

Preface









Thank you for choosing DELTA's high-performance VFD-S Series. VFD-S Series are manufactured by adopting high-quality components, material and incorporating the latest microprocessor technology available.

Getting Started

This quick start will be helpful in the installation and parameter setting of the AC motor drives. To guarantee safe operation of the equipment, read the following safety guidelines before connecting power to the AC motor drives. For detail information refer to the VFD-S User Manual on the CD supplied with the drive.



WARNING

-  **DANGER!** AC input power must be disconnected before any maintenance. Do not connect or disconnect wires and connectors while power is applied to the circuit. Maintenance must be performed by qualified technicians.
-  **CAUTION!** There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. To avoid damage to these components, do not touch these components or the circuit boards with metal objects or your bare hands.
-  **DANGER!** A charge may still remain in the DC-link capacitor with hazardous voltages even if the power has been turned off. To avoid personal injury, please ensure that power has turned off before operating AC drive and wait ten minutes for capacitors to discharge to safe voltage levels.
-  **CAUTION!** Ground the VFD-S using the ground terminal. The grounding method must comply with the laws of the country where the AC drive is to be installed. Refer to Basic Wiring Diagram.
-  **CAUTION!** The final enclosures of the AC drive must comply with EN50178. (Live parts shall be arranged in enclosures or located behind barriers that meet at least the requirements of the Protective Type IP20. The top surface of the enclosures or barrier that is easily accessible shall meet at least the requirements of the Protective Type IP40). (VFD-S series corresponds with this regulation.)
-  **CAUTION!** The rated voltage of power system that is installed on AC drive must be equal to or less than 240 Volts (460V model is 480 Volts) and the current must be equal to or less than 5000A RMS.
-  **DANGER!** The AC drive may be destroyed beyond repair if incorrect cables are connected to the input/output terminals. Never connect the AC drive output terminals U/T1, V/T2, and W/T3 directly to the AC main circuit power supply.
-  **CAUTION!** Heat sink may heat up over 70°C (158°F), during the operation. Do not touch the heat sink.

