), and [SF02 Reg n-8] ( $5 r CB$ ) to [SF11 Reg n-8] ( $5 r LB$ ) may be visible with this parameter. Identical to [Past fault 1] ( $dPI$ ) page <u>64</u> .	

DRI- > MON- > PFL-

Code	Name / Description	Unit
dGE -	[DIAGNOSTICS] (continued)	
PFL -	[CURRENT FAULT LIST]	
n o F	[No fault] ( n o F): No detected fault stored	
R S F	[Angle error] ( F 5 F): Angle setting detected fault	
ЬLF	[Brake control] (L L F): Brake's motor 3-phases loss	
br F	[Brake feedback] ( b r F): Brake contactor detected error	
L F F	[Incorrect config.] ( <i>L F F</i> ): Invalid configuration at power on	
C F 12	[Bad conf] ( <i>E F , 2</i> ): Configuration transfer detected error	
E n F	[Com. network] ( [ n F): NET option communication interruption	
C o F	[CAN com.] ( <i>L</i> = <i>F</i> ): CANopen® communication interruption	
	[Capa.charg] ( $\Gamma \Gamma F$ ): Load relay detected fault	
C S F d L F	[Ch.sw. fault] ( <i>L</i> 5 <i>F</i> ): Channel switching detected error [Load fault] ( <i>L F</i> ): Dynamic load detected error	
EEFI	[Control EEprom] (E E F I): Control EEprom detected error	
EEFZ	[Power Eeprom] (E E F 2): Power EEprom detected error	
EPFI	<b>[External fault Ll/Bit]</b> ( <i>E P F 1</i> ): External detected fault from LI or local link	
FЬE	[FB fault] (F b E): Function block detected error	
FBES	[FB stop fly.] (F b E 5): Function block stop detected error	
FEF I	[Out. contact. stuck] (F [ F ]): Output contactor: closed contactor	
FEF2	[Out. contact. open.] (F [ F 2): Output contactor: opened contactor	
HEF	[Cards pairing] ( <i>H</i> [ F): Hardware configuration detected error	
HdF	[IGBT desaturation] (H d F): Hardware detected error	
i L F	[Option int link] ( , L F): Option internal link interruption	
inFl inF2	[Rating error] ( In F I): Unknown drive rating [PWR Calib.] ( In F Z): Unknown or incompatible power board	
inF 3	[Int.serial link] ( In F 3): Internal serial link communication interruption	
10F4	[Int.Mfg area] ( In F 4): Invalid industrialization zone	
in F 6	[Internal-option] ( In F E): Unknown or incompatible option board	
in F 9	[Internal- I measure] ( , , , F 9): Current measurement circuit detected error	
in F R	[Internal-mains circuit] ( In F R): Input phase loss circuit detected error	
in F b	[Internal- th. sensor] ( , , , F b): Thermal sensor detected error (OC or SC)	
in F E	[Internal-CPU] ( , o F E): CPU detected fault (ram, flash, task)	
	[Input contactor] (L [ F]): Line contactor detected error	
LFF3 66F	[Al3 4-20mA loss] (L F F 3): Al3 4-20 mA loss [Overbraking] (	
6 C F	[Overcurrent] ( a E F ): Overcurrent	
o H F	[Drive overheat] ( $_{\alpha}$ H F): Drive overheating	
oll	[Proc.Overload Fit] ( a L L): Torque overload	
o L F	[Motor overload] ( L F): Motor overload	
	[1 output phase loss] ( PF I): Motor 1-phase loss	
• P F 2		
= 5 F	[Mains overvoltage] ( <u>a</u> 5 F): Oversupply detected fault [PTC fault] ( <u>a</u> E F L): Motor overheating detected error from PTCL: standard product	
6 E F L P H F	[Input phase loss] (PHF): Main input 1-phase loss	
PEFL	[LI6=PTC probe] ( <i>P E F L</i> ): PTCL detected error (OC or SC)	
SRFF	[Safety] (SRFF): Safety function	
SEFI	[Motor short circuit] (5 [ F 1): Motor short circuit (hard detection)	
5 C F 3	[Ground short circuit] (5 [ F 3): Direct ground short-circuit (hard detection)	
5 C F 4	[IGBT short circuit] (5 [ F 4): IGBT short-circuit (hard detection)	
5 C F 5	[Motor short circuit] (5 [ F 5): Load short-circuit during Igon load sequence (hard detection)	
SLF I	[Modbus com.] (5 L F I): Modbus local serial communication interruption	
5LF2 5LF3	[PC com.] (5 L F 2): PC Software communication interruption	
50F	[HMI com.] (5 L F 3): Remote terminal communication interruption [Overspeed] (5 a F): Overspeed	
5 P F	[Speed fdback loss] (5 P F): Speed feedback loss	
5 5 F	[Torque/current lim] (5 5 F): Torque current limitation detected fault	
E J F	[IGBT overheat] ( <i>L</i> J <i>F</i> ): IGBT overheating	
EnF	[Auto-tuning] (E n F): Tune detected fault	
u L F	[Pr.Underload Fit] ( u L F): Torque underload	
u 5 F	[Undervoltage] ( u 5 F ): Undervoltage	

DRI- > MON- > AFI-

Code	Name / Description Unit
RF	[MORE FAULT INFO]
	Additional detected fault information.
EnF	[Network fault]
	Communication option card fault code.
	This parameter is read-only. The fault code remains saved in the parameter, even if the cause disappears. The parameter is res
	after the drive is disconnected and then reconnected. The values of this parameter depend on the network card. Consult the manual for the corresponding card.
ILF I	[Internal link fault 1]
	Communication interruption between option card 1 and drive.
	This parameter is read-only. The fault code remains saved in the parameter, even if the cause disappears. The parameter is res
	after the drive is disconnected and then reconnected.
SFFE	[Safety fault reg.] (1)
	Safety function fault error register.
	Bit0 = 1: Logic inputs debounce time-out (verify value of debounce time LIDT according to the application) Bit1 Reserved
	Bit2 = 1: Motor speed sign has changed during SS1 ramp
	Bit3 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp.
	Bit4: Reserved
	Bit5: Reserved
	Bit6 = 1: Motor speed sign has changed during SLS limitation Bit7 = 1: Motor speed has reached the frequency limit threshold during SS1 ramp.
	Bit8: Reserved
	Bit9: Reserved
	Bit10: Reserved
	Bit11: Reserved
	Bit12: Reserved Bit13 = 1: Not possible to measure the motor speed (verify the motor wiring connection)
	Bit14 = 1: Motor ground short-circuit detected (verify the motor wiring connection)
	Bit15 = 1: Motor phase to phase short-circuit detected (verify the motor wiring connection)
SAFI	[Safety fault Reg1] (1)
2111 1	Safety fault register 1.
	Application control error register.
	Bit0 = 1: PWRM consistency detected error
	Bit1 = 1: Safety functions parameters detected error Bit2 = 1: Application auto test has detected an error
	Bit3 = 1: Diagnostic verification of safety function has detected an error
	Bit4 = 1: Logical input diagnostic has detected an error
	Bit5 = 1: SMS or GDL safety functions detected error (Details in [SAFF Subcode 4] 5 F [] 4 register page 71)
	Bit6 = 1: Application watchdog management active
	Bit7 = 1: Motor control detected error Bit8 = 1: Internal serial link core detected error
	Bits = 1: Logical input activation detected error Bit9 = 1: Logical input activation detected error
	Bit 0 = 1: Safe Torque Off function has triggered an error
	Bit11 = 1: Application interface has detected an error of the safety functions
	Bit12 = 1: Safe Stop 1 function has detected an error of the safety functions
	Bit13 = 1: Safely Limited Speed function has triggered an error
	Bit14 = 1: Motor data is corrupted
	Bit15 = 1: Internal serial link data flow detected error

Example:

SFFE = **0x0008** in Hexadecimal

SFFE = Bit 3

DRI- > MON- > AFI-

Code	Name / Description	Unit
5 A F 2	[Safety fault Reg2] (1) Safety fault register 2 Motor Control error register Bit0 = 1 : Consistency stator frequency verification has detected an error Bit1 = 1 : Stator frequency estimation detected error Bit2 = 1 : Motor control watchdog management is active Bit3 = 1 : Motor control hardware watchdog is active Bit4 = 1 : Motor control hardware watchdog is active Bit5 = 1 : Chain testing detected error Bit6 = 1 : Internal serial link core detected error Bit7 = 1 : Direct short-circuit detected error Bit8 = 1 : PWM driver detected error Bit9 = 1 : GDL internal detected error Bit10 : Reserved Bit11 = 1 : Application interface has detected an error of the safety functions Bit12 = 1 : Reserved Bit13 : Reserved Bit13 : Reserved Bit13 : Reserved Bit14 = 1 : Motor data is corrupted Bit15 = 1 : Internal serial link data flow detected error	
5 F O O	[SAFF Subcode 0] (1) Safety fault subregister 00 Appplication auto test error register Bit0 : Reserved Bit1 = 1 : Ram stack overflow Bit2 = 1 : Ram address integrity error Bit3 = 1 : Ram data access error Bit4 = 1 : Flash Checksum Error Bit5 : Reserved Bit6 : Reserved Bit6 : Reserved Bit7 : Reserved Bit8 : Reserved Bit9 = 1 : Fast task overflow Bit10 = 1 : Slow task overflow Bit11 = 1 : Application task overflow Bit12 : Reserved Bit3 : Reserved Bit13 : Reserved Bit13 : Reserved Bit13 : Reserved Bit14 = 1 : PWRM line is not activated during initialization phase Bit15 = 1 : Application hardware Watch Dog is not running after initialization	
5F0	[SAFF Subcode 1] (1) Safety fault subregister 01 Logical input diagnostics error register Bit0 = 1 : Management - state machine error Bit1 = 1 : Data required for test management are corrupted Bit2 = 1 : Channel selection detected error Bit3 = 1 : Testing - state machine detected error Bit4 = 1 : Test request is corrupted Bit5 = 1 : Pointer to test method is corrupted Bit6 = 1 : Incorrect test action provided Bit7 = 1 : Detected Error in results collecting Bit8 = 1 : L13 detected error. Cannot activate safe function Bit9 = 1 : L14 detected error. Cannot activate safe function Bit10 = 1 : L15 detected error. Cannot activate safe function Bit11 = 1 : L16 detected error. Cannot activate safe function Bit12 = 1 : Test sequence updated while a diagnostic is in progress Bit13 = 1 : Detected error in test pattern management Bit14 : Reserved Bit15 : Reserved	

Example:

SFFE = 0x0008 in Hexadecimal

SFFE = Bit 3

Code	Name / Description	Unit
5 F D 2	[SAFF Subcode 2] (1)         Safety fault subregister 02         Application Watchdog Management detected error register         Bit0 = 1 : Fast task detected error         Bit1 = 1 : Slow task detected error         Bit2 = 1 : Application task detected error         Bit3 = 1 : Background task detected error         Bit4 = 1 : Safety fast task/input detected error         Bit5 = 1 : Safety slow task/input detected error         Bit6 = 1 : Safety app task/input detected error         Bit7 = 1 : Safety app task/input detected error         Bit8 = 1 : Safety app task/treatment detected error         Bit8 = 1 : Safety background task detected error         Bit9 : Reserved         Bit10 : Reserved         Bit11 : Reserved         Bit12 : Reserved         Bit13 : Reserved         Bit14 : Reserved         Bit15 : Reserved         Bit14 : Reserved         Bit15 : Reserved	
5 F O 3	[SAFF Subcode 3] (1)         Safety fault subregister 03         Bit0 = 1 : Debounce time out         Bit1 = 1 : Input not consistent         Bit2 = 1 : Consistency check - state machine detected error         Bit3 = 1 : Consistency check - debounce timeout corrupted         Bit4 = 1 : Response time data detected error         Bit5 = 1 : Response time corrupted         Bit6 = 1 : Undefined consumer queried         Bit7 = 1 : Configuration detected error         Bit8 = 1 : Inputs are not in nominal mode         Bit10 : Reserved         Bit11 : Reserved         Bit12 : Reserved         Bit13 : Reserved         Bit14 : Reserved         Bit15 : Reserved         Bit13 : Reserved         Bit14 : Reserved         Bit15 : Reserved	
5 F O 4	[SAFF Subcode 4] (1)         Safety fault subregister 04         [Safe Torque Off] 5 L o detected error register         Bit0 = 1 : No signal configured         Bit1 = 1 : State machine detected error         Bit2 = 1 : Internal data detected error         Bit3 : Reserved         Bit4 : Reserved         Bit5 : Reserved         Bit6 : Reserved         Bit7 : Reserved         Bit8 = 1 : SMS overspeed detected error         Bit9 = 1 : SMS internal detected error         Bit10 : Reserved         Bit11 = 1 : GDL internal detected error 1         Bit12 = 1 : GDL internal detected error 2         Bit13 : Reserved         Bit14 : Reserved	

(1) Hexadecimal values are displayed on the Graphic display terminal

Example:

SFFE = 0x0008 in Hexadecimal

SFFE = Bit 3

DRI- > MON- > AFI-

ode	Name / Description	Unit
5 F O 5	[SAFF Subcode 5] (1)	
	Safety fault subregister 05	
	[Safe Stop 1] 5 5 / detected error register	
	Bit0 = 1 : State machine detected error	
	Bit1 = 1 : Motor speed sign changed during stop	
	Bit2 = 1 : Motor speed reached trigger area	
	Bit3 = 1 : Theoretical motor speed corrupted	
	Bit4 = 1 : Unauthorized configuration	
	Bit5 = 1 : Theoretical motor speed computation detected error	
	Bit6 : Reserved	
	Bit7 = 1 : Speed sign check: consistency detected error	
	Bit8 = 1 : Internal SS1 request corrupted	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
5 F O 6	[SAFF Subcode 6] (1)	
	Safety fault subregister 06	
	[Safely Limited Speed] 5 L 5 detected error register	
	Bit0 = 1 : State machine error register	
	Bit1 = 1 : Motor speed sign changed during limitation	
	Bit2 = 1 : Motor speed has reached the frequency limit threshold	
	Bit3 = 1 : Data corruption	
	Bit4 : Reserved	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
SFD7	[SAFF Subcode 7] (1)	
	Safety fault subregister 07	
	Application Watchdog Management detected error register	
	Bit0 : Reserved	
	Bit1 : Reserved	
	Bit2 : Reserved	
	Bit3 : Reserved	
	Bit4 : Reserved	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	

Example:

SFFE = **0x0008** in Hexadecimal

SFFE = Bit 3

DRI- > MON- > AFI-

ode	Name / Description	Unit
SFOB	[SAFF Subcode 8] (1)	
	Safety fault subregister 08	
	Application Watchdog Management detected error register	
	Bit0 = 1 : PWM task detected error	
	Bit1 = 1 : Fixed task detected error	
	Bit2 = 1 : ATMC watchdog detected error	
	Bit3 = 1 : DYNFCT watchdog detected error	
	Bit4 : Reserved	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	
SF09	[SAFF Subcode 9] (1)	
	Safety fault subregister 09	
	Motor control Auto Test detected error register	
	Bito : Reserved	
	Bit1 = 1 : Ram stack overflow	
	Bit2 = 1 : Ram address integrity detected error	
	Bit3 = 1 : Ram data access detected error	
	Bit4 = 1 : Flash Checksum detected error	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 = 1 : 1ms task overflow	
	Bit10 = 1 : PWM task overflow	
	Bit11 = 1 : Fixed task overflow	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 = 1 : Unwanted interruption	
	Bit15 = 1 : Hardware WD is not running after initialization	
5 F I D	[SAFF Subcode 10] (1)	
	Safety fault subregister 10	
	Motor control direct short-circuit detected error register	
	Bit0 = 1 : Ground short circuit - Configuration detected error	
	Bit1 = 1 : Phase to phase short circuit - Configuration detected error	
	Bit2 = 1 : Ground short circuit	
	Bit3 = 1 : Phase to phase short circuit	
	Bit4 : Reserved	
	Bit5 : Reserved	
	Bit6 : Reserved	
	Bit7 : Reserved	
	Bit8 : Reserved	
	Bit9 : Reserved	
	Bit10 : Reserved	
	Bit11 : Reserved	
	Bit12 : Reserved	
	Bit13 : Reserved	
	Bit14 : Reserved	
	Bit15 : Reserved	

Example:

SFFE = **0x0008** in Hexadecimal SFFE = Bit **3** 

DR	- >	MON	J- >	AFI-

Code	Name / Description	Unit
Code 5 F I I	Name / Description         [SAFF Subcode 11] (1)         Safety fault subregister 11         Motor Control dynamic check of activity detected error register         Bit0 = 1 : Application requested a diagnostic of direct short circuit         Bit1 = 1 : Application requested consistency verification of stator frequency estimation (voltage and current)         Bit2 = 1 : Application requested diagnostic of SpdStat provided by Motor Control         Bit3 : Reserved         Bit4 : Reserved         Bit5 : Reserved         Bit6 : Reserved         Bit7 : Reserved         Bit8 = 1 : Motor Control safe diagnostic of direct short circuit is enabled         Bit9 = 1 : Motor Control consistency check of stator frequency estimation is enabled         Bit10 = 1 : Motor Control consistency check of stator provided by Motor Control is enabled	Unit
dG	Bit11       : Reserved         Bit12       : Reserved         Bit13       : Reserved         Bit14       : Reserved         Bit15       : Reserved	
	[DIAGNOSTICS] (continued)	
ERC	<b>[IGBT alarm counter]</b> Transistor alarm time counter (length of time the "IGBT temperature" alarm has been active).	
FUCS	[Min. freq time] Transistor alarm time counter at minimum switching frequency (length of time the "IGBT temperature" alarm has the drive has automatically reduced the switching frequency to the minimum value).	been active after
n E J ★	[IGBT alarm Nb]         Transistor alarm counter: number detected during lifecycle.         Visible if [3.1 ACCESS LEVEL] (L R L) is set to [Expert] (E P r).	
5Er -	[SERVICE MESSAGE] See page 291.	
rFLE	[Reset past faults] Reset all resetable previous detected faults.	
п в У Е 5		



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

(1) Hexadecimal values are displayed on the Graphic display terminal Example:
 SFFE = 0x0008 in Hexadecimal
 SFFE = Bit 3

DRI- > MON- > COD-

Code	Name / Description Unit
Non-	[1.2 MONITORING] (continued)
Cod-	[PASSWORD]
	HMI Password. If you have lost your code, please contact Schneider Electric.
C S E	[State]
2.52	Status of the drive (lock/unlock). Information parameter, cannot be modified.
	[Locked] (L []): The drive is locked by a password [Unlocked] ( L []): The drive is not locked by a password
[ o d	[PIN code 1] Confidential code.
	Enables the drive configuration to be protected using an access code. When access is locked by means of a code, only the parameters in the [1.2 MONITORING] ( <i>I</i> = -) and
	[1.1 SPEED REFERENCE] (r E F -) menus can be accessed. The MODE key can be used to switch between menus.
	<b>Note:</b> Before entering a code, do not forget to make a careful note of it.
o F F	[OFF] ( ¬ F F): No access locking codes. - To lock access, enter a code (2 to 9,999). The display can be incremented using the jog dial. Then press ENT. [ON] ( ¬ ¬
	appears on the screen to indicate that access has been locked.
<u> </u>	<ul> <li>[ON] ( p n): A code is locking access (2 to 9,999).</li> <li>To unlock access, enter the code (incrementing the display using the jog dial) and press ENT. The code remains on the</li> </ul>
	display and access is unlocked until the next time the drive is turned off. Access will be locked again the next time the drive is turned off.
	- If an incorrect code is entered, the display changes to [ON] ( _ n), and access remains locked.
	Access is unlocked (the code remains on the screen). - To reactivate locking with the same code when access has been unlocked, return to [ON] ( _ n) using the jog dial and the
	press ENT. <b>[ON]</b> ( <i>a</i> , <i>n</i> ) remains on the screen to indicate that access has been locked. - To lock access with a new code when access has been unlocked, enter the new code (increment the display using the jo
	dial) and then press ENT. [ON] ( , ) appears on the screen to indicate that access has been locked.
	<ul> <li>To clear locking when access has been unlocked, return to [OFF] ( PF ) using the jog dial and then press ENT.</li> <li>[OFF] ( F ) remains on the display. Access is unlocked and will remain so until the next restart.</li> </ul>
Cod2	[PIN code 2]
*	Confidential code 2. Visible if [3.1 ACCESS LEVEL] (L R [) is set to [Expert] (E P r).
o F F	The value [OFF] ( $\Box F F$ ) indicates that no password has been set [Unlocked] ( $\Box L E$ ).
00	The value <b>[ON]</b> ( <i>a</i> , <i>n</i> ) indicates that the drive configuration is protected and an access code must be entered in order to unlock Once the correct code has been entered, it remains on the display and the drive is unlocked until the next time the power suppl
	is disconnected.
8888	PIN code 2 is an unlock code known only to Schneider Electric Product Support.
uLr	[Upload rights]
uLrO	[Permitted] ( u L r []): Means that SoMove or the graphic display terminal can save the whole configuration (password,
ulr I	protections, configuration). When the configuration is edited, only the non protected parameters will be accessible. <b>[Not allowed]</b> ( $\mu L r I$ ): Means that SoMove or the graphic display terminal cannot save the configuration
dLr	[Download rights]
dLrO	[Locked drv] ( <i>d L r</i> []): Locked drive: means that the configuration can be downloaded only in a locked drive which configuratio
dLrl	has the same password. If the passwords are different, download is not permitted. [Unlock. drv] ( <i>d</i> L <i>r</i> 1): Unlocked drive: means that the configuration can be downloaded only in a drive without active passwo
dLr2	[Not allowed] (d L r 2): Not allowed: the configuration cannot be downloaded
dLr3	[Lock/unlock] (d L r 3): Lock. + Not: download is permitted following case 0 or case 1
Th	ese parameters only appear if the corresponding function has been selected in another menu. When the parameters car
📩 als	o be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed
in t	hese menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

# Configuration Mode (ConF)

5

# What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Introduction	<u>78</u>
Organization tree	<u>79</u>
My Menu	<u>80</u>
Factory Settings	<u>81</u>
Macro Configuration	<u>82</u>
Full	<u>85</u>

# Introduction

Configuration mode includes 4 parts:

1. "My Menu" menu includes up to 25 parameters available for user customization using the graphic display terminal or SoMove software.

2. Store/recall parameter set: These 2 functions are used to store and recall customer settings.

3. [Macro configuration] (*L* F *L*) parameter which allows to load predefined values for applications (see page <u>82</u>).

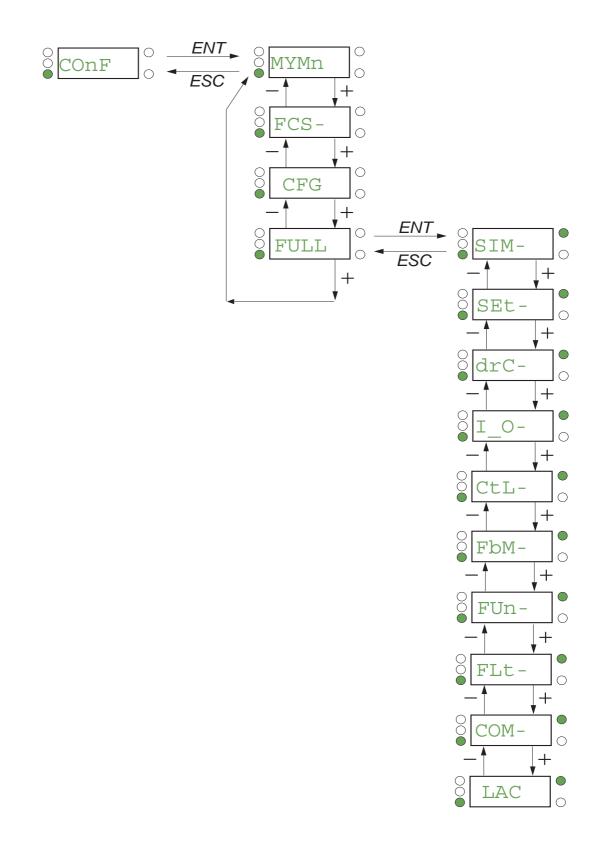
4. FULL: This menu provides access to all other parameters. It includes 10 sub-menus:

- [SIMPLY START] (5 , 7 -) page <u>85</u>
- [SETTINGS] (5 E E -) page 89
- [MOTOR CONTROL] (d r [ -) page 105
- [INPUTS / OUTPUTS CFG] ( , \_ \_ \_ ) page <u>125</u>
- [COMMAND] (*L L* -) page <u>154</u>
- [FUNCTION BLOCK] (F b fl -) page <u>158</u>
- [APPLICATION FUNCT.] (Fun-) page 167
- [FAULT MANAGEMENT] (F L E -) page 248
- [COMMUNICATION] (С о П ) page 275
- [ACCESS LEVEL] (L FIC) page 282

# **Organization tree**

Displayed parameter values are given as examples.





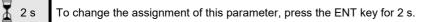
# My Menu

Code	Name / Description
[ on F	[1.3 CONFIGURATION]
ПУПп	[MY MENU]
	This menu contains the parameters selected in the [3.4 DISPLAY CONFIG.] (d [F -) menu on page 289.

DRI- > CONF > FCS-

# **Factory Settings**

Code	Name / Description	Factory setting
Con F	[1.3 CONFIGURATION]	
FCS-	[FACTORY SETTINGS]	
FCSi	[Config. Source]	[Macro-Conf] ( , n ,)
*	Choice of source configuration. If the configuration switching function is configured, it will not be possible to access [Config 2] ( $\Gamma F \Box 2$ ). Note: To load the drive's presettings previously stored ([Config 1] ( $5 E r$ 1) or [Config 2] configuration [Config. Source] ( $F \Box 5$ r) = [Config 1] ( $\Gamma F \Box 1$ ) or [Config 2] ( $\Gamma F \Box 2$ ) [Goto FACTORY SETTINGS] ( $\Gamma F 5$ ) = [YES] ( $\exists E 5$ ).	<b>2]</b> $(5 E - 2)$ , select the source
 CFG I CFG2		
Fry	[PARAMETER GROUP LIST]	
	Selection of menus to be loaded. See the multiple selection procedure on page <u>33</u> for the integrated display terminal and pa <b>Note:</b> In factory configuration and after a return to "factory settings", <b>[PARAMETER GRO</b>	
	[3.4 DISPLAY CONFIG.] menu, [Return std name] ( 5 P) page 291 returns to [No] ( n	ם). acro-Conf.] ( ( ה ה ו). In1 address] ( ה ה ה ו) to
GFS	[Goto FACTORY SETTINGS]	
*	<b>A</b> WARNING	
2 s	UNANTICIPATED EQUIPMENT OPERATION Verify that restoring the factory settings is compatible with the type of wiring u Failure to follow these instructions can result in death, serious injury, or	
	It is only possible to revert to the factory settings if at least one group of parameters has p <b>[No]</b> $(n a)$ : No <b>[Yes]</b> $(4E 5)$ : The parameter changes back to <b>[No]</b> $(n a)$ automatically as soon as the o	
565 /	[Save config]	[No] ( n
*	The active configuration to be saved does not appear for selection. For example, if it is [Config 1] ( $5 \ L \ r$ I) and [Config 2] ( $5 \ L \ r$ Z) appear. The parameter changes back to [I complete.	
5 E r 0 5 E r 1 5 E r 2	[Config 0] (5 E r 0): Press and hold down the ENT key for 2 s	
📩 also	se parameters only appear if the corresponding function has been selected in another be accessed and adjusted from within the configuration menu for the corresponding fu ese menus, on the pages indicated, to aid programming.	-



DRI- > CONF

# Macro Configuration

t/Stop] (5 £ 5)
amage.



To change the assignment of this parameter, press the ENT key for 2 s.

# Example of total return to factory settings

- [Config. Source] (F [ 5 ]) is set to [Macro-Conf] ( ] []
- [PARAMETER GROUP LIST] (F r 9 -) is set to [AII] (FLL)
- [Goto FACTORY SETTINGS] (*G* F 5) is set to [Yes] (*J* E 5)

# Assignment of the inputs/outputs

Input/ output	[Start/Stop]	[M. handling]	[Gen. Use]	[Hoisting]	[PID regul.]	[Network C.]
[AI1]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel]	[Ref.1 channel] (PID reference)	[Ref.2 channel] ([Ref.1 channel] = integrated Modbus) (1)
[AI2]	[No]	[Summing ref. 2]	[Summing ref. 2]	[No]	[PID feedback]	[No]
[AI3]	[No]	[No]	[No]	[No]	[No]	[No]
[AO1]	[No]	[No]	[No]	[No]	[No]	[No]
[R1]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]	[No drive flt]
[R2]	[No]	[No]	[No]	[Brk control]	[No]	[No]
[LI1] (2-wire)	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]
[LI2] (2-wire)	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]
[LI3] (2-wire)	[No]	[2 preset speeds]	[Jog]	[Fault reset]	[PID integral reset]	[Ref. 2 switching]
[LI4] (2-wire)	[No]	[4 preset speeds]	[Fault reset]	[External fault]	[2 preset PID ref.]	[Fault reset]
[LI5] (2-wire)	[No]	[8 preset speeds]	[Torque limitation]	[No]	[4 preset PID ref.]	[No]
[LI6] (2-wire)	[No]	[Fault reset]	[No]	[No]	[No]	[No]
[LI1] (3-wire)	[Drive running]	[Drive running]	[Drive running]	[Drive running]	[Drive running]	[Drive running]
[LI2] (3-wire)	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]	[Forward]
[LI3] (3-wire)	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]	[Reverse]
[LI4] (3-wire)	[No]	[2 preset speeds]	[Jog]	[Fault reset]	[PID integral reset]	[Ref. 2 switching]
[LI5] (3-wire)	[No]	[4 preset speeds]	[Fault reset]	[External fault]	[2 preset PID ref.]	[Fault reset]
[LI6] (3-wire)	[No]	[8 preset speeds]	[Torque limitation]	[No]	[4 preset PID ref.]	[No]
[LO1]	[No]	[No]	[No]	[No]	[No]	[No]
		(	Graphic display termina	l keys		
F1 key	[No]	[No]	[No]	[No]	[No]	Control via graphic display terminal
F2, F3, F4 keys	[No]	[No]	[No]	[No]	[No]	[No]

In 3-wire control, the assignment of inputs LI1 to LI6 shifts.

(1) To start with, integrated Modbus [Modbus Address] (R d d) must first be configured, page 276.

Note: These assignments are reinitialized every time the macro configuration changes.

#### Other configurations and settings

In addition to the assignment of inputs/outputs, other parameters are assigned **only in the Hoisting macro configuration**.

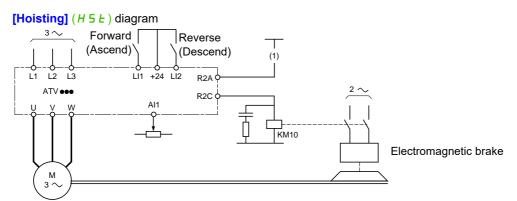
#### Hoisting:

- [Movement type] ( b 5 L ) is set to [Hoisting] ( u E r ) page 194
- [Brake contact] ( b [ ,) is set to [No] ( D D) page 194
- [Brake impulse] (b , P) is set to [Yes] (9 E 5) page <u>194</u>
- [Brake release I FW] ( , b r ) is set to 0 A page 194
- [Brake Release time] (b r L) is set to 0 s page <u>194</u>
- [Brake release freq] (b , r) is set to [Auto] (R u L a) page <u>195</u>
- [Brake engage freq] ( b E n ) is set to [Auto] ( R u L a ) page 195
- [Brake engage time] (*b E L*) is set to 0 s page <u>195</u>
- [Engage at reversal] ( b E d) is set to [No] ( n p) page <u>195</u>
- [Jump at reversal] ( J d C ) is set to [Auto] ( H u L u ) page <u>195</u>
- [Time to restart] (E E r) is set to 0 s page <u>196</u>
- [Current ramp time] (b r r) is set to 0 s page <u>198</u>
- [Low speed] (L 5 P) is set to Rated motor slip calculated by the drive, page 87
- [Output Phase Loss] ( PL) is set to [Yes] ( HE 5) page <u>256</u> No further modifications can be made to this parameter.
- [Catch on the fly] (F L r) is set to [No] (n p) page <u>253</u>
   No further modifications can be made to this parameter.

#### Return to factory settings:

**Note:** The factory settings that appear in the parameter tables correspond to [Macro configuration] (L F L) = [Start/Stop] (5 L 5). This is the macro configuration set at the factory.

#### Example diagrams for use with the macro configurations



(1) Whithout integrated safety function, a contact on the Preventa module must be inserted in the brake control circuit to engage it when the "Safe Torque Off" safety function is activated (see connection diagrams in the Installation manual).

Full					
Code	Name / Description	Adjustment range	Factory setting		
[onF	[1.3 CONFIGURATION]				
Full	[FULL]				
5 i N -	[SIMPLY START]				
FCC	[2/3 wire control]		[2 wire] (2 [ )		
2 s	WARNING         UNANTICIPATED EQUIPMENT OPERATION         If this parameter is changed, the parameters [Reverse assign.] (r r 5) and [2 wire type] (E E E) and the assignments of the digital inputs are reset to the factory setting.         Verify that this change is compatible with the type of wiring used.         Failure to follow these instructions can result in death, serious injury, or equipment damage.				
2 C	See [2/3 wire control] ( <i>E</i> [ [) page <u>125</u> . [2 wire] ( <i>2</i> [) 2-wire control (level commands): This is the input state (0 or 1) or edge ( Example of "source" wiring:	(0 to 1 or 1 to 0), whic	h controls running or stopping.		
JE	[3 wire] ( J [ )         3-wire control (pulse commands): A "forward" or "reverse" pulse is suffice to command stopping.         Example of "source" wiring:         ATVeee         +24       L11         L12: forward         L12: forward         L12: forward         L12: reverse	ient to command star	ting, a "stop" pulse is sufficient		
C F G	[Macro configuration]		[Start/Stop] (5 £ 5)		
*	<b>A</b> WARNING				
2 s	UNANTICIPATED EQUIPMENT OPERATION Verify that the selected macro configuration is compatible with the type of wiring used. Failure to follow these instructions can result in death, serious injury, or equipment damage.				
SES HdG HSE GEn Pid nEE	[M. handling] (H d L): Handling [Hoisting] (H 5 L): Hoisting [Gen. Use] (L E n): General use [PID regul.] (P , d): PID regulation				

Code	Name / Description	Adjustment range	Factory setting		
CCFG	[Customized macro]				
*	Read-only parameter, only visible if at least one macro configuration parameter has been modified.				
ле УЕ 5	[No] ( ¬ ¬): No [Yes] ( <i>Y E</i> 5): Yes				
bFr	[Standard mot. freq]		[50Hz IEC] ( 5 [])		
	This parameter modifies the presets of the following parameters: <b>[Rated mo</b> <u>87</u> , <b>[Freq. threshold]</b> ( $F \downarrow d$ ) page <u>102</u> , <b>[Rated motor freq.]</b> ( $F \uparrow 5$ ) and <b>[</b>				
5 0 6 0	[50Hz IEC] ( 5 []): Drive 50 Hz [60Hz NEMA] ( 5 []): Drive 60 Hz				
, P L	[Input phase loss]		Yes or No, according to drive rating		
*	This parameter is only accessible in this menu on 3-phase drives. If one phase disappears, the drive switches to fault mode <b>[Input phase loss]</b> ( $PHF$ ), but if 2 or 3 phases disappear, the drive continues to operate until it trips on an undervoltage detected fault (the drive trips in <b>[Input phase loss]</b> ( $PHF$ ) if there is an input phase loss and if this leads to performance decrease). See <b>[Input phase loss]</b> ( $PHF$ ) page <u>256</u> .				
ла УЕ 5	<b>[Ignore]</b> ( <b>n b</b> ): Detected fault ignored, to be used when the drive is supplie <b>[Freewheel]</b> ( <b>J E 5</b> ): With freewheel stop	d via a single-phase s	supply or by the DC bus		
nPr	[Rated motor power]		According to drive rating		
*	Rated motor power given on the nameplate, in kW if [Standard mot. freq] [Standard mot. freq] ( $b \ F \ r$ ) is set to [60Hz NEMA] ( $b \ D$ ). See [Rated motor power] ( $n \ P \ r$ ) page <u>107</u> .	( <i>b</i> F r ) is set to [50H	z IEC] ( 5 //), in HP if		
u n 5	[Rated motor volt.]	100 to 480 V	According to drive rating		
*	Rated motor voltage given on the nameplate. ATV320eeeM2e: 100 to 240 V – ATV320eeeN4e: 200 to 480 V. See [Rated motor volt.] (u n 5) page <u>107</u> .				
nEr	[Rated mot. current]	0.25 to 1.5 ln (1)	According to drive rating and [Standard mot. freq] ( <i>b</i> F r)		
*	Rated motor current given on the nameplate. See [Rated mot. current] ( n [ r ) page <u>107</u> .				
Fr S	[Rated motor freq.]	10 to 800 Hz	50 Hz		
*	Rated motor frequency given on the nameplate. The factory setting is 50 Hz, or preset to 60 Hz if [Standard mot. freq] ( <i>b</i> F This parameter is not visible if [Motor control type] ( $L + L$ ) page <u>105</u> is se See [Rated motor freq.] ( $F - 5$ ) page <u>107</u> .		שה).		
n 5 P	[Rated motor speed]	0 to 65,535 rpm	According to drive rating		
	Rated motor speed given on the nameplate. This parameter is not visible if [Motor control type] ( $L \ E \ E$ ) page <u>105</u> is set to [Sync. mot.] ( $5 \ \ \ D \ D$ ). See [Rated motor speed] ( $n \ \ S \ P$ ) page <u>107</u> . 0 to 9,999 rpm then 10.00 to 60.00 krpm on the integrated display terminal. If, rather than the rated speed, the nameplate indicates the synchronous speed and the slip in Hz or as a %, calculate the rated speed as follows:				
*	Nominal speed = Synchronous speed x $\frac{100 - \text{slip as a \%}}{100}$ or				
	Nominal speed = Synchronous speed x $\frac{50 - \text{slip in Hz}}{50}$ (50 Hz motors)				
	or				
	Nominal speed = Synchronous speed x $\frac{60 - \text{slip in Hz}}{60}$ (60 Hz motors)				

DRI- > CONF > FULL > SIM-

	Name / Description	Adjustment range	Factory setting	
EFr	[Max frequency]	10 to 599 Hz	60 Hz	
	The factory setting is 60 Hz, or preset to 72 Hz if [Standard mot. freq] ( $b F r$ ) is set to 60 Hz. The maximum value is limited by the following conditions: It must not exceed 10 times the value of [Rated motor freq.] ( $F r$ 5).			
	See [Max frequency] ( <i>E F r</i> ) page <u>105</u> .			
Lun	[Auto tuning]		[No action] (n a)	
0	For asynchronous motors, see page <u>108</u> . For synchronous motors, see page <u>113</u> .			
E u S	[Auto tuning state]		[Not done] (ERb)	
	This parameter is not saved at drive power off. It shows the Autotuning status since last power on. See [Auto tuning state] ( $L = 5$ ) page <u>108</u> .			
EAD PEnd ProG FAiL donE	[In Progress] ( $P r \circ G$ ): Autotune is in progress [Failed] ( $F R \cdot L$ ): Autotune has detected a fault	ion is used to control	the motor	
Stun	[Tune selection]		[Default] (ERb)	
ĿЯЬ	[Default] ( <i>L R b</i> ): The default stator resistance value is used to control the	motor		
ПЕЯ5 С 5			trol the motor	
			trol the motor According to drive rating	
5 ن 5	[Custom] (L u 5): The stator resistance set manually is used to control the	e motor 0.2 to 1.5 ln (1)	According to drive rating	
د . s ۱ E H	[Custom] ( <i>L</i> u 5): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on	e motor 0.2 to 1.5 ln (1)	According to drive rating	
د ۵۵ ۱ E H ()	[Custom] ( $L \downarrow 5$ ): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on See [Mot. therm. current] ( $\downarrow L H$ ) page <u>90</u> .	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2)	According to drive rating 3.0 s	
с 5 , Е Н () Я С С	[Custom] (L u 5): The stator resistance set manually is used to control the         [Mot. therm. current]         Motor thermal protection current, to be set to the rated current indicated on         See [Mot. therm. current] ( I E H) page 90.         [Acceleration]         Time to accelerate from 0 to the [Rated motor freq.] (F r 5) (page 86). To         parameter must be set according to the possibility of the application.	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2)	According to drive rating 3.0 s	
с и 5 т Е Н () Я С С ()	[Custom] ( $\mathcal{L} \cup 5$ ): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on See [Mot. therm. current] ( $\mathcal{L} \mathcal{H}$ ) page <u>90</u> . [Acceleration] Time to accelerate from 0 to the [Rated motor freq.] ( $\mathcal{F} \subset 5$ ) (page <u>86</u> ). To parameter must be set according to the possibility of the application. See [Acceleration] ( $\mathcal{H} \mathcal{L} \mathcal{L}$ ) page <u>89</u> .	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2) b have repeatability in 0.00 to 6,000 s (2)	According to drive rating 3.0 s ramps, the value of this 3.0 s	
Cus iEH () RCC () dEC	[Custom] (L u 5): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on See [Mot. therm. current] ( , L H) page 90.          [Acceleration]         Time to accelerate from 0 to the [Rated motor freq.] (F r 5) (page 86). To parameter must be set according to the possibility of the application. See [Acceleration] (H L L) page 89.         [Deceleration]         Time to decelerate from the [Rated motor freq.] (F r 5) (page 86) to 0. To parameter must be set according to the possibility of the application.	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2) b have repeatability in 0.00 to 6,000 s (2)	According to drive rating 3.0 s ramps, the value of this 3.0 s	
Cus IEH () RCC () dEC ()	[Custom] ( $\mathcal{L} \cup 5$ ): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on See [Mot. therm. current] ( $\mathcal{L} \mathcal{H}$ ) page <u>90</u> . [Acceleration] Time to accelerate from 0 to the [Rated motor freq.] ( $\mathcal{F} \subset 5$ ) (page <u>86</u> ). To parameter must be set according to the possibility of the application. See [Acceleration] ( $\mathcal{H} \subset \mathcal{L}$ ) page <u>89</u> . [Deceleration] Time to decelerate from the [Rated motor freq.] ( $\mathcal{F} \subset 5$ ) (page <u>86</u> ) to 0. To parameter must be set according to the possibility of the application. See [Deceleration]	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2) b have repeatability in 0.00 to 6,000 s (2) b have repeatability in 0 to 599 Hz	According to drive rating 3.0 s ramps, the value of this 3.0 s ramps, the value of this	
Cus iEH () RCC () dEC () LSP	[Custom] ( $\mathcal{L} \downarrow 5$ ): The stator resistance set manually is used to control the [Mot. therm. current] Motor thermal protection current, to be set to the rated current indicated on See [Mot. therm. current] ( $\mathcal{L} H$ ) page <u>90</u> . [Acceleration] Time to accelerate from 0 to the [Rated motor freq.] ( $\mathcal{F} r 5$ ) (page <u>86</u> ). To parameter must be set according to the possibility of the application. See [Acceleration] ( $\mathcal{H} \mathcal{L} \mathcal{L}$ ) page <u>89</u> . [Deceleration] Time to decelerate from the [Rated motor freq.] ( $\mathcal{F} r 5$ ) (page <u>86</u> ) to 0. To parameter must be set according to the possibility of the application. See [Deceleration] Time to decelerate from the [Rated motor freq.] ( $\mathcal{F} r 5$ ) (page <u>86</u> ) to 0. To parameter must be set according to the possibility of the application. See [Deceleration] ( $\mathcal{d} \mathcal{E} \mathcal{L}$ ) page <u>89</u> . [Low speed] Motor frequency at minimum reference, can be set between 0 and [High speed]	e motor 0.2 to 1.5 ln (1) the motor nameplate 0.00 to 6,000 s (2) b have repeatability in 0.00 to 6,000 s (2) b have repeatability in 0 to 599 Hz	According to drive rating 3.0 s ramps, the value of this 3.0 s ramps, the value of this	

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.
(2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] ( 10 c) page <u>170</u>.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

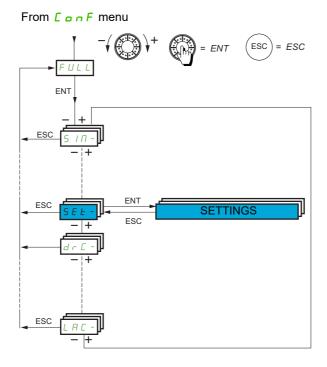
2 s To cha

To change the assignment of this parameter, press the ENT key for 2 s.

# Settings

# With integrated display terminal

It is recommend to stop the motor before modifying any of the settings.



The adjustment parameters can be modified with the drive running or stopped.

Code	Name / Description	Adjustment range	Factory setting	
Full	[FULL] (continued)			
SEE -	[SETTINGS]			
inr	[Ramp increment]		0.1	
0	This parameter is valid for [Acceleration] ( $\mathcal{F} \mathcal{L} \mathcal{L}$ ), [Deceleration] ( $\mathcal{d} \mathcal{E}$ [Deceleration 2] ( $\mathcal{d} \mathcal{E} \mathcal{Z}$ ). See [Ramp increment] ( $\mathcal{L} \mathcal{D} \mathcal{L}$ ) page <u>170</u> .	<i>L</i> ), [Acceleration 2] ( <i>RL</i> )	₽) and	
0.0   0.   	[0,01]: Ramp up to 99.99 seconds [0,1]: Ramp up to 999.9 seconds [1]: Ramp up to 6,000 seconds			
ACC	[Acceleration]	0.00 to 6,000 s (1)	3.0 s	
0	Time to accelerate from 0 to the <b>[Rated motor freq.]</b> ( $F r 5$ ) page <u>86</u> . To must be set according to the possibility of the application. See <b>[Acceler</b>		s, the value of this parameter	
dEC	[Deceleration]	0.00 to 6,000 s (1)	3.0 s	
0	Time to decelerate from the <b>[Rated motor freq.]</b> ( <i>F</i> <b>r 5</b> ) page <u>86</u> to 0. To must be set according to the possibility of the application. See <b>[Deceler</b>	, , , , ,	s, the value of this parameter	
AC 2	[Acceleration 2]	0.00 to 6,000 s (1)	5 s	
* ()	Time to accelerate from 0 to the [Rated motor freq.] ( $F = 5$ ) page <u>86</u> . To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application. See [Acceleration 2] ( $R \ C \ C$ ) page <u>171</u> .			
d E 2	[Deceleration 2]	0.00 to 6,000 s (1)	5 s	
* ()	Time to decelerate from the [Rated motor freq.] ( $F = 5$ ) page <u>86</u> to 0. To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application. See [Deceleration 2] ( $d E = 2$ ) page <u>171</u> .			
ERI	[Begin Acc round]	0 to 100%	10%	
* ()	Rounding of start of acceleration ramp as a % of the [Acceleration] ( $R$ [Ramp type] ( $r P L$ ) is set to [Customized] ( $L \sqcup 5$ ). See [Begin Acc	[ [ ) or [Acceleration 2] ( ]		
E A S	[End Acc round]	0 to 100%	10%	
* ()	Rounding of end of acceleration ramp as a % of the [Acceleration] ( $PI$ Can be set between 0 and 100% - [Begin Acc round] ( $E P I$ ). Visible if [Ramp type] ( $r P E$ ) is set to [Customized] ( $E u 5$ ). See [En			
ER3	[Begin Dec round]	0 to 100%	10%	
* ()	Rounding of start of deceleration ramp as a % of the [Deceleration] ( $d$ [Ramp type] ( $r P L$ ) is set to [Customized] ( $L u 5$ ). See [Begin Dec		d E 2) ramp time. Visible if	
E A H	[End Dec round]	0 to 100%	10%	
* ()	Rounding of end of deceleration ramp as a % of the [Deceleration] ( $d$ a Can be set between 0 and 100% - [Begin Dec round] ( $L R \exists$ ). Visible if [Ramp type] ( $r P L$ ) is set to [Customized] ( $L u 5$ ). See [En	, <b>-</b>	, .	
LSP	[Low speed]	0 to 599 Hz	0 Hz	
0	Motor frequency at minimum reference, can be set between 0 and [High page <u>87</u> .	h <b>speed]</b> ( <i>H</i> 5 <i>P</i> ) page <u>87</u> .	See [Low speed] (L 5 P)	
HSP	[High speed]	0 to 599 Hz	50 Hz	
0	Motor frequency at maximum reference, can be set between [Low specersetting changes to 60 Hz if [Standard mot. freq] ( <i>b</i> F r) is set to [60Hz			

DRI- > CONF > FULL > SET-

Code	Name / Description	Adjustment range	Factory setting
HSP2	[High speed 2]	0 to 599 Hz	50 Hz
*	Visible if [2 High speed] (5 H 2) is not set to [No] (n a). See [High spe	ed 2] ( <i>H</i> 5 <i>P</i> 2) page <u>244</u> .	
0			
HSP3	[High speed 3]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (5 H 4) is not set to [No] (n a). See [High speed]	ed 3] ( <i>H</i> 5 <i>P</i> 3) page <u>244</u> .	
0			
НБРЧ	[High speed 4]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] (5 H 4) is not set to [No] (n a). See [High spe	ed 4] ( <i>H</i> 5 <i>P</i> 4) page <u>244</u> .	
0			
, E H	[Mot. therm. current]	0.2 to 1.5 ln (2)	According to drive rating
()	Motor thermal protection current, to be set to the rated current indicated		
	See [Mot. therm. current] ( + E H)page 87.		
υFr	[IR compensation]	0 to 200%	100%
0	IR compensation. See [IR comprensation] ( <i>u F r</i> ) page <u>118</u> .		
SLP	[Slip compensation]	0 to 300%	100%
*	Slip compensation. See [Slip compensation] (5 L P) page <u>118</u> .		
0			
SFC	[K speed loop filter]	0 to 100	65
*	Speed filter coefficient. See [K speed loop filter] (5 F []) page <u>118</u> .		
0			
S i E	[Speed time integral]	1 to 65,535 ms	63 ms
*	Speed loop integral time constant. See [Speed time integral] (5 , E) pa	age <u>118</u> .	
0			
5 P G	[Speed prop. gain]	0 to 1,000%	40%
*	Speed loop proportional gain. See [Speed prop. gain] (5 P L) page <u>118</u>		
		-	
()			
5 P G u	[UF inertia comp.]	0 to 1,000%	40%
*	Inertia factor. See [UF inertia comp.] (5 P L u) page <u>118</u> .		
()			

(1) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] ( 10 r) page <u>170</u>. (2) In corresponds to the rated drive current indicated in the Installation manual or on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

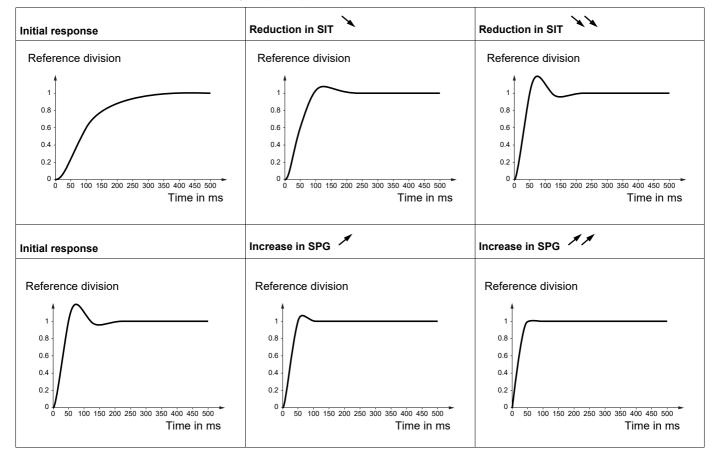
# Parameter settings for [K speed loop filter] (5 F L), [Speed prop. gain] (5 P L) and [Speed time integral] (5 r L)

The following parameters can be accessed if [Motor control type] (L E) page <u>105</u> is set to [SVC V] (u u L), [Sync. mot.] (5 H n) or [Energy Sav.] (n L d).

#### General Case: Setting for [K speed loop filter] (5 F [) = 0

The regulator is an "IP" type with filtering of the speed reference, for applications requiring flexibility and stability (hoisting or high inertia, for example).

- [Speed prop. gain] (5 P G) affects excessive speed.
- [Speed time integral] (5 , L) affects the passband and response time.



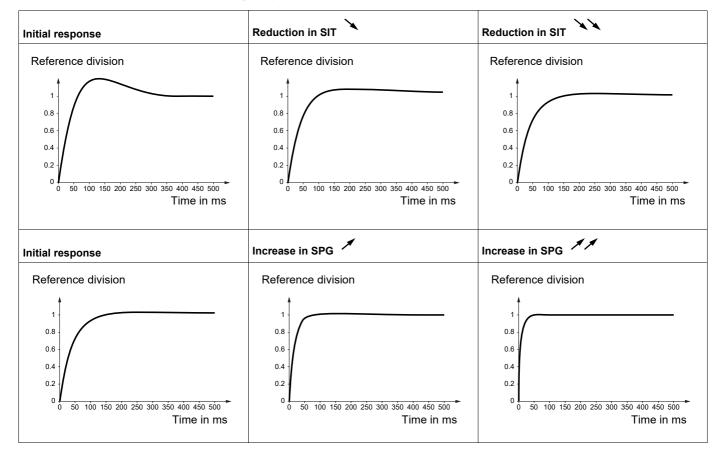
#### Special case: Parameter [K speed loop filter] (5 F L) is not 0

This parameter must be reserved for specific applications that require a short response time (trajectory positioning or servo control).

- When set to 100 as described above, the regulator is a "PI" type, without filtering of the speed reference.
- Settings between 0 and 100 will obtain an intermediate function between the settings below and those on the previous page.

Example: Setting for [K speed loop filter] (5 F C) = 100

- [Speed prop. gain] (5 P L) affects the passband and response time.
- [Speed time integral] (5 , L) affects excessive speed.



Code	Name / Description	Adjustment range	Factory setting		
dEF	[Ramp divider]	0 to 10	4		
*	Deceleration ramp time reduction. See [Ramp divider] ( <i>d</i> [ F) page <u>173</u> .				
()					
ı d C	[DC inject. level 1]	0.1 to 1.41 ln (1)	0.64 ln (1)		
*	Level of DC injection braking current activated via logic input or s 174.	selected as stop mode. See [DC in]	ject. level 1] ( , d [ ) page		
()					
Ed i	[DC injection time 1]	0.1 to 30 s	0.5 s		
* ()	Maximum current injection time [DC inject. level 1] ( $, d L$ ). After this time, the injection current becomes [DC inject. level 2] ( $, d L 2$ ). See [DC injection time 1] ( $L d I$ ) page <u>174</u> .				
1 d C 2	[DC inject. level 2]	0.1 In to 1.41 In (1)	0.5 ln (1)		
* ()	Injection current activated by logic input or selected as stop mode, once period of time [DC injection time 1] ( $E d$ ,) has elapsed See [DC inject. level 2] ( $I d E P$ ) page <u>175</u> .				
EdC	[DC injection time 2]	0.1 to 30 s	0.5 s		
* ()	Maximum injection time [DC inject. level 2] ( $_{1} d [ 2 ]$ ) for injection selected as stop mode only. See [DC injection time 2] ( $_{L} d [ ]$ ) page <u>175</u> .				
5 d C	[Auto DC inj. level 1]	0 to 1.2 ln (1)	0.7 ln (1)		
* ()	NOTICE         OVERHEATING AND DAMAGE TO THE MOTOR         Verify that the connected motor is properly rated for the DC injection current to be applied in terms of am and time in order to avoid overheating and damage to the motor.         Failure to follow these instructions can result in equipment damage.         Level of standstill DC injection current [Auto DC injection] (F d C) is not [No] (n c).				
EdCI	See page <u>176</u> .	0.1 to 30 s	0.5 s		
L I	[Auto DC inj. time 1]	0.110.50.5	0.0 5		
	NOTICE				
* ()	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the and time in order to avoid overheating and damage to the Failure to follow these instructions can result in equ	he motor.	ied in terms of amount		
	Standstill injection time. This parameter can be accessed if [Auto If [Motor control type] ( $L \ E$ ) page <u>105</u> is set to [Sync. mot.]( time. See page <u>176</u> .				

Code	Name / Description	Adjustment range	Factory setting	
5 3 6 2	[Auto DC inj. level 2]	0 to 1.2 ln (1)	0.5 ln (1)	
* ()	OVERHEATING AND DAMAGE TO THE MO Verify that the connected motor is properly rate and time in order to avoid overheating and dar Failure to follow these instructions can res	ed for the DC injection current to be ap nage to the motor.	plied in terms of amount	
	2nd level of standstill DC injection current. This parameter can be accessed if [Auto DC injection See page <u>177</u> .	n] (Ħ d Ľ) is not [No] (ח ם).		
EdC2	[Auto DC inj. time 2]	0 to 30 s	0 s	
		NOTICE		
* ()	OVERHEATING AND DAMAGE TO THE MO Verify that the connected motor is properly rate and time in order to avoid overheating and dar Failure to follow these instructions can res	ed for the DC injection current to be ap nage to the motor.	pplied in terms of amount	
	2nd standstill injection time. This parameter can be accessed if <b>[Auto DC injection</b> See page <u>177</u> .			
SFr	[Switching freq.]	2 to 16 kHz	4.0 kHz	
0	<b>NOTICE</b> DAMAGE TO THE MOTOR Verify that the switching frequency of the drive does not exceed 4 kHz if the EMC filter is disconnected for operation of the drive in an IT mains. Failure to follow these instructions can result in equipment damage.			
	This applies to the following drive versions: ATV320eeeM2e Switching frequency setting. See page <u>119</u> . Adjustment range: The maximum value is limited to 4 kHz if [Motor surge limit] (5 µ L) parameter, page <u>120</u> is conf Note: In the event of excessive temperature rise, the drive will automatically reduce the switching frequency and reset the temperature returns to normal.			
EL ,	[Current Limitation]	0 to 1.5 ln (1)	1.5 ln (1)	
* ()	<ul> <li>OVERHEATING AND DAMAGE TO THE MO</li> <li>Verify that the motor is properly rated for the</li> <li>Consider the duty cycle of the motor and all determining the current limit.</li> <li>Failure to follow these instructions can res</li> </ul>	e maximum current to be applied to the factors of your application including d		
	Used to limit the motor current. See page <u>218</u> . <b>Note:</b> If the setting is less than 0.25 In, the drive may I (see page <u>256</u> ). If it is less than the no-load motor curr		mode if this has been enabled	

Code	Name / Description	Adjustment range	Factory setting	
C L 2	[I Limit. 2 value]	0 to 1.5 ln (1)	1.5 ln (1)	
★ () FLu	<ul> <li>K</li> <li>Verify that the motor is properly rated for the maximum current to be applied to the motor.</li> <li>Consider the duty cycle of the motor and all factors of your application including derating require determining the current limit.</li> <li>Failure to follow these instructions can result in equipment damage.</li> <li>See page 218. Note: If the setting is less than 0.25 In, the drive may lock in [Output Phase Loss] (a P L) fault mode if this has (see page 256). If it is less than the no-load motor current, the motor cannot run.</li> <li>FL u</li> <li>Motor fluxing]</li> <li>MADANGER</li> <li>HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH If the parameter [Motor fluxing] (F L u) is set to [Continuous] (F E L), fluxing is always active, motor does not run.</li> </ul>			
Z s	Failure to follow these instructions will result i         N         OVERHEATING AND DAMAGE TO THE MOTOR         Verify that the connected motor is properly rated for and damage to the motor.         Failure to follow these instructions can result i	OTICE The flux current to be applied in ord	der to avoid overheating	
	The parameter is visible if <b>[Motor control type]</b> ( $L \ E \ E$ ) parameter is visible if <b>[Motor control type]</b> ( $L \ E \ E$ ) parameter to obtain rapid high torque on startup, magnetic flu In <b>[Continuous]</b> ( $F \ E \ E$ ) mode, the drive automatically built In <b>[Not cont.]</b> ( $F \ C \ E$ ) mode, fluxing occurs when the motor The flux current is greater than <b>[Rated mot. current]</b> ( $n \ E$ magnetizing current. See page <u>189</u> . <b>[Not cont.]</b> ( $F \ C \ E$ ): Non-continuous mode <b>[Continuous]</b> ( $F \ E \ E$ ): Continuous mode. This option is not or if <b>[Type of stop]</b> ( $5 \ E \ E$ ) page <u>173</u> is <b>[Freewheel]</b> ( $n \ S$	<ul> <li>ix needs to already have been establish lds up flux when it is powered up.</li> <li>or starts up.</li> <li>r) when the flux is established and is the possible if [Auto DC injection] (<i>R</i> d I</li> </ul>	ned in the motor. hen adjusted to the motor	
Fno	[No] (F n p): Function inactive. This option is not possible	if [Brake assignment] ( <i>LLE</i> ) page <u>19</u>		
EL S	[Low speed time out]	0 to 999.9 s	0 s	
0	Maximum operating time at <b>[Low speed]</b> ( $L \leq P$ ) (see page <u>87</u> ). Following operation at LSP for a defined period, a motor stop is requested automatically. The motor will restart if the reference is greater than LSP and if a run command is still present. See page <u>213</u> . <b>Note:</b> A value of 0 indicates an unlimited period of time. <b>Note:</b> If <b>[Low speed time out]</b> ( $L \leq D$ ) is not 0, <b>[Type of stop]</b> ( $5 \leq L$ ) page <u>173</u> is forced to <b>[Ramp stop]</b> ( $r \prod P$ ) (only if a ramp stop can be configured).			
JGF	[Jog frequency]	0 to 10 Hz	10 Hz	
*	Reference in jog operation. See page <u>178</u> .	<u>L</u>	1	
0				

DRI- > CONF > FULL > SET-

# Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting	
JGE	[Jog delay]	0 to 2.0 s	0.5 s	
*	Anti-repeat delay between 2 consecutive jog operations. See page <u>179</u> .			
0				

Configuration Mode (ConF)

Code	Name / Description	Adjustment range	Factory setting
5 P 2	[Preset speed 2]	0 to 599 Hz	10 Hz
*	Preset speed 2. See [Preset speed 2] ( 5 P 2) page <u>181</u> .		
()			
5 P 3	[Preset speed 3]	0 to 599 Hz	15 Hz
*	Preset speed 3. See [Preset speed 3] (5 P 3) page <u>181</u> .		
()			
5 P 4	[Preset speed 4]	0 to 599 Hz	20 Hz
*	Preset speed 4. See [Preset speed 4] (5 P 4) page <u>181</u> .		
()			
5 P 5	[Preset speed 5]	0 to 599 Hz	25 Hz
*	Preset speed 5. See [Preset speed 5] (5 P 5) page <u>181</u> .		
()			
5 P 6	[Preset speed 6]	0 to 599 Hz	30 Hz
*	Preset speed 6. See [Preset speed 6] (5 P 5) page <u>181</u> .		
()			
5 P 7	[Preset speed 7]	0 to 599 Hz	35 Hz
*	Preset speed 7. See [Preset speed 7] (5 P 7) page <u>181</u> .		
0			
5 P 8	[Preset speed 8]	0 to 599 Hz	40 Hz
*	Preset speed 8. See [Preset speed 8] (5 P B) page <u>182</u> .		I
0			
5 P 9	[Preset speed 9]	0 to 599 Hz	45 Hz
*	Preset speed 9. See [Preset speed 9] (5 P 9) page <u>182</u> .		
0			
5 P I D	[Preset speed 10]	0 to 599 Hz	50 Hz
*	Preset speed 10. See [Preset speed 10] (5 P 10) page <u>182</u> .		
0			
5 P I I	[Preset speed 11]	0 to 599 Hz	55 Hz
*	Preset speed 11. See [Preset speed 11] (5 P I I) page <u>182</u> .		
0			
SP 12	[Preset speed 12]	0 to 599 Hz	60 Hz
*	Preset speed 12. See [Preset speed 12] (5 P 12) page <u>182</u> .		
0			
•2			

DRI- > CONF > FULL > SET-

### Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting
5 P I 3	[Preset speed 13]	0 to 599 Hz	70 Hz
*	Preset speed 13. See [Preset speed 13] (5 P I 3) page 18	<u>2</u> .	
Q			
N2			
5 P I 4	[Preset speed 14]	0 to 599 Hz	80 Hz
$\star$	Preset speed 14. See [Preset speed 14] (5 P 14) page 18	<u>2</u> .	
()			
5 7 1 5	[Preset speed 15]	0 to 599 Hz	90 Hz
*	Preset speed 15. See [Preset speed 15] (5 P / 5) page 18.	<u>2</u> .	
0			
5 P 16	[Preset speed 16]	0 to 599 Hz	100 Hz
*	Preset speed 16. See [Preset speed 16] (5 P 16) page 18	<u>2</u> .	I
()			
ΠFr	[Multiplying coeff.]	0 to 100%	100%
*	Multiplying coefficient, can be accessed if [Multiplier ref.] ( <i>I</i> terminal. See page <u>46</u> .	П Я 2, П Я 3) page <u>169</u> has been as	signed to the graphic display
0			
Sr P	[+/-Speed limitation]	0 to 50%	10%
$\star$	Limitation of +/- speed variation. See page <u>187</u> .		
()			

Code	Name / Description	Adjustment range	Factory setting
r P G	[PID prop. gain]	0.01 to 100	1
*	Proportional gain. See page <u>211</u> .		
0			
r 16	[PID integral gain]	0.01 to 100	1
*	Integral gain. See page <u>211</u> .		l
0			
r d G	[PID derivative gain]	0.00 to 100	0
*	Derivative gain. See page <u>211</u> .		
0			
PrP	[PID ramp]	0 to 99.9 s	0 s
*	PID acceleration/deceleration ramp, defined to go from [Min PID re	ference] (P I P I) to [Max PID refere	<b>nce]</b> ( <i>P</i> , <i>P</i> 2) and
()	vice versa. See page <u>211</u> .		
Pol	[Min PID output]	-599 to 599 Hz	0 Hz
*	Minimum value of regulator output in Hz. See page <u>211</u> .		
0		1	1
PoH	[Max PID output]	0 to 599 Hz	60 Hz
*	Maximum value of regulator output in Hz. See page 211.		
0			
PAL	[Min fbk alarm]	See page <u>211</u> (2)	100
*	Minimum monitoring threshold for regulator feedback. See page 21	<u>1</u> .	
0			
PRH	[Max fbk alarm]	See page <u>212</u> (2)	1,000
*	Maximum monitoring threshold for regulator feedback. See page 2	1 <u>2</u> .	
Ô			
PEr	[PID error Alarm]	0 to 65,535 (2)	100
*	Regulator error monitoring threshold. See page <u>212</u> .		I
Q			
PSr	[Speed input %]	1 to 100%	100%
*	Multiplying coefficient for predictive speed input. See page <u>212</u> .		
0			
r P 2	[Preset ref. PID 2]	See page <u>214</u> (2)	300
*	Preset PID reference. See page <u>214</u> .	L	1
0			
<b>~ P</b>			

Code	Name / Description	Adjustment range	Factory setting
r P 3	[Preset ref. PID 3]	See page <u>214</u> (2)	600
*	Preset PID reference. See page 214.		
(			
r P 4	[Preset ref. PID 4]	See page <u>214</u> (2)	900
*	Preset PID reference. See page 214.		
0			

### Parameters described in this page can be accessed by:

ode	Name / Description	Adjustment range	Factory setting		
ibr	[Brake release I FW]	0 to 1.36 ln (1)	0.0 A		
*	Brake release current threshold for lifting or forward mo	vement. See page <u>194</u> .			
()					
ir d	[Brake release I Rev]	0 to 1.36 In (1)	0.0 A		
*	Brake release current threshold for lowering or reverse				
Ô					
			1		
brt	[Brake Release time]	0 to 5.00 s	0 s		
*	Brake release time delay. See page <u>194</u> .				
()					
bir	[Brake release freq]	[Auto] (月」と。)	[Auto] (Я и Ŀ ɒ)		
		0 to 10 Hz			
*	See page <u>195</u> .				
()					
Auto	[Auto] (Ruto): Nominal value				
6En	[Brake engage freq]	[Auto] (月」上。)	[Auto] ( R u Ł o )		
	0 to 10 Hz				
*	Brake engage frequency threshold. See page <u>195</u> .				
()					
ЕБЕ	[Brake engage delay]	0 to 5.00 s	0 s		
*					
0	Time delay before request to engage brake. See page	<u>195</u> .			
	[Proke en rege time]	0 to 5.00 s	0 s		
6 <i>6</i> 6	[Brake engage time] Brake engage time (brake response time). See page 19		0.5		
*	brake engage time (brake response time). See page 18	<u>70</u> .			
()					
JGC	[Jump at reversal]	[Auto] (Я ⊔ Ь □)	[Auto] (Я ⊔ Ł ם)		
_	See 1995	0 to 10 Hz			
*	See page <u>195</u> .				
()					
Ruto	[Auto] ( R u Ł o): Nominal value				
E E r	[Time to restart]	0.00 to 15.00 s	0.00 s		
*	Time between the end of a brake engage sequence and	d the start of a brake release sequence. Se	ee page <u>196</u> .		
0					
т. EL iП	[Motoring torque lim]	0 to 300%	100%		
	Torque limitation in motor mode, as a % or in 0.1% incre				
*	[Torque increment] ( , n E P) parameter, page 216.				
()	See page <u>216</u> .				

Code	Name / Description	Adjustment range	Factory setting
EL IG	[Gen. torque lim]	0 to 300%	100%
*	Torque limitation in generator mode, as a % or in 0.1% increments of the rated torque in accordance with the		
0	[Torque increment] ( , n E P) parameter, page 216. See page 216.		
ErH	[Traverse freq. high]	0 to 10 Hz	4 Hz
*	Traverse high. See page <u>242</u> .		
0			
ErL	[Traverse freq. low]	0 to 10 Hz	4 Hz
*	Traverse low. See page <u>242</u> .		
0			
9 S H	[Quick step High]	0 to [Traverse freq. high] (E r H)	0 Hz
*	Quick step high. See page <u>242</u> .		
$\mathbf{O}$			
95L	[Quick step Low]	0 to [Traverse freq. low] (E r L	0 Hz
*	Quick step low. See page <u>242</u> .		
0			
[ E d	[Current threshold]	0 to 1.5 ln (1)	ln (1)
()	Current threshold for [I attained] ( <i>L E R</i> ) function assigned to a relation	ay or a logic output (see page <u>138</u> ). Se	e page <u>252</u> .
		1	1
EEH	[High torque thd.]	-300% to +300%	100%
0	High torque threshold for [High tq. att.] ( <i>E E H R</i> ) function assigned rated motor torque. See page 253.		-
EEL	[Low torque thd.]	-300% to +300%	50%
0	Low torque threshold for [Low tq. att.] ( <i>E E L R</i> ) function assigned to motor torque. See page 253.		
F9L	[Pulse warning thd.]	0 Hz to 20,000 kHz	0 Hz
*	Speed threshold measured by the [FREQUENCY METER] (F 9 F - (see page <u>138</u> ). See page <u>253</u> .		
FEd	[Freq. threshold]	0.0 to 599 Hz	HSP
0	Motor frequency threshold for [Freq.Th.att.] ( $F \downarrow R$ ) function assigned to a relay or a logic output (see page <u>138</u> ), or used by the [PARAM. SET SWITCHING] ( $\Pi \downarrow P$ -) function, page <u>230</u> . See page <u>253</u> .		
F24	[Freq. threshold 2]	0.0 to 599 Hz	HSP
0	Motor frequency threshold for [Freq. th.2 attained] (F 2 R) function by the [PARAM. SET SWITCHING] (II L P -) function, page 230. S	See page <u>253</u> .	
FFE	[Freewheel stop Thd]	0.2 to 599 Hz	0.2 Hz
* ()	Speed threshold below which the motor will switch to freewheel stop. This parameter supports switching from a ramp stop or a fast stop to a freewheel stop below a low speed threshold. It can be accessed if [Type of stop] ( $5 L L$ ) is set to [Fast stop] ( $F 5 L$ ) or [Ramp stop] ( $r \Pi P$ ) and if [Brake assignment] ( $b L L$ ) and [Auto DC injection] ( $H d L$ ) are not configured. See page <u>173</u> .		
E E d	[Motor therm. level]	0 to 118%	100%
0	Threshold for motor thermal alarm (logic output or relay). See page	<u>255</u> .	
JPF	[Skip Frequency]	0 to 599 Hz	0 Hz
0	Skip frequency. This parameter helps to prevent prolonged operation This function can be used to help to prevent a speed, which would o renders it inactive. See page <u>183</u> .		

