CONTROL TECHNIQUES

DFS SERIES

READY TO USE, FAST TURNAROUND

HIGH POWER FREESTANDING DRIVES

DRIVE OBSESSED

FREE STANDING DRIVES

DFS SERIES

DFS SERIES

PRE-ASSEMBLED CUBICLE DRIVES

Efficient System Build.

Designing and building a high power drive cubicle takes immense engineering knowhow. Most people don't have that expertise in-house. But we do. And we've put it all into our DFS freestanding drives.

The cubicle system is designed to handle high power applications – maximum energy efficiency and ingress protection when you need it most. The drives are pre-assembled, they're easy to set up. Just install the cubicle and flick the switch. Maximum plant availability, minimum technical wizardry required.

DFS SERIES KEY HIGHLIGHTS

Ready to use: Easy set-up

- Industry standard cubicles which integrate with your existing installation (for sizes see page 16)
- Includes power disconnect and fuses
- Pre-installed options available include:
  - i. EMC filter
  - ii. Energy monitoring
  - iii. 24V back-up supply wiring
  - iv. Empty sections can be integrated for customer equipment and installation cables
- See page 11 for full list of options
- Water cooling is available on request

Straightforward set-up & commissioning

- Commissioning is made easy with a door mounted multi-language HMI
- Enhanced diagnostics thanks to the real time clock
- Connect PC tool for optimum commissioning:
  - i. Loaded with parameter management features, including cloning
  - ii. Easy-to-read dynamic logic diagrams so you can visualise and manage the drive in real time

Fast turnaround

Need your order ASAP?

Our local Drive Centres and partners have got the quote and order process down to a fine art. Issues that could cause delays are ironed out immediately.

- Emergency breakdowns won't set you back weeks; we'll ship you a replacement drive within a week
- Standard lead-times are six weeks


CONTROL
TECHNIQUES
DFS

ENERGY EFFICIENT

HIGH POWER APPLICATIONS

Fans & pumps

- Fan & pump macros, plus onboard logic functions
- Water hammer control, and catch a spinning motor
- On-board Fire Mode
- Improved energy efficiency during low demand

Compressors

- On board PLC and PID functionalities for advanced control without the cost and footprint of an external controller
- Energy efficiency and optimal control for increased Coefficient of Performance (CoP)

General Automation

- Maximum control for conveyors with S-ramp acceleration / deceleration profiling and RFC-A automated load control
- Efficient control of mixer applications and up to 200% overload
- Closed-loop control for cranes and hoists for precision accuracy
- Reliability and control for crushers
- Precision and repeatability for extruder applications
- High energy efficiency and torque control for tunneling and drilling applications and up to 200% overload

CAN-DO DRIVES

DFS SERIES

MAINTAIN PLANT UPTIME

With high reliability, easy maintenance and fast service support.

Rugged, reliable drive systems

- Highly robust cabinets with ingress protection options to meet the needs of the application
  - i. IP23 as standard
  - ii. IP54 as selectable option
  - iii. IP55 water-cooled on request
- Cabinet temperature control via intelligent fan system
- Built with stringent quality controls with full traceability and rigorous testing gives our plant ISO-9001 accreditation
- High quality auxiliary components sourced from leading automation industry vendors

Optimum local service support to minimise downtime

- Control Techniques is active in 70 countries and offers global support from local Drive Centers or Partners
- Rapid on-site support, in your language, from highly qualified, experienced service and application engineers
- Efficient service with replacement parts available locally
- Comprehensive online support including: Drive set-up, diagnostic tool and online support

FREE DOWNLOAD

Diagnostic Tool

Fix error codes quickly and get help with set-up and fault-finding in the Diagnostic Tool app: **controltechniques.com/mobile-applications**

FREE DOWNLOAD

Drive set-up

Everything you need for quick and easy installation in our free-to-access online guides: **www.drive-setup.com**

Download support

Comprehensive collection of manuals available for download from **controltechniques.com** or using the **QR code.**

2 YEAR FREE WARRANTY

Free 2 year warranty

All of our components come with a 2-year warranty so you can rest easy

Warranty terms and conditions apply.