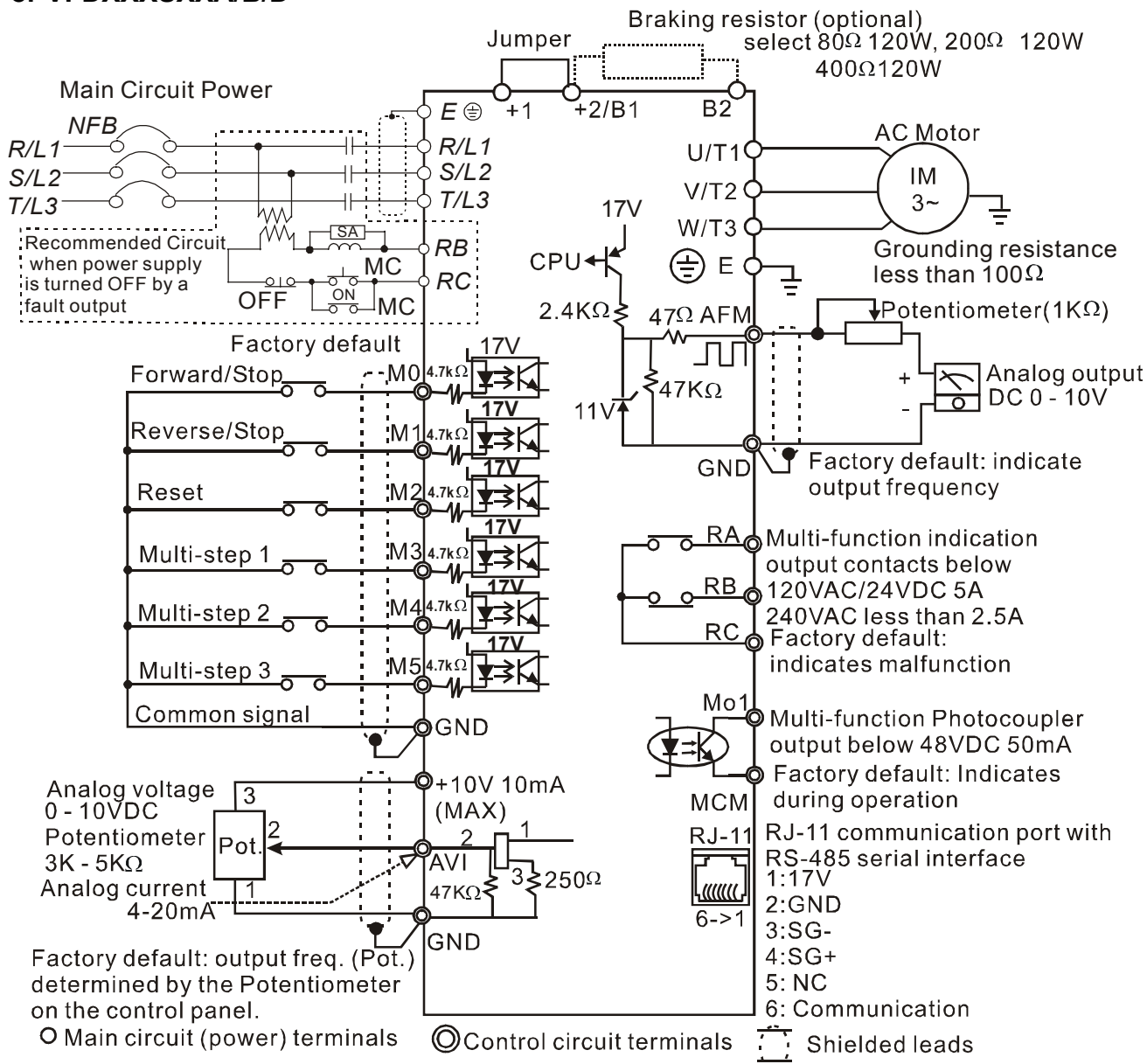
STANDARD SPECIFICATIONS

Voltage Class		115V Class			230V Class					460V Class			
Model Number VFD-□ □ □ S		002	004	007	002	004	007	015	022	004	007	015	022
Max. Applicable Motor Output (kW)		0.2	0.4	0.75	0.2	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2
Output Rating	Rated Output Capacity (KVA)	0.6	1.0	1.6	0.6	1.0	1.6	2.9	4.2	1.2	2.0	3.3	4.4
	Rated Output Current (A)	1.6	2.5	4.2	1.6	2.5	4.2	7.5	11.0	1.5	2.5	4.2	5.5
	Maximum Output Voltage (V)	Proportional to Input Voltage											
	Rated Frequency (Hz)	1.0 to 400 Hz											
Input Rating	Rated Input Current (A)	Single phase			Single/3-phase model drive					3-phase			
		6	9	18	4.9/2.4	6.5/3.0	9.7/5.1	15.7/9.0	24/15	1.7	2.9	5.1	6.9
	Input Current for 1-phase model drive to be used as 3-phase model drive	---			1.9	2.7	5.1	8.4	--	---			
	Rated Voltage/Frequency	100/110/120 VAC 50/60 Hz			200/208/220/240 VAC 50/60Hz					380/400/415/480 VAC 50/60Hz			
Voltage/Freq. Tolerance		Voltage: ±10%, Frequency: ±5%											
Control Characteristics	Control System		SPWM (Sinusoidal Pulse Width Modulation, carrier frequency 3k-10kHz)										
	Output Frequency Resolution		0.1Hz										
	Torque Characteristics		Including the auto-torque, auto-slip compensation; starting torque can be 150% at 5Hz										
	Overload Endurance		150% of rated current for 1 minute										
	Accel/Decel Time		0.1to 600 second (2 Independent settings for Accel/Decel Time)										
	V/F Pattern		V/F pattern adjustable										
	Stall Prevention Level		20 to 200%, Setting of Rated Current										
			Setting by ▲ ▼ or Potentiometer										
Operating Characteristics	Frequency Setting	Keypad	Setting by ▲ ▼ or Potentiometer										
		External Signal	Potentiometer-5KΩ/0.5W, DC 0 to +10V or 0 to +5V (Input impedance 47KΩ), RS-485 interface, 4 to 20mA (Input impedance 250Ω); Multi-Function Inputs 1 to 5 (7 steps, Jog, up/down)										
	Operation Setting Signal	Keypad	Setting by RUN, STOP										
		External Signal	M0 to M5 can be combined to offer various modes of operation, RS-485 serial interface (MODBUS).										
	Multi-Function Input Signal		Multi-step selection 0 to 7, Jog, accel/decel inhibit, first/second accel/decel switch, counter, PLC operation, external Base Block (NC, NO)										
	Multi-Function Output Indication		AC Drive Operating, Frequency Attained, Non-zero, Base Block, Fault Indication, Local/Remote indication, PLC Operation indication.										
Analog Output Signal		Analog frequency/current signal output.											
Other Function		AVR, S-Curve, Over-Voltage, Over-Current Stall Prevention, Fault Records, Adjustable Carrier Frequency, DC Braking, Momentary Power Loss restart, Frequency Limits, Parameter Lock/Reset, Reverse Inhibition, etc.											
Protection		Self-testing, Over Voltage, Over Current, Under Voltage, Overload, Overheating, External Fault, Electronic thermal, Ground Fault.											
Cooling		Forced air-cooling (ONLY FOR 022S2XA/B; XXXS43A/B/E 1HP~3HP; XXXSXXD; XXXS21E 400W~3HP). Others are Natural air-cooling.											
Environment	Installation Location		Altitude 1,000 m or below, keep from corrosive gasses, liquid and dust										
	Pollution Degree		2										
	Ambient Temperature		-10°C to 40°C (Non-Condensing and not frozen)										
	Storage Temperature		-20 C to 60 C										
	Ambient Humidity		Below 90% RH (non-condensing)										
	Vibration		9.80665m/s ² (1G) less than 20Hz, 5.88m/s ² (0.6G) at 20 to 50Hz										

Basic Wiring Diagram

Users must connect wiring according to the following circuit diagram shown below.

For VFDXXXSXXA/B/D

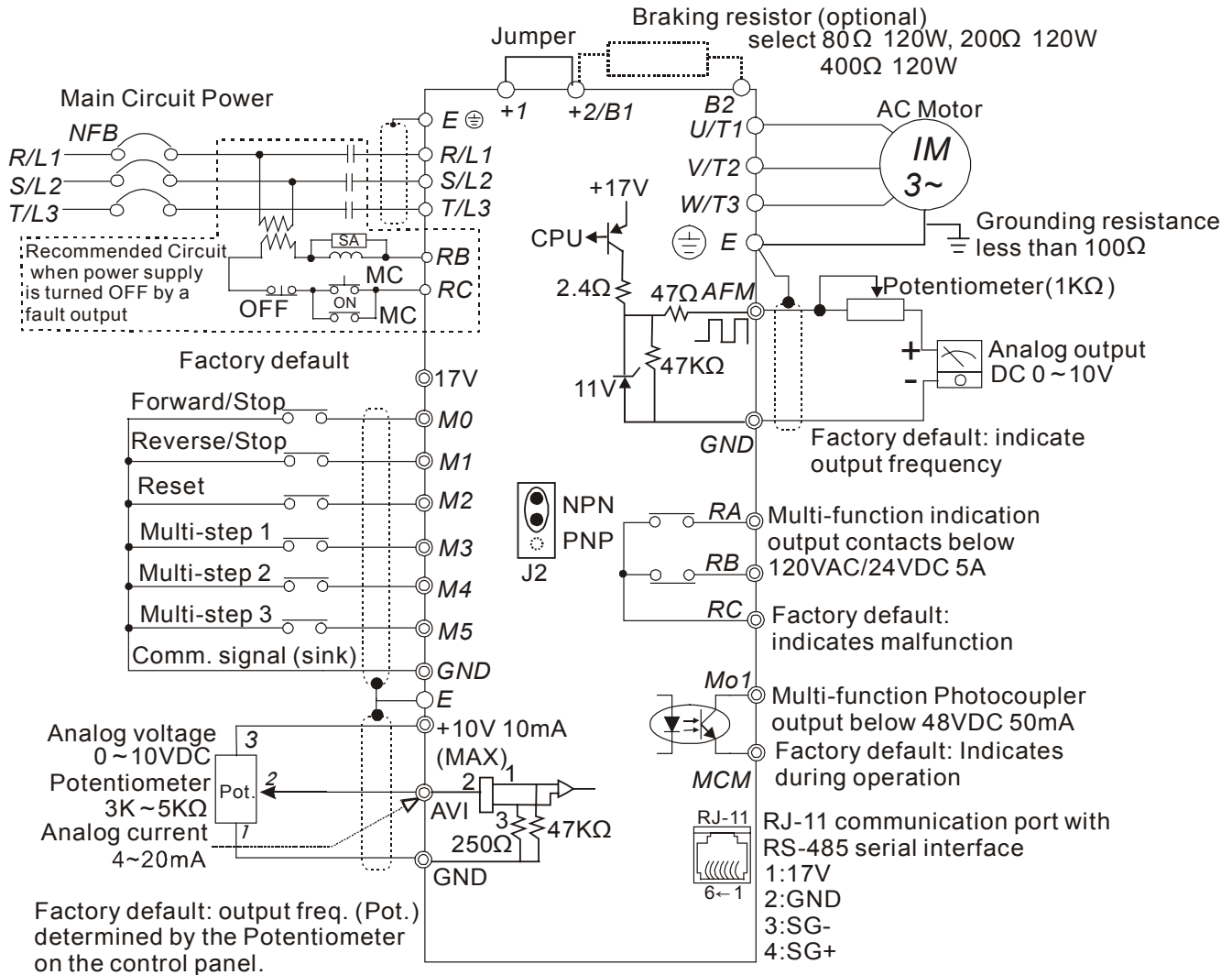


NOTE: Do not plug in a Modem or telephone line to the RS-485 communication port, permanent damage may result. Terminal 1 & 2 are the power sources for the optional copy keypad and should not be used while using RS-485 communication.

* If it is single phase model, please select any of the two input power terminals in main circuit power.