Code	Name / Description	Adjustment range	Factory setting	
JF2	[Skip Frequency 2]	0 to 599 Hz	0 Hz	
0	2nd skip frequency. This parameter helps to prevent prolonged operation within an adjustable range around the regulated frequency. This function can be used to help to prevent a speed, which would cause resonance, being reached. Setting the function to 0 renders it inactive. See page <u>183</u> .			
JF 3	[3rd Skip Frequency]	0 to 599 Hz	0 Hz	
0	3rd skip frequency. This parameter helps to prevent prolonged oper frequency. This function can be used to help to prevent a speed, wh function to 0 renders it inactive. See page <u>183</u> .			
JFH	[Skip.Freq.Hysteresis]	0.1 to 10 Hz	1 Hz	
* ()	Parameter visible if at least one skip frequency [Skip Frequency] $(JPF)$ , [Skip Frequency 2] $(JF2)$ or [3rd Skip Frequency] $(JF3)$ is different from 0. Skip frequency range: between $(JPF - JFH)$ and $(JPF + JFH)$ for example.			
Lun	This adjustment is common to the 3 frequencies ( <i>J P F</i> , <i>J F 2</i> , <i>J F</i> [Unld.Thr.Nom.Speed]	20 to 100% of [Rated mot. current] (n [ r )	60%	
* ()	Underload threshold at rated motor frequency ([Rated motor freq.] (F r 5) page <u>86</u> ), as a % of the rated motor torque. Visible only if [Unid T. Del. Detect] (u L E) page <u>270</u> is not set to 0. See page <u>270</u> .			
LuL	[Unld.Thr.0.Speed]	0 to [Unid.Thr.Nom.Speed] (L u n)	0%	
* ()	Underload threshold at zero frequency, as a % of the rated motor torque. Visible only if [UnId T. Del. Detect] ( <i>u L L</i> ) page <u>270</u> is not set to 0. See page <u>270</u> .			
rNud	[Unld. Freq.Thr. Det.]	0 to 599 Hz	0 Hz	
*	Underload detection minimum frequency threshold. See page <u>270</u> .			
0				
Srb	[Hysteresis Freq.Att.]	0.3 to 599 Hz	0.3 Hz	
* ()	Maximum deviation between the frequency reference and the motor See page <u>270</u> .	frequency, which defines steady state	operation.	
FEu	[Underload T.B.Rest.]	0 to 6 min	0 min	
* ()	Minimum time permitted between an underload being detected and any automatic restart. In order for an automatic restart to be possible, the value of [Max. restart time] ( $E R r$ ) page 252 must exceed that of this parameter by at least one minute. See page 271.			
LoC	[Ovld Detection Thr.]	70% to 150% of [Rated mot. current] ( [ )	110%	
* ()	Overload detection threshold, as a % of the rated motor current [Rated mot. current] ( $n \lfloor r$ ). This value must be less than the limit current in order for the function to work. See page <u>272</u> . Visible only if [OvId Time Detect.] ( $L = L$ ) is not set to 0. This parameter is used to detect an "application overload". This is not a motor or drive thermal overload.			
FEo	[Overload T.B.Rest.]	0 to 6 min	0 min	
* ()	Minimum time permitted between an overload being detected and any automatic restart. In order for an automatic restart to be possible, the value of [Max. restart time] ( $E R r$ ) page 252 must exceed that of this parameter by at least one minute. See page 272.			
LЬC	[Load correction]	0 to 599 Hz	0 Hz	
*	Rated correction in Hz. See [Load correction] (L b C) page <u>122</u> .		1	
0				

DRI- > CONF > FULL > SET-

i arameters accentica in tino page can be accessed by	Parameters described in this	page can be accessed by
---	------------------------------	-------------------------

Carla	News / Decerintian		Footomicootting	
Code	Name / Description	Adjustment range	Factory setting	
FFN	[Fan Mode]		[Standard] (5 E d) or [Always] (r u n) according to the drive.	
	If <b>[Fan Mode]</b> ( <i>F F I</i> ) is set to <b>[Never]</b> (5 <i>L P</i> ), the fan of t	he drive is disabled.		
	For ATV320	s] (г ц п).		
75	NOTIO	CE		
O	OVERHEATING Verify that the ambient temperature does not exceed 40 °C (104° F) if the fan is disabled. Failure to follow these instructions can result in equipment damage.			
SEd run SEP	[Always] ( ר u ח): The fan is always activated	ng to the drive thermal state		
5 d 5	[Scale factor display]	0.1 to 200	30	
	Used to display a value in proportion to the output frequency [Output f	frequency] ( - F - ): the machine speed	, the motor speed, etc.	
	The display will show			
	$[Cust. output value] (5 P d 3) = \frac{[Scale factor display] (5 d 5) \times [Output frequency] (r F r)}{1000}$ to 2 decimal places			
	• If [Scale factor display] (5 d 5) ≤ 1, [Cust. output value] (5 P d I) is displayed (possible definition = 0.01)			
	• If 1 < [Scale factor display] (5 d 5) ≤ 10, [Cust. output value] (5 P d 2) is displayed (possible definition = 0.1)			
0	• If [Scale factor display] (5 d 5) > 10, [Cust. output value] (5 P d 3) is displayed (possible definition = 1)			
()	• If [Scale factor display] $(5 d 5) > 10$ and [Scale factor display] $(5 d 5) \times [Output frequency] (r F r) > 9,999$ :			
	example: for 24,223, display will show 24.22			
	<ul> <li>If [Scale factor display] (5 d 5) &gt; 10 and [Scale factor display] (ocked at 65.54</li> </ul>	play](5 d 5)x [Output frequency](r F	<b>r</b> ) > 65,535, display	
	Example: Display motor speed for 4-pole motor, 1,500 rpm at 50 Hz (synchronous speed): [Scale factor display] (5 d 5) = 30 [Cust. output value] (5 P d 3) = 1,500 at [Output frequence	<b>cy]</b> ( <i>r</i> <b>F</b> <i>r</i> ) = 50 Hz		
	<ul> <li>(1) In corresponds to the rated drive current indicated in the Ir</li> <li>(2) If a graphic display terminal is not in use, values greater the mark after the thousand digit, example: 15.65 for 15,650.</li> </ul>			
📩 📩 also	se parameters only appear if the corresponding function has been be accessed and adjusted from within the configuration menu for the menus, on the pages indicated, to aid programming.			

0

🚡 2 s

Parameter that can be modified during operation or when stopped.

To change the assignment of this parameter, press the ENT key for 2 s.

# Motor control

The parameters in the [MOTOR CONTROL] (*d* r [ -) menu can only be modified when the drive is stopped and no run command is present, with the following exceptions:

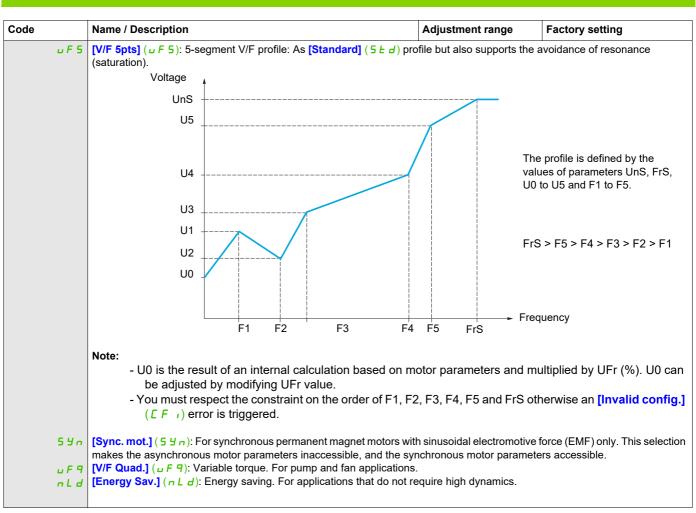
- [Auto tuning] (Lun) page 113, which may cause the motor to start up.
- Parameters containing the sign  ${f O}$  in the code column, which can be modified with the drive running or stopped.

Note : We recommend to perform auto-tuning if one of the following parameters are modified from their factory setting.

Code	Name / Description	Adjustment range	Factory setting	
Full	[FULL] (continued)			
dr[-	[MOTOR CONTROL]			
bFr	[Standard mot. freq]		[50 Hz IEC] ( 5 Ø)	
	This parameter modifies the presets of the following parameters: [High speed] $(H \leq P)$ page <u>87</u> , [Freq. threshold] $(F \vdash d)$ page <u>102</u> , [Rated motor volt.] $(u \land 5)$ , [Rated motor freq.] $(F \land 5)$ and [Max frequency] $(E \land F)$ .			
5 0 6 0				
E F r	[Max frequency]	10 to 599 Hz	60 Hz	
	The factory setting is 60 Hz, or preset to 72 Hz if <b>[Standard mot. freq]</b> ( <i>b F r</i> ) is set to 60 Hz. The maximum value is limited by the following conditions: It must not exceed 10 times the value of <b>[Rated motor freq.]</b> ( <i>F r</i> <b>5</b> ).			
<u> </u>	[Motor control type]		[Standard] (5 E d)	
	Note: Select law before entering parameter values.			
C	[SVC V] ( $_{U}$ $_{U}$ ): Sensorless vector control with internal speed loop based on voltage feedback calculation. For applications needing high performance during starting or operation.			
5 E d	[Standard] (5 L d): Standard motor law. For simple applications that do not require high performance. Simple motor control keeping a constant Voltage Frequency ratio, with a possible adjustment of the curve bottom. This law is generally used for mot connected in parallel. Some specific applications with motors in parallel and high performance levels may require [SVC V]			
	Voltage UnS U0 U0 FrS	uency		
	<b>Note:</b> U0 is the result of an internal calculation based on motor parar modifying UFr value.	neters and multiplied by	UFr (%). U0 can be adjusted by	

DRI- > CONF > FULL > DRC

#### Parameters described in this page can be accessed by:



DRI- > CONF > FULL > DRC- > ASY-

### Asynchronous motor parameters

Code	Name / Description	Adjustment range	Factory setting	
A 5 Y -	[ASYNC. MOTOR]			
	Only visible if [Motor control type] ( <i>L E b</i> ) page <u>105</u> is not set to [S	Sync. mot.] ( 5		
nPr	[Rated motor power]	According to drive rating	According to drive rating	
*	This parameter cannot be accessed if [Motor control type] ( $L \ge L$ ) page <u>105</u> is set to [Sync. mot.] ( $5 \lor L$ ). Rated motor power given on the nameplate, in kW if [Standard mot. freq] ( $B \vdash L$ ) is set to [50Hz IEC] ( $5 \square$ ), in HP if [Standard mot. freq] ( $B \vdash L$ ) is set to [60Hz NEMA] ( $E \square$ ).			
C o 5	[Motor 1 Cosinus Phi]	0.5 to 1	According to drive rating	
*	Nominal motor cos phi. This parameter can be accessed if [Motor param choice] ( <i>ПРЕ</i> ) is set to [Mot Cos] ( <i>L</i> 5).			
u n 5	[Rated motor volt.]	100 to 480 V	According to drive rating and [Standard mot. freq] ( <i>b F r</i> )	
*	This parameter cannot be accessed if [Motor control type] ( <i>L E L</i> ) page <u>105</u> is set to [Sync. mot.] (5 4 n). Rated motor voltage given on the nameplate.			
n E r	[Rated mot. current]	0.25 to 1.5 ln (1)	According to drive rating and [Standard mot. freq] ( <i>b F r</i> )	
*	This parameter cannot be accessed if [Motor control type] ( <i>L E L</i> ) page <u>105</u> is set to [Sync. mot.] (5 <sup>y</sup> n). Rated motor current given on the nameplate.			
FrS	[Rated motor freq.]	10 to 800 Hz	50 Hz	
*	This parameter cannot be accessed if <b>[Motor control type]</b> ( $\underline{\Gamma} \vdash \underline{L}$ ) page <u>105</u> is set to <b>[Sync. mot.]</b> ( <u>5 9 n</u> ). Rated motor frequency given on the nameplate. The factory setting is 50 Hz, or preset to 60 Hz if <b>[Standard mot. freq]</b> ( <u>b F r</u> ) is set to 60 Hz.			
n 5 P	[Rated motor speed]	0 to 65,535 rpm	According to drive rating	
	This parameter cannot be accessed if [Motor control type] ( $L \neq L$ ) page <u>105</u> is set to [Sync. mot.] ( $5 \forall n$ ). 0 to 9,999 rpm then 10.00 to 65.53 krpm on the integrated display terminal. If, rather than the rated speed, the nameplate indicates the synchronous speed and the slip in Hz or as a %, calculate the rated speed as follows:			
*	Nominal speed = Synchronous speed x $\frac{100 - \text{slip as a \%}}{100}$ or			
	Nominal speed = Synchronous speed x $\frac{50 - \text{slip in Hz}}{50}$ (50 Hz motors) or			
	Nominal speed = Synchronous speed x $\frac{60 - \text{slip in Hz}}{60}$ (60 Hz motors).			

DRI- > CONF > FULL > DRC- > ASY-

### Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting		
Eun	[Auto tuning]	I	[No] ( ח ם )		
()	A WAR	NING			
	UNEXPECTED MOVEMENT				
🚡 2 s	Autotuning moves the motor in order to tune the control lo				
	<ul> <li>Only start the system if there are no persons or obstruct Failure to follow these instructions can result in death</li> </ul>				
	During autotuning, the motor makes small movements, noise dev				
	<ul> <li>Auto-tuning is only performed if no stop command has been ac assigned to a logic input, this input must be set to 1 (active at</li> </ul>	•	or "fast stop" function has been		
	<ul> <li>Auto-tuning takes priority over any run or prefluxing commands, which will be taken into account after the auto-tuning sequence.</li> </ul>				
	<ul> <li>If auto-tuning detects a fault, the drive displays [No action] ( [Autotune fault mgt] (E n L) page <u>268</u>, may switch to [Auto</li> </ul>	o-tuning] ( L n F ) fault mode			
	- Auto-tuning may last for 1 to 2 seconds. Do not interrupt the p	process. Wait for the display	to change to [No action] ( ם ם).		
	Note: Motor thermal state has a big influence on tune result. Make				
	To redo a tune of the motor, wait that it is completely stopped and co then redo the motor tuning.	old. Set first [Auto tuning] (	$E \cup n$ ) to [Erase tune] ( $E L r$ ),		
	The use of the motor tuning without doing a <b>[Erase tune]</b> ( $L c$ ) f In any case, the motor has to be stopped before performing a tune		al state estimation of the motor.		
	Cable length has an influence on the Tune result. If the cabling is n	•	do the tune operation.		
по 965	[No action] (n a): Auto-tuning not in progress				
363	<b>[Do tune]</b> ( $4E$ 5): Auto-tuning is performed immediatly if possible, to <b>[No action]</b> ( $n_{B}$ ). If the drive state does not allow the tune operation				
ELr	the operation must be done again. [Erase tune] ( $L L r$ ): The motor parameters measured by the auto	-tuning function are reseted	The default motor parameters		
	values are used to control the motor. [Auto tuning status] ( $L \ \mu$ 5)				
£ u 5	[Auto tuning state]		[Not done] (ERb)		
	(for information only, cannot be modified) This parameter is not saved at drive power off. It shows the Autotu	ning status since last power	on.		
		0			
ER B PEnd	[Not done] ( $E \not B  b$ ): Autotune is not done [Pending] ( $P E \ r  d$ ): Autotune has been requested but not yet per	formed			
ProG FAil	<b>[In Progress]</b> ( <i>P</i> r $\Box$ <i>E</i> ): Autotune is in progress <b>[Failed]</b> ( <i>F</i> $H$ $\downarrow$ <i>L</i> ): Autotune has detected a fault				
donE	<b>[Done]</b> $(d \square n E)$ : The motor parameters measured by the auto-tur	ning function are used to cor	ntrol the motor		
Stun	[Tune selection]		[Default] (ERb)		
	(for information only, cannot be modified)				
Е Я Б П Е Я Б	<b>[Default]</b> ( $E B b$ ): The default values are used to control the motor [Measure] ( $\Pi E B 5$ ): The values measured by the auto-tuning fun-		motor		
C u 5	<b>[Custom]</b> ( <i>L</i> <b>u 5</b> ): The values set manually are used to control the <b>Note:</b> Tune of the motor will increase significantly the performance				
Lunu	[Auto tuning usage]		[Therm Mot] (E II)		
	This parameter shows the way used to modify the motor parameter	rs according to its estimated	thermal state.		
n 0	[No] ( n c): No thermal state estimation				
E N C E	<b>[Therm Mot]</b> ( $E \Pi$ ): Statoric thermal state estimation based on nor <b>[Cold tun]</b> ( $E E$ ): Statoric thermal state estimation based on stator				
	at each power up				
	<b>Note:</b> An autotuning must be performed before setting [Auto tuning values of a cold tune.	to [Cold נו ח ם) to [Cold	tunj (L E) to get the references		

DRI- > CONF > FULL > DRC- > ASY-

Code	Name / Description	Adjustment range	Factory setting	
Aut	[Automatic autotune]	i	[No] (n @)	
Q		WARNING		
VI	UNEXPECTED MOVEMENT			
	If this function is activated, autotuning is perfo	ormed each time the drive is switche	d on.	
🚡 2 s	Verify that activating this function does not			
	Failure to follow these instructions can res	suit in death, serious injury, or eq	uipment damage.	
	The motor must be stopped when switching on the dr [Automatic autotune] ( $P \sqcup L$ ) is forced to [Yes] ( $\mathcal{G} E$ of motor statoric resistance measured during the tune	5) if [Auto tuning usage] (Lunu) is s		
9ES	[No] ( , , , ): Function deactivated [Yes] ( y E 5): A tune is automatically done at each p [One] ( , , , E): A tune is done at the first run order.	ower up		
FLu	[Motor fluxing]		[No] (F n a)	
★ () (1)	<ul> <li>If the parameter [Motor fluxing] (<i>F L μ</i>) is seemotor does not run.</li> <li>Verify that using this setting does not resul Failure to follow these instructions will result.</li> </ul>	t in unsafe conditions.	s always active, even if the	
2 s	NOTICE			
<u> </u>	OVERHEATING AND DAMAGE TO THE MC Verify that the connected motor is properly rate and damage to the motor. Failure to follow these instructions can res	ed for the flux current to be applied in	order to avoid overheating	
	If [Motor control type] ( $L E$ ) page <u>105</u> is set to [S] In order to obtain rapid high torque on startup, magned In [Continuous] ( $F L E$ ) mode, the drive automatical In [Not cont.] ( $F n L$ ) mode, fluxing occurs when the The flux current is greater than [Rated mot. current] is then adjusted to the motor magnetizing current.	etic flux needs to already have been esta ly builds up flux when it is powered up. motor starts up.	ablished in the motor.	
FCE	[Not cont.] ( $F \cap E$ ): Non-continuous mode [Continuous] ( $F \in E$ ): Continuous mode. This option or if [Type of stop] ( $5 \in E$ ) page <u>173</u> is [Freewheel] [No] ( $F \cap B$ ): Function inactive. This option is not pos	(n5£).		
	If <b>[Motor control type]</b> ( $L \neq L$ ) page <u>105</u> is set to <b>[S</b> ] alignment of the rotor and not the fluxing. If <b>[Brake assignment]</b> ( $L \perp L$ ) page <u>194</u> is not <b>[No]</b>	ync. mot.] (5 9 n), the [Motor fluxing]	(F L u) parameter causes the	

DRI- > CONF > FULL > DRC- > ASY-

Code	Name / Description	Adjustment range	Factory setting
ΠΡΕ	[Motor param choice]		[Mot Power] ( n P r )
*			
nPr	[Mot Power] ( ¬P ¬)		
C o 5	[Mot Cos] ([ a 5)		

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



🖌 2 s

 $\star$ 

Parameter that can be modified during operation or when stopped.

To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > DRC- > ASY-

## Asynchronous motor parameters: Expert mode

Code	Name / Description	Adjustment range	Factory setting	
A 5 4 -	[ASYNC. MOTOR]			
r 5 A	[Cust stator resist.]	0 to 65,535 mOhm	0 mOhm	
★ (1)	Cold state stator resistance (per winding), modifiable value. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			
LFA	[Lfw]	0 to 655.35 mH	0 mH	
*	Cold state leakage inductance, modifiable value. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			
ı d A	[ldw]	0 to 6,553.5 A	0 A	
*	Customer adjusted magnetizing current. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			
ErA	[Cust. rotor t const.]	0 to 65,535 ms	0 ms	
*	Customer adjusted rotor time constant. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			

(1) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,000 to 65,535).

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > DRC- > SYN-

#### Parameters described in this page can be accessed by:

#### Synchronous motor parameters

These parameters can be accessed if [Motor control type] (L E E) page <u>105</u> is set to [Sync. mot.] ( $5 \ \mbox{y}_{\ \mbox{n}}$ ). In this case, the asynchronous motor parameters cannot be accessed.

Once the drive is chosen:

#### 1- Enter the motor nameplate.

#### 2 - Perform the tune.

- Do an [Auto tuning] (Lun)
- Check the state of the synchronous motor saliency (See page <u>113</u>.)
- If [Saliency mot. state] (5 n L) displays [Med salient] (n L 5) or [High salient] (H L 5)
  - follow the procedure below "3 Improve the tune result"
    - and
    - follow the the procedure below "4 Adjust PHS"
- Or if [Saliency mot. state] (5 П . L) displays [Low salient] (L L 5)
  - follow the the procedure below "4 Adjust PHS"

#### 3 - Improve the tune results.

# NOTICE

### OVERHEATING AND DAMAGE TO THE MOTOR

- Verify that the motor is properly rated for the maximum current to be applied to the motor.
- Consider the duty cycle of the motor and all factors of your application including derating requirements in determining the current limit.

Failure to follow these instructions can result in equipment damage.

- Set [PSI align curr. max] (*П* [ *r* ) conforming to the maximum motor current. The maximum value of [PSI align curr. max] (*П* [ *r* )) is limited by [Current Limitation] ([ L <sub>1</sub>). Without information set [PSI align curr. max] (*Π* [ *r* ) to [Auto] (*Π* [ *r* ) (see page <u>116</u>)
- Do a second (*L* <u>u</u> <u>n</u>) after the (*П* <u>[</u> <u>r</u>) modification.

#### 4 - Adjust PHS.

Adjust [Syn. EMF constant] (PH 5) to have optimal behavior (See page 116.)

- Start the motor at minimal stable frequency available on the machine (without load).
- Check and note the [% error EMF sync] (r d R E) value. (See page <u>117</u>)
  - If the [% error EMF sync] (r d R E) value is lower than 0%, then [Syn. EMF constant] (P H 5) may be increased.
  - If the [% error EMF sync] (r d R E) value is upper than 0%, then [Syn. EMF constant] (P H 5) may be reduced.

[% error EMF sync] (r d R E) value should be closed to 0%.

• Stop the motor for modify P H 5 in accordance with the value of the r d R E (previously noted).

### Advices:

The drive must be chosen to have enough current according to the need of behavior, but not too much, to have enough accuracy in the current measurement, especially with the high frequency signal injection (see **[HF inj. activation]** (HF ) page <u>116</u>).

Performances may be higher on high saliency motors by activating high frequency injection function (see **[HF inj. activation]** (HF, ) page <u>116</u>).

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting
dr[-	[MOTOR CONTROL] (continued)		
5 y n -	[SYNCHRONOUS MOTOR]		
n E r S	[Nominal I sync.]	0.25 to 1.5 ln (1)	According to drive rating
*	Rated synchronous motor current given on the nameplate.		
PPn5	[Pole pairs]	1 to 50	According to drive rating
*	Number of pairs of poles on the synchronous motor.		
n 5 P 5	[Nom motor spdsync]	0 to 48,000 rpm	According to drive rating
★ (2)	Rated motor speed given on the nameplate.		
£95	[Motor torque]	0.1 to 6,553.5 Nm	According to drive rating
*	Rated motor torque given on the nameplate.		
Lun	[Auto tuning]		[No] (n ¤)
0	<b>A</b> WARNING	6	
2 s	<ul> <li>Only start the system if there are no persons or obstructions in the zone of operation.</li> <li>Failure to follow these instructions can result in death, serious injury, or equipment damage.</li> <li>During autotuning, the motor makes small movements, noise development and oscillations of the system are normal.</li> <li>Auto-tuning is only performed if no stop command has been activated. If a "freewheel stop" or "fast stop" function has been assigned to a logic input, this input must be set to 1 (active at 0).</li> <li>Auto-tuning takes priority over any run or prefluxing commands, which will be taken into account after the auto-tuning sequence.</li> <li>If auto-tuning detects a fault, the drive displays [No action] (n c) and, depending on the configuration of [Autotune fault mgt] (L n L) page 268, may switch to [Auto-tuning] (L n F) fault mode.</li> <li>Auto-tuning may last for 1 to 2 seconds. Do not interrupt the process. Wait for the display to change to [No action] (n c)</li> <li>Note: Motor thermal state has a big influence on tune result. Make the tune with the motor stopped and cold. To redo a tune of the motor, wait that it is completely stopped and cold. Set first [Auto tuning] (L u n) to [Erase tune] ([L r) then redo the motor tuning.</li> </ul>		
ne	The use of the motor tuning without doing a <b>[Erase tune]</b> ( $L L r$ ) first is use In any case, the motor has to be stopped before performing a tune operation Cable length has an influence on the Tune result. If the cabling is modified, if <b>[No action]</b> ( $n c$ ): Auto-tuning not in progress	۱.	
9E5 Clr	<b>[Do tune]</b> ( $\forall E$ 5): Auto-tuning is performed immediatly if possible, then the to <b>[No action]</b> ( $\neg \Box$ ). If the drive state does not allow the tune operation imm the operation must be done again. <b>[Erase tune]</b> ( $\varGamma L \neg$ ): The motor parameters measured by the auto-tuning fit	ediately, the parameter	changes to [No] ( ח ם ) and
	values are used to control the motor. [Auto tuning status] ( $E = 5$ ) is set to	[Not done] ( <i>E</i>	
Ευ5	[Auto tuning state] (for information only, cannot be modified) This parameter is not saved at drive power off. It shows the Autotuning statu	is since last power on.	[Not done] ( <i>L R b</i> )
ERB PEnd ProG FRiL danE	<ul> <li>[Pending] (P E n d): Autotune has been requested but not yet performed</li> <li>[In Progress] (P r a L): Autotune is in progress</li> <li>[Failed] (F R , L): Autotune has detected a fault</li> </ul>		

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting		
Stun	[Tune selection]		[Default] (ERb)		
	(for information only, cannot be modified) <b>Note:</b> Tune of the motor will increase significantly the performances.				
Е Я Ь ПЕ Я 5 С и 5	[Measure] ( <i>ΠE</i> / 5): The values measured by the auto-tuning function are used to control the motor				
Lunu	[Auto tuning usage]		[Therm Mot] (ЕП)		
с е Е П С Е					
Rut	[Automatic autotune]		[No] ( n o )		
0					
2 s	<ul> <li>If this function is activated, autotuning is performed each time the</li> <li>Verify that activating this function does not result in unsafe cor</li> <li>Failure to follow these instructions can result in death, serior</li> </ul>	ditions.			
па УЕ 5 апЕ					
SNot	[Saliency mot. state]				
*	<ul> <li>(for information only, cannot be modified)</li> <li>Information on synchronous motor saliency.</li> <li>This parameter can be accessed if [Tune selection] (5 ± μ n) is set to [Measure] (Π Ε Π 5).</li> <li>Note: In case of motor with low saliency, the standard control law is advised.</li> <li>[No] (n p): Tune not done</li> <li>[Low salient] (L L 5): Low saliency level (Recommended configuration: [Angle setting type] (Π 5 ±) = [PSI align] (P 5 +) o</li> <li>[PSIO align] (P 5 + p) and [HF inj. activation] (HF +) = [No] (n p)).</li> <li>[Med salient] (ΠL 5): Medium saliency level ([Angle setting type] (Π 5 ±) = [SPM align] (5 P Π Π) is possible.</li> <li>[HF inj. activation] (HF +) = [Yes] (4 ± 5) could work).</li> </ul>				
П 5 Н 5 Н 1 5					
ASE	[HF inj. activation] (HF i) = [Yes] (HE 5) is possible). [Angle setting type]		[PSIO align.] (P 5 , a)		
*	Mode for measuring the phase-shift angle. Visible only if [Motor control type] [PSI align] ( $P \leq i$ ) and [PSIO align] ( $P \leq i = 0$ ) are working for all type of sync [IPM align] ( $i \in P \cap R$ ) increase performances depending on the type of sync	nchronous motors. [SI	nc. mot.] ( ל ש ח).		
,РПЯ 5РПЯ Р5, Р5,0	motor has a medium or low saliency level). It uses high frequency injection, <b>[PSI align]</b> ( <i>P</i> <b>5</b> ): Pulse signal injection. Standard alignment mode by pul	less noisy than standa d Permanent Magnet r which is less noisy that se signal injection. ed alignment mode by	ard alignment mode. notor (usually, this kind of n standard alignment mode		

DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting
HF i	[HF inj. activation]	1	[No] (n @)
<ul> <li>Activation of high frequency signal injection in RUN. This function allows to estimate the motor speed in a view to have to at low speed without speed feedback.</li> <li>Note: The more the saliency is high, the more the [HF inj. activation] (HF ·) function will be efficient.</li> <li>In order to ensure the performances, it could be necessary to adjust the speed loop parameters ([K speed loop filter] (5 [Speed time integral] (5 · L) and [Speed prop. gain] (5 P L), see page 118) and the speed estimation phase locked I (Expert parameters [HF pII bandwith] (5 P L) and [HF pII dump. factor] (5 P F), see page 116).</li> <li>High frequency injection is not efficient with low saliency motors (see [Saliency mot. state] (5 Π • L) page 114). It is advised to have 4 kHz of pwm frequency ([Switching freq.] (5 F r)).</li> <li>In case of instability with no load, it is advised to decrease [Speed prop. gain] (5 P L) and [HF pII bandwith] (5 P L). The speed loop parameters to have the dynamic behavior and the PLL gains to have a good speed estimation at los speed.</li> <li>In case of instability with load, it could help to increase the [Angle error Comp.] (P E L) parameter (mainly for SPM motor)</li> </ul>			ent. <b>speed loop filter]</b> (5 <i>F C</i> ), mation phase locked loop <i>E</i> ) page <u>114</u> ). <b>I bandwith]</b> (5 <i>P b</i> ). Then, speed estimation at low
	[No] ( n p): Function deactivated [Yes] ( J E 5): High frequency injection is used for speed estimation		
	(1) In corresponds to the rated drive current indicated in the Installation (2) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,0		ve nameplate.
The	se parameters only appear if the corresponding function has been select	ed in another menu. V	Vhen the parameters can

also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



★

Parameter that can be modified during operation or when stopped.

To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > DRC- > SYN-

# Synchronous motor: Expert mode

Code	Name / Description	Adjustment range	Factory setting	
59n-	[SYNCHRONOUS MOTOR]			
r 5 A 5	[Cust. stator R syn]	0 to 65,535 mOhm	0 mOhm	
*	Cold state stator resistance (per winding). The factory setting is replace	ed by the result of the auto-tunin	g operation, if it has been	
Q	performed. The value can be entered by the user, if he knows it.			
(1)	Physical entrol	0 to 655.35 mH	0 mH	
LdS	[Autotune L d-axis] Axis "d" stator inductance in mH (per phase).	0 10 000.00 111		
*	On motors with smooth poles [Autotune L d-axis] $(L d 5) =$ [Autotune L q-axis] $(L q 5) =$ Stator inductance L. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			
L 9 5	[Autotune L q-axis]	0 to 655.35 mH	0 mH	
*	Axis "q" stator inductance in mH (per phase). On motors with smooth poles [Autotune L d-axis] (L d 5) = [Autotune L q-axis] (L 9 5) = Stator inductance L. The factory setting is replaced by the result of the auto-tuning operation, if it has been performed.			
PHS	[Syn. EMF constant]	0 to 6,553.5 mV/rpm	0 mV/rpm	
★ (1)	Synchronous motor EMF constant, in mV per rpm (peak voltage per phase). PHS adjustment allows to reduce the current in operation without load.			
FrSS	[Nominal freq sync.]	10 to 800 Hz	nSPS * PPnS / 60	
*	Nominal motor frequency for synchronous motor in Hz unit. Automatic	ally updated according to		
0	[Nom motor spdsync] ( $n 5 P 5$ ) and [Pole pairs] ( $P P n 5$ ) data.			
5 P 6	[HF pll bandwith]	0 to 100 Hz	25 Hz	
*	Bandwidth of the stator frequency Pll.			
5 P F	[HF pll dump. factor]	0 to 200%	100%	
*	Dumping factor of the stator frequency Pll.			
PEC	[Angle error Comp.]	0 to 500%	0%	
*	Error compensation of the angle position in high frequency mode. It increases performances at low speed in generator and motor mode,	particularly for SPM motors.		
Ruto	[Auto] ( <i>R</i> _ <i>L</i> _ ): The drive takes a value equal to the rated slip of the	motor, calculated using the dri	ve parameters.	
Fri	[HF injection freq.]	250 to 1,000 Hz	500 Hz	
*	Frequency of the high frequency injection signal. It has an influence or estimation accuracy.	n the noise during angle shift m	easurement and speed	
Hir	[HF current level]	0 to 200%	25%	
*	Ratio for the current level of the high frequency injection signal. It has a and speed estimation accuracy.	n influence on the noise during	angle shift measurement	
ΠCr	[PSI align curr. max]	[Auto] ( <i>Auba</i> ) to 300%	[Auto] ( <i>R</i> ⊔ <i>L</i> □ )	
*	Current level in % of [Nominal I sync.] ( $n [r 5]$ ) for [PSI align] ( $P 5_{1}$ ) and [PSIO align] ( $P 5_{1} c$ ) angle shift measurement modes. This parameter has an impact on the inductor measurement. [PSI align curr. max] ( $\Pi [r]$ ) is used for tune operation. This current must be equal or higher than the maximum current level of the application, otherwise instability may occur. If [PSI align curr. max] ( $\Pi [r]$ ) is set to [Auto] ( $\Pi [r] [r] [r] [r] [r] [r] [r] [r] [r] [r]$			
i Lir	[Injection level align]	0 to 200%	50%	
*	Current level in % of [Nominal I sync.] ( n [ r 5) for high frequency p	hase-shift angle measurement	IPMA type.	

#### DRI- > CONF > FULL > DRC- > SYN-

Code	Name / Description	Adjustment range	Factory setting
5 ir	[Boost level align.]	0 to 200%	100%
*	Current level in % of [Nominal I sync.] ( n [ r 5) for high frequency ]	bhase-shift angle measurement	SPMA type.
r d A E	[% error EMF sync]	-3276.7 to 3275.8 %	-
	If the [% error EMF sync] (r d R E) value is lower than 0%, then [Syn	D-Axis Current <i>d R E</i> to asjust [Syn. EMF constant] ( <i>P H</i> 5), <i>r d R E</i> should be closed to 0. % error EMF sync] ( <i>r d R E</i> ) value is lower than 0%, then [Syn. EMF constant] ( <i>P H</i> 5), may be increased. % error EMF sync] ( <i>r d R E</i> ) value is upper than 0%, then [Syn. EMF constant] ( <i>P H</i> 5), may be reduced.	

(1) On the integrated display unit: 0 to 9,999 then 10.00 to 65.53 (10,000 to 65,536).



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting		
dr[-	[MOTOR CONTROL] (continued)				
5 P G	[Speed prop. gain]	0 to 1,000%	40%		
* ()	Speed loop proportional gain. Visible if [Motor control type] ( $L \ E$ ) is not set to [Standard] ( $5 \ E \ d$ ), [V/F 5pts] ( $\Box \ F \ 5$ ) or [V/F Quad.] ( $\Box \ F \ 9$ ).				
5 P G u	[UF inertia comp.]	0 to 1,000%	40%		
* ()	Inertia factor for following motor control laws. Visible if [Motor control type] ( <i>L E L</i> ) is set to [Standard] (5 <i>L d</i> ), [V	/F 5pts] (	(uF9).		
5 i E	[Speed time integral]	1 to 65,535 ms	63 ms		
* ()	Speed loop integral time constant. Visible if [Motor control type] ( <i>L L</i> ) is not set to [Standard] (5 <i>L d</i> )	, <b>[V/F 5pts]</b> ( <i>u</i> F 5) or <b>[V/F Q</b> u	ad.] ( u F 9).		
5 F C	[K speed loop filter]	0 to 100	65		
* ()	Speed filter coefficient (0(IP) to 100(PI)).				
FFH	[Spd est. filter time]	0 to 100 ms	6.4 ms		
*	Accessible in Expert mode only. Frequency to filter the estimated speed.				
ErtF	[Cur. ref. filter time]	0 to 100 ms	3.2 ms		
*	Accessible in Expert mode only. Filter time of the current reference filter [of control law (if <b>[No]</b> ( n c): st	ator natural frequency)].			
uFr	[IR compensation]	0 to 200%	100%		
0	Used to optimize torque at very low speed, or to adapt to special cases [IR compensation] ( $\mu$ F $r$ )). If there is insufficient torque at low speed can avoid the motor to start (locking) or change the current limiting motors of the current limiting motors.	, increase [IR compensation] (			
5 L P	[Slip compensation]	0 to 300%	100%		
* ()	This parameter cannot be accessed if [Motor control type] ( <i>L L L</i> ) is This parameter is written at 0% when [Motor control type] ( <i>L L L</i> ) is Adjusts the slip compensation around the value set by the rated motor The speeds given on motor nameplates are not necessarily exact. If slip setting is lower than actual slip: The motor is not rotating at the c the reference. If slip setting is higher than actual slip: The motor is overcompensated	set to [V/F Quad.] ( $P = P$ ). speed. orrect speed in steady state, bu	It at a speed lower than		
υI	[U1]	0 to 800 V according to rating	0 V		
*	V/F profile setting. This parameter can be accessed if [Motor control type] ( $L \ E$ ) is set	to <b>[V/F 5pts]</b> ( <i>u F</i> 5).			
F I	[F1]	0 to 599 Hz	0 Hz		
*	V/F profile setting. This parameter can be accessed if [Motor control type] ( $L + L$ ) is set	to <b>[V/F 5pts]</b> ( <i>u F</i> 5).			
u 2	[U2]	0 to 800 V according to rating	0 V		
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u F</i> 5).			
F 2	[F2]	0 to 599 Hz	0 Hz		
*	V/F profile setting. This parameter can be accessed if [Motor control type] ( $L \ E$ ) is set	to <b>[V/F 5pts]</b> ( <i>u F</i> 5).			

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting
и Э	[U3]	0 to 800 V according to rating	0 V
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u</i> F 5).	
F J	[F3]	0 to 599 Hz	0 Hz
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L L</i> ) is set	to [V/F 5pts] ( _ F 5).	
<u> </u>	[U4]	0 to 800 V according to rating	0 V
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u</i> F 5).	
FЧ	[F4]	0 to 599 Hz	0 Hz
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u</i> F 5).	
<u>и</u> 5	[U5]	0 to 800 V according to rating	0 V
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u</i> F 5).	
F S	[F5]	0 to 599 Hz	0 Hz
*	V/F profile setting. This parameter can be accessed if <b>[Motor control type]</b> ( <i>L L L</i> ) is set	to <b>[V/F 5pts]</b> ( <i>u</i> F 5).	
EL ,	[Current Limitation]	0 to 1.5 ln (1)	1.5 ln (1)
	NOTICE		
*	OVERHEATING AND DAMAGE TO THE MOTOR		
()	<ul> <li>Verify that the motor is properly rated for the maximum cur</li> </ul>	rent to be applied to the mo	tor.
	• Consider the duty cycle of the motor and all factors of your application including derating requirements in		
	determining the current limit. Failure to follow these instructions can result in equipment damage.		
	rainine to follow these instructions can result in equipment damage.		
	First current limitation.		State in the second second second
	<b>Note:</b> If the setting is less than 0.25 ln, the drive may lock in [Output P (see page <u>256</u> ). If it is less than the no-load motor current, the motor ca		It this has been enabled
5 F E	[Switch. freq type]		[SFR type 1] (HF I)
	The motor switching frequency will be modified (reduced) when the inte	ernal temperature of the drive w	ill be too high.
HF I	[SFR type 1] ( <i>H F 1</i> ): Heating optimization Allows the system to adapt the switching frequency according to the mo	otor frequency.	
HF 2	[SFR type 2] (HF 2): Motor noise optimization (for high switching frequencies	uency)	
	Allows the system to keep a constant chosen switching frequency [Sw [Output frequency] ( $r F r$ ).	itching freq.] ( 5 F r ) whateve	r the motor frequency
	In the event of overheating, the drive automatically decreases the switc It is restored to its original value when the temperature returns to normal		
SFr	[Switching freq.]	2 to 16 kHz	4 kHz
	[		
0	NOTICE		
	DAMAGE TO THE MOTOR		
	Verify that the switching frequency of the drive does not exce	ed 4 kHz if the EMC filter is	disconnected for
	operation of the drive in an IT mains. Failure to follow these instructions can result in equipme	ont damage	
	This applies to the following drive versions: ATV320000M20	ant damage.	
	Switching frequency setting.		
	Adjustment range: The maximum value is limited to 4 kHz if [Motor sur		
	<b>Note:</b> In the event of excessive temperature rise, the drive will automat the temperature returns to normal.	, .	
	In case of high speed motor, it is advised to increase the Pulse Width $N$ at 8, 12 or 16 kHz.	Iodulation (PWM) frequency [S	witching freq.] (5 F r)
	-,		

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting	
nr d	[Noise reduction]		[No] ( n	
	Random frequency modulation helps to prevent any resonance, [No] (n c): Fixed frequency	which may occur at a fixed frequ	ency.	
9 E S				
6 o A	[Boost activation]		[Dynamic] ( d	
n 0 d y n A 5 E A E	[Dynamic] ( d y n R): Dynamic boost			
600	[Boost]	-100 to 100%	0%	
	This parameter can be accessed if [Boost activation] ( $b \square R$ ) is not set to [No] ( $n \square$ ). Adjustment of the motor magnetizing current at low speed, as a % of the rated magnetizing current. This parameter increase or reduce the time taken to establish the torque. It allows gradual adjustment up to the frequency set by [Action Boost] ( $F \square B$ ). Negative values apply particularly to tapered rotor motors.			
	Magnetizing current			
*	Positive [Boost] (b o o) Rated magnetizing current			
	Negative [Boost] (boo)	·		
FAL	[Action Boost]	0 to 599 Hz	0 Hz	
*	This parameter can be accessed if [Boost activation] ( $b \square R$ ) is Frequency above which the magnetizing current is no longer affective.			
5 u L	[Motor surge limit.]		[No] ( ח ם )	
	<ul> <li>This function limits motor overvoltages and is useful in the follow</li> <li>NEMA motors</li> <li>Japanese motors</li> <li>Spindle motors</li> <li>Rewound motors</li> <li>This parameter can remain set to [No] (n c) for 230/400 V moto</li> </ul>		of cable between the drive and	
	<ul> <li>the motor does not exceed:</li> <li>4 m with unshielded cables</li> <li>10 m with shielded cables</li> <li>Note: When [Motor surge limit.] (5 u L) is set to [Yes](9 E 5), is modified, see page 120.</li> </ul>	-		
n e YES	<ul> <li>- 4 m with unshielded cables</li> <li>- 10 m with shielded cables</li> <li>Note: When [Motor surge limit.] (5 u L) is set to [Yes](9 E 5), is modified, see page <u>120</u>.</li> <li>[No] (n u): Function inactive</li> </ul>	-		
	<ul> <li>4 m with unshielded cables</li> <li>10 m with shielded cables</li> <li>Note: When [Motor surge limit.] (5 u L) is set to [Yes](9 E 5); is modified, see page <u>120</u>.</li> <li>[No] (n u): Function inactive</li> </ul>	-		
9 E S	<ul> <li>4 m with unshielded cables</li> <li>10 m with shielded cables</li> <li>Note: When [Motor surge limit.] (5 u L) is set to [Yes](9 E 5); is modified, see page 120.</li> <li>[No] (n u): Function inactive</li> <li>[Yes] (9 E 5): Function active</li> </ul>	, the maximum switching frequer	loy <b>[Switching freq.]</b> (5 F r)	
965 5 o P	<ul> <li>4 m with unshielded cables</li> <li>10 m with shielded cables</li> <li>Note: When [Motor surge limit.] (5 u L) is set to [Yes](9 E 5); is modified, see page <u>120</u>.</li> <li>[No] (n u): Function inactive [Yes] (9 E 5): Function active</li> <li>[Volt surge limit. opt]</li> <li>Optimization parameter for transient overvoltages at the motor term</li> </ul>	, the maximum switching frequer	loy <b>[Switching freq.]</b> (5 F r)	



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

() Pa

Parameter that can be modified during operation or when stopped.

The value of the **[Volt surge limit. opt]** ( $5 \circ P$ ) parameter corresponds to the attenuation time of the cable used. It is defined to help to prevent the superimposition of voltage wave reflections resulting from long cable lengths. It limits overvoltages to twice the DC bus rated voltage.

The tables on the following page give examples of correspondence between the **[Volt surge limit. opt]** ( $5 \circ P$ ) parameter and the length of the cable between the drive and the motor. For longer cable lengths, an output of the filter or a dV/dt protection filter must be used.

For motors in parallel, the sum of all the cable lengths must be taken into consideration. Compare the length given in the table row corresponding to the power for one motor with that corresponding to the total power, and select the shorter length.

Example: Two 7.5 kW (10 HP) motors

Take the lengths on the 15 kW (20 HP) table row, which are shorter than those on the 7.5 kW (10 HP) row, and divide by the number of motors to obtain the length per motor (with unshielded "GORSE" cable and SOP = 6, the result is 40/2 = 20 m maximum for each 7.5 kW (10 HP) motor).

In special cases (for example, different types of cable, different motor powers in parallel, different cable lengths in parallel, etc.), we recommend using an oscilloscope to check the overvoltage values obtained at the motor terminals.

To retain the overall drive performance, do not increase the SOP value unnecessarily.

Altivar 320	Мс	otor		cross- n (min)			٦	Maximum ca	able length	in meters			
Reference	Powe	r			Unshieldeo Type H07			Shielded " Type GVC			Shielded " Type 2950		cable
	kW	HP	in mm <sup>2</sup>	AWG	SOP = 10	SOP = 8	SOP = 6	SOP = 10	SOP = 8	SOP = 6	SOP = 10	SOP = 8	SOP=6
ATV320U04N4	0.37	0.50	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U06N4	0.55	0.75	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U07N4	0.75	1	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U11N4	1.1	1.5	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U15N4	1.5	2	1.5	14	100 m	70 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U22N4	2.2	3	1.5	14	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U30N4	3	-	1.5	14	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U40N4	4	5	2.5	12	110 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320U55N4	5.5	7.5	4	10	120 m	65 m	45 m	105 m	85 m	65m	50 m	40 m	30 m
ATV320U75N4	7.5	10	6	8	120 m	65 m	45 m	105 m	85 m	65 m	50 m	40 m	30 m
ATV320D11N4	11	15	10	8	115 m	60 m	45 m	100 m	75 m	55 m	50 m	40 m	30 m
ATV320D15N4	15	20	16	6	105 m	60 m	40 m	100 m	70 m	50 m	50 m	40 m	30 m

#### Tables giving the correspondence between the SOP parameter and the cable length, for 400 V supply mains

For 230/400 V motors used at 230 V, the [Motor surge limit.] ( $5 \sqcup L$ ) parameter can remain set to [No] ( $n \sqcup D$ ).

DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting
ubr	[Braking level]	335 to 995 V	According to drive rating voltage
Q	Braking transistor command level (See [Braking level] ( u b r ) page 24	<u>7</u> ).	-
LLA	[Load sharing]		[No] ( ם ח )
*	When 2 motors are connected mechanically and therefore at the same spe can be used to improve torque distribution between the two motors. To do the This parameter can only be accessed if [Motor control type] ( $L \ E$ ) page [No] ( $n \ P$ ): Function inactive [Yes] ( $\mathcal{G} \ E$ 5): Function active	his, it varies the speed	based on the torque.
	[Load correction]	0 to 599 Hz	0 Hz
* ()	Rated correction in Hz. This parameter can be accessed if [Load sharing] ( <i>L b R</i> ) is set to [Yes] ( Torque LbC Nominal torque 0 Frequency Nominal torque	9E5).	

 $\star$ 

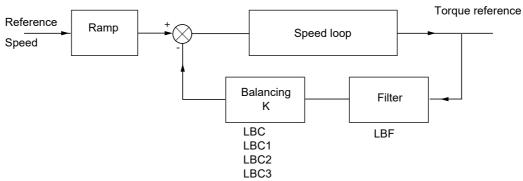
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

()

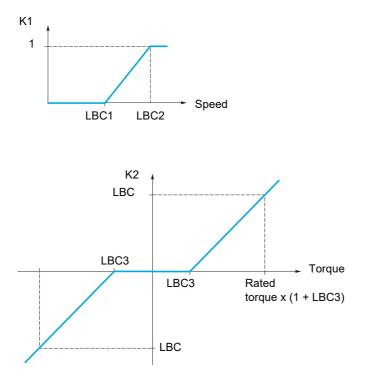
Parameter that can be modified during operation or when stopped.

### Load sharing, parameters that can be accessed at expert level

Principle:



The load sharing factor K is determined by the torque and speed, with two factors K1 and K2 (K = K1 x K2).



DRI- > CONF > FULL > DRC-

Code	Name / Description	Adjustment range	Factory setting
L B C I	[Correction min spd]	0 to 598.9 Hz	0 Hz
* ()	This parameter can be accessed if <b>[Load sharing]</b> ( <i>L b R</i> ) is set to <b>[Yes]</b> Minimum speed for load correction in Hz. Below this threshold, no corrections speed if this would hamper rotation of the motor.	· · · · · · · · · · · · · · · · · · ·	ncel correction at very low
L 6 C 2	[Correction max spd]	[Correction min spd] (L b [ 1) + 0.1 at 599 Hz	0.1 Hz
* ()	This parameter can be accessed if <b>[Load sharing]</b> ( <i>L b R</i> ) is set to <b>[Yes]</b> Speed threshold in Hz above which maximum load correction is applied.	( <i>YE</i> 5).	
L 6 C 3	[Torque offset]	0 to 300%	0%
* ()	This parameter can be accessed if <b>[Load sharing]</b> ( <i>L b R</i> ) is set to <b>[Yes]</b> Minimum torque for load correction as a % of the rated torque. Below this torque instabilities when the torque direction is not constant.		re made. Used to avoid
LЬF	[Sharing filter]	0 to 20 s	100 ms
* \$	This parameter can be accessed if <b>[Load sharing]</b> ( <i>L b R</i> ) is set to <b>[Yes]</b> Time constant (filter) for correction in ms. Used in the event of flexible med	· · · · · · · · · · · · · · · · · · ·	o avoid instabilities.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

### Inputs / outputs CFG

The parameters in the **[INPUTS / OUTPUTS CFG]** (, \_ \_ \_ - ) menu can only be modified when the drive is stopped and no run command is present.

Code	Name / Description		Adjustment range	Factory setting
Full	[FULL] (continued)			
1 - 0 -	[INPUTS / OUTPUTS C	FG]		
FCC	[2/3 wire control]			[2 wire] (2 [ )
🗕 2 s			ì	
	UNANTICIPATED EQUIPM	ENT OPERATION , the parameters [Reverse assign.] ( r	- c 5) and [2 wire ty	$\mathbf{pel}(E \Sigma E)$ and the
	assignments of the digital in	puts are reset to the factory setting.	, <b>-</b> -	, ,
		mpatible with the type of wiring used. tructions can result in death, seriou	s injury, or equipm	ent damage.
		<u> </u>	•	
20	[2 wire] (2 [) 2-wire control (level commands	): This is the input state (0 or 1) or edge (0	to 1 or 1 to 0) which co	ntrols running or stopping.
	Example of "source" wiring:			
	ATV••• +24 LI1 LIx LI	1: forward		
	·, FI	x: reverse		
∃ E	[3 wire] ( J [ )	a). A "forward" or "rovaraa" pulsa is sufficiar	at to command starting	a "aton" nulsa ia sufficient
	to command stopping.	s): A "forward" or "reverse" pulse is sufficier	in to command starting	, a stop pulse is sufficient
	Example of "source" wiring:			
		1: stop		
	<sup>1</sup>	2: forward		
		x: reverse		
ECE	[2 wire type]			[Transition] (Ern)
*		<b>A</b> WARNING	)	
	UNANTICIPATED EQUIPM	ENT OPERATION		
🟅 2 s		tting is compatible with the type of wirir		
	Failure to follow these ins	tructions can result in death, serious	s injury, or equipm	ent damage.
LEL	[] ovoll (I_E_I_): State 0 or 1 is tal	ken into account for run (1) or stop (0)		
Ern	[Transition] (E r n): A change of	state (transition or edge) is necessary to init	iate operation, in order	to avoid accidental restarts
PFo	after a break in the power supply [Fwd priority] ( <i>P F</i> ): State 0 or	1 is taken into account for run or stop, but the	he "forward" input take	s priority over the "reverse"
	input	F,	•	. ,

DRI- > CONF > FULL > I\_O-

Code	Name / Description	Adjustment range	Factory setting
run	[Drive Running]		[No] ( ם ח )
*	Assignment of the stop command. Visible only if [2/3 wire control] ( <i>E</i> []) is set to [3 wire] ( 3 []).		
0063 6101 	[LI1] (L , I): Logical input LI1 if not in [I/O profile] (, c) [Cd00] (L d D D): In [I/O profile] (, c), can be switched with possible logic [OL01] (c L D I): Function blocks: Logical Output 01	inputs	
	[OL10] ( a L / D): Function blocks: Logical Output 10		
Frd	[Forward]		[LI1] (L , I)
	Assignment of the forward direction command.		
C d D D a L D I	[LI1] (L , I): Logical input LI1 if not in [I/O profile] (, D) [Cd00] (L d D D): In [I/O profile] (, D), can be switched with possible logic [OL01] (D L D I): Function blocks: Logical Output 01	inputs	
 	[OL10] ( L / D): Function blocks: Logical Output 10		
r r 5	[Reverse assign.]		[LI2] (L , Z)
	Assignment of the reverse direction command.		
Lil	[No] (n p): Not assigned [L11] (L r I): Logical input L11 [] (]: See the assignment conditions on page <u>153</u> (If [Profile] (CHCF) is set to [Not Separ.] (SIM) or [Separate] (SEP) then [4 up to [C115] (C115), [C211] (C211) up to [C215] (C215) and [C311] (C311]		

DRI- > CONF > FULL > I\_O- > L1-

Code	Name / Description	Adjustment range	Factory setting
L I -	[LI1 CONFIGURATION]		
LIR	[LI1 assignment]		
	Read-only parameter, cannot be configured.		
	It displays all the functions that are assigned to input LI1 in order to check for	multiple assignments.	
	[No] (n a): Not assigned		
r u n	[Run] ( r u n): Run Enable		
	[Forward] (F r d): Forward operation [Reverse] (r r 5): Reverse operation		
r P 5	[Ramp switching] (r P 5): Ramp switching		
JoG	[Jog] ( J 🖬 🖌): Jog operation		
u 5 P d 5 P	[+Speed] ( u 5 P): + speed [- speed] ( d 5 P): - speed		
PSZ	[2 preset speeds] (P 5 2): 2 Preset speeds		
	[4 preset speeds] (P 5 4): 4 Preset speeds		
P58 rFC	[8 preset speeds] (P 5 B): 8 Preset speeds [Ref. 2 switching] (r F L): Reference switching		
	[Freewheel stop] $(n \leq L)$ : Freewheel stop		
d C i	[DC injection] (d [ ): Injection DC stop		
F5E FLo	[Fast stop] (F 5 L): Fast stop [Forced local] (F L ): Forced local mode		
r 5 F	[Fault reset] ( $r \leq F$ ): Fault reset		
EuL	[Auto-tuning] ( <i>L</i> _ L): Auto-tuning		
SPII FL i	[Ref. memo.] (5 P II): Save reference [Pre Fluxing] (F L ): Motor fluxing		
PRu	[Auto / manual] (P R u): PI(D) auto-manu		
	[PID integral reset] (P , 5): Integral shunting PI(D)		
Pr2 Pr4	[2 preset PID ref.] (P r 2): 2 Preset PI(D) references         [4 preset PID ref.] (P r 4): 4 Preset PI(D) references		
	[Torque limitation] (L L R): Permanent torque limitation		
EEF	[External fault] (E E F): External fault		
	[Output contact. fdbk] ( r [ R): Downstream contactor feedback [2 config. switching] ( [ r F I): Configuration switching 1		
EnF2	[3 config. switching] ( [ n F 2): Configuration switching 2		
	[2 parameter sets] ( [ H R ]): Parameter switching 1 [3 parameter sets] ( [ H R 2): Parameter switching 2		
ELC	[Activ. Analog torque limitation] ( <i>E L C</i> ): Torque limitation: Activation (anal	log input) by a logic inpu	ıt
C C S	[Cmd switching] ( <i>L L</i> 5): Command channel switching		
	[Fault inhibition] ( I D H): Fault inhibition [16 preset speeds] (P 5 I D): 16 preset speeds		
	[Current limit 2] ( <i>L Z</i> ): Current limitation switching		
<u>с С Б</u>	[Ref 1B switching] (r [ b): Reference channel switching (1 to 1B)		
Er C 6 C i	[Traverse control] ( <i>E</i> $r$ <i>L</i> ): Traverse control [Brake contact] ( <i>b L</i> $r$ ): Brake logic input contact		
SRF	[Stop FW limit sw.] (5 R F): Stop switch forward		
5 A r 4 B 5	[Stop RV limit sw.] (5 R r): Stop switch reverse [Slowdown forward] (d R F): Slowdown attained forward		
d A F d A r	[Slowdown reverse] (d R r): Slowdown attained forward [Slowdown reverse] (d R r): Slowdown attained reverse		
<i>CL</i> 5	[Disable limit sw.] ( L 5): Limits switches clearing		
LES	[Drive lock (Line contact. ctrl)] (L E 5): Emergency stop [Init. traverse ctrl.] (r E r): Reload traverse control		
5 . 6	[Counter wobble] (5 n E): Counter wobble synchronization		
	[Prod. reset] ( r P R): Reset Product		
	[2 HSP] (5 H 2): High Speed 2 [4 HSP] (5 H 4): High Speed 4		
FPS I	[Preset spd2] (F P 5 I): Function key preset speed 1 assignment		
	[Preset spd3] (F P 5 2): Function key preset speed 2 assignment		
	[PID ref. 2] (F P r 1): Function key preset PI 1 assignment [PID ref. 3] (F P r 2): Function key preset PI 2 assignment		
F u S P	[+Speed] (F u 5 P): Function key faster assignment		
FdSP	[-Speed] (F d 5 P): Function key slower assignment		
FE USI	[T/K] ( <i>F L</i> ): Function key bumpless assignment [+speed around ref.] ( $\mu$ 5 $\mu$ ): + Speed around ref		
d 5 i	[-speed around ref.] (d 5 /): - Speed around ref		

DRI- > CONF > FULL > I\_O- > L1-

ode	Name / Description	Adjustment range	Factory setting
u 5 i d 5 i	[-speed around ref.] ( d 5 ,): - Speed around ref		
L D I ، 	[ <b>IL01</b> ] ( , <i>L</i> 🛛 <i>I</i> ): Function blocks: Logical Input 1		
1 10			
F 6 r 11 5 L 5 1			
SLSZ	[SLS ch.2] (5 L 5 2): SLS safety function Channel 2		
5511			
55 12 56 - 1			
5602	[STO ch.2] (5 L 0 2): STO safety function Channel 2		
5051			
5 11 5 2	[SMS ch.2] (5 // 5 2): SMS safety function Channel 2		
	Note: Safety function channels are available for LI3-LI4 and LI5-LI6 only.		
LId	[LI1 On Delay]	0 to 200 ms	0 ms
	This parameter is used to take account of the change of the logic input to s and 200 milliseconds, in order to filter out possible interference. The change	,	,
1 - 0 -	[INPUTS / OUTPUTS CFG] (continued)		
	[INPUTS / OUTPUTS CFG] (continued) [LIx CONFIGURATION]		
L <i>2 -</i> o		for LI1 above, up to LI6.	
L 2 -	[LIX CONFIGURATION]	for LI1 above, up to LI6.	
L 2 - 0 L 6 -	[LIX CONFIGURATION]	for LI1 above, up to LI6.	
L	[LIX CONFIGURATION] All the logic inputs available on the drive are processed as in the example	for LI1 above, up to LI6.	
L 2 - o L 6 -	[LIX CONFIGURATION] All the logic inputs available on the drive are processed as in the example in [LI5 CONFIGURATION]	for LI1 above, up to LI6.	
L 2 - :0 L 6 - L 5 -	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example for [LI5 CONFIGURATION]         Specific parameters for LI5 used as a pulse input.	for LI1 above, up to LI6.	
L 2 - o L 6 - L 5 -	[LIx CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic input available on the drive are processed as in the example in the logic input is available on the drive are processed as in the example in the logic input is available on the drive are processed as in the example in the logic input is available on the drive are processed as in the example in the logic input is available on the drive are processed as in the example in the logic input is available on the drive are processed as in the example in the example in the logic input is available on the drive are processed as in the example in the example in the logic input is available on the drive are processed as in the example in the examp		
L 2 - o L 6 - L 5 -	[LIx CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are processed as in the example in the drive are procesed as in the drive are procesed as in the drint		
L 2 - 0 L 6 - L 5 -	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the specific parameters for LI5 used as a pulse input.         [LI5 CONFIGURATION]         Specific parameters for LI5 used as a pulse input.         [RP assignment]         Read-only parameter, cannot be configured.         It displays all the functions associated with the Pulse input in order to chect		
L 2 - o L 6 - L 5 - P , A	[LIx CONFIGURATION]         All the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs available on the drive are processed as in the example to the logic inputs are processed as in the example to the logic inputs are processed as in the example to the logic inputs are processed as a pulse input.         [RP assignment]       Read-only parameter, cannot be configured.         It displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays.	k, for example, for comp	patibility problems.
L 2 - 0 L 6 - L 5 - P , A	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the example in the example input in the example in the example in the example input in the example in the example input in the example inpu	k, for example, for comp	patibility problems.
L 2 - 0 L 5 - L 5 - P , A P , L	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the specific parameters for LI5 used as a pulse input.         [LI5 CONFIGURATION]         Specific parameters for LI5 used as a pulse input.         [RP assignment]         Read-only parameter, cannot be configured.         It displays all the functions associated with the Pulse input in order to check         Identical to [Al1 assignment] (R   IR) page 133.         [RP min value]         Pulse input scaling parameter of 0% in Hz * 10 unit.	k, for example, for comp 0 to 20.00 kHz	oatibility problems.
L 2 - 0 L 5 - L 5 - P , A P , L	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the example in the logic inputs of the processed as a pulse input.         [RP assignment]       [R I I I I I I I I I I I I I I I I I I I	k, for example, for comp 0 to 20.00 kHz	oatibility problems.
L 2 - 0 L 5 - P , A P , L P , L	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs available on the drive are processed as in the example in the logic inputs are processed as in the example input.         [RP assignment]       Read-only parameter, cannot be configured.         It displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input in order to check it displays all the functions associated with the Pulse input scaling parameter of 0% in Hz * 10 unit.         [RP max value]         Pulse input scaling parameter of 100% in Hz * 10 unit.	k, for example, for comp 0 to 20.00 kHz 0 to 20.00 kHz	0 kHz
L 2 - o L 5 - P , A P , L P , L	[Lix CONFIGURATION]         All the logic inputs available on the drive are processed as in the example in [LI5 CONFIGURATION]         Specific parameters for LI5 used as a pulse input.         [RP assignment]         Read-only parameter, cannot be configured.         It displays all the functions associated with the Pulse input in order to check         Identical to [Al1 assignment] (F   IF) page 133.         [RP min value]         Pulse input scaling parameter of 0% in Hz * 10 unit.         [RP filter]	k, for example, for comp 0 to 20.00 kHz 0 to 20.00 kHz	0 kHz

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

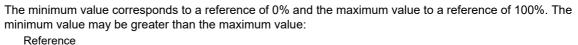


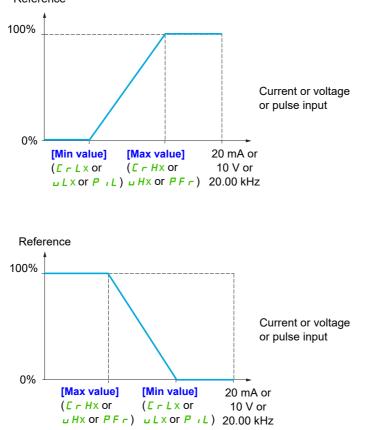
To change the assignment of this parameter, press the ENT key for 2 s.

# Configuration of analog inputs and Pulse input

The minimum and maximum input values (in volts, mA, etc.) are converted to % in order to adapt the references to the application.

## Minimum and maximum input values:

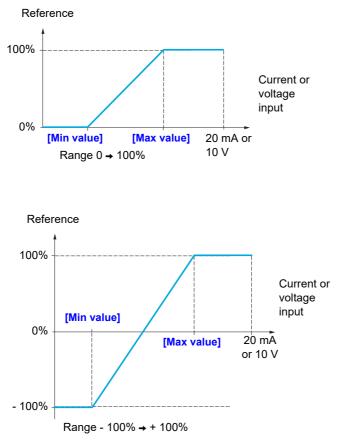




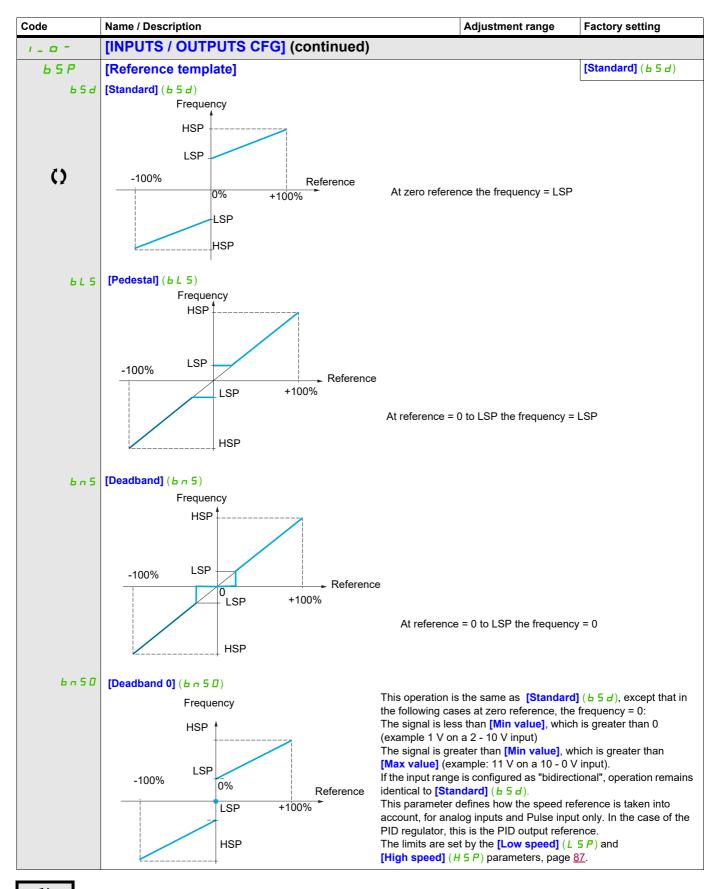
For +/- bidirectional inputs, the min. and max. are relative to the absolute value, for example +/- 2 to 8 V.

## Range (output values): For analog inputs only:

This parameter is used to configure the reference range to  $[0\% \rightarrow 100\%]$  or  $[-100\% \rightarrow +100\%]$  in order to obtain a bidirectional output from a unidirectional input.



DRI- > CONF > FULL > I\_O

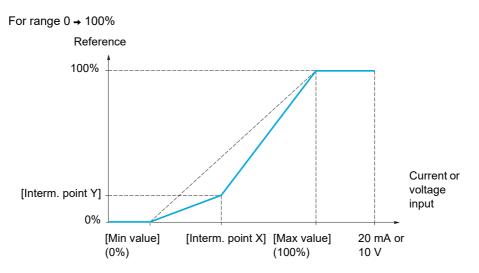


()

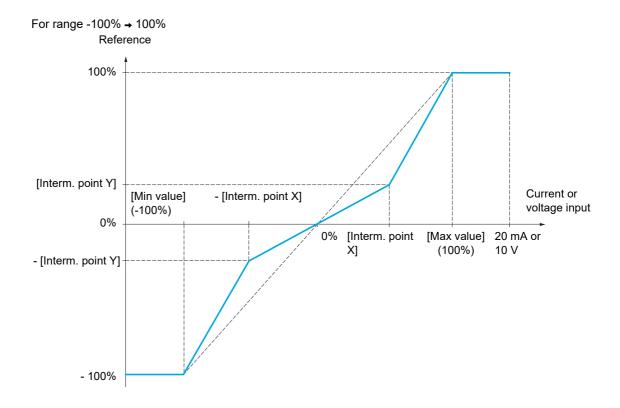
Parameter that can be modified during operation or when stopped.

### Delinearization: For analog inputs only:

The input can be delinearized by configuring an intermediate point on the input/output curve of this input:



Note: For [Interm. point X], 0% corresponds to [Min value] and 100% to [Max value].