CE Every drive cubicle is fully compliant, and CE marked to guarantee standards

MAXIMUM VERSATILITY

VARIANTS FOR EVERY APPLICATION

DFS is available with a control stage to suit any application:

- Industrial automation systems based upon induction or servo motors, where control dynamics are key.
- HVAC/R systems where dedicated drive features provide overall system control.
- DFS supports the latest high-efficiency motors to maximise return on investment and minimise impact on the environment.

Select from: Unidrive M700, M701, M702 or Pump Drive F600 control

	**M700**	Ethernet	• Onboard real-time multi-protocol Ethernet • 1 x Safe Torque Off (STO) certified to SIL3/PLe • Analogue and digital I/O
	**M701**	Unidrive SP replacement	Designed to match Control Techniques' highly popular Unidrive SP feature-set. • Modbus RTU over RS485 communications • 1 x STO certified to SIL3/PLe • Analogue and digital I/O
	**M702**	Safety enhanced	• Onboard real-time multi-protocol Ethernet • 2 x STO certified to SIL3/ PLe • Digital I/O - If Analogue I/O is required, this can be provided by an SI-I/O option module
	**F600**	Process	Optimum energy efficiency for fan, pump and compressor applications. Pump Drive F600 works with permanent magnet or induction motors to deliver the most efficient performance and highest energy savings for fan, pump and compressor applications.

Please refer to the individual product brochures for full information

Output frequency

DFS drives have a maximum output frequency of 599Hz and are, therefore, not subject to special export controls.

DFS1

Door-mounted HMI

AC input disconnect operator

AC input disconnect operator

Optional cylinder lock with key

Door airfilters

Plinth: 100 mm standard
(200 mm optional)