For VFDXXXSXXE

NPN (sink mode)

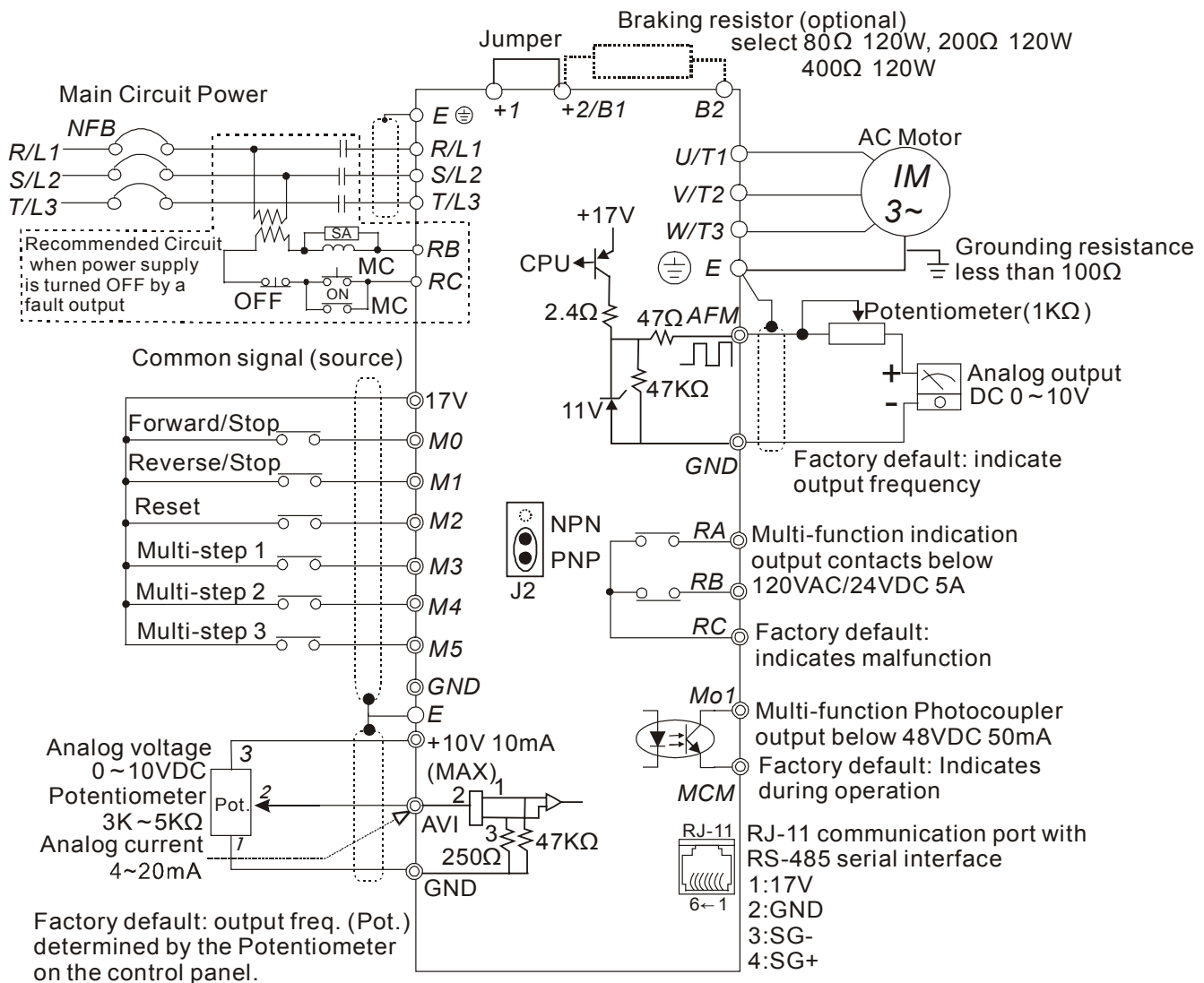


- Main circuit (power) terminals
- ◎ Control circuit terminals
- ⊖ Shielded leads

NOTE: Do not plug in a Modem or telephone line to the RS-485 communication port, permanent damage may result. Terminal 1 & 2 are the power sources for the optional copy keypad and should not be used while using RS-485 communication.

* If it is single phase model, please select any of the two input power terminals in main circuit power.

For VFDXXXSXXE
PNP (source mode)

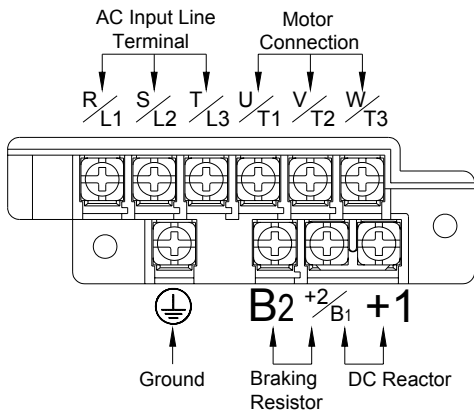


- Main circuit (power) terminals
- ◎ Control circuit terminals
- ⊖ Shielded leads

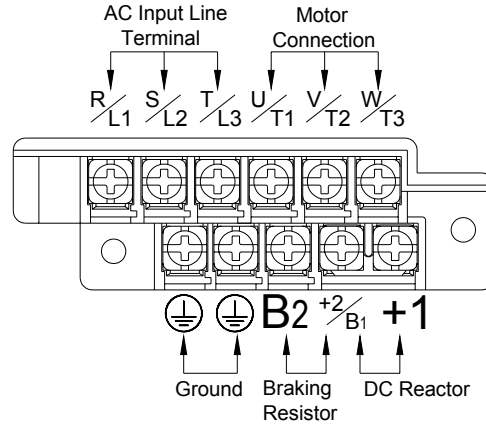
NOTE: Do not plug in a Modem or telephone line to the RS-485 communication port, permanent damage may result. Terminal 1 & 2 are the power sources for the optional copy keypad and should not be used while using RS-485 communication.

* If it is single phase model, please select any of the two input power terminals in main circuit power.

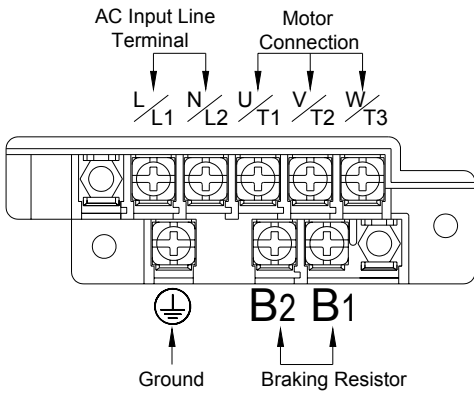
Power Terminals



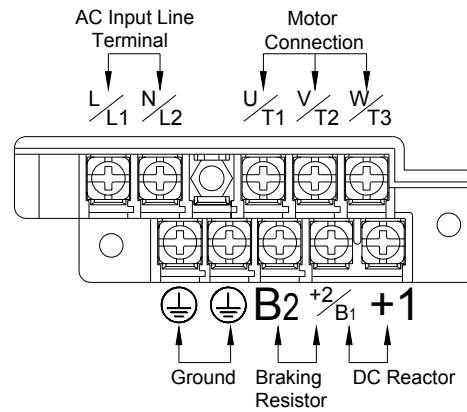
002S23B, 004S23B, 004S43B,
007S23B, 007S43B, 015S21A/B,
015S23A/B, 015S43B, 022S23A/B,
022S43B