DRI- > CONF > FULL > I\_O- > AI1-

Code	Name / Description	Adjustment range	Factory setting
H i I -	[AI1 CONFIGURATION]		
A , IA	[Al1 assignment]		
	Read-only parameter, cannot be configured.		
	It displays all the functions associated with input AI1 in order to	check, for example, for compatibility	ty problems.
n 0	[No] ( n c): Not assigned		
Re l	[AO1 assignment] ( <i>R</i> = <i>I</i> ): Analog output AO1 [Ref.1 channel] ( <i>F</i> = <i>I</i> ): Reference source 1		
Fr I Fr 2			
582	[Summing ref. 2] (5 R 2): Summing reference 2		
P , F E A A		analog value	
6 A S	[Subtract. ref. 2] ( d R 2): Subtracting reference 2	-	
Р,П FР,			
5 A 3	[Summing ref. 3] (5 F 3): Summing reference 3		
Fr 16 d A 3	[Ref.1B channel] ( <i>F</i> r <i>I</i> b): Reference source 1B [Subtract. ref. 3] ( <i>d</i> R J): Subtracting reference 3		
	[Forced local] ( <i>FL</i> = <i>E</i> ): Forced local reference source		
<u> </u>			
ПА Э РЕ 5		t function	
, R O I			
 . R 1 D	[IA10] ( , F I []): Function blocks: Analog Input 10		
A , IE	[Al1 Type]		[Voltage] ( / 🛛 u )
ت 10	[Voltage] ( 10 u): Positive voltage input 0 - 10 V (negative valu	ues are interpreted as zero: the inpu	ut is unidirectional)
u i L T	[Al1 min value]	0 to 10.0 V	0 V
	Al1 voltage scaling parameter of 0%.		
ы iH I	[Al1 max value]	0 to 10.0 V	10.0 V
	Al1 voltage scaling parameter of 100%.		
A , IF	[Al1 filter]	0 to 10.00 s	0 s
	Interference filtering.		
A , IL	[Al1 range]		[0 - 100%] ( <i>P</i> o 5)
	[0 - 100%] ( <i>P</i> = 5): Positive logical [+/- 100%] ( <i>n</i> E G): Positive and negative logical		
A , IE	[Al1 Interm. point X]	0 to 100%	0%
	Input delinearization point coordinate. Percentage of the physic	al input signal.	
	0% corresponds to [Al1 min value] ( $\mu$ , L I). 100% corresponds to [Al1 max value] ( $\mu$ , H I).		
A , 15	[All Interm. point Y]	0 to 100%	0%
		0 10 100 /0	070
	Output delinearization point coordinate (frequency reference). Percentage of the internal frequency reference corresponding to	o the [Al1 Interm. point X] (R	E) percentage of physical
	input signal.		
1-0-	[INPUTS / OUTPUTS CFG] (continued)		
9 ,2 -	[AI2 CONFIGURATION]		
A '5 U	[Al2 assignment]		
	Identical to [Al1 assignment] ( <i>R I I R</i> ) page <u>133</u> .		
A ,2E	[AI2 Type]		[Voltage +/-] ( n / 🛛 🖬
10 u n 10 u	[Voltage] ( 1 🖸 u): Positive voltage input 0 - 10 V (negative valu [Voltage +/-] ( n 1 🖸 u): Positive and negative voltage input +/-		ut is unidirectional)
u .L2	[Al2 min value]	0 to 10.0 V	0 V
UILL			

DRI- > CONF > FULL > I\_O- > AI2-

Code	Name / Description	Adjustment range	Factory setting
u 1H2	[Al2 max. value]	0 to 10.0 V	10.0 V
	Al2 voltage scaling parameter of 100%.		
A , 2F	[Al2 filter]	0 to 10.00 s	0 s
	Interference filtering.		
A ,2L	[Al2 range]		[0 - 100%] ( <i>P</i> = 5)
	This parameter is forced to $[0 - 100\%] (P_0 5)$ and can not be accessed if +/-] $(n   0 u)$ .	[ <b>Al2 Type]</b> ( <i>A , 2 E</i> ) (pa	ge <u>133</u> ) is set to <b>[Voltage</b>
Pas nEG	[0 - 100%] ( <i>P</i> = 5): Positive logical [+/- 100%] ( <i>n</i> E =): Positive and negative logical		
A ,2E	[Al2 Interm. point X]	0 to 100%	0%
	Input delinearization point coordinate. Percentage of the physical input sign $0\%$ corresponds to [Min value] if the range is $0 \rightarrow 100\%$ .	nal.	
	0% corresponds to $\frac{[Max value] + [Min value]}{2}$ if the range is -100% $\rightarrow$ +	100%.	
	100% corresponds to [Max value].		
A ,25	[Al2 Interm. point Y]	0 to 100%	0%
	Output delinearization point coordinate (frequency reference). Percentage of the internal frequency reference corresponding to the [AI2 In input signal.	nterm. point X] ( <i>R 12 E</i>	) percentage of physical
1-0-	[INPUTS / OUTPUTS CFG] (continued)		
R . 3 -	[AI3 CONFIGURATION]		
Я,ЭЯ	[Al3 assignment]		
	Identical to [AI1 assignment] ( <i>F I I F</i> ) page <u>133</u> .		
A , 3E	[AI3 Type]		[Current] (DR)
O A	[Current] ( ] R): Current input 0 - 20 mA		
ErLJ	[Al3 min. value]	0 to 20.0 mA	0 mA
	Al3 current scaling parameter of 0%.		
ErHJ	[Al3 max. value]	0 to 20.0 mA	20.0 mA
	Al3 current scaling parameter of 100%.		
R , 3F	[AI3 filter]	0 to 10.00 s	0 s
	Interference filtering.		
A . 3L	[Al3 range]		[0 - 100%] ( <i>P</i> = 5)
P = 5 n E G	<ul> <li>[0 - 100%] (P a 5): Unidirectional input</li> <li>[+/- 100%] (n E L): Bidirectional input</li> <li>Example: On a 4 - 20 mA input.</li> <li>4 mA corresponds to reference -100%.</li> <li>12 mA corresponds to reference 0%.</li> <li>20 mA corresponds to reference +100%.</li> <li>Since Al3 is, in physical terms, a bidirectional input, the [+/- 100%] (n E L) is unidirectional. A bidirectional signal is not compatible with a bidirectional</li> </ul>	•	e used if the signal applied
Я , ЭЕ	[Al3 Interm. point X]	0 to 100%	0%
	Input delinearization point coordinate. Percentage of the physical input sign 0% corresponds to [Min value] ( $L \cap L \exists$ ) if the range is 0 $\Rightarrow$ 100%. [Al3 max. value] ( $L \cap H \exists$ ) - [Al3 min. value]	nal.	
		range is -100% <b>→</b> +100%	
	100% corresponds to [Al3 max. value] ( $L \ r \ H \ 3$ ).		

DRI- > CONF > FULL > I\_O- > AI3-

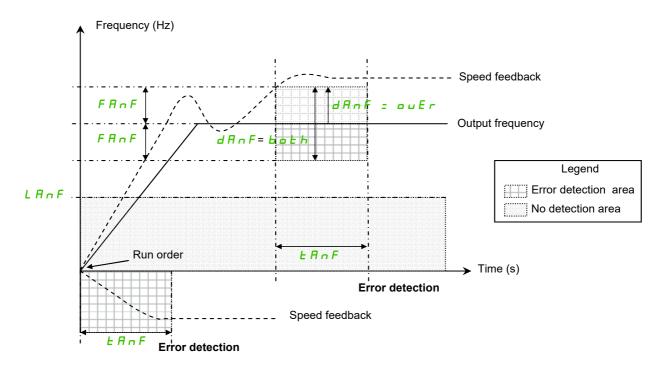
ode	Name / Description	Adjustment range	Factory setting		
A ,35	[Al3 Interm. point Y]	0 to 100%	0%		
	Output delinearization point coordinate (frequency reference). Percentage of the internal frequency reference corresponding to the [AI3 input signal.	Interm. point X] (7 13	) percentage of physica		
1 - 0 -	[INPUTS / OUTPUTS CFG] (continued)				
9 u I -	[VIRTUAL AI1]				
An IA	[AIV1 assignment]				
	Virtual analog input 1 via the jog dial available on the front side of the product. Identical to [Al1 assignment] (R     R) page <u>133</u> .				
A u 2 -	[VIRTUAL AI2]				
A o 2 A	[AIV2 assignment]				
	Possible assignments for [Al virtual 2] (R, , , , 2): Virtual analog input 2 via communication channel, to be configured with [Al2 net. channel] (R, , C, 2).				
	Identical to [AIV1 assignment] ( <i>R</i> u <i>I R</i> ) page <u>133</u> .				
A 'C S	[Al2 net. Channel]		[No] ( n o )		
*	<b>[VIRTUAL AI2]</b> ( <i>P</i> , <i>d</i> ) source channel. This parameter can also be accessed in the <b>[PID REGULATOR]</b> ( <i>P</i> , <i>d</i> Scale: The value 8192 transmitted by this input is equivalent to 10 V on a				
ERn	<ul> <li>[No] (n c): Not assigned</li> <li>[Modbus] (I d b): Integrated Modbus</li> <li>[CANopen] (I H n): Integrated CANopen®</li> <li>[Com. card] (n E b): Communication card (if inserted)</li> </ul>				
i Einin	[ENCODER CONFIGURATION]				
	Following parameters can be accessed if the speed monitoring card VW	3A3620 has been inserte			
Enu	[Encoder usage]		<b>[No]</b> (nO)		
5 E C	[No] (n a): Function inactive. [Fdbk monit.] (5 E L): The encoder provides speed feedback for monitori	ng.			
En S	[Encoder type]		[AABB] (AAbb)		
*	Encoder usage configuration.				
	Encoder usage configuration. To be configured in accordance with the type of encoder used.				
Я Я Ь Ь Я Ь					
	Following parameters can be accessed if [Encoder usage] (Enu) is set	to [Fdbk monit.] ( 5 E C ).			
PG ,	[Number of pulses]	100 to 3600	1024		
*	Encoder usage configuration.	L			
	Number of pulses per encoder revolution.				

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > I\_O- > IEn-

#### Load slip detection :



The drive will detect an error and display the error code [Load slipping] (*R*, *F*) in the following cases:

- As soon as the RUN order is received, if the sign of the output frequency and the speed feedback are in opposite way during [ANF Time Thd.] (*L* R o F).
- During operation:
  - if the speed feedback is in the same direction than the output frequency
  - and the speed feedback is over [ANF Detection level] (L R n F).
  - and,

"if [ANF Direction check] ( $d R \cap F$ ) is set to [Over] ( $\circ \cup E \cap$ ), the difference between the output frequency and the speed feedback is over [ANF Frequency Thd.] ( $F R \cap F$ ) during [ANF Time Thd.] (TAnF) (Overspeed detection). or,

"if [ANF Direction check] ( $d R \cap F$ ) is set to [Both] ( $b \cap E h$ ), the difference between the output frequency and the speed feedback is over [ANF Frequency Thd.] ( $F R \cap F$ ) or below - [ANF Frequency Thd.] ( $F R \cap F$ ) during [ANF Time Thd.] ( $E R \cap F$ ) (Overspeed or underspeed detection).

Code	Name / Description	Adjustment range	Factory setting
1 - 0 -	[INPUTS / OUTPUTS CFG] (continued)		
iEn-	[ENCODER CONFIGURATION] (continued)		
	Following parameters can be accessed if the speed monitoring card VW3A ( <i>E</i> n u) is set to [Fdbk monit.] ( 5 <i>E</i> [).	3620 has been inserted a	nd if [Encoder usage]
FAnF	[ANF Frequency Thd.]	0.1 to 50 Hz	5.0 Hz
*	Level of [Load slipping] ( $\mathbf{P} \cap \mathbf{F}$ ) detected error.		
	The drive will not detect the error [Load slipping] ( $H \cap F$ ) if the difference bett is below than [ANF Frequency Thd.] ( $F \cap F$ ).	ween the output frequency	/ and the speed feedback
LAnF	[ANF Detection level]	0 to 10 Hz	0.0 Hz
	Level of ANF detected error.		
*	The drive will not detect the error [Load slipping] (R n F) if the speed feedb	ack is below [ANF Detect	ion level] ( <i>L 用 n F</i> ).

DRI- > CONF > FULL > I\_O- > IEn-

Name / Description	Adjustment range	Factory setting
[ANF Direction check]		[Over] ( ם ם E ר )
Available [Load slipping] ( <i>R</i> n <i>F</i> ) detection direction.		
		lerspeed.
[ANF Time Thd.]	0 to 10 s	0.10 s
Level of [Load slipping] ( <i>R</i> n <i>F</i> ) detected error.		
1		
	[ANF Direction check] Available [Load slipping] (R n F) detection direction.          [Over] ( a u E r ): The drive will detect the error [Load slipping]         [Both] ( b a E h): The drive will detect the error [Load slipping]         [ANF Time Thd.]	[ANF Direction check]         Available [Load slipping] ( $P \cap F$ ) detection direction.         [Over] ( $o \cup E \cap$ ): The drive will detect the error [Load slipping] ( $P \cap F$ ) in case of overspeed.         [Both] ( $b \circ E h$ ): The drive will detect the error [Load slipping] ( $P \cap F$ ) in case of overspeed or und         [ANF Time Thd.]



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > I\_O- > R1-

Code	Name / Description	Adjustment range	Factory setting	
1 - 0 -	[INPUTS / OUTPUTS CFG] (continued)			
r 1-	[R1 CONFIGURATION]			
r I	[R1 Assignment]		[No drive fit] (F L E)	
00	[No] (n a): Not assigned			
FLE	[No drive fit] ( <i>F L L</i> ): Drive fault detection status (relay normally energized [Drv running] ( <i>r L n</i> ): Drive running	[No drive flt] ( <i>F L L</i> ): Drive fault detection status (relay normally energized, and de-energized in the event of an error)		
FER	[Freq. Th. attain.] (F L R): Frequency threshold attained ([Freq. threshold	<b>d]</b> ( <i>F L d</i> ) page <u>102</u> )		
FLA CEA		[HSP attain.] (F L R): High speed attained		
SrA	[I attained] ( <i>L E R</i> ): Current threshold attained ([Current threshold] ( <i>L E d</i> ) page <u>102</u> ) [Freq.ref.att] ( 5 <i>r R</i> ): Frequency reference attained			
E S A	[Th.mot. att.] (E 5 R): Motor 1 thermal state attained			
PEE PFR	[PID error al] ( <i>P E E</i> ): PID error alarm [PID fdbk al] ( <i>P F R</i> ): PID feedback alarm			
F2A	[Freq. Th. 2 attained] (F 2 R): Frequency threshold 2 attained ([Freq. threshold 2] (F 2 d) page 102)			
EAd JLA	[Th. drv. att.] ( <i>E R d</i> ): Drive thermal state attained			
o L A	[Pro.Undload] ( u L R): Underload alarm [Ovld.P.AIrm] ( u L R): Overload alarm			
r S d A	[Rope slack ] (r 5 d R): Rope slack (see [Rope slack config.] (r 5 d) parameter page 205)			
EEHA EELA	[High tq. att.] ( <i>E L H R</i> ): Motor torque overshooting high threshold [High torque thd.] ( <i>E L H</i> ) page <u>102</u> [Low tq. att.] ( <i>E L R</i> ): Motor torque undershooting low threshold [Low torque thd.] ( <i>E L L</i> ) page <u>102</u>			
	[Forward] ( <i>П F r d</i> ): Motor in forward rotation			
Пгг5 £52	[Reverse] ( <i>N</i> r r 5): Motor in reverse rotation			
	[Th.mot2 att] (£ 5 2): Motor 2 thermal threshold (TTD2) reached         [Th.mot3 att] (£ 5 3): Motor 3 thermal threshold (TTD3) reached			
RES	[Neg Torque] ( <i>F L</i> 5): Negative torque (braking)			
	[Cnfg.0 act.] ( [ n F II): Configuration 0 active [Cnfg.1 act.] ( [ n F II): Configuration 1 active			
EnF2	[Cnfg.2 act.] ( [ n F 2): Configuration 2 active			
C F P I C F P 2	[Set 1 active] ( <i>E F P 1</i> ): Parameter set 1 active [Set 2 active] ( <i>E F P 2</i> ): Parameter set 2 active			
	[Set 3 active] ( <i>E F P 3</i> ): Parameter set 3 active	[Set 2 active] ([ F P 2): Parameter set 2 active [Set 3 active] ([ F P 3): Parameter set 3 active		
del	[DC charged] (d b L): DC bus charging			
	[In braking] (b r 5): Drive braking [P. removed] (P r II): Drive locked by "Safe Torque Off" input			
F9LA	[Fr.met. alar.] (F 9 L R): Measured speed threshold attained [Pulse warn	ing thd.] ( <i>F</i> 9 <i>L</i> ) page <u>1</u>	<u>02</u>	
ПСР LSA	[I present] ( <i>I L P</i> ): Motor current present [Limit sw. att] ( <i>L</i> 5 <i>P</i> ): Limit switch attained			
	<b>[Load alarm]</b> $(d L d R)$ : Load variation detection (see page <u>267</u> )			
861	[Alarm Grp 1] ( <i>F G</i> ): Alarm group 1			
A G 2 A G 3	[Alarm Grp 2] ( # [; 2): Alarm group 2 [Alarm Grp 3] ( # [; 3): Alarm group 3			
PLA	[LI6=PTC al.] ( <i>P L R</i> ): LI6 = PTCL alarm			
EFA USA		[Ext. fault al] (EFR): External fault alarm		
u P R	[Under V. al.] ( $_{U} > H$ ): Undervoltage alarm [Uvolt warn] ( $_{U} P R$ ): Undervoltage threshold			
	[Al. °C drv] ( <i>L</i> H R): Drive overheating			
	[Lim T/I att.] (5 5 /R): Torque limit alarm [IGBT al.] (E J R): Thermal junction alarm			
A P 3	[AI3 AI. 4-20] (FP 3): AI3 4-20 mA loss alarm			
	[Ready] (r d 9): Ready to start [OL01] (a L 0 1): Function blocks: Logical Output 01			
- LIO	[oL10] (oL 10): Function blocks: Logical Output 10			
<u>r 1-</u> r Id	[R1 CONFIGURATION] (continued) [R1 Delay time]	0 to 60,000 ms	0 ms	
(1)				
	The change in state only takes effect once the configured time has elapsed. The delay cannot be set for the [No drive flt] (F L L) assignment, and rem		ecomes true.	
r 15	[R1 Active at]		[1] ( <i>P</i> o 5)	
	Configuration of the operating logic:			
Po5 nEG	<ul> <li>[1] (P = 5): State 1 when the information is true</li> <li>[0] (n E L): State 0 when the information is true</li> </ul>			
neu	Configuration [1] ( $P \circ 5$ ) cannot be modified for the [No drive flt] ( $F \perp E$ ) assignment.			

DRI- > CONF > FULL > I\_O- > R1-

Code	Name / Description	Adjustment range	Factory setting	
r IH	[R1 Holding time]	0 to 9,999 ms	0 ms	
	The change in state only takes effect once the configured time has elapsed, when the information becomes false. The holding time cannot be set for the [No drive fit] ( <i>F L L</i> ) assignment, and remains at 0.			
r IF	r IF [Enable Relay1 fallback]			
	Available if [R1 Assignment] (r 1) page <u>138</u> is set [No] (n c) : Not assigned			
9E5 00	<b>[YES]</b> ( <i>JE</i> 5): Relay controlled by OL1R. The relay is de-energized if the drive is in operating state "Fault" <b>[No]</b> ( <i>n c</i> ): Relay controlled by OL1R.			
1-0-	[INPUTS / OUTPUTS CFG] (continued)			
r 2 -	[R2 CONFIGURATION]			
r 2	[R2 Assignment]		[No] (n @)	
Ь L С L L С е С с Е Б а Е 5 У	Identical to [R1 Assignment] ( ) page <u>138</u> with the addition of: [Brk control] ( <i>b L L</i> ): Brake contactor control [Input cont.] ( <i>L L</i> ): Line contactor control [Output cont.] ( <i>c L L</i> ): Output contactor control [End reel] ( <i>E b c</i> ): End of reel (traverse control function) [Sync. wobble] ( <i>b</i> 5 4): "Counter wobble" synchronization			
r 2 d	[R2 Delay time]	0 to 60,000 ms	0 ms	
(1)	The delay cannot be set for the [No drive fit] ( <i>F L L</i> ), [Brk control] ( <i>b L C</i> ), [Output cont.] ( <i>b C C</i> ) and [Input cont.] ( <i>L L</i> assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes true.			
r 2 5	[R2 Active at]		[1] ( <i>P</i> o 5)	
P = 5 n E G	Configuration of the operating logic: [1] ( <i>P</i> = 5): State 1 when the information is true [0] ( <i>n</i> E L): State 0 when the information is true The configuration [1] ( <i>P</i> = 5) cannot be modified for the [No drive fit] ( <i>F</i> L L), [Brk control] ( <i>b</i> L L), [DC charging] ( <i>d</i> L =), and [Input cont.] ( <i>L</i> L L) assignments.			
r 2 H	[R2 Holding time]	0 to 9,999 ms	0 ms	
	The holding time cannot be set for the [No drive fit] ( $F \ L \ L$ ), [Brk control] ( $L \ L$ ) and [Input cont] ( $L \ L \ L$ ) assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes false.			
r 2 F	[Enable Relay2 fallback] [No] (n o)			
	Available if [R2 Assignment] (r 2) page 139 is set [No] (n c) : Not assigned			
9 E S	<b>[YES]</b> ( <i>JE</i> 5): Relay controlled by OL1R. The relay is de-energized if the drive is in operating state "Fault" <b>[No]</b> ( <i>n</i> 2): Relay controlled by OL1R.			
1_0-	[INPUTS / OUTPUTS CFG] (continued)	[INPUTS / OUTPUTS CFG] (continued)		
Lol-	[LO1 CONFIGURATION]			
Lol	[LO1 assignment]		[No] (n	
о[[ ЕБо	Identical to [R1 Assignment] ( r 1) page <u>138</u> with the addition of following parameter value (shown for information only as these selections can only be configured in the [APPLICATION FUNCT.] (F u n -) menu): [Brk control] ( b L C ): Brake contactor control [Input cont.] ( L L C ): Line contactor control [Output cont.] ( b L C ): Line contactor control [Contput cont.] ( b L C ): Dutput contactor control [End reel] ( b b c): End of reel(traverse control function) [Sync. wobble] ( b 5 9): "Counter wobble" synchronization [GDL] ( b d L ): GDL safety function			
Lold	[LO1 delay time]	0 to 60,000 ms (1)	0 ms	
	The delay cannot be set for the [No drive flt] ( <i>F L E</i> ), [Brk control] ( <i>b L C</i> assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed			

DRI- > CONF > FULL > I\_O- > LO1-

Code	Name / Description	Adjustment range	Factory setting	
L / S	[LO1 active at]		[1] ( <i>P</i> = 5)	
	Configuration of the operating logic: [1] ( <i>P</i> = 5): State 1 when the information is true [0] ( <i>n E L</i> ): State 0 when the information is true The configuration [1] ( <i>P</i> = 5) cannot be modified for the [No drive fit] ( <i>F L L</i> ), [Brk control] ( <i>L L</i> ) and [Input cont.] ( <i>L L L</i> ) assignments.			
Lo IH	[LO1 holding time]	0 to 9,999 ms	0	
	The holding time cannot be set for the <b>[No drive flt]</b> ( <i>F L L</i> ), <b>[Brk control]</b> ( <i>L L C</i> ) and <b>[Input cont]</b> ( <i>L L C</i> ) assignmen remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes false.			
Lo IF	[Enable DQ1 fallback]		[No] (no)	
	Available if [LO1 assignment] (L o I) is set to [No] (no): Not assigned			
	[Yes] ( <i>JE</i> 5): Logic output controlled by OL1R. The logic output is de-energized if the drive is in operating state "fault". [No] ( <i>n a</i> ): Logic output controlled by OL1R.			

(1) 0 to 9,999 ms then 10.00 to 60.00 s on the integrated display terminal.

#### DRI- > CONF > FULL > I\_O- > DO1-

#### Use of analog output AO1 as a logic output

Analog output AO1 can be used as a logic output, by assigning DO1. In this case, when set to 0, this output corresponds to the AO1 min. value (0 V, or 0 mA for example), and when set to 1 to the AO1 max. value (10 V, or 20 mA for example).

The electrical characteristics of this analog output remain unchanged. As these characteristics are different from logic output characteristics, check that it is still compatible with the intended application.

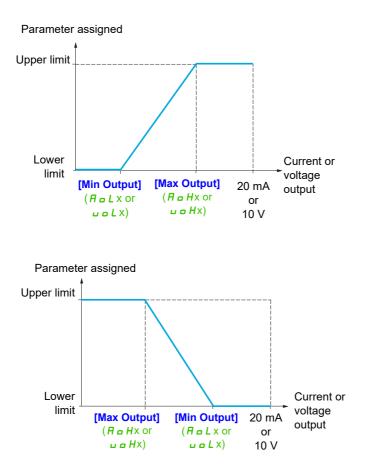
Code	Name / Description	Adjustment range	Factory setting	
1 - 0 -	[INPUTS / OUTPUTS CFG] (continued)			
do I-	[DO1 CONFIGURATION]			
do I	[DO1 assignment]		[No] ( n	
	[Input cont.] (L L L): Line contactor control			
do Id	[DO1 delay time]	0 to 60,000 ms (1)	0 ms	
	The delay cannot be set for the [No drive fit] ( <i>F L E</i> ), [Brk control] ( <i>b L E</i> ), [Output cont.] ( <i>b L E</i> ) and [Input cont.] ( <i>L L E</i> ) assignments, and remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes true.			
d o 15	[DO1 active at]		[1] ( <i>P</i> o 5)	
	Configuration of the operating logic: [1] ( <i>P</i> = 5): State 1 when the information is true [0] ( <i>n</i> E <i>L</i> ): State 0 when the information is true The configuration [1] ( <i>P</i> = 5) cannot be modified for the [No drive fit] ( <i>F L L</i> ), [Brk control] ( <i>b L L</i> ) and [Input cont.] ( <i>L L L</i> ) assignments.			
do IH	[DO1 holding time]	0 to 9,999 ms	0 ms	
	The holding time cannot be set for the [No drive flt] ( $F \ L \ L$ ), [Brk control] ( $L \ L \ L$ ) and [Input cont] ( $L \ L \ L$ ) assignments, a remains at 0. The change in state only takes effect once the configured time has elapsed, when the information becomes false.			

(1) 0 to 9,999 ms then 10.00 to 60.00 s on the integrated display terminal.

### Configuration of analog output

### Minimum and maximum values (output values):

The minimum output value, in volts, corresponds to the lower limit of the assigned parameter and the maximum value corresponds to its upper limit. The minimum value may be greater than the maximum value.



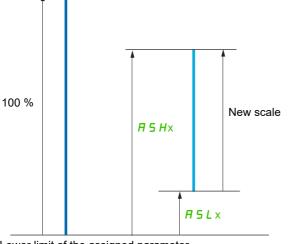
## Scaling of the assigned parameter

The scale of the assigned parameter can be adapted in accordance with requirements by modifying the values of the lower and upper limits by means of two parameters for each analog output.

These parameters are given in %. 100% corresponds to the total variation range of the configured parameter, so: 100% = upper limit - lower limit For example, **[Sign. torque]** (5 E 9) which varies between -3 and +3 times the rated torque, 100% corresponds to 6 times the rated torque.

- The [Scaling AOx min] (*R* 5 *L* x) parameter modifies the lower limit: new value = lower limit + (range x ASLx). The value 0% (factory setting) does not modify the lower limit.
- The [Scaling AOx max] (*H* 5 *H*x) parameter modifies the upper limit: new value = lower limit + (range x ASLx). The value 100% (factory setting) does not modify the upper limit.
- [Scaling AOx min] ( # 5 L x) must always be lower than [Scaling AOx max] ( # 5 Hx).

Upper limit of the assigned parameter



Lower limit of the assigned parameter

### Application example 2

The value of the motor current at the AO1 output is to be transferred with 0 - 20 mA, range 2 ln motor, ln motor being the equivalent of a 0.8 ln drive.

The **[I motor]** ( <u>c</u> <u>C</u> <u>r</u> ) parameter varies between 0 and 2 times the rated drive current, or a range of 2.5 times the rated drive current.

[Scaling AO1 min] (*R* 5 *L I*) must not modify the lower limit, which therefore remains at its factory setting of 0%.

**[Scaling AO1 max]** ( $R \leq H I$ ) must modify the upper limit by 0.5x the rated motor torque, or 100 - 100/5 = 80% (new value = lower limit + (range x ASH1).

1 _ 0 - A _ 1 - A _ 1 A _ 1 	Name / Description         [INPUTS / OUTPUTS CFG] (continued)         [A01 CONFIGURATION]         [A01 assignment]         [No] (n c): Not assigned         [I motor] (a [ r): Current in the motor, between 0 and 2 ln (ln = rated drive the drive nameplate)	Adjustment range	Factory setting
70  - R0   000 000 000 000 000 000 000	[AO1 CONFIGURATION] [AO1 assignment] [No] (n c): Not assigned [I motor] (c [ r): Current in the motor, between 0 and 2 ln (ln = rated drive the drive nameplate)		
A o I o C r o F r o F S o r P E r 9 S E 9	[AO1 assignment] [No] (n p): Not assigned [I motor] (p [ r): Current in the motor, between 0 and 2 ln (ln = rated drive the drive nameplate)		
n a a C r a F r a F 5 a r P E r 9 5 E 9	[No] ( <i>n c</i> ): Not assigned [I motor] ( <i>c</i> [ <i>r</i> ): Current in the motor, between 0 and 2 In (In = rated drive the drive nameplate)		[Nol()]
0 [ r 0 F r 0 F S 0 r P 1 r 9 5 t 9	[I motor] ( <u>c</u> <u>C</u> <u>r</u> ): Current in the motor, between 0 and 2 In (In = rated drive the drive nameplate)		[No] ( ח ם )
o F 5 o r P E r 9 5 E 9			stallation manual and o
	[Motor freq.] ( $\Box F \Gamma$ ): Output frequency, from 0 to [Max frequency] ( $E F \Gamma$ [Sig. o/p frq.] ( $\Box F 5$ ): Signed output frequency, between - [Max frequency [Ramp out.] ( $\Box \Gamma P$ ): From 0 to [Max frequency] ( $E F \Gamma$ ) [Motor torq.] ( $E \Gamma q$ ): Motor torque, between 0 and 3 times the rated motor [Sign. torque] ( $5 E q$ ): Signed motor torque, between -3 and +3 times the r	( <i>E F r</i> ) and + [Max fre torque	
	motor mode and the - sign to the generator mode (braking). [sign ramp] ( $\Box r$ 5): Signed ramp output, between - [Max frequency] ( $E F$		- ·
o P 5 o P F o P E	[PID ref.] ( $_{o}$ P 5): PID regulator reference between [Min PID reference] (P [PID feedbk] ( $_{o}$ P F): PID regulator feedback between [Min PID feedback] [PID error] ( $_{o}$ P E): PID regulator error between- 5 % and + 5 % of ([Max P (P + F + I))	$(P \ I)$ and [Max PID ref $(P \ I F \ I)$ and [Max PID	erence] (P + P 2). feedback] (P + F 2)
oP; oPr uoP	<b>[PID output]</b> ( $\Box P$ ,): PID regulator output between <b>[Low speed]</b> ( $L S P$ ) a <b>[Mot. power]</b> ( $\Box P r$ ): Motor power, between 0 and 2.5 times <b>[Rated motor [Motor volt.]</b> ( $\Box P$ ): Voltage applied to the motor, between 0 and <b>[Rated r</b>	notor volt.] (	
EHr2	[Mot thermal] ( $E H r$ ): Motor thermal state, between 0 and 200% of the rate [Mot therm2] ( $E H r r$ ): Motor thermal state 2, between 0 and 200 % of the [Mot therm3] ( $E H r r$ ): Motor thermal state 3, between 0 and 200% of the	rated thermal state	
EHd	<b>[Drv thermal]</b> $(E H d)$ : Drive thermal state, between 0 and 200% of the rate <b>[Torque lim.]</b> $(E P L)$ : Torque limit, between 0 and 3 times the rated motor	d thermal state	
d 0	[d01] (d o l): Assignment to a logic output. This assignment can only appea This is the only possible choice in this case, and is only displayed for inform	r if [DO1 assignment] ( d	<ul> <li>I) has been assigned</li> </ul>
	[Torque 4Q] ( <i>L</i> 9 // 5): Signed motor torque, between -3 and +3 times the r correspond to the physical direction of the torque, regardless of mode (moto	•	sign and the - sign
	[OA01] (  P [] 1): Function blocks: Analog Output 01  [OA10] (  P 1 ]): Function blocks: Analog Output 10		
	[AO1 Type]		[Current] (DR)
100	[Voltage] ( 1 🛛 u): Voltage output [Current] ( 🗇 A): Current output		
A . L I	[AO1 min Output]	0 to 20.0 mA	0 mA
*	This parameter can be accessed if [AO1 Type] ( <i>R</i> - <i>I E</i> ) is set to [Current]	( <b>DR</b> ).	
A o H I	[AO1 max Output]	0 to 20.0 mA	20.0 mA
	This parameter can be accessed if [AO1 Type] ( <i>R</i> = <i>I E</i> ) is set to [Current]	( <b>DR</b> ).	
uoli	[AO1 min Output]	0 to 10.0 V	0 V
	This parameter can be accessed if [AO1 Type] (R . I L) is set to [Voltage]	( I 🛛 и).	
uoHI	[AO1 max Output]	0 to 10.0 V	10.0 V
*	This parameter can be accessed if [AO1 Type] ( <i>R</i> o <i>I E</i> ) is set to [Voltage]	( 10 ש).	
ASL I	[Scaling AO1 min]	0 to 100.0%	0%
	Scaling of the lower limit of the assigned parameter, as a % of the maximum	possible variation.	
ASH I	[Scaling AO1 max]	0 to 100.0%	100.0%
	Scaling of the upper limit of the assigned parameter, as a % of the maximun	n possible variation.	4
	[AO1 Filter]	0 to 10.00 s	0 s
	Interference filtering. This parameter is forced to 0 if [AO1 assignment] (	I) is set to [dO1] (d a	1).
	[Enable AQ1 fallback]		[No] ( n
	Available if [AO1 assignment] (R a 1) is set to [No] (n a): Not assigned [YES] (YES): AO1 used as logic output is controlled by AO1C. This output		L

The following submenus group the alarms into 1 to 3 groups, each of which can be assigned to a relay or a logic output for remote signaling. These groups can also be displayed on the graphic display terminal (see **[3.3 MONITORING CONFIG.]** ( $\Pi \subseteq F$  -) menu page 286) and viewed via the **[1.2 MONITORING]** ( $\Pi \subseteq r$  -) menu page 47.

When one or a number of alarms selected in a group occurs, this alarm group is activated.

Code	Name / Description
1.0-	[INPUTS / OUTPUTS CFG] (continued)
A 1C -	[ALARM GRP1 DEFINITION]
	Selection to be made from the following list:
	[LI6=PTC al.] ( <i>P L R</i> ): LI6 = PTCL alarm
	[Ext. fault al.] (E F R): External fault alarm
	[Under V. al.] ( u 5 A): Undervoltage alarm
	[I attained] ( <i>L E R</i> ): Current threshold attained ([Current threshold] ( <i>L E d</i> ) page <u>102</u> )
	[Freq.Th.att.] (F L R): Frequency threshold attained ([Freq. threshold] (F L d) page <u>102</u> )
FZR	[Freq. th.2 attained] (F 2 R): Frequency threshold 2 attained ([Freq. threshold 2] (F 2 d) page 102)
SrR	[Freq.ref.att] (5 r R): Frequency reference attained
E S R	[Th.mot. att.] ( <i>E</i> 5 <i>R</i> ): Motor 1 thermal state attained
E 5 2	[Th.mot2 att] (E 5 2): Motor 2 thermal state attained
£53	[Th.mot3 att] (E 5 3): Motor 3 thermal state attained
	[Uvolt warn] ( $\_P = R$ ): Undervoltage threshold
FLA EHA	[HSP attain.] ( <i>F L R</i> ): High speed attained [Al. °C drv] ( <i>L H R</i> ): Drive overheating
PEE	[PID error al] (P E E): PID error alarm
	[PID fdbk al.] ( <i>P F R</i> ): PID feedback alarm
	[AI3 AI. 4-20] ( <i>PP</i> ]: Alarm indicating absence of 4-20 mA signal on input AI3
558	[Lim T/l att.] (5 5 A): Torque limit alarm
	[Th. drv. att.] ( <i>E R d</i> ): Drive thermal state attained
	[IGBT alarm] ( <i>E J R</i> ): IGBT alarm
u L R	[Underload. Proc. Al.] ( L R): Underload alarm
o L R	[Overload. Proc. Al.] ( L H): Overload alarm
	[Rope slack alarm] (r 5 d R): Rope slack (see [Rope slack config.] (r 5 d) parameter page 205)
EEHA	[High torque alarm] ( $E \in HR$ ): Motor torque overshooting high threshold [High torque thd.] ( $E \in H$ ) page 102.
EELA	[Low torque alarm] ( $E \in L R$ ): Motor torque undershooting low threshold[Low torque thd.] ( $E \in L$ ) page 102.
F9LR	[Freq. meter Alarm] (F 9 L R): Measured speed threshold attained: [Pulse warning thd.] (F 9 L) page 102.
al ar	[Dynamic load alarm] (d L d R): Load variation detection (see [DYNAMIC LOAD DETECT.] (d L d -) page 267).
	See the multiple selection procedure on page <u>33</u> for the integrated display terminal, and page <u>24</u> for the graphic display terminal.
ASC -	[ALARM GRP2 DEFINITION]
	Identical to [ALARM GRP1 DEFINITION] (# 10 -) page 145.
A 3 C -	[ALARM GRP3 DEFINITION]
	Identical to [ALARM GRP1 DEFINITION] (# / [ - ) page 145.

#### Command

The parameters in the [COMMAND] ([ L L -) menu can only be modified when the drive is stopped and no run command is present.

#### **Command and reference channels**

Run commands (forward, reverse, stop, etc.) and references can be sent using the following channels:

Command	Reference
Terminals: logic inputs LI or analog inputs used as logic inputs LA Function blocks Remote display terminal Graphic display terminal Integrated Modbus Integrated CANopen® Communication card	Terminals: analog inputs AI, pulse input Function blocks Remote display terminal Graphic display terminal Integrated Modbus Integrated CANopen® Communication card
	+/- speed via the terminals +/- speed via the graphic display terminal

# 

#### UNANTICIPATED EQUIPMENT OPERATION

If analog inputs [AI1] ( $P_{I}$  I) or [AI2] ( $P_{I}$  I<sup>2</sup>) are used as logic inputs ([LAI1] ( $L_{P_{I}}$  I) or [LAI2] ( $L_{P_{I}}$  I), they remain active in their behaviors in analog input mode (example : [Ref.1 channel] ( $F_{r}$  I) is still set to [AI1] ( $P_{I}$  II).

• Remove the configuration of [Al1] (R | I) or [Al2] (R | 2) in analog input mode

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Note: [LA1] (L R I) and [LA2] (L R 2) can be used as 2 logic inputs in source mode only.

- + 24 V power supply (max. 30 V)
- State 0 if < 7.5 V, state 1 if > 8.5 V.

**Note:** The stop keys on the graphic display terminal or remote display can be programmed as non-priority keys. A stop key can only have priority if the [Stop Key priority] ( $P \ 5 \ E$ ) parameter in the [COMMAND] ( $E \ E \ L \ -$ ) menu, page <u>154</u> is set to [Yes] ( $\mathcal{Y} \ E \ 5$ ).

The behavior of the Altivar 320 can be adapted according to requirements:

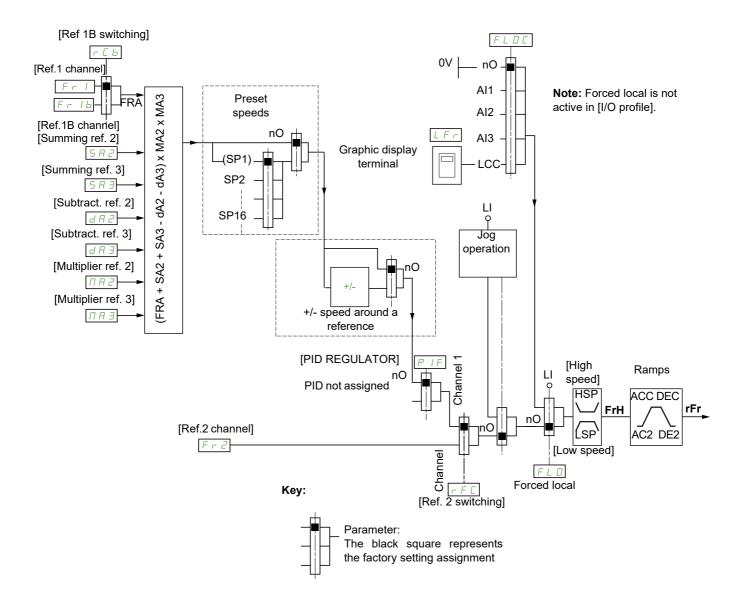
- [Not separ.] (5, 1): Command and reference are sent via the same channel.
- [Separate] (5 E P): Command and reference may be sent via different channels.

In these configurations, control via the communication bus is performed in accordance with the DRIVECOM standard with only 5 freely-assignable bits (see Communication Parameters Manual). The application functions cannot be accessed via the communication interface.

• **[I/O profile]** ( , , ): The command and the reference can come from different channels. This configuration both simplifies and extends use via the communication interface. Commands may be sent via the logic inputs on the terminals or via the communication bus. When commands are sent via a bus, they are available on a word, which acts as virtual terminals containing only logic inputs. Application functions can be assigned to the bits in this word. More than one function can be assigned to the same bit.

**Note:** Stop commands from the graphic display terminal or remote display terminal remain active even if the terminals are not the active command channel.

### Reference channel for [Not separ.] (5, , II), [Separate] (5 E P) and [I/O profile] (, , ) configurations, PID not configured



### Fr 1, 582, 583, 482, 483, N82, N83:

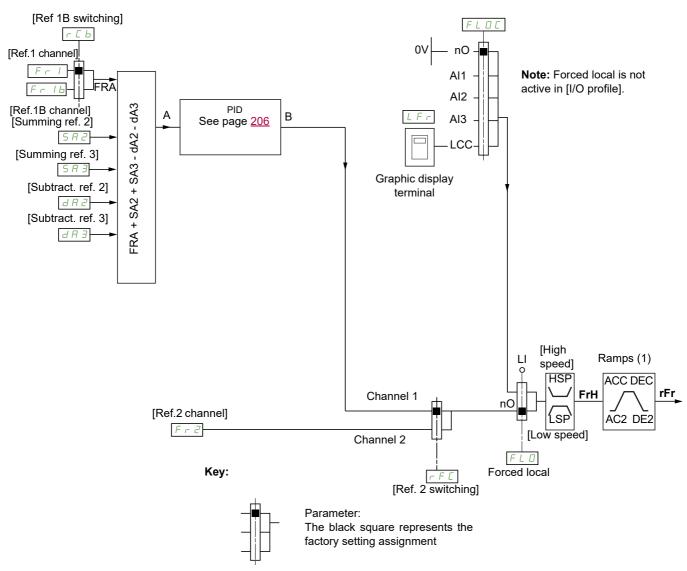
- · Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card
- Fr Ib, for 5EP and ID:
- Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card
- Fr 1Ь, for 5 , П:
- Terminals, only accessible if F r I = terminals

```
Fr2:
```

 Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card, and +/- speed

```
Note: [Ref.1B channel] (F r I b) and [Ref 1B switching] (r L b) must be configured in the [APPLICATION FUNCT.] (F µ n -) menu.
```

# Reference channel for [Not separ.] (5 , $\Pi$ ), [Separate] (5 EP) and [I/O profile] (, $\Box$ ) configurations, PID configured with PID references at the terminals



(1) Ramps not active if the PID function is active in automatic mode.

#### Fr 1:

• Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card

```
F r I b, for S E P and r b:
Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card
```

- Fr Ib, for 5 , II:
- Terminals, only accessible if F r I = terminals
- SR2, SR3, dR2, dR3:
- Terminals only

```
F r 2:
```

 Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card, and +/- speed

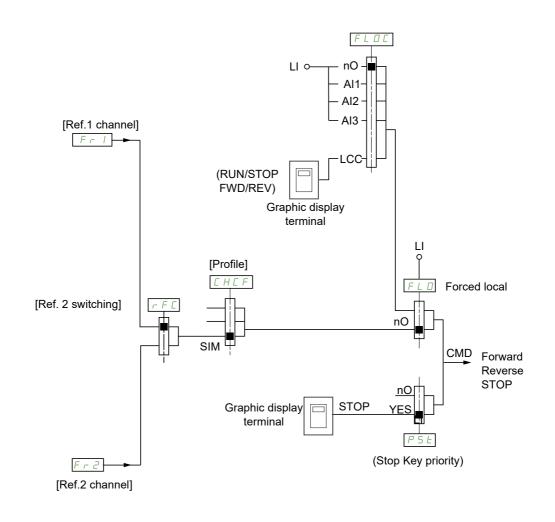
```
Note: [Ref.1B channel] (F r I b) and [Ref 1B switching] (r L b) must be configured in the [APPLICATION FUNCT.] (F u n -) menu.
```

## Command channel for [Not separ.] (5, 17) configuration

Reference and command, not separate

The command channel is determined by the reference channel. Parameters F r I, F r 2, r F E,  $F L \Box$  and  $F L \Box E$  are common to reference and command.

Example: If the reference is F - I = R + I (analog input at the terminals), control is via L + I (logic input at the terminals).



Key:



Parameter: The black square represents the factory setting assignment

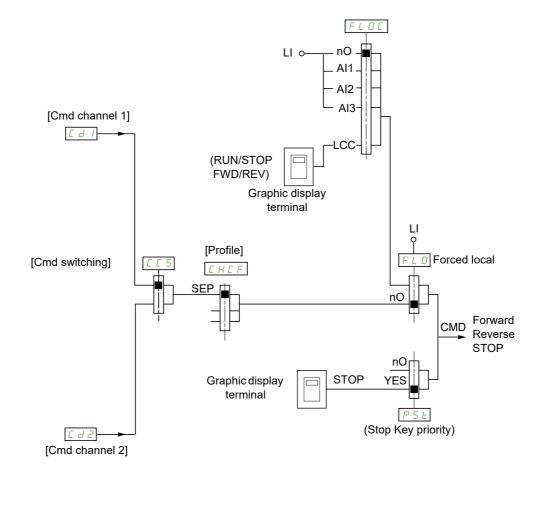
#### Command channel for [Separate] (5 E P) configuration

Separate reference and command

Parameters F L o and F L o L are common to reference and command.

Example: If the reference is in forced local mode via R, I (analog input at the terminals), command in forced local mode is via  $L_{-1}$  (logic input at the terminals).

The command channels [ d ] and [ d ] are independent of the reference channels F r ], F r ] and F r ].



Key:



Parameter: The black square represents the factory setting assignment, except for [Profile].

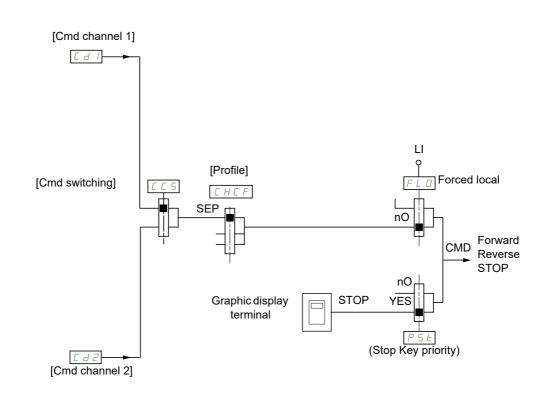
#### **[d], [d2**:

• Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card

## Command channel for [I/O profile] ( , , ) configuration

Separate reference and command, as in [Separate] (5 E P) configuration

The command channels [d] and [d] are independent of the reference channels  $F_r$  I,  $F_r$   $I_b$  and  $F_r$  2.



#### Key:



Parameter:

Parameter: The black square represents the factory

setting assignment, except for [Profile].

#### Cd I, Cd2:

Terminals, graphic display terminal, integrated Modbus, integrated CANopen®, communication card

A command or an action can be assigned:

- To a fixed channel by selecting an L , input or a Cxxx bit:
  - By selecting, for example, L , 3, this action will be triggered by L , 3 regardless of which command channel is switched.
  - By selecting, for example, [2 14, this action will be triggered by integrated CANopen® with bit 14 regardless of which command channel is switched.
- To a switchable channel by selecting a CDxx bit:
  - By selecting, for example, [ d I I, this action will be triggered by:
    - L , I 2 if the terminals channel is active
    - [ I I I if the integrated Modbus channel is active
    - [ 2 | | if the integrated CANopen® channel is active
    - [ 3 | | if the communication card channel is active

If the active channel is the graphic display terminal, the functions and commands assigned to CDxx switchable internal bits are inactive.

Terminals	Integrated Modbus	Integrated CANopen®	Communication card	Internal bit, can be switched
				CD00
LI2 (1)	C101 (1)	C201 (1)	C301 (1)	CD01
LI3	C102	C202	C302	CD02
LI4	C103	C203	C303	CD03
LI5	C104	C204	C304	CD04
LI6	C105	C205	C305	CD05
-	C106	C206	C306	CD06
-	C107	C207	C307	CD07
-	C108	C208	C308	CD08
-	C109	C209	C309	CD09
-	C110	C210	C310	CD10
-	C111	C211	C311	CD11
-	C112	C212	C312	CD12
LAI1	C113	C213	C313	CD13
LAI2	C114	C214	C314	CD14
-	C115	C215	C315	CD15
OL01 to OL10				

(1) If [2/3 wire control] (*E* C) page 85 is set to [3 wire] (3C), *L* , 2, C / D /, C 2 D / and C 3 D / cannot be accessed.

#### Assignment conditions for logic inputs and control bits

The following elements are available for every command or function that can be assigned to a logic input or a control bit:

[LI1] (L , I) to [LI6] (L , E)	Logical inputs
[LAI1] (L R , I) to [LAI2] (L R , 2)	Virtual logic input
[C101] ( [ / [] / ) to [C110] ( [ / / [] )	With integrated <b>Modbus</b> in [I/O profile] ( , , , ) configuration
[C111] ( [ / / / ) to [C115] ( [ / / 5)	With integrated Modbus regardless of configuration
[C201] ( [ 2 [] 1) to [C210] ( [ 2 1 [])	With integrated CANopen® in [I/O profile] ( , , , ) configuration
[C211] ([2   ]) to [C215] ([2   5)	With integrated CANopen® regardless of configuration
[C301] ( [ ] [ ]) to [C310] ( [ ] I [])	With a communication card in [I/O profile] (, , , ) configuration
[C311] ( <i>L</i> ∃ <i>I I</i> ) to [C315] ( <i>L</i> ∃ <i>I</i> 5)	With a communication card regardless of configuration
[CD00] ( [ d ] ]) to [CD10] ( [ d   ])	In [I/O profile] ( , , ) configuration
[CD11] ( [ d   ]) to [CD15] ( [ d   5)	Regardless of configuration
[OL01] ( □ L □ I) to [OL10] ( □ L I □)	Regardless of configuration

**Note:** In **[I/O profile]** (, , ) configuration, L, / cannot be accessed and if **[2/3 wire control]** (*E C C*) page <u>85</u> is set to **[3 wire]** (*3 C*), *L*, *2*, *C* / *D* /, *C 2 D* / and *C 3 D* / cannot be accessed either.

# 

#### LOSS OF CONTROL

Inactive communication channels are not monitored (no error detection in the event of a communication interruption).

Verify that using the commands and functions assigned to bits C101 to C315 does not result in unsafe conditions in the event of a communication interruption.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

DRI- > CONF > FULL > CTL-

Code	Name / Description	Adjustment range	Factory setting
Full	[FULL] (continued)		
CEL-	[COMMAND]		
Frl	[Ref.1 channel]		[AI1] ( <i>R</i> / /)
Я I Э L С С П J Б	[Al2] (F I 2): Analog input A2         [Al3] (F I 3): Analog input A3		
י P ה ים ד ה ה ח ח ה		e if <b>[Profile]</b> ( <i>[ H [ F</i> )is	s not set to
	[OA10] ( P / D): Function blocks: Analog Output 10 [RV Inhibition]		[No] ( n
	Inhibition of movement in reverse direction, does not apply to direction reque Reverse direction requests sent by logic inputs are taken into account. Reverse direction requests sent by the graphic display terminal are not taken Reverse direction requests sent by the fieldbus are not taken into account. Any reverse speed reference originating from the PID, summing input, etc., i	n into account.	
ле УЕ 5			
PSE	[Stop Key priority]		[Yes] ( <i>4E</i> 5)
2 s	LOSS OF CONTROL         This function disables the Stop keys of the Remote Display Terminal if the setting of the parameter [Command channel] ([ [ ] d [) is not [HMI] (H [] i).         Only set this parameter to [No] ( ] [ ] is you have implemented appropriate alternative stop functions.		
пе 955	<b>Failure to follow these instructions can result in death, seriou</b> This will be a freewheel stop. If the active command channel is the graphic di to the [Type of stop] ( $5 \pm E$ ) page <u>173</u> irrespective of the configuration of [ $173$ [No] ( $n = 1$ )	us injury, or equipme splay terminal, the stop v Stop Key priority] ( <i>P</i> 5	will be performed according <i>L</i> ).
	the command channel.	51 1	
CHCF	[Profile]		[Not separ.] (5 , 17)
2 s			
	<ul> <li>UNANTICIPATED EQUIPMENT OPERATION</li> <li>Disabling [I/O profile] ( , c) resets the drive to the factory settings</li> <li>Verify that restoring the factory settings is compatible with the t</li> <li>Failure to follow these instructions can result in death, seriou</li> </ul>	ype of wiring used.	ent damage.
5 , N 5 E P 1 P	[Not separ.] (5, , П): Reference and command, not separate [Separate] (5 E P): Separate reference and command. This assignment car [I/O profile] (, , , , ): I/O profile	nnot be accessed in [I/O	profile] ( , , ).

DRI- > CONF > FULL > CTL-

Code	Name / Description A	djustment range	Factory setting
C C 5	[Cmd switching]		[ch1 active] ( L d 1)
*	This parameter can be accessed if <b>[Profile]</b> ( $\[ L H \[ L \[ F \] )$ is set to <b>[Separate]</b> (5 E If the assigned input or bit is at 0, channel <b>[Cmd channel 1]</b> ( $\[ L \[ d \] )$ is active. If the assigned input or bit is at 1, channel <b>[Cmd channel 2]</b> ( $\[ L \[ d \] )$ is active. If <b>[Profile]</b> ( $\[ L \[ H \[ C \] F \] )$ is set to <b>[Not separ.]</b> (5 $\[ I \] $ , $n$ ), only <b>[Cmd channel 1]</b> ( $\[ L \] $		
563 L , I	<pre>[ch1 active] ( [ d ]): [Cmd channel 1] ( [ d ]) active (no switching) [ch2 active] ( [ d ]): [Cmd channel 2] ( [ d ]) active (no switching) [Ll1] ( L ] ): Logical input Ll1 [] (): See the assignment conditions on page 153 (not [ d ]] to [ d ]5)</pre>		
	[Cmd channel 1]		[Terminals] (EEr)
*	This parameter can be accessed if [Profile] ( [ H [ F ) is set to [Separate] ( 5 E	<i>P</i> ) or <b>[l/O profile]</b> ( ,	<b>•</b> ).
L C C N d b C A n	[Terminals] ( <i>E E r</i> ): Terminals [HMI] ( <i>L C C</i> ): Graphic display terminal or remote display terminal [Modbus] ( <i>I d b</i> ): Integrated Modbus [CANopen] ( <i>C F n</i> ): Integrated CANopen® [Com. card] ( <i>n E b</i> ): Communication card (if inserted)		
C d 2	[Cmd channel 2]		[Modbus] ( <i>П d Ь</i> )
*	This parameter can be accessed if [Profile] ( <i>L</i> H <i>L F</i> ) is set to [Separate] ( 5 <i>E</i>	<i>P</i> ) or <b>[l/O profile]</b> ( ,	<b>_</b> ).
L C C N d b C A n	[Terminals] ( <i>L</i> E r): Terminals [HMI] ( <i>L</i> C): Graphic display terminal or remote display terminal [Modbus] ( <i>I</i> d b): Integrated Modbus [CANopen] ( <i>C</i> R n): Integrated CANopen® [Com. card] ( <i>n</i> E b): Communication card (if inserted)		
rFE	[Ref. 2 switching]		[Ref.1 channel] (F r I)
	If the assigned input or bit is at 0, channel [Cmd channel 1] ( $[ d ]$ ) is active. If the assigned input or bit is at 1, channel [Cmd channel 2] ( $[ d ]$ ) is active.		
Fr2	[Ref. 1 channel] ( $F r l$ ): [Cmd channel 1] ( $L d l$ ) active (no switching) [Ref. 2 channel] ( $F r l$ ): [Cmd channel 2] ( $L d l$ ) active (no switching) [L1] ( $L l l$ ): Logical input L11		
L 1 I	[] (): See the assignment conditions on page <u>153</u> (not [ d ] ] to [ d   5)		
Fr2	[Ref.2 channel]		[No] ( n a )
	[No] ( $n a$ ): Not assigned. If [Profile] ( $L H L F$ ) is set to [Not separ.] ( $5 , n$ ), treference. If [Profile] ( $L H L F$ ) is set to [Separate] ( $5 E P$ ) or [I/O profile] ( $r$		
	[Al1] ( <i>H</i> / <i>I</i> ): Analog input A1		
	[Al2] ( <i>F I</i> 2): Analog input A2 [Al3] ( <i>F I</i> 3): Analog input A3		
	[+/-Speed] ( $\mu P d E$ ): +/- speed command		
	[HMI] (L C C): Graphic display terminal or remote display terminal		
	[Modbus] (II d b): Integrated Modbus		
	[CANopen] ( L R n): Integrated CANopen®         [Com. card] ( n E L): Communication card (if inserted)		
	<b>[RP]</b> ( <i>P</i> 1): Pulse input		
A iu l	[Al virtual 1] (R , u I): Virtual analog input 1 with the jog dial		
	[OA01] ( - F D I): Function blocks: Analog Output 01		
- 8 10	[OA10] ( P I D): Function blocks: Analog Output 10		

DRI- > CONF > FULL > CTL-

#### Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting		
C o P	[Copy channel 1 <> 2]		[No] (n o)		
🚡 2 s	A WARNIN	G			
	<b>UNANTICIPATED EQUIPMENT OPERATION</b> This parameter can cause unintended movements, for example, motor, sudden acceleration or stops.	inversion of the direc	ion of rotation of the		
	<ul> <li>Verify that the setting of this parameter does not cause unintended movements.</li> </ul>				
	<ul> <li>Verify that the setting of this parameter does not result in unsafe conditions</li> </ul>				
	Failure to follow these instructions can result in death, serious injury, or equipment damage.				
	Can be used to copy the current reference and/or the command by means example. If <b>[Profile]</b> ( $\varGamma$ $H \[ F \]$ page <u>154</u> is set to <b>[Not separ.]</b> ( $5 \[ \Pi \]$ or <b>[Separate]</b> to channel 2. If <b>[Profile]</b> ( $\varGamma$ $H \[ F \]$ is set to <b>[I/O profile]</b> ( $\[ \square \]$ $\square$ ), copying will be possible in A reference or a command cannot be copied to a channel on the terminals. The reference copied is <b>[Frequency ref.]</b> ( $\digamma \[ \Gamma \]$ $\square$ ) (after ramp) unless the this case, the reference copied is <b>[Output frequency]</b> ( $\varGamma \[ \Gamma \] \Gamma \]$ ) (after ramp)	( <b>5</b> <i>E P</i> ), copying will only both directions. destination channel refe	be possible from channel		
5 P	[Reference] (5 P): Copy reference [Command] (L d): Copy command				

To change the assignment of this parameter, press the ENT key for 2 s.

🚡 2 s

As the graphic display terminal may be selected as the command and/or reference channel, its action modes can be configured.

The parameters on this page can only be accessed on the graphic display terminal, and not on the integrated display terminal.

Comments:

- The display terminal command/reference is only active if the command and/or reference channels from the terminal are active with the exception of [T/K] (F L) (command via the display terminal), which takes priority over these channels. Press [T/K] (F L) (command via the display terminal) again to revert control to the selected channel.
- Command and reference via the display terminal are impossible if the latter is connected to more than one drive.
- The JOG, preset speed and +/- speed functions can only be accessed if [Profile] ([H[F]) is set to [Not separ.] (5, 1).
- The preset PID reference functions can only be accessed if [Profile] (*L* H *L F*) is set to [Not separ.] (5 , *I*) or [Separate] (5 *E P*).
- The [T/K] (F L) (command via the display terminal) can be accessed regardless of the [Profile] (L H L F).

de	Name / Description	Adjustment range	Factory setting
Fnl	[F1 key assignment]		[No] ( n
по F Јоб F Р 5 I		speed [Preset speed 2] ( 5	<b>P 2</b> ) page <u>97</u> . Press STO
FPSZ	to stop the drive. [Preset spd3] (F P 5 2): Press the key to run the drive at the 3rd preset to stop the drive.	speed [Preset speed 3] (5	P 3) page <u>97</u> . Press STC
FPr I	•		
FPr2	sending a run command. Only operates if [Ref.1 channel] (F - I) is set function.	to [HMI] (L L L). Does not	operate with the [T/K] (F
FuSP	[+speed] (F u 5 P): Faster, only operates if [Ref.2 channel] (F r 2) is sincrease the speed. Press STOP to stop the drive.	set to [HMI] (L C C). Press	the key to run the drive ar
FdSP	[- speed] (F d 5 P): Slower, only operates if [Ref.2 channel] (F r 2) is assigned to [+ speed]. Press the key to run the drive and decrease the		
FE			
Fn2	[F2 key assignment]		[No] ( n a )
	Identical to [F1 key assignment] (F n I) page 157.		
Fn3	[F3 key assignment]		[No] ( n a )
	Identical to [F1 key assignment] (F n I) page 157.		
Fn 4	[F4 key assignment]		[No] ( n
	Identical to [F1 key assignment] (F n I) page <u>157</u> .		
ЬПР	[HMI cmd.]		[Stop] (5 L = P)
*	When the $[T/K]$ ( <i>F L</i> ) function is assigned to a key and that function is ac when control returns to the graphic display terminal or remote display terminal or remote display terminal or remoted by the graphic display terminal or remoted		the behavior at the mome
StoP	[Stop] (5 L o P): Stops the drive (although the controlled direction of ope (to be taken into account on the next RUN command)).	eration and reference of the	previous channel are copi
	[Bumpless] ( $\underline{B} \sqcup \Pi F$ ): Does not stop the drive (the controlled direction of		

 $\star$ 

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > FBM- > MFB-

## **Function Block Management**

Code	Name / Description	Adjustment range	Factory setting
Full	[FULL] (continued)		
F Ь П -	[FUNCTION BLOCKS]		
ПҒЬ-	[MONIT. FUN. BLOCKS] Note: This section shows only what is possible to do with local or remote dis PC software, please refer to the dedicated Function blocks manual.	play on the drive. For a	dvanced configuration using
FЬSE	[FB Status]		
id L E CHEC StaP in it run Err	<b>[Idle]</b> ( $, d \downarrow E$ ): No binary file in the target, the FB is waiting for a download <b>[Check prog.]</b> ( $\Box H \in L$ ): Check the program downloaded <b>[Stop]</b> ( $5 \vdash a P$ ): The Function blocks application is stopped <b>[Init]</b> ( $, n, \iota E$ ): Check coherency between ATVLogic program and Function <b>[Run]</b> ( $r \sqcup n$ ): The Function blocks application is running <b>[Error]</b> ( $E \vdash r$ ): An internal error has been detected. The Function blocks application blocks	n blocks parameters	e mode.
FBFE	[FB Fault]		
  PAr EAL E0PP AdL 	[No] (n c): No detected fault [Internal] ( n c): Internal detected error [Binary file] (b n): Binary file corrupted [Intern Para.] ( n P): Internal parameter detected error [Para. RW] (P R r): Parameter access detected error [Calculation] (L R L): Calculation detected error [TO AUX] (L c R u): TimeOut AUX task [TO synch] (L c P P): TimeOut in PRE/POST task [Bad ADLC] (R d L): ADLC with bad parameter [Input assig.] ( n): Input not configured		
Fb i-	[FB IDENTIFICATION]		
buEr	[Program version]	0 to 255	-
*	Program user version.		
6 - 5	[Program size]	0 to 65,535	-
*	Program file size.		
Бли	[Prg. format version]	0 to 255	-
	Binary format version of the drive.		
[ E u	[Catalog version]	0 to 65,535	-
	Catalog version of the drive.		
FЬП-	[FUNCTION BLOCKS] (continued)		
ғьса <b>()</b>	<b>[FB Command]</b> Allows to start and stop the function blocks manually.		
	<b>[FB Command]</b> ( $F \ b \ C \ d$ ) is forced to <b>[Stop]</b> ( $5 \ b \ c \ P$ ) if there is no valid fr <b>[FB Command]</b> ( $F \ b \ C \ d$ ) is set to <b>[Start]</b> ( $5 \ b \ c \ P$ ) when the function block <b>[FB start mode]</b> ( $F \ b \ c \ R$ ) configuration. <b>Note:</b> As soon as the function blocks are started, the drive is considered as in parameters is no longer possible.	ks application switch to	Run according to
StoP Strt	<b>[Stop]</b> ( $5 L \circ P$ ): Function blocks application Stop command <b>[Start]</b> ( $5 L - L$ ): Function blocks application Start command		

DRI- > CONF > FULL > FBM-

Code	Name / Description	Adjustment range	Factory setting	
FbrП	[FB start mode]		[No] (n ¤)	
🚡 2 s				
	UNANTICIPATED EQUIPMENT OPERATION			
	Depending on the setting of this parameter, function blocks may be immediately executed.			
	<ul> <li>Verify that this setting does not result in unsafe conditions.</li> <li>Failure to follow these instructions can result in death, serious injury, or equipment damage.</li> </ul>			
			U	
	Allows to choose the different ways of starting the Function blocks application. <b>Note:</b> Modifications of this parameter are not taken into account if the Function blocks application is running.			
9 E S L , I	[Yes] (JE 5): Function blocks application switches to Run automatically at drive power on			
	[] (): See the assignment conditions on page <u>153</u> (([OL10] ( <u>L</u> [] I) up t [CD15] ( <u>L</u> <u>J</u> I <u>5</u> ) are not available).	to [OL10] ( <u>-</u> L I I I) and	[CD00] ( <i>L</i> d 🛛 🖉 ) up to	
F 6 5 N	[Stop FB Stop motor]		[Freewheel] ( <i>YE</i> 5)	
	<b>A</b> WARNING			
	LOSS OF CONTROL			
	If [Stop FB stop motor] ( <i>F</i> <u>b</u> 5 <i>Π</i> ) is set to [No] ( <i>n</i> <u>c</u> ), the motor stopped.	will not stop when the	e program will be	
	<ul> <li>Only set this parameter to [No] ( , , ) if you have implemented appropriate alternative stop functions.</li> </ul>			
	Failure to follow these instructions can result in death, seriou	is injury, or equipme	ent damage.	
	Allows to setup the way of working of the drive when function blocks are stopped.			
9E5 r NP				
FSE dCi	[Fast stop] (F 5 L): Fast stop [DC injection] (d [ i): DC injection			
FbdF	[FB on drive fault]		[Stop] (5 L o P)	
	Behavior of function blocks when the drive trips.			
5£ = P , G n	[Stop] (5 L o P): Function blocks stops when the drive trips, outputs are rea [Ignore] ( , L o): Function blocks continue to work when the drive trips (exce			
FLA-	[INPUTS ASSIGNMENTS]			
1 L O 1	[Logic input 1 assignment]		[No] ( n a )	
	Possible assignment for the Function block logic input. Identical to [R1 Assignment] ( $r$ /) page <u>138</u> (not [Limit sw. att] ( $L$ 5 $R$ )) w (shown for information only as these selections can only be configured in the			
9 E S				
L i I 	[LI1] ( <i>L</i> , <i>I</i> ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u>			
1 L	[Logic input x assignment]		[No] ( n a )	
	All the Function Blocks logic inputs available on the drive are processed as in [Logic input 1 assignment] ( , L [] /] above, up to [Logic input 10 assign			

DRI- > CONF > FULL > FBM- > FBA-

Image: Provide the system       [No] (n o)         Possible assignment for the Function block analog input.       [No] (n o)         Possible assignment for the Function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o)         Image: Provide the function block analog input.       [No] (n o) </th <th></th>	
$\begin{bmatrix} No] (n c): Not assigned \\ R I I \\ [Al1] (R I I): Analog input A1 \\ R I 2 \\ [Al2] (R I 2): Analog input A2 \\ R I 3 \\ [Al3] (R I 3): Analog input A3 \\ c r \\ [I motor] (c r): Motor current \\ c r \\ [Motor freq.] (c r): Motor speed \\ c r \\ [Ramp. out] (c r P): Ramp output \\ c r \\ F \\ [Motor torq.] (c r 9): Motor torque \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign torque] (S E 9): Signed motor \\ S E 9 \\ [Sign tor$	
$R \mid I \mid$ $[AII]$ ( $R \mid I$ ): Analog input A1 $R \mid 2$ $[AI2]$ ( $R \mid 2$ ): Analog input A2 $R \mid 3$ $[AI3]$ ( $R \mid 3$ ): Analog input A3 $\Box \mid r \mid$ $[I \mod tor]$ ( $\Box \mid r \mid$ ): Motor current $\Box \mid r \mid$ $[Motor freq.]$ ( $\Box \mid r \mid$ ): Motor speed $\Box \mid r \mid$ $[Ramp. out]$ ( $\Box \mid r \mid$ ): Motor torque $E \mid r \mid$ $[Motor torq.]$ ( $E \mid r \mid$ ): Motor torque $S \not \in q$ $[Sign torque]$ ( $S \not \in q$ ): Signed motor torque	
$R \mid I \mid$ $[AII]$ ( $R \mid I$ ): Analog input A1 $R \mid 2$ $[AI2]$ ( $R \mid 2$ ): Analog input A2 $R \mid 3$ $[AI3]$ ( $R \mid 3$ ): Analog input A3 $\Box \mid r \mid$ $[I \mod tor]$ ( $\Box \mid r \mid$ ): Motor current $\Box \mid r \mid$ $[Motor freq.]$ ( $\Box \mid r \mid$ ): Motor speed $\Box \mid r \mid$ $[Ramp. out]$ ( $\Box \mid r \mid$ ): Motor torque $E \mid r \mid$ $[Motor torq.]$ ( $E \mid r \mid$ ): Motor torque $S \not \in q$ $[Sign torque]$ ( $S \not \in q$ ): Signed motor torque	
$R \mid I 2$ $[AI2] (R \mid I 2)$ : Analog input A2 $R \mid I 3$ $[AI3] (R \mid I 3)$ : Analog input A3 $\Box \ \Gamma$ $[I motor] (\Box \ \Gamma$ ): Motor current $\Box \ F \ \Gamma$ $[Motor freq.] (\Box \ F \ C)$ : Motor speed $\Box \ \Gamma$ $[Ramp. out] (\Box \ \Gamma$ ): Motor torque $E \ r \ P$ $[Ramp. out] (\Box \ \Gamma \ P)$ : Ramp output $E \ r \ P$ $[Motor torq.] (E \ r \ P)$ : Motor torque $5 \ E \ P$ $[Sign torque] (5 \ E \ P)$ : Signed motor torque	
□ [ r otor] (□ [ r ): Motor current         □ F r         [Motor freq.] (□ F r): Motor speed         □ r P         [Ramp. out] (□ r P): Ramp output         L r 9         [Motor torq.] (L r 9): Motor torque         5 L 9         [Sign torque] (5 L 9): Signed motor torque	
□ F r       [Motor freq.] (□ F r): Motor speed         □ r P       [Ramp. out] (□ r P): Ramp output         L r 9       [Motor torq.] (L r 9): Motor torque         5 L 9       [Sign torque] (5 L 9): Signed motor torque	
Image: constraint of the second stateImage: con	
L r 9[Motor torq.] (L r 9): Motor torque5 L 9[Sign torque] (5 L 9): Signed motor torque	
5 L 9 [Sign torque] (5 L 9): Signed motor torque	
or 5 [Sign ramp] (or 5): Signed ramp output	
P 5     [PID ref.] ( P 5): PI(D) reference	
PF [PID feedbk] ( PF): PI(D) feedback	
□ P E       [PID error] (□ P E): PI(D) error         □ P I       [PID output] (□ P I): PI(D) integral	
$\square P_r$ [Mot. power] ( $\square P_r$ ): Motor power	
<i>E H r</i> [Mot. thermal] ( <i>E H r</i> ): Motor thermal state	
<i>E H d</i> [Drv thermal] ( <i>E H d</i> ): Drive thermal state	
<i>E</i> 9 // 5 [Torque 4Q] ( <i>E</i> 9 // 5): Signed motor torque	
o F 5[Sig. o/p frq.] (o F 5): Signed output frequencyL H r 2[Mot therm2] (L H r 2): Motor 2 thermal state	
$E H_{\Gamma} = I$ [Mot therm3] ( $E H_{\Gamma} = I$ ): Motor 3 thermal state	
u o P [Motor volt.] (u o P): Motor voltage	
<i>P</i> , <b>[RP]</b> ( <i>P</i> , ): Pulse input	
<b>R</b> I [Al virtual 1] ( <b>R</b> I I): Virtual analog input 1 with the jog dial	
d o I       [D01] (d o I): Analog/logical output DO1         R u Z       [Al virtual 2] (R u Z): Virtual analog input 2 by the communication bus	
□ R □ I [OA01] (□ R □ I): Function blocks: Analog Output 01	
• R I D       [OA10] (• R I D): Function blocks: Analog Output 10	
[No] (n a)	
All the Function blocks analog inputs available on the drive are processed as in the example for [IA01] ( , R 🛛 I) at [IA10] ( , R I 🗋).	pove, up to
ЬП - [FUNCTION BLOCKS] (continued)	
H d     -     [ADL CONTAINERS]	
ADL containers contain Modbus logical adress of internal parameters of the drive. If the chosen adress is valid, the dis	splay shows
the parameter name instead of the adress.	
L R I         ADL Container 01         3,015 to 64,299         0	
L R I 2         ADL Container 02         3,015 to 64,299         0	
L R I 3         ADL Container 03         3,015 to 64,299         0	
L R I 4         ADL Container 04         3,015 to 64,299         0	
L R I 5         ADL Container 05         3,015 to 64,299         0	
L R I 6         ADL Container 06         3,015 to 64,299         0	
L R 0 7         ADL Container 07         3,015 to 64,299         0	
L R II         ADL Container 08         3,015 to 64,299         0	

DRI- > CONF > FULL > FBM- > FBP-

Code	Name / Description	Adjustment range	Factory setting
FЬП-	[FUNCTION BLOCKS] (continued)		
F b P -	[FB PARAMETERS]		
	Internal parameters available for the user program.	Γ	
поот	[]	0 to 65,535	0
(1)	M001 Parameter saved in EEprom.		
0			
1002	[]	0 to 65,535	0
(1)	M002 Parameter saved in EEprom		
0			
П О О Э	[]	0 to 65,535	0
(1)	M003 Parameter saved in EEprom		
0			
ПООЧ	[]	0 to 65,535	0
(1)	M004 Parameter saved in EEprom		
0			
пооз	[]	0 to 65,535	0
(1)	M005 Parameter written in RAM		
0			
П О О Б	[]	0 to 65,535	0
(1)	M006 Parameter written in RAM		
0			
гоол	[]	0 to 65,535	0
(1)	M007 Parameter written in RAM		
Q			
008	[]	0 to 65,535	0
(1)	M008 Parameter written in RAM	L	
()			
• 2			

(1) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, for example, 15.65 for 15,650.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

## [APPLICATION FUNCT.] (Fun-)

Summary of functions:

Code	Name	Page
(r E F -)	[REFERENCE SWITCH.]	<u>167</u>
( <b>-</b>     - )	[REF. OPERATIONS]	<u>168</u>
(rPE-)	[RAMP]	<u>170</u>
(5 <i>EE</i> -)	[STOP CONFIGURATION]	<u>173</u>
(AdC-)	[AUTO DC INJECTION]	<u>176</u>
(JoG-)	[JOG]	<u>178</u>
( <b>P</b> 55-)	[PRESET SPEEDS]	<u>181</u>
( <b>u P d</b> )	[+/- SPEED]	<u>185</u>
(5 r E -)	[+/-SPEED AROUND REF.]	<u>187</u>
(5 <i>PП</i> -)	[MEMO REFERENCE]	<u>188</u>
(FL ,-)	[FLUXING BY LI]	<u>189</u>
( <b>bl[</b> -)	[BRAKE LOGIC CONTROL]	<u>194</u>
(ЕLП-)	[EXTERNAL WEIGHT MEAS.]	<u>200</u>
(H5H-)	[HIGH SPEED HOISTING]	<u>204</u>
( <b>P</b> , d - )	[PID REGULATOR]	<u>210</u>
(Pr I-)	[PID PRESET REFERENCES]	214
( <i>E o L -</i> )	[TORQUE LIMITATION]	<u>216</u>
( <i>CL</i> -)	[2nd CURRENT LIMIT.]	<u>218</u>
(,2E-)	[DYN CURRENT LIMIT]	<u>219</u>
(LLC-)	[LINE CONTACTOR COMMAND]	<u>221</u>
( <b>o                                   </b>	[OUTPUT CONTACTOR CMD]	<u>223</u>
(LPo-)	[POSITIONING BY SENSORS]	227
( <i>ПLP</i> -)	[PARAM. SET SWITCHING]	<u>230</u>
(ППС-)	[MULTIMOTORS/CONFIG.]	<u>235</u>
( <b>E</b> n <b>L</b> -)	[AUTO TUNING BY LI]	<u>236</u>
( <b>E r o -</b> )	[TRAVERSE CONTROL]	<u>237</u>
( <i>CH</i> 5-)	[HSP SWITCHING]	244
(d[[-)	[DC BUS]	<u>245</u>

The parameters in the [APPLICATION FUNCT.] ( $F \mu \sigma$  -) menu can only be modified when the drive is stopped and there is no run command, except for parameters with a  $\heartsuit$  symbol in the code column, which can be modified with the drive running or stopped.