IP54 roof fan

Fuse holder

AC input disconnect

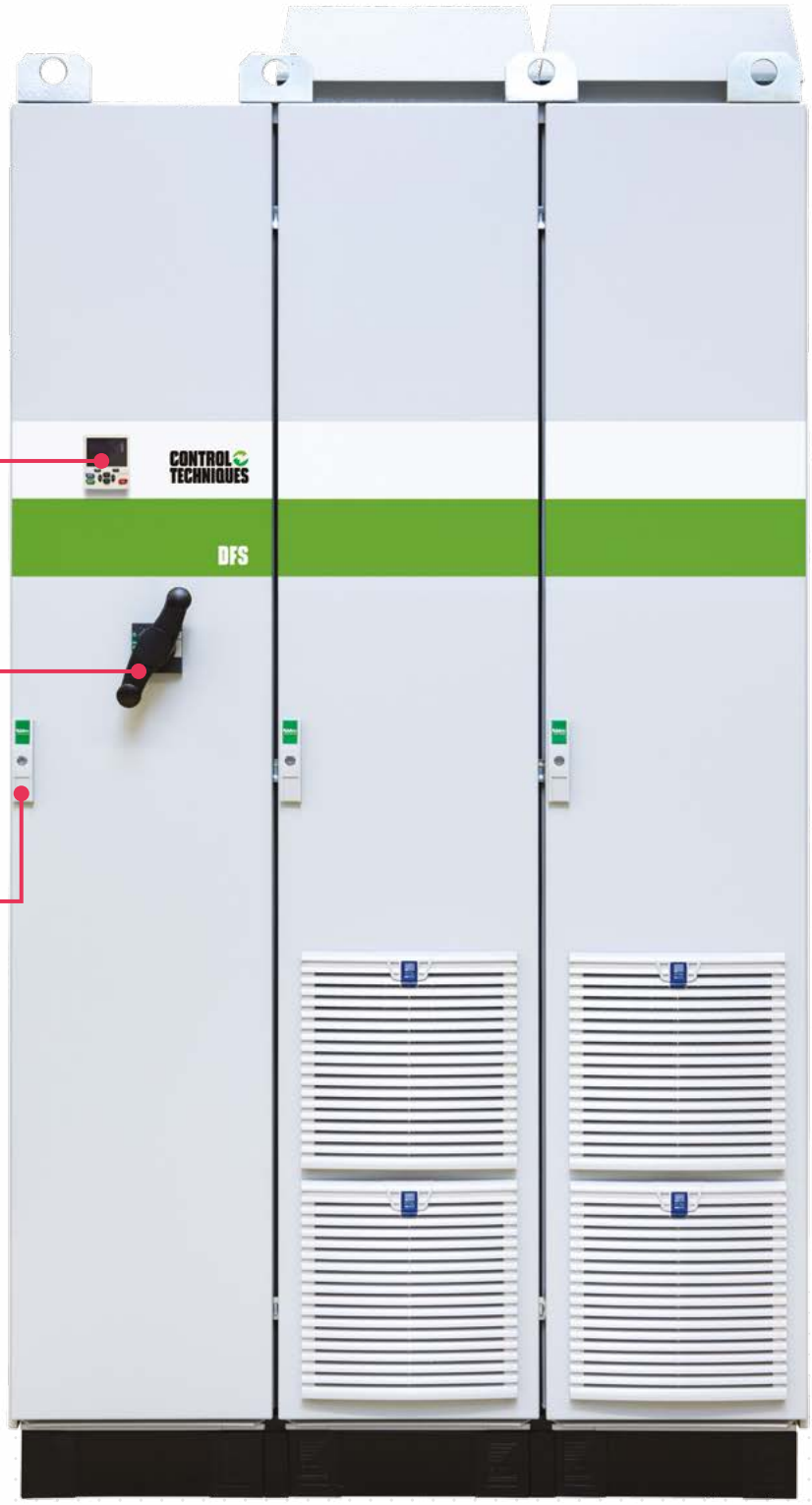
Motor connections & brake terminal

Drive control terminals

Roof fan supply transformer

Plinth: 100 mm standard
(200 mm optional)