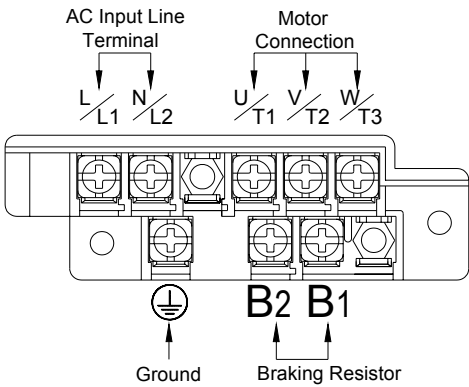
002S23A, 004S23A/E, 007S23A/E,
015S23D, 015S43A/D/E, 022S23D,
022S43A/D/E



002S11A/B, 004S11A/B,
007S11A/B



002S21A/E, 004S21A/E, 007S21A/E,
015S21D/E, 022S21D/E




022S21A/B

0.25-1 HP (1HP: 230V/460V) and VFD015S23D
Wire Gauge: 14-20 AWG
Wire Type: copper wire only, 75°C
Torque: 12 kgf-cm (10 in-lbf)

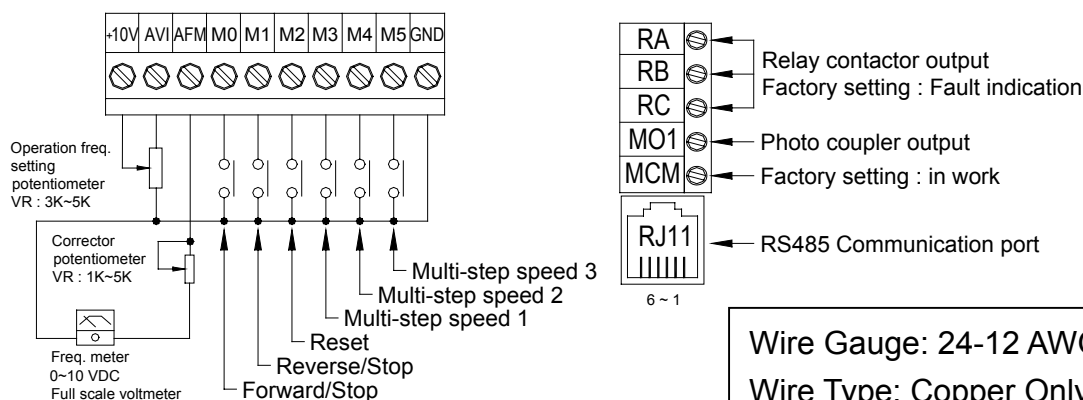
1-3 HP (1HP: 115V)
Wire Gauge: 10-18 AWG
Wire Type: stranded copper wire only, 75°C
Torque: 20 kgf-cm (17.4 in-lbf)

Terminal Explanations

Terminal Symbol	Explanation of Terminal Function
R/L1, S/L2, T/L3	AC line input terminals (three phase)
L/L1, N/L2	AC line input terminals (single phase)
U/T1, V/T2, W/T3	Motor connections
+2/B2 – B1	Connections for Braking Resistor (optional)
+2/+1 – B1	Connections for DC Link Reactor (optional)
	Earth Ground

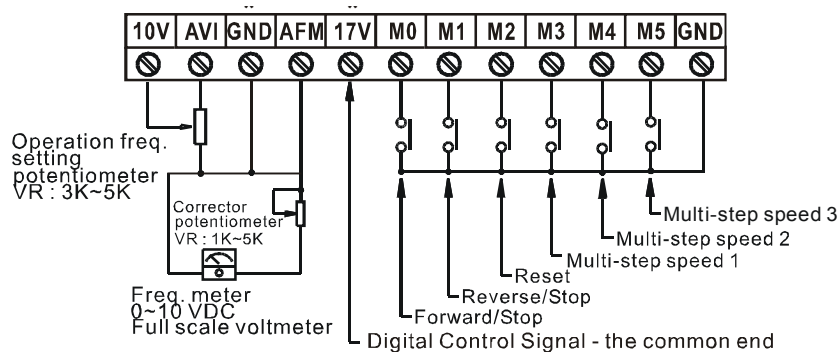
Control Terminal Wiring (Factory Setting)

A. XXXSXXA/B/D



Wire Gauge: 24-12 AWG
 Wire Type: Copper Only
 Torque: 4 kgf-cm (3.5 in-lbf)

B. XXXSXXE



Wire Gauge: 24-16 AWG
 Wire Type: Copper Only
 Torque: 2 kgf-cm (1.7 in-lbf)

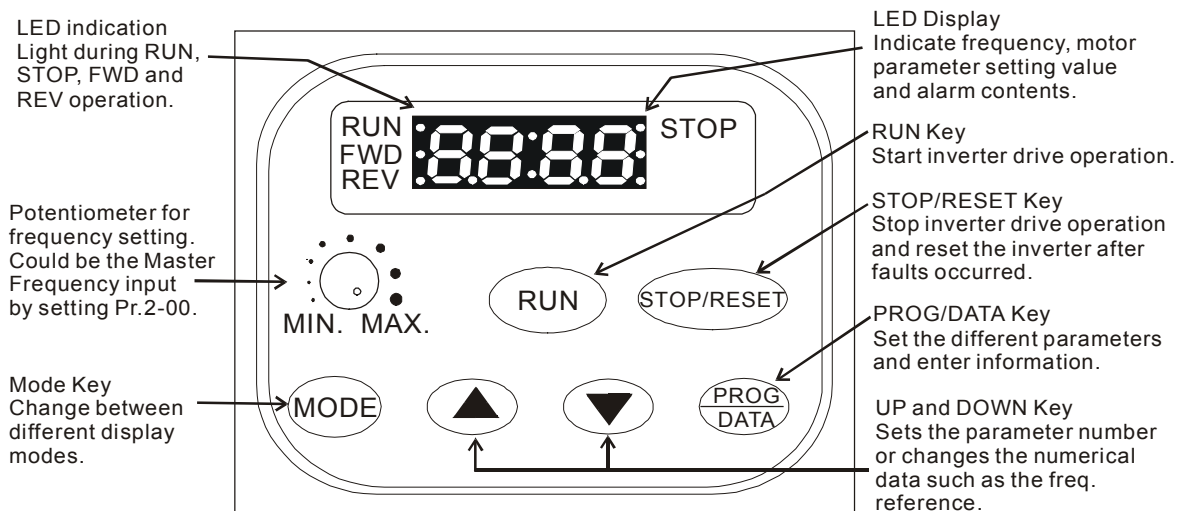
Terminal Explanations:

Terminal symbols	Terminal name	Remarks
RA-RC	Multi-Function Indication Output Contact	Refer to Pr.3-06 Relay output contact RA-RC (N.O. Contact) RB-RC (N.C. Contact)
RB-RC	Multi-Function Indication Output Contact	
MO1-MCM	Multi-function PHC output	Refer to Pr.3-05
RJ-11	Serial communication port	RS-485 serial communication interface
+10V-GND	Power for speed setting	Power Supply (+10 V/10mA)
AVI-GND	Analog voltage/current freq. command	0 to +10 V (Max. Output Frequency) Input or 4 to 20mA (Max. Output Frequency) Input
AFM-GND	Analog frequency/current meter	0 to +10 V (Max. output Frequency) Output
17V	DC Voltage Source	(17V/20mA), used for source mode.
M0	Multi-function auxiliary input	Refer to Pr.4-04 to Pr.4-08
M1	Multi-function input 1	
M2	Multi-function input 2	
M3	Multi-function input 3	
M4	Multi-function input 4	
M5	Multi-function input 5	
GND	Digital Signal Common	

Note: Use twisted-shielded, twisted-pair or shielded-lead wires for the control signal wiring. It is recommended to run all signal wiring in a separate steel conduit. The shield wire should only be connected at the drive. Do not connect shield wire on both ends.