Note: Compatibility of functions

The choice of application functions may be limited by the number of I/O and by the fact that some functions are incompatible with others. Functions that are not listed in the table below are fully compatible.

If there is an incompatibility between functions, the first function configured will help to prevent the others being configured.

Each of the functions on the following pages can be assigned to one of the inputs or outputs.

# **WARNING**

#### UNANTICIPATED EQUIPMENT OPERATION

Multiple functions can be assigned to and simultaneously activated via a single input.

• Verify that assigning multiple functions to a single input does not result in unsafe conditions.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

It is only possible to assign one input to several functions at [Advanced] (P d u) and [Expert] (E P r) levels.

Before assigning a command, reference or function to an input or output, the user must check that this input or output has not already been assigned and that another input or output has not been assigned to an incompatible function.

The drive factory setting or macro configurations automatically configure functions, which may help to prevent other functions being assigned.

In some case, it is necessary to unconfigure one or more functions in order to be able to enable another. Check the compatibility table below.

Stop functions have priority over run commands.

Speed references via logic command have priority over analog references.

**Note:** This compatibility table does not affect commands that can be assigned to the keys of the graphic display terminal (see page  $\underline{24}$ ).

### Compatibility table

Reference operations	Reference operations (page <u>168</u> )	+/- speed (3) (page <u>185</u> )	Preset speeds (page <u>180</u> )	<ul> <li>PID regulator</li> <li>(page <u>210</u>)</li> </ul>	Traverse control (page <u>242</u> )	JOG operation (page 178)	➡ Reference switching (page 167)	► Skip frequency (page 183)	Brake logic control (page 194)	Auto DC injection (page <u>176</u> )	Catch on the fly (page <u>253</u> )	Output contactor command (page <u>223</u> )	DC injection stop (page <u>173</u> )	Fast stop (page <u>173</u> )	Freewheel stop (page <u>173</u> )	+/- speed around a reference (page 187)	High speed hoisting (page <u>204</u> )	Load sharing (page <u>122</u> )	Positioning by sensors (page <u>227</u> )
(page <u>168</u> ) +/- speed (3)			•	(2)	•	•	• •	• •											
(page <u>185</u> )					•	•													
Preset speeds (page <u>180</u> )	+					1	1	1											
PID regulator (page <u>210</u> )	● (2)				•	•	t	Ť	•							•	•	•	•
Traverse control (page <u>242</u> )		•		•		•	1	1								•	•		
JOG operation (page <u>178</u> )	+	•	+	•	●			Ť	•	+						•	•		
Reference switching (page <u>167</u> )	+	+	+	Ŧ	ł			1								1			
Skip frequency (page <u>183</u> )	+	+	+	Ŧ	Ŧ	+	+									÷			
Brake logic control (page <u>194</u> )				•		•					•	•	•						
Auto DC injection (page <u>176</u> )						1							1		1				
Catch on the fly (page <u>253</u> )									•										
Output contactor command (page <u>223</u> )									•										
DC injection stop (page <u>173</u> )									•	+				● (1)	1				
Fast stop (page <u>173</u> )													● (1)		1				
Freewheel stop (page <u>173</u> )										+			+	Ŧ					
+/- speed around a reference (page <u>187</u> )				$\bullet$	•	•	t	1											
High speed hoisting (page <u>204</u> )				•	•	•													
Load sharing (page <u>122</u> )				•															
Positioning by sensors (page <u>227</u> )				•															

(1) Priority is given to the first of these two stop modes to be activated.

(2) Only the multiplier reference is incompatible with the PID regulator.

Incompatible functions

Compatible functions

Not applicable

Priority functions (functions which cannot be active at the same time):

1 ←

The function indicated by the arrow has priority over the other.

#### **Incompatible Functions**

The following function will be inaccessible or deactivated after an Automatic restart.

This is only possible for control type if [2/3 wire control] ( $E \ \Box \ \Box$ ) is set to [2 wire] ( $2 \ \Box$ ) and if [2 wire type] ( $E \ \Box \ \Box$ ) is set to [Level] ( $L \ \Box \ \Box$ ) or [Fwd priority] ( $P \ \Box \ \Box$ ). See [2/3 wire control] ( $E \ \Box \ \Box$ ) page <u>85</u>.

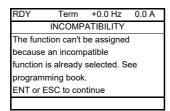
The [1.2 MONITORING] ( $\Pi \Box \sigma$  -) menu page <u>47</u> can be used to display the functions assigned to each input in order to check their compatibility.

When a function is assigned, a 🗸 appears on the graphic display terminal, as illustrated in the example below:

RDY	Term	0.0Hz	0A
A	PPLICATI	ON FUNC	T.
REFERE	NCE SWI	TCH.	
REF. OP	ERATION	S	
RAMP			
STOP CO	ONFIGUR/	ATION	
AUTO D	C INJECTI	ON	
Code	<<	>>	Quick

If you attempt to assign a function that is incompatible with another function that has already been assigned, an alarm message will appear:

• With the graphic display terminal:



· With the integrated display terminal and the remote display terminal:

COMP flashes until ENT or ESC is pressed.

When you assign a logic input, an analog input, a reference channel or a bit to a function, pressing the HELP key will display the functions that may already have been activated by this input, bit or channel.

When a logic input, an analog input, a reference channel or a bit that has already been assigned is assigned to another function, the following screens appear:

· With the graphic display terminal:

RUN	Term	0.0 Hz	0.0 A
W	ARNING -	ASSIGNED	D TO
Forwar	d		
EN	T-Valid.	ESC-	-Abort

If the access level permits this new assignment, pressing ENT confirms the assignment.

If the access level does not permit this new assignment, pressing ENT results in the following display:

RUN	Term	0.0 Hz	0.0 A
AS	SSIGNMEN	NT FORBID	DEN
Un-ass	ign the pre	sent	
function	ns, or seled	ct	
"Advan	ced" acces	s level	

· With the integrated display terminal:

The code for the first function, which is already assigned, is displayed flashing.

If the access level permits this new assignment, pressing ENT confirms the assignment.

If the access level does not permit this new assignment, pressing ENT has no effect, and the message continues to flash. It is only possible to exit by pressing ESC.

DRI- > CONF > FULL > FUN- > REF-

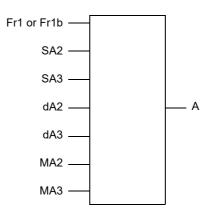
## **REFERENCE SWITCHING**

Code	Name / Description	Adjustment range	Factory setting				
Fun-	[APPLICATION FUNCT.]						
r E F -	[REFERENCE SWITCH.]						
гEЬ	[Ref 1B switching]		[ch1 active] (F r l)				
	See the diagrams on pages <u>147</u> and <u>148</u> . If the assigned input or bit is at 0, [ <b>Ref.1 channel</b> ] ( <i>I</i> If the assigned input or bit is at 1, [ <b>Ref.1B channel</b> ] [ <b>Ref 1B switching</b> ] ( $r \ L \ b$ ) is forced to [ <b>ch1 active</b> ] [ <b>Ref.1 channel</b> ] ( $F \ r \ I$ ) assigned via the terminals (	(Fr Ib) is active. (Fr I) if [Profile] (CHEF) is set to [Not s	<b>epar.]</b> (5, , П) with				
Frit	<ul> <li>[ch1 active] (F r L): No switching, [Ref.1 channel]</li> <li>[ch1B active] (F r I b): No switching, [Ref.1B chan</li> <li>[L11] (L r I): Logical input L11</li> <li>[] (): See the assignment conditions on page 153</li> </ul>	nnel] (Fr Ib) active					
Er Ib	[Ref.1B channel]		[No] (n g)				
A   A   2 A   2 L C C N A E C Ar n E E P A . u	<ul> <li>[No] (n o): Not assigned</li> <li>[Al1] (R I I): Analog input A1</li> <li>[Al2] (R I 2): Analog input A2</li> <li>[Al3] (R I 3): Analog input A3</li> <li>[HMI] (L E C): Graphic display terminal or remote dia [Modbus] (R d b): Integrated Modbus</li> <li>[CANopen] (E R n): Integrated CANopen®</li> <li>[Com. card] (n E b): Communication option board s</li> <li>[RP] (P i): Pulse input</li> <li>[Al virtual 1] (R i u I): Virtual analog input 1 with the [Not separ.] (5 i R))</li> <li>[CA01] (o R D I): Function blocks: Analog Output 0</li> </ul>	source ne jog dial (only available if <b>[Profile]</b> ( <i>C H C F</i>	;) is not set to				
 	 [OA10] ( - 用 I D): Function blocks: Analog Output 1	Q					

DRI- > CONF > FULL > FUN- > OAI-

### **REFERENCE OPERATIONS**

Summing input / Subtracting input / Multiplier



 $A = (Fr1 \text{ or } Fr1b + SA2 + SA3 - dA2 - dA3) \times MA2 \times MA3$ 

- If 5 R 2, 5 R 3, d R 2, d R 3 are not assigned, they are set to 0.
- If *II R 2*, *II R 3* are not assigned, they are set to 1.
- A is limited by the minimum *L* **5** *P* and maximum *H* **5** *P* parameters.
- For multiplication, the signal on *NR2* or *NR3* is interpreted as a %. 100% corresponds to the maximum value of the corresponding input. If *NR2* or *NR3* is sent via the communication bus or graphic display terminal, an *NFr* multiplication variable, page <u>286</u> must be sent via the bus or graphic display terminal.
- Reversal of the direction of operation in the event of a negative result can be inhibited (see [RV Inhibition] (5 , n) page <u>154</u>).

Code	Name / Description	Adjustment range	Factory setting			
Funt	[APPLICATION FUNCT.] (continued)					
o A	[REF. OPERATIONS]					
	Reference = (Fr1 or Fr1b + SA2 + SA3 - dA2 - dA3) x MA2 x MA3. <b>Note:</b> This function cannot be used with certain other functions. Fo	0 10				
5 A 2	[Summing ref. 2]		[No] ( n			
	Selection of a reference to be added to [Ref.1 channel] (F r I) or	[Ref.1B channel] (F r	ь).			
A I I A I 2 A I 3 L C C N d b C A n E E P , A , u 2 A , u 2 	[No] ( $n a$ ): Not assigned [AI1] ( $R I$ ): Analog input A1 [AI2] ( $R I 2$ ): Analog input A2 [AI3] ( $R I 3$ ): Analog input A3 [HMI] ( $L E C$ ): Graphic display terminal or remote display terminal $R$ [Modbus] ( $\Pi d b$ ): Integrated Modbus [CANopen] ( $E R n$ ): Integrated CANopen® [Com. card] ( $n E t$ ): Communication option board source [RP] ( $P I$ ): Motor voltage [AI virtual 1] ( $R I u I$ ): Virtual analog input 1 with the jog dial [AI virtual 2] ( $R I u I$ ): Virtual analog input 2 by the communication [OA01] ( $a R I I$ ): Function blocks: Analog Output 01 					
583	[Summing ref. 3]		[No] (n a)			
	Selection of a reference to be added to [ <b>Ref.1 channel</b> ] ( <i>F</i> – <i>I</i> ) or Identical to [ <b>Summing ref. 2</b> ] (5 <i>R 2</i> ) page <u>168</u> .	[Ref.1B channel] (F r )	<b>b</b> ).			
6 A 2	[Subtract. ref. 2]		[No] (n @)			
	Selection of a reference to be subtracted from <b>[Ref.1 channel]</b> ( <i>F</i> a Identical to <b>[Summing ref. 2]</b> (5 R 2) page <u>168</u> .	<ul> <li>I) or [Ref.1B channel]</li> </ul>	(Fr Ib).			

DRI- > CONF > FULL > FUN- > OAI-

Code	Name / Description	Adjustment range	Factory setting
d R J	[Subtract. ref. 3]		[No] ( ח ם )
	Selection of a reference to be subtracted from [Ref.1 chan Identical to [Summing ref. 2] (5 R 2) page <u>168</u> .	nnel] (Fr I) or [Ref.1B channel] (F	г 16).
П Я 2	[Multiplier ref. 2]		[No] (n a)
	Selection of a multiplier reference [Ref.1 channel] ( <i>F</i> r / Identical to [Summing ref. 2] (5 F 2) page <u>168</u> . This parameter is incompatible with the PID regulator, [No	, <b>-</b>	
ПЯЭ	[Multiplier ref. 3]		[No] (n a)
	Selection of a multiplier reference [Ref.1 channel] ( <i>F</i> r / I Identical to [Summing ref. 2] (5 <i>F</i> 2) page <u>168</u> . This parameter is incompatible with the PID regulator, [No		

# RAMP

Code	Name / Description	Adjustment range	Factory setting
Funt	[APPLICATION FUNCT.] (continued)		
rPt-	[RAMP]		
r P E	[Ramp type]		[Linear] (L in)
L in 5 0 C u 5	[Linear] (L , r n) [S ramp] (5) [U ramp] (u) [Customized] (L u 5)		L
0	S ramps f(Hz) = f(Hz) = f(Hz) The rounding coeffit t1 = 0.6 set ramp tint t2 = 0.4 set ramp tint t3 = 1.4 set ramp tint U ramps f(Hz) = f(Hz) The rounding coeffit t1 = 0.5 set ramp tint t2 = 0.4 set ramp tint t3 = 1.4 set ramp tint t1 = 0.5 set ramp tint t1 = 0.5 set ramp tint t1 = 0.5 set ramp tint t2 = 1.0 set ramp tint t1 = 0.5 set ramp tint	ne (linear) ne (round) ne cient is fixed, ne (linear)	
	Customized ramps f(Hz) FrS f(Hz) f(H	i 0 to 100% i 0 to (100% - tA1) i 0 to 100%	
105	[Ramp increment]		<b>[0,1]</b> ( <i>D</i> . <i>I</i> )
(1) (1) (1)	This parameter is valid for [Acceleration] ( <i>R L L</i> ), [Dece [Deceleration 2] ( <i>d E 2</i> ). [0,01]: Ramp up to 99.99 seconds [0,1]: Ramp up to 999.9 seconds [1]: Ramp up to 6,000 seconds	leration] ( <i>d E [</i> ), [Acceleration 2	] ( <i>R C 2</i> ) and
A C C	[Acceleration]	0.00 to 6,000 s (2)	3.0 s
(1)	Time to accelerate from 0 to the <b>[Rated motor freq.]</b> ( <i>F</i> parameter must be set according to the possibility of the		ty in ramps, the value of this
d E C	[Deceleration]	0.00 to 6,000 s (2)	3.0 s
(1)	Time to decelerate from the <b>[Rated motor freq.]</b> ( <i>F</i> <b>r 5</b> ) parameter must be set according to the possibility of the		ity in ramps, the value of this
ERI	[Begin Acc round]	0 to 100%	10%
* ()	Rounding of start of acceleration ramp as a % of the [Ac Can be set between 0 and 100%. This parameter can be accessed if the [Ramp type] (r F		<b>2]</b> ( <i>R L 2</i> ) ramp time.

## DRI- > CONF > FULL > FUN- > RPT-

ode	Name / Descriptio	201	Adjustment range	Factory setting
E A 2	[End Acc roun	nd]	0 to 100%	10%
* ()	Can be set betwee	n 0 and (100% - <mark>[Begin Acc r</mark>	the [Acceleration] ( $\mathcal{R} \ \mathcal{L}$ ) or [Acceleration] bund] ( $\mathcal{L} \ \mathcal{R}$ 1)). be] ( $\mathcal{r} \ \mathcal{P} \ \mathcal{L}$ ) is [Customized] ( $\mathcal{L} \ \mathcal{u} \ 5$ ).	ation 2] (月口己) ramp time.
(1)			0.1	400/
ER3	[Begin Dec ro		0 to 100%	10%
★ () (1)	Can be set betwee	n 0 and 100%.	the [Deceleration] ( $d \in L$ ) or [Deceler be] ( $r P E$ ) is [Customized] ( $L u 5$ ).	ration 2] ( <i>d</i> E <i>d</i> ) ramp time.
<u> </u>	[End Dec roun	ndl	0 to 100%	10%
*	-		he [Deceleration] (d E C) or [Deceler	ation 21 ( d E 2) ramp time
<b>(1</b> )		n 0 and (100% - <mark>[Begin Dec ro</mark> n n be accessed if the <b>[Ramp typ</b>	נר ק נו א ש)). pe] (ר ף ב ) is [Customized] (ב ש 5).	
Frt	[Ramp 2 thres	hold]	0 to 599 Hz according	to rating 0 Hz
		er than [Ramp 2 threshold] (F		ates the function) and the output
			r と). Ramp switch ass.] (r P 5) switching Ramp	
	Threshold ramp sw	vitching can be combined with	Ramp switch ass.] ( r P 5) switching	
	Threshold ramp sw	vitching can be combined with	Ramp switch ass.] (r P 5) switching Ramp	
	Threshold ramp sw LI or bit 0	vitching can be combined with [ Frequency                                     	Ramp switch ass.] (r P 5) switching Ramp ACC, dEC	
	Threshold ramp sw LI or bit 0 0	vitching can be combined with Frequency < Frt > Frt	Ramp switch ass.] (r P 5) switching         Ramp         ACC, dEC         AC2, dE2	
r P 5	Threshold ramp sw LI or bit 0 1 1	vitching can be combined with Frequency < Frt > Frt < Frt > Frt > Frt	Ramp         ACC, dEC         AC2, dE2         AC2, dE2	
	Image: Constraint of the second sec	vitching can be combined with [ Frequency <pre></pre>	Ramp         ACC, dEC         AC2, dE2         AC2, dE2         AC2, dE2	as follows:
	Image: Constraint of the second sec	Frequency         < Frt	Ramp         ACC, dEC         AC2, dE2         AC2, dE2         AC2, dE2	as follows:
, RC2 ★ ()	Threshold ramp sw         Ll or bit         0         1         1         [Ramp switch         [No] (n o): Function         [Lili] (L + I): Logion         [] (): See the ass         [Acceleration I         Time to accelerate         be set according to	Frequency         < Frt	Ramp         ACC, dEC         AC2, dE2         D.00 to 6,000 s (2)         eq.] (F r 5). To have repeatability in ratio	as follows: [No] (n a) 5.0 s amps, the value of this parameter me
R C 2 ★ (1)	Threshold ramp sw         Ll or bit         0         1	Frequency         < Frt	Ramp switch ass.] ( $r P 5$ ) switching         Ramp         ACC, dEC         AC2, dE2         AC2, dE2         AC2, dE2         AC2, dE2         Question (F r 5). To have repeatability in ration.         shold] (F r b) is greater than 0 or if [R	as follows: [No] (n o) 5.0 s amps, the value of this parameter milliamp switch ass.] (r P 5) is assign
C 2 ★ (1) d E 2	Threshold ramp sw         Ll or bit         0         1         1         1         Image: Image switch         [Ramp switch         [No] (n a): Function         [Ll1] (L , I): Logid         [] (]: See the ass         [Acceleration in this parameter car         [Deceleration in this parameter car	Frequency         < Frt	Ramp switch ass.] ( $r P 5$ ) switchingRampACC, dECAC2, dE2AC2, dE2AC2, dE2AC2, dE299.] ( $F r 5$ ). To have repeatability in ration.shold] ( $F r L$ ) is greater than 0 or if [R0.00 to 6,000 s (2)	as follows: [No] (n =) 5.0 s amps, the value of this parameter me tamp switch ass.] (r P 5) is assign 5.0 s
R C 2 ★ (1)	Threshold ramp sw         Ll or bit         0         1         1         Image: Image switch         Image switch     <	Frequency         < Frt	Ramp switch ass.] ( $r P 5$ ) switching         Ramp         ACC, dEC         AC2, dE2         AC2, dE2         AC2, dE2         AC2, dE2         Question (F r 5). To have repeatability in ration.         shold] (F r b) is greater than 0 or if [R	as follows: [No] (n a) 5.0 s amps, the value of this parameter me tamp switch ass.] (r P 5) is assign 5.0 s is, the value of this parameter must

DRI- > CONF > FULL > FUN- > RPT-

Code	Name / Description	Adjustment range	Factory setting						
brA	[Dec ramp adapt.]		[Yes] ( 9 E 5)						
	ΝΟΤ	ICE							
	DAMAGE TO THE MOTOR								
	• Only set this parameter to <b>[Yes]</b> ( <i>YE</i> 5) or <b>[No]</b> ( <i>n</i> <b>D</b> ) if the connected motor is a permanent magnet synchronous motor.								
	Other settings demagnetize permanent magnet synchronous motors. Failure to follow these instructions can result in equipment damage.								
	Activating this function automatically adapts the deceleration ramp, if this has been set at a too low value according to the inertia of the load, which can cause an overvoltage detected fault. [Dec ramp adapt.] ( $b \ r \ R$ ) is forced to [No] ( $n \ c$ ) if the brake logic control [Brake assignment] ( $b \ L \ C$ ) is assigned (page <u>194</u> ). The function is incompatible with applications requiring:								
	- Positioning on a ramp. - The use of a braking resistor (the resistor would not operate correctly).								
	[No] ( n o): Function inactive								
4 YES	[Yes] ( <i>YE</i> 5): Function active, for applications that do not require strong deceleration The following selections appear depending on the rating of the drive and [Motor control type] ( <i>L L</i> ) page <u>105</u> . They enable stronger deceleration to be obtained than with [Yes] ( <i>Y E</i> 5). Use comparative testing to determine your selection. [High torq. A] ( <i>d Y n R</i> ): Addition of a constant current flow component.								
	When [Dec ramp adapt.] ( $b r R$ ) is configured on [High torq. x] ( $d y R X$ ), the dynamic performances for braking are improved by the addition of a current flow component. The aim is to increase the iron loss and magnetic energy stored in the motor.								
	(1) The parameter can also be accessed in the <b>[SETTINGS</b> (2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s a	• • •	nent](,,,,)page <u>170</u> .						
📩 📩 also	se parameters only appear if the corresponding function has b be accessed and adjusted from within the configuration menu nese menus, on the pages indicated, to aid programming.		-						

Parameter that can be modified during operation or when stopped.

()

DRI- > CONF > FULL > FUN- > STT-

# **STOP CONFIGURATION**

	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
SEE -	[STOP CONFIGURATION]		
	Note: Some types of stops cannot be used with all other functions. Follow the instructions on page <u>163</u> .		
5 E E	[Type of stop]		[Ramp stop] ( г П Р)
	Stop mode on disappearance of the run command or a <b>Note:</b> If the "brake logic" function on page <u>194</u> has bee only ramp type stops may be configured.		<b>t]</b> ( <i>L L</i> 5) page <u>95</u> or <u>213</u> is not 0,
- N P F 5 E n 5 E d C i	[Fast stop] (F 5 L): Fast stop [Freewheel] (n 5 L): Freewheel stop	y if [Motor control type](	ge <u>105</u> is not set to
FFE	[Freewheel stop Thd.]	0.2 to 599 Hz	0.2 Hz
★ () (1)	Speed threshold below which the motor will switch to fr This parameter supports switching from a ramp stop or This parameter can be accessed if [Type of stop] (5 E [Brake assignment] (6 L [) and [Auto DC injection]	a fast stop to a freewheel stop below <i>L</i> ) is set to <b>[Fast stop]</b> ( <i>F</i> 5 <i>L</i> ) or <b>[</b>	
 5£	[Freewheel stop ass.]		[No] ( ח ם )
	The stop is activated when the input or the bit changes t motor will only restart if [2/3 wire control] ( $E \ C \ D$ ) page [Level] ( $L \ E \ D$ ) or [Fwd priority] ( $P \ F \ D$ ). If not, a new	e <u>85</u> is set to <b>[2 wire]</b> ( <b>2 L</b> ) and if <b>[2</b>	
	[No] ( n p): Not assigned [Ll1] (L , I): Logical input Ll1 [] (): See the assignment conditions on page <u>153</u>		
	[LI1] (L / I): Logical input LI1		[No] ( n a )
L i I 	[LI1] ( <i>L i I</i> ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u>	<pre>till active, the motor will only restart if 2 wire type] (E C E) is set to [Level]</pre>	( , o) at 0). [2/3 wire (L E L ) or [Fwd priority] (PF o).
L , I  F 5 E L , I	[LI1] ( $L \ i$ ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u> [Fast stop assign.] The stop is activated when the input changes to 0 or th If the input returns to state 1 and the run command is s control] ( $L \ L \ c$ ) page <u>85</u> is set to [2 wire] ( $L \ c$ ) and if If not, a new run command must be sent.	till active, the motor will only restart if 2 wire type] ( <i>E C E</i> ) is set to [Level] unctions. Follow the instructions on p parate] (SEP) then [CD11] (Cd11) up	( , , , ) at 0). [2/3 wire ( <i>L E L</i> ) or [Fwd priority] ( <i>P F</i> , ). age <u>163</u> . to [CD15] (Cd15), [C111] (C111)
L , I  F 5 E L , I	[LI1] ( $L + I$ ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u> [Fast stop assign.] The stop is activated when the input changes to 0 or th If the input returns to state 1 and the run command is s control] ( $E \ E \ D$ ) page <u>85</u> is set to [2 wire] ( $E \ D \ D$ ) and if If not, a new run command must be sent. Note: This function cannot be used with certain other ful [No] ( $n \ D$ ): Not assigned [L11] ( $L + I$ ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u> (If [Profile] (CHCF) is set to [Not Separ.] (SIM) or [Sep	till active, the motor will only restart if 2 wire type] ( <i>E C E</i> ) is set to [Level] unctions. Follow the instructions on p parate] (SEP) then [CD11] (Cd11) up	( , o) at 0). [2/3 wire ( <i>L E L</i> ) or [Fwd priority] ( <i>P F o</i> ). age <u>163</u> . to [CD15] (Cd15), [C111] (C111)

Parameters de	escribed in this page can be accessed by:	D	RI- > CONF > FULL > FUN- > STT		
Code	Name / Description	Adjustment range	Factory setting		
d C ,	[DC injection assign.]		[No] ( n a )		
	<ul> <li>UNINTENDED MOVEMENT</li> <li>Do not use DC injection to generate holding torque when the motor is at a standstill.</li> <li>Use a holding brake to keep the motor in the standstill position.</li> <li>Failure to follow these instructions can result in death, serious injury, or equipment damage.</li> </ul>				
	DC injection braking is initiated when the assigned If the input returns to state 0 and the run command is set to [2 wire] ( $2L$ ) and if [2 wire type] ( $LLL$ ) must be sent. Note: This function cannot be used with certain of	is still active, the motor will only restart if is set to [Level] (L E L) or [Fwd priority] (	( <i>P</i> F). If not, a new run command		
Lil	[No] (no): Not assigned [L11] (L / I): Logical input L11 [] (): See the assignment conditions on page <u>1</u>	<u>53</u>			
ı d C	[DC inject. level 1]	0.1 to 1.41 ln (2)	0.64 ln (2)		
*	NOTICE				
<b>(</b> 1) (3)	e applied in terms of amount				
	Level of DC injection braking current activated via This parameter can be accessed if <b>[Type of stop]</b> is not <b>[No]</b> ( <i>n</i> <b>p</b> ).		r if [DC injection assign.] ( <i>d</i> [ _ ı)		
Ed i	[DC injection time 1]	0.1 to 30 s	0.5 s		
		NOTICE			
★ <b>()</b> (1) (3)	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
(1)(3)	Maximum current injection time [DC inject. level ? [DC inject. level 2] ( $, d [ 2 ]$ ). This parameter can be accessed if [Type of stop] is not set to [No] ( $n a$ ).				

#### DRI- > CONF > FULL > FUN- > STT-

Code	e Name / Description Adjustment range Factory			
, d C 2	[DC inject. level 2]	0.1 ln (2) to [DC inject. level 1] ( , d [)	0.5 ln (2)	
★ 【) (1) (3)	NOTICE         OVERHEATING AND DAMAGE TO THE MOTOR         Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor.         Failure to follow these instructions can result in equipment damage.			
	Injection current activated by logic input or selected as stop morelapsed. This parameter can be accessed if <b>[Type of stop]</b> (5 <i>b b</i> ) is set is not set to <b>[No]</b> ( <i>n a</i> ).		• • • •	
EdE	[DC injection time 2]	0.1 to 30 s	0.5 s	
★ () (1) (3)	NOT OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the and time in order to avoid overheating and damage to Failure to follow these instructions can result in ec	the motor.	blied in terms of amount	
dotd	[Dis. operat opt code]		[Ramp stop] ( - П P)	
	Disable operation stop mode.			
n S E r N P	[Freewheel] ( $n 5 E$ ): Disable drive function [Ramp stop] ( $r \Pi P$ ): Ramp stop then disable drive function			

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

(2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.

(3) These settings are independent of the [AUTO DC INJECTION] (R d L -) function.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > ADC-

# AUTO DC INJECTION

Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continu	Jed)		
AdC -	[AUTO DC INJECTION]			
A 9 C	[Auto DC injection]		[Yes] ( <i>4E</i> 5)	
		A A DANGER		
	HAZARD OF ELECTRIC SHOCK, EXP	LOSION OR ARC FLASH		
	If the parameter [Auto DC injection] (R	<i>L</i> ) is set to <b>[Continuous]</b> ( <i>L L</i> ), DC in	jection is always active, even	
0	<ul> <li>if the motor does not run.</li> <li>Verify that using this setting does not</li> <li>Failure to follow these instructions with the set instruction is setting the set instruction is set in the set in the set instruction is set in the set in t</li></ul>			
🚡 2 s				
		<b>A</b> WARNING		
	UNINTENDED MOVEMENT			
		olding torque when the motor is at a st	andstill.	
	• Use a holding brake to keep the motor Failure to follow these instructions ca	•	equipment damage.	
	Automatic current injection on stopping (at the e	· • • •		
	Note: There is an interlock between this function to [Continuous] ( <i>F [ L ]</i> , [Auto DC injection]		flotor fluxing] (F L u) is set	
	Note: [Auto DC injection] (R d [) is set to [No		page <u>105</u> is set to	
	[Sync. mot.] (5 4 n). [Auto DC injection] (R d L) is forced to [No] (A	ס ס ) when <b>[Brake assignment]</b> ( <i>L L</i> ) pag	و <u>194</u> is not set to <b>[No]</b> ( م م).	
	This parameter gives rise to the injection of curr running.	ent even if a run command has not been sen	It. It can be accessed with the drive	
	[No] ( , , ): No injection			
9 E 9	[Yes] ( <i>J E</i> 5): Adjustable injection time	11		
	<ul> <li>[Continuous] (<i>L L</i>): Continuous standstill injec</li> <li>[Auto DC inj. level 1]</li> </ul>	0 to 1.2 ln (2)	0.7 ln (2)	
382 1		0.00 1.2 111 (2)	0.7 m (2)	
		NOTICE		
*	OVERHEATING AND DAMAGE TO TH	EMOTOR		
()	Verify that the connected motor is properly rated for the DC injection current to be applied in terms of a			
(1)	and time in order to avoid overheating and damage to the motor.			
	Level of standstill DC injection current [Auto DC	C injection] (A d C) is not [No] (n a).		
EdCI	[Auto DC inj. time 1]	0.1 to 30 s	0.5 s	
		NOTICE		
*	OVERHEATING AND DAMAGE TO TH			
	Verify that the connected motor is proper and time in order to avoid overheating a		e applied in terms of amount	
0	Failure to follow these instructions ca			
(1)				
	Standstill injection time. This parameter can be If [Motor control type] ( <i>L E b</i> ) page <u>105</u> is set time.			

DRI- > CONF > FULL > FUN- > ADC-

Code	Name / De	scription		Adjustment range	Factory setting	
5 8 6 2	[Auto D	C inj. leve	əl 2]	0 to 1.2 ln (2)	0.5 ln (2)	
★ () (1)	Verify tl and tim	hat the con e in order f	AND DAMAGE TO THE MOTO	for the DC injection current to be ge to the motor.	applied in terms of amount	
	2nd level of standstill DC injection current. This parameter can be accessed if [Auto DC injection] ( $P d L$ ) is not [No] ( $p a$ ).					
F9C5	[Auto D	C inj. tim	e 2]	0 to 30 s	0 s	
				NOTICE		
	Verify tl and tim <b>Failure</b> 2nd stands	nat the con e in order f <b>to follow</b> still injection	to avoid overheating and dama these instructions can result	for the DC injection current to be ge to the motor. t <b>in equipment damage.</b>	applied in terms of amount	
* ()	YES	x	SdC1 - SdC2 -			
(1)	Ct	≠ 0	SdC1 SdC2	tdC1 + tdC2 t		
	Ct	= 0	SdC1	t		
	Run cor	nmand		t		
			• — — — — — — — — — — — — — — — — — — —	ť		

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

(2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

# JOG

Code	Name / Description		Adjustment range	Factory setting
Fun-	[APPLICATION FUNC	T.] (continued)		
J o G -	[JOG]			
	Note: This function cannot be	used with certain othe	r functions. Follow the instructions	s on page <u>163</u> .
JoG	[JOG]			[LI3] ( <i>L</i> , <i>3</i> )
	Pulse operation. The JOG function is only active The function is active when the Example: 2-wire control operat	assigned input or bit	nel and the reference channels a is at 1.	re on the terminals.
	Motor	Ramp	Ramp	
	frequency	DEC/DE2	forced to 0.1 s	
	Reference			
	JGF reference	/ -\		
	0			<b>_</b> _►
	JGF reference			
	LI (JOG)			
	· · · · ·			
	0		JGt	
	Forward 1		<b>←</b>	
	0			
	Reverse A			
	0			<b>→_</b> _►
L .		ot Separ.] (SIM) or [S		11) up to <b>[CD15]</b> (Cd15), <b>[C111]</b> (C11 <b>15]</b> (C315) are not available).
JGF	[Jog frequency]		0 to 10 Hz	10 Hz
*	Reference in jog operation.			ļ
	This parameter can be accessed	ed if <b>[JOG]</b> ( <b>J D L</b> ) is	not set to [No] ( ח ם ).	
()				
(1)				

#### DRI- > CONF > FULL > FUN- >JOG-

Code	Name / Description	Adjustment range	Factory setting	
JGE	[Jog delay]	0 to 2.0 s	0.5 s	
*	Anti-repeat delay between 2 consecutive jog operations. This parameter can be accessed if <b>[JOG]</b> ( <i>J</i> <b>c G</b> ) is not set to <b>[No]</b> ( <b>c c</b> ).			
()		• • • • • • • • • • • • • • • • • • • •		
(1)				

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

*	These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.
0	Parameter that can be modified during operation or when stopped.

🚡 2 s

To change the assignment of this parameter, press the ENT key for 2 s.

# **PRESET SPEEDS**

2, 4, 8 or 16 speeds can be preset, requiring 1, 2, 3 or 4 logic inputs respectively.

### Note:

You must configure 2 and 4 speeds in order to obtain 4 speeds. You must configure 2, 4 and 8 speeds in order to obtain 8 speeds. You must configure 2, 4, 8, and 16 speeds in order to obtain 16 speeds.

16 speeds LI (PS16)	8 speeds LI (PS8)	4 speeds LI (PS4)	2 speeds LI (PS2)	Speed reference
0	0	0	0	Reference (1)
0	0	0	1	SP2
0	0	1	0	SP3
0	0	1	1	SP4
0	1	0	0	SP5
0	1	0	1	SP6
0	1	1	0	SP7
0	1	1	1	SP8
1	0	0	0	SP9
1	0	0	1	SP10
1	0	1	0	SP11
1	0	1	1	SP12
1	1	0	0	SP13
1	1	0	1	SP14
1	1	1	0	SP15
1	1	1	1	SP16

(1) See the diagram on page 147: Reference 1 = (SP1).

DRI- > CONF > FULL > FUN- >PSS-

Code	Name / Description	Adjustment range	Factory setting		
Funt	[APPLICATION FUNCT.] (continued)				
P55-	[PRESET SPEEDS]				
	Note: This function cannot be used with certain other functions. Follow the instructions on page <u>163</u>				
P 5 2	[2 preset speeds]		[No] ( n		
n 0	[No] ( n p): Not assigned [Ll1] (L r l): Logical input Ll1				
	[] (): See the assignment conditions on page <u>153</u>				
P 5 4	[4 preset speeds]		[No] ( n a )		
	Identical to <b>[2 preset speeds]</b> ( <i>P</i> <b>5</b> <i>2</i> ) page <u>181</u> . To obtain 4 speeds, you must also configure 2 speeds.				
P 5 8	[8 preset speeds]		[No] ( ח ם )		
	Identical to <b>[2 preset speeds]</b> ( <i>P</i> <b>5</b> <i>2</i> ) page <u>181</u> . To obtain 8 speeds, you must also configure 2 and 4 speeds.				
P 5 16	[16 preset speeds]		[No] ( n a )		
	Identical to <b>[2 preset speeds]</b> ( <i>P</i> <b>5</b> <i>2</i> ) page <u>181</u> . To obtain 16 speeds, you must also configure 2, 4 and 8 speeds.				
5 P 2	[Preset speed 2]	0 to 599 Hz	10 Hz		
*	Preset speed 2. See the Combination table for preset PID references page	2 <u>06</u> .			
0					
(1)					
5 P 3	[Preset speed 3]	0 to 599 Hz	15 Hz		
*	Preset speed 3. See the Combination table for preset PID references page	<u>206</u> .			
()					
(1)					
5 <i>P</i> 4	[Preset speed 4]	0 to 599 Hz	20 Hz		
*	Preset speed 4. See the Combination table for preset PID references page				
		<u> </u>			
()					
(1)		1			
5 P 5	[Preset speed 5]	0 to 599 Hz	25 Hz		
*	Preset speed 5. See the Combination table for preset PID references page	e <u>206</u> .			
()					
(1)					
5 P 6	[Preset speed 6]	0 to 599 Hz	30 Hz		
*	Preset speed 6. See the Combination table for preset PID references page	e <u>206</u> .			
0					
(1)					
5 P 7	[Preset speed 7]	0 to 599 Hz	35 Hz		
*	Preset speed 7. See the Combination table for preset PID references page				
		—			
()					
(1)					

DRI- > CONF > FULL > FUN- > PSS-

Code	Name / Description	Adjustment range	Factory setting
5 P 8	[Preset speed 8]	0 to 599 Hz	40 Hz
*	Preset speed 8. See the Combination table for preset PID references pag	e <u>206</u> .	
0			
(1)			
5 <i>P</i> 9	[Preset speed 9]	0 to 599 Hz	45 Hz
*	Preset speed 9. See the Combination table for preset PID references pag	e <u>206</u> .	
()			
(1)	(Decoder and 40)	0 to 599 Hz	50 Hz
SPIO	[Preset speed 10] Preset aread 10. See the Combination table for preset PID references pe		
*	Preset speed 10. See the Combination table for preset PID references pa	ge <u>200</u> .	
()			
(1)			
5 P I I	[Preset speed 11]	0 to 599 Hz	55 Hz
*	Preset speed 11. See the Combination table for preset PID references pa	ge <u>206</u> .	
()			
(1)			
5 P 1 2	[Preset speed 12]	0 to 599 Hz	60 Hz
*	Preset speed 12. See the Combination table for preset PID references pa	ge <u>206</u> .	
0			
(1) 5 P I 3	[Preset speed 13]	0 to 599 Hz	70 Hz
*	Preset speed 13. See the Combination table for preset PID references pa		
	· · · · · · · · · · · · · · · · · · ·	<u> </u>	
0			
(1)			
5 P   4	[Preset speed 14]	0 to 599 Hz	80 Hz
*	Preset speed 14. See the Combination table for preset PID references pa	ge <u>206</u> .	
0			
(1)			
5 P I S	[Preset speed 15]	0 to 599 Hz	90 Hz
*	Preset speed 15. See the Combination table for preset PID references pa	ge <u>206</u> .	
0			
(1)			
SP 16	[Preset speed 16]	0 to 599 Hz	100 Hz
*	Preset speed 16.		
	The appearance of these <b>[Preset speed x]</b> ( $5 Px$ ) parameters is determine See the Combination table for preset PID references page <u>206</u> .	ned by the number of sp	eeds configured.
O O	Coo the combination table for preset FID references page 200.		
(1)			

 $\star$ 

()

# Parameters described in this page can be accessed by:

DRI- > CONF > FULL > FUN- > PSS-

Code	Name / Description	Adjustment range	Factory setting
JPF	[Skip Frequency]	0 to 599 Hz	0 Hz
0	Skip frequency. This parameter helps to prevent prolonged operation within This function can be used to help to prevent a critical speed, which would o to 0 renders it inactive.		<b>.</b>
JF 2	[Skip Frequency 2]	0 to 599 Hz	0 Hz
0	2nd skip frequency. This parameter helps to prevent prolonged operation frequency. This function can be used to help to prevent a critical speed, w the function to 0 renders it inactive.	, ,	
JF 3	[3rd Skip Frequency]	0 to 599 Hz	0 Hz
0	3rd skip frequency. This parameter helps to prevent prolonged operation frequency. This function can be used to help to prevent a critical speed, we the function to 0 renders it inactive.		-
J F H	[Skip.Freq.Hysteresis]	0.1 to 10 Hz	1 Hz
<b>*</b>	This parameter is visible if at least one skip frequency [Skip Frequency] [3rd Skip Frequency] ( $JF$ =) is different from 0. Skip frequency range: between ( $JPF - JFH$ ) and ( $JPF + JFH$ ), for This adjustment is common to the 3 frequencies ( $JPF$ , $JF2$ , $JF3$ ).		cy 2] ( <i>J F ∂</i> ) or

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

# +/- SPEED

Two types of operations are available:

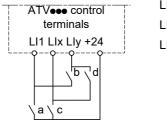
- Use of single action keys: Two logic inputs are required in addition to the operating direction(s). The input assigned to the "+ speed" command increases the speed, the input assigned to the "- speed" command decreases the speed.
- Use of double action keys: Only one logic input assigned to "+ speed" is required.

+/- speed with double-press buttons:

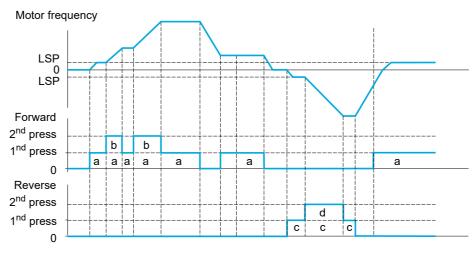
Description: 1 button pressed twice (2 steps) for each direction of rotation. A contact closes each time the button is pressed.

	Released (- speed)	1st press (speed maintained)	2nd press (faster)
Forward button	-	а	a and b
Reverse button	-	с	c and d

Example of wiring:



LI1: Forward LIx: Reverse LIy: + speed



Do not use this +/-speed type with 3-wire control.

Whichever type of operation is selected, the max. speed is set by [High speed] ( $H \leq P$ ) (see page <u>87</u>).

# Note:

If the reference is switched via [Ref. 2 switching] (r F L) (see page <u>155</u>) from any one reference channel to another reference channel with "+/- speed", the value of reference [Output frequency] (r F r) (after ramp) may be copied at the same time in accordance with the [Copy channel 1 --> 2] ( $L \circ P$ ) parameter (see page <u>156</u>).

If the reference is switched via [Ref. 2 switching] (r F L) (see page <u>155</u>) from one reference channel to any other reference channel with "+/- speed", the value of reference [Output frequency] (r F r) (after ramp) is copied at the same time.

This helps to prevent the speed being incorrectly reset to zero when switching takes place.

DRI- > CONF > FULL > FUN- > UPD-

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
uPd-	[+/- SPEED]		
	This function can be accessed if reference channel [Ref.2 channel] ( Note: This function cannot be used with certain other functions. Follo		
<u>ы 5 Р</u>	[+ speed assignment]		[No] (n @)
	Function active if the assigned input or bit is at 1.		L
Lil	<ul> <li>[No] (n a): Not assigned</li> <li>[L11] (L i 1): Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u></li> <li>(If [Profile] (CHCF) is set to [Not Separ.] (SIM) or [Separate] (SEP) up to [C115] (C115), [C211] (C211) up to [C215] (C215) and [C311]</li> </ul>		
dSP	[-Speed assignment]		[No] ( n
	Assignment identical to [+ speed assignment] ( u 5 P).		
	Assignment identical to [+ speed assignment] ( u 5 P).		
	Assignment identical to [+ speed assignment] ( $\_$ 5 P). Function active if the assigned input or bit is at 1.		
567			[No] (n a)
	Function active if the assigned input or bit is at 1.	to EEPROM).	[No] (n a)
Str ★	Function active if the assigned input or bit is at 1.         [Reference saved]         Associated with the "+/- speed" function, this parameter can be used         When the run commands disappear (saved to RAM).         When the supply mains or the run commands disappear (saved	to EEPROM). e last reference saved.	

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

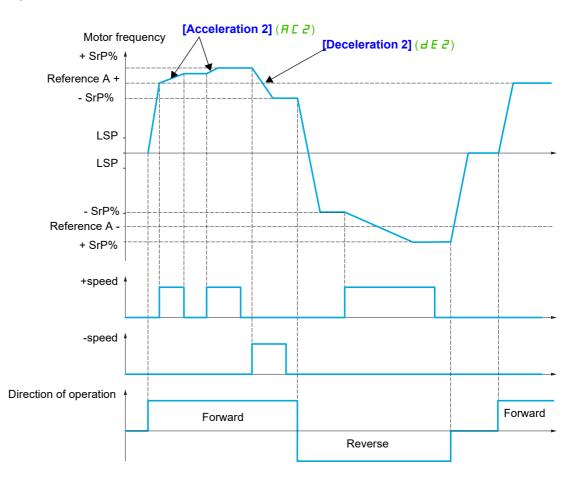
 $\star$ 

# +/- SPEED AROUND A REFERENCE

The reference is given by **[Ref.1 channel]** (F r I) or **[Ref.1B channel]** (F r Ib) with summing/subtraction/multiplication functions and preset speeds if relevant (see the diagram on page <u>147</u>). For improved clarity, we will call this reference A. The action of the +speed and -speed keys can be set as a % of this reference A. On stopping, the reference (A +/- speed) is not saved, so the drive restarts with reference A+ only.

The maximum total reference is limited by [High speed]  $(H \ 5 P)$  and the minimum reference by [Low speed]  $(L \ 5 P)$ , see page <u>87</u>.

Example of 2-wire control:



DRI- > CONF > FULL > FUN- > SRE-

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
SrE-	[+/-SPEED AROUND REF.]		
	The function can be accessed for reference channel [Ref.1 channel] (F r Note: This function cannot be used with certain other functions. Follow the i		
u 5 i	[+ speed assignment]		[No] (n @)
	<b>No]</b> ( <i>n</i> <b>b</b> ): Not assigned [Ll1] ( <i>L</i> , <i>I</i> ): Logical input Ll1 [] (): See the assignment conditions on page <u>153</u>		
d S i	[-Speed assignment]		[No] (n @)
	See the assignment conditions on page <u>153</u> Assignment identical to <b>[+ speed assignment]</b> ( <u>u</u> 5 <u>r</u> ).		
	Function active if the assigned input or bit is at 1.		
Sr P	[+/-Speed limitation]	0 to 50%	10%
* ()	This parameter limits the variation range with +/- speed as a % of the reference. The ramps used in this function are [Acceleration 2] ( $\mathcal{A} \subset \mathcal{C}$ ) and [Deceleration 2] ( $\mathcal{A} \subset \mathcal{C}$ ). This parameter can be accessed if +/- speed is assigned.		
8 C 2	[Acceleration 2]	0.00 to 6,000 s (2)	5.00 s
★ () (1)	Time to accelerate from 0 to the [Rated motor freq.] ( $F r 5$ ). To have repeatability in ramps, the value of this parameter must be set according to the possibility of the application. This parameter can be accessed if [+/- speed] ( $E \sqcup d$ ) is assigned.		
<u> </u>	[Deceleration 2]	0.00 to 6,000 s (2)	5.00 s
*	Time to decelerate from the <b>[Rated motor freq.]</b> ( <i>F</i> – 5) to 0. To have repe be set according to the possibility of the application.	atability in ramps, the va	lue of this parameter must
0	This parameter can be accessed if [+/- speed] ( <i>L</i> u d) is assigned.		
(1)			

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

(2) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s according to [Ramp increment] ( 10 r) page 170.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



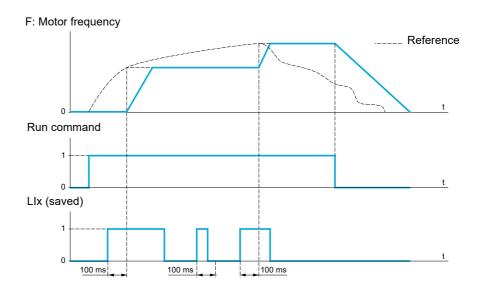
#### DRI- > CONF > FULL > FUN- > SPM-

#### Parameters described in this page can be accessed by:

#### **REFERENCE MEMORIZING**

Saving a speed reference value using a logic input command lasting longer than 0.1 s.

- This function is used to control the speed of several drives alternately via a single analog reference and one logic input for each drive.
- It is also used to confirm a line reference (communication bus or network) on several drives via a logic input. This allows movements to be synchronized by getting rid of variations when the reference is set.
- The reference is acquired 100 ms after the rising edge of the request. A new reference is not then acquired until a new request is made.



Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
5 <i>P П</i> -	[MEMO REFERENCE]		
5 <i>P П</i>	[Ref. memo ass.]		[No] ( ם ח )
	Assignment to a logic input. Function active if the assigned input is at active state.		
	[No] ( ,  , ): Function inactive [Ll1] ( L , I): Logical input Ll1		
L R , I L R , 2 a L O I 	[LI6] (L , 5): Logical input LI6         [LA11] (L R , I): Logical input Al1         [LA12] (L R , 2): Logical input Al2         [OL01] (a L B I): Function blocks: Logical Output 01		
oL 10	[OL10] ( _ L / D): Function blocks: Logical Output 10		

DRI- > CONF > FULL > FUN- > FLI-

# FLUXING BY LOGIC INPUT

Code	Name / Description	Adjustment range	Factory setting				
Fun-	[APPLICATION FUNCT.] (continu	ued)					
FL / -	[FLUXING BY LI]						
FLu	[Motor fluxing]		[No] (F n a)				
	HAZARD OF ELECTRIC SHOCK, EX						
<b>_</b>	If the parameter [Motor fluxing] (F L L	If the parameter [Motor fluxing] (F L u) is set to [Continuous] (F L E), fluxing is always active, even if the					
*		<ul><li>motor does not run.</li><li>Verify that using this setting does not result in unsafe conditions.</li></ul>					
()	Failure to follow these instructions						
(1)							
🟅 2 s		NOTICE					
A 28	OVERHEATING AND DAMAGE TO T	HE MOTOR					
		Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount					
	and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.						
	[Not cont.] (F n [): Non-continuous mode						
FC	<i>L E</i> [Continuous] ( <i>F L L</i> ): Continuous mode. This option is not possible if [Auto DC injection] ( <i>R d L</i> ) page <u>176</u> is [Yes] ( <i>Y E</i> 5) or if [Type of stop] (5 <i>L L</i> ) page						
Fo	[Freewheel] (n 5 L). [No] (F n p): Function inactive						
	In order to obtain rapid high torque on startup, magnetic flux needs to already have been established in the motor. In [Continuous] ( <i>F L</i> ) mode, the drive automatically builds up flux when it is powered up.						
	In <b>[Not cont.]</b> ( $F \cap L$ ) mode, fluxing occurs when the motor starts up. The flux current is greater than <b>[Rated mot. current]</b> ( $\cap L \cap$ ) (configured rated motor current) when the flux is established an						
	is then adjusted to the motor magnetizing current.						
	If [Motor control type] ( <i>L E L</i> ) page <u>105</u> is set	t to [Sync. mot.] ( ל ש ה), the [Motor fluxing	( <i>F L </i> ) parameter causes the				
	alignment of the rotor and not the fluxing. If [Brake assignment] ( <i>b L L</i> ) page <u>194</u> is not	[No] ( $\sigma_{R}$ ), the [Motor fluxing] ( $F_{L}$ $\mu$ ) par	ameter has no effect.				
FL i	[Fluxing assignment]		[No] (n ם)				
		NOTICE					
*	OVERHEATING AND DAMAGE TO T	HE MOTOR					
	Verify that the connected motor is properly rated for the flux current to be applied in order to avoid						
	overheating and damage to the motor.						
	Failure to follow these instructions can result in equipment damage.         Assignment is only possible if [Motor fluxing] (F L u) is set to [Not cont.] (F n L).						
	If an LI or a bit is assigned to the motor fluxing command, flux is built up when the assigned input or bit is at 1. If an LI or a bit has not been assigned, or if the assigned LI or bit is at 0 when a run command is sent, fluxing occurs when the						
	motor starts.	assigned Li of bit is at 0 when a run commai	in is sent, nuxing occurs when the				
	[No] (n o): Not assigned						
Li	I [LI1] (L i ]: Logical input LI1 [] (): See the assignment conditions on page	e 153					
		- <u>····</u>					

DRI- > CONF > FULL > FUN- > FLI-

Code	Name / Description	Adjustment range	Factory setting
A S E	[Angle setting type]		[PSIO align.] (P 5)
*	Mode for measuring the phase-shift angle. Visible only if [I [PSI align] (P 5 ) and [PSIO align] (P 5 ) are workin [IPM align] ( , P П R) increase performances depending of	g for all type of synchronous moto	
5РПА Р5, Р5, о	<ul> <li>[IPM align] ( , P ∩ R): Alignment for IPM motor. Alignment mode for Interior-buried Permanent Magnet motor (usually, this ki of motor has a high saliency level). It uses high frequency injection, which is less noisy than standard alignment mode.</li> <li>[SPM align] (5 P ∩ R): Alignment for SPM motor. Mode for Surface-mounted Permanent Magnet motor (usually, this kind of motor has a medium or low saliency level). It uses high frequency injection, which is less noisy than standard alignment mode.</li> <li>[SPM align] (5 P ∩ R): Alignment for SPM motor. Mode for Surface-mounted Permanent Magnet motor (usually, this kind of motor has a medium or low saliency level). It uses high frequency injection, which is less noisy than standard alignment mode.</li> <li>[PSI align] (P 5 ): Pulse signal injection. Standard alignment mode by pulse signal injection.</li> <li>[PSI align] (P 5 ): Pulse signal injection - Optimized. Standard optimized alignment mode by pulse signal injection. The phase-shift angle measurement time is reduced after the first run order or tune operation, even if the drive has been turned of [No align] (n c): No alignment</li> </ul>		
	(1) The parameter can also be accessed in the [SET	TINGS] ( 5 E L - ) menu.	
📩 also	se parameters only appear if the corresponding function be accessed and adjusted from within the configuration lese menus, on the pages indicated, to aid programming	menu for the corresponding func	
() Para	ameter that can be modified during operation or when st	opped.	



To change the assignment of this parameter, press the ENT key for 2 s.

# **BRAKE LOGIC CONTROL**

Used to control an electromagnetic brake by the drive, for horizontal and vertical hoisting applications, and for unbalanced machines.

#### Principle:

- Vertical hoisting movement:

Maintain motor torque in the driving load holding direction during brake opening and closing, in order to hold the load, start smoothly when the brake is released and stop smoothly when the brake is engaged.

- Horizontal movement:

Synchronize brake release with the build-up of torque during startup and brake engage at zero speed on stopping, to help to prevent jolting.

#### Instructions for brake logic control for a vertical hoisting application:

# 

## UNANTICIPATED EQUIPMENT OPERATION

Verify that the selected settings will not result in the loss of control of the load being lifted.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

• [Brake impulse] (*b*, *P*): [Yes] (*JE* 5). Ensure that the direction of rotation FW corresponds to lifting the load.

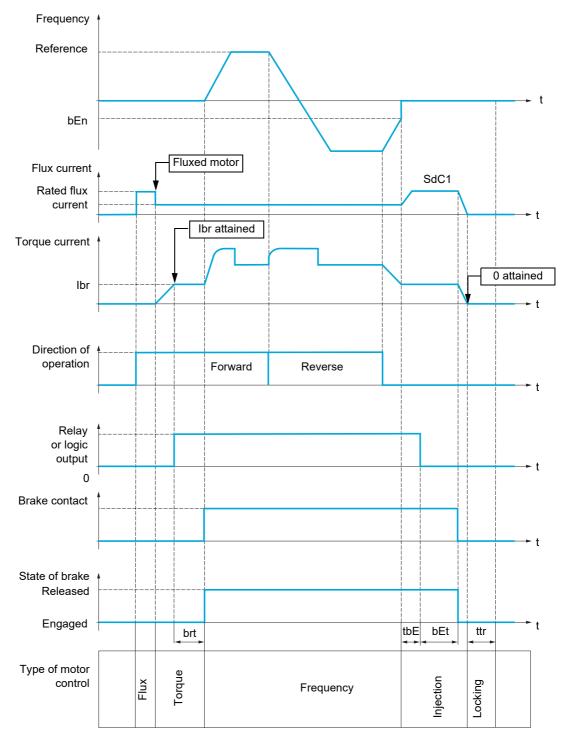
For applications in which the load being lowered is very different from the load being lifted, set  $\mathbf{b} \cdot \mathbf{P} = 2 \cdot \mathbf{b} \cdot \mathbf{r}$  (for example, ascent always with a load and descent always without a load).

- Brake release current ([Brake release I FW] ( , b r) and [Brake release I Rev] ( , r d) if [Brake impulse]
   (b , P) = 2 , b r): Adjust the brake release current to the rated current indicated on the motor. During testing, adjust the brake release current in order to hold the load smoothly.
- Acceleration time: For hoisting applications, it is advisable to set the acceleration ramps to more than 0.5 seconds. Ensure that the drive does not exceed the current limit. The same recommendation applies for deceleration. Reminder: For a hoisting movement, a braking resistor should be used.
- [Brake Release time] (b r L): Set according to the type of brake. It is the time required for the mechanical brake to release.
- [Brake release frequency] (b, r), in open-loop mode only: Leave in [Auto] (R u E o), adjust if necessary.
- [Brake engage frequency] ( b E n): Leave in [Auto] ( R u E o), adjust if necessary.
- [Brake engage time] (*b E b*): Set according to the type of brake. It is the time required for the mechanical brake to engage.

#### Instructions for brake logic control for a horizontal hoisting application:

- [Brake impulse] ( b , P): No
- [Brake release I FW] ( , b r ): Set to 0.
- [Brake Release time] (b r L): Set according to the type of brake. It is the time required for the mechanical brake to release.
- [Brake engage frequency] (*b E n*), in open-loop mode only: Leave in [Auto] (*R u E a*), adjust if necessary.
- [Brake engage time] ( b E b): Set according to the type of brake. It is the time required for the mechanical brake to engage.

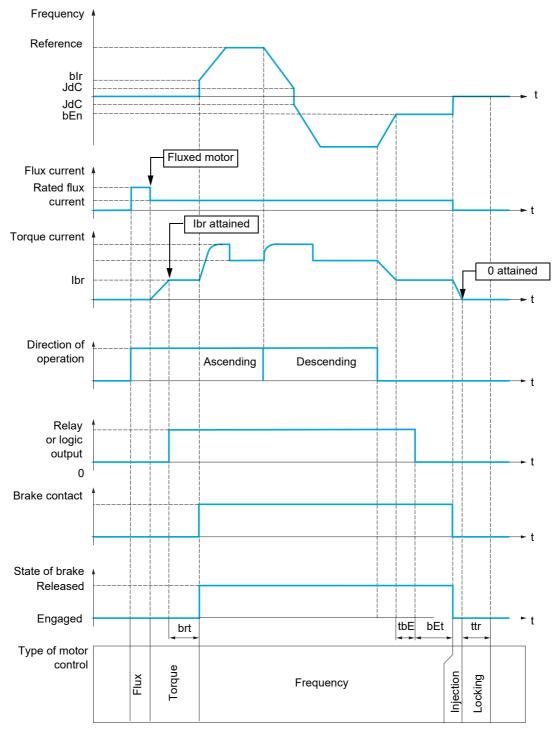
#### Brake logic control, horizontal movement in open-loop mode



#### Key:

- (*b E n*): [Brake engage freq]
- (*b E L*): [Brake engage time]
- (br L): [Brake Release time]
- ( , b r ): [Brake release I FW]
- (5 d [ 1): [Auto DC inj. level 1]
- (*E b E*): [Brake engage delay]
- (*E E r*): [Time to restart]

#### Brake logic control, vertical movement in open-loop mode



#### Key:

- (*b E n*): [Brake engage freq]
- (*b E E*): [Brake engage time]
- (b , r): [Brake release freq]
- (*b* ~ *E*): [Brake Release time]
- ( I b r ): [Brake release I FW]
- ( J d C ): [Jump at reversal]
- (*E b E*): [Brake engage delay]
- (*E E r*): [Time to restart]

DRI- > CONF > FULL > FUN- > BLC-

Code	Name / Description	Adjustment range	Factory setting
Funt	[APPLICATION FUNCT.] (continued)		
ЬLС-	[BRAKE LOGIC CONTROL]		
	Note: This function cannot be used with certain other functions. Follow the	ne instructions on page <u>163</u>	
ЬΙС	[Brake assignment]		[No] ( n a )
	Logic output or control relay. <b>Note:</b> If the brake is assigned, only a ramp stop is possible. Check the [] Brake logic control can only be assigned if [Motor control type] ( $L \ge L$ ) [V/F Quad.] ( $u = F = 9$ ) or [Sync. mot] ( $5 \le 2 = n$ ). See Compatibility table page	is not set to [Standard] (5	<i>L d</i> ), <b>[V/F 5pts]</b> ( <i>u F</i> 5),
n e r 2 L e I d e I	[No] (n a): Function not assigned (in this case, none of the function parameters can be accessed) [R2] (r 2): Relay [LO1] (L a I): Logic output [dO1] (d a I): Analog output AO1 functioning as a logic output. Selection can be made if [AO1 assignment] (R a I) page 144 is set to [No] (n a)		
65E	[Movement type]		[Hoisting] ( $\_$ E $\_$ )
*			
Hor uEr	[Traveling] $(H \circ r)$ : Resistive-load movement (translational motion of ov Note: If [Motor control type] ( $L \vdash L$ ) is set to [Standard] ( $5 \vdash d$ ) or [V/F [Traveling] ( $H \circ r$ ). [Hoisting] ( $u \in r$ ): Driving-load movement (hoisting winch, for example) Note: If [Weight sensor ass.] ( $P \in 5$ ) page 200 is not [No] ( $n \circ$ ), [Mov	<sup>-</sup> 5pts] ( <i>u</i> F 5), [Movemen	t type] ( $b \leq E$ ) is forced to the centre of the contract of
66,	[Brake contact]		[No] ( ם ח )
*	If the brake has a monitoring contact (closed for released brake).		
	[No] ( n d): Not assigned [LI1] (L , I): Logical input LI1 [] (): See the assignment conditions on page <u>153</u>		
БіР	[Brake impulse]		[Yes] (4 E 5)
* ()	Brake impulse. This parameter can be accessed if [Weight sensor ass.] ( $P E 5$ ) is set to if [Movement type] ( $b 5 E$ ) is set to [Hoisting] ( $u E r$ ).	ס <b>[No]</b> ( מ ם ) (see page <u>200</u>	2). It is set to <b>[Yes]</b> ( <del>9</del>
yes Zibr	<b>[No]</b> ( $r, c$ ): The motor torque is given in the required operating direction, <b>[Yes]</b> ( $y \in 5$ ): The motor torque is in forward direction (check that this di <b>[Brake release I FW]</b> ( $r, b, r$ ) <b>[2 IBR]</b> ( $2, r, b, r$ ): The torque is in the required direction, at current <b>[Bral</b> <b>[Brake release I Rev]</b> ( $r, r, d$ ) for Reverse, for certain specific applicatio	rection corresponds to asce ke release I FW] ( , ь с) fo	ending), at current
ıbr	[Brake release I FW]	0 to 1.36 ln (2)	0 A
*	Brake release current threshold for ascending or forward movement. This parameter can be accessed if <b>[Weight sensor ass.]</b> ( <i>P E 5</i> ) is set t	to [No] ( n o) page <u>200</u> .	
(1)			
ird	[Brake release   Rev]	0 to 1.36 ln (2)	0 A
* ()	Brake release current threshold for descending or reverse movement. This parameter can be accessed if [Brake impulse] ( <i>b</i> , <i>P</i> ) is set to [2]	<b>BR] (さぃ</b> ゟヮ).	
brt	[Brake Release time]	0 to 5.00 s	0 s
*	Brake release time delay.		1
Ó			
(1)			

DRI- > CONF > FULL > FUN- > BLC-

Code	Name / Description	Adjustment range	Factory setting		
Біг	[Brake release freq]	[Auto] ( R u Ł o) to 10 Hz	[Auto] ( Я ⊔ 上 □ )		
*	Brake release frequency threshold (initialization of acceleration ramp). This parameter can be accessed if [Movement type] ( $b 5 E$ ) page <u>194</u> is set to [Hoisting] ( $\mu E r$ ).				
()					
(1)					
Auto	[Auto] ( <i>Fub</i> ): The drive takes a value equal to the rated slip of the mo 0 to 10 Hz: Manual control.	otor, calculated using the dr	ive parameters		
bEn	[Brake engage freq]	[Auto] (月」と。) 0 to 10 Hz	[Auto] ( Я и Ł ם )		
*	Brake engage frequency threshold. Note: [Brake engage freq] ( <i>b</i> E n) cannot be higher than [Low speed]	(158)			
0		(2 2 . ).			
(1)					
Auto	[Auto] ( <i>Ruto</i> ): The drive takes a value equal to the rated slip of the mo 0 to 10 Hz: Manual control.	otor, calculated using the dr	ive parameters		
ЕБЕ	[Brake engage delay]	0 to 5.00 s	0 s		
★ () (1)	Time delay before request to engage brake.				
(1) БЕЕ	[Brake engage time]	0 to 5.00 s	0 s		
*	Brake engage time (brake response time).				
(1)		,			
5 d C I	[Auto DC inj. level 1]	0 to 1.2 ln (2)	0.7 ln (2)		
Q	NOTICE				
(1)	OVERHEATING AND DAMAGE TO THE MOTOR Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.				
	Level of standstill DC injection current. Note: This parameter can be accessed if [Movement type] ( <i>b</i> 5 <i>b</i> ) page	e <u>194</u> is set to <b>[Traveling]</b> (	Hor).		
ьЕд	[Engage at reversal]		[No] ( n		
*	Can be used to select whether or not the brake engages on transition to a	zero speed when the operat	ing direction is reversed.		
Q					
ле УЕ 5	[No] ( n p): The brake does not engage [Yes] ( 4 E 5): The brake engages				
JGC	[Jump at reversal]	[Auto] ( A u L o ) to 10 Hz	[Auto] ( A u E a )		
★ () (1)	This parameter can be accessed if [Movement type] ( <i>b</i> 5 <i>b</i> ) page <u>194</u> is	s set to <b>[Hoisting]</b> ( u E r ).			
A u E a -	<b>[Auto]</b> ( $\Pi \sqcup E \Box$ ): The drive takes a value equal to the rated slip of the mo 0 to 10 Hz: Manual control When the reference direction is reversed, this parameter can be used to an on transition to zero speed. Parameter is not applicable if <b>[Engage at rev</b>	void loss of torque (and cons	sequential release of load)		

DRI- > CONF > FULL > FUN- > BLC-

Code	Name / Description	Adjustment range	Factory setting
EEr	[Time to restart]	0.00 to 15.00 s	0 s
*	Time between the end of a brake engage sequence and the start of a bra	ake release sequence.	
0			

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

(2) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



# Brake control logic expert parameters

Following parameters for brake logic sequence are accessible in expert mode only.

Code	Name / Description		Adjustment range	Factory setting
br HO	[BRH b0]			0
*	Selection of the brake restart sequer	ice if a run command is repeated while	the brake is engaging.	
ם ו	[0] ( <sup>()</sup> ): The engage/release sequent [1] ( <sup>1</sup> ): The brake is released immed			
	A run command may be requested du depends on the value selected for [E	ring the brake engagement phase. Whe RH b0] ( אר H ם).	ether or not the brake rele	ease sequence is execute
	Run command			
	Frequency		►	
	Relay or logic input	bEt 55 ttr brt	(BRH b	<b>0]</b> ( <i>b r H D</i> ) = 0
	Frequency			0] ( <i>b r H D</i> ) = 1
	Relay or 🛔 logic input			
	Note: If a run command is requested	l during the "ttr" phase, the complete br	ake control sequence is	initialized.
brH I	[BRH b1]			0
*	Deactivation of the brake contact in s	steady state fault.		
ם ו	[Brake feedback] ( b r F ) brake cor	state fault is active (fault state if the contract fault is monitored in all operating p state fault is inactive. The <b>[Brake feed]</b>	hases.	