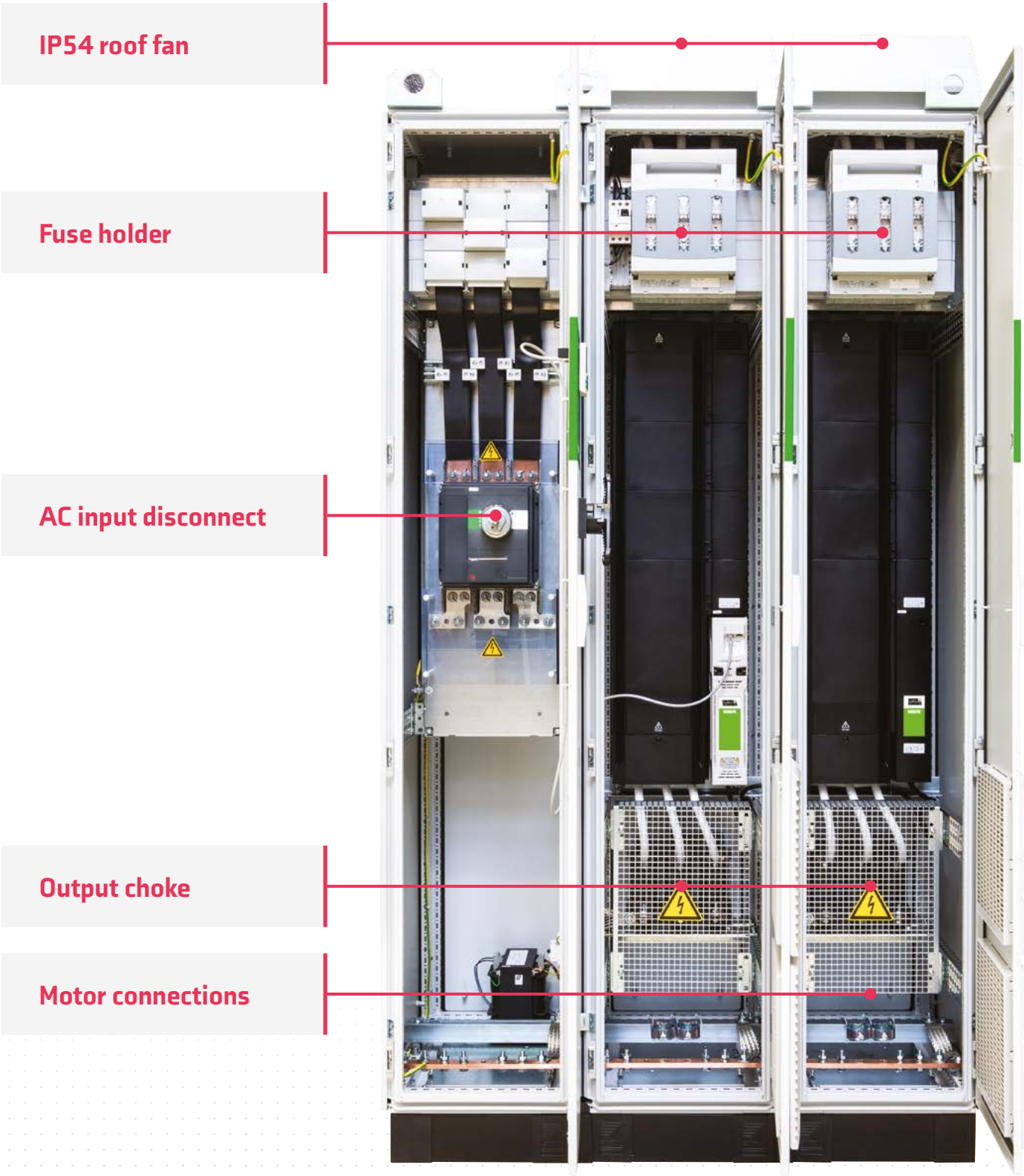
DFS2



Door-mounted HMI

AC input disconnect operator

Optional cylinder lock with key


IP54 roof fan
Fuse holder
AC input disconnect
Output choke
Motor connections

DFS SERIES

DIMENSIONS

Dimensions	
A	IP23 or IP54 up to 180 mm
B	2000 mm
C	100 or 200 mm
D	IP23 or IP54 – 600 mm
E	DFS1 – 400 mm DFS2 – 1200 mm

DFS SERIES

ORDERING GUIDE

Drive Range	Format	Drive Specification					Primary Cubicle Options	
M70x-	DFS	1	9	4	E	N	S	A
	Freestanding Drive		Current Rating Step		World Region: E = Europe		Input Switch: S = Load Switch	
Drive Range: M70x Industrial Drive; F600 Pump Drive		DFS Range		Supply Voltage: 4 = 400 V; 6 = 690 V		Input Circuit: N = Rectifier - Single 6 Pulse		Enclosure Rating: A = IP23 - Air Cooled; C = IP54 - Air Cooled

Options:

Feature	Description
Enclosure rating	A = IP23 (Standard) C = IP54 - Air inlet grill filters
Electrical environment	EMC filter to meet generic emission IEC 61000-6-4 or operate in the First Environment
	Remove internal EMC filter for use on un earthed supplies
	Remove MOV protection for use on un earthed supplies
AC Input Disconnect	A - Main switch with undervoltage release coil 230 VAC (MN) B - Main switch with undervoltage release coil 24 VAC (MN) C - Main switch with shunt trip voltage release coil 230 VAC (MX) D - Main switch with shunt trip voltage release coil 24 VAC (MX) 2 x auxiliary contacts on main switch - supply and wiring
Emergency stop push button door mounted	For integration in your control system
Cubicle Options	Cabinet temperature-controlled roof fan Plinth 200 mm. Standard plinth is 100 mm Alternative 180 ° door hinges for improved access Cylinder lock with key for extra cubicle security
Energy Monitoring	A - kWh meter Conventional (IP54) with current transducers (non MID) B - kWh meter Modbus RTU with current transducers (non MID) C - kWh meter Profibus (400 V SUPPLY ONLY) with current transducers (non MID) D - kWh meter Ethernet with current transducers (non MID) kWh meter pulse contacts in combination with A, B, C OR D kWh meters
24 V back-up power	Supply wiring installed for external 24V backup power supply
Additional Cubicles	A - Integrated 400 mm empty cubicle with plinth, cable plates INCLUDING mounting plate - for your system equipment B - Integrated 400 mm empty cubicle with plinth, cable plates and WITHOUT mounting plate - for your installation cable management
Packaging	Packaging for land freight as standard Packaging for air freight available at extra cost

Drive selection for 380/480 VAC: Load switch, fuses and IP23 protection as standard 40°