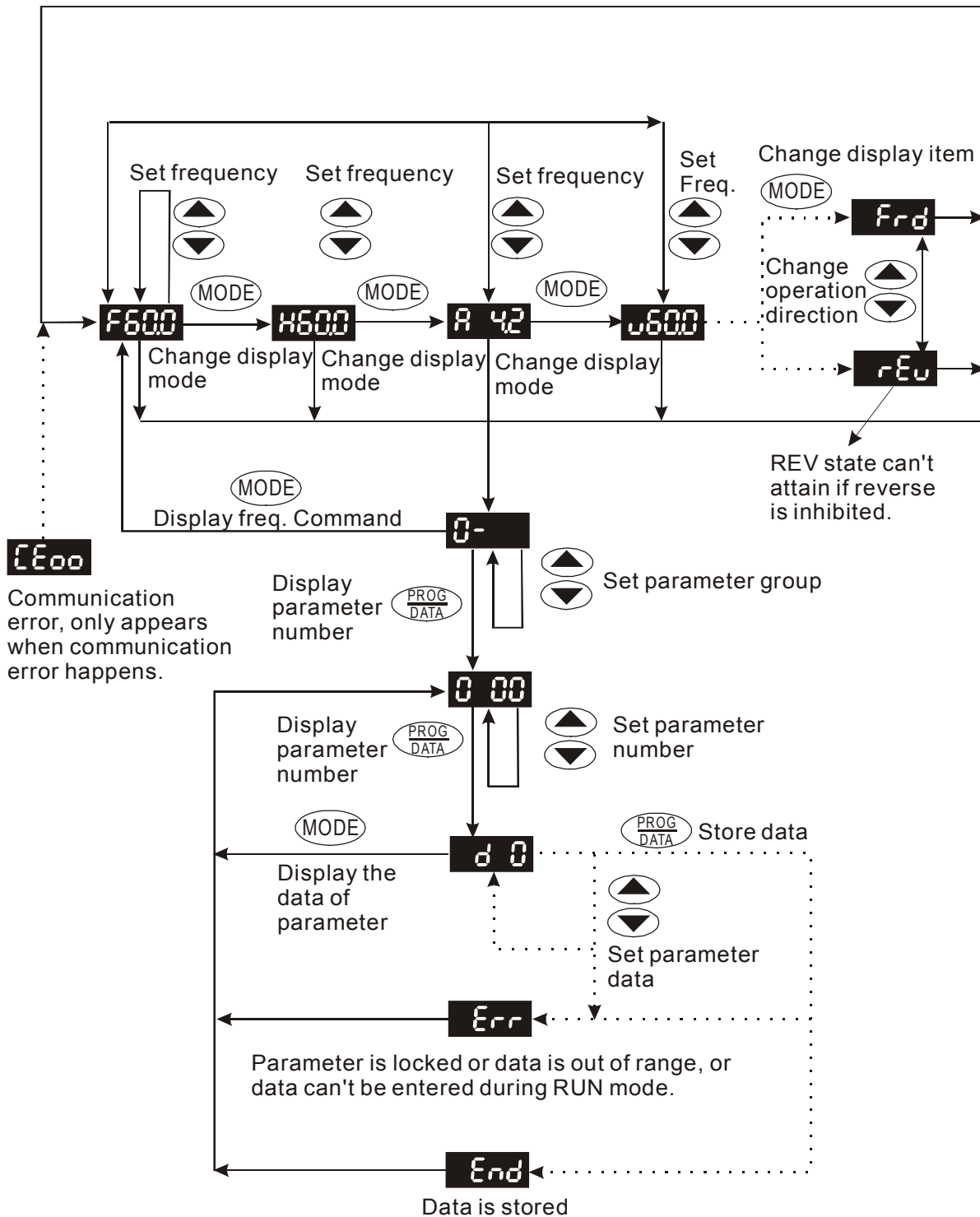
Description of Digital Keypad

This digital keypad includes two parts: Display panel and keypad. Display panel provides the parameter display and shows operation status of the AC drive. Keypad provides programming interface between users and AC drives.



Keypad Operation

(MODE) Change display mode



SUMMARY OF PARAMETER SETTINGS

◆: The parameter can be set during operation, *: Twice the value for 460V class.


Parameters	Explanation	Settings	Factory Setting
Group 0: User Parameters			
0-00	Identity Code of AC Drive	Read-only	d #
0-01	Rated Current Display	Read-only	d##.#
0-02	Parameter Reset	d10: Reset Parameter to Factory Setting	d0
0-03	Start-up Display Selection ◆	d0: F (setting frequency) d1: H (actual frequency) d2: (user-defined unit) d3: A (output current)	d0
0-04	User-Defined Unit ◆	d0: Display User-Defined Unit (u) d1: Display Counter Value (C) d2: Display Process Operation (1= tt) d3: Display DC-BUS Voltage (U) d4: Display output voltage (E) d5: Display frequency commands of PID (P) d6: Display PID feedback (after multiplying by Gain) (b)	d0
0-05	User-Defined Coefficient K ◆	d0.1 to d160	d1.0
0-06	Software Version	Read-only	d#.#
0-07	Password Input	d0 to d999	d0
0-08	Password Decode	d0 to d999	d0
Group 1 Basic Parameters			
1-00	Maximum Output Freq.	d50.0 to d400 Hz	d60.0
1-01	Maximum Voltage Frequency (Base Freq)	d10.0 to d400 Hz	d60.0
1-02	Maximum Output Voltage	d2.0V to d255V*	d230*
1-03	Mid-Point Frequency	d1.0 to d400 Hz	d1.0
1-04	Mid-Point Voltage	d2.0V to d255V*	d12*
1-05	Minimum Output Frequency	d1.0 to d60.0 Hz	d1.0
1-06	Minimum Output Voltage	d2.0V to d255V*	d12*
1-07	Upper Bound of freq.	d1 to d110%	d100
1-08	Lower Bound of freq.	d0 to d100%	d0
1-09	Acceleration Time 1 (Tacc1) ◆	d0.1 to d600 Sec	d10.0
1-10	Deceleration Time 1 (Tdec1) ◆	d0.1 to d600 Sec	d10.0
1-11	Acceleration Time 2 ◆	d0.1 to d600 Sec	d10.0
1-12	Deceleration Time 2 ◆	d0.1 to d600 Sec	d10.0
1-13	Jog Acceleration / Deceleration Time ◆	d0.1 to d600 Sec	d10.0
1-14	Jog Frequency ◆	d1.0 Hz to d400 Hz	d6.0