DRI- > CONF > FULL > FUN- > BLC-

DRI- > CONF > FULL > FUN- > BLC-

ode	Name / Description		Adjustment range	Factory setting
brH2	[BRH b2]			0
*	Taking the brake contact into acc	count for the brake control sequence.		
0 1	[0] ( <i>D</i> ): The brake contact is not [1] ( <i>I</i> ): The brake contact is take			
	[Brake Release time] ( [Current ramp time] ( - [BRH b2] ( b r H 2) = 1: W	brake contact: uring the brake release sequence, the refer b r L). During the brake engage sequence c r) at the end of the [Brake engage tim hen the brake is released, the reference is e current changes to 0 according to the ram	e, the current changes to e] ( <i>b E L</i> ). enabled when the logic i	0 according to the ramp nput changes to 1. Whe
	Run command	[]		
	Relay or logic input		→	
	Frequency	brt bEt	brr	( <i>b r H 2</i> ) = 0
	Logic input Brake contact 🛔		)	
	Frequency	br	[BRH b2]	( <i>b r H 2</i> ) = 1
brr	[Current ramp time]		0 to 5.00 s	0 s
*	Torque current ramp time (increa	ase and decrease) for a current variation e	qual to [Brake release I I	<b>=W]</b> (, ьг)
0				

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



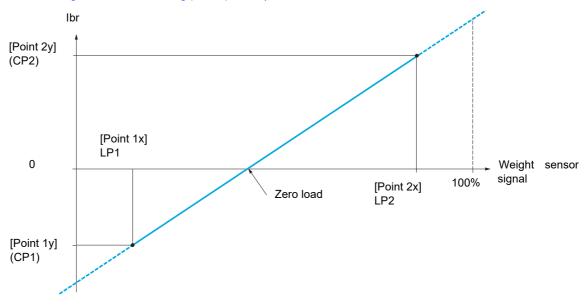
# EXTERNAL WEIGHT MEASUREMENT

#### Load measurement

This function uses the information supplied by a weight sensor to adapt the current **[Brake release I FW]** (, b, r) of the **[BRAKE LOGIC CONTROL]** (b L L -) function. The signal from the weight sensor can be assigned to an analog input (usually a 4 - 20 mA signal) or to the pulse-in input, according to the type of weight sensor.

# Example: Measurement of the total weight of a hoisting winch and its load

The current [Brake release | FW] ( , b r ) is adapted in accordance with the curve below.



DRI- > CONF > FULL > FUN- > ELM-

Code	Name / Description	Adjustment range	Factory setting			
Funt	[APPLICATION FUNCT.] (continued)					
ELN-	[EXTERNAL WEIGHT MEAS.]					
PES	E 5 [Weight sensor ass.]					
		IG				
	LOSS OF CONTROL					
	<ul> <li>Verify that [Point 1 X] (L P I), [Point 2x] (L P 2), [Point 1Y] set to avoid loss of control of the load being lifted.</li> </ul>	( <i>C P 1</i> ) and [Point 2)	(CP2) are correctly			
	<ul> <li>Perform a comprehensive commissioning test to confirm the</li> </ul>	e value given to the pa	rameters [Point 1 X]			
	(L P I), [Point 2x] $(L P 2)$ , [Point 1Y] $(L P I)$ and [Point 2	2 <b>Y]</b> ( <i>E P 2</i> ).				
	Failure to follow these instructions can result in death, ser	ious injury, or equip	ment damage.			
	This parameter can be configured if [BRAKE LOGIC CONTROL] ( <u>b L C</u>	- ) page <u>194</u> is not set to	[No] ( ם ם).			
	[No] ( n p): Not assigned					
RII	[Al1] ( <i>H</i> / <i>I</i> ): Analog input A1					
	[AI2] ( <i>F I 2</i> ): Analog input A2 [AI3] ( <i>F I 3</i> ): Analog input A3					
P i	[ <b>RP</b> ] ( <i>P</i> <sub>1</sub> ): Pulse input					
	[Al virtual 1] ( $R_{I}$ $_{I}$ $_{I}$ ): Virtual analog input 1 with the jog dial					
	<b>[Al virtual 2]</b> ( $\Pi_{I} \sqcup \mathcal{D}$ ): Virtual analog input 2 by the communication bus <b>[OA01]</b> ( $\Box_{\Pi} \Pi_{I}$ ): Function blocks: Analog Output 01					
	[OA10] ( a R I D): Function blocks: Analog Output 10 [Point 1 X]	0 to LP2-0.01%	0%			
	0 to 99.99% of signal on assigned input.					
*	[Point 1x] $(L P I)$ must be less than [Point 2x] $(L P 2)$ .					
	This parameter can be accessed if [Weight sensor ass.] (P E 5) is assig	T				
CP I	[Point 1Y]	-1.36 In to 1.36 In (1)	-In (1)			
*	Current corresponding to load [Point 1 X] ( <i>L P I</i> ), in A. This parameter can be accessed if [Weight sensor ass.] ( <i>P E</i> 5) is assig	ned.				
LP2	[Point 2X]	LP1+0.01% to 100%	50%			
	0.01 to 100% of signal on assigned input.					
<b>×</b>	[Point 2x] ( <i>L P 2</i> ) must be greater than [Point 1x] ( <i>L P 1</i> ). This parameter can be accessed if [Weight sensor ass.] ( <i>P E</i> 5) is assig	ned.				
C P 2	[Point 2Y]	-1.36 In to 1.36 In (1)	0 A			
*	Current corresponding to load [Point 2x] ( <i>L P</i> 2), in A. This parameter can be accessed if [Weight sensor ass.] ( <i>P E</i> 5) is assig	ned.	1			
ıbr A	[lbr 4-20 mA loss]	0 to 1.36 ln (1)	0			
*	Brake release current in the event of the loss of the weight sensor informa					
0	This parameter can be accessed if the weight sensor is assigned to an ana Recommended settings: Rated motor current for a hoisting application.	log current input and the	4-20 mA loss is deactivated.			
• *						

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

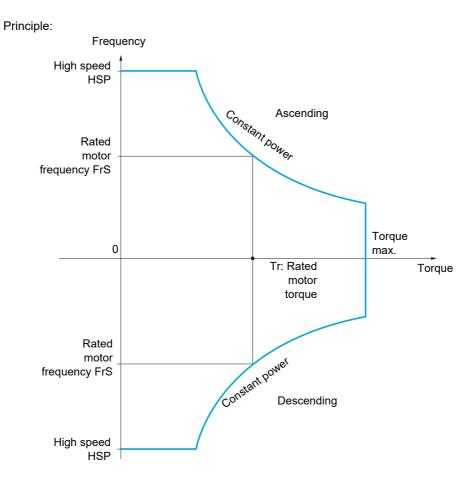


# **HIGH SPEED HOISTING**

This function can be used to optimize the cycle times for hoisting movements for zero or lightweight loads. It authorizes operation at "constant power" in order to reach a speed greater than the rated speed without exceeding the rated motor current.

The speed remains limited by the [High speed] (H 5 P) parameter page 87.

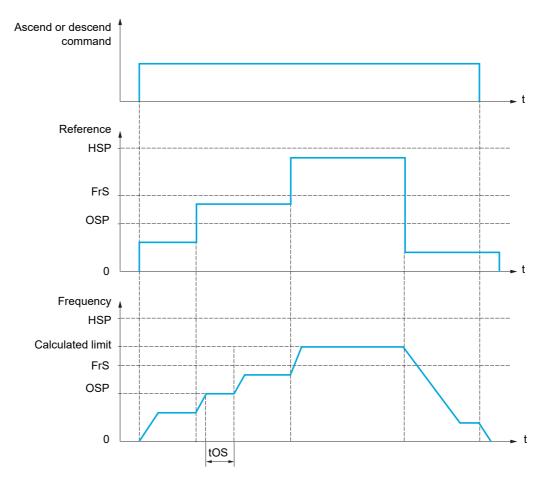
The function acts on the speed reference pedestal and not on the reference itself.



There are 2 possible operating modes:

- Speed reference mode: The maximum permissible speed is calculated by the drive during a speed step that is set so that the drive can measure the load.
- Current limitation mode: The maximum permissible speed is the speed that supports current limitation in motor mode, in the "ascending" direction only. For the "descending" direction, operation is in Speed reference mode.

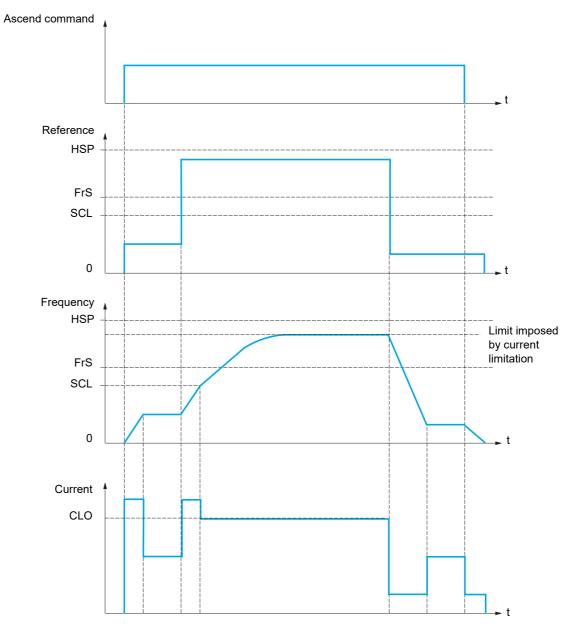
## Speed reference mode



OSP: Adjustable speed step for load measurement tOS: Load measuring time

Two parameters are used to reduce the speed calculated by the drive, for ascending and descending.

# **Current limiting mode**



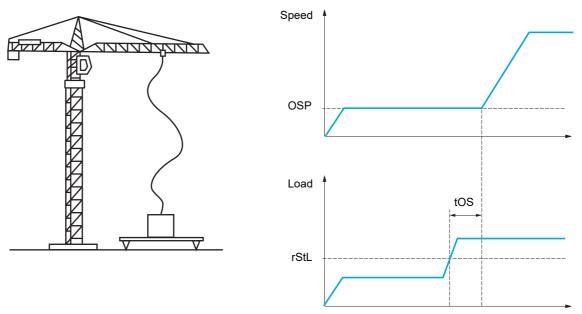
SCL: Adjustable speed threshold, above which current limitation is active

CLO: Current limitation for high-speed function

**Note:** The speed reached for a specific current will be lower in case of network undervoltage in comparison with nominal network voltage.

## Rope slack

The Rope slack function can be used to help to prevent starting up at high speed when a load has been set down ready for lifting but the rope is still slack (as illustrated below).



The speed step (OSP parameters) described on page 202 is used to measure the load. The effective measurement cycle will not be triggered until the load reaches the adjustable threshold [Rope slack trq level] (r 5 E L), which corresponds to the weight of the hook.

A logic output or a relay can be assigned to the indication of the rope slack state in the **[INPUTS / OUTPUTS CFG]** ( , , , , , , ) menu.

Name / Description	Adjustment range	Factory setting		
[APPLICATION FUNCT.] (continued)				
[HIGH SPEED HOISTING]				
Note: This function cannot be used with certain other functions. Follow the	e instructions on page <u>163</u> .			
[High speed hoisting]		[No] (n ם)		
[No] ( n o): Function inactive [Speed ref] ( 5 5 o): Speed reference mode [I Limit] ( [ 5 o): Current limitation mode				
[Motor speed coeff.]	0 to 100%	100%		
, , ,				
This parameter can be accessed if [High speed hoisting] (H 5 a) is set	to [Speed ref] ( 5 5 a).			
[Gen. speed coeff]	0 to 100%	50%		
, , , ,				
This parameter can be accessed in [Figh speed noisting] (F 5 a) is not				
[Load measuring tm.]	0.1 s to 65 s	0.5 s		
Duration of speed step for measurement.				
[Measurement spd]	0 to [Rated motor freq.] (F	<b>r 5</b> ) 40 Hz		
Speed stabilized for measurement.		1		
This parameter can be accessed if [migh speed hoisting] (H S o) is not				
	[APPLICATION FUNCT.] (continued)         [HIGH SPEED HOISTING]         Note: This function cannot be used with certain other functions. Follow th         [High speed hoisting]         [No] ( n o): Function inactive         [Speed ref] (5 5 o): Speed reference mode         [I Limit] ( £ 5 o): Current limitation mode         [Motor speed coeff.]         Speed reduction coefficient calculated by the drive for Ascending directio         This parameter can be accessed if [High speed hoisting] (H 5 o) is set         [Gen. speed coeff]         Speed reduction coefficient calculated by the drive for Descending directio         This parameter can be accessed if [High speed hoisting] (H 5 o) is not         [Load measuring tm.]         Duration of speed step for measurement.         This parameter can be accessed if [High speed hoisting] (H 5 o) is not         [Measurement spd]         Speed stabilized for measurement.	[APPLICATION FUNCT.] (continued)         [HIGH SPEED HOISTING]         Note: This function cannot be used with certain other functions. Follow the instructions on page 163.         [High speed hoisting]         [No] (n o): Function inactive         [Speed ref] (5 5 o): Speed reference mode         [I Limit] (C 5 o): Current limitation mode         [Motor speed coeff.]       0 to 100%         Speed reduction coefficient calculated by the drive for Ascending direction.         This parameter can be accessed if [High speed hoisting] (H 5 o) is set to [Speed ref] (5 5 o).         [Gen. speed coeff]       0 to 100%         Speed reduction coefficient calculated by the drive for Descending direction.         This parameter can be accessed if [High speed hoisting] (H 5 o) is not set to [No] (n o).         [Load measuring tm.]       0.1 s to 65 s         Duration of speed step for measurement.       This parameter can be accessed if [High speed hoisting] (H 5 o) is not set to [No] (n o).         [Measurement spd]       0 to [Rated motor freq.] (F		

DRI- > CONF > FULL > FUN- > HSH-

Code	Name / Description	Adjustment range	Factory setting	
[[0	[High speed I Limit]	0 to 1.5 In (1)	ln (1)	
* ()	Current limitation at high speed. This parameter can be accessed if <b>[High speed hoisting]</b> ( <i>H</i> <b>Note:</b> If the setting is less than 0.25 In, the drive may lock in a (see page <u>256</u> ).		has been enabled	
5 C L	[I Limit. frequency]	0 to 599 Hz according to rating	40 Hz	
*	Frequency threshold, above which the high-speed limitation of This parameter can be accessed if [High speed hoisting] ( <i>F</i>			
0				
r 5 d	[Rope slack config.]		[No] ( n o )	
*	Rope slack function. This parameter can be accessed if [High speed hoisting] (H 5 ) is not set to [No] ( ).			
	[No] $(n c)$ : Function inactive [Drive estim.] $(d r i)$ : Measurement of the load by estimating [Ext. sensor] ( <i>PE</i> 5): Measurement of the load using a weig page <u>200</u> is not [No] $(n c)$		nsor ass.] ( <i>P</i> E 5)	
rSEL	[Rope slack trq level]	0 to 100%	0%	
*	Adjustment threshold corresponding to a load weighing slight This parameter can be accessed if [Rope slack trg level] (		he rated load.	

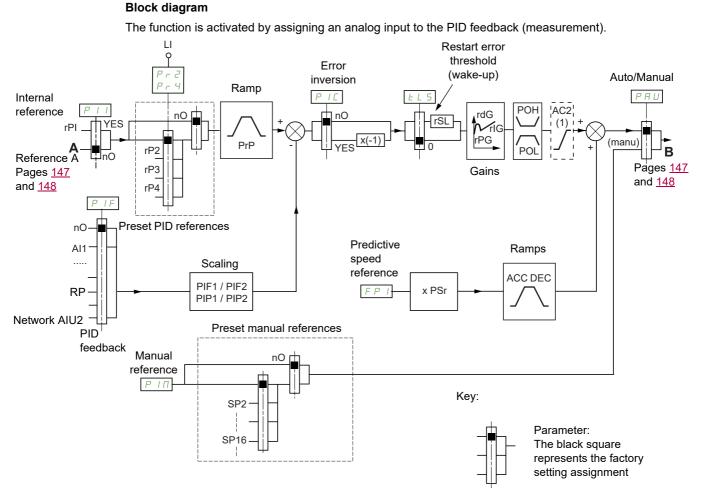
(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



# PID REGULATOR



(1) Ramp AC2 is only active when the PID function starts up and during PID "wake-ups".

### **PID feedback:**

The PID feedback must be assigned to one of the analog inputs AI1 to AI3, to the pulse input, according to whether any extension cards have been inserted.

#### **PID reference:**

The PID reference must be assigned to the following parameters: Preset references via logic inputs (r P 2, r P 3, r P 4)

In accordance with the configuration of [Act. internal PID ref.] (P , ) page 210:

Internal reference (r P ) or

Reference A ([Ref.1 channel] (F r 1) or [Ref.1B channel] (F r 1b), see page 154).

#### Combination table for preset PID references:

LI ( <i>P</i> r 4)	LI ( <i>P r 2</i> )	Pr2=no	Reference
			rPI or A
0	0		rPI or A
0	1		rP2
1	0		rP3
1	1		rP4

A predictive speed reference can be used to initialize the speed on restarting the process.

Scaling of feedback and references:

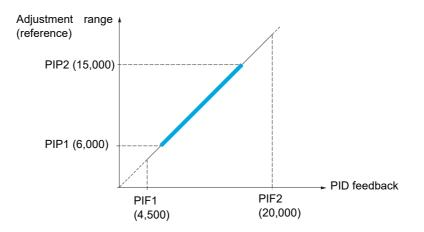
- [Min PID feedback] (P , F I), [Max PID feedback] (P , F 2) parameters can be used to scale the PID feedback (sensor range). This scale MUST be maintained for all other parameters.
- [Min PID reference] (*P*, *P*, *I*), [Max PID reference] (*P*, *P*, *P*, *P*) parameters can be used to scale the adjustment range, for example the reference. The adjustment range MUST remain within the sensor range.

The maximum value of the scaling parameters is 32,767. To facilitate installation, we recommend using values as close as possible to this maximum level, while retaining powers of 10 in relation to the actual values.

**Example** (see graph below): Adjustment of the volume in a tank, between 6 m<sup>3</sup> and 15 m<sup>3</sup>.

- Sensor used 4-20 mA, 4.5 m<sup>3</sup> for 4 mA and 20 m<sup>3</sup> for 20 mA, with the result that *P* , *F I* = 4,500 and *P* , *F 2* = 20,000.
- Adjustment range 6 to 15 m<sup>3</sup>, with the result that P , P I = 6,000 (min. reference) and P , P 2 = 15,000 (max. reference).
- Example references:
  - rP1 (internal reference) = 9,500
  - rP2 (preset reference) = 6,500
  - rP3 (preset reference) = 8,000
  - rP4 (preset reference) = 11,200

The [3.4 DISPLAY CONFIG.] menu can be used to customize the name of the unit displayed and its format.



#### Other parameters:

- [PID wake up thresh.] (r 5 L) parameter: Can be used to set the PID error threshold, above which the PID regulator will be reactivated (wake-up) after a stop due to the max. time threshold being exceeded at low speed [Low speed time out] (L L 5).
- Reversal of the direction of correction [PID correct. reverse] (P, L): If [PID correct. reverse] (P, L) is set to [No] (n a), the speed of the motor will increase when the error is positive (for example: pressure control with a compressor). If [PID correct. reverse] (P, L) is set to [Yes] (YE 5), the speed of the motor will decrease when the error is positive (for example: temperature control using a cooling fan).
- The integral gain may be short-circuited by a logic input.
- An alarm on the PID feedback may be configured and indicated by a logic output.
- An alarm on the PID error may be configured and indicated by a logic output.

#### "Manual - Automatic" Operation with PID

This function combines the PID regulator, the preset speeds and a manual reference. Depending on the state of the logic input, the speed reference is given by the preset speeds or by a manual reference input via the PID function.

#### Manual reference [Manual reference] (Р , П):

- Analog inputs AI1 to AI3
- Pulse input

#### Predictive speed reference [Speed ref. assign.] (F P .):

- [AI1] (*R* , *I*): Analog input
- [AI2] (*R* , *2*): Analog input
- [AI3] (*R* , *3*): Analog input
- [**RP**] (*P*, ): Pulse input
- [HMI] (L [ ]): Graphic display terminal or remote display terminal
- [Modbus] (I d b): Integrated Modbus
- [CANopen] ([ R n): Integrated CANopen®
- [Com. card] ( n E L ): Communication card (if inserted)

#### Setting up the PID regulator

#### 1. Configuration in PID mode.

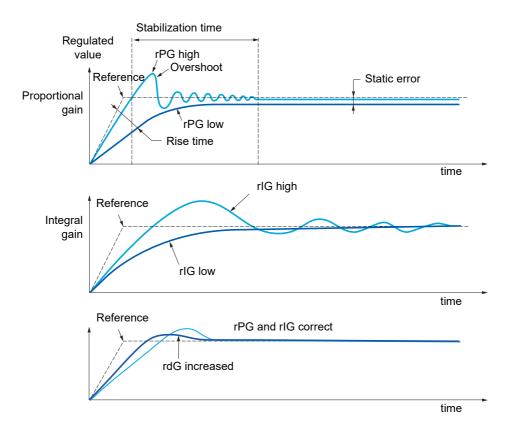
See the diagram on page 206.

#### 2. Perform a test in factory settings mode.

To optimize the drive, adjust [PID prop. gain] (r P L) or [PID integral gain] (r L) gradually and independently, and observe the effect on the PID feedback in relation to the reference.

#### 3. If the factory settings are unstable or the reference is incorrect.

- Perform a test with a speed reference in Manual mode (without PID regulator) and with the drive on load for the speed range of the system:
  - In steady state, the speed must be stable and comply with the reference, and the PID feedback signal must be stable.
  - In transient state, the speed must follow the ramp and stabilize quickly, and the PID feedback must follow the speed. If this is not the case, see the settings for the drive and/or sensor signal and wiring.
- Switch to PID mode.
- Set [Dec ramp adapt.] (*b R*) to [No] (*n b*) (no auto-adaptation of the ramp).
- Set [PID ramp] (P r P) to the minimum permitted by the mechanism without triggering an [Overbraking] ( b F).
- Set the integral gain [PID integral gain] (r , G) to minimum.
- Leave the derivative gain [PID derivative gain] (r d L) at 0.
- Observe the PID feedback and the reference.
- Switch the drive ON/OFF a number of times or vary the load or reference rapidly a number of times.
- Set the proportional gain [PID prop. gain] (r P L) in order to ascertain the compromise between response time and stability in transient phases (slight overshoot and 1 to 2 oscillations before stabilizing).
- If the reference varies from the preset value in steady state, gradually increase the integral gain
   [PID integral gain] (r, , G), reduce the proportional gain [PID prop. gain] (r, PG) in the event of instability
   (pump applications), find a compromise between response time and static precision (see diagram).
- Lastly, the derivative gain may permit the overshoot to be reduced and the response time to be improved, although this will be more difficult to obtain a compromise in terms of stability, as it depends on 3 gains.
- Perform in-production tests over the whole reference range.



The oscillation frequency depends on the system kinematics.

Parameter	Rise time	Overshoot	Stabilization time	Static error
rPG	11	1	=	<b>`</b>
rIG		11	1	~~~
rdG	=	~	•	=

DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
Pid-	[PID REGULATOR]		
	Note: This function cannot be used with certain other function	ns. Follow the instructions on page <u>163</u> .	
P i F	[PID feedback ass.]		[No] ( n 🛛 )
n 0			
A I I A 12			
R I S	[AI3] ( <i>F I 3</i> ): Analog input A3		
י P 1 הי R		nication bus	
A iu 2	[Al virtual 2] (R u 2): Virtual analog input 2 by the commu		
_ AO   	[OA01] (		
o A I O	[OA10] ( P I D): Function blocks: Analog Output 10		T
8 ,C2	[Al2 net. channel]		[No] ( n ם )
*	This parameter can be accessed if [PID feedback ass.] (P		neter can also be
<b>^</b>	accessed in the [INPUTS / OUTPUTS CFG] ( , ) menu		
n 0			
П d 6 С Я n			
n E E			
PIFI	[Min PID feedback]	0 to [Max PID feedback] (P , F 2) (2)	100
*	Value for minimum feedback.		1
$\mathbf{O}$			
(1)			4 000
PIFZ	[Max PID feedback]	[Min PID feedback] (P , F 1) to 32,767 (2)	1,000
*	Value for maximum feedback.		
()			
(1)			
PIPI	[Min PID reference]	[Min PID feedback] (P , F I) to	150
	· · · ·	[Max PID reference] (P , P 2) (2)	
$\star$	Minimum process value.		
()			
(1)			
P , P 2	[Max PID reference]	[Min PID reference] (P , P I) to	900
	Linex i ib reference]	[Max PID feedback] ( $P + F = 2$ ) (2)	
$\star$	Maximum process value.		
()			
(1) <b>P</b>	[Act. internal PID ref.]		
	Internal PID regulator reference.		[No] ( n  ם )
*			
n 0			with
y e s	summing/subtraction/multiplication functions (see the diagram [Yes] ( <i>YE</i> 5): The PID regulator reference is internal via [Int		

# DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting		
r P i	[Internal PID ref.]	[Min PID reference] (P , P ) to [Max PID reference] (P , P 2)	150		
*	Internal PID regulator reference. This parameter can also be accessed in the [1.2 MONITORING] ( // פ ר - ) menu.				
0					
r P G	[PID prop. gain]	0.01 to 100	1		
*	Proportional gain.				
Ó					
r iG	[PID integral gain]	0.01 to 100	1		
*	Integral gain.				
0					
r d G	[PID derivative gain]	0.00 to 100	0		
*	Derivative gain.				
Ö					
PrP	[PID ramp]	0 to 99.9 s	0 s		
*	PID acceleration/deceleration ramp, defined to go from [Min PII	D reference] (P , P /) to [Max PID referen	cel (P, P, Z) and		
	vice versa.				
()					
(1)					
PiC	[PID correct. reverse]		[No] ( ם ם )		
*	Reversal of the direction of correction [PID correct. reverse] ( <i>F</i> If [PID correct. reverse] ( <i>P</i> , <i>L</i> ) is set to [No] ( <i>n</i> , <i>b</i> ), the speed pressure control with a compressor) If [PID correct. reverse] ( <i>P</i> , <i>L</i> ) is set to [Yes] ( <i>YE</i> 5), the speed temperature control using a cooling fan).	l of the motor will increase when the error is			
, n e 9 E S					
PoL	[Min PID output]	- 599 to 599 Hz	0 Hz		
*	Minimum value of regulator output in Hz.				
(1)					
PoH	[Max PID output]	0 to 599 Hz	60 Hz		
*	Maximum value of regulator output in Hz.				
()					
(1)					
PAL	[Min fbk alarm]	[Min PID feedback] $(P \downarrow F I)$ to [Max PID feedback] $(P \downarrow F 2)$ (2)	100		
*	Minimum monitoring threshold for regulator feedback.				
()					
(1)					

DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting
РЯН	[Max fbk alarm]	[Min PID feedback] $(P \downarrow F \downarrow)$ to [Max PID feedback] $(P \downarrow F \downarrow)$ (2)	1,000
*	Maximum monitoring threshold for regulator feedback.		
0			
(1)			
PEr	[PID error Alarm]	0 to 65,535 (2)	100
*	Regulator error monitoring threshold.		
0			
(1)			
P 15	[PID integral reset]		[No] ( n a )
*	If the assigned input or bit is at 0, the function is inactive (the F If the assigned input or bit is at 1, the function is active (the PI	<b>o</b> ,	
L . I 	No] (n p): Not assigned [L11] (L , I): Logical input L11 [] (): See the assignment conditions on page <u>153</u>		
FP i	[Speed ref. assign.]		[No] ( n
*	PID regulator predictive speed input.		
n 0			
R . I R . 2	[Al1] ( <i>R</i> / <i>I</i> ): Analog input A1 [Al2] ( <i>R</i> / <i>Z</i> ): Analog input A2		
E i R	[AI3] (F I J): Analog input A3		
LСС Пав		inal source	
C A n n E t			
P 1	[ <b>RP</b> ] ( <i>P</i> ,): Pulse input		
A			
 	[OA10] ( P I D): Function blocks: Analog Output 10		
PSr	[Speed input %]	1 to 100%	100%
*	Multiplying coefficient for predictive speed input. This parameter cannot be accessed if [Speed ref. assign.] ( <i>F</i>	$(\mathbf{P}_{i})$ is set to [No] $(\mathbf{P}_{i})$	
()			
(1)			
PAu	[Auto/Manual assign.]		[No] ( n a )
*	If the assigned input or bit is at 0, the PID is active. If the assigned input or bit is at 1, manual operation is active.		
0 e L , l 	<ul> <li>[No] (n c): Not assigned</li> <li>[L11] (L i 1): Logical input L11</li> <li>[]: See the assignment conditions on page <u>153</u></li> </ul>		
A C 2	[Acceleration 2]	0.00 to 6,000 s (3)	5 s
*	Time to accelerate from 0 to the <b>[Rated motor freq.]</b> ( $F r 5$ ). be set according to the possibility of the application.		this parameter must
$\mathbf{O}$	Ramp AC2 is only active when the PID function starts up and	uunng PiD wake-ups .	
(1)			

DRI- > CONF > FULL > FUN- > PID-

Code	Name / Description	Adjustment range	Factory setting		
Р,П	[Manual reference]		[No] ( n a )		
*	Manual speed input. This parameter can be accessed if [Auto/Manual assign.] (PRu) is not set to [No] (n). The preset speeds are active on the manual reference if they have been configured.				
R , P R , u c R O	<ul> <li>[A11] (R / I): Analog input A1</li> <li>[A12] (R / 2): Analog input A2</li> <li>[A13] (R / 3): Analog input A3</li> <li>[RP] (P /): Pulse input</li> <li>[Al virtual 1] (R / 2 /): Virtual analog input 1 with the jog dial</li> <li>[OA01] (a R 0 /): Function blocks: Analog Output 01</li> </ul>				
o A I	[OA10] ( a R I D): Function blocks: Analog Output 10				
EL S	[Low speed time out]	0 to 999.9 s	0 s		
(1)	Maximum operating time at [Low speed] ( $L \leq P$ ) (see [Low speed] ( $L \leq P$ ) page <u>87</u> ). Following operation at [Low speed] ( $L \leq P$ ) for a defined period, a motor stop is requested automatically. The motor will restart if the reference is greater than [Low speed] ( $L \leq P$ ) and if a run command is still present. Note: A value of 0 indicates an unlimited period of time. If [Low speed time out] ( $L \leq P$ ) is not 0, [Type of stop] ( $\leq L \leq P$ ) page <u>173</u> is forced to [Ramp stop] ( $r \sqcap P$ ) (only if a ramp stop can be configured).				
r 5 L	[PID wake up thresh.]	0.0 to 100.0	0		
★ ₹2s	WARNING           UNANTICIPATED EQUIPMENT OPERATION           Verify that activating this function does not result in unsafe conditions.           Failure to follow these instructions can result in death, serious injury, or equipment damage.				
	If the "PID" and "Low speed operating time" [Low speed time out] ( $L \ L \ 5$ ) functions are configured at the same time, the PID regulator may attempt to set a speed lower than [Low speed] ( $L \ 5 \ P$ ). This results in unsatisfactory operation, which consists of starting, operating at low speed then stopping, and so on Parameter [PID wake up thresh.] ( $r \ 5 \ L$ ) (restart error threshold) can be used to set a minimum PID error threshold for restarting after a stop at prolonged [Low speed] ( $L \ 5 \ P$ ). [PID wake up thresh.] ( $r \ 5 \ L$ ) is a percentage of the PID error (value depends on [Min PID feedback] ( $P \ r \ F \ I$ ) and [Max PID feedback] ( $P \ r \ F \ 2$ ), see [Min PID feedback] ( $P \ r \ F \ I$ ) page 210). The function is inactive if [Low speed time out] ( $L \ L \ 5$ ) = 0 or if [PID wake up thresh.] ( $r \ 5 \ L$ ) = 0.				
	<ul> <li>(1) The parameter can also be accessed in the [SETTINGS</li> <li>(2) If a graphic display terminal is not in use, values greater mark after the thousand digit, for example, 15.65 for 15</li> <li>(3) Range 0.01 to 99.99 s or 0.1 to 999.9 s or 1 to 6,000 s</li> </ul>	than 9,999 will be displayed on the 4-digit dis ,650.			
📩 📩 als	uese parameters only appear if the corresponding function has to so be accessed and adjusted from within the configuration menu these menus, on the pages indicated, to aid programming.				
C) Pa	arameter that can be modified during operation or when stopped	I.			

Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > FUN- > PRI-

# PID PRESET REFERENCES

Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continued	d)		
Pri-	[PID PRESET REFERENCES]			
	Function can be accessed if <b>[PID feedback ass.]</b> ( <i>P</i> , <i>F</i> ) page <u>210</u> is assigned.			
Pr2	[2 preset PID ref.]		[No] ( n @ )	
	If the assigned input or bit is at 0, the function is ina If the assigned input or bit is at 1, the function is ac			
	<ul> <li>[No] (n p): Not assigned</li> <li>[L1] (L + I): Logical input LI1</li> <li>[] (): See the assignment conditions on page <u>15</u></li> </ul>	<u>33</u>		
Pr4	[4 preset PID ref.]		[No] ( n 🛛 )	
	Check that [2 preset PID ref.] ( $P  ightharpoonup 2$ ) has been as Identical to [2 preset PID ref.] ( $P  ightharpoonup 2$ ) page 212. If the assigned input or bit is at 0, the function is inal If the assigned input or bit is at 1, the function is ac	active.		
r P 2	[Preset ref. PID 2]	[Min PID reference] $(P \downarrow P I)$ to [Max PID reference] $(P \downarrow P 2)$ (2)	300	
- ₽ 2 ★	[Preset ref. PID 2] This parameter can be accessed if [2 preset PID reference]	[Max PID reference] (P , P 2) (2)	300	
		[Max PID reference] (P , P 2) (2)	300	
*		[Max PID reference] (P , P 2) (2)	300	
* ()		[Max PID reference] (P , P 2) (2)	300 600	
★ () (1)	This parameter can be accessed if [2 preset PID re	[Max PID reference] (P , P 2) (2) ef.2] (P r 2) is assigned. [Min PID reference] (P , P 1) to [Max PID reference] (P , P 2) (2)		
(1)	This parameter can be accessed if [2 preset PID reset PID reset ref. PID 3]	[Max PID reference] (P , P 2) (2) ef.2] (P r 2) is assigned. [Min PID reference] (P , P 1) to [Max PID reference] (P , P 2) (2)		
★ () (1) ← P ∃ ★	This parameter can be accessed if [2 preset PID reset PID reset ref. PID 3]	[Max PID reference] (P , P 2) (2) ef.2] (P r 2) is assigned. [Min PID reference] (P , P 1) to [Max PID reference] (P , P 2) (2)		
★ () (1) <i>⊂ P ∃</i> ★ ()	This parameter can be accessed if [2 preset PID reset PID reset ref. PID 3]	[Max PID reference] (P , P 2) (2) ef.2] (P r 2) is assigned. [Min PID reference] (P , P 1) to [Max PID reference] (P , P 2) (2)		
<ul> <li>(1)</li> <li>(7 P 3)</li> <li>(1)</li> <li>(1)</li> <li>(1)</li> </ul>	This parameter can be accessed if [2 preset PID reset PID reset ref. PID 3] This parameter can be accessed if [3 preset PID reset PID re	[Max PID reference] (P, P2) (2) ef.2] (Pr2) is assigned. [Min PID reference] (P, P1) to [Max PID reference] (P, P2) (2) ef.] (Pr3) is assigned. [Min PID reference] (P, P1) to [Max PID reference] (P, P2) (2)	600	
★ (1) <i>¬ P ∃</i> ★ () (1) <i>¬ P Ч</i>	This parameter can be accessed if [2 preset PID reset PID 7] [Preset ref. PID 3] This parameter can be accessed if [3 preset PID reference of [3 preset PID	[Max PID reference] (P, P2) (2) ef.2] (Pr2) is assigned. [Min PID reference] (P, P1) to [Max PID reference] (P, P2) (2) ef.] (Pr3) is assigned. [Min PID reference] (P, P1) to [Max PID reference] (P, P2) (2)	600	

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

(2) If a graphic display terminal is not in use, values greater than 9,999 will be displayed on the 4-digit display with a period mark after the thousand digit, for example, 15.65 for 15,650.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

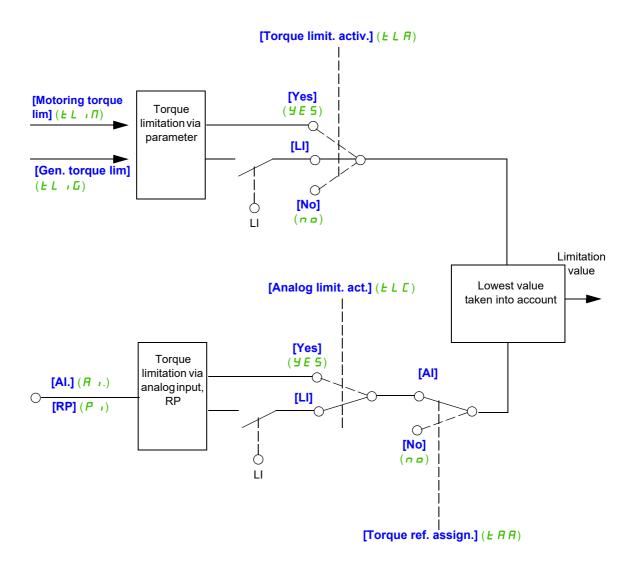


# TORQUE LIMITATION

There are two types of torque limitation:

- With a value that is fixed by a parameter
- With a value that is set by an analog input (AI or pulse)

If both types are enabled, the lowest value is taken into account. The two types of limitation can be configured or switched remotely using a logic input or via the communication bus.



DRI- > CONF > FULL > FUN- > TOL-

Code	Name / Description	Adjustment range	Factory setting
Funt	[APPLICATION FUNCT.] (continued)		
tol-	[TORQUE LIMITATION]		
ELA	[Torque limit. activ.]		[No] ( n  ם )
	If the assigned input or bit is at 0, the function is inactive. If the assigned input or bit is at 1, the function is active.		
уе 5 Ц , 1 	<ul> <li>[No] (n p): Function inactive</li> <li>[Yes] (<i>YE</i> 5): Function always active</li> <li>[L11] (<i>L</i> , <i>I</i>): Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u></li> </ul>		
in E P	[Torque increment]		[1%] ( 1)
*	This parameter cannot be accessed if <b>[Torque limit. activ.]</b> ( <i>L L R</i> ) is set Selection of units for the <b>[Motoring torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L <math>\Pi</math></i> ) and <b>[Gen. torque lim]</b> ( <i>L L</i>		eters.
0. I I	[0,1%] ( <i>D</i> . <i>I</i> ): Unit 0.1% [1%] ( <i>I</i> ): Unit 1%		
EL IN	[Motoring torque lim]	0 to 300%	100%
* () (1)	This parameter cannot be accessed if <b>[Torque limit. activ.]</b> ( $E L R$ ) is set Torque limitation in motor mode, as a % or in 0.1% increments of the rated <b>[Torque increment]</b> ( $I R E P$ ) parameter.		ith the
EL IG	[Gen. torque lim]	0 to 300%	100%
★ () (1)	This parameter cannot be accessed if <b>[Torque limit. activ.]</b> ( <i>L L R</i> ) is set Torque limitation in generator mode, as a % or in 0.1% increments of the re <b>[Torque increment]</b> ( $\mu n L P$ ) parameter.		ce with the
EAA	[Torque ref. assign.]		[No] ( n p )
	If the function is assigned, the limitation varies between 0% and 300% of th applied to the assigned input. Examples: 12 mA on a 4-20 mA input results in limitation to 150% of the rated torque. 2.5 V on a 10 V input results in 75% of the rated torque.		sis of the 0% to 100% signal
R i I	[No] ( n n): Not assigned (function inactive) [AI1] ( n l): Analog input		
я : 2 Я : 3	[Al2] (𝑘 , 𝔅): Analog input [Al3] (𝑘 , 𝔅): Analog input		
Р. Я.ц. I	[RP] (P ,): Pulse input [Al Virtual 1] (R , u ]): Virtual analog input 1 with the jog dial		
	[Al Virtual 2] ( $R \downarrow \Box 2$ ): Virtual input via communication bus, to be configu [OA01] ( $\Box R \Box I$ ): Function blocks: Analog Output 01	ıred via <b>[Al2 net. chann</b>	<b>el]</b> ( <i>R ,C 2</i> ) page <u>135</u> .
 	[OA10] ( C R I D): Function blocks: Analog Output 10		

DRI- > CONF > FULL > FUN- > TOL-

Code	Name / Description	Adjustment range	Factory setting
ELE	[Analog limit. act.]	•	[Yes] ( <i>4E</i> 5)
	This parameter cannot be accessed if <b>[Torque limit. activ.]</b> ( <i>L L R</i> ) is set to <b>[No]</b> ( <i>n p</i> ). Identical to <b>[Torque limit. activ.]</b> ( <i>L L R</i> ) page <u>216</u> .		
	If the assigned input or bit is at 0:		
The limitation is specified by the [Motoring torque lim] $(L \ , \Pi)$ and [Gen. torque lim.] $(L \ , G)$		) parameters if	
	[Torque limit. activ.] (L L R) is not [No] (D D).         No limitation if [Torque limit. activ.] (L L R) is set to [No] (D D).         If the assigned input or bit is at 1:		
	The limitation depends on the input assigned by [Torque ref. assign.] ( <i>E R R</i> ).		
	Note: If [Torque limitation] ( <i>L</i> L <i>R</i> ) and [Torque ref. assign.] ( <i>L R R</i> ) are enabled at the same time, the lowes		ne, the lowest value will be
	taken into account.		

(1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > CLI-

### Parameters described in this page can be accessed by:

# **2ND CURRENT LIMITATION**

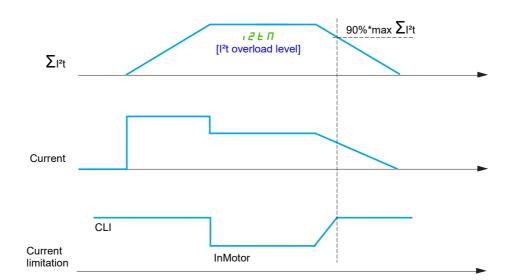
Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continued)			
EL I-	[2nd CURRENT LIMIT.]			
LCZ	[Current limit 2] [No] (n a)			
	If the assigned input or bit is at 0, the first current limitation is action of the assigned input or bit is at 1, the second current limitation is [No] $(n, q)$ : Function inactive			
L i I	[L11] ( <i>L</i> , <i>I</i> ): Logical input L11 [] (): See the assignment conditions on page <u>153</u>			
C L 2	[I Limit. 2 value]	0 to 1.5 ln (1)	1.5 ln (1)	
* 0	NOTICE         OVERHEATING AND DAMAGE TO THE MOTOR         • Verify that the motor is properly rated for the maximum current to be applied to the motor.         • Consider the duty cycle of the motor and all factors of your application including derating requirements in determining the current limit.         Failure to follow these instructions can result in equipment damage.			
	Second current limitation. This parameter can be accessed if <b>[Current limit 2]</b> ( $L \ C \ C$ ) is not The adjustment range is limited to 1.5 In. <b>Note:</b> If the setting is less than 0.25 In, the drive may lock in <b>[Output Phase Loss]</b> ( $C \ P \ L$ ) page 256). If it is less than the <b>[Current limitation]</b>	out Phase Loss] ( _ P L ) faul		
	[Current limitation]	0101.311(1)	1.5 III (1)	
*	<b>NOTICE</b> OVERHEATING AND DAMAGE TO THE MOTOR			
0	<ul> <li>Verify that the motor is properly rated for the maximum current to be applied to the motor.</li> <li>Consider the duty cycle of the motor and all factors of your application including derating requirements in determining the current limit.</li> <li>Failure to follow these instructions can result in equipment damage.</li> </ul>			
	First current limitation. This parameter can be accessed if [Current limit 2] ( $L \ C \ C$ ) is not set to [No] ( $n \ C$ ). The adjustment range is limited to 1.5 ln. Note: If the setting is less than 0.25 ln, the drive may lock in [Output Phase Loss] ( $C \ P L$ ) fault mode if this has been enabled (see [Output Phase Loss] ( $C \ P L$ ) page 256). If it is less than the no-load motor current, the motor cannot run.			
	(1) In corresponds to the rated drive current indicated in the Ir	nstallation manual and on the	e drive nameplate.	
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.				



Parameter that can be modified during operation or when stopped.

### **DYN CURRENT LIMIT**

The DTM ATV320, is available with SoMove to set the **BMP** motors. To install the Altivar 320 DTM (device type manager), you can download and install our FDT (field device tool): SoMove lite on www.schneider-electric.com.



Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continued)			
12E -	[DYN CURRENT LIMIT]			
i2EA	[I <sup>2</sup> t model activation] [No] (n p)			
*	I <sup>2</sup> t model activation for current limitation			
		Yes] ( $\forall E$ 5): when i <sup>2</sup> t $\geq$ Max $\sum$ i <sup>2</sup> t, [I <sup>2</sup> t overload level] ( $, 2 \in \Pi$ ) = 100 and current limitation is set to InMotor when i <sup>2</sup> t $\leq$ Max $\sum$ i <sup>2</sup> t*90%, [I <sup>2</sup> t overload level] ( $, 2 \in \Pi$ ) $\leq$ 90 and the current limitation is set to CLI		
12E 1	[max current of I <sup>2</sup> tl]		1.5 ln +1 (1)	
	Maximum current of I <sup>2</sup> t model.			
12EE	[max time of I <sup>2</sup> tl]	0.00 to 655.35	[0.00]([].[][])	
	Maximum time of I <sup>2</sup> t model.			

(1) In corresponds to the rated drive current indicated in the Installation manual or on the drive nameplate.



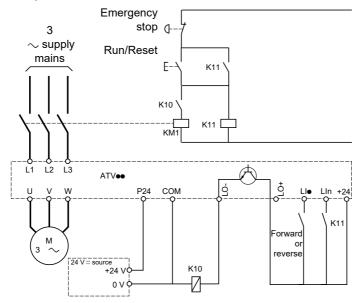
These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

# LINE CONTACTOR COMMAND

The line contactor closes every time a run command (forward or reverse) is sent and opens after every stop, as soon as the drive is locked. For example, if the stop mode is stop on ramp, the contactor will open when the motor reaches zero speed.

Note: The drive control power supply must be provided via an external 24 V source.

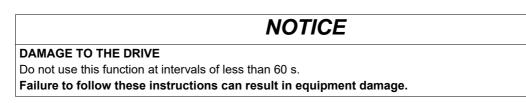
### Example circuit:



24 V power supply

Note: The "Run/Reset" key must be pressed once the "Emergency stop" key has been released.

Lle = Run command [Forward] (F r d) or [Reverse] (r r 5) LO-/LO+ = [Line contactor ass.] (L L L) Lln = [Drive lock] (L E 5)



DRI- > CONF > FULL > FUN- > LLC-

Code	Name / Description	Adjustment range	Factory setting
Funt	[APPLICATION FUNCT.] (continued)		
LLC-	[LINE CONTACTOR COMMAND]		
LLC	[Line contactor ass.] [No] (n a)		[No] ( n a )
	Logic output or control relay.		
L = 1 r 2	[No] (n p): Function not assigned (in this case, none of the function parameters can be accessed) [LO1] (L p I): Logical output LO1 [R2] (r 2): Relay r2 [d01] (d p I): Analog output AO1 functioning as a logic output. Selection can be made if [AO1 assignment] (R p I) page <u>144</u> is set to [No] (n p)		
LES	[Drive lock] [No] (n a)		[No] ( n a )
*	This parameter can be accessed if [Line contactor ass.] ( $L \ L \ C$ ) is not set to [No] ( $n \ c$ ). The drive locks when the assigned input or bit changes to 0.		
L i I	<ul> <li>[No] (n p): Function inactive</li> <li>[L11] (L r I): Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u></li> </ul>		
LEE	[Mains V. time out]	5 to 999 s	5 s
*	Monitoring time for closing of line contactor. If, once this time has elapsed, there is no voltage on the drive power circuit, the drive will lock with a [Line contactor] ( $L \ F$ ) detected fault.		

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

# OUTPUT CONTACTOR COMMAND

This allows the drive to control a contactor located between the drive and the motor. The contactor is closed when a run command is applied. The contactor is opened when there is no longer any current in the motor.

**Note:** If the DC injection braking function is used, the output contactor does not close as long as DC injection braking is active

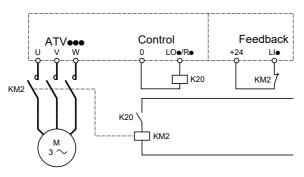
### **Output contactor feedback**

The corresponding logic input should be at 1 when there is no run command and at 0 during operation.

In the event of an inconsistency, the drive trips in FCF2 if the output contactor fails to close (LIx at 1) and in FCF1 if it is stuck (LIx at 0).

The [Delay to motor run] (d b 5) parameter can be used to delay tripping in fault mode when a run command is sent and the [Delay to open cont.] (d R 5) parameter delays the detected fault when a stop command is set.

**Note:** FCF2 (contactor failing to close) can be reset by the run command changing state from 1 to 0 (0 --> 1 - -> 0 in 3-wire control).



The [Out. contactor ass.] (  $\Box \ \Box \ \Box$  ) and [Output contact. fdbk] (  $\neg \ \Box \ B$ ) functions can be used individually or together.

DRI- > CONF > FULL > FUN- > OCC-

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
o[[-	[OUTPUT CONTACTOR CMD]		
o [ [	[Out. contactor ass.]		[No] ( n
	Logic output or control relay.		
n a L a I r 2 d a I	[LO1] ( <i>L</i> = <i>I</i> ): Logical output LO1 [R2] ( <i>r</i> = 2): Relay r2		
r C A	[Output contact. fdbk]		[No] ( ח ם )
d 6 5	[Delay to motor run]	0.05 to 60 s	0.15 s
* 0	Time delay for: Motor control following the sending of a run command Output contactor state monitoring, if the feedback is assigned. If the contactor fails to close at the end of the set time, the drive will lock in FCF2 mode. This parameter can be accessed if [Out. contactor ass.] ( c [ ]) is assigned or if [Output contact. fdbk] ( r [ ]) is assigned. The time delay must be greater than the closing time of the output contactor.		
d R S	[Delay to open cont.]	0 to 5.00 s	0.10 s
* 0	Time delay for output contactor opening command following motor stop. This parameter can be accessed if [Output contact. fdbk] (r [ A) is assigned. The time delay must be greater than the opening time of the output contactor. If it is set to 0, the detected fault will not be monitored. If the contactor fails to open at the end of the set time, the drive will lock in FCF1 fault mode.		
	These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed		

()

Parameter that can be modified during operation or when stopped.

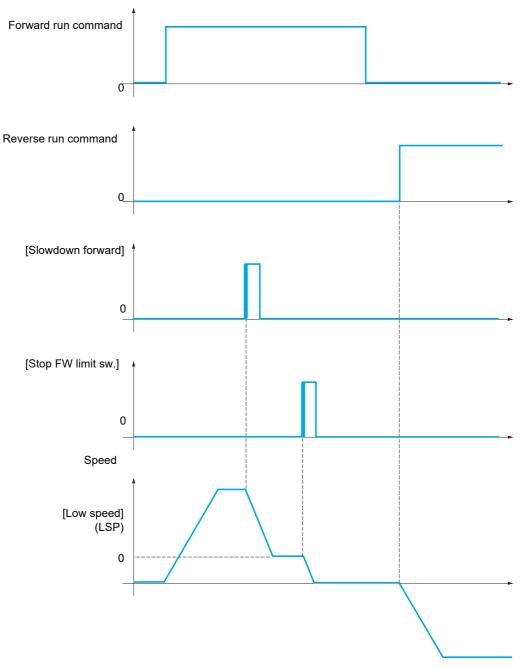
in these menus, on the pages indicated, to aid programming.

# **POSITIONING BY SENSORS**

This function is used for managing positioning using position sensors or limit switches linked to logic inputs or using control word bits:

- · Slowing down
- Stopping

The action logic for the inputs and bits can be configured on a rising edge (change from 0 to 1) or a falling edge (change from 1 to 0). The example below has been configured on a rising edge:



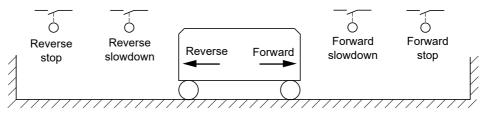
The slowdown mode and stop mode can be configured.

The operation is identical for both directions of operation. Slowdown and stopping operate according to the same logic, described below.

### Example: Forward slowdown, on rising edge

- Forward slowdown takes place on a rising edge (change from 0 to 1) of the input or bit assigned to forward slowdown if this rising edge occurs in forward operation. The slowdown command is then stored, even in the event of a power outage. Operation in the opposite direction is authorized at high speed. The slowdown command is deleted on a falling edge (change from 1 to 0) of the input or bit assigned to forward slowdown if this falling edge occurs in reverse operation.
- A bit or a logic input can be assigned to disable this function.
- Although forward slowdown is disabled while the disable input or bit is at 1, sensor changes continue to be monitored and saved.

### Example: Positioning on a limit switch, on rising edge



# 

### LOSS OF CONTROL

- Verify correct connection of the limit switches.
- Verify the correct installation of the limit switches. The limit switches must be mounted in a position far enough away from the mechanical stop to allow for an adequate stopping distance.
- You must release the limit switches before you can use them.
- · Verify the correct function of the limit switches
- Failure to follow these instructions can result in death, serious injury, or equipment damage.

### Operation with short cams:

# 

### LOSS OF CONTROL

When operating for the first time or after a reset of the configuration to the factory settings, the motor must always be started outside of the Slowdown and Stop ranges.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

# 

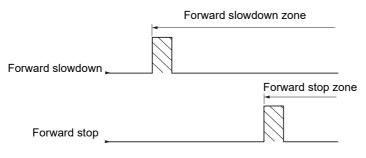
### LOSS OF CONTROL

When the drive is switched off, it stores the range which it is currently in.

If the system is moved manually while the drive is off, you must restore the original position before switching it on again.

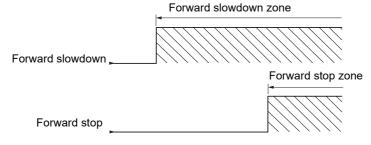
### Failure to follow these instructions can result in death, serious injury, or equipment damage.

In this instance, when operating for the first time or after restoring the factory settings, the drive must initially be started outside the slowdown and stop zones in order to initialize the function.



### Operation with long cams:

In this instance, there is no restriction, which means that the function is initialized across the whole trajectory.



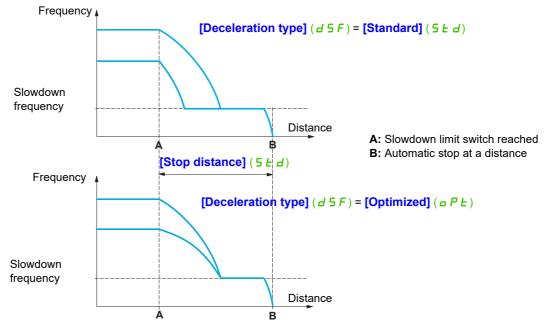
#### Stop at distance calculated after deceleration limit switch

This function can be used to control the stopping of the moving part automatically once a preset distance has been traveled after the slowdown limit switch.

On the basis of the rated linear speed and the speed estimated by the drive when the slowdown limit switch is tripped, the drive will induce the stop at the configured distance.

This function is useful in applications where one manual-reset overtravel limit switch is common to both directions. It will then only respond to help management if the distance is exceeded. The stop limit switch retains priority in respect of the function.

The [Deceleration type] (d 5 F) parameter can be configured to obtain either of the functions described below:



### Note:

- If the deceleration ramp is modified while stopping at a distance is in progress, this distance will not be observed.
- If the direction is modified while stopping at a distance is in progress, this distance will not be observed.

# 

### LOSS OF CONTROL

Verify that the configured distance is actually possible. This function does not replace the limit switch. Failure to follow these instructions can result in death, serious injury, or equipment damage.

DRI- > CONF > FULL > FUN- > LPO-

Code	Name / Description	Adjustment range	Factory setting		
Funt	[APPLICATION FUNCT.] (continued)				
LPo-	[POSITIONING BY SENSORS]				
	Note: This function cannot be used with certain other functions.	Follow the instructions on page <u>16</u>			
SRF	[Stop FW limit sw.]		[No] ( n ם )		
	Stop switch forward.				
	<ul> <li>[No] (n p): Not assigned</li> <li>[L1] (L i ]: Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u></li> <li>(If [Profile] (CHCF) is set to [Not Separ.] (SIM) or [Separate] (SEP) then [CD11] (Cd11) up to [CD15] (Cd15), [C111] (C111) up to [C115] (C115), [C211] (C211) up to [C215] (C215) and [C311] (C311) up to [C315] (C315) are not available).</li> </ul>				
S A r	[Stop RV limit sw.]		[No] ( n a )		
	Stop switch reverse. Identical to <b>[Stop FW limit sw.]</b> ( <b>5</b> <i>R F</i> ) above.				
5 A L	[Stop limit config.]		[Active low] (L a)		
	A WAF	RNING			
	LOSS OF CONTROL				
*	If [Stop limit config.] (5 <i>FL</i> ) is set to [Active high] ( <i>H</i> , <i>G</i> ), the stop command will be activated on active signal and the stop command will not be applied if the connection is removed. Verify that using this setting does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage.				
L 0 H 16					
dRF	[Slowdown forward]		[No] (n =)		
	Slowdown attained forward. Identical to <b>[Stop FW limit sw.]</b> ( <b>5</b> <i>R F</i> ) above.				
dRr	[Slowdown reverse]		[No] ( n		
	Slowdown attained reverse.				
	Identical to [Stop FW limit sw.] (5 R F) above. [Slowdown limit cfg.]		[Active low] (L g)		
BHL					
	<b>A</b> WARNING				
*	LOSS OF CONTROL         If [Slowdown limit cfg.] (d R L) is set to [Active high] (H , G), the slowdown command will be activated on active signal and the slowdown command will not be applied if the connection is removed.         Verify that using this setting does not result in unsafe conditions.         Failure to follow these instructions can result in death, serious injury, or equipment damage.				
	This parameter can be accessed if at least one limit switch or one or negative logic of the bits or inputs assigned to the slowdown.	e slowdown sensor has been assi	gned. It defines the positive		
L = H 16					

DRI- > CONF > FULL > FUN- > LPO-

Code	Name / Description	Adjustment range	Factory setting	
C L 5	[Disable limit sw.]		[No] (n @)	
*	LOSS OF CONTROL			
	If [Disable limit sw.] ( <i>L</i> 5) is set to an input and activated, the limit switch management will be inhibite			
	Verify that activating this function does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage.			
	This parameter can be accessed if at least one limit switch or one sensor has been assigned.			
	The action of the limit switches is disabled when the assigned bit or input is at 1. If, at this time, the drive is stopped or being slowed down by limit switches, it will restart up to its speed reference.			
	[No] (): Function inactive			
	[LI1] (L , I): Logical input LI1			
 PAS	[] (): See the assignment conditions on page <u>153</u> [Stop type]		[Ramp stop] (r ПP)	
	This parameter can be accessed if at least one limit switch or one sensor	has been assigned		
*		nuo been uooigneu.		
- NP F5E	[Ramp stop] ( <i>Γ</i> Π <i>P</i> ): Follow ramp [Fast stop] ( <i>F</i> 5 <i>L</i> ): Fast stop (ramp time reduced by [Ramp divider] ( <i>d</i>	[F), see [Ramp divider	( <i>d E F</i> ) page 93)	
n 5 E	[Freewheel] ( n 5 L ): Freewheel stop	- //	()	
d S F	[Deceleration type]		[Standard] (5 <i>L d</i> )	
*	This parameter can be accessed if at least one limit switch or one sensor	has been assigned.		
SE d	[Standard] ( $5 E d$ ): Uses the [Deceleration] ( $d E C$ ) or [Deceleration 2]			
0 P E	<b>[Optimized]</b> ( <i>a P b</i> ): The ramp time is calculated on the basis of the actual to limit the operating time at low speed (optimization of the cycle time: the			
	speed).			
SEd	[Stop distance]		[No] ( ם ח)	
*	This parameter can be accessed if at least one limit switch or one sensor Activation and adjustment of the "Stop at distance calculated after the slow	wdown limit switch" function	on.	
-	[No] ( n o): Function inactive (the next two parameters will, therefore, be i 0.01 to 10.00: Stop distance range in meters	naccessible)		
n L 5	[Rated linear speed]	0.20 to 5.00 m/s	1.00 m/s	
*	This parameter can be accessed if at least one limit switch or one sensor h set to <b>[No]</b> ( <i>n</i> <b>b</b> ).	as been assigned and [St	op distance] (5 Ł d) is not	
	Rated linear speed in meters/second.		T	
SFd	[Stop corrector]	50 to 200%	100%	
*	This parameter can be accessed if at least one limit switch or one sensor h set to <b>[No]</b> ( <i>n</i> <b>a</b> ). Scaling factor applied to the stop distance to compensate, for example, a		op distance] ( 5 E d) is not	
ПБЕР	[Memo Stop]	non inical ramp.	[No] (n p)	
*	This parameter can be accessed if at least one limit switch or one sensor With or whithout memorisation stop switch	has been assigned.		
п е У Е 5	[No] (			
PrSt	[Priority restart]		[No] (n o)	
*	This parameter can be accessed if at least one limit switch or one sensor Priority given to the starting even if switch stop is activated.	has been assigned.	L	
	[No] ( n p): No priority restart if stop switch is activated			
9 E S	<b>[YES]</b> ( $4E$ 5): Priority to restart even if stop switch is activated This parameter is forced to [No] ( $n \circ$ ) if [Memo Stop] ( $n 5 E P$ ) is set to [N	(ES] ( <i>4 E 5</i> ).		
		2 X 2		
	se parameters only appear if the corresponding function has been sele be accessed and adjusted from within the configuration menu for the co		-	

in these menus, on the pages indicated, to aid programming.

# PARAMETER SET SWITCHING

A set of 1 to 15 parameters from the [SETTINGS] (5 E E -) menu on page <u>89</u> can be selected and 2 or 3 different values assigned. These 2 or 3 sets of values can then be switched using 1 or 2 logic inputs or control word bits. This switching can be performed during operation (motor running).

It can also be controlled on the basis of 1 or 2 frequency thresholds, whereby each threshold acts as a logic input (0 = threshold not reached, 1 = threshold reached).

	Values 1	Values 2	Values 3
Parameter 1	Parameter 1	Parameter 1	Parameter 1
Parameter 2	Parameter 2	Parameter 2	Parameter 2
Parameter 3	Parameter 3	Parameter 3	Parameter 3
Parameter 4	Parameter 4	Parameter 4	Parameter 4
Parameter 5	Parameter 5	Parameter 5	Parameter 5
Parameter 6	Parameter 6	Parameter 6	Parameter 6
Parameter 7	Parameter 7	Parameter 7	Parameter 7
Parameter 8	Parameter 8	Parameter 8	Parameter 8
Parameter 9	Parameter 9	Parameter 9	Parameter 9
Parameter 10	Parameter 10	Parameter 10	Parameter 10
Parameter 11	Parameter 11	Parameter 11	Parameter 11
Parameter 12	Parameter 12	Parameter 12	Parameter 12
Parameter 13	Parameter 13	Parameter 13	Parameter 13
Parameter 14	Parameter 14	Parameter 14	Parameter 14
Parameter 15	Parameter 15	Parameter 15	Parameter 15
Input LI or bit or frequency threshold 2 values	0	1	0 or 1
Input LI or bit or frequency threshold 3 values	0	0	1

**Note:** Do not modify the parameters in the **[SETTINGS]** (5 E E -) menu, because any modifications made in this menu (**[SETTINGS]** (5 E E -)) will be lost on the next power-up. The parameters can be adjusted during operation in the **[PARAM. SET SWITCHING]** ( $\Pi L P -$ ) menu, on the active configuration.

Note: Parameter set switching cannot be configured from the integrated display terminal.

Parameters can only be adjusted on the integrated display terminal if the function has been configured previously via the graphic display terminal, by PC Software or via the bus or communication network. If the function has not been configured, the **[PARAM. SET SWITCHING]** ( $\Pi L P$  -) menu and the **[SET 1]** ( $P \leq I$ -), **[SET 2]** ( $P \leq 2$  -), **[SET 3]** ( $P \leq 3$  -) submenus will not appear.

DRI- > CONF > FULL > FUN- > MLP-

Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continued)			
ΠLP-	[PARAM. SET SWITCHING]			
CHR I	[2 parameter sets]		[No] (n @)	
	Switching 2 parameter sets.			
FER	<b>[No]</b> ( $n a$ ): Not assigned <b>[Freq. Th.att.]</b> ( $F \downarrow R$ ): Switching via <b>[Freq. threshold]</b> ( $F \downarrow d$ ) page 253 <b>[Freq. Th. 2 attained]</b> ( $F \not a R$ ): Switching via <b>[Freq. threshold 2]</b> ( $F \not a d$ ) p <b>[L11]</b> ( $L \downarrow I$ ): Logical input L11 [] (): See the assignment conditions on page 153	age <u>253</u>		
CHRZ	[3 parameter sets]		[No] (n @)	
	Identical to [2 parameter sets] ( <i>L</i> H R I) page 230.	Identical to [2 parameter sets] ( L H R I) page 230.		
	Switching 3 parameter sets. Note: In order to obtain 3 parameter sets, [2 parameter sets] ([ H R I) mu	st also be configured.		
5 P 5	[PARAMETER SELECTION]			
	This parameter can only be accessed on the graphic display terminal if [2 p. Making an entry in this parameter opens a window containing all the adjustr			
	Select 1 to 15 parameters using ENT (a $\checkmark$ then appears next to the paral ENT.	meter). Parameter(s) car	n also be deselected using	
	Example:			
	PARAMETER SELECTION SETTINGS			
	Ramp increment			
ΠLΡ-	[PARAM. SET SWITCHING] (continued)			
P51-	[SET 1]			
	This parameter can be accessed if at least 1 parameter has been selected i	-	-	
	Making an entry in this parameter opens a settings window containing the se selected.	elected parameters in th	e order in which they were	
	With the graphic display terminal:			
×	RDY         Term         +0.0 Hz         0.0 A         RDY         Term         +0.0 Hz         0.0 A           SET1         Acceleration         Acceleration         Acceleration         Acceleration			
0	Acceleration : 9.51 s ENT			
5 10 1	Deceleration :     9.67 s       Acceleration 2 :     12.58 s			
5 / / 5	Deceleration 2         13.45 s           Begin Acc round:         2.3 s         Min = 0.1         Max = 999.9			
	Code Quick << >> Quick			
	With the integrated display terminal:			
	Proceed as in the Settings menu using the parameters that appear.			
ΠLP-	[PARAM. SET SWITCHING] (continued)			
P52-	[SET 2]			
*	This parameter can be accessed if at least 1 parameter has been selected i	n [PARAMETER SELEC	CTION].	
0	Identical to <b>[SET 1]</b> ( <i>P</i> 5 <i>I</i> - ) page <u>230</u> .			
5201				
5215				

DRI- > CONF > FULL > FUN- > MLP-

Code	Name / Description	Adjustment range	Factory setting
ΠLΡ-	[PARAM. SET SWITCHING] (continued)		
P53-	[SET 3]		
*	This parameter can be accessed if [3 parameter sets] ( <i>L</i> H R 2) is not [No] in [PARAMETER SELECTION].	( o o) and if at least 1 para	ameter has been selected
0	Identical to [SET 1] ( <i>P</i> 5 <i>I</i> - ) page 230.		
5301			
5315			



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

**Note:** We recommend that a parameter set switching test is carried out while stopped and a check is made to verify that it has been performed correctly.

Some parameters are interdependent and in this case may be restricted at the time of switching.

Interdependencies between parameters must be respected, even between different sets.

Example: The highest [Low speed] (L 5 P) must be below the lowest [High speed] (H 5 P).

# **MULTIMOTORS / MULTICONFIGURATIONS**

### Motor or configuration switching [MULTIMOTORS/CONFIG.] (ППС-)

The drive may contain up to 3 configurations, which can be saved using the

### [FACTORY SETTINGS] (F [ 5 -) menu, page 81.

Each of these configurations can be activated remotely, enabling adaptation to:

- 2 or 3 different motors or mechanisms (multimotor mode)
- 2 or 3 different configurations for a single motor (multiconfiguration mode)

The two switching modes cannot be combined.

Note: The following conditions MUST be observed:

- Switching may only take place when stopped (drive locked). If a switching request is sent during operation, it will not be executed until the next stop.
- In the event of motor switching, the following additional conditions apply:
  - When the motors are switched, the power and control terminals concerned must also be switched as appropriate.
  - The maximum power of the drive must not be exceeded by any of the motors.
- All the configurations to be switched must be set and saved in advance in the same hardware configuration, this being the definitive configuration (option and communication cards). Failure to follow this instruction can cause the drive to lock on an [Incorrect config.] (*L* F F) state.

### Menus and parameters switched in multimotor mode

- [SETTINGS] (5 E L -)
- [MOTOR CONTROL] (dr [-)
- [INPUTS / OUTPUTS CFG] ( , \_ \_ \_ )
- [COMMAND] (*L L -* )
- [APPLICATION FUNCT.] (Fun-) with the exception of the [MULTIMOTORS/CONFIG.] function (to be configured once only)
- [FAULT MANAGEMENT] (F L E)
- [MY MENU]
- [USER CONFIG.]: The name of the configuration specified by the user in the [FACTORY SETTINGS] (F [ 5 -) menu

### Menus and parameters switched in multiconfiguration mode

As in multimotor mode, except for the motor parameters that are common to the 3 configurations:

- Rated current
- Thermal current
- Rated voltage
- Rated frequency
- Rated speed
- Rated power
- IR compensation
- Slip compensation
- Synchronous motor parameters
- Type of thermal protection
- Thermal state
- The auto-tuning parameters and motor parameters that can be accessed in expert mode
- Type of motor control

Note: No other menus or parameters can be switched.

# Transfer of a drive configuration to another one, with graphic display terminal, when the drive uses [MULTIMOTORS/CONFIG.] (ППС-) function

Let A be the source drive and B the drive addressed. In this example, switching is controlled by logic input. 1. Connect graphic display terminal to the drive A.

2. Put logic input LI ([2 Configurations] ( $[ \Box \cap F ]$ )) and LI ([3 Configurations] ( $[ \Box \cap F ]$ )) to 0.

3. Download configuration 0 in a file of graphic display terminal (example: file 1 of the graphic display terminal).

4. Put logic input LI ([2 Configurations] ( $L \cap F I$ )) to 1 and leave logic input LI ([3 Configurations] ( $L \cap F I$ )) to 0.

5. Download configuration 1 in a file of graphic display terminal (example: file 2 of the graphic display terminal).

6. Put logic input LI ([3 Configurations] ( $\Box \cap F \supseteq$ )) to 1 and leave logic input LI ([2 Configurations] ( $\Box \cap F I$ )) to 1.

7. Download configuration 2 in a file of graphic display terminal (example: file 3 of the graphic display terminal).

8. Connect graphic display terminal to the drive B.

9. Put logic input LI ([2 Configurations] ( $[ \sqcap F \ I)$ ) and LI ([3 Configurations] ( $[ \sqcap F \ 2)$ ) to 0.

10. Make a factory setting of the drive B.

11. Download the configuration file 0 in the drive (file 1 of graphic display terminal in this example).

12. Put logic input LI ([2 Configurations] ( [ n F I)) to 1 and leave logic input LI

([3 Configurations] (*L* ∩ *F ≥*)) to 0.

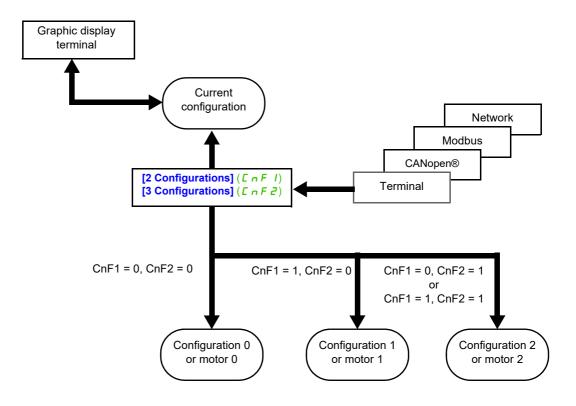
13. Download the configuration file 1 in the drive (file 2 of graphic display terminal in this example).

14. Put logic input LI ([3 Configurations] ( [ n F 2)) to 1 and leave logic input LI

([2 Configurations] (*L* ¬ *F I*)) to 1.

15. Download the configuration file 2 in the drive (file 3 of graphic display terminal in this example).

**Note:** Steps 6, 7, 14 et 15 are necessary only if **[MULTIMOTORS/CONFIG.]** ( $\Pi \Pi \Box =$ ) function is used with 3 configurations or 3 motors.



### Switching command

Depending on the number of motors or selected configurations (2 or 3), the switching command is sent using one or two logic inputs. The table below lists the possible combinations.

LI 2 motors or configurations	LI 3 motors or configurations	Number of configurations or active motors
0	0	0
1	0	1
0	1	2
1	1	2

### Schematic diagram for multimotor mode

# NOTICE

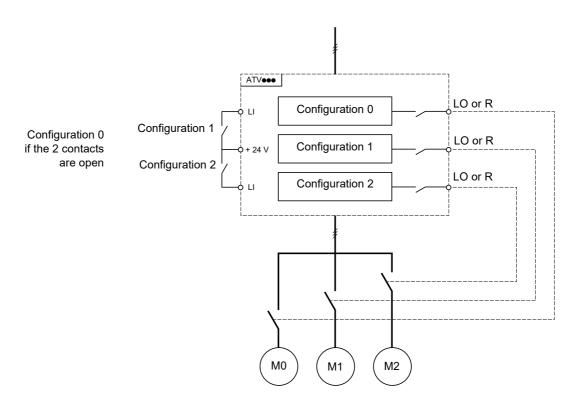
### MOTOR OVERHEATING

The motor thermal state of each motor is not saved when drive is switched off.

When the drive is switched on, it is not aware of the thermal state of the connected motor or motors.

• To enable correct temperature monitoring of the motors, install an external temperature sensor for each motor.

Failure to follow these instructions can result in equipment damage.



### Auto-tuning in multimotor mode

This auto-tuning can be performed:

- Manually using a logic input when the motor changes.
- Automatically each time the motor is activated for the 1<sup>st</sup> time after switching on the drive, if the [Automatic autotune] (*R* <u>u</u> *L*) parameter on page <u>109</u> is set to [Yes] (*Y*E <u>5</u>).

### Motor thermal states in multimotor mode:

The drive helps to protect the three motors individually. Each thermal state takes into account all stop times, if the drive power is not switched off.

DRI- > CONF > FULL > FUN- > MMC-

# Configuration information output

In the **[INPUTS / OUTPUTS CFG]** (, \_ \_ \_ ) menu, a logic output can be assigned to each configuration or motor (2 or 3) for remote information transmission.

**Note:** As the **[INPUTS / OUTPUTS CFG]** ( , \_ \_ \_ ) menu is switched, these outputs must be assigned in all configurations in which information is required.

Code	Name / Description	Adjustment range	Factory setting	
Fun-	[APPLICATION FUNCT.] (continued)			
ΠΠΕ -	[MULTIMOTORS/CONFIG.]			
СНП	[Multimotors]		[No] (n @)	
	NOTICE			
	MOTOR OVERHEATING			
	When the drive is switched off, the thermal states of the connect When the drive is switched on again, the drive is not aware of the			
	Use separate temperature sensors for each connected moto			
	Failure to follow these instructions can result in equipment		5.	
	<b>[No]</b> $(n \circ n)$ : Multiconfiguration possible			
	[Yes] ( <i>YE</i> 5): Multimotor possible			
EnFl	[2 Configurations]		[No] ( n	
	Switching of 2 motors or 2 configurations.			
	[No] ( n p): No switching [Ll1] ( L i l): Logical input Ll1			
	[] (): See the assignment conditions on page <u>153</u>			
	([CD00] ([ d [] []) up to [CD15] ([ d   5), [C101] ([   []  ) up to [C110] ([   []), [C201] ([ 2 []  ) up to [C210] ([ 2   []) and [C301] ([ 3 []  ) up to [C310] ([ 3   []) are not available).			
EnF2	[3 Configurations]		[No] (n @)	
	Switching of 3 motors or 3 configurations.			
	Identical to [2 Configurations] ( <i>L</i> n <i>F I</i> ) page 235.			
	Note: In order to obtain 3 motors or 3 configurations, [2 Configurations] (	<b>E n F I</b> ) must also be co	onfigured.	

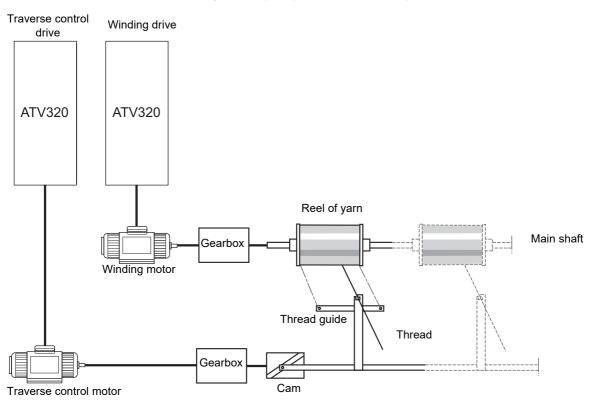
DRI- > CONF > FULL > FUN- > TNL-

# AUTO TUNING BY LOGIC INPUT

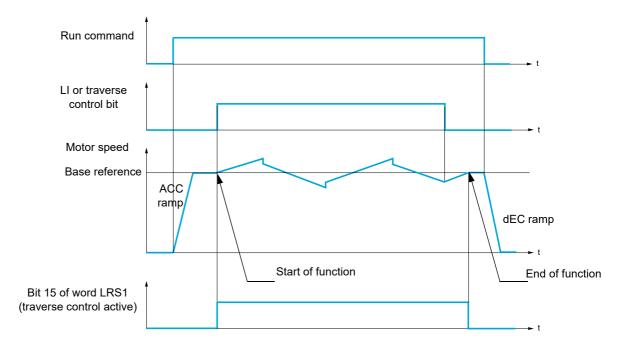
Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued)		
EnL-	[AUTO TUNING BY LI]		
ЕuL	[Auto-tune assign.]		[No] (n a)
	Auto-tuning is performed when the assigned input or bit changes to 1. <b>Note:</b> Auto-tuning causes the motor to start up.		
	[No] ( n c): Not assigned		
L i I	[LI1] (L , I): Logical input LI1		
	[] (): See the assignment conditions on page <u>153</u>		

# TRAVERSE CONTROL

Function for winding reels of yarn (in textile applications):



The speed of rotation of the cam must follow a precise profile to ensure that the reel is steady, compact and linear:



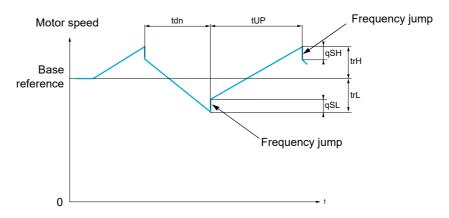
The function starts when the drive has reached its base reference and the traverse control command has been enabled.

When the traverse control command is disabled, the drive returns to its base reference, following the ramp determined by the traverse control function. The function then stops, as soon as it has returned to this reference.

Bit 15 of word LRS1 is at 1 while the function is active.

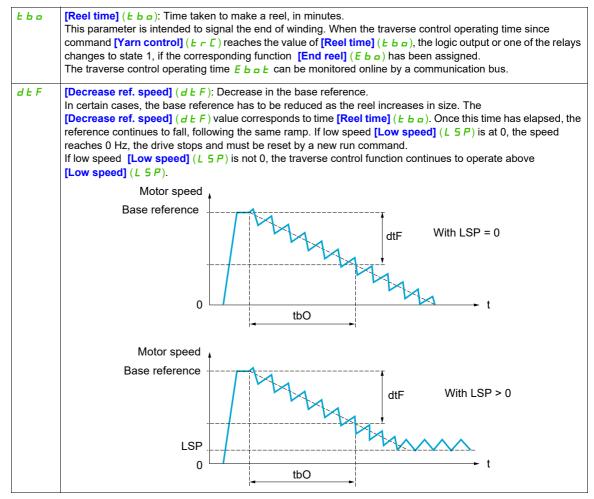
### **Function parameters**

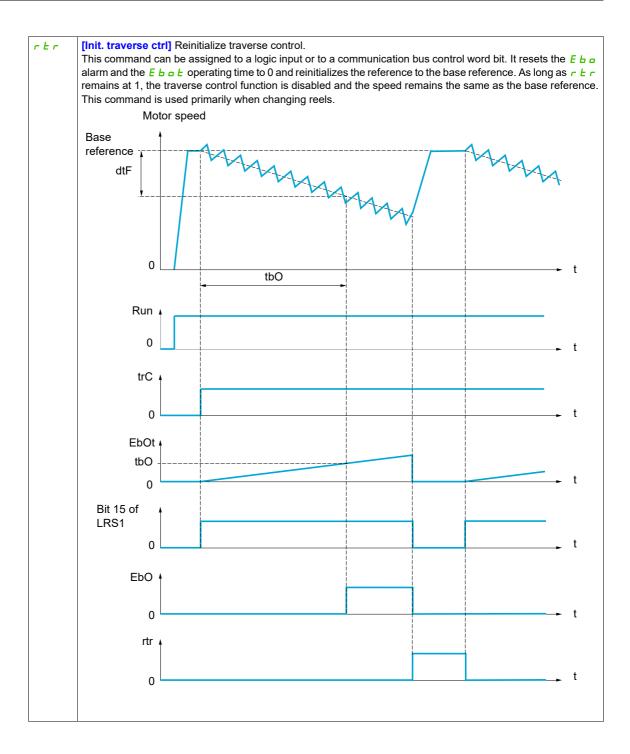
These define the cycle of frequency variations around the base reference, as shown in the diagram below:



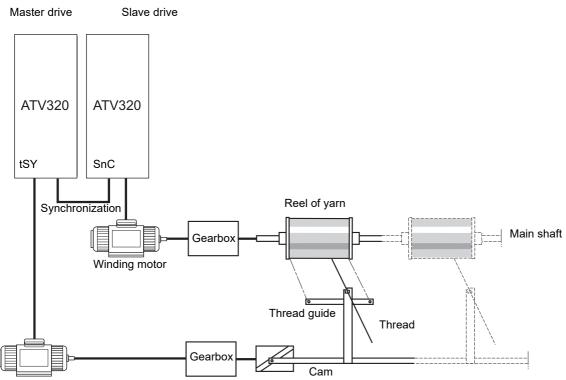
ErE	<b>[Yarn control]</b> ( <i>L</i> r <i>L</i> ): Assignment of the traverse control command to a logic input or to a communication bus control word bit
Er H	[Traverse freq. high] (E r H): in Hertz
t r L	[Traverse Freq. Low] (E r L): in Hertz
9 S H	[Quick step High] (95 H): in Hertz
95L	[Quick step Low] (95 L): in Hertz
E u P	[Traverse ctrl. accel.] (L u P): time, in seconds
Edn	[Traverse ctrl. decel] ( <i>L</i> d n): time, in seconds

### Reel parameters:





# Counter wobble

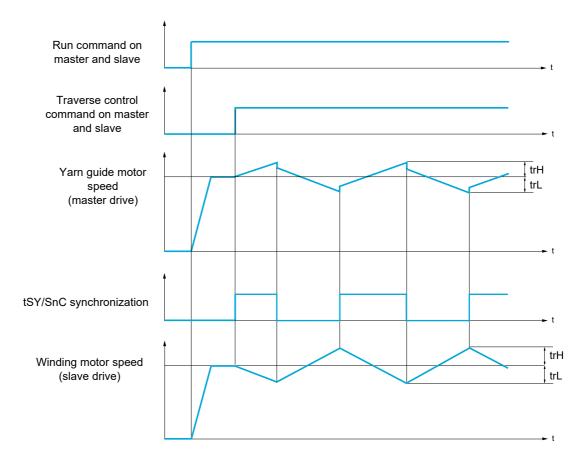


Thread guide motor

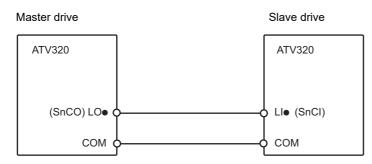
The Counter wobble function is used in certain applications to obtain a constant yarn tension when the Traverse control function is producing considerable variations in speed on the yarn guide motor ([Traverse freq. high] ( $L \ r \ H$ ) and [Traverse Freq. low] ( $L \ r \ L$ ), see [Traverse freq. high] ( $L \ r \ H$ ) page 242).

Two motors must be used (one master and one slave).

The master controls the speed of the yarn guide, the slave controls the winding speed. The function assigns the slave a speed profile, which is in antiphase to that of the master. This means that synchronization is required, using one of the master's logic outputs and one of the slave's logic inputs.



# Connection of synchronization I/O



The starting conditions for the function are:

- Base speeds reached on both drives
- [Yarn control] (*L* r *L*) input activated
- Synchronization signal present

Note: The [Quick step High] (95H) and [Quick step Low] (95L) parameters should generally be kept at 0.

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.] (continued	(k	
tr0-	[TRAVERSE CONTROL]		
	Note: This function cannot be used with certain oth	er functions. Follow the instructions on page	-
ErC	[Yarn control]		[No] ( n
	The Traverse control cycle starts when the assigne	d input or bit changes to 1 and stops wher	n it changes to 0.
Er H	[Traverse freq. high]	0 to 10 Hz	4 Hz
*	Traverse frequency high.		
0			
(1)			
ErL	[Traverse Freq. Low]	0 to 10 Hz	4 Hz
*	Traverse frequency low.		
()			
(1)			
9 S H	[Quick step High]	0 to [Traverse freq. high] (	<i>L r H</i> ) 0 Hz
*	Quick step high.		
Q			
(1) 95L	[Quick step Low]	0 to [Traverse Freq. Low] (	ErL) 0 Hz
	Quick step low.		
*			
()			
(1)			
EuP	[Traverse ctrl. accel.]	0.1 to 999.9 s	4 s
*	Acceleration traverse control.		
()			
Edn	[Traverse ctrl. decel]	0.1 to 999.9 s	4 s
*	Deceleration traverse control.		
$\bigcirc$			
ŁЬо	[Reel time]	0 to 9,999 min	0 min
*	Reel execution time.		
0			
ЕЬо	[End reel]		[No] ( n o )
*	The assigned output or relay changes to state 1 wh	en the traverse control operating time read	ches the [Reel time] (L b a).
ni Lo ri do	<ul> <li>[LO1] (L a I): Logical output LO1</li> <li>[R2] (r 2): Relay R2</li> <li>[dO1] (d a I): Analog output AO1 functioning as a I</li> </ul>	ogic output. Selection can be made if [AO	<b>1 assignment]</b> ( <i>R ם I</i> ) page <u>144</u>
	is set to [No] ( n o ).		

Code	Name / Description	Adjustment range	Factory setting
5 n C	[Counter wobble]		[No] ( n o )
*	Synchronization input. To be configured on the winding drive (slave) only.		
 L , l 	[No] ( n o): Function inactive, thereby helping to prevent access [L11] ( L , I): Logical input L11 [] (): See the assignment conditions on page <u>153</u>	s to other parameters	
E 5 9	[Sync. wobble]		[No] ( n a )
*	Synchronization output. To be configured on the yarn guide drive (master) only.		
na La I r 2 da I	[No] (n a): Function not assigned [LO1] (L a I) [R2] (r 2) [dO1] (d a I): Analog output AO1 functioning as a logic output. S is set to [No] (n a).	Selection can be made if [AO1 assig	nment] ( <i>R o I</i> ) page <u>144</u>
dEF	[Decrease ref. speed]	0 to 599 Hz	0 Hz
* 0	Decrease in the base reference during the traverse control cycle	2.	
rtr	[Init. traverse ctrl]		[No] ( ח ם )
*	When the state of the assigned input or bit changes to 1, the tran [Decrease ref. speed] ( $d \downarrow F$ ).	verse control operating time is reset	to 0, along with
L , I 	<ul> <li>[No] (n p): Function not assigned</li> <li>[L11] (L r I): Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u></li> </ul>		

# (1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FUN- > TR0-

DRI- > CONF > FULL > FUN- > CHS-

### HIGH SPEED SWITCHING

Code	Name / Description	Adjustment range	Factory setting
Funt	[APPLICATION FUNCT.] (continued)		
CH5-	[HSP SWITCHING]		
5 H 2	[2 High speed]		[No] (n @)
	High Speed Switching.		
Lil	<b>[No]</b> $(n \cdot a)$ : Function not assigned <b>[Freq. Th. attain.]</b> $(F \downarrow R)$ : Frequency threshold attained <b>[Freq. Th. 2 attained]</b> $(F \supseteq R)$ : Frequency threshold 2 attained <b>[L11]</b> $(L \cdot I)$ : Logical input L11 <b>[]</b> (): See the assignment conditions on page <u>153</u>		
5 H Y	[4 High speed]		[No] (n @)
	High Speed Switching. <b>Note:</b> In order to obtain 4 High speed, <b>[2 High speed]</b> (5 H 2) must also be Identical to <b>[2 High speed]</b> (5 H 2) page <u>244</u> .	e configured.	
HSP	[High speed]	0 to 599 Hz	50 Hz
Q	Motor frequency at maximum reference, can be set between [Low speed] The factory setting changes to 60 Hz if [Standard mot. freq] ( <i>b F r</i> ) is set		ncy] (EFr).
HSP2	[High speed 2]	0 to 599 Hz	50 Hz
*	Visible if [2 High speed] (5 H 2) is not set to [No] ( n a).		
0	Identical to <b>[High speed]</b> ( <i>H</i> 5 <i>P</i> ) page <u>244</u> .		
HSP3	[High speed 3]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] $(5 H 4)$ is not set to [No] $(n a)$ .		
0	Identical to [High speed] (H 5 P) page 244.		
НSРЧ	[High speed 4]	0 to 599 Hz	50 Hz
*	Visible if [4 High speed] $(5 H 4)$ is not set to [No] $(n a)$ .		
0	Identical to <b>[High speed]</b> ( <i>H</i> 5 <i>P</i> ) page <u>244</u> .		

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can

also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed

\*

Parameter that can be modified during operation or when stopped.

in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > FUN- > DCC-

# DC Bus

Code	Name / Description	Adjustment range	Factory setting
Fun-	[APPLICATION FUNCT.]		
d[[-	[DC Bus]		
ассп	[DC-Bus chaining]		[No] ( n p )
	DC Bus chaining configuration		
	[No] (n p): Not assigned	- h (	
ΠΑ in 6u5	[Bus & Main] ( <i>I</i> R ( )): The drive is supplied by both DC Bus and supp [Only Bus] ( <i>b</i> u 5): The drive is supplied by DC Bus only.	bly mains.	
		ER	
	GROUND FAULT MONITORING DISABLED, NO ERROR D		
	Setting this parameter to [Bus & Main] ( <i>П R , п</i> ) deactivates gro		
	Only use this parameter after a thorough risk assessment in	compliance with all regulati	ons and standards
	that apply to the device and to the application.		
	<ul> <li>Implement alternative ground fault monitoring functions that drive, but allow for adequate, equivalent responses by other</li> </ul>		
	regulations and standards as well as the risk assessment.		
	Commission and test the system with ground fault monitoring	-	
	<ul> <li>During commissioning, verify that the drive and the system simulations in a controlled environment under controlled co</li> </ul>		forming tests and
	Failure to follow these instructions will result in death or		
<i><b>J</b></i> [[]	[DC-Bus compat.]		[Altivar] ( <i>R</i> Ł  u)
	DC Bus chaining compatibility		
	Visible if [DC-Bus chaining] (d [ []) above is not set to [No] (n a).		
REu			
LHN	[Lexium] (L H II): At least one Lexium 32 drive is on the DC Bus chain.		
*	- For ATVeeeM2 or ATV320eeeM3 or ATV320eeeS6, not dependin [Mains voltage] (u r E 5), [Braking level] (u b r) are forced to		C ) the parameters
	<ul> <li>For ATV●●●N4, if [DC-Bus compat.] ( d [ [ ] ) is set to [Altivar] ( [Braking level] ( u b r ) are forced to their default value.</li> </ul>	( <i>R</i> L u) the parameters [Mains	voltage] ( u r E 5),
	- For ATVeeeN4, if [DC-Bus compat.] ( <i>d</i> [ [ ]) is set to [Lexium] ( <i>i</i> value, [Braking level] ( <i>u b r</i> ) is forced to 780 Vdc and the drive w 820 Vdc instead of 880 Vdc to be compatible with Lexium 32 drive	vill trigger in [Overbraking] ( 🛛 🖢	
, PL	[Input phase loss]		According to drive
	Drive behaviour in case of input phase loss detected fault.		rating.
<b>∡</b>	Cannot be accessed if drive rating is ATVeeeM2. Visible if [3.1 ACCESS LEVEL] (L R C) is set to [Expert] (E P r) and [C	DC-Bus chaining] (dГ Г П) al	bove is set to [No] (n a)
0 0 9 E 5	[Ignore] ( , , , ): Detected fault ignored [Freewheel] ( 4 E 5): Detected fault with freewheel stop		
	[Input phase loss] ( , P L) is forced to [Ignore] ( , , , ) if [DC-Bus chai See [Input phase loss] ( , P L) in the Programming Manual (DRI- > CO		[Only Bus] (b u 5).

#### DRI- > CONF > FULL > FUN- > DCC Parameters described in this page can be accessed by: SELB [Ground short circuit] [Freewheel] ( 4 E 5) Direct ground short-circuit fault detection behaviour Can be accessed for drives rating ATV320U55N4 ... D15N4. Visible if [3.1 ACCESS LEVEL] (L R L) is set to [Expert] (E P r) and [DC-Bus chaining] (d L L R) above is not set to [No] ( \_ \_ ). [Ignore] ( n a): Detected fault ignored n o [Freewheel] ( 4 E 5): Detected fault with freewheel stop YES. [Ground short circuit] (5 [ L ]) is forced to [Ignore] (n a) for ATV320U55N4e ... D15N4e drives if [DC-Bus chaining] $(d \ \Box \ \Box \ \Pi)$ above is set to [Bus & Main] $(\Pi \ \Pi \ \Box \ \Pi)$ . Note: If [Ground short circuit] (5 [ L ]) is set to [Ignore] (n a), integrated safety functions (except Safe Torque Off) for ATV320U55N4• ... D15N4• drives cannot be used, otherwise the drive will trigger in [Safe function fault] (5 R F F) state. A A DANGER **GROUND FAULT MONITORING DISABLED, NO ERROR DETECTION** Setting this parameter to [Ignore] (n a) deactivates ground fault monitoring. $\star$ Only use this parameter after a thorough risk assessment in compliance with all regulations and standards that apply to the device and to the application. Implement alternative ground fault monitoring functions that do not trigger automatic error responses of the drive, but allow for adequate, equivalent responses by other means in compliance with all applicable regulations and standards as well as the risk assessment. Commission and test the system with ground fault monitoring enabled. During commissioning, verify that the drive and the system operate as intended by performing tests and simulations in a controlled environment under controlled conditions. Failure to follow these instructions will result in death or serious injury. According to drive According to drive ur E S [Mains Voltage] voltage rating voltage rating Rated voltage of the supply mains in Vac. Visible if [3.1 ACCESS LEVEL] (L R C) is set to [Expert] (E P c) and [DC-Bus chaining] (d C C R) above is set to [No] (n c). For ATV32000M20 or ATV32000M30: 200 [200V ac] (200): 200 Volts AC 2 2 0 [220V ac] (2 2 0): 220 Volts AC 2 3 0 [230V ac] (2 3 0): 230 Volts AC 240 [240V ac] (2 4 D): 240 Volts AC (factory setting) LHT [Lexium] ( $L H \Pi$ ): [Mains voltage] (u r E 5), [Undervoltage level] (u 5 L), [Braking level] (u b r) are forced to their default value For ATV320 3 8 0 [380V ac] ( 3 8 0): 380 Volts AC 400 [400V ac] (400): 400 Volts AC 440V ac] (440): 440 Volts AC 4 6 0 [460V ac] (4 6 0): 460 Volts AC [500V ac] (5 0 0): 500 Volts AC (factory setting) 500 LHII [Lexium] (LHII): [Mains voltage] (u r E 5), [Undervoltage level] (u 5 L) are forced to their default value, [Braking level] (u b r) is forced to 780 Vdc and the drive will trigger in [Overbraking] (a b F) at a DC Bus level of 820 Vdc instead of 880 Vdc. For ATV320 525 [525V ac] (5 2 5): 525 Volts AC [600V ac] ( 6 0 0): 600 Volts AC (Factory setting) 600 LHI [Lexium] (LHI): [Mains voltage] (u r E 5), [Undervoltage level] (u 5 L), [Braking level] (u b r) are forced to their default value.

L	[Undervoltage lev Undervoltage fault leve	_			100 to 304 Vac	rating	ling to drive
	Visible if [3.1 ACCESS	LEVEL1 (1 R C) is set t	o [Expert] (FP	c)			
		[3.1 ACCESS LEVEL] (L R L) is set to [Expert] (E P r).					
		e maximal value of the a state of the state of the states and the states of the states		e (see the table	below).		
					Adjustement range	2	
				Mi	Minimum Value		
			[DC-Bus	chaining] (dCCM)	[DC-Bus chaining]	(dCCM)	
	Drive voltage rating	[Mains voltage] (urES)		=	= [MAin](Bus & Main) or [b	ouS] (Only Bus)	Maximum va
		[200V ac] (200)		100 Vac			
	ATV320●●M2●	[220V ac] (220)		120 Vac			
	ATV320•••M3•	[230V ac] (230)		131 Vac	100 Vac		141 Vac
		[240V ac] (240) or [Lexium] (	(LHM)	141 Vac			
		[380V ac] (380)		190 Vac			
		[400V ac] (400)		204 Vac			
	ATV320●●N4●	[440V ac] (440)		233 Vac	190 Vac		276 Vac
		[460V ac] (460)		247 Vac			
		[500V ac] (500) or [Lexium] (	(LHM)	276 Vac			
		[525V ac] (525)		266 Vac			
	ATV320●●\$6●	[600V ac] (600) or [Lexium] (	(IHM)	304 Vac	266 Vac		304 Vac
		visible in (DRI- > CONF	> FULL > FLT-	> USB-).			
•	This parameter is also [Braking level] Braking transistor com		> FULL > FLT-	> USB-).	335 to 995 Vdc	Accord rating	ling to drive
-	[Braking level] Braking transistor comr				335 to 995 Vdc		ling to drive
r	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320eeM - For ATV320eeM - For ATV320eeM - For ATV320eeS	mand level. LEVEL] ( <i>L R C</i> ) is set t etermined by the drive v I20 : 395 Vdc I30 : 395 Vdc 40 : 820 Vdc	o <b>[Expert]</b> ( <i>E P</i> oltage rating :		335 to 995 Vdc		ling to drive
-	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320eeM - For ATV320eeM - For ATV320eeM - For ATV320eeS	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table:		335 to 995 Vdc		ling to drive
	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320eeM - For ATV320eeM - For ATV320eeM - For ATV320eeS	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table:	r ). ment range	_		ling to drive
	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320000M - For ATV320000M - For ATV320000N - For ATV320000S The adjustment range is	mand level. LEVEL] (L R C) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u>	r ). ment range	_		ling to drive
•	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320000M - For ATV320000M - For ATV320000N - For ATV320000S The adjustment range is	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u>	г). ment range maximal value	_		ling to drive
-	[Braking level] Braking transistor comm Visible if [3.1 ACCESS The factory setting is du - For ATV320000M - For ATV320000M - For ATV320000S The adjustment range is Drive voltage rating	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220) [230V ac](230)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u>	r ). ment range	_		ling to drive
•	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is de         - For ATV320eeM         - For ATV320eeM	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc 130 determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220) [230V ac](230) [240V ac](240) or	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u>	г). ment range maximal value	_		ling to drive
•	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is de         - For ATV320eeM         - For ATV320eeM	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220) [230V ac](230) [240V ac](240) or [Lexium](LHM)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u> <u>380 Vdc</u>	г). ment range maximal value	_		ling to drive
-	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is de         - For ATV320eeM         - For ATV320eeM	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc 130 is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220) [230V ac](230) [240V ac](240) or	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u> <u>380 Vdc</u> <u>395 Vdc</u>	г). ment range maximal value	_		ling to drive
-	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is du         - For ATV320eeM         - ATV320eeM2e         ATV320eeM3e	mand level. <b>LEVEL]</b> ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc 130 is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](220) [230V ac](230) [240V ac](240) or [Lexium](LHM) [380V ac](380)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u> <u>380 Vdc</u> <u>395 Vdc</u> <u>698 Vdc</u>	г). ment range maximal value	_		ling to drive
-	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is de         - For ATV320eeM         - For ATV320eeM	mand level. LEVEL] ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc 130 is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](200) [230V ac](200) [240V ac](240) or [Lexium](LHM) [380V ac](380) [400V ac](400)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u> <u>380 Vdc</u> <u>395 Vdc</u> <u>698 Vdc</u> <u>718 Vdc</u>	r ). ment range maximal value 395 Vdc	_		ling to drive
	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is du         - For ATV320eeM         - ATV320eeM2e         ATV320eeM3e	mand level. LEVEL] ( <i>L R C</i> ) is set t etermined by the drive v 120: 395 Vdc 130: 395 Vdc 40: 820 Vdc 60: 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](200) [220V ac](200) [240V ac](240) or [Lexium](LHM) [380V ac](380) [400V ac](400) [440V ac](400) [400V ac](400) [500V ac](500)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: Minimum value 335 Vdc 365 Vdc 380 Vdc 395 Vdc 698 Vdc 718 Vdc 759 Vdc 779 Vdc 820 Vdc	r ). ment range maximal value 395 Vdc 820 Vdc	_		ling to drive
	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is du         - For ATV320eeM         - ATV320eeM2e         ATV320eeM3e	mand level. LEVEL] ( <i>L R C</i> ) is set t etermined by the drive v 120 : 395 Vdc 130 : 395 Vdc 40 : 820 Vdc 60 : 995 Vdc 130 is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](200) [220V ac](200) [240V ac](200) [240V ac](200) [240V ac](200) [240V ac](200) [400V ac](400) [400V ac](400) [400V ac](400) [400V ac](400) [500V ac](500) [Lexium](LHM)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: <u>Adjuste</u> minimum value <u>335 Vdc</u> <u>365 Vdc</u> <u>380 Vdc</u> <u>395 Vdc</u> <u>395 Vdc</u> <u>698 Vdc</u> <u>718 Vdc</u> <u>759 Vdc</u> <u>779 Vdc</u> <u>820 Vdc</u> <u>780 Vdc</u>	r ). ment range maximal value 395 Vdc	_		ling to drive
	[Braking level]         Braking transistor comm         Visible if [3.1 ACCESS         The factory setting is du         - For ATV320eeM         - ATV320eeM2e         ATV320eeM3e	mand level. LEVEL] ( <i>L R C</i> ) is set t etermined by the drive v 120: 395 Vdc 130: 395 Vdc 40: 820 Vdc 60: 995 Vdc is determined by the the [Mains voltage](urES) [200V ac](200) [220V ac](200) [220V ac](200) [240V ac](240) or [Lexium](LHM) [380V ac](380) [400V ac](400) [440V ac](400) [400V ac](400) [500V ac](500)	o <b>[Expert]</b> ( <i>E P</i> oltage rating : following table: Minimum value 335 Vdc 365 Vdc 380 Vdc 395 Vdc 698 Vdc 718 Vdc 759 Vdc 779 Vdc 820 Vdc	r ). ment range maximal value 395 Vdc 820 Vdc	_		ling to drive



Parameter that can be modified during operation or when stopped.

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

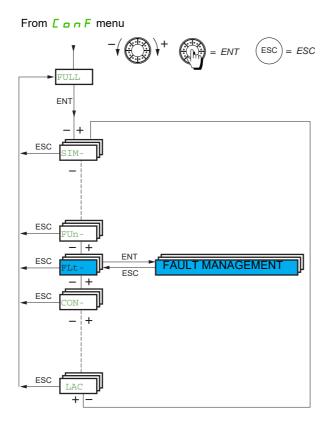
DRI- > CONF > FULL > DCC-

# Fault Management

# With integrated display terminal:

Summary of functions:

Code	Name	Page
PEC	[PTC MANAGEMENT]	<u>250</u>
rSE	[FAULT RESET]	<u>251</u>
Atr	[AUTOMATIC RESTART]	<u>252</u>
AL S	[ALARMS SETTING]	<u>252</u>
FLr	[CATCH ON THE FLY]	<u>253</u>
EHE	[MOTOR THERMAL PROT.]	<u>255</u>
oPL	[OUTPUT PHASE LOSS]	<u>256</u>
i P L	[INPUT PHASE LOSS]	<u>256</u>
οHL	[DRIVE OVERHEAT]	<u>257</u>
SAF	[THERMAL ALARM STOP]	<u>258</u>
EEF	[EXTERNAL FAULT]	<u>258</u>
u 5 b	[UNDERVOLTAGE MGT]	<u>259</u>
EIE	[IGBT TESTS]	<u>260</u>
LFL	[4-20mA LOSS]	<u>260</u>
in H	[FAULT INHIBITION]	<u>261</u>
ELL	[COM. FAULT MANAGEMENT]	<u>261</u>
5 d d	[ENCODER FAULT]	<u>263</u>
Eid	[TORQUE OR I LIM. DETECT]	<u>264</u>
F9F	[FREQUENCY METER]	<u>266</u>
dLd	[DYNAMIC LOAD DETECT.]	<u>267</u>
EnF	[AUTO TUNING FAULT]	<u>268</u>
PP i	[CARDS PAIRING]	<u>269</u>
uLd	[PROCESS UNDERLOAD]	<u>270</u>
old	[PROCESS OVERLOAD]	<u>272</u>
LFF	[FALLBACK SPEED]	<u>272</u>
FSE	[RAMP DIVIDER]	<u>272</u>
dE i	[DC INJECTION]	<u>273</u>



The parameters in the **[FAULT MANAGEMENT]** (F L E -) menu can only be modified when the drive is stopped and there is no run command, except for parameters with a O symbol in the code column, which can be modified with the drive running or stopped.

DRI- > CONF > FULL > FLT- > PTC-

### Parameters described in this page can be accessed by:

### PTC probe

1 set of PTC probe can be managed by the drive in order to help to protect the motor: on logic input LI6 converted for this use by switch SW2 on the control block.

The PTC probe is monitored for the following detected faults:

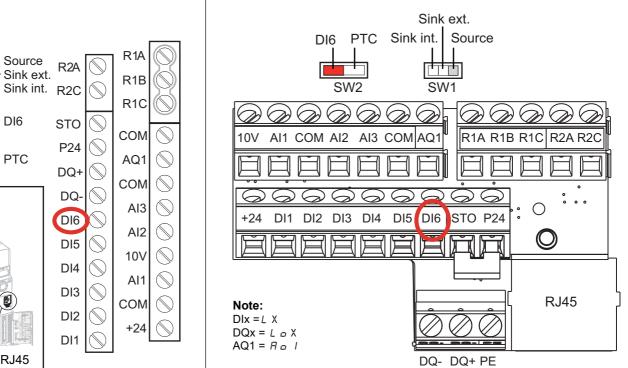
- Motor overheating
- Sensor break
- Sensor short-circuit

Protection via PTC probe does not disable protection via I<sup>2</sup>t calculation performed by the drive (the two types of protection can be combined).

# ATV320

SW1

SW2



Code	Name / Description	Adjustment range	Factory setting
Full	[FULL] (continued)		
FLE-	[FAULT MANAGEMENT]		
PEC -	[PTC MANAGEMENT]		
PECL	[LI6 = PTC probe]		[No] ( n a )
	Check first that the switch SW2 on the control block is set to PTC.		
	[No] ( n p): Not used		
R S	5 [Always] (R 5): PTC probe are monitored permanently, even if the power supply is not connected (as long as the control remain		
r d 5	connected to the power supply) <b>[Power ON]</b> ( $r \neq 5$ ): PTC probe are monitored while the drive power supply is connected		
r 5	[Motor ON] (r 5): PTC probe are monitored while the motor power supply	is connected	

# 

DRI- > CONF > FULL > FLT- > RST-

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
r 5 E -	[FAULT RESET]		
r SF	[Fault reset]		[No] ( n o )
	Detected faults are cleared manually when the assigned inp disappeared. The STOP/RESET key on the graphic display terminal perfor Following detected faults can be cleared manually : $PSF$ , FCF2, $roF9$ , $roFR$ , $roFb$ , $LCF$ , $LFF3$ , $bFFPEFL$ , $SCF4$ , $SCF5$ , $SLF1$ , $SLF2$ , $SLF3$ , $SoF$	rms the same function. b r F , b L F , C n F , C n F , d L F , E , n H F , n L C , n L F , n P F I , n P F	PF 1, EPF2, F6E5, 2, 05F, 06FL, PHF,
	<b>Note:</b> If [Reset restricted fault configuration] ( <i>H</i> ~ <i>F</i> C) is set cleared manually: <i>D</i> C F, 5 C F <i>I</i> , 5 C F <i>J</i> . See page <u>252</u>	to [Yes] ( <i>YE</i> 5), the additional following	ng detected fault can be
L i	<ul> <li>[No] (n p): Function inactive</li> <li>[L11] (L r I): Logical input L11</li> <li>[] (): See the assignment conditions on page <u>153</u> (If [Profile] (CHCF) is set to [Not Separ.] (SIM) or [Separate up to [C115] (C115), [C211] (C211) up to [C215] (C215) and</li> </ul>		
r P A	[Product reset assig.]		[No] ( n
	The Restart function performs a Fault Reset and then restar the same steps as if it had been switched off and on again. I result in immediate and unanticipated operation. The Restar	Depending on the wiring and the config	uration of the drive, this ma
	AW	ARNING	
*	<ul> <li>UNANTICIPATED EQUIPMENT OPERATION</li> <li>The Restart function performs a Fault Reset and result</li> <li>Verify that activating this function does not result</li> <li>Failure to follow these instructions can result in</li> </ul>	It in unsafe conditions.	ment damage
	This parameter can only be modified if [3.1 ACCESS LEVE Drive reinitialization via logic input. Can be used to reset all d supply. The drive is reinitialized on a rising edge (change fro when locked. To assign reinitialization, press and hold down the ENT key	etected faults without having to disconr om 0 to 1) of the assigned input. The d	nect the drive from the pow
L i	[No] (n p): Function inactive [Ll1] (L , I): Logical input Ll1		
L . E L A . L A . d	<pre>[LAI1] (L R , I): Logical input Al1</pre>		
	<ul> <li>Image: Image: Image:</li></ul>		
r P	[Product reset]		[No] ( n a )
	The Restart function performs a Fault Reset and then restar the same steps as if it had been switched off and on again. I result in immediate and unanticipated operation.		
*	<b>▲</b> ₩	ARNING	
	UNANTICIPATED EQUIPMENT OPERATION The Restart function performs a Fault Reset and re	estarts the drive.	
	• Verify that activating this function does not result. <b>Failure to follow these instructions can result</b>	in death, serious injury, or equi	
	This parameter can only be accessed if [3.1 ACCESS LEVE Drive reinitialization. Can be used to reset all detected faults		
л с У Е 9			

DRI- > CONF > FULL > FLT- > RST-

Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting	
HrFC	[Reset restricted fault configuration]		[No] (n p)	
	This parameter can only be accessed if [3.1 ACCESS LEVEL] (L R [) is se	et to <b>[Expert]</b> ( <i>E P r</i> ) mo	de.	
*	Can be used to select the access level of [Fault reset] ( $r 5 F$ ) to reset dete from the power supply. see page $\frac{251}{251}$	cted faults without having	g to disconnect the drive	
	Note: If [Reset restricted fault configuration] $(H \vdash F \vdash)$ is set to [Yes] (9 cleared manually: $\Box \vdash F$ , $5 \vdash F \mid 1$ , $5 \vdash F \mid 3$ .	E 5), the additional follow	wing detected fault can be	
у в У Е 5	[No] (n p): Function inactive [Yes] ( <i>YE</i> 5): Function active			
FLE-	[FAULT MANAGEMENT] (continued)			
Atr -	[AUTOMATIC RESTART]			
Atr	[Automatic restart]		[No] (n @)	
2 s	This function can be used to automatically perform individual or multiple Fault Resets. If the cause of the error that has triggered the transition to the operating state Fault disappears within while this function is active, the drive resumes normal operation. While the Fault Reset attempts are performed automatically, the output signal "Operating state Fault" is not available. If the attempts to perform the Fault Reset are not successful, the drive remains in the operating state Fault and the output signal "Operating state Fault" becomes active.			
	<b>A</b> WARNING	G		
	UNANTICIPATED EQUIPMENT OPERATION			
	Verify that activating this function does not result in unsafe co	nditions.		
	• Verify that the fact that the output signal "Operating state Fault"	" is not available while	this function is active	
	does not result in unsafe conditions. Failure to follow these instructions can result in death, serious injury, or equipment damage			
	r andre to ronow these instructions can result in death, serious injury, or equipment damage			
	The error relay remains activated if this function is active. The speed reference and the operating direction must be maintained. Use 2-wire control [[2/3 wire control] ( $E \ C$ ) is set to [2 wire] ( $2 \ C$ ) and [2 wire type] ( $E \ C$ ) is set to [Level] ( $L \ E \ L$ ), see [2/3 wire control] ( $E \ C$ ) page <u>85</u> ). If the restart has not taken place once the configurable time $E \ R \ r$ has elapsed, the procedure is aborted and the drive remains locked until it is turned off and then on again. The error codes, which permit this function, are listed on page <u>313</u> .			
	[No] ( n a): Function inactive			
ле УЕ 5	<b>[Yes]</b> ( $\forall E$ 5): Automatic restart, after locking in fault state, if the detected fa conditions permit the restart. The restart is performed by a series of automatic periods: 1 s, 5 s, 10 s, then 1 minute for the following attempts.			
EAr	[Max. restart time]		[5 minutes] (5)	
*	This parameter appears if <b>[Automatic restart]</b> ( <i>R</i> <u>L</u> <u>r</u> ) is set to <b>[Yes]</b> ( <i>Y</i> <u>E</u> <b>S</b> restarts on a recurrent detected fault.	). It can be used to limit t	he number of consecutive	
5 10 30 14 24 34 54	<ul> <li>[5 min] (5): 5 minutes</li> <li>[10 minutes] (10): 10 minutes</li> <li>[30 minutes] (30): 30 minutes</li> <li>[1 hour] (1h): 1 hour</li> <li>[2 hours] (2h): 2 hours</li> <li>[3 hours] (3h): 3 hours</li> <li>[Unlimited] (1 b): Unlimited</li> </ul>			
FLE-	[FAULT MANAGEMENT] (continued)			
AL 5 -	[ALARM SETTING]			
C E d	[Current threshold]	0 to 1.5 ln (1)	INV	
0	Motor current threshold.			
(1)				

DRI- > CONF > FULL > FLT- > ALS-

Code	Name / Description	Adjustment range	Factory setting	
FEd	[Freq. threshold]	0 to 599 Hz	50 Hz	
0	Motor frequency threshold.	<u></u>		
F2d	[Freq. threshold 2]	0 to 599 Hz	50 Hz	
0	Motor frequency threshold.	<u></u>		
E E H	[High torque thd.]	-300 to 300%	100%	
0	High torque frequency threshold.	<u></u>		
EEL	[Low torque thd.]	-300 to 300%	50%	
0	Low torque frequency threshold.	<u></u>		
F9L	[Pulse warning thd.]	0 to 20,000 Hz	0 Hz	
*	Frequency level. Visible if <b>[Frequency meter]</b> ( <i>F</i> <b>9</b> <i>F</i> ) is not <b>[No]</b> ( <i>n</i> <b>b</b> ).			
FLE-	[FAULT MANAGEMENT] (continued)			
FLr-	[CATCH ON THE FLY] Note: This function cannot be used with certain other functions. Follow the	instructions on page <u>162</u> .		
FLr	[Catch on the fly]		[No] ( n	
	Used to enable a smooth restart if the run command is maintained after the following events: - Loss of supply mains or disconnection. - Clearance of current detected fault or automatic restart. - Freewheel stop. The speed given by the drive resumes from the estimated speed of the motor at the time of the restart, then follows the ramp to the reference speed. This function requires 2-wire level control. When the function is operational, it activates at each run command, resulting in a slight delay of the current (0.5 s max). [Catch on the fly] ( $F \perp r$ ) is forced to [No] ( $r \mid c$ ) if brake logic control [Brake assignment] ( $b \perp L$ ) is assigned (page <u>194</u> ) or if [Auto DC injection] ( $H \perp L$ ) is set to [Continuous] ( $L \perp$ ) page <u>176</u> .			
л е У Е 5	[No] ( n o): Function inactive [Yes] ( 4 E 5): Function active			

(1) In corresponds to the rated drive current indicated in the Installation manual and on the drive nameplate.

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.



To change the assignment of this parameter, press the ENT key for 2 s.

## Motor thermal protection

#### Function

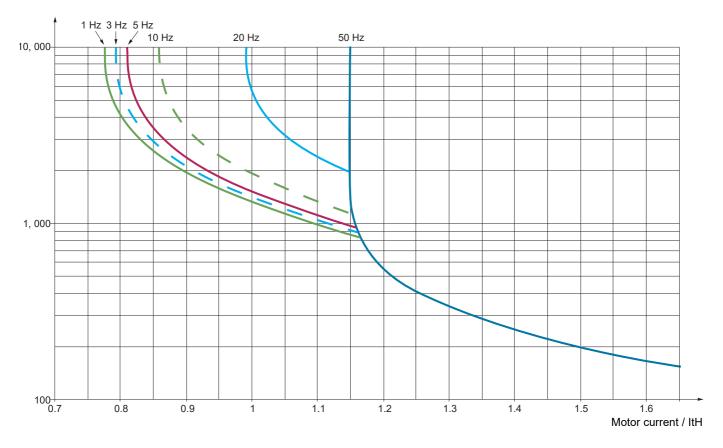
Thermal protection by calculating the l<sup>2</sup>t.

Note: The motor thermal state is not saved when the drive is switched off.

- Self-cooled motors: The tripping curves depend on the motor frequency.
- Force-cooled motors: Only the 50 Hz tripping curve needs to be considered, regardless of the motor frequency.

The following curves represent the triggering time in seconds:

#### Triggering time in seconds



# CAUTION

## **RISK OF DAMAGE TO THE MOTOR**

External protection against overloads is required under the following circumstances:

- When the product is being switched on again, as there is no memory to record the motor thermal state
- When supplying more than one motor
- When supplying motors with ratings less than 0.2 times the nominal drive current
- When using motor switching

Failure to follow these instructions can result in equipment damage.

DRI- > CONF > FULL > FLT- > THT-

Code	Name / Description	Adjustment range	Factory setting	
FLE-	[FAULT MANAGEMENT] (continued)			
EHE-	[MOTOR THERMAL PROT.]			
EHE	[Motor protect. type]		[Self cooled] (R [ L )	
	<b>Note:</b> .An error will occur when the thermal state reaches 118% of the rated back below 100%.	state and reactivation will	occur when the state falls	
RCL FCL	[No] (n c): No protection [Self cooled] (R [ L): For self-cooled motors [Force-cool] (F [ L): For force-cooled motors			
E E d	[Motor therm. level]	0 to 118%	100%	
(1)	Threshold for motor thermal alarm (logic output or relay).			
(1) EEd2	[Motor2 therm. level]	0 to 118%	100%	
	Threshold for motor 2 thermal alarm (logic output or relay).			
0		-		
EEd3	[Motor3 therm. level]	0 to 118%	100%	
()	Threshold for motor 3 thermal alarm (logic output or relay).			
oLL	[Overload fault mgt]		[Freewheel] (9E5)	
	<b>NOTICE</b> OVERHEATING AND DAMAGE TO THE MOTOR Depending on the settings of this parameter, the error response to detected errors is disabled or the settings of this parameter.			
	transition to the operating state Fault is suppressed if an error is			
	Verify that the settings of this parameter do not result in equi	-		
	<ul> <li>Implement alternative monitoring functions for disabled monit</li> <li>Failure to follow these instructions can result in equipment</li> </ul>	-		
	Type of stop in the event of a motor thermal error.			
	[Ignore] (n c): Detected fault ignored			
	[Freewheel] ( $4E$ 5): Freewheel stop [Per STT] ( $5EE$ ): Stop according to configuration of [Type of stop] ( $5EE$ ) page <u>173</u> , without tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] ( $EEE$ ) and [2 wire type] ( $EEE$ ) page <u>125</u> if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop.			
LFF	[fallback spd] (L F F): Change to fallback speed, maintained as long as the	e detected fault persists a	and the run command has	
r L 5	not been removed (2) <b>[Spd maint.]</b> ( $r L 5$ ): The drive maintains the speed being applied when the fault is present and the run command has not been removed (2)	ne detected fault occurred	, as long as the detected	
г П Р F 5 E d С т	[Ramp stop] ( $r \sqcap P$ ): Stop on ramp [Fast stop] ( $F \backsim E$ ): Fast stop [DC injection] ( $d \vdash r$ ): DC injection stop. This type of stop cannot be used	with certain other function	ns. See table on page 165	
ПЕП	[Mot THR memo]		[No] ( ם ם )	
	Motor thermal state memorization.			
	[No] ( , , , ): Motor thermal state is not stored at power off [Yes] ( <del>J</del> E 5): Motor thermal state is stored at power off			

255

DRI- > CONF > FULL > FLT- > OPL-

## Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting	
FLE-	[FAULT MANAGEMENT] (continued)			
oPL-	[OUTPUT PHASE LOSS]			
o P L	[Output Phase Loss] [Yes] (9 E 5)			
🚡 2 s		R		
	HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH If output phase monitoring is disabled, phase loss and, by implication, accidental disconnection of cables, are			
	not detected.		,	
	Verify that the setting of this parameter does not result in uns			
	Failure to follow these instructions will result in death or se	erious injury.		
	Note: [Output phase loss] ( $_{a}$ P L) is set to [No] ( $_{n}$ $_{a}$ ) when [Motor control type] ( $L$ $E$ ) page <u>105</u> is set to [Sync. mot.] (5 $\mathcal{G}_{n}$ ). For other [Motor control type] ( $L$ $E$ ) configurations, [Output phase loss] ( $_{a}$ P L) is forced to [Yes]			
	$(\forall E 5)$ if brake logic control is configured.	, [		
n 0	[No] ( n p): Function inactive			
9 E 5	[Yes] (JE 5): Tripping on [Output phase loss] ( PL ) with freewheel sto		and the second	
6 A C	<b>[Output cut]</b> ( $\square \sqcap L$ ): No fault triggered, but management of the output vol with the motor is re-established and catch on the fly performed (even if this	-		
	The drive switches to [Output cut] (5 ° C) state after [OutPh time detect] drive is in Stand by output cut [Output cut] (5 ° C) state.	( <b>a d b</b> ) time. Catch on fly	y is possible as soon as the	
odt	[OutPh time detect]	0.5 to 10 s	0.5 s	
	Time delay for taking the [Output Phase Loss] ( P L ) detected fault into			
0				
FLE-	[FAULT MANAGEMENT] (continued)			
iPL -	[INPUT PHASE LOSS]			
i P L	[Input phase loss]		According to drive rating	
	Cannot be accessed if drive rating is ATVeeeM2.			
*	In this case, no factory settings value. Factory setting : [Freewheel] ( <i>JE</i> 5) for drive rating ATV320			
,	If 1 phase disappears and if this leads to performance decrease, the drive	switches to fault mode [I	nput phase loss] ( <i>P</i> H F).	
🚡 2 s	If 2 or 3 phases disappear, the drive trips in [Input phase loss] (PHF).			
	[Ignore] ( ר ב): Detected fault ignored			
	[Freewheel] ( <i>4 E 5</i> ): Detected fault with freewheel stop			

Code	Name / Description	Adjustment range	Factory setting		
FLE-	[FAULT MANAGEMENT] (continued)				
oHL -	[DRIVE OVERHEAT]				
σHL	[Overtemp fault mgt]		[Freewheel] ( <i>4E</i> 5)		
	NO <sup>*</sup>	TICE			
	OVERHEATING AND DAMAGE TO THE MOTOR				
	Depending on the settings of this parameter, the error response to detected errors is disabled or the transition to the operating state Fault is suppressed if an error is detected.				
	<ul> <li>Verify that the settings of this parameter do not result in equipment damage.</li> </ul>				
	Failure to follow these instructions can result in e				
96	vill occur when the state fa				
5 E I	[Per STT] (5 L L): Stop according to configuration of [Type of relay does not open and the drive is ready to restart as soon as t of the active command channel (for example, according to [2/3])	the detected fault disappears, according to the detected fault disappears, according the detected fault disappears and the detected fault disappears and the detected fault disappears and the detected fault disappears are disappears and the detected fault disappears are disapp	ding to the restart condition		
	control is via the terminals). Configuring an alarm for this detecte in order to indicate the cause of the stop.	d fault is recommended (assigned t			
LFI	in order to indicate the cause of the stop. [fallback spd] ( <i>L F F</i> ): Change to fallback speed, maintained a		o a logic output, for exampl		
L F I r L S	<ul> <li>in order to indicate the cause of the stop.</li> <li>[fallback spd] (<i>L F F</i>): Change to fallback speed, maintained a not been removed (2)</li> <li>[Spd maint.] (<i>r L 5</i>): The drive maintains the speed being approximation of the speed being approximation</li></ul>	as long as the detected fault persision	o a logic output, for examp is and the run command h		
г L 9 г П I	<ul> <li>in order to indicate the cause of the stop.</li> <li>[fallback spd] (<i>L</i> F F): Change to fallback speed, maintained a not been removed (2)</li> <li>[Spd maint.] (<i>r</i> L 5): The drive maintains the speed being app fault is present and the run command has not been removed (2)</li> <li>[Ramp stop] (<i>r</i> П P): Stop on ramp</li> </ul>	as long as the detected fault persision	o a logic output, for examp is and the run command h		
r L S	<ul> <li>in order to indicate the cause of the stop.</li> <li>[fallback spd] (L F F): Change to fallback speed, maintained a not been removed (2)</li> <li>[Spd maint.] (r L 5): The drive maintains the speed being app fault is present and the run command has not been removed (2)</li> <li>[Ramp stop] (r Π P): Stop on ramp</li> <li>[Fast stop] (F 5 L): Fast stop</li> </ul>	as long as the detected fault persist blied when the detected fault occurr ?)	o a logic output, for examp ts and the run command h red, as long as the detecte		
г L ! г П   F 5 !	<ul> <li>in order to indicate the cause of the stop.</li> <li>[fallback spd] (L F F): Change to fallback speed, maintained a not been removed (2)</li> <li>[Spd maint.] (r L 5): The drive maintains the speed being app fault is present and the run command has not been removed (2)</li> <li>[Ramp stop] (r П P): Stop on ramp</li> <li>[Fast stop] (F 5 L): Fast stop</li> </ul>	as long as the detected fault persist blied when the detected fault occurr ?)	o a logic output, for examples and the run command hared, as long as the detecte		

- (1) The parameter can also be accessed in the [SETTINGS] (5 E L -) menu.
- (2) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

🚡 2 s

To change the assignment of this parameter, press the ENT key for 2 s.

DRI- > CONF > FULL > FLT- > OHL-

DRI- > CONF > FULL > FLT- > SAT

#### Parameters described in this page can be accessed by:

#### Deferred stop on thermal alarm

This function helps to prevent the drive stopping between two steps of the process if the drive or motor overheats, by authorizing operation until the next stop. At the next stop, the drive is locked until the thermal state falls back to a value, which undershoots the set threshold by 20%. Example: A threshold set at 80% enables reactivation at 60%.

One thermal state threshold must be defined for the drive, and one thermal state threshold for the motor(s), which will trigger the deferred stop.

Code	Name / Description	Adjustment range	Factory setting	
FLE-	[FAULT MANAGEMENT] (continued)			
5AE -	[THERMAL ALARM STOP]			
5 A E	[Thermal alarm stop]		[No] ( ם ח )	
	Thermal alarm stop function allow to set a custom alarm thermal level for the drive or the motor. When one of these levels is			
	reached, the drive trips in freewheel stop.			
л о У Е 5	[No] (n o): Function inactive (in this case, the following parameters cannot be accessed) [Yes] ( 9 E 5): Freewheel stop on drive or motor thermal alarm			
EHR	[Drv therm. state al]	0 to 118%	100%	
Q	Thermal state threshold of the drive tripping the deferred stop.			
E E d	[Motor therm. level]	0 to 118%	100%	
0	Thermal state threshold of the motor tripping the deferred stop.			
EEd2	[Motor2 therm. level]	0 to 118%	100%	
0	Thermal state threshold of the motor 2 tripping the deferred stop.			
EEd3	[Motor3 therm. level]	0 to 118%	100%	
Q	Thermal state threshold of the motor 3 tripping the deferred stop.			
FLE-	[FAULT MANAGEMENT] (continued)			
EEF-	[EXTERNAL FAULT]			
EEF	[External fault ass.]		[No] ( ח ם )	
	If the assigned bit is at 0, there is no external fault. If the assigned bit is at 1, there is an external fault.			
	Logic can be configured via [External fault config] (L E L) if a lo	ogic input has been assigned		
	[No] ( n o): Function inactive			
L 1 1 	<b>[LI1]</b> ( <i>L</i> , <i>I</i> ): Logical input LI1 [] (): See the assignment conditions on page <u>153</u>			
LEE	[External fault config]		[Active high] (H , L)	
*	Parameter can be accessed if the external fault has been assigned the input assigned to the detected fault.	ed to a logic input. It defines t	he positive or negative logic of	
	[Active low] $(L \circ)$ : Triggering on falling edge (change from 1 to [Active high] $(H \circ E)$ : Triggering on rising edge (change from 0 f			

DRI- > CONF > FULL > FLT- > ETF-

Code	Name / Description	Adjustment range	Factory setting		
EPL	[External fault mgt]		[Freewheel] ( <i>4E</i> 5)		
	Type of stop in the event of an external fault.				
90 965 511	[Freewheel] (JE 5): Freewheel stop				
LFF	[fallback spd] (L F F): Change to fallback speed, maintained as long as the detected fault persists and the run command has				
r L 5	not been removed (1) [Spd maint.] (r L 5): The drive maintains the speed being applied when the detected fault occurred, as long as the detected				
сПР	fault is present and the run command has not been removed (1)				
FSE	[Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F \subseteq E$ ): Fast stop				
	[DC injection] ( d [ ,): DC injection stop. This type of stop canno	t be used with certain other fu	nctions. See table on page <u>165</u>		
FLE-	[FAULT MANAGEMENT] (continued)				
u 5 6 -	[UNDERVOLTAGE MGT]		T		
<u>ы 5 Б</u>	[UnderV. fault mgt]		[Std fault] (D)		
	Behavior of the drive in the event of an undervoltage.				
0	<b>[Std fault]</b> ( <b>D</b> ): The drive trips and the external fault signal is trig be opened)	gered (the fault relay assigne	d to [No drive flt] (F L L) will		
I.	[FIt wo relay] ( 1): The drive trips but the external fault signal is not	ot triggered (the fault relay ass	signed to [No drive flt] (FLE)		
2	remains closed) [Alarm] (2): Alarm and fault relay remain closed. The alarm can	be assigned to a logic output	t or a relav		
 E5	[Mains voltage]	According to drive voltage	According to drive voltage		
		rating	rating		
	Rated voltage of the supply mains in V. See [Mains voltage] (u r E 5) page 246				
۶L	[Undervoltage level]	100 to 304 V	According to drive rating		
	Undervoltage fault level setting in Volts. The factory setting is def See [Undervoltage level] ( $\mu$ 5 L) page 247	ermined by the drive voltage	rating.		
υSE	[Undervolt. time out]	0.2 s to 999.9 s	0.2 s		
	Time delay for taking undervoltage detected fault into account.				
SEP	[UnderV. prevention]		[No] ( ם ח )		
	Behavior in the event of the undervoltage prevention level being	reached.			
ne NNS rNP LnF	<b>[No]</b> $(\Pi \square \square)$ : No action <b>[DC Maintain]</b> $(\Pi \Pi \square \square)$ : This stop mode uses the inertia to mainta <b>[Ramp stop]</b> $(\Pi \square \square \square)$ : Stop following an adjustable ramp <b>[Max st</b> <b>[Lock-out]</b> $(L \square \square \square)$ : Lock (freewheel stop) without error		g as possible		
ĿSП	[UnderV. restart tm]	1.0 s to 999.9 s	1.0 s		
*	Time delay before authorizing the restart after a complete stop for	r [UnderV. prevention] (5 E	<i>P</i> ) = [Ramp stop] ( <i>г</i> П <i>P</i> ), if		
Q	the voltage has returned to normal.				
υPL	[Prevention level]	141 to 368 V	According to drive rating		
*	Undervoltage prevention level setting in Volts, which can be acces adjustment range and factory setting are determined by the drive				
5 E N	[Max stop time]	0.01 to 60.00 s	1.00 s		
*	Ramp time if [UnderV. prevention] (5 L P) is set to [Ramp stop	р] (гПР).			
()					

DRI- > CONF > FULL > FLT- > USB-

	Name / Description	Adjustment range	Factory setting
£ 6 5	[DC bus maintain tm]	1 to 9,999 s	9,999 s
	DC bus maintain time if [UnderV. prevention] (5 L P) is set to [D	С Maintainl (ПП 5)	
*			
Q			
FLE-	[FAULT MANAGEMENT] (continued)		
E iE -	[IGBT TESTS]		
Strt	[IGBT test]	[IGBT test] [No] (n a)	
па 965	<ul> <li>[No] (n p): No test</li> <li>[Yes] (<i>J</i> E 5): The IGBTs are tested on power up and every time a run command is sent. These tests cause a slight delay (a few ms). In the event of a detected fault, the drive will lock. The following faults can be detected:</li> <li>Drive output short-circuit (terminals U-V-W): SCF display.</li> <li>IGBT inoperable: xtF, where x indicates the number of the IGBT concerned.</li> <li>IGBT short-circuited: x2F, where x indicates the number of the IGBT concerned.</li> </ul>		
FLE-	[FAULT MANAGEMENT] (continued)		
LFL -	[4-20mA LOSS]		
LFLJ	[AI3 4-20mA loss]		[Ignore] ( ם ם )
00	greater than 3 mA [Freewheel] ( <i>JE</i> 5): Freewheel stop		
	[Freewheel] ( 4 E 5): Freewheel stop	<b>pl</b> (5, <i>b</i> , <i>b</i> ) page 173 withou	t fault tripping. In this case, the
9 E S S E E	[Freewheel] ( 9 E 5): Freewheel stop	as the detected fault disapp to [2/3 wire control] ( <i>E</i>	ears, according to the restart [) and [2 wire type] ( <i>E E</i> )
S E E L F F	[Freewheel] ( $\forall E$ 5): Freewheel stop [Per STT] ( $5 \ L \ L$ ): Stop according to configuration of [Type of sto fault relay does not open and the drive is ready to restart as soon conditions of the active command channel (for example, according page <u>125</u> if control is via the terminals). Configuring an alarm for to output, for example) in order to indicate the cause of the stop [Fallback spd] ( $L \ F \ F$ ): Change to fallback speed, maintained as has not been removed (1)	as the detected fault disappoints to [2/3 wire control] ( <i>E C I</i> ) this detected fault is recommonly as the detected fault points as the detected fault fault points as the detected fault poin	ears, according to the restart ) and [2 wire type] ( <i>L</i> [ <i>L</i> ) hended (assigned to a logic ersists and the run command
SEE LFF rLS	[Freewheel] ( $\forall E$ 5): Freewheel stop [Per STT] ( $5 \ E \ E$ ): Stop according to configuration of [Type of sto fault relay does not open and the drive is ready to restart as soon conditions of the active command channel (for example, according page <u>125</u> if control is via the terminals). Configuring an alarm for to output, for example) in order to indicate the cause of the stop [Fallback spd] ( $L \ F \ F$ ): Change to fallback speed, maintained as	as the detected fault disappoints to [2/3 wire control] ( <i>E C I</i> ) this detected fault is recommonly as the detected fault points as the detected fault fault points as the detected fault poin	ears, according to the restart ) and [2 wire type] ( <i>L</i> [ <i>L</i> ) hended (assigned to a logic ersists and the run command

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FLT- > INH-

## Parameter can be accessed in [Expert] mode

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
inH-	[FAULT INHIBITION]		
in H	[Fault inhibit assign.]		[No] ( n o )
	In rare cases, the monitoring functions of the drive may be unwanted beca typical example is a smoke extractor fan operating as a part of a fire prote- should operate as long as possible, even if, for example, the permissible a applications, damage to or destruction of the device may be acceptable as of from occurring whose hazard potential is assessed to be more severe. A parameter is provided to disable certain monitoring functions in such ap automatic error responses of the device are no longer active. You must im monitoring functions that allow operators and/or master control systems to to detected errors. For example, if overtemperature monitoring of the drive is disabled, the dr errors go undetected. An overtemperature condition can be, for example, stopped immediately and automatically by its internal monitoring functions	ction system. If a fire occ mbient temperature of th collateral damage, for exa plications so that automa plement alternative moni adequately respond to c ive of a smoke extractor signaled in a control room	urs, the smoke extractor fai e drive is exceeded. In such imple, to keep other damag atic error detection and toring functions for disable conditions which correspond fan may itself cause a fire
*	* A DANGER		
🕈 2 s	MONITORING FUNCTIONS DISABLED, NO ERROR DETEC	TION	
<b>A</b>	<ul> <li>Only use this parameter after a thorough risk assessment in compliance with all regulations and standards that apply to the device and to the application.</li> </ul>		
	<ul> <li>Implement alternative monitoring functions for disabled monitoring functions that do not trigger automatic error responses of the drive, but allow for adequate, equivalent responses by other means in compliance with all applicable regulations and standards as well as the risk assessment.</li> <li>Commission and test the system with the monitoring functions enabled.</li> <li>During commissioning, verify that the drive and the system operate as intended by performing tests and simulations in a controlled environment under controlled conditions.</li> </ul>		
	Failure to follow these instructions will result in death or serious injury.		
	If the assigned input or bit is at 0, detected fault monitoring is active. If the a Active detected faults are cleared on a rising edge (change from 0 to 1) of <b>Note:</b> The Safe Torque Off function and any detected faults that help to p function. Following faults can be inhibited: Rof, Cof, Cof, Crf I, dLF, EoF, EPF I, EPF2, FCF2, oLF, oPF I, oPF2, oSF, oLFL, PHF, PLFL, SLF I, SLF I, SLF ULF.	the assigned input or bin revent any form of opera	t. tion are not affected by this <b>3</b> , <b>o b F</b> , <b>o H F</b> , <b>o L C</b> ,
	[No] ( n o): Function inactive [Ll1] (L , I): Logical input Ll1 [] (): See the assignment conditions on page <u>153</u>		
FLE-	[FAULT MANAGEMENT] (continued)		
CLL-	[COM. FAULT MANAGEMENT]		
	[Network fault mgt]		[Freewheel] ( 4 E 5)
		0	
	<ul> <li>LOSS OF CONTROL</li> <li>If this parameter is set to [Ignore] (n o), fieldbus module commonly use this setting after a thorough risk assessment in contrast apply to the device and to the application.</li> <li>Only use this setting for tests during commissioning.</li> <li>Verify that communication monitoring has been re-enabled</li> </ul>	mpliance with all regul	ations and standards
	procedure and performing the final commissioning test. Failure to follow these instructions can result in death, set		