Parameters	Explanation	Settings	Factory Setting
1-15	Auto Acceleration / Deceleration	d0: Linear Acceleration/Deceleration d1: Auto Acceleration, Linear Deceleration d2: Linear Acceleration, Auto Deceleration d3: Auto Acceleration/Deceleration d4: Linear Acceleration; Auto Deceleration, Stall Prevention during Deceleration d5: Auto Deceleration; Auto Acceleration, Stall Prevention during Deceleration	d0
1-16	S-Curve in Acceleration	d0 to d7	d0
1-17	S-Curve in Deceleration	d0 to d7	d0
1-18	Jog Decelerating Time	d 0.0 Jog Decelerating Time Determined by Pr.1-13 d 0.1 to d600	d0.0
Group 2 Operation Method Parameters			
2-00	Source of Frequency Command	d0: Master Frequency input determined by digital keypad. (record the frequency of power loss and it can do analog overlap plus) d1: Master Frequency determined by analog signal DC 0V-10V (external terminal AVI). (won't record the frequency of power loss and it can't do analog overlap plus) d2: Master Frequency determined by analog signal DC 4mA - 20mA (external terminal AVI). (won't record the frequency of power loss and it can't do analog overlap plus) d3: Master Frequency determined by Potentiometer on the digital keypad. (won't record the frequency of power loss and it can do analog overlap plus) d4: Master Frequency operated by RS-485 serial communication interface and record frequency of power loss. (record the frequency of power loss and it can do analog overlap plus)	d0

Parameters	Explanation	Settings	Factory Setting
		d5: Master Frequency operated by RS-485 serial communication interface and won't record frequency before power loss. (won't record the frequency of power loss and it can do analog overlap plus)	
2-01	Source of Operation Command	d0: by Digital Keypad d1: by external terminals, keypad STOP enabled d2: by external terminals, keypad STOP disabled d3: by RS-485 communication interface, keypad STOP enabled d4: by RS-485 communication interface, keypad STOP disabled	d0
2-02	Stop Method	d0: Ramp Stop d1: Coast Stop	d0
2-03	PWM Carrier Frequency	d3: 3KHz d7: 7KHz d4: 4KHz d8: 8KHz d5: 5KHz d9: 9KHz d6: 6KHz d10: 10KHz	d10
2-04	Reverse Operation	d0: Enable REV d1: Disable REV	d0
2-05	Loss of ACI Signal	d0: 0 Hz, continue running d1: Stop the frequency output d2: Last ACI input command	d0
2-06	Analog Auxiliary Frequency Operation	d0: Disable d1: Enable + AVI d2: Enable + ACI	d0
Group 3 Output Function Parameters			
3-00	Analog Output Signal	d0: analog frequency d1: analog current	d0
3-01	Analog Output Gain ◆	d1 to d200%	d100
3-02	Desired Freq. Attained	d1.0 to d400 Hz	d1.0
3-03	Terminal Count Value	d0 to d999	d0
3-04	Preliminary Count Value	d0 to d999	d0
3-05	Multi-Function Output1 (Photocoupler Output)	d0: Not Used d1: AC Drive Operational	d1
3-06	Multi-Function Output2 (Relay Output)	d2: Max. Output Freq. Attained d3: Zero Speed d4: Over Torque d5: Base-Block (B.B.) d6: Low Voltage Detection d7: AC Drive Operation Mode d8: Fault Indication	d8

Parameters	Explanation	Settings	Factory Setting
		d9: Desired Freq. Attained d10: PLC Program Running d11: PLC Program Step Complete d12: PLC Program Complete d13: PLC Program Operation Pause d14: Terminal Count Value Attained d15: Preliminary Count Value Attained d16: Ready State Indicator d17: FWD command indication d18: REV command indication	
Group 4 Input Function Parameters			
4-00	Potentiometer Bias Frequency \diamond	d 0.0 to d 100.0%	d0.0
4-01	Potentiometer Bias Polarity \diamond	d0: Positive Bias d1: Negative Bias	d0
4-02	Potentiometer Frequency Gain \diamond	d1 to d200 %	d100
4-03	Potentiometer Reverse Motion Enable	d0: Forward Motion Only d1: Reverse Motion enabled	d0
4-04	Multi-Function Input Terminal 1 (M0, M1)	d0: Parameter Disable d1: FWD/STOP, REV/STOP d2: FWD/REV, RUN/STOP d3: 3-wire Operation Control Mode d4: E.F. External Fault Input (N.O.)	d1
4-05	Multi-Function Input Terminal 2 (M2)	d5: E.F. External Fault Input (N.C.) d6: Reset d7: Multi-Step Speed Command 1 d8: Multi-Step Speed Command 2	d6
4-06	Multi-Function Input Terminal 3 (M3)	d9: Multi-Step Speed Command 3 d10: Jog Operation d11: Acceleration/deceleration Speed Inhibit d12: First or Second Acceleration/deceleration Time Selection	d7
4-07	Multi-Function Input Terminal 4 (M4)	d13: Base-Block (B.B.) (N.O.) d14: Base-Block (B.B.) (N.C.) d15: Increase Master Frequency d16: Decrease Master Frequency	d8
4-08	Multi-Function Input Terminal 5(M5)	d17: Run PLC Program d18: Pause PLC d19: Counter Trigger Signal d20: Counter Reset d21: Select ACI / Deselect AVI	d9

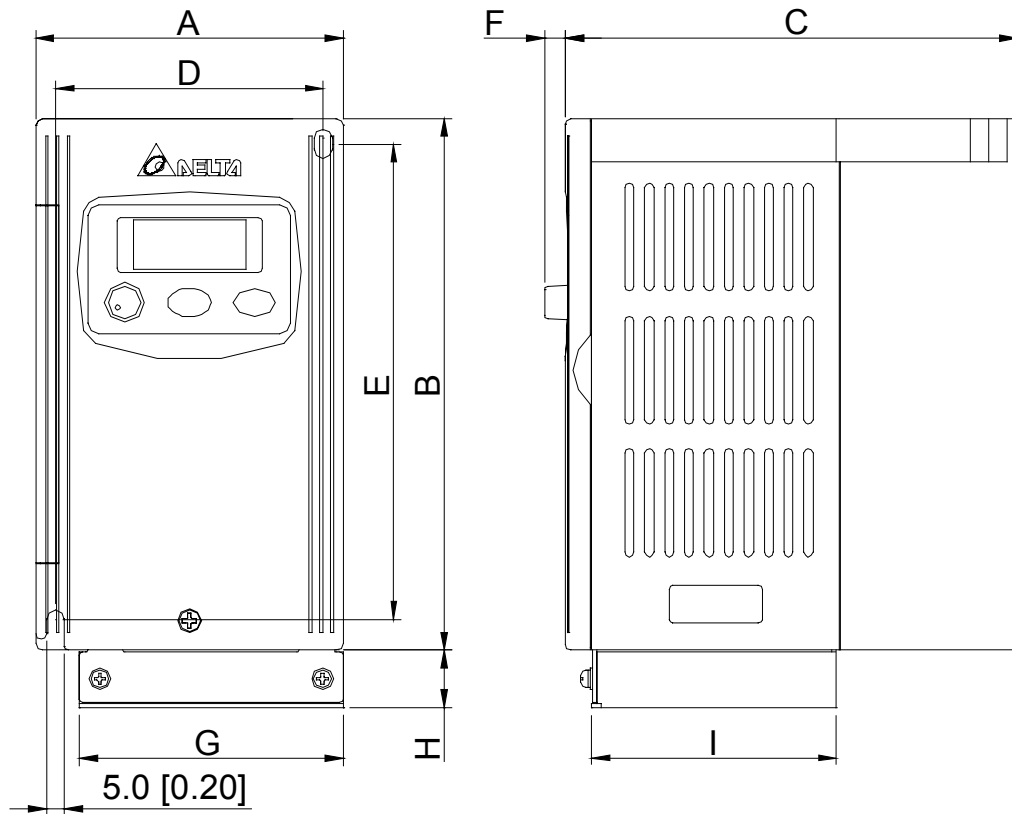
Parameters	Explanation	Settings	Factory Setting
		d22: Disable PID function d23: JOG FWD d24: JOG REV d25: The source of master frequency is AVI. d26: The source of master frequency is ACI.	
4-09	Line Start Lockout	d0: Disable d1: Enable	d0
4-10	Up/down frequency command mode	d0: Up/down frequency by acceleration/deceleration time d1: Up frequency according to constant speed, down frequency according to deceleration time d2: Up frequency according to acceleration time, down frequency according to constant speed d3: Up/down frequency by constant speed	d3
4-11	Acceleration /Deceleration speed of constant up/down frequency	d0 to d1000 Hz/sec	d1
Group 5 Multi-Step Speed and PLC Parameters			
5-00	1 st Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-01	2 nd Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-02	3 rd Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-03	4 th Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-04	5 th Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-05	6 th Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-06	7 th Step Speed Freq.	d0.0 to d400 Hz	d0.0
5-07	PLC Mode	d0: Disable PLC Operation d1: Execute one program cycle d2: Continuously execute program cycles d3: Execute one program cycle step by step d4: Continuously execute one program cycle step by step d5: Disable PLC operation, but can set direction of 1 st speed to 7 th speed	d0
5-08	PLC Forward/ Reverse Motion	d0 to d255 (0: FWD 1: REV)	d0
5-09	Time Duration Step 0	d0 to d65500 Sec	d0
5-10	Time Duration Step 1	d0 to d65500 Sec	d0
5-11	Time Duration Step 2	d0 to d65500 Sec	d0