DRI- > CONF > FULL > FLT- > CLL-

Code	Name / Description	A divotment ren	Eactory cotting		
	Name / Description	Adjustment range	Factory setting		
	Behavior of the drive in the event of a communication inte	rruption with a communication card.			
	[Ignore] ( ח ם): Detected fault ignored				
	[Freewheel] ( <i>JE 5</i> ): Freewheel stop				
5 E E	[Per STT] (5 <i>L L</i> ): Stop according to configuration of [Typ				
	fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restar conditions of the active command channel (for example, according to [2/3 wire control] ( <i>L L L</i> ) and [2 wire type] ( <i>L L L</i> )				
	125 if control is via the terminals). Configuring an alarm for				
	example) in order to indicate the cause of the stop	in a disa tanan atta di kasha di Kasha di Kasha di Kasa di Kas			
LFF	[Fallback spd] ( <i>L F F</i> ): Change to fallback speed, maintained as long as the detected fault persists and the run command has not been removed (1)				
r L 5					
- N P	[Fast stop] (F 5 L): Fast stop				
FSE					
d C i		p cannot be used with certain other fun			
[ o L	[CANopen fault mgt]		[Freewheel] (9E 5)		
	A V	VARNING			
	LOSS OF CONTROL				
	If this parameter is set to [Ignore] ( ¬ ¬), CANop	en communication monitoring is di	sabled.		
	Only use this setting after a thorough risk asset	essment in compliance with all reg	ulations and standards		
	that apply to the device and to the application.				
	Only use this setting for tests during commissioning.				
	<ul> <li>Verify that communication monitoring has been precedure and performing the final commission</li> </ul>		e commissioning		
	procedure and performing the final commissioning test. Failure to follow these instructions can result in death, serious injury, or equipment damage.				
	Behavior of the drive in the event of a communication inte	rruption with integrated CANopen®.			
9 E S	[Freewheel] ( 9 E 5): Freewheel stop				
9 E S	[Freewheel] ( <i>JE</i> 5): Freewheel stop [Per STT] (5 <i>L L</i> ): Stop according to configuration of [Type]				
9 E S	[Freewheel] ( 4 E 5): Freewheel stop [Per STT] ( 5 L L): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac	as soon as the detected fault disappear ccording to [2/3 wire control] ( <i>L</i> [ []) and	s, according to the restart nd <mark>[2 wire type]</mark> ( <i>E E E</i> ) pag		
9 E S	[Freewheel] ( <i>YE</i> 5): Freewheel stop [Per STT] (5 <i>L L</i> ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for	as soon as the detected fault disappear ccording to [2/3 wire control] ( <i>L</i> [ []) and	s, according to the restart nd <mark>[2 wire type]</mark> ( <i>E E E</i> ) pag		
9 E S	[Freewheel] ( <i>Y E</i> 5): Freewheel stop [Per STT] ( 5 <i>L L</i> ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop.	as soon as the detected fault disappear coording to [2/3 wire control] ( L C ) and or this detected fault is recommended (a	s, according to the restart ad [2 wire type] ( <i>L [ L</i> ) pag assigned to a logic output, fo		
9 E S 5 E E L F F	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1)	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis	s, according to the restart ad [2 wire type] ( <i>L [ L</i> ) pag assigned to a logic output, fo sts and the run command ha		
965 566	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein	as soon as the detected fault disappear coording to $[2/3 \text{ wire control}]$ ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occu	s, according to the restart ad [2 wire type] ( <i>L C L</i> ) page assigned to a logic output, fo sts and the run command has		
YES SEE LFF rLS rNP	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp	as soon as the detected fault disappear coording to $[2/3 \text{ wire control}]$ ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occu	s, according to the restart ad [2 wire type] ( <i>L C L</i> ) page assigned to a logic output, fo sts and the run command has		
ЧЕ 5 5 E E L F F r L 5 F S E	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1)	s, according to the restart ad [2 wire type] ( <i>L [ L</i> ) page assigned to a logic output, fo ass and the run command has red, as long as the detected		
ЧЕ 5 5 E E L F F r L 5 r П P F 5 E d C ,	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop [DC injection] ( $d E r$ ): DC injection stop. This type of stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1)	s, according to the restart ad [2 wire type] ( $E \ E \ E$ ) pag- assigned to a logic output, fo sts and the run command ha- rred, as long as the detected ctions. See table on page <u>16</u>		
ЧЕ 5 5 E E L F F r L 5 r П P F 5 E	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1)	s, according to the restart ad [2 wire type] ( <i>E E E</i> ) pag assigned to a logic output, fo ass and the run command ha red, as long as the detected		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop [DC injection] ( $d E r$ ): DC injection stop. This type of stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund	s, according to the restart ad [2 wire type] ( <i>E C E</i> ) pag assigned to a logic output, fo sts and the run command ha rred, as long as the detected ctions. See table on page <u>16</u>		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop [DC injection] ( $d E r$ ): DC injection stop. This type of stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1)	s, according to the restart ad [2 wire type] ( <i>L [ L ]</i> ) pag assigned to a logic output, fo sts and the run command ha rred, as long as the detected ctions. See table on page <u>16</u>		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been remove [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop [DC injection] ( $d E r$ ): DC injection stop. This type of stop	as soon as the detected fault disappear coording to [2/3 wire control] ( $E \ E \ )$ at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund	s, according to the restart ad [2 wire type] ( <i>L [ L ]</i> ) pag assigned to a logic output, fo sts and the run command ha rred, as long as the detected ctions. See table on page <u>16</u>		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( $\forall E 5$ ): Freewheel stop [Per STT] ( $5 E E$ ): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, ac 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop. [fallback spd] ( $L F F$ ): Change to fallback speed, maintain not been removed (1) [Spd maint.] ( $r L 5$ ): The drive maintains the speed bein fault is present and the run command has not been removed [Ramp stop] ( $r \Pi P$ ): Stop on ramp [Fast stop] ( $F 5 E$ ): Fast stop [DC injection] ( $d E r$ ): DC injection stop. This type of stop	as soon as the detected fault disappear coording to [2/3 wire control] ( <i>E</i> [ ) at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund <b>VARNING</b>	s, according to the restart ad [2 wire type] ( <i>E E E</i> ) pag assigned to a logic output, for sts and the run command ha red, as long as the detected stions. See table on page <u>16</u> [Freewheel] ( <i>J E</i> 5)		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( 4 E 5): Freewheel stop         [Per STT] ( 5 E E): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, active 125 if control is via the terminals). Configuring an alarm for example) in order to indicate the cause of the stop.         [fallback spd] (L F F): Change to fallback speed, maintain not been removed (1)         [Spd maint.] (r L 5): The drive maintains the speed bein fault is present and the run command has not been remove (Ramp stop] (r fi P): Stop on ramp         [Fast stop] (F 5 E): Fast stop         [DC injection] (d C r): DC injection stop. This type of stop         [Modbus fault mgt]         LOSS OF CONTROL         If this parameter is set to [Ignore] (n a), Modbus         • Only use this setting after a thorough risk asset	as soon as the detected fault disappear coording to [2/3 wire control] ( L [ L ) at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund <b>VARNING</b> s communication monitoring is disa essment in compliance with all regu	s, according to the restart ad [2 wire type] ( $E \ E \ E$ ) pag assigned to a logic output, for sts and the run command ha rred, as long as the detected ctions. See table on page <u>16</u> [Freewheel] ( $\exists E \ 5$ )		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( <i>YE</i> 5): Freewheel stop         [Per STT] (5 <i>E L</i> ): Stop according to configuration of [Typ         fault relay does not open and the drive is ready to restart a         conditions of the active command channel (for example, ad         125 if control is via the terminals). Configuring an alarm for         example) in order to indicate the cause of the stop.         [fallback spd] ( <i>L F F</i> ): Change to fallback speed, maintain         not been removed (1)         [Spd maint.] ( <i>r L</i> 5): The drive maintains the speed bein         fault is present and the run command has not been removed         [Ramp stop] ( <i>r П P</i> ): Stop on ramp         [Fast stop] ( <i>F</i> 5 <i>L</i> ): Fast stop         [DC injection] ( <i>d L r</i> ): DC injection stop. This type of stop         [Modbus fault mgt]         LOSS OF CONTROL         If this parameter is set to [Ignore] ( <i>n a</i> ), Modbus         • Only use this setting after a thorough risk asset that apply to the device and to the application	as soon as the detected fault disappear coording to [2/3 wire control] ( L [ L ) at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund <b>VARNING</b> s communication monitoring is disa essment in compliance with all regu-	s, according to the restart ad [2 wire type] ( $E \ E \ E$ ) pag assigned to a logic output, for sts and the run command ha rred, as long as the detected ctions. See table on page <u>16</u> [Freewheel] ( $\exists E \ 5$ )		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( 4 E 5): Freewheel stop         [Per STT] ( 5 E E): Stop according to configuration of [Typ fault relay does not open and the drive is ready to restart a conditions of the active command channel (for example, active and the terminals). Configuring an alarm for example) in order to indicate the cause of the stop.         [fallback spd] (L F F): Change to fallback speed, maintain not been removed (1)         [Spd maint.] (r L 5): The drive maintains the speed bein fault is present and the run command has not been removel (Ramp stop] (r fi P): Stop on ramp         [Fast stop] (F 5 E): Fast stop         [DC injection] (d E r): DC injection stop. This type of stop         [Modbus fault mgt]         LOSS OF CONTROL         If this parameter is set to [Ignore] (n a), Modbus         • Only use this setting after a thorough risk assorthat apply to the device and to the application         • Only use this setting for tests during commiss	as soon as the detected fault disappear coording to [2/3 wire control] ( <i>E</i> [ ) at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund <b>VARNING</b> s communication monitoring is disa essment in compliance with all regu- ioning.	s, according to the restart and [2 wire type] ( $E \ E$ ) pag assigned to a logic output, for sta and the run command have red, as long as the detected stions. See table on page <u>16</u> [Freewheel] ( $\Im E$ 5) [Freewheel] ( $\Im E$ 5) abled. Julations and standards		
ЧЕ 5 5 E E L F F r L 5 F 5 E d C ,	[Freewheel] ( <i>YE</i> 5): Freewheel stop         [Per STT] (5 <i>E L</i> ): Stop according to configuration of [Typ         fault relay does not open and the drive is ready to restart a         conditions of the active command channel (for example, ad         125 if control is via the terminals). Configuring an alarm for         example) in order to indicate the cause of the stop.         [fallback spd] ( <i>L F F</i> ): Change to fallback speed, maintain         not been removed (1)         [Spd maint.] ( <i>r L</i> 5): The drive maintains the speed bein         fault is present and the run command has not been removed         [Ramp stop] ( <i>r П P</i> ): Stop on ramp         [Fast stop] ( <i>F</i> 5 <i>L</i> ): Fast stop         [DC injection] ( <i>d L r</i> ): DC injection stop. This type of stop         [Modbus fault mgt]         LOSS OF CONTROL         If this parameter is set to [Ignore] ( <i>n a</i> ), Modbus         • Only use this setting after a thorough risk asset that apply to the device and to the application	as soon as the detected fault disappear coording to [2/3 wire control] ( <i>E</i> [ ) at or this detected fault is recommended (a ined as long as the detected fault persis g applied when the detected fault occur red (1) p cannot be used with certain other fund <b>VARNING</b> s communication monitoring is disa essment in compliance with all regu- ioning. en re-enabled before completing the	s, according to the restart and [2 wire type] ( $E \ E$ ) pag assigned to a logic output, for sta and the run command have red, as long as the detected stions. See table on page <u>16</u> [Freewheel] ( $\Im E$ 5) [Freewheel] ( $\Im E$ 5) abled. Julations and standards		

DRI- > CONF > FULL > FLT- > CLL-

Code	Name / Description	Adjustment range	Factory setting
	Behavior of the drive in the event of a communication interruption with inte	grated Modbus.	
9 E S	[Ignore] (n o): Detected fault ignored [Freewheel] (4 E 5): Freewheel stop [Per STT] (5 L L): Stop according to configuration of [Type of stop] (5 L L) page <u>173</u> , without fault tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to [2/3 wire control] (L L L) and [2 wire type] (L L L) page		
LFF	<ul> <li><u>125</u> if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop.</li> <li>[fallback spd] (<i>L F F</i>): Change to fallback speed, maintained as long as the detected fault persists and the run command has not been removed (1)</li> </ul>		
гПP	<b>[Spd maint.]</b> ( $r L 5$ ): The drive maintains the speed being applied when the detected fault occurred, as long as the detected fault is present and the run command has not been removed (1) <b>[Ramp stop]</b> ( $r \Pi P$ ): Stop on ramp		
d C i	[Fast stop] (F 5 L): Fast stop [DC injection] (d L ): DC injection stop. This type of stop cannot be used	with certain other function	ons. See table on page <u>165</u> .
FLE-	[FAULT MANAGEMENT] (continued)		
5 d d -	[ENCODER FAULT]		
5 d d	[Load slip detection]		[Yes] ( <i>4E</i> 5)
	Load slip detection activation		
	[ <b>No</b> ] ( n p): Detected fault ignored [ <b>Yes</b> ] ( <del>y</del> E 5): Freewheel stop		
	The event is triggered by comparison with the output frequency and the sp configuration $FR_{n}F$ , $LR_{n}F$ , $dR_{n}F$ and $LR_{n}F$ . The event is also triggered as soon as a RUN order is received, if the sign in opposite way during $LR_{n}F$ . In case of a detected fault, the drive switch to a freewheel stop, and if the b brake command will be set to 0.	of the output frequency a	nd the speed feedback are
FRnF	[ANF Frequency Thd.]		-
*	Visible if [Encoder usage] (Enu) is set to [Fdbk monit.] (5 E L). See page <u>136</u>		
LAnF	[ANF Detection level]		-
*	Visible if [Encoder usage] (Enu) is set to [Fdbk monit.] (5 E L). See page <u>136</u>		
dRnF	[ANF Direction check]		-
*	Visible if [Encoder usage] (Enu) is set to [Fdbk monit.] (5 E L). See page <u>137</u>		
EAnF	[ANF Time Thd.]		-
*	Visible if [Encoder usage] (Enu) is set to [Fdbk monit.] (5 E L). See page <u>137</u>		

DRI- > CONF > FULL > FLT- > TID-

Code	Name / Description	Adjustment range	Factory setting
Eid-	[TORQUE OR I LIM. DETECT]		
556	[Trq/I limit. stop]		[lgnore] (ם ח)
	Behavior in the event of switching to torque or current limitation.		
, n a 4 E S	[Ignore] ( n e): Detected fault ignored [Freewheel] ( 4 E 5): Freewheel stop		
	<b>[Per STT]</b> ( $5 \ L \ L$ ): Stop according to configuration of <b>[Type of stop]</b> ( $5 \ L \ L$ ) page <u>173</u> , without fault tripping. In this case, the fault relay does not open and the drive is ready to restart as soon as the detected fault disappears, according to the restart conditions of the active command channel (for example, according to <b>[2/3 wire control]</b> ( $L \ L \ L$ ) and <b>[2 wire type]</b> ( $L \ L \ L$ ) page <u>125</u> if control is via the terminals). Configuring an alarm for this detected fault is recommended (assigned to a logic output, for example) in order to indicate the cause of the stop		
LFF	[fallback spd] ( <i>L F F</i> ): Change to fallback speed, maintained as long as the detected fault persists and the run command has not been removed (1)		
r L 5			
r NP	[Ramp stop] ( ¬ П P): Stop on ramp		
FSE	[Fast stop] (F 5 L): Fast stop		
d C i	[DC injection] (d [ ): DC injection stop. This type of stop cannot be use	ed with certain other func	tions. See table on page <u>165</u>
5 E o	[Trq/I limit. time out]	0 to 9,999 ms	1,000 ms
0	(If <b>[Trq/l limit. stop]</b> (5 5 b) has been configured) Time delay for taking SSF limitation into account.	L	

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.



Parameter that can be modified during operation or when stopped.

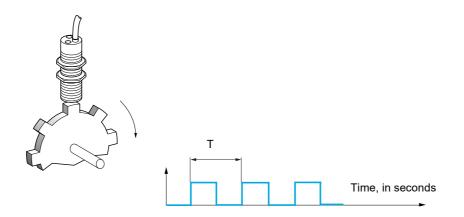
To change the assignment of this parameter, press the ENT key for 2 s.

#### Use of the "Pulse input" input to measure the speed of rotation of the motor

This function uses the "Pulse input" input and can only be used if the "Pulse input" input is not being used for another function.

#### Example of use

An indexed disk driven by the motor and connected to a proximity sensor can be used to generate a frequency signal that is proportional to the speed of rotation of the motor.



When applied to the "Pulse input" input, this signal supports:

- Measurement and display of the motor speed: signal frequency = 1/T. This frequency is displayed by means
  of the [Pulse in. work. freq.] (F 9 5) parameter, page <u>50</u>.
- Overspeed detection (if the measured speed exceeds a preset threshold, the drive will trigger an error).
- Brake failure detection, if brake logic control has been configured: If the speed does not drop sufficiently quickly following a command to engage the brake, the drive will trigger an error. This function can be used to detect worn brake linings.
- Detection of a speed threshold that can be adjusted using [Pulse warning thd.] (F 9 L) page <u>102</u> and is assignable to a relay or logic output, see page <u>138</u>.

DRI- > CONF > FULL > FLT- > FQF-

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
F9F-	[FREQUENCY METER]		
F9F	[Frequency meter]		[No] (n @)
	Activation of the speed measurement function.		
п а У Е 5	[No] ( n a): Function inactive. In this case, none of the function parameters [Yes] ( 4 E 5): Function active, assignment only possible if no other function		to the "Pulse input" input
F9C	[Pulse scal. divisor]	1.0 to 100.0	1.0
()	Scaling factor for the "Pulse input" input (divisor). The frequency measured is displayed by means of the [Pulse in. work. freq.] ( <i>F</i> 9 5) parameter, page <u>50</u> .		
F9R	[Overspd. pulse thd.]		[No] (n ¤)
	Activation and adjustment of overspeed monitoring: [Overspeed] (5 o F).		
-	[No] (no): No overspeed monitoring 1 Hz to 20.00 kHz: Adjustment of the frequency tripping threshold on the "F [Pulse scal. divisor] (F9[).	Pulse input" input divided	d by
<i>E d</i> 5	[Pulse overspd delay]	0.0 s to 10.0 s	0.0 s
	Time delay for taking overspeed detected fault into account.		
FdE	[Level fr. pulse ctrl]		[No] ( n 🛛 )
	Activation and adjustment of monitoring for the Pulse input (speed feedback	<): [Speed fdback loss]	(5 <i>PF</i> ).
n e -	[No] (no): No monitoring of speed feedback 0.1 Hz to 599 Hz: Adjustment of the motor frequency threshold for tripping a the estimated frequency and the measured speed).	speed feedback detecte	ed fault (difference between
F9E	[Pulse thd. wo Run]		[No] ( n o )
	Activation and adjustment of brake monitoring: [Brake feedback] ( <i>b</i> r F). If brake logic control [Brake assignment] ( <i>b</i> L C) page <u>194</u> is not configur [No] (n c): No brake monitoring 1 Hz to 1,000 Hz: Adjustment of the motor frequency threshold.	red, this parameter is fo	rced to [No] ( n a).
-			
- £96	[Pulse wo Run delay]	0.0 s to 10.0 s	0.0 s

#### Load variation detection

This detection is only possible with the High-speed hoisting function. It can be used to detect if an obstacle has been reached, triggering a sudden (upward) increase or (downward) decrease in the load.

Load variation detection triggers a [Dynamic load fault] (d L F). The [Dyn. load Mgt.] (d L b) parameter can be used to configure the response of the drive in the event of this detected fault.

Load variation detection can also be assigned to a relay or a logic output.

There are two possible detection modes, depending on the configuration of high-speed hoisting:

Speed reference mode

**[High speed hoisting]** (*H* 5 <sup>*a*</sup>) page <u>204</u> is set to **[Speed ref]** (5 5 <sup>*a*</sup>). Torque variation detection.

During high-speed operation, the load is compared to that measured during the speed step. The permissible load variation and its duration can be configured. If exceeded, the drive switches to fault mode.

Current limitation mode

[High speed hoisting] (H 5 ) page 204 is set to [Current Limit] (L 5 ).

On ascend, during high-speed operation, an increase in load will result in a drop in speed. Even if high-speed operation has been activated, if the motor frequency drops below the [I Limit Frequency] ( $5 \ L$ ) threshold page 205, the drive will switch to fault mode. The detection is realised only for a positive variation of the load and only in the high speed area (area upper to [I Limit Frequency] ( $5 \ L$ )). On descend, operation takes the form of Speed reference mode.

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
dLd-	[DYNAMIC LOAD DETECT.]		
	Load variation detection. This can be accessed if [High speed	ed hoisting] (H 5 a) page 204 is not	[No] ( n a ).
ELd	[Dynamic load time]		[No] ( n a )
	Activation of load variation detection and adjustment of time delay for taking load variation detected fault [Dynamic load fault] ( <i>d L F</i> ) into account.		
-	[No] ( n a): No load variation detection 0.00 s to 10.00 s: Adjustment of the time delay for taking det	tected fault into account.	
dLd	[Dynamic load threshold]	1 to 100%	100%
	Adjustment of the threshold for load variation detection, as a	% of the load measured during the s	peed step.
dLЬ	[Dyn. load Mgt.]		[Freewheel] (9E 5)
	Behavior of the drive in the event of a load variation detected	d fault.	
9 E S	[Ignore] (n o): Detected fault ignored [Freewheel] ( <i>JE</i> 5): Freewheel stop [Per STT] ( <i>5 E E</i> ): Stop according to configuration of [Type relay does not open and the drive is ready to restart as soon a of the active command channel, (for example, according to [ control is via the terminals). Configuring an alarm for this detect in order to indicate the cause of the stop	as the detected fault disappears, accor 2/3 wire control] ( <i>E</i> [ [ ]) and [2 wire	type] ( <i>L L L</i> ) page <u>125</u> if
LFF		ed as long as the detected fault persis	ts and the run command has
r L 5	and the run command has not been removed (1)	ne the detected fault occurred, as long	as the detected fault persists
- <i>ПР</i>			
FSE	[Fast stop] (F 5 L): Fast stop		

DRI- > CONF > FULL > FLT- > TNF-

## Parameters described in this page can be accessed by:

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
EnF-	[AUTO TUNING FAULT]		
EnL	[Autotune fault mgt]		[Freewheel] (9E 5)
ла УЕ 5	[Ignore] ( n a): Detected fault ignored [Freewheel] ( 4 E 5): Freewheel stop		

(1) Because, in this case, the detected fault does not trigger a stop, it is recommended to assign a relay or logic output to its indication.



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

#### Card pairing

Function can only be accessed in [Expert] (EPr) mode.

This function is used to detect whenever a card has been replaced or the software has been modified in any way.

When a pairing password is entered, the parameters of the card currently inserted are stored. On every subsequent power-up, these parameters are verified and, in the event of a discrepancy, the drive locks in HCF fault mode. Before the drive can be restarted, you must revert to the original situation or re-enter the pairing password.

The following parameters are verified:

- The type of card for: all cards.
- · The software version for: the control block, the communication cards.
- The serial number for: the control block.

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued	)	• 
PP :-	[CARDS PAIRING]		
PP ,	[Pairing password]	[OFF] ( _ F F ) to 9,999	[OFF] ( _ F F )
*			
o F I	<ul> <li>The [OFF] (a F F) value signifies that the card pairin</li> <li>The [ON] (a n) value signifies that card pairing is ac the event of a card pairing detected fault</li> <li>As soon as the code has been entered, the drive is u The PPI code is an unlock code known only to Schne</li> </ul>	nlocked and the code changes to <b>[ON]</b> ( $\_$ n).	order to start the drive in

 $\star$ 

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

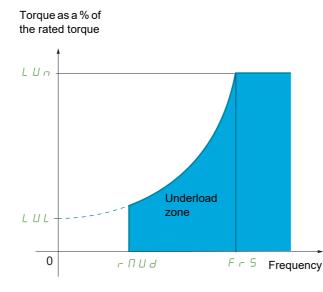
#### DRI- > CONF > FULL > FLT- > ULD-

#### Parameters described in this page can be accessed by:

#### Process underload detected fault

A process underload is detected when the next event occurs and remains pending for a minimum time **[Unid T. Del. Detect]** ( $\mu L E$ ), which is configurable:

- The motor is in steady state when the offset between the frequency reference and motor frequency falls below the configurable threshold [Hysteresis Freq. Att.] (5 r b).



Between zero frequency and the rated frequency, the curve reflects the following equation:

torque =  $L \sqcup L$  +  $(\frac{L \sqcup n - L \sqcup L}{(rated frequency)^2})^2$ 

The underload function is not active for frequencies below **[Unld. Freq. Thr. Det.]** ( $r \sqcap u d$ ).

A relay or a logic output can be assigned to the signaling of this detected fault in the **[INPUTS / OUTPUTS CFG]** ( , , , , , , ) menu.

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
u L d -	[PROCESS UNDERLOAD]		
υLΕ	[Unid T. Del. Detect.]	0 to 100 s	0 s
	Underload detection time delay. A value of 0 deactivates the function and makes the other parameters ina	ccessible.	
Lun	[Unld. Thr. Nom. Speed.]	20 to 100%	60%
*	Underload threshold at rated motor frequency ([Rated motor freq.] (F r	5) page <u>86</u> ), as a % of the rate	d motor torque.
0			
LuL	[Unid. Thr. 0. Speed.]	0 to [Unid.Thr.Nom.Speed]	0%
*	Underload threshold at zero frequency, as a % of the rated motor torque.		ł
0			
rNud	[Unid. Freq. Thr. Det.]	0 to 599 Hz	0 Hz
*	Minimum frequency underload detection threshold.		
()			
			0.3 Hz
Srb	[Hysteresis Freq. Att.]	0.3 to 599 Hz	0.3 HZ
5 r b ★	[Hysteresis Freq. Att.] Maximum deviation between the frequency reference and the motor frequ		

DRI- > CONF > FULL > FLT- > ULD-

Code	Name / Description	Adjustment range	Factory setting
udL	[Underload Managmt.]		[Freewheel] ( <i>Y E</i> 5)
*	Behavior on switching to underload detection.		
	[Ignore] ( ר ב): Detected fault ignored		
9 E S	[Freewheel] ( 4 E 5): Freewheel stop		
r N P	[Ramp stop] (r ПP): Stop on ramp		
FSE	[Fast stop] (F 5 L): Fast stop		
FEu	[Underload T.B. Rest.]	0 to 6 min	0 min
*	This parameter cannot be accessed if [Underload Ma		
	Minimum time permitted between an underload being of	<b>J</b>	
()	In order to allow an automatic restart, the value of [Max one minute.	t. restart time] ( <i>L</i>	d this parameter by at least

\*

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

DRI- > CONF > FULL > FLT- > OLD-

#### Parameters described in this page can be accessed by:

#### Process overload detected fault

A process overload is detected when the next event occurs and remains pending for a minimum time **[OvId Time Detect.]** ( $L \circ L$ ), which is configurable:

- The drive is in current limitation mode.
- The motor is in steady state and the current is above the set overload threshold [Ovld Detection Thr.] (L o [).

The motor is in steady state when the offset between the frequency reference and motor frequency falls below the configurable threshold [Hysteresis Freq. Att.] (5 r b).

A relay or a logic output can be assigned to the signaling of this detected fault in the

#### [INPUTS / OUTPUTS CFG] ( , \_ \_ \_ -) menu.

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
old-	[PROCESS OVERLOAD]		
t o L	[OvId Time Detect.]	0 to 100 s	0 s
	Overload detection time delay. A value of 0 deactivates the function and makes the other parameters inaccessible.		
LoC	[OvId Detection Thr.]	70 to 150%	110%
*	Overload detection threshold, as a % of the rated motor current [ than the limit current in order for the function to work.	Rated mot. current] ( n [ r ) page 86. Th	his value must be less
()	than the limit current in order for the function to work.		
(1)			
5 r b	[Hysteresis Freq.Att.]	0 to 599 Hz	0.3 Hz
	Maximum deviation between the frequency reference and the m		
*			
()			
(1)			
o d L	[OvId.Proces.Mngmt]		[Freewheel] (9E5)
*	Behavior on switching to overload detection.		
п в УЕ 5 г ПР F 5 Ł	[Ignore] (n p): Detected fault ignored [Freewheel] (4 E 5): Freewheel stop [Ramp stop] (r f P): Stop on ramp [Fast stop] (F 5 L): Fast stop		
Fto	[Overload T.B.Rest.]	0 to 6 min	0 min
*	This parameter cannot be accessed if [OvId.Proces.Mngmt] (		
()	Minimum time permitted between an overload being detected an In order to allow an automatic restart, the value of [Max. restart f	•	parameter by at least
	one minute.		
(1) FLE -	[FAULT MANAGEMENT] (continued)		
LFF-			
	[FALLBACK SPEED]	0 to 500 Up	0 Hz
LFF	[Fallback speed]	0 to 599 Hz	
<b>F I I</b>	Selection of the fallback speed.		
FLE-	[FAULT MANAGEMENT] (continued)		
FSE-	[RAMP DIVIDER]		
dEF	[Ramp divider]	0 to 10	4
*	The ramp that is enabled ([Deceleration] ( <i>d</i> E L) or [Deceleration] ( <i>d</i> E L) or [Deceleration]	ion 2] ( <i>d</i> E <i>d</i> )) is then divided by this coe	efficient when stop
()	Value 0 corresponds to a minimum ramp time.		
(1)			

DRI- > CONF > FULL > FLT- > DCI-

Code	Name / Description	Adjustment range	Factory setting
FLE-	[FAULT MANAGEMENT] (continued)		
d[ 1-	[DC INJECTION]		
ı d C	[DC inject. level 1]	0.1 to 1.41 ln (2)	0.64 ln (2)
	NO	TICE	
*	OVERHEATING AND DAMAGE TO THE MOTOR		
()	Verify that the connected motor is properly rated for the		n terms of amount
(1) (3)	and time in order to avoid overheating and damage to the motor. Failure to follow these instructions can result in equipment damage.		
	Failure to follow these instructions can result in e	quipment damage.	
	Level of DC injection braking current activated via logic input o	r selected as stop mode.	
Ed i	[DC injection time 1]	0.1 to 30 s	0.5 s
			1
	NOTICE		
*	OVERHEATING AND DAMAGE TO THE MOTOR		
	Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amount		
()	and time in order to avoid overheating and damage to the motor.		
(1) (3)	Failure to follow these instructions can result in e	quipment damage.	
	Maximum current injection time [DC inject. level 1] ( , d [). A	for this time, the injustion ourrant become	2
	[DC inject. level 2] ( $i \neq L$ 2).		5
, d C 2	[DC inject. level 2]	0.1 ln (2) to [DC inject. level 1] ( , d [ )	0.5 ln (2)
	NO	TICE	
*	OVERHEATING AND DAMAGE TO THE MOTOR		
0	Verify that the connected motor is properly rated for the		n terms of amount
••	and time in order to avoid overheating and damage to		
(1) (3)	Failure to follow these instructions can result in e	quipment damage.	
	Injection current activated by logic input or selected as stop mo	de, once period of time [DC injection tim	e 1] ( <i>Ł d</i> ,) has
	elapsed.		

DRI- > CONF > FULL > FLT- > DCI-

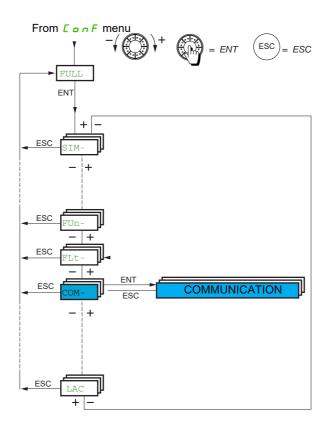
Code	Name / Description	Adjustment range	Factory setting	
EdE	[DC injection time 2]	0.1 to 30 s	0.5 s	
		NOTICE		
*	OVERHEATING AND DAMAGE TO T	HE MOTOR		
1	Verify that the connected motor is properly rated for the DC injection current to be applied in terms of amoun			
and time in order to avoid overheating and damage to the motor.				
(1) (3)	Failure to follow these instructions can result in equipment damage.			
	Maximum injection time [DC inject. level 2] ( This parameter can be accessed if [Type of st	<b>d</b> [ 2) for injection, selected as stop mode only <b>op]</b> (5 <i>L L</i> ) is set to [ <b>DC injection</b> ] ( <i>d</i> [ <i>i</i> ).	<i>.</i>	
	(2) In corresponds to the rated drive curre	n the [SETTINGS] (5 $E$ $E$ -) and [APPLICATIO nt indicated in the Installation manual and on the [AUTO DC INJECTION] ( $R$ $d$ $E$ -) function.		
📩 al	hese parameters only appear if the correspondir lso be accessed and adjusted from within the cor these menus, on the pages indicated, to aid pro	figuration menu for the corresponding functio		

Parameter that can be modified during operation or when stopped.

()

## Communication

## With integrated display terminal:



Code	Name / Description	Adjustment range	Factory setting
Full	[FULL] (continued)		
С 🛛 П -	[COMMUNICATION]		
, E S -	[COM. SCANNER INPUT]		
	[Scan. IN1 address] ( ¬ П Я I) to [Scan. IN4 address] (see Modbus & CANopen® communication manual).	( n II R H) could be used for Fast Task of t	he communication scanner
<u>πΠΑΙ</u>	[Scan. IN1 address]		3,201
	Address of the 1st input word.		
n N A 2	[Scan. IN2 address]		8,604
	Address of the 2nd input word.		
п П Я Э	[Scan. IN3 address]		0
	Address of the 3rd input word.		
<u> п П Я Ч</u>	[Scan. IN4 address]		0
	Address of the 4th input word.		L
n N A S	[Scan. IN5 address]		0
	Address of the 5th input word.		L
n N A 6	[Scan. IN6 address]		0
	Address of the 6th input word.		L
п П Я Л	[Scan. IN7 address]		0
	Address of the 7th input word.		L
n N A B	[Scan. IN8 address]		0
	Address of the 8th input word.		L

DRI- > CONF > FULL > COMM- > OCS-

Code	Name / Description	Adjustment range	Factory setting
С 🛛 Л -	[COMMUNICATION] (continued)		
o[5-	[COM. SCANNER OUTPUT]		
	[Scan. Out1 address] ( n [ R I) to [Scan. Out4 address] ( n [ R 4) could (see Modbus & CANopen® communication manual).	be used for Fast Task of	the communication scanne
n C A I	[Scan.Out1 address]		8,501
	Address of the 1st output word.		
n C A 2	[Scan.Out2 address]		8,602
	Address of the 2nd output word.		
n E A B	[Scan.Out3 address]		0
	Address of the 3rd output word.		<u></u>
n C A 4	[Scan.Out4 address]		0
	Address of the 4th output word.		
n C A S	[Scan.Out5 address]		0
	Address of the 5th output word.		
n C A 6	[Scan.Out6 address]		0
	Address of the 6th output word.		
n C A 7	[Scan.Out7 address]		0
	Address of the 7th output word.		
n C A B	[Scan.Out8 address]		0
	Address of the 8th output word.		
С 🛛 П -	[COMMUNICATION] (continued)		
П 🛛 I -	[MODBUS NETWORK]		
Add	[Modbus Address]	[OFF] ( • F F ) to 247	[OFF] ( <i>a</i> F F )
• F F -	[OFF] (		
ANoC	[Modbus add Com. C.]	[OFF] ( _ F F ) to 247	[OFF] ( <i>a</i> F F )
*		<u>_</u>	
o F F	[OFF] (		
t b r	[Modbus baud rate]		[19.2 Kbps] ( / 9 2)
	4 8 - 9 6 - 19 2 - 38 4 kbps on the integrated display terminal. 4800, 9600, 19200 or 38400 bauds on the graphic display terminal.		
EF o	[Modbus format]		[8-E-1] ( <i>B E 1</i> )
	8O1 - 8E1 - 8n1, 8n2		
t t o	[Modbus time out]	0.1 to 30 s	10.0 s
	0.1 to 30 s		
ΓοΠΙ	[Mdb com stat]		
r 0 E   r   E 0	[r1t0] (r IED): Modbus reception, no transmission	dle	
r   E	[r1t1] (r IE I): Modbus reception and transmission		



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

DRI- > CONF > FULL > FLT- > CNO-

Code	Name / Description	Adjustment range	Factory setting
СоП-	[COMMUNICATION] (continued)		
Eno-	[CANopen]		
AdCo	[CANopen address]	[OFF] ( _ F F ) to 127	[OFF] ( <i>• F F</i> )
• F F -	[OFF] (  F F ): OFF 1 to 127		
6d[o	[CANopen bit rate]		[250 kbps] (2 5 0)
125 250 500	[50 kbps] ( 5 0): 50,000 Bauds [125 kbps] ( 12 5): 125,000 Bauds [250 kbps] ( 2 5 0): 250,000 Bauds [500 kbps] ( 5 0 0): 500,000 Bauds [1 Mbps] ( 10): 1 MBauds		
ErCo	[Error code]	0 to 5	-
	Read-only parameter, cannot be modified.		
СоЛ-	[COMMUNICATION] (continued)		
СЬд-	[COMMUNICATION CARD]		
	See the specific documentation for the card used.		
LCF-	[FORCED LOCAL]		
FLo	[Forced local assign.]		[No] ( n
	Forced local assignment. Forced local mode is active when the input is at state 1. [Forced local assign.] ( <i>F L</i> ) is forced to [No] ( <i>n</i> ) if [Profile] ( <i>L H L</i> [No] ( <i>n</i> ): Function inactive	F) is set to [I/O profile] (	ים) page <u>154</u> .
 L , 6 L A , 1 L A , 2 a L D 1 	<pre>[Ll1] (L , I): Logical input Ll1  [Ll6] (L , 5): Logical input Ll6 [LAl1] (L R , I): Logical input Al1 [LAl2] (L R , 2): Logical input Al2 [OL01] (a L 0 I): Function blocks: Logical Output 01  [OL10] (a L 10): Function blocks: Logical Output 10</pre>		
	[Forced local Ref.]		[No] ( ח ם )
ם ח 1 י R 2 י R E י R	<ul> <li>Forced local reference source assignment.</li> <li>[No] (n p): Not assigned (control via the terminals with zero reference)</li> <li>[Al1] (H I): Analog input</li> <li>[Al2] (H I2): Analog input</li> <li>[Al3] (H I2): Analog input</li> <li>[HMI] (L C C): Assignment of the reference and command to the graphic Reference: [HMI Frequency ref.] (L F r) page 50.</li> </ul>	: display terminal or remot	e display terminal.
	Command: RUN/STOP/FWD/REV keys. [RP] (P i): Pulse input [OA01] ( B D i): Function blocks: Analog Output 01		
■ A I D	[OA10] ( P I D): Function blocks: Analog Output 10		
FLot	[Time-out forc. local] 0.1 to 30 s.	0.1 to 30 s	10.0 s
*	This parameter can be accessed if [Forced local assign.] (F L o) is not Time delay before communication monitoring is resumed on leaving force		

Code	Name / Description         Adjustment range         Factory setting					
С 🛛 Л -	[COMMUNICATION] (continued)					
ntid	[Fieldbus Identifier Sel]		-			
	• This parameter allows to the ATV320 drive to be identified as an ATV320 or an ATV32 drive by the network.					
	• The modification of the setting value is effective when you restart the drive.					
	• This parameter is not part of a drive configuration. This parameter cannot be transfered.					
	A factory setting does not modify the setting value of this parameter.					
320	<ul> <li>IATV320] (I I I): Network identifies the drive as an ATV320.</li> <li>IATV32] (I I): Network identifies the drive as an ATV32.</li> </ul>					
3 E						



These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.

## Access Level

See [3.1 Access Level] (L R L) page <u>282</u>.

# Interface (ItF)

# 6

## What's in this Chapter?

This chapter contains the following topics:

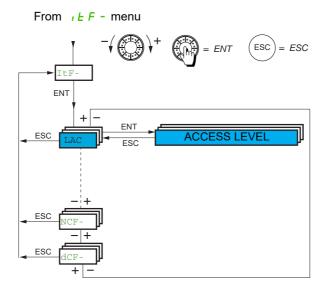
Торіс	Page
Access Level (LAC)	<u>282</u>
Language (LnG)	<u>284</u>
Monitoring Configuration (MCF)	<u>285</u>
Display configuration (dCF)	<u>289</u>

ITF-

#### Parameters described in this page can be accessed by:

## Access Level (LAC)

## With integrated display terminal:



Code	Name / Description	Factory setting
1 E F -	[3 INTERFACE]	
LRC	[3.1 ACCESS LEVEL]	[Standard] (5 <i>L d</i> )
0		
6 A S	[Basic] ( <i>b R</i> 5): Limited access to [SIMPLY START] (5, <i>n</i> -), [1.2 MONITORING] ( <i>n</i> o -), [FACTORY SETTINGS] ( <i>F L</i> 5 -), [5 PASSWORD] ( <i>L</i> o d) and [3.1 ACCESS LEVEL] ( <i>L R L</i> assigned to each input.	
Rdu	<b>[Standard]</b> (5 $E$ d): Access to all menus on the integrated display terminal. Only one function of <b>[Advanced]</b> ( $R$ d $\mu$ ): Access to all menus on the integrated display terminal. Several functions <b>[Expert]</b> ( $E$ $P$ $_{\Gamma}$ ): Access to all menus on the integrated display terminal and access to additional be assigned to each input.	can be assigned to each input.

()

Parameter that can be modified during operation or when stopped.

Comparison of the menus that of	can be accessed on the graphic display	y terminal/integrated display terminal
---------------------------------	--	--

				Ac	ces	s le	vel
[1 DRIVE MENU] ( <i>d</i> r - 1 - )							
	[1.1 SPEED REFERENCE] ( - E F -)						
	[1.2 MONITORING] ( [] )						
		ППо- (Monitoring motor)					
		<u>, с П</u> - (I/O MAP)					
		<b>5</b> <i>R F</i> - (Monitoring Safety)					
		П F ь - (Monitoring Function Bloc	ks)				
		<u>ГПП</u> - (Communication Map)					
		<i>ПР</i> , - (Monitoring PI)					
		PEL - (Monitoring Power time)					
		RLr - (Alarms) (1)					
		<b>5 5</b> <i>L</i> - (Other state) (1)					
		Lod - (Password)					
	[1.3 CONFIGURATION] ([ on F)			НS			
		<u>П                                    </u>		-			
		F [ 5 - (Factory Settings)		Basic			
		Full (Full)				1	
			5, 7 - (Simply Start)				
			<b>5</b> <i>EL</i> - (Settings)				
			F Ь П - (Function		P		
			Blocks)		15	P	
[2 IDENTIFICATION] ( a d	-)(1)				Standard 5	Ч	
[3 INTERFACE] ( , E F -) (1	)				Stan	Advanced	ΡL
	[3.1 ACCESS LEVEL] (L R E)				0)	٨dva	Expert <i>E</i>
	[3.2 LANGUAGE] (L n L)					٩	Expe
[4 OPEN / SAVE AS] (E r R	-)(1)						
[5 PASSWORD] ( [ o d - ) (1	1)						
	A single function can be assigned to	each input.					
[1 DRIVE MENU] ( <i>d</i> r)	[1.2 MONITORING] ( П 🖻 ന - )	d G E - (Diagnostics)			-		
	[1.3 CONFIGURATION] ( <i>L</i> = n F)	Full (Full)					
			d r E - (Motor Control)				
			<ul> <li> (Inputs /</li> <li>Outputs Configuration)</li> </ul>				
			<b>L L -</b> (Command)				
			<b>Fun-</b> (Application function)				
			<i>FLE</i> - (Fault Management)				
			<mark>Г <sub>в</sub> П -</mark> (Communication)				
[3 INTERFACE] ( , <i>E F</i> - ) (1)	[3.3 MONITORING CONFIG.] ( <i>П</i> [	F -)		1			
	A single function can be assigned to	each input.				1	
	[3.4 DISPLAY CONFIG.] ( <i>d</i> [ F -) (1	1)				L	
	Several functions can be assigned to	o each input.					
Expert parameters	Several functions can be assigned to	o each input.					
		•					

(1) Can be accessed only with graphic display terminal.

ITF-

#### Parameters described in this page can be accessed by:

## Language (LnG)

RDY	Term	+0.0 Hz	0.0 A
	3.2 LAN	NGUAGE	
English			
Français			<
Deutsch			
Español			
Italiano			
	<<	>>	Quick
Chinese			
Русский			
Türkçe			

When only one selection is possible, the selection made is indicated by  $\checkmark$  Example: Only one language can be chosen.

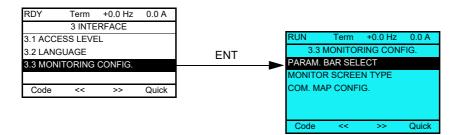
Code	Name / Description	Factory setting
LnG	[3.2 LANGUAGE]	[Language 0] (L n G D)
(	Current language index.	
L n G O	[Language 0] (L _ G [ ])	
	 [Language 9] ( <i>L ດ ር ዓ</i> )	

()

Parameter that can be modified during operation or when stopped.

## **Monitoring Configuration (MCF)**

This menu can only be accessed with the graphic display terminal.



This can be used to configure the information displayed on the graphic display screen during operation.



**[PARAM. BAR SELECT]**: Selection of 1 to 2 parameters displayed on the top line (the first 2 cannot be modified).

[MONITOR SCREEN TYPE]: Selection of parameters displayed in the centre of the screen and the display mode (digital values or bar graph format).

[COM. MAP CONFIG.]: Selection of the words displayed and their format.

ITF- > MCF-

Code	Name / Description
Π <i>L</i> F -	[3.3 MONITORING CONFIG]

Code	Name / Description			
P 6 5 -	[PARAM. BAR SELECT]			
	[Al1] [Al2] [Al3] [AO1] [ETA state world] [Alarm groups] [Frequency ref.] [Output frequency] [Motor current] [Motor speed] [Motor voltage] [Motor voltage] [Motor torque] [Motor torque] [Motor thermal state] [Drv. thermal state] [Drv. thermal state] [Consumption] [Run time] [Power on time] [IGBT alarm counter] [Min. freq time] [PID reference] [PID reference] [PID feedback] [PID error] [PID Output] [Config. active] [Utilised param. set]	in V in V in W in mA in V in Hz: parameter displayed in factory configuration in Hz in A: parameter displayed in factory configuration in rpm in V in W as a % in V as a % as a % in Wh or kWh depending on drive rating in hours (length of time the motor has been switched on) in hours (length of time the drive has been switched on) in hours (length of time the drive has been switched on) in seconds as a % as as a as as a		
	deselected using	rs can be selected.		

ITF- > MCF- > MSC-

#### Monitor screen type

de	Name / Description			Factory setting	
5 C -	[MONITOR SCREEN TYPE	3]			
ПАЕ	[Display value type]			[Digital] ( <i>d E L</i> )	
	[Digital] ( <i>d</i> E C)				
()	[Bar graph] ( <i>B R r</i> )				
	[List] (L , 5 E)				
ΠΡΕ	[PARAMETER SELECTION]				
	[AI1]		in V		
	[Al2]		in V		
	[AI3] [AO1]		in mA in V		
	[ETA state world]		in v		
	[Alarm groups]				
	[Frequency ref.]	i	in Hz: parameter disp	layed in factory configuration	
	[Output frequency]		in Hz		
	[Pulse in. work. freq.]			ayed in factory configuration	
	[Motor current]		in Hz		
	[Motor speed] [Motor voltage]		in rpm in V		
	[Motor voitage]		in W		
	[Motor torque]		as a %		
	[Mains voltage]		in V		
	[Motor thermal state]		as a %		
	[Drv. thermal state]		as a % in Wh or kWh depending on drive rating		
	[Consumption] [Run time]			ne the motor has been switched on)	
	[Power on time]		in hours (length of time the drive has been switched on)		
	[IGBT alarm counter]			of IGBT overheating alarms)	
	[Min. freq time]		in seconds		
	[PID reference]		as a %		
*	[PID feedback] [PID error]		as a % as a %		
	[PID Output]		in Hz		
		( <b>4</b> 1			
	Select the parameter(s) using ENT (a	✓ then appears nex	kt to the parameter). P	arameter(s) can also be deselected using El	
	PARAMETER SELECTION				
	MONITORING				
	······				
	······ 🗸				
	Examples include:				
	Display of 2 digital values	Display of 2 ba	r graphs	Display of a list of 5 values	
	RUN Term +35.0 Hz 80.0 A			UN Term +35.0 Hz 80.0 A	
	Motor speed	Min Motor spee 0 1250 rpm		1.2 MONITORING requency ref. : 50.1Hz	
	1250 rpm				
	1250 rpm Motor current		M		
	· · ·		ent max M	otor current: 80 A	

 $\star$ 

These parameters only appear if the corresponding function has been selected in another menu. When the parameters can also be accessed and adjusted from within the configuration menu for the corresponding function, their description is detailed in these menus, on the pages indicated, to aid programming.



Parameter that can be modified during operation or when stopped.

#### Parameters described in this page can be accessed by:

ITF- > MCF- > ADL-

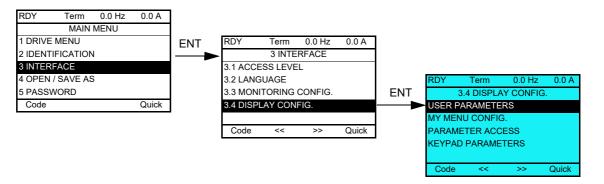
#### Communication map configuration

$\vec{F} d L = [COM. MAP CONFIG.]$ 9 $iR d I = [Word 1 add. select.]$ 9 $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d I = [Format word 1]$ [Hex] (HE ) $\vec{O}$ Format of word 1. $\vec{F} R d J = [Format word 1]$ [Hex] (HE ) $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d 2$ [Format word 2]       [Hex] (HE ) $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d 2$ [Format word 2]       [Hex] (HE ) $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d 3$ [Format word 3]       [Hex] (HE ) $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d 3$ [Format word 3]       [Hex] (HE ) $\vec{O}$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $\vec{F} R d 4$ [Format word 4]       [Hex] (HE ) $\vec{F} C 4 4$ <t< th=""><th>Code</th><th>Name / Description</th><th>Factory setting</th></t<>	Code	Name / Description	Factory setting
Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the log dial.         FRd I       [Format word 1]         Format of word 1.       [Hex] (HE)         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the log dial.         FRd Z       [Format word 2]         Image: the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the log dial.         FRd Z       [Format word 2]         (fermat word 3)       [Hex] (HE)         (fermat word 3)       [Hex] (HE)         (format of word 3)       [Hex] (HE)         (fermat of word 3)       [Hex] (HE)         (fermat word 4)       [Hex] (HE)	AdL -	[COM. MAP CONFIG.]	
FRd 1       [Format word 1]       [Hex] (HE )         Format of word 1.       Hex] (HE )         Format of word 1.       Hex] (HE )         FE       [Signed] (S : L) $a \leq L$ [Word 2 add. select.]         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd 2       [Format of word 2]         Format of word 2.       [Hex] (HE )         Hex [ Hex] (HE )       [Signed] (S : L) $a \leq L$ [Hex] (HE )         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd 3       [Format of word 3]         Frad 4       [Format of word 3]         Frad 5       [Signed] (S : L) $a \leq L$ [Hex] (HE ) $a \leq L$ [Signed] (S : L) $a \leq L$ [Hex] (HE ) $b \leq L$ [Signed] (S : L) $a \leq L$ [Hex] (HE ) $a \leq L$ [Hex] (HE ) $b \leq L$ [Signed] (S : L) $a \leq L$ [Hex] (HE ) $b \leq L$ [Signed] (S : L) $a \leq L$ [Signed] (S : L) $a \leq L$ [Signed] (S : L)	I B R I	[Word 1 add. select.]	0
Format of word 1.         HE         Itex] (HE         Signed] (5:6)         -52         Uhsigned] (-56)         FRd2         Word 2 add. select.]         O         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the Jog dial.         FRd2       [Format word 2]         Format of word 2.         HE       [Signed] (5:6)         -52       [Unsigned] (-56)         -752       [Unsigned] (-56)         -752       [Signed] (5:6)         -752       [Signed] (-56)         -753       [Word 3 add. select.]         O       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd3       [Format word 3]         (J)       Format of word 3.         Hez       [Hex] (HE         (J)       Format of word 3.         Hez       [Hex] (HE         (Signed] (-5.6)         -5.6       [Unsigned] (-5.6)         -5.6       [Unsigned] (-5.6)         -5.6       [Unsigned] (-5.6)         (J)       Format of word 4.         HE       [Signed] (5:6)         -5.6	0	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	jog dial.
Hext (HE ) (Signed) (5, 1) (Maigned) (5, 5)0 $Rdz$ (Word 2 add. select.]0 $G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdz$ (Format word 2)[Hext] (HE ) $G$ Format of word 2.(Hext] (HE ) $Hext (HE )$ Signed] (5, 1) (Dursigned] (5, 5)0 $Rdd$ [Word 3 add. select.]0 $G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdd$ [Format word 3][Hext] (HE ) $G$ Format of word 3.[Hext] (HE ) $G$ Format of word 3.[Hext] (HE ) $G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdd$ [Format word 3][Hext] (HE ) $G$ Format of word 3.[Hext] (HE ) $G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdd$ [Format word 4][Mext] (HE ) $G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdd$ [Format word 4][Mext] (HE ) $G$ Format of word 4. $Hext (HE )$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FRdd$ [Format word 4][Mext (HE ) $G$ Format of word 4. $Hext (HE )$ Select the address of the word to be displayed by p	FRJI	[Format word 1]	[Hex] ( <i>H E</i> )
Heg       [Heg] (HE )         Signed[ (5 , c)       0         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d2       [Format word 2]         ()       Format of word 2.         HEg       [Heg] (HE )         5 c. 6 [Signed] (c , c)       0         7 G4       [Word 3 add. select.]         0       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         7 R d3       [Word 3 add. select.]       0         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d3       [Format word 3]       [Hex] (HE )         ()       Format of word 3.       [Hex] (HE )         ()       Format of word 3.       [Hex] (HE )         ()       Format of word 3.       [Hex] (HE )         ()       Format of word 4.       [Hex] (HE )         ()       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d4       [Format word 4]       [Hex] (HE )         ()       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d4       [Format word 4	()	Format of word 1.	
Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd2       [Format word 2]         Format of word 2.         HE       [Hex] (HE         Signed] (5 · L)       [Signed] (5 · L)         • FAd3       [Word 3 add. select.]         • Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd3       [Format word 3]         • Format of word 3.         • Format of word 4.         • [Itex] (HE)         • Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd4       [Format word 4]         • [Unsigned] (n 5 L)         • not of word 4.         • HE       [Hex] (HE )         • So L       [Signed] (n 5 L)         • not word 4.       [Hex] (HE )         • So L       [Signed] (n 5 L)         • not of word 4.       [Hex] (	5 ,6	[Signed] (5 , L) [Unsigned] (n 5 L)	
FR d 2       [Format word 2]       [Hex] (HE) $O$ Format of word 2.         HE       [Hex] (HE) $S : C$ [Signed] (S : C) $n \leq G$ [Word 3 add. select.] $O$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 3       [Format word 3] $O$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. $FR d 3$ [Format word 3] $O$ Format of word 3. $HE$ [Signed] (S : C) $n \leq G$ [Unsigned] (n $\leq C$ ) $n \leq G$ [Signed] (S : C) $n \leq G$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 4       [Word 4 add. select.]       0 $O$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 4       [Format word 4]       [Hex] (HE) $O$ Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 4       [Format word 4]       [Hex] (HE) $O$ Select the address of the	r R d 2	[Word 2 add. select.]	0
Format of word 2. HE [Hex] (HE ] 5 / E [Signed] (5 / E) 7 / E d 3 [Word 3 add. select.] O Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial. F / E d 3 [Format word 3] F / E d 3 [Format word 3] F / E d 4 [Hex] (HE ) Solution of word 3. HE [Hex] (HE ) Solution of word 3. F / E d 4 [Format word 4] F / E d 5 / E [Signed] (5 / E) 7 / Format of word 4. HE [Hex] (HE ) F / E d 4 [Format word 4] F / E d 4 [Format word 4] F / E d 5 / E [Signed] (5 / E) Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example: RUN Term +35 0 Hz 80.0 A COMMUNICATION MAP] 	0	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	jog dial.
HE       Hex] (HE )         Signed] (5 : C)       (Nord 3 add. select.]         Image: Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd 3       [Format word 3]         Frad 3       [Format word 3]         Pormat of word 3.         HE       Hex] (HE )         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         Image: Hex] (HE )       Format of word 3.         HE       Hex] (HE )         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         Image: Hex] (HE )       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 4       [Format word 4]       [Hex] (HE )         Format of word 4.       Format of word 4.         HE       [Hex] (HE )       Signed] (n 5 C)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] multiple:         RUN       Term +35.0 Hz 80.0 A         COMMUNICATION MAP       [RUN Term +35.0 Hz 80.0 A         COMMUNICATION MAP       [RUN Term +35.0 Hz 80.0 A	FRJZ	[Format word 2]	[Hex] ( <i>H E</i> )
5 ; C       [Signed] (5 ; C) (Unsigned] (n 5 C)         i R d 3       [Word 3 add. select.]       0         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.       Image: Comparison of the format of the forma	()	Format of word 2.	
Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd 3       [Format word 3]         Format of word 3.       [Hex] (HE)         Format of word 3.       [Hex] (HE)         Signed] (S : D)       [Signed] (S : D)         r R d 4       [Word 4 add. select.]         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d 4       [Format word 4]         Format of word 4.       [Hex] (HE)         Signed] (S : D)       [Signed] (S : D)         Format of word 4.       [Hex] (HE)         Signed] (S : D)       [Signed] (S : D)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me         Example:       [NIN Term +35.0 Hz 80.0 A)         COMMUNICATION MAP       [NIP	5 ,6	[Signed] (5 , G)	
FRd 3       [Format word 3]         Format of word 3.       [Hex] (HE)         Signed] (S : D)       [Signed] (S : D) $n \in SD$ [Unsigned] ( $n \in SD$ ) $i R d : Y$ [Word 4 add. select.]         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FR d : Y       [Format word 4]         Format of word 4.       [Hex] (HE)         Signed] (S : D)       [Signed] (S : D)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN Term +35.0 Hz 80.0 A         COMMUNICATION MAP	r A d B	[Word 3 add. select.]	0
Format of word 3.         HE         5 rE         [Signed] (5 rE)         r 5 E         [Unsigned] (r 5 E)         r R d 4         [Word 4 add. select.]         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d 4       [Format word 4]         Format of word 4.         HE       5 rE         [Signed] (5 rE)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me         Example:         RUN Term +35.0 Hz 80.0 A         COMMUNICATION MAP         Image:	(	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	jog dial.
HE       [Hex] (HE )         S i G       [Signed] (S : G)         n S G       [Unsigned] (n S G)         i F d 4       [Word 4 add. select.]       0         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d 4       [Format word 4]       [Hex] (HE )         Format of word 4.       [Hex] (HE )       [Signed] (S : G)         n S G       [Unsigned] (n S G)       [Unsigned] (n S G)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:       [RUN Term +35.0 Hz 80.0 A]         [RUN Term +35.0 Hz 80.0 A]       [COMMUNICATION MAP]	FRd3	[Format word 3]	[Hex] ( <i>H E</i> )
5 : C       [Signed] (5 : C)         n 5 C       [Word 4 add. select.]         0       Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d 4       [Format word 4]         ()       Format of word 4.         HE       [Signed] (5 : C)         n 5 C       [Unsigned] (5 : C)         n 5 C       [Unsigned] (5 : C)         n 5 C       [Unsigned] (n 5 C)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me         Example:       RUN Term +35.0 Hz 80.0 A         COMMUNICATION MAP	()	Format of word 3.	
n 5 G       [Unsigned] (n 5 G)         i fl d 4       [Word 4 add. select.]       0         Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         F R d 4       [Format word 4]       [Hex] (HE )         Format of word 4.       [Hex] (HE )         Signed] (5 , G)       [Unsigned] (5 , G)         unsigned] (n 5 G)       Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN Term +35.0 Hz 80.0 A       COMMUNICATION MAP			
Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the jog dial.         FRd 4       [Format word 4]         Format of word 4.       [Hex] (HE)         Signed] (5 i E)       [Signed] (5 i E)         In 5 E       [Hex] (HE)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN Term +35.0 Hz 80.0 A         COMMUNICATION MAP			
FRd 4       [Format word 4]         Image: Comparison of word 4.         HE       [Hex] (HE)         S : C       [Signed] (S : C)         n 5 C       [Unsigned] (n 5 C)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN Term +35.0 Hz 80.0 A COMMUNICATION MAP         Image: Communication map	, A 9 A	[Word 4 add. select.]	0
Format of word 4.          HE       [Hex] (HE)         5 , C       [Signed] (5 , C)         n 5 C       [Unsigned] (n 5 C)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN       Term +35.0 Hz 80.0 A         COMMUNICATION MAP	()	Select the address of the word to be displayed by pressing the << and >> (F2 and F3) keys and rotating the	jog dial.
HE       [Hex] (HE)         S : G       [Signed] (S : G)         n S G       [Unsigned] (n S G)         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example:         RUN       Term +35.0 Hz 80.0 A         COMMUNICATION MAP	FRJY	[Format word 4]	[Hex] ( <i>H E</i> )
5          [Signed] (5          [D)         [Unsigned] (n 5 [L)         [Unsigned] (n 5 [L)         ]         Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me         Example: $             \frac{RUN  Term  +35.0 \text{ Hz}  80.0 \text{ A}}{COMMUNICATION MAP}             $	()	Format of word 4.	
Then, it will be possible to view the selected words in the [COMMUNICATION MAP] submenu of the [1.2 MONITORING] me Example: RUN       Term       +35.0 Hz       80.0 A         COMMUNICATION MAP	5 ,6	[Signed] (5 · G)	
RUN         Term         +35.0 Hz         80.0 A           COMMUNICATION MAP	n 5 L		
COMMUNICATION MAP			ONITORING] menu.
<< >> Quick		COMMUNICATION MAP 	

Parameter that can be modified during operation or when stopped.

#### Display configuration (dCF)

This menu can only be accessed with the graphic display terminal. It can be used to customize parameters or a menu and to access parameters.

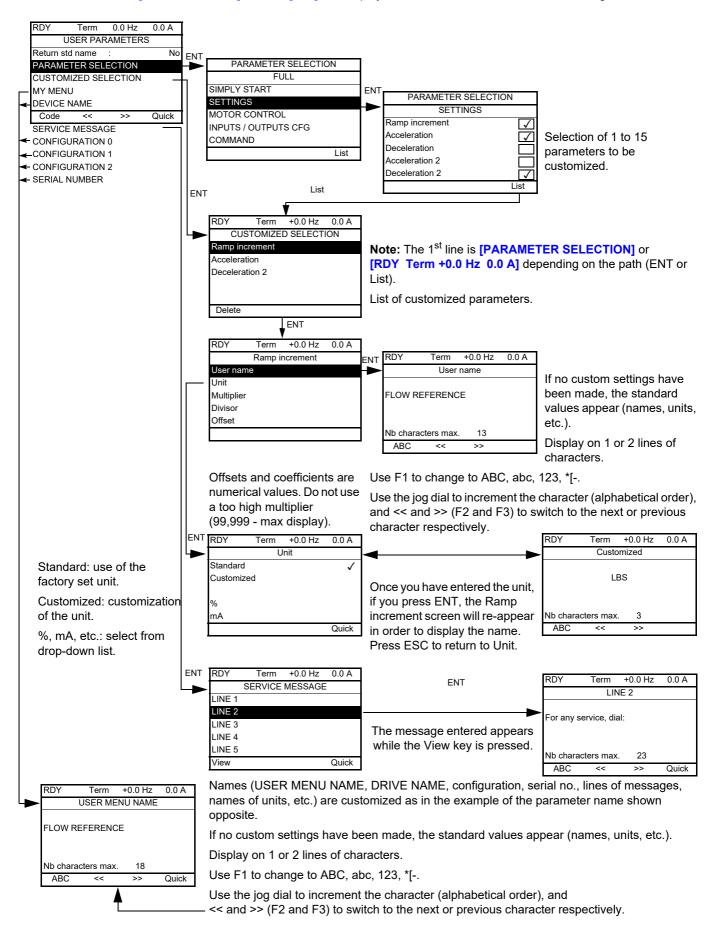


- USER PARAMETERS: Customization of 1 to 15 parameters.
- MY MENU: Creation of a customized menu.
- PARAMETER ACCESS: Customization of the visibility and protection mechanisms of menus and parameters.
- KEYPAD PARAMETERS: Adjustment of the contrast and stand-by mode of the graphic display terminal (parameters stored in the terminal rather than in the drive).

Code	Name / Description
d[F-	[3.4 DISPLAY CONFIG]

#### **User parameters**

If [Return std name] is set to [Yes], the display reverts to standard but the custom settings remain stored.



#### Parameters described in this page can be accessed by:

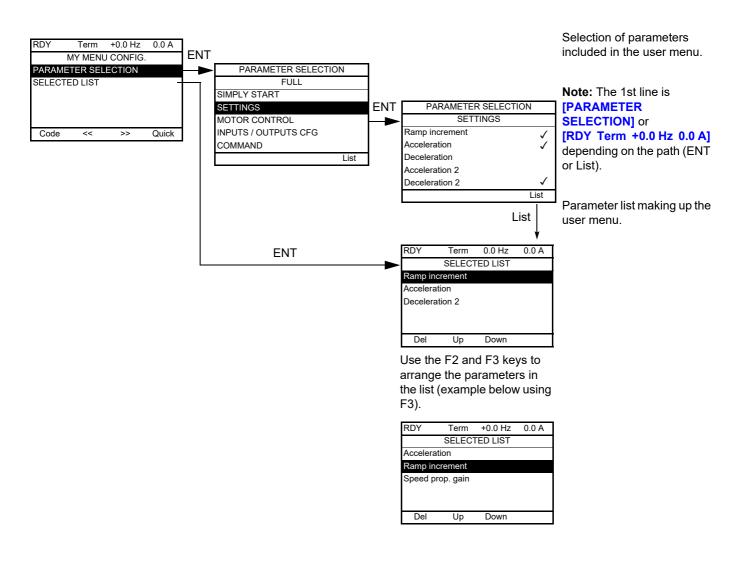
ITF- > DCF- > CUP-

Code	Name / Description	Factory setting
С и Р -	[USER PARAMETERS]	
6 S P	[Return std name]	[No] ( n a )
()	Display standard parameters instead of customised ones.	
ла 965 ЛУЛл	[No] (n e) [Yes] (9 E 5) [MY MENU]	
PAn	[DEVICE NAME]	
SEr -	[SERVICE MESSAGE]	
SALDI	[LINE 1]	
SALOZ	[LINE 2]	
SALD3	[LINE 3]	
SNLOY	[LINE 4]	
5 N L D 5	[LINE 5]	
[ F n 0	[CONFIGURATION 0]	
CFn02	[CONFIGURATION 1]	
[Fn03	[CONFIGURATION 2]	
PSn	[SERIAL NUMBER]	

()

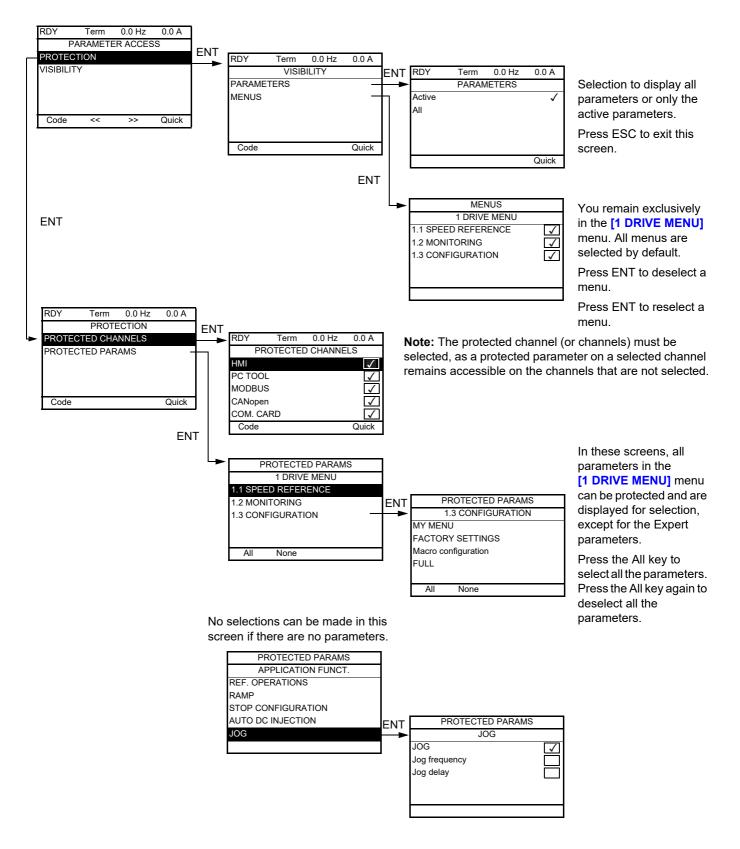
Parameter that can be modified during operation or when stopped.

#### My Menu config.



Code	Name / Description
ПУС -	[MY MENU CONFIG.]

#### **Parameter access**



**Note:** The protected parameters are no longer accessible and are not, therefore, displayed for the selected channels.

#### Parameters described in this page can be accessed by:

ITF- > DCF- > PAC- > PRO- > PCD-

Code	Name / Description	Factory setting
P A C -	[PARAMETER ACCESS]	
Pro-	[PROTECTION]	
P[d-	[PROTECTED CHANNELS]	
Р 5 Паб	<ul> <li>[HMI] (L a n): Graphic display terminal or remote display terminal</li> <li>[PC Tool] (P 5): PC Software</li> <li>[Modbus] (I d b): Integrated Modbus</li> <li>[CANopen] (L R n): Integrated CANopen®</li> <li>[Com. card] (n E b): Communication card (if inserted)</li> </ul>	
u 15 -	[VISIBILITY]	
Puis	[PARAMETERS]	[Active] ( <i>R L L</i> )
()	Parameter visibility: only active ones, or all parameters.	
ACE ALL		

()

Parameter that can be modified during operation or when stopped.

#### Parameters described in this page can be accessed by:

#### **Keypad parameters**

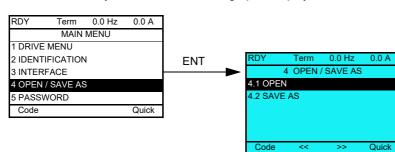
RDY	Term	0.0 Hz	0.0 A
K	EYPAD PA	ARAMETE	RS
Keypad of	contrast		50%
Keypad s	stand-by	:	5 min
Code	<<	>>	Quick

Code	Name / Description	Adjustment range	Factory setting
EnL-	[KEYPAD PARAMETERS]		
ErSE	[Keypad contrast]	0 to 100%	50%
Q	Contrast of the keypad.		
С 5 6 У	[Keypad stand-by]	[No] ( n a ) to 10 min	5 min
()	Graphic keypad standby delay.		
	[No] ( ר ב): No		

()

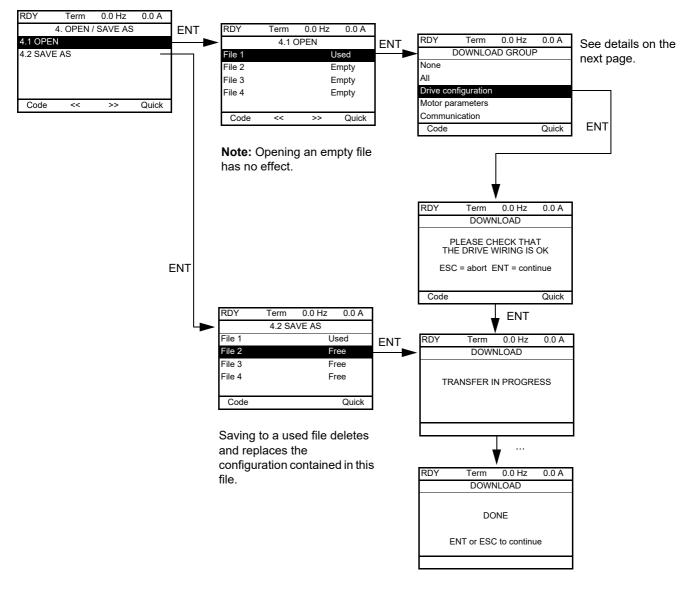
Parameter that can be modified during operation or when stopped.

## Open / Save as (trA)



This menu can only be accessed with the graphic display terminal.

[4.1 OPEN]: To download one of the 4 files from the graphic display terminal to the drive.



#### [4.2 SAVE AS]: To download the current drive configuration to the graphic display terminal.

Various messages may appear when the download is requested:

- [TRANSFER IN PROGRESS]
- [DONE]
- · Error messages if download not possible
- [Motor parameters are NOT COMPATIBLE. Do you want to continue?]: In this case, the download is
  possible, but the parameters will be restricted.

#### DOWNLOAD GROUP

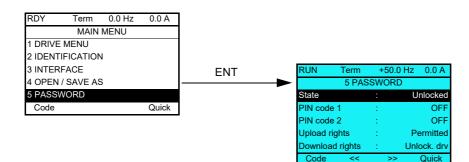
Open / Save as (trA)

[None]:		No parameters
[AII]:		All parameters in all menus
[Drive configuration]:		The entire [1 DRIVE MENU] without [COMMUNICATION]
[Motor parameters]:	[Rated motor volt.] (u n 5)	In the [MOTOR CONTROL] (d r [ -) menu
	[Rated motor freq.] (F r 5)	
	[PSI align curr. max] (n [ r )	
	[Rated motor speed] (n 5 P)	
	[Motor 1 Cosinus phi] (L a 5)	
	[Rated motor power] ( ¬ P ¬ )	
	[Motor param choice] (ПРС)	
	[Tune selection] (5 L u n)	
	[Mot. therm. current] ( , E H)	
	[IR compensation] (uFr)	
	[Slip compensation] (5 L P)	
	[Cust stator resist.] (r 5 R)	
	[Lfw] ( <i>L</i> F <i>R</i> )	
	[Cust. rotor t const.] (E r R)	
	[Nominal I sync.] (n [ r 5)	
	[Nom motor spdsync] ( n 5 P 5)	
	[Pole pairs] (PPn 5)	
	[Syn. EMF constant] (PH5)	
	[Autotune L d-axis] (L d 5)	
	[Autotune L q-axis] (L 9 5)	
	[Nominal freq sync.] (F r 5 5)	
	[Cust. stator R syn] (r 5 R 5)	
	[Motor torque] (£ 9 5)	
	[U1] ( <i>u I</i> )	
	[F1] ( <i>F</i> 1)	
	[U2] ( <i>u</i> 2)	
	[F2] (F 2)	
	[U3] ( <i>u</i> 3)	
	<b>[F3]</b> ( <i>F 3</i> )	
	[U4] ( u 4)	
	[F4] (F 4)	
	[U5] (u 5)	
	[F5] (F 5)	
	The motor parameters that can be accessed in [Expert] ( $E P r$ ) mode, page 261.	
	[Mot. therm. current] ( , E H)	In the [SETTINGS] (5 E L -) menu
[Communication] :		All the parameters in the [COMMUNICATION] menu

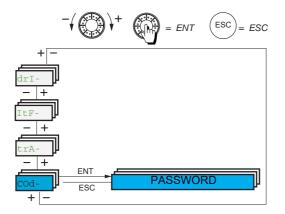
## Password (COd)

## 8

#### With graphic display terminal

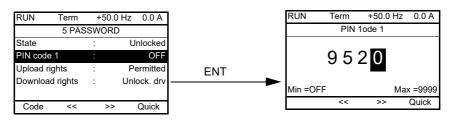


#### With integrated display terminal



Enables the configuration to be protected with an access code or a password to be entered in order to access a protected configuration.

Example with graphic display terminal:



- The drive is unlocked when the PIN codes are set to [Unlocked] ( ¬ F F) (no password) or when the correct code has been entered. All menus are visible.
- Before protecting the configuration with an access code, you must:
  - Define the [Upload rights] ( $\_L \_ r$ ) and [Download rights] ( $\_L \_ r$ ).
    - Make a careful note of the code and keep it in a place where you will be able to find it.

- The drive has 2 access codes, enabling 2 access levels to be set up:
  - PIN code 1 is a public unlock code: 6969.
  - PIN code 2 is an unlock code known only to Schneider Electric Product Support. It can only be accessed in [Expert] (EPr) mode.
  - Only one PIN1 or PIN2 code can be used, the other must remain set to [OFF] ( F F).

Note: When the unlock code is entered, the user access code appears.

The following items are access-protected:

- Return to factory settings ([FACTORY SETTINGS] (F [ 5 ) menu.
- The custom display settings ([3.4 DISPLAY CONFIG.] ( d [ F -) menu).

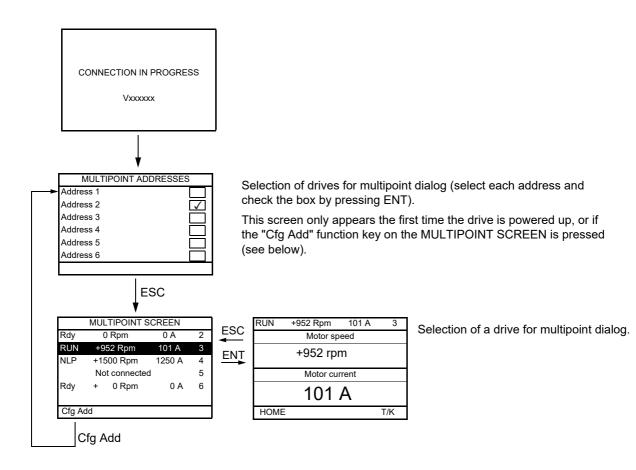
Code	Name / Description	Adjustment range	Factory setting	
Iod-	[5 PASSWORD]			
C S E	[State]		[Unlocked] ( L L )	
	Information parameter, cannot be modified.			
	[Locked] (L [): The drive is locked by a password [Unlocked] (u L [): The drive is not locked by a password			
[ o d	[PIN code 1]	[OFF] ( <b>G</b> F F ) to 9,999	[OFF] ( _ F F )	
	1st access code. The value [OFF] ( $_{\Box} F F$ ) indicates that no password has be indicates that the drive is protected and an access code must be entered in entered, it remains on the display and the drive is unlocked until the next tim PIN code 1 is a public unlock code: 6969.	order to unlock it. Once th	ne correct code has beer	
[ o d 2	[PIN code 2]	[OFF] ( _ F F ) to 9,999	[OFF] ( _ F F )	
	indicates that the drive is protected and an access code must be entered in entered, it remains on the display and the drive is unlocked until the next tim			
	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] (	port. ING] ( <i>П р п -</i> ) menu is th are visible. enu, and if [PIN code 2] (	e only one visible. Then i ( <i>C o d 2</i> ) is not set to	
υLr	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] ( $ \  \  \  \  \  \  \  \  \  \  \  \  \ $	port. ING] ( <i>П р п -</i> ) menu is th are visible. enu, and if [PIN code 2] (	e only one visible. Then i ( <i>C o d 2</i> ) is not set to	
υLr	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] (	port. ING] ( <i>П р п -</i> ) menu is th are visible. enu, and if [PIN code 2] (	e only one visible. Then i ( <i>C o d 2</i> ) is not set to ocked), the visibility	
u L r u L r u L r D u L r D	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] ( $ [ c d d ]$ ) is not set to [OFF] ( $ a F F$ ), the [1.2 MONITOR [PIN code 2] ( $ [ c d d ]$ ) is set to [OFF] ( $ a F F$ ) (drive unlocked), all menus a If the display settings are modified in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ m [OFF] ( $ a F F$ ), the visibility configured is kept. Then if [PIN code 2] ( $ [ c d d ]$ configured in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ menu is kept. [Upload rights] Reads or copies the current configuration to the drive. [Permitted] ( $ u L r []$ ): The current drive configuration can be uploaded to the	port. ING] ( <i>П</i> р п - ) menu is the are visible. enu, and if [PIN code 2] ( P) is set to OFF (drive unless the graphic display terminated to the graphic display terminated terminate	e only one visible. Then i ( <i>C</i> o d 2) is not set to ocked), the visibility [Permitted] ( u L r D) al or PC Software.	
u L r O	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] ( $ [ c d d ]$ ) is not set to [OFF] ( $ a F F$ ), the [1.2 MONITOR [PIN code 2] ( $ [ c d d ]$ ) is set to [OFF] ( $ a F F$ ) (drive unlocked), all menus a If the display settings are modified in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ m [OFF] ( $ a F F$ ), the visibility configured is kept. Then if [PIN code 2] ( $ [ c d d ]$ configured in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ menu is kept. [Upload rights] Reads or copies the current configuration to the drive. [Permitted] ( $ u L r I$ ): The current drive configuration can be uploaded to th [Not allowed] ( $ u L r I$ ): The current drive configuration can only be upload	port. ING] ( <i>П</i> р п - ) menu is the are visible. enu, and if [PIN code 2] ( P) is set to OFF (drive unless the graphic display terminated to the graphic display terminated terminate	e only one visible. Then i ( <i>L</i> o d 2) is not set to ocked), the visibility [Permitted] ( u L r I) al or PC Software. terminal or PC Software i	
ulr0 ulr1	PIN code 2 is an unlock code known only to Schneider Electric Product Sup When [PIN code 2] ( $ [ c d d ]$ ) is not set to [OFF] ( $ a F F$ ), the [1.2 MONITORI [PIN code 2] ( $ [ c d d ]$ ) is set to [OFF] ( $ a F F$ ) (drive unlocked), all menus a If the display settings are modified in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ m [OFF] ( $ a F F$ ), the visibility configured is kept. Then if [PIN code 2] ( $ [ c d d ]$ configured in [3.4 DISPLAY CONFIG.] ( $ d [ F - )$ menu is kept. [Upload rights] Reads or copies the current configuration to the drive. [Permitted] ( $ u L r D$ ): The current drive configuration can be uploaded to the [Not allowed] ( $ u L r D$ ): The current drive configuration can be uploaded to the drive is not protected by an access code or if the correct code has been	port. ING] ( <i>П</i> <u>р</u> <u>п</u> - ) menu is the are visible. enu, and if [PIN code 2] ( P) is set to OFF (drive unle the graphic display terminated to the graphic display terminated termina	e only one visible. Then i ( <i>C</i> a d 2) is not set to ocked), the visibility [Permitted] ( <i>u</i> L r D) al or PC Software.	

### **Multipoint Screen**

#### **Multipoint Screen**

Communication is possible between a graphic display terminal and a number of drives connected on the same bus. The addresses of the drives must be configured in advance in the [COMMUNICATION] ( $L \square \Pi -$ ) menu using the [Modbus Address] ( $\Pi d d$ ) parameter, page <u>276</u>.

When a number of drives are connected to the same graphic display terminal, it automatically displays the following screens:



In multipoint mode, the command channel is not displayed. From left to right, the state, then the 2 selected parameters, and finally the drive address appear.

All menus can be accessed in multipoint mode. Only drive control via the graphic display terminal is not authorized, apart from the Stop key, which locks all the drives.

If there is an error on a drive, this drive is displayed.

## **Maintenance and Diagnostics**

Ш

#### What's in this Part?

This part contains the following chapters:

Chapter	Chapter Name	Page
11	Maintenance	<u>307</u>
12	Diagnostics and Troubleshooting	<u>309</u>

### Maintenance

#### Limitation of Warranty

The warranty does not apply if the product has been opened, except by Schneider Electric services.

#### Servicing

## CAUTION

#### **RISK OF DAMAGE TO THE DRIVE**

Adapt the following recommendations according to the environment conditions: temperature, chemical, dust. Failure to follow these instructions can result in equipment damage.

It is recommended to do the following in order to optimize continuity of operation.

Environment	Part concerned	Action	Periodicity
Knock on the product	Housing - control block (led - display)	Check the drive visual aspect	At least each year
Corrosion	Terminals - connector - screws - EMC plate	Inspect and clean if required	
Dust	Terminals - fans - blowholes		
Temperature	Around the product	Check and correct if required	
Cooling	Fan	Check the fan operation	
		Replace the fan	After 3 to 5 years, depending on the operating conditions
Vibration	Terminal connections	Check tightening at recom- mended torque	At least each year

Note: The fan operation depends on the drive thermal state. The drive may be running and the fan not.

#### Spares and repairs

Serviceable product. Please refer to your Customer Care Centre.

#### Long time storage

If the drive was not connected to mains for an extended period of time, the capacitors must be restored to their full performance before the motor is started. See page  $\frac{39}{29}$ .

#### Fan replacement

It is possible to order a new fan for the ATV320 maintenance, see the commercial references on www.schneider-electric.com.

Fans may continue to run for a certain period of time even after power to the product has been disconnected.



#### **RUNNING FANS**

Verify that fans have come to a complete standstill before handling them.

Failure to follow these instructions can result in equipment damage.

## **Diagnostics and Troubleshooting**

## 11

#### What's in this Chapter?

This chapter contains the following topics:

Торіс	Page
Error code	<u>310</u>
Clearing the detected fault	<u>310</u>
Fault detection codes which require a power reset after the detected fault is cleared	<u>311</u>
Fault detection codes that can be cleared with the automatic restart function after the cause has disappeared	<u>313</u>
Fault detection codes that are cleared as soon as their cause disappears	<u>316</u>
Option card changed or removed	<u>316</u>
Control block changed	<u>316</u>
Fault detection codes displayed on the remote display terminal	<u>317</u>

## **A A DANGER**

#### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Read and understand the instructions in "Safety Information" chapter before performing any procedure in this chapter.

Failure to follow these instructions will result in death or serious injury.

#### Error code

- If the display does not light up, check the power supply to the drive.
- The assignment of the Fast stop or Freewheel functions will help to prevent the drive starting if the corresponding logic inputs are not powered up. The ATV320 then displays [Freewheel] (n 5 L) in freewheel stop and [Fast stop] (F 5 L) in fast stop. This is normal since these functions are active at zero so that the drive will be stopped if there is a wire break.
- Check that the run command input is activated in accordance with the selected control mode ([2/3 wire control] (*E C C*) and [2 wire type] (*E C E*) parameters, page <u>85</u>).
- If an input is assigned to the limit switch function and this input is at zero, the drive can only be started up by sending a command for the opposite direction (see page <u>224</u>).
- If the reference channel or command channel is assigned to a communication bus, when the power supply is connected, the drive will display [Freewheel] (n 5 L) and remain in stop mode until the communication bus sends a command.

Code	Name / Description
dGE -	[DIAGNOSTICS]
	This menu can only be accessed with the graphic display terminal. It displays detected faults and their cause in plain text and can be used to carry out tests, see page <u>64</u> .

#### **Clearing the detected fault**

In the event of a non resettable detected fault:

- Disconnect all power, including external control power that may be present.
- Lock all power disconnects in the open position.
- Wait 15 minutes to allow the DC bus capacitors to discharge (the drive LEDs are not indicators of the absence of DC bus voltage).
- Measure the voltage of the DC bus between the PA/+ and PC/- terminals to ensure that the voltage is less than 42 Vdc.
- If the DC bus capacitors do not discharge completely, contact your local Schneider Electric representative. Do not repair or operate the drive.
- Find and correct the detected fault.
- Restore power to the drive to confirm the detected fault has been rectified.

In the event of a resettable detected fault, the drive can be reset after the cause is cleared:

- By switching off the drive until the display disappears completely, then switching on again.
- Automatically in the scenarios described for the [AUTOMATIC RESTART] (*REr* -) function, page 252.
- By means of a logic input or control bit assigned to the [FAULT RESET] (r 5 L -) function, page 251.
- By pressing the STOP/RESET key on the graphic display keypad if the active channel command is the HMI (see [Cmd channel 1] ([ d I) page <u>155</u>).

#### Fault detection codes which require a power reset after the detected fault is cleared

The cause of the detected fault must be removed before resetting by turning off and then back on.

 $R \leq F$ , b = F,  $c \leq F$ ,  $c \leq F$ ,  $c \leq F$  and b = F detected faults can also be cleared remotely by means of a logic input or control bit ([Fault reset] ( $r \leq F$ ) parameter, page <u>251</u>).

Detected Fault	Name	Probable cause	Remedy				
A n F	[Load slipping]	• The difference between the output frequency and the speed feedback is not correct.	<ul> <li>Check the motor, gain and stabillity parameters.</li> <li>Add a braking resistor.</li> <li>Check the size of the motor/drive/load.</li> <li>Check the encoder's mechanical coupling and its wiring.</li> <li>Check the setting of parameters</li> </ul>				
A 5 F	[Angle Error]	• This occurs during the phase-shift angle measurement, if the motor phase is disconnected or if the motor inductance is too high.	• Check the motor phases and the maximum current allowed by the drive.				
br F	[Brake feedback]	<ul> <li>The brake feedback contact does not match the brake logic control.</li> <li>The brake does not stop the motor quickly enough (detected by measuring the speed on the "Pulse input" input).</li> </ul>	<ul> <li>Check the feedback circuit and the brake logic control circuit.</li> <li>Check the mechanical state of the brake.</li> <li>Check the brake linings.</li> </ul>				
[rFl	[Precharge]	Charging relay control detected fault or charging resistor damaged.	<ul> <li>Turn the drive off and then turn on again.</li> <li>Check the internal connections.</li> <li>Contact Schneider Electric Product Support.</li> </ul>				
EEF I	[Control Eeprom]	<ul> <li>Internal memory detected fault, control block.</li> </ul>	<ul> <li>Check the environment (electromagnetic compatibility).</li> <li>Turn off, reset, return to factory settings.</li> </ul>				
EEF2	[Power Eeprom]	<ul> <li>Internal memory detected fault, power card.</li> </ul>	Contact Schneider Electric Product Support.				
FEFI	[Out. contact. stuck]	<ul> <li>The output contactor remains closed although the opening conditions have been met.</li> </ul>	<ul><li>Check the contactor and its wiring.</li><li>Check the feedback circuit.</li></ul>				
HdF	[IGBT desaturation]	<ul> <li>Short-circuit or grounding at the drive output.</li> </ul>	Check the cables connecting the drive to the motor, and the motor insulation.				
ı L F	[internal com. link]	<ul> <li>Communication interruption between option card and drive.</li> </ul>	<ul> <li>Check the environment (electromagnetic compatibility).</li> <li>Check the connections.</li> <li>Replace the option card.</li> <li>Contact Schneider Electric Product Support.</li> </ul>				
inF I	[Rating error]	• The power card is different from the card stored.	Check the reference of the power card.				
in F2	[Incompatible PB]	• The power card is incompatible with the control block.	Check the reference of the power card and its compatibility				
in F B	[Internal serial link]	Communication interruption between the internal cards.	<ul><li>Check the internal connections.</li><li>Contact Schneider Electric Product Support.</li></ul>				
in F 4	[Internal-mftg zone]	Internal data inconsistent.	Recalibrate the drive (performed by Schneider Electric Product Support).				
in F 6	[Internal - fault option]	• The option installed in the drive is not recognized.	<ul> <li>Check the reference and compatibility of the option.</li> <li>Check that the option is well inserted into the ATV320.</li> </ul>				
in F 9	[Internal- I measure]	• The current measurements are incorrect.	<ul> <li>Replace the current sensors or the power card.</li> <li>Contact Schneider Electric Product Support.</li> </ul>				
in F A	[Internal-mains circuit]	• The input stage is not operating correctly.	Contact Schneider Electric Product Support.				
ип F Ь [Internal- th. sensor]		The drive temperature sensor is not operating correctly.	<ul><li> Replace the drive temperature sensor.</li><li> Contact Schneider Electric Product Support.</li></ul>				
in F E	[internal- CPU ]	Internal microprocessor detected fault.	<ul><li>Turn off and reset.</li><li>Contact Schneider Electric Product Support.</li></ul>				
5 A F F	[Safety fault]	<ul> <li>Debounce time exceeded.</li> <li>SS1 threshold exceeded.</li> <li>Wrong configuration.</li> <li>SLS type overspeed detected.</li> </ul>	<ul> <li>Check the safety functions configuration.</li> <li>Check the ATV320 Integrated safety Functions manual</li> <li>Contact Schneider Electric Product Support.</li> </ul>				

<b>Detected Fault</b>	Name	Probable cause	Remedy				
5 o F	[Overspeed]	Instability or driving load too high.	<ul> <li>Check the motor, gain and stability parameters.</li> <li>Add a braking resistor.</li> <li>Check the size of the motor/drive/load.</li> <li>Check the parameters settings for the [FREQUENCY METER] (F 9 F -) function page 266, if it is configured.</li> </ul>				
5 P F	[Speed fdback loss]	<ul> <li>Signal on "Pulse input" missing, if the input is used for speed measurement.</li> <li>Encoder feedback signal missing</li> </ul>	<ul> <li>Check the wiring of the input cable and the detector used.</li> <li>Check the configuration parameters of the encoder.</li> <li>Check the wiring between the encoder and the drive.</li> <li>Check the encoder.</li> </ul>				

## Fault detection codes that can be cleared with the automatic restart function after the cause has disappeared

These detected faults can also be cleared by turning on and off or by means of a logic input or control bit ([Fault reset] (r 5F) parameter page 251).

Detected Fault	Name	Probable cause	Remedy					
ЬLF	[Brake control]	<ul> <li>Brake release current not reached.</li> <li>Brake engage frequency threshold [Brake engage freq] (<i>b E n</i>) only regulated when brake logic control is assigned.</li> </ul>	<ul> <li>Check the drive/motor connection.</li> <li>Check the motor windings.</li> <li>Check the [Brake release I FW] ( , b r ) and [Brake release I Rev] ( , r d) settings page <u>194</u>.</li> <li>Apply the recommended settings for [Brake engage freq] ( b E n ).</li> </ul>					
[ n F	[Com. network]	Communication interruption on communication card.	<ul> <li>Check the environment (electromagnetic compatibility).</li> <li>Check the wiring.</li> <li>Check the time-out.</li> <li>Replace the option card.</li> <li>Contact Schneider Electric Product Support.</li> </ul>					
C o F	[CANopen com.]	• Communication interruption on the CANopen® bus.	<ul> <li>Check the communication bus.</li> <li>Check the time-out.</li> <li>Refer to the CANopen® User's manual.</li> </ul>					
EPFI	[External flt-Ll/Bit]	<ul> <li>Event triggered by an external device, depending on user.</li> </ul>	Check the device which caused the triggering and reset.					
EPF2	[External fault com.]	• Event triggered by a communication network.	Check for the cause of the triggering and reset.					
FLES	[FB stop flt.]	<ul> <li>Function blocks have been stopped while motor was running.</li> </ul>	• Check [Stop FB Stop motor] (F b 5 П) configuration.					
FCF2	[Out. contact. open.]	• The output contactor remains open although the closing conditions have been met.	•					
LEF	[input contactor]	• The drive is not turned on even though [Mains V. time out ] (L [ L) has elapsed.	<ul><li>Check the contactor and its wiring.</li><li>Check the time-out.</li><li>Check the supply mains/contactor/drive connection.</li></ul>					
LFF3	[AI3 4-20mA loss]	<ul> <li>Loss of the 4-20 mA reference on analog input Al3.</li> </ul>	Check the connection on the analog inputs.					
о Ь F	[Overbraking]	<ul> <li>Braking too sudden or driving load.</li> <li>Supply voltage too high.</li> </ul>	<ul> <li>Increase the deceleration time.</li> <li>Install a braking resistor if necessary.</li> <li>Activate the [Dec ramp adapt.] (<i>b r R</i>) function page <u>172</u>, if it is compatible with the application.</li> <li>Check the supply voltage.</li> </ul>					
□ [ F [Overcurrent]		<ul> <li>Parameters in the [SETTINGS]</li> <li>(5 E £ -) and [MOTOR CONTROL]</li> <li>(d r [ -) menus are not correct.</li> <li>Inertia or load too high.</li> <li>Mechanical locking.</li> </ul>	<ul> <li>Check the parameters.</li> <li>Check the size of the motor/drive/load.</li> <li>Check the state of the mechanism.</li> <li>Decrease [Current limitation] (<i>L</i> ).</li> <li>Increase the switching frequency.</li> </ul>					
o H F	[Drive overheat]	Drive temperature too high.	• Check the motor load, the drive ventilation and the ambient temperature. Wait for the drive to cool down before restarting.					
σLC	[Proc. overload fit]	Process overload.	<ul> <li>Check and remove the cause of the overload.</li> <li>Check the parameters of the [PROCESS OVERLOAD] (a L d -) function, page 272.</li> </ul>					
o L F	[Motor overload]	Triggered by excessive motor current.	Check the setting of the motor thermal protection, check the motor load. Wait for the motor to cool down before restarting.					
oPF I	[1 output phase loss]	• Loss of one phase at drive output.	Check the connections from the drive to the motor.					

Detected Fault	Name	Probable cause	Remedy					
□ P F 2	[3 motor phase loss]	<ul> <li>Motor not connected or motor power too low.</li> <li>Output contactor open.</li> <li>Instantaneous instability in the motor current.</li> </ul>	• If an output contactor is being used, set [Output Phase Loss] ( _ P L ) to [Output cut] ( _ R L ), page					
o 5 F	[Mains overvoltage]	<ul><li>Supply voltage too high.</li><li>Disturbed mains supply.</li></ul>	Check the supply voltage.					
otFL	[LI6=PTC overheat]	Overheating of PTC probes detected on input LI6.	<ul> <li>Check the motor load and motor size.</li> <li>Check the motor ventilation.</li> <li>Wait for the motor to cool before restarting.</li> <li>Check the type and state of the PTC probes.</li> </ul>					
PEFL	[LI6=PTC probe]	<ul> <li>PTC probe on input LI6 open or short-circuited.</li> </ul>	<ul> <li>Check the PTC probe and the wiring between it and the motor/drive.</li> </ul>					
SCF I	[Motor short circuit]	Short-circuit or grounding at the drive output.	<ul> <li>Check the cables connecting the drive to the motor, and the motor insulation.</li> <li>Reduce the switching frequency.</li> <li>Connect chokes in series with the motor.</li> <li>Check the adjustment of speed loop and brake.</li> <li>Increase the [Time to restart] (<i>L L r</i>), page <u>101</u>.</li> <li>Increase the switching frequency.</li> </ul>					
SCF 3	[Ground short circuit]	Significant earth leakage current at the drive output if several motors are connected in parallel.	<ul> <li>Check the cables connecting the drive to the motor, and the motor insulation.</li> <li>Reduce the switching frequency.</li> <li>Connect chokes in series with the motor.</li> <li>Check the adjustment of speed loop and brake.</li> <li>Increase the [Time to restart] (<i>L L r</i>), page <u>101</u>.</li> <li>Reduce the switching frequency.</li> </ul>					
5 C F 4	[IGBT short circuit]	Power component detected fault.	Contact Schneider Electric Product Support.					
5 C F 5	[Motor short circuit]	Short-circuit at drive output.	<ul><li>Check the cables connecting the drive to the motor, and the motor's insulation.</li><li>Contact Schneider Electric Product Support.</li></ul>					
SLF I	[Modbus com.]	Communication interruption on the Modbus bus.	<ul><li>Check the communication bus.</li><li>Check the time-out.</li><li>Refer to the Modbus User's manual.</li></ul>					
5 L F 2	[PC com.]	Communication interruption with PC Software.	<ul><li>Check the PC Software connecting cable.</li><li>Check the time-out.</li></ul>					
SLFJ	[HMI com.]	<ul> <li>Communication interruption with the graphic display terminal or remote display terminal.</li> </ul>	<ul><li>Check the terminal connection</li><li>Check the time-out.</li></ul>					
5 5 F	[Torque/current lim]	Switch to torque or current limitation.	<ul> <li>Check if there are any mechanical problems.</li> <li>Check the parameters of [TORQUE LIMITATION] (<i>L</i> = <i>L</i> -) page <u>216</u> and the parameters of the [TORQUE OR I LIM. DETECT.] (<i>L</i> + <i>d</i> -), page <u>264</u>.</li> </ul>					
E J F	[IGBT overheat]	Drive overheated.	<ul><li>Check the size of the load/motor/drive.</li><li>Reduce the switching frequency.</li><li>Wait for the motor to cool before restarting.</li></ul>					

<b>Detected Fault</b>	Name	Probable cause	Remedy					
EnF	[Auto-tuning]	• Special motor or motor whose power is not suitable for the drive.	Check that the motor/drive are compatible.					
		<ul> <li>Motor not connected to the drive.</li> </ul>	<ul> <li>Check that the motor is present during auto-tuning.</li> <li>If an output contactor is being used, close it during auto-tuning</li> <li>Check that the motor is stopped during tune operation.</li> </ul>					
		<ul> <li>Motor not stopped</li> </ul>						
υLF	[Proc. underload Flt]	Process underload.	Check and remove the cause of the underload.					
			<ul> <li>Check the parameters of the [PROCESS UNDERLOAD] ( u L d - ) function, page 270.</li> </ul>					

<b>Detected Fault</b>	Name	Probable cause	Remedy				
C F F	[Incorrect config.]	Option card changed or removed.	<ul> <li>Check that there are no card errors.</li> <li>In the event of the option card being changed/removed deliberately, see the remarks below.</li> </ul>				
		<ul> <li>Control block replaced by a control block configured on a drive with a different rating.</li> </ul>	<ul> <li>Check that there are no card errors.</li> <li>In the event of the control block being changed deliberately, see the remarks below.</li> </ul>				
		• The current configuration is inconsistent.	<ul> <li>Return to factory settings or retrieve the backup configuration, if it is valid (see page <u>81</u>).</li> </ul>				
CF ; CF ; 2	[Invalid config.]	<ul> <li>Invalid configuration.</li> <li>The configuration loaded in the drive via the bus or communication network is inconsistent.</li> <li>Check the configuration loaded previously.</li> <li>Load a compatible configuration.</li> </ul>					
E S F	[Ch. Sw. fault]	Switch to not valid channels.	Check the function parameters.				
dLF	[Dynamic load fault]	Abnormal load variation.	<ul><li>Check that the load is not blocked by an obstacle.</li><li>Removal of a run command causes a reset.</li></ul>				
FЬE	[FB fault]	Function blocks error.	• See [FB Fault] (F b F L) for more details.				
H C F	[Cards pairing]	• The [CARDS PAIRING] ( <i>P P</i> , -) function page 269 has been configured and a drive card has been changed.	<ul> <li>In the event of a card error, reinsert the original card.</li> <li>Confirm the configuration by entering the [Pairing password] (PP ) if the card was changed deliberately. </li> </ul>				
PHF [Input phase loss]		<ul> <li>Drive incorrectly supplied or a fuse blown.</li> <li>One phase missing.</li> <li>3-phase ATV320 used on a single-phase supply mains.</li> <li>Unbalanced load.</li> <li>This protection only operates with the drive on load.</li> </ul>	<ul> <li>Check the power connection and the fuses.</li> <li>Use a 3-phase supply mains.</li> <li>Disable the detected fault by [Input phase loss] ( , P L) = [No] (n a) page <u>86</u>.</li> </ul>				
ы 5 F	[Undervoltage]	<ul><li>Supply mains too low.</li><li>Transient voltage dip.</li></ul>	• Check the voltage and the parameters of [UNDERVOLTAGE MGT] ( $\_$ 5 $\_$ - ), page 259.				

#### Fault detection codes that are cleared as soon as their cause disappears

#### Option card changed or removed

When an option card is removed or replaced by another, the drive locks in **[Incorrect config.]** (L F F) fault mode on power-up. If the card has been deliberately changed or removed, the detected fault can be cleared by pressing the ENT key twice, which causes the factory settings to be restored (see page <u>81</u>) for the parameter groups affected by the card. These are as follows:

#### Card replaced by a card of the same type

Communication cards: only the parameters that are specific to communication cards

#### Control block changed

When a control block is replaced by a control block configured on a drive with a different rating, the drive locks in [Incorrect config.] (L F F) fault mode on power-up. If the control block has been deliberately changed, the detected fault can be cleared by pressing the ENT key twice, which **causes all the factory settings to be restored.** 

### Fault detection codes displayed on the remote display terminal

Code	Name	Description
in it	[Initialization in progress]	The microcontroller is initializing. Search underway for communication configuration.
<b>СоП.Е</b> (1)	[Communication error]	Time out detected fault (50 ms). This message is displayed after 20 attempts at communication.
<b>A - I 7</b> (1)	[Alarm button]	A key has been held down for more than 10 seconds. The keypad is disconnected. The keypad wakes up when a key is pressed.
<u>Г</u> <i>L</i> г (1)	[Confirmation of detected fault reset]	This is displayed when the STOP key is pressed once if the active command channel is the remote display terminal.
<b>d Е и . Е</b> (1)	[Drive disparity]	The drive brand does not match that of the remote display terminal.
г в П.Е (1)	[ROM anomaly]	The remote display terminal detects a ROM anomaly on the basis of checksum calculation.
г ЯП.Е (1)	[RAM anomaly]	The remote display terminal detects a RAM anomaly.
<b>СР</b> (1)	[Other detected faults]	Other detected faults.

(1) Flashing

## Annex



#### What's in this Part?

This part contains the following chapters:

Chapter	Chapter Name					
13	Index of Functions	<u>321</u>				
14	Index of Parameter Codes	<u>323</u>				

## Index of Functions

# 12

The following table represents the parameter codes:	
Function	Page
[2 wire] (2C)	<u>85</u>
[2nd CURRENT LIMIT.]	<u>218</u>
[3 wire] (3C)	<u>85</u>
[+/- SPEED]	<u>185</u>
[+/-SPEED AROUND REF.]	<u>187</u>
[AUTO DC INJECTION]	<u>176</u>
[AUTOMATIC RESTART]	<u>252</u>
[Auto tuning]	<u>87</u>
[AUTO TUNING BY LI]	<u>236</u>
DC Bus	<u>245</u>
[BRAKE LOGIC CONTROL]	<u>194</u>
[CATCH ON THE FLY]	<u>253</u>
Command and reference channels	<u>146</u>
Deferred stop on thermal alarm	<u>258</u>
[DRIVE OVERHEAT]	<u>257</u>
[ENCODER FAULT]	<u>263</u>
[ENCODER CONFIGURATION]	<u>135</u>
[FACTORY SETTINGS]	<u>81</u>
[Fault reset]	<u>251</u>
[FLUXING BY LI]	<u>189</u>
[HIGH SPEED HOISTING]	<u>204</u>
[DYN CURRENT LIMIT]	<u>219</u>
[JOG]	<u>178</u>
LINE CONTACTOR COMMAND	<u>220</u>
Load measurement	<u>199</u>
[Load sharing]	<u>122</u>
Load variation detection	<u>267</u>
Motor or configuration switching [MULTIMOTORS/CONFIG.] ( Π Π Ε - )	232
Motor thermal protection	<u>254</u>
[Noise reduction]	<u>120</u>
[OUTPUT CONTACTOR CMD]	<u>223</u>
[Ovld.Proces.Mngmt]	272
[PARAM. SET SWITCHING]	<u>230</u>
[5 PASSWORD]	<u>302</u>
[PID REGULATOR]	210
POSITIONING BY SENSORS	224
PRESET SPEEDS	<u>180</u>
PTC probe	<u>250</u>
[RAMP]	<u>170</u>
[REFERENCE SWITCH.]	<u>167</u>
Rope slack	204

The following table represents the parameter codes:

Function	Page
[RP assignment]	<u>128</u>
REFERENCE MEMORIZING	<u>188</u>
[STOP CONFIGURATION]	<u>173</u>
Stop at distance calculated after deceleration limit switch	226
Summing input / Subtracting input / Multiplier	<u>168</u>
Synchronous motor parameters	<u>112</u>
TORQUE LIMITATION	<u>215</u>
TRAVERSE CONTROL	<u>237</u>
[Underload Managmt.]	<u>271</u>
Use of the "Pulse input" input to measure the speed of rotation of the motor	<u>265</u>

## **Index of Parameter Codes**

# 13

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (ת ב ח - )	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] ( <i>L</i> F <i>L</i> )	[SIMPLY START] (5 , <i>n</i> -)	[Settings] (5 <i>E                                    </i>	[MOTOR CONTROL] (d r [ -)	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ([E ± L -)	[FUNCTION BLOCKS] (F b Π - )	[APPLICATION FUNCT.] (F μ π -)	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] (L = fl - )	[3 INTERFACE] ( , <i>E F</i> -)	
A C 5						<u>89</u>					<u>171</u> <u>187</u> <u>212</u>				
ACC					<u>87</u>	<u>89</u>					<u>170</u>				
A C											<u>176</u>				
A d C o		1	1	1	1	1		1	1			1	<u>277</u>		
A d d													<u>276</u>		
A , IA		<u>52</u>						<u>133</u>							
R , IC		<u>52</u>													
RIIE								<u>134</u>							
RIIF		<u>52</u>						<u>134</u>							
R : 15								<u>133</u>							
A I IE								<u>133</u>							
A 15A		<u>52</u>						<u>133</u>							
A 15C		<u>52</u>													
A 15E								<u>134</u>							
A 12F		<u>52</u>						<u>134</u>							
A 125								<u>134</u>							
A 15F		50						<u>133</u>							
		<u>53</u>						<u>134</u>							
A 13C		<u>53</u>						104							
R 13E R 13F		F.2						<u>134</u> <u>134</u>							
A I J L		<u>53</u>						<u>134</u> <u>134</u>							
A 135								<u>134</u> <u>135</u>							
A 135								<u>133</u>							
R 152								<u>134</u>			<u>210</u>				
A iu l	<u>46</u>	<u>50</u>													
ALGr	<u> </u>	<u>63</u>													
ЯПоС													<u>276</u>		
Ro I		<u>53</u>						144							
A o IC		53													
Ro IF		53						<u>144</u>							

#### The following table represents the parameter codes:

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] $(r E F -)$	[1.2 MONITORING] (חמר)	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , 17 - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] ( $\mathcal{L} \circ \Pi$ - )	[3 INTERFACE] ( , Ł F - )	
Ao It								<u>144</u>							
A . H I		<u>53</u>						<u>144</u>							
A.L.I		<u>53</u>						<u>144</u>							
ярн		<u>62</u>						444							
		<u>53</u> <u>53</u>						<u>144</u> <u>144</u>							
ASL I ASE		<u>55</u>					<u>114</u>	144			<u>190</u>				
Atr							114				190	<u>252</u>			
Rut							<u>109</u>								
							114								
A . IA								<u>135</u>							
R 2 R								<u>135</u>							
<u>БС</u> ,											<u>194</u>				
6860													<u>277</u>		
ь Е д											<u>195</u>				
ЬЕл						<u>101</u>					<u>195</u>				
ЬEE						<u>101</u>					<u>195</u>				
b F r					<u>86</u>		<u>105</u>				10.1				
БіР						101					<u>194</u> <u>195</u>				
bir blC						<u>101</u>					<u>195</u> <u>194</u>				
<u> БПР</u>									<u>157</u>		194				
6		<u>55</u>							107	<u>158</u>					
6		<u>56</u>								<u>158</u>					
6 o A							<u>120</u>								
600							120								
br A											<u>172</u>				
6rHO											<u>197</u>				
БгНІ											<u>197</u>				
6rH2											<u>198</u>				
Бгг											<u>198</u>				
brt						<u>101</u>					<u>194</u>				
65P								<u>131</u>							
65E											<u>194</u>				
buEr cccc		<u>55</u>								<u>158</u>					
CCFG					<u>86</u>				455						
									<u>155</u> <u>155</u>						
									<u>155</u> <u>155</u>						
563				80	QE				100						
C F G C F P S		<u>62</u>		<u>82</u>	<u>85</u>										
											230				
СНАЗ											<u>230</u> 230				

Code		1	1		1	1		T	1	T	1		1		CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (Π ם ח - )	[FACTORY SETTINGS] (F £ 5 - )	[Macro configuration] ( <i>L</i> F <i>L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 <i>E</i> Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] ( <i>F</i> b <i>Π</i> - )	[APPLICATION FUNCT.] (F u n -)	[FAULT MANAGEMENT] (FL E - )	[COMMUNICATION] (L a II - )	[3 INTERFACE] ( , Ł F - )	
CHCF									<u>154</u>						
с н п											<u>235</u>				
C L 2						<u>95</u>					<u>218</u>				
EL 1						<u>94</u>	<u>119</u>				<u>218</u>				
ELL												<u>261</u>			
[[											<u>205</u>				
C L 5											<u>228</u>				
СПАС		<u>56</u>													
EnF I											<u>235</u>				
CnF2											<u>235</u>				
C n F 5		<u>62</u>													
C o d		<u>75</u>													
<u> </u>		<u>75</u>									004				
C = F											<u>204</u>	000			
[ 0 L									450			<u>262</u>			
C o P C o r									<u>156</u>		204				
 [ = 5							<u>107</u>				<u>204</u>				
							107				200				
C P 2											200				
C r H 3		<u>53</u>						<u>134</u>			200				
CrL3		53						134							
ErSt														<u>295</u>	
ErtF							<u>118</u>								
СБЬУ														<u>295</u>	
C S E		<u>75</u>												302	
CEd						<u>102</u>						<u>252</u>			
C E E							<u>105</u>								
C E u	1	<u>56</u>		1	1			1		<u>158</u>			1		
4 A 2											<u>168</u>				
d A 3											<u>169</u>				
dRF											<u>227</u>				
dRL											<u>227</u>				
dĦnF								<u>137</u>				<u>263</u>			
dĦr											<u>227</u>				
d A 5											<u>223</u>				
d 6 5											<u>223</u>				
9000											<u>245</u>				
9660											<u>245</u>				
9661		<u>66</u>													
9005		<u>67</u>													
d C C 3		<u>67</u>													

Code															CUSTOMER SETTING
d [ [ 4	[1.1 SPEED REFERENCE] (r E F - )	[1.2 MONITORING]           [7]	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] $(\Gamma \neq G)$	[SIMPLY START] (5 , 77 - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b $\Pi$ - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] (L a II - )	[3 INTERFACE] ( ,	
<i>d</i> C C S		<u>67</u>													
d C C 6		<u>67</u>													
d C C 7		<u>67</u>													
9226		<u>67</u>													
d C F						<u>93</u>					<u>173</u>	<u>272</u>			
d C ı											<u>174</u>				
d E 2						<u>89</u>					<u>171</u>				
											<u>187</u>				
dEC					<u>87</u>	<u>89</u>					<u>170</u>				
dlb												<u>267</u>			
dLd												<u>267</u>			
dLr		<u>75</u>												<u>302</u>	
d o								<u>141</u>							
do Id								<u>141</u>							
do IH								<u>141</u>							
d a 15		64						<u>141</u>							
4 P I 4 P Z		<u>64</u>													
d P 3		<u>67</u>													
d P 4		<u>67</u> <u>67</u>													
dPS		<u>67</u>													
dP6		<u>67</u>													
d P J		<u>67</u>													
dPB		<u>67</u>													
drEl		<u>66</u>													
drC2		<u>66</u>													
dr[]		<u>66</u>													
drE4		66													
drES		66													
dr[6		66													
dr[]		66													
dr[8		<u>66</u>													
d 5 F					1	1	1	1	1		<u>228</u>				
d 5 i											<u>187</u>				
d 5 P											<u>187</u>				
dEF											<u>243</u>				
660											<u>242</u>				
EPL												<u>259</u>			
Enu								<u>135</u>							
E n 5								<u>135</u>							
ErCo													<u>277</u>		
EEF												<u>258</u>			

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (ת ם ח - )	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ -)	[INPUTS / OUTPUTS CFG] (	[COMMAND] ([E L -)	[FUNCTION BLOCKS] (F b Π -)	[APPLICATION FUNCT.] ( <i>F ע ח</i> -)	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] (L = II - )	[3 INTERFACE] ( , <i>E</i>	
F I							<u>118</u>								
F 2							<u>118</u>								
F 2 d							<u>102</u>								
F 3							<u>119</u>								
F 4							<u>119</u>								
F 5							<u>119</u>								
FAB							<u>120</u>								
FRdI														<u>288</u>	
FRd2														<u>288</u>	
FRd3														<u>288</u>	
FRdY														<u>288</u>	
FRnF								<u>136</u>				<u>263</u>			
FBCd										<u>158</u>					
FbdF										<u>159</u>					
FBFE		<u>55</u>								<u>158</u>					
FbrN										<u>159</u>					
FbSn										<u>159</u>					
FLSE		<u>55</u>	04							<u>158</u>					
FESI			<u>81</u>									266			
F d E F F H							110					<u>266</u>			
FFN						<u>104</u>	<u>118</u>								
FFE						<u>104</u> <u>102</u>					<u>173</u>				
FL i						102					189				
FLo											100		277		
FLaC													277		
FLot													277		
FLr												<u>253</u>			
FLu						<u>95</u>	<u>109</u>				189				
Enl									<u>157</u>						
Fn2									157						
F n 3									157						
F n H									157						
FP i											212				
F9A												<u>266</u>			
F9C												266			
F9F												<u>266</u>			
F9L						<u>102</u>		1				<u>253</u>		1	
F 9 5		<u>50</u>						1						1	
F9E												<u>266</u>			
Fr 1								1	<u>154</u>					1	
Fr 16		1						1	1		<u>167</u>	1	1	1	

Code															CUSTOMER SETTING
	щ							ច្ច				-			
	[1.1 SPEED REFERENCE] ( <i>r E F</i> -)	[1.2 MONITORING] (חמר - )	[FACTORY SETTINGS] (F L 5 -)	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] (E Ł L -)	[FUNCTION BLOCKS] (F b Π -)	[APPLICATION FUNCT.] (F u n -)	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] (L = II - )	[3 INTERFACE] ( , <i>E F</i> - )	
Fr2	<u> </u>	22	<b>L</b> Č	23		<u> </u>	2 .	≞ _	<u>155</u>	<b>E</b> Č	23	<b>1</b> - C	22	<u> </u>	
FrH	<u>50</u>	<u>50</u>													
		<u>57</u>													
Fri							<u>116</u>								
FrS					<u>86</u>		<u>107</u>								
Fr55 FrE							<u>116</u>				<u>171</u>				
FSE											<u>171</u> <u>173</u>				
FEd						102					11.0	<u>253</u>			
Fto						102						272			
FEu						103						271			
FEY			<u>81</u>												
6 F 5			<u>81</u>												
6 S P														<u>291</u>	
HF I							<u>116</u>								
HIr							<u>116</u>								
HrFE												<u>252</u>			
H 5 o											<u>204</u>				
HSP					<u>87</u>	<u>89</u>					<u>244</u>				
HSP2						<u>90</u>					<u>244</u>				
Н 5 Р 3 Н 5 Р 4						<u>90</u> <u>90</u>					<u>244</u> <u>244</u>				
13F4						90					<u>244</u> <u>219</u>				
1250		<u>51</u>									210				
126.1		<u>.</u>									219				
1266											219				
, R D										<u>160</u>					
, A D S				1			1			<u>160</u>	1			1	
, A D 3										<u>160</u>					
, A D 4										<u>160</u>					
, A D S										<u>160</u>					
,806										<u>160</u>					
1807										<u>160</u>					
,808										<u>160</u>					
,809										<u>160</u>					
1 R I D 1 R R I										<u>160</u>				<u>288</u>	
,Rd2														<u>288</u> <u>288</u>	
in d g														288	
,Rd4								-						288	
, br						101					<u>194</u>				
ibr A											200				
ı d A						1	<u>111</u>								

Image: Section of the sectio	de				1	1		1	1	1	1	1		1	1	CUSTOMER SETTING
idfid		[1.1 SPEED REFERENCE] ( <i>r E F -</i> )	[1.2 MONITORING] (ח ם ח - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] (	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 <i>E k</i> - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG]	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b Π - )	[APPLICATION FUNCT.] (F _ n - )	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] ( <i>E</i> = <i>Π</i> - )	[3 INTERFACE] ( ,	
L 0 I	ı d C						<u>93</u>									
LO2 <th< td=""><td>, d C 2</td><td></td><td></td><td></td><td></td><td></td><td><u>93</u></td><td></td><td></td><td></td><td></td><td><u>175</u></td><td><u>273</u></td><td></td><td></td><td></td></th<>	, d C 2						<u>93</u>					<u>175</u>	<u>273</u>			
L 03L 03L 03L 04L 04L 05L 05<	,L 0										<u>159</u>					
L 0 Y											<u>159</u>					
LOS <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><u>159</u></td><td></td><td></td><td></td><td></td><td></td></t<>											<u>159</u>					
LO6 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><u>159</u></td><td></td><td></td><td></td><td></td><td></td></t<>											<u>159</u>					
1.07 $1.08$ $1.0$ $1.0$ $1.0$ $1.59$ $1.0$ $1.59$ $1.0$ $1.0$ $1.59$ $1.0$ $1.59$ $1.0$ $1.59$ $1.0$ $1.59$ <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																
1.08       1       1       1       159       1       1       1         1.09       1       1       1       1       159       1       1         1.10       1       1       16       159       1       1       1         1.11       1       1       16       1       159       1       1       1         1.11       1       1       16       1       159       1       1       1         1.11       1       16       1       16       1																
$i \ L \ 0 \ 9$ $i \ 0 \ 1 \ 0 \ 0$											_					
ILIOImage: sector of the sector o																
l l l l l l l l l l l l l l l l l l l																
nnH $nnH$ <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><u>159</u></td><td></td><td></td><td></td><td></td><td></td></t<>											<u>159</u>					
Int P       Image: P       Im								<u>116</u>					004			
Int P       Int I       Int I <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>20</td><td></td><td></td><td></td><td></td><td>170</td><td><u>261</u></td><td></td><td></td><td></td></td<>							20					170	<u>261</u>			
IPLImage: sector of the sector of							89									
iridImage: sector of the sector o						86							256			
i i i i i i i i i i i i i i i i i i i						00	101						200			
JdCImage: sector se						87						134				
JF2IIIIO3IIIB3IIIJF3IIIO3IIB3IIIIJFHIIIIO3IIB3IIIJCFIIIIIIIIIIJCFIIIIIIIIIIIJCFIIIIIIIIIIIIJCFIIIIIIIIIIIIIJCFII <td< td=""><td></td><td></td><td></td><td></td><td></td><td>01</td><td></td><td></td><td></td><td></td><td></td><td>195</td><td></td><td></td><td></td><td></td></td<>						01						195				
JF 3Image: space																
JFHImage: sector se																
J L F       Image: state in the state in th																
JGE       Image: state sta																
JPF       1       102       127       183       102       127         L IR       51       1       1       127       1       1       1       1         L Id       1	JGE											<u>179</u>				
L 1R       51       Image: Constraint of the symbol constraint of the sy	JoG											<u>178</u>				
L 1d          128	JPF						<u>102</u>					<u>183</u>				
$L \ge R$ 51       Image: state stat	LIR		<u>51</u>						<u>127</u>							
L 2 d         1       128         1									<u>128</u>							
L 3 R       51       1       127       128       12			<u>51</u>													
L 3 d																
L 4 R       51       Image: state s			<u>51</u>													
L 4 d        128																
L 5 R       51       1       127       128       12			<u>51</u>													
L 5 d     128     128     128       L 6 R     51     128     128       L 6 d     128     128     128																
L 6 R     51     128     128       L 6 d     1     128     1			<u>51</u>													
L 5 d 128 128																
			<u>51</u>													
									<u>128</u>		100					
LRD2     160     160       LRD3     160     160											_					

Code						1	1	1					1	1	CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] ( <i>П</i> а л - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (d r [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] ( <i>L</i> = <i>Π</i> - )	[3 INTERFACE] ( , Ł F - )	
L A O 4										<u>160</u>					
LADS										<u>160</u>					
L A O 6										<u>160</u>					
LRD7										<u>160</u>					
LROB										<u>160</u>					
LAIA		<u>51</u>						<u>128</u>							
LRId								<u>128</u>							
LASA		<u>51</u>						<u>128</u>							
LR2d								<u>128</u>							
LAnF								<u>136</u>				<u>263</u>		000	
							400							<u>282</u>	
L 6 A L 6 C						102	<u>122</u> <u>122</u>								
						<u>103</u>	<u>122</u> <u>124</u>								
LPC5							<u>124</u>								
LBCJ							124								
LBF							124								
LCZ							124				218				
LEr		<u>50</u>													
LEE											<u>221</u>				
L d 5							<u>116</u>								
LES											<u>221</u>				
LEE												<u>258</u>			
LFA							<u>111</u>								
LFF												<u>272</u>			
LFLJ												<u>260</u>			
LFr	<u>46</u>	<u>50</u>													
LFrI		<u>59</u>													
LFr2		<u>59</u>													
LFrJ		<u>59</u>													
L 15 1		<u>51</u>													
L 152		<u>51</u>													
LLE											<u>221</u>				
LnG														<u>284</u>	
Lol									<u>139</u>						
Lold									<u>139</u>						
LoIH									<u>140</u>						
L 0 / 5						400			<u>140</u>			070			
						<u>103</u>					200	<u>272</u>			
											200				
L P 2 L 9 5							110				<u>200</u>				
145							<u>116</u>								

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] $(r \in F -)$	[1.2 MONITORING] (חבה - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>E F L</i> )	[SIMPLY START] (5 , <i>n</i> -)	[SETTINGS] (5 £ Ł - )	[MOTOR CONTROL] (d r [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ([E L -)	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] ([ a fl - )	[3 INTERFACE] ( , <i>E F</i> -)	
LSP					<u>87</u>	<u>89</u>									
LuL						<u>103</u>						<u>270</u>			
Lun						<u>103</u>						<u>270</u>			
וססח										<u>161</u>					
1002										<u>161</u>					
0003										<u>161</u>					
<u> </u>										<u>161</u>					
П О О 5 П О О 6										<u>161</u>					
11006 11007										<u>161</u> <u>161</u>					
1001										<u>161</u>					
ΠΙΣΕ		<u>58</u>								101					
ΠΙΕΕ		<u>58</u>													
ПБЕР											228				
<b>N H 2</b>												<u>169</u>			
ПЯЭ												169			
ПСг							<u>116</u>								
ПдЕ														<u>287</u>	
ΠFr	<u>46</u>	<u>50</u>				<u>98</u>									
ΠΠϜ		<u>50</u>													
ΠΡΕ							<u>110</u>								
ПЕП												<u>255</u>			
nbr P		<u>61</u>													
nbtP		<u>61</u>													
n C		<u>58</u>													
n C 2		<u>58</u>													
E J n		<u>58</u>													
n E 4		<u>58</u>													
n [ 5		<u>58</u>													
n [ 6		<u>59</u>													
n [ ] n [ 8		<u>59</u> <u>59</u>													
n [ H ]		23											<u>276</u>		
n C A 2													276		
nER3													276		
n C A 4					+					+			276		
n C A S													276		
n C A 6					1					1			276		
n C A 7													276		
n C A B													276		
n E r					<u>86</u>		<u>107</u>								
n [ r 5							<u>113</u>								

Index of Parameter (	Codes
----------------------	-------

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (ת ב ח - )	[FACTORY SETTINGS] (F L 5 -)	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 <i>E                                    </i>	[MOTOR CONTROL] (d r £ -)	[INPUTS / OUTPUTS CFG] (	[COMMAND] ( <i>E</i> Ł -)	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (דעה - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] (נמח-)	[3 INTERFACE] ( , <i>E F</i> -)	
n L 5											<u>228</u>				
n П		<u>58</u>													
n N 2		<u>58</u>													
ъПЭ		<u>58</u>													
<u>п П Ч</u>		<u>58</u>													
л П S		<u>58</u>													
n N 6		<u>58</u>													
٦٦٦		<u>58</u>													
n N 8		<u>58</u>													
<u></u> ΠΠ													<u>275</u>		
n N A 2													<u>275</u>		
n N A 3													<u>275</u>		
n N A 4													<u>275</u>		
<u> Π Π Α 5</u>													<u>275</u>		
n N A 6													<u>275</u>		
<u>п</u> ПЯ 7													<u>275</u>		
<u> </u>													<u>275</u>		
n    E 5		<u>61</u>													
n P r					<u>86</u>		<u>107</u>								
n r d							<u>120</u>								
n 5 P					<u>86</u>		<u>107</u>								
n 5 P 5							<u>113</u>								
n 5 E											<u>173</u>				
n E J		<u>74</u>													
٦ ٦ ٩											<u>223</u>				
o d L												<u>272</u>			
o d E												<u>256</u>			
o H L												<u>257</u>			
<u> </u>												<u>255</u>			
o P L		50										<u>256</u>			
oPr		<u>50</u>									00.1				
_ <u>_</u> 5 P		50									<u>204</u>				
otr		<u>50</u>				00					040				
PRH						<u>99</u>					<u>212</u>				
P A L P A S						<u>99</u>					211				
PRU											228 212				
PEd											212			<u>294</u>	
PLA						<u>99</u>					212			<u>234</u>	
PES						33					200				
PES PF i		<u>54</u>						<u>128</u>			200				
PFr		<u>54</u>						<u>120</u> <u>128</u>							

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] ( <i>r E F</i> - )	[1.2 MONITORING] ( <i>П</i> о <i>п</i> - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł -)	[FUNCTION BLOCKS] (F b Π - )	[APPLICATION FUNCT.] (F u n -)	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] (L o f)	[3 INTERFACE] ( , <i>Ł</i>	
	<b>5</b> 5	25	шu	29	ទីល	ទីណ	<b>2</b> 0		<b>2</b> <u>2</u>	ЩĽ	₹Ľ	шu	<b>2</b> 5	<b>2</b> _	
PG I							<u>116</u>	<u>135</u>							
PH5 P , R		<u>54</u>					110	<u>128</u>							
P 10		<u><u><u></u></u></u>						120			<u>211</u>				
PiF											210				
PIFI											210				
P IF 2											210		1		
Piri											210				
PiL		<u>54</u>		1				<u>128</u>			1		1		
Р,П											<u>213</u>				
PIPI											<u>210</u>				
P ; P 2											<u>210</u>				
P 15											<u>212</u>				
PoH						<u>99</u>					<u>211</u>				
Pol						<u>99</u>					<u>211</u>				
PP 1							440					<u>269</u>			
PPnS							<u>113</u>				014				
Pr2 Pr4											<u>214</u> <u>214</u>				
PrSt											214				
PrP						<u>99</u>					211				
P 5 1 6											181				
P 5 2											181				
P 5 4											<u>181</u>				
P 5 8											<u>181</u>				
PSr						<u>99</u>					<u>212</u>				
PSE									<u>154</u>						
PECL												<u>250</u>			
PEH		<u>62</u>													
Pu 15														<u>294</u>	
9 S H						<u>102</u>					<u>242</u>				
951						<u>102</u>					<u>242</u>				
<u> </u>								<u>138</u>							
r 1d								<u>138</u>							
r IF r 2F								<u>139</u> <u>139</u>							
- 1H								<u>139</u>							
r 15								138							
								139							
r 2 d								139							
r 2 H								139							
r 2 5								139							

Code				1		1		1	1	T		1			CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (ת פית - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>E F D</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (d r L -)	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] ( $\mathcal{L} = \Pi -$ )	[3 INTERFACE] ( , <i>E F</i> - )	
r C A											<u>223</u>				
гĽЬ											<u>167</u>				
r d A E							<u>117</u>								
r d G						<u>99</u>					<u>211</u>				
r E C I		<u>61</u>													
r F E									<u>155</u>						
r F C C		<u>56</u>													
r F L E		<u>74</u>													
r F r		<u>50</u>				00					014				
r 10						<u>99</u>			<u>154</u>		<u>211</u>				
r in rNud						103			104			<u>270</u>			
r nua r P						100						<u>270</u> 251			
r P I I		<u>59</u>										201			
r P 12		<u>59</u>													
r P 13		59													
r P 14		59													
r P 2						99					214				
r P 2 1		<u>60</u>													
r P 2 2		<u>60</u>													
r P 2 3		<u>60</u>													
r P 2 4		<u>60</u>													
r P 3						<u>100</u>					<u>214</u>				
r P 3 1		<u>60</u>													
r P 3 2		<u>60</u>													
r P 3 3		<u>60</u>													
r P 3 4		<u>60</u>													
r P 4						<u>100</u>					<u>214</u>				
- P A	10											<u>251</u>			
r P C	<u>46</u>	<u>62</u>													
r P E		<u>62</u>													
r P F		<u>62</u>				00					014				
r P G	16	60				<u>99</u>					<u>211</u> 211				
r P i r Po	<u>46</u>	<u>62</u> <u>62</u>									<u>211</u>				
r Pr		<u>62</u>						-		-			-		
r P 5											<u>171</u>				
r P E								+			170				
r r 5								<u>126</u>							
r S A							<u>111</u>	<u> </u>							
r 5 A 5							116	1							
r 5 d		1		1	1	1		1	1	1	<u>205</u>		1		

Code											1		1	1	CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F - )	[1.2 MONITORING] ( <i>Π</i> a <i>n</i> - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , 77 - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (d r [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ( <i>E</i> Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] ( <i>E</i> a <i>T</i> - )	[3 INTERFACE] ( , Ł F - )	
r 5 F												<u>251</u>			
r 5 L											<u>213</u>				
rSEL											<u>205</u>				
r E H		<u>62</u>													
rEr											<u>243</u>				
r u n								<u>126</u>							
5 / 0 /											<u>230</u>				
5 102											<u>230</u>				
5 10 3											<u>230</u>				
5 104 5 105											<u>230</u> 230				
5 / 0 6											<u>230</u> 230				
5 10 1											<u>230</u> 230				
5 108											<u>230</u> 230				
5 / 0 9											230				
5110											230				
5111											230				
5112											230				
5113											230				
5 / / 4											230				
5//5											230				
5201											230				
5202											230				
5203											<u>230</u>				
5204											<u>230</u>				
5205		1		1		1			1		<u>230</u>		1	1	
5206											<u>230</u>		1	1	
5207											<u>230</u>				
5208											<u>230</u>				
5209											<u>230</u>				
5210											<u>230</u>				
5211											<u>230</u>				
5212											<u>230</u>				
5213											<u>230</u>				
5214											<u>230</u>				
5215											<u>230</u>				
5301											<u>231</u>				
5302											<u>231</u>				
5303											<u>231</u>				
5304											<u>231</u>				
5305											<u>231</u>				
5306											<u>231</u>				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F - )	[1.2 MONITORING] ( <i>Π</i> a <i>n</i> - )	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (d r [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] (E Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (F u n - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] ( $\mathcal{L} = \Pi -$ )	[3 INTERFACE] ( ,	
5307											<u>231</u>				
5308											<u>231</u>				
5309											<u>231</u>				
5310											<u>231</u>				
5311											<u>231</u>				
5312											<u>231</u>				
5313											<u>231</u>				
5314											<u>231</u>				
5315											<u>231</u>				
5 A 2 5 A 3											<u>168</u> <u>168</u>				
58F I		<u>69</u>									100				
58F2		<u>70</u>													
SAL		10									227				
58r											227				
586												<u>258</u>			
5 C L											<u>205</u>				
5 <i>C L 3</i>											246				
565 /			<u>81</u>												
Sac I						<u>93</u>					<u>176</u> <u>195</u>				
5362						<u>94</u>					<u>177</u>				
5 d d												<u>263</u>			
5 8 5						<u>104</u>									
5 F O O		<u>70</u>													
5 F O 1		<u>70</u>													
5 F O 2		<u>71</u>													
5 F O 3		<u>71</u>													
5 F O 4		<u>71</u>													
5 F O 5		<u>72</u>													
5 F O 6		<u>72</u>													
5 F O 7		<u>72</u>													
5 F 0 8		<u>73</u>													
5F09		<u>73</u>													
5F 10		<u>73</u>													
5F		<u>74</u>				00	440								
5 F C 5 F d						<u>90</u>	<u>118</u>				228				
SFE		<u>55</u>									220				
JEEE		<u>69</u>													
SFr						<u>94</u>	<u>119</u>								
5 F E							<u>119</u>					1			
5 H 2							1		1		<u>244</u>				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (חבה - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L</i> F <i>L</i> )	[SIMPLY START] (5 , <i>n</i> -)	[Settings] (5 £ Ł -)	[MOTOR CONTROL] (d r [ -)	[INPUTS / OUTPUTS CFG] (	[COMMAND] (E Ł - )	[FUNCTION BLOCKS] (F b fl - )	[APPLICATION FUNCT.] (f נו ח - )	[FAULT MANAGEMENT] (F L E -)	[COMMUNICATION] (L a fl - )	[3 INTERFACE] ( , <i>E F</i> -)	
5 H Y											<u>244</u>				
5 10							<u>117</u>								
5 i E						<u>90</u>	<u>118</u>								
5 L L												<u>262</u>			
5 L P						<u>90</u>	<u>118</u>								
5 L 5 5		<u>54</u>													
5 N o E							<u>114</u>								
5 n C											<u>243</u>				
5 o P							<u>120</u>								
5 P I D						<u>97</u>					<u>182</u>				
5 P						<u>97</u>					<u>182</u>				
5 P 1 2						<u>97</u>					<u>182</u>				
5 P I 3						<u>98</u>					<u>182</u>				
5P 14						<u>98</u>					<u>182</u>				
5 P 1 5						<u>98</u>					<u>182</u>				
5P 16						<u>98</u>					<u>182</u>				
5 P 2						<u>97</u>					<u>181</u>				
5 P 3 5 P 4						<u>97</u>					<u>181</u>				
5 P 5						<u>97</u> <u>97</u>					<u>181</u> <u>181</u>				
575						<u>97</u> 97					<u>181</u> <u>181</u>				
5 P T						<u>97</u> 97					<u>181</u>				
578						<u>97</u>					182				
579						<u>97</u>					<u>182</u>				
576						<u></u>	<u>116</u>								
SPdi		<u>63</u>					<u> </u>								
5842		63													
5 P d 3		63													
5 P F		1					<u>116</u>								
5 P G						<u>90</u>	118								
5 P G u						90	118								
5 P П		1							1		<u>188</u>		1		
5-11		<u>64</u>							1		1				
5-12		<u>67</u>													
to 5 r 18															
5-21		<u>64</u>													
5-22		<u>67</u>													
to 5 r 2 8		<u></u>													
SrAl		<u>64</u>							1		1		1		
5 r <i>A 2</i> to		<u>67</u>													
5 r A 8															

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F -)	[1.2 MONITORING] (חמת - )	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>I</i> 1 - )	[Settings] (5 <i>EL</i> -)	[MOTOR CONTROL] (dr [ -)	[INPUTS / OUTPUTS CFG] ( , )	[COMMAND] ( <i>E</i> Ł -)	[FUNCTION BLOCKS] (F b Π - )	[APPLICATION FUNCT.] (F נו ח - )	[FAULT MANAGEMENT] (FL E -)	[COMMUNICATION] (L a II -)	[3 INTERFACE] ( , <i>E F</i> -)	
Srb I		<u>64</u>													
<mark>5 г Ь 2</mark> to		<u>67</u>													
5 r 6 8															
SrE I		<u>64</u>													
5 r C 2 to		<u>67</u>													
SrCB															
5 r d 1		<u>64</u>													
5 r d 2 to		<u>67</u>													
5-88		0.1													
SrEl SrE2		<u>64</u> <u>67</u>													
to		<u>.</u>													
SrEB SrFI		<u>64</u>													
5 r F 2		<u>67</u>													
to 5 r F B															
5-61		<u>64</u>													
5-62		<u>67</u>													
to 5 r G B															
5 r H I		<u>64</u>													
5 - H 2 to		<u>67</u>													
5 r H 8															
5-1		<u>64</u>													
<del>5 م 5 5 to</del>		<u>67</u>													
5- 18															
5 r J 1 5 r J 2		<u>64</u> <u>67</u>													
to															
Sr J8 Sr I		<u>64</u>													
5 r K 2		<u>67</u>													
to 5 r K B															
SrL I		<u>64</u>													
SrLZ		<u>67</u>						1			1				
to 5 r L B															
5 r b						<u>103</u>		1			1	<u>270</u>			
SrP						00					107	<u>272</u>			
55 15		<u>54</u>				<u>98</u>					<u>187</u>				
556												264			

Code						1									CUSTOMER SETTING
	[1.1 SPEED REFERENCE] (r E F - )	[1.2 MONITORING] (חמר - )	[FACTORY SETTINGS] (F [ 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (d r [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] (E Ł - )	[FUNCTION BLOCKS] (F b fi - )	[APPLICATION FUNCT.] (F u n -)	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] (L = / - )	[3 INTERFACE] ( , <i>E F</i> -)	
	[1.1 S (r E	[1.2 MON (Лап-)	FAC (F C	[Maci ( [ F I	ISIMF (5 / I	<b>[SETTINC</b> (5 <i>E L</i> - )	[MOTOR (d r [ - )	[INPUTS/ ( )	[COMMAN (E E L -)	[FUN (Fb)	(Fun-)	(F L I	(Commu	[3 IN <sup>-</sup>	
S E d											228				
5 E F r		<u>50</u>													
5 E N												<u>259</u>			
5 E o												<u>264</u>			
5605		<u>54</u>													
S E P												<u>259</u>			
5 E r											<u>185</u>				
SErt											470	<u>260</u>			
522					<u>87</u>		<u>108</u> <u>114</u>				<u>173</u>				
۶uL							<u>120</u>								
ERI						<u>89</u>					<u>170</u>				
E A 2						<u>89</u>					<u>171</u>				
E A 3						<u>89</u>					<u>171</u>				
ЕПЧ						<u>89</u>					<u>171</u>				
L A A											<u>216</u>				
EAC		<u>74</u>													
FHCS		<u>74</u>						100							
ERnF								<u>136</u>				<u>263</u>			
E A r E B E						<u>101</u>					<u>195</u>	<u>252</u>			
 						101					242				
Ebr											272		<u>276</u>		
£65												<u>260</u>	210		
FCC					<u>85</u>			<u>125</u>							
ECE								125							
FqC						<u>93</u>					<u>175</u>	<u>274</u>	1	1	
EdC I						<u>93</u>					<u>176</u>				
F9C5						<u>94</u>					<u>177</u>				
Edi						<u>93</u>					<u>174</u>	<u>273</u>			
Edn											<u>242</u>				
<i>E d</i> 5												<u>266</u>			
EEC I		<u>61</u>													
EF o													<u>276</u>		
EFr					<u>87</u>			<u>105</u>				057			
E H R		50										<u>257</u> <u>258</u>			
E H d E H r		<u>50</u> <u>50</u>													
EHE		50										<u>255</u>			
ELA											<u>216</u>	200			
ELC											210				

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] ( <i>r E F</i> - )	[1.2 MONITORING] ( <i>Пап</i> -)	[FACTORY SETTINGS] (F L 5 - )	[Macro configuration] ( <i>L F L</i> )	[SIMPLY START] (5 , 17 - )	[SETTINGS] (5 E Ł - )	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ([E L -)	[FUNCTION BLOCKS] (F b Π - )	[APPLICATION FUNCT.] (F u n -)	[FAULT MANAGEMENT] (F L E - )	[COMMUNICATION] (L a $\Pi$ - )	[3 INTERFACE] ( , <i>E F</i> -)	
E L d												<u>267</u>			
EL 10						<u>102</u>					<u>216</u>				
EL IN						<u>101</u>					<u>216</u>				
EL S						<u>95</u>					<u>213</u>				
EnL												<u>268</u>			
EoL												<u>272</u>			
£ o 5											<u>204</u>				
EPII		<u>59</u>													
EP 12		<u>60</u>													
EP 13		<u>60</u>													
EP 14		<u>60</u> <u>60</u>													
EP21		<u>60</u>													
EP23		<u>60</u>													
EPZY		<u>60</u>													
EPJI		<u>61</u>													
EP32		61													
EP33		61													
ЕРЭЧ		61													
E 9 6												<u>266</u>			
£95							<u>113</u>								
Erfl							<u>111</u>								
ErE											<u>242</u>				
ErH						<u>102</u>					<u>242</u>				
ErL						<u>102</u>					<u>242</u>				
ЕSП												<u>259</u>			
£ 5 9											<u>243</u>				
E E d						<u>102</u>						<u>255</u> <u>258</u>			
FF95												<u>255</u> <u>258</u>			
££d3												<u>255</u> <u>258</u>			
E E H			1			<u>102</u>						<u>253</u>	1		
EEL						<u>102</u>						<u>253</u>			
t t o												<u>276</u>			
EEr						<u>101</u>				<u>196</u>					
EuL										<u>236</u>					
Eun					<u>87</u>		<u>108</u> <u>113</u>								
tunu							<u>108</u> <u>114</u>								
EuP										<u>242</u>					

Code															CUSTOMER SETTING
	[1.1 SPEED REFERENCE] ( <i>r E F</i> -)	[1.2 MONITORING] (חמר - )	[FACTORY SETTINGS] (F £ 5 - )	[Macro configuration] ( <i>L</i> F <i>L</i> )	[SIMPLY START] (5 , <i>n</i> - )	[Settings] (5 <i>E Ł</i> -)	[MOTOR CONTROL] (dr [ - )	[INPUTS / OUTPUTS CFG] ( , _ a - )	[COMMAND] ([E L -)	[FUNCTION BLOCKS] $(F h \Pi -)$	[APPLICATION FUNCT.] ( <i>F</i> μ π -)	[FAULT MANAGEMENT] (FL E - )	[COMMUNICATION] (L a fl - )	[3 INTERFACE] ( , <i>E F</i> -)	
£ u 5					<u>87</u>		<u>108</u> <u>113</u>								
u I							<u>118</u>								
u 2							<u>118</u>								
<u>ы</u> Э							<u>119</u>								
<u>ы</u> 4							<u>119</u>								
u 5							<u>119</u>								
ubr											<u>247</u>		<u>122</u>		
u d L												<u>271</u>			
uFr						<u>90</u>	<u>118</u>								
u iH l		<u>52</u>						<u>133</u>							
u ,H2		<u>52</u>						<u>134</u>							
u i Lii		<u>52</u>						<u>133</u>							
u 112		<u>52</u>						<u>133</u>							
uLn		<u>50</u>													
uLr		<u>75</u>													
υLE												<u>270</u>			
u n 5					<u>86</u>		<u>107</u>								
u o H I		<u>53</u>						<u>144</u>							
uol I		<u>53</u>						<u>144</u>							
u o P		<u>50</u>													
υPL												<u>259</u>			
ur E S											<u>246</u>	<u>259</u>			
u 5 b												<u>259</u>			
u S i											<u>187</u>				
υSL											<u>247</u>	<u>259</u>			
u 5 P											<u>185</u>				
u 5 E												<u>259</u>			

# Glossary

# 14

# D

#### **Display terminal**

The display terminal menus are shown in square brackets. For example: **[Communication]** The codes are shown in round brackets. For example:  $\begin{bmatrix} c & n \end{bmatrix}$  -Parameter names are displayed on the display terminal in square brackets. For example: **[Fallback Speed]** Parameter codes are displayed in round brackets. For example: *L F F* 

# Ε

F

#### Error

Discrepancy between a detected (computed, measured, or signaled) value or condition and the specified or theoretically correct value or condition.

Factory setting

Factory settings when the product is shipped

## Fault

Fault is an operating state. If the monitoring functions detect an error, a transition to this operating state is triggered, depending on the error class. A "Fault reset" is required to exit this operating state after the cause of the detected error has been removed. Further information can be found in the pertinent standards such as IEC 61800-7, ODVA Common Industrial Protocol (CIP).

#### **Fault Reset**

A function used to restore the drive to an operational state after a detected error is cleared by removing the cause of the error so that the error is no longer active.

## Μ

Ρ

### **Monitoring function**

Monitoring functions acquire a value continuously or cyclically (for example, by measuring) in order to check whether it is within permissible limits. Monitoring functions are used for error detection. Glossary

#### Parameter

Device data and values that can be read and set (to a certain extent) by the user.

PELV	
	Protective Extra Low Voltage, low voltage with isolation. For more information: IEC 60364-4-41
PLC	
	Programmable logic controller
Power stage	
	The power stage controls the motor. The power stage generates current for controlling the motor.
	W
Warning	
	If the term is used outside the context of safety instructions, a warning alerts to a potential problem that was detected by a monitoring function. A warning does not cause a transition of the operating state.