Parameters	Explanation	Settings	Factory Setting
5-12	Time Duration Step 3	d0 to d65500 Sec	d0
5-13	Time Duration Step 4	d0 to d65500 Sec	d0
5-14	Time Duration Step 5	d0 to d65500 Sec	d0
5-15	Time Duration Step 6	d0 to d65500 Sec	d0
5-16	Time Duration Step 7	d0 to d65500 Sec	d0
Group 6 Protection Parameters			
6-00	Over-Voltage Stall Prevention	d0: Disable d1: Enable	d1
6-01	Over-Voltage Prevention Level	230V series: d350 to d410V 460V series: d700 to d820V	d390 d780
6-02	Over-Current Stall Prevention Level	d20 to d150%	d130
6-03	Over-Torque Detection Mode	d0: Disabled d1: Enabled during constant speed operation and continue to run to OL1 or OL. d2: Enabled during Constant Speed Operation and halted after detection d3: Enabled during running and continues before Continuous Output Time Limit (Pr.6-05) is reached d4: Enabled during running and halted after Over-Torque detection	d0
6-04	Over-Torque Detection Level	d30 to d200%	d150
6-05	Time setting for Over-torque Detection	d0.1 to d10.0 Sec	d0.1
6-06	Electronic Thermal Overload Relay Selection	d0 to d2	d2
6-07	Electronic Thermal Characteristic 	d30 to d600 Sec	d60
6-08	Present Fault Record	d0: No Fault occurred d1: Over Current (oc) d2: Over Voltage (ov) d3: Over Heat (oH) d4: Over Load (oL) d5: Over Load (oL1) d6: External Fault (EF) d7: Not used d8: Not used d9: Current exceed during Acceleration (ocA) d10: Current exceed during Deceleration (ocd)	d0
6-09	Second Most Recent Fault Record		
6-10	Third Most Recent Fault Record		

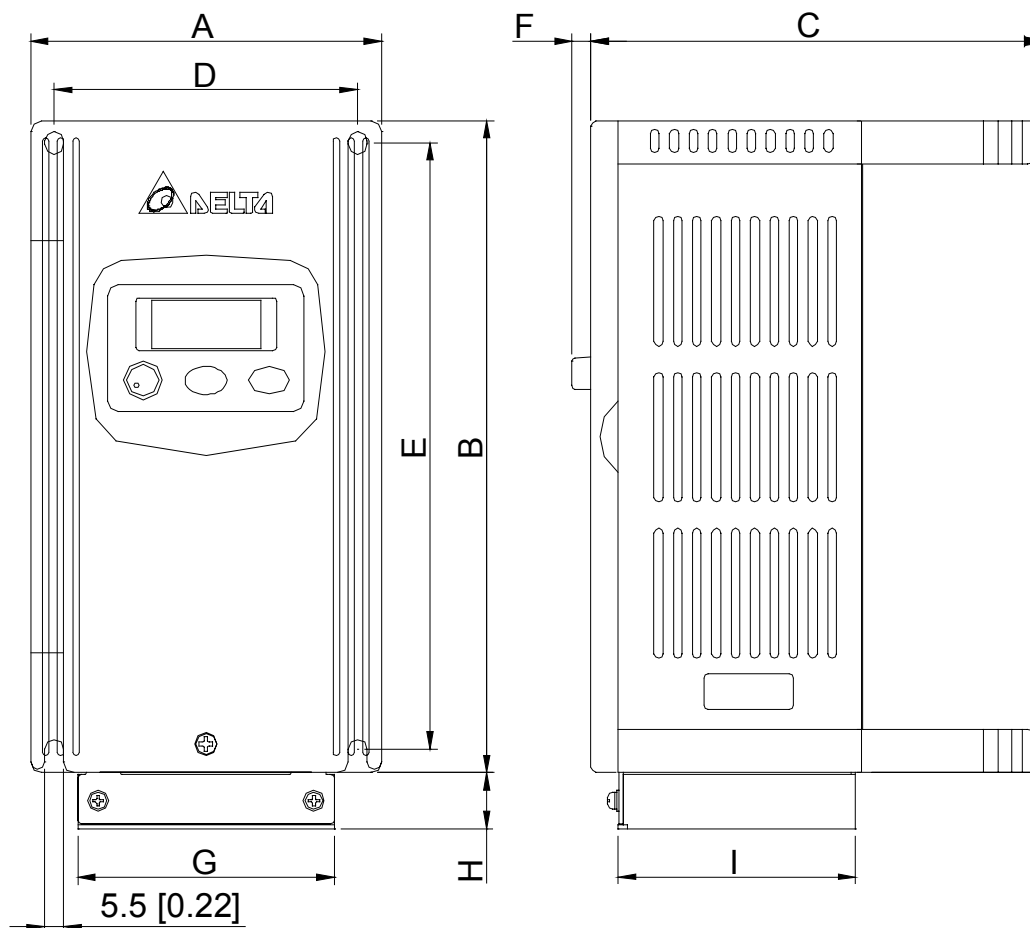
Parameters	Explanation	Settings	Factory Setting
		d11: Current exceed during Steady State (ocn) d12: Ground Fault (GF)	
Group 7 Motor Parameters			
7-00	Motor Rated Current ◆	d30 to d120%	d85
7-01	Motor No-Load Current ◆	d0 to d90%	d50
7-02	Torque Compensation ◆	d0 to d10	d01
7-03	Slip Compensation ◆	d0.0 to d10.0	d0.0
Group 8 Special Parameters			
8-00	DC Braking Voltage Level	d0 to d30%	d0
8-01	DC Braking Time during Start-Up	d0.0 to d60.0 Sec	d0.0
8-02	DC Braking time during Stopping	d0.0 to d60.0 Sec	d0.0
8-03	Start-Point for DC Braking	d0.0 to d400 Hz	d0.0
8-04	Momentary Power Loss Operation Selection	d0: Stop Operation after Momentary Power Loss d1: Continues after Momentary Power Loss, speed search starts with Master Frequency d2: Continues after Momentary Power Loss, speed search starts with Minimum Output Frequency	d0
8-05	Maximum Allowable Power Loss Time	d0.3 to d5.0 Sec	d2.0
8-06	B.B. Time for Speed Search	d0.3 to d5.0 Sec	d0.5
8-07	Maximum Speed Search Current Level	d30 to d200%	d150
8-08	Skip Frequency 1 Upper Bound	d0.0 to d400 Hz	d0.0
8-09	Skip Frequency 1 Lower Bound	d0.0 to d400 Hz	d0.0
8-10	Skip Frequency 2 Upper Bound	d0.0 to d400 Hz	d0.0
8-11	Skip Frequency 2 Lower bound	d0.0 to d400 Hz	d0.0
8-12	Skip Frequency 3 Upper bound	d0.0 to d400 Hz	d0.0
8-13	Skip Frequency 3 Lower Bound	d0.0 to d400 Hz	d0.0
8-14	Auto Restart After Fault	d0 to d10	d0
8-15	AVR Function	d0: AVR Function Enable d1: AVR Function Disable d2: AVR Function Disable when Deceleration	d2
8-16	Dynamic Braking Voltage	d350 to d450V*	d380*
8-17	DC Braking Lower Bound Limit	d0.0 to d400 Hz	d0.0
Group 9: Communication Parameters			
9-00	Communication Address ◆	d1 to d254	d1
9-01	Transmission Speed ◆	d0: Baud Rate 4800 bps	d1

Parameters	Explanation	Settings	Factory Setting
9-01	Transmission Speed ◆	d1: Baud Rate 9600 bps d2: Baud Rate 19200 bps d3: Baud Rate 38400 bps	
9-02	Transmission Fault Treatment◆	d0: Warn and Keep Operating d1: Warn and Ramp to Stop d2: Warn and Coast to Stop d3: Keep Operating without Warning	d0
9-03	Modbus Communication Watchdog Timer ◆	d0: Disable d1 to d20: time setting (1 sec increment)	d0
9-04	Communication Protocol ◆	d0: 7,N,2 (Modbus, ASCII) d1: 7,E,1 (Modbus, ASCII) d2: 7,O,1 (Modbus, ASCII) d3: 8,N,2 (Modbus, ASCII) d4: 8,E,1 (Modbus, ASCII) d5: 8,O,1 (Modbus, ASCII) d6: 8,N,2 (Modbus, RTU) d7: 8,E,1 (Modbus, RTU) d8: 8,O,1 (Modbus, RTU)	d0
Group A: Communication Parameters			
A-00	PID Feedback Terminal Selection	d0: Disable PID function d1: Negative feedback 0~10V AVI d2: Negative feedback 4~20mA ACI d3: Positive feedback 0~10V AVI d4: Positive feedback 4~20mA ACI	d0
A-01	Feedback Signal Gain	d0 to d999	d100
A-02	Proportional Gain (P)	d0 to d999	d100
A-03	Integral Time (I)	d0 to d999	d100
A-04	Differential Time (D)	d0 to d100	d0
A-05	Integration's Upper Bound Frequency	d0 to d100%	d100
A-06	One-Time Delay	d0 to d999	d0
A-07	PID Frequency Output Command Limit	d0 to d110%	d100
A-08	Detection Time of the Feedback Error	d0.0 to d650 seconds	d0.0
A-09	Feedback Signal Fault Treatment	d0: warn and RAMP to stop d1: warn and COAST to stop	d0
A-10	Dwell (sleep) Frequency	d0.0 to d400Hz	d0.0
A-11	Revival Frequency	d0.0 to d400Hz	d0.0
A-12	Dwell (sleep) Period	d0.0 to d650 seconds	d0.0
A-13	PID User Defined	d0.0 to d400	d0.0

Dimension: mm[inch]



Model Name	A	B	C	D	E	F	G	H	I
002S11A/21A/23A	85.0 [3.35]	148.0 [5.83]	88.0 [3.47]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	-	-	-
004S11A/21A/23A	85.0 [3.35]	148.0 [5.83]	102.0 [4.02]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	-	-	-
004S43A/43E, 007S21A/23A	85.0 [3.35]	148.0 [5.83]	124.0 [4.89]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	-	-	-
007S43A/43E	85.0 [3.35]	148.0 [5.83]	126.0 [4.96]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	-	-	-
002S21E, 004S21E, 007S21E, 015S23D	85.0 [3.35]	148.0 [5.83]	127.0 [5.00]	74.0 [2.92]	133.7 [5.27]	5.8 [0.23]	-	-	-
002S11B/21B/23B	85.0 [3.35]	148.0 [5.83]	88.0 [3.47]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	73.0 [2.88]	16.0 [0.63]	67.8 [2.67]
004S11B/21B/23B	85.0 [3.35]	148.0 [5.83]	102.0 [4.02]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	73.0 [2.88]	16.0 [0.63]	67.8 [2.67]
004S43B, 007S21B/23B	85.0 [3.35]	148.0 [5.83]	124.0 [4.89]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	73.0 [2.88]	16.0 [0.63]	67.8 [2.67]
007S43B	85.0 [3.35]	148.0 [5.83]	126.0 [4.96]	74.0 [2.92]	132.2 [5.21]	5.8 [0.23]	73.0 [2.88]	16.0 [0.63]	67.8 [2.67]



Model Name	A	B	C	D	E	F	G	H	I
015S21A/23A	100.0 [3.94]	186.0 [7.33]	143.0 [5.63]	86.5 [3.41]	173.0 [6.82]	5.4 [0.21]	-	-	-
015S21D/21E, 022S21D/21E/23D	100.0 [3.94]	186.0 [7.33]	129.3 [5.09]	86.5 [3.41]	173.0 [6.82]	5.4 [0.21]	-	-	-
007S11A, 015S43A/43E, 022S23A/43A/43E	100.0 [3.94]	186.0 [7.33]	129.0 [5.08]	86.5 [3.41]	173.0 [6.82]	5.4 [0.21]	-	-	-
022S21A	118.0 [4.65]	220.0 [8.67]	130.9 [5.16]	105.5 [4.16]	207.0 [8.16]	4.4 [0.17]	-	-	-
007S11B, 015S21B/23B/43B, 022S23B/43B	100.0 [3.94]	186.0 [7.33]	129.0 [5.08]	86.5 [3.41]	173.0 [6.82]	5.4 [0.21]	73.0 [2.88]	16.0 [2.67]	67.8 [2.67]
022S21B	118.0 [4.65]	220.0 [8.67]	130.9 [5.16]	105.5 [4.16]	207.0 [8.16]	4.4 [0.17]	73.0 [2.88]	16.0 [2.67]	67.8 [2.67]