35°C Ambient | IP23 and IP54				
380/480 VAC±10% | 50 Hz				
Order Code (Short)	Normal Duty 110 %		Heavy Duty Open Loop = 150 % RFC = 175 %	
	xxxx = F300, M700, M701, M702		xxxx = M700, M701, M702	
	Max Cont. Current	Motor Shaft Power	Max Cont. Current	Motor Shaft Power
	(A)	(kW)	(A)	(kW)
xxxx-DFS1G4EN	155	75	134	55
xxxx-DFS1H4EN	184	90	157	75
xxxx-DFS1J4EN	221	110	180 200 (2 kHz)	90
xxxx-DFS1K4EN	255 266 (2 kHz)	132 132 (2 kHz)	211 224 (2 kHz)	110 110 (2 kHz)
xxxx-DFS1L4EN	320	160	270	132
xxxx-DFS1M4EN	361	200	307 320 (2 kHz)	160 160 (2 kHz)
xxxx-DFS1N4EN	437	225	377	200
xxxx-DFS1P4EN	460 487 (2 kHz)	250 250 (2 kHz)	417	225
xxxx-DFS1Q4EN	460 507 (2 kHz)	250 280 (2 kHz)	415 464 (2 kHz)	225 250 (2 kHz)
xxxx-DFS2L4EN	608	315	513	270
xxxx-DFS2M4EN	686	370	583 608 (2 kHz)	315 315 (2 kHz)
xxxx-DFS2N4EN	830	450	716	380
xxxx-DFS2P4EN	874 925 (2 kHz)	470 500 (2 kHz)	792	420
xxxx-DFS2Q4EN	874 963 (2 kHz)	470 520 (2 kHz)	789 882 (2 kHz)	420 470 (2 kHz)

40°C Ambient | IP23 and IP54				
380/480 VAC ±10% | 50 Hz				
Order Code (Short)	Normal Duty 110 %		Heavy Duty Open Loop = 150 % RFC = 175 %	
	xxxx = F300, M700, M701, M702		xxxx = M700, M701, M702	
	Max Cont. Current	Motor Shaft Power	Max Cont. Current	Motor Shaft Power
	(A)	(kW)	(A)	(kW)
xxxx-DFS1G4EN	155	75	134	55
xxxx-DFS1H4EN	184	90	152	75
xxxx-DFS1J4EN	221	110	180 200 (2 kHz)	90
xxxx-DFS1K4EN	221 221 (2 kHz)	132	180 200 (2 kHz)	110
xxxx-DFS1L4EN	320	160	270	132
xxxx-DFS1M4EN	341	200	295 314 (2 kHz)	160
xxxx-DFS1N4EN	426 437 (2 kHz)	225	377	200
xxxx-DFS1P4EN	438 475 (2 kHz)	250	398 416 (2 kHz)	225
xxxx-DFS1Q4EN	438 485 (2 kHz)	250 280 (2 kHz)	398 441 (2 kHz)	225 250 (2 kHz)
xxxx-DFS2L4EN	608	315	513	270
xxxx-DFS2M4EN	648 669 (2 kHz)	370	560 596 (2 kHz)	315
xxxx-DFS2N4EN	809 830 (2 kHz)	450	716	380
xxxx-DFS2P4EN	831 902 (2 kHz)	470 500 (2 kHz)	755 790 (2 kHz)	420
xxxx-DFS2Q4EN	831 921 (2 kHz)	470 520 (2 kHz)	755 838 (2 kHz)	420 470 (2 kHz)

Notes:

- 3kHz Switching Frequency except where stated otherwise
- "kW" are motor dependant and for indication only
- A braking transistor is included in all drives
- Remaining digits of order code generated automatically for customer selected cubicle options

***Higher powers can be quoted on request**

Drive selection for 500/690 VAC: Load switch, fuses and IP23 protection as standard

35°C Ambient | IP23 and IP54				
500/690 VAC | ±10% | 50 Hz				
Order Code (Short)	Normal Duty 110 %		Heavy Duty Open Loop = 150 % RFC = 175 %	
	xxxx = F300, M700, M701, M702		xxxx = M700, M701, M702	
	Max Cont. Current	Motor Shaft Power	Max Cont. Current	Motor Shaft Power
	(A)	(kW)	(A)	(kW)
xxxx-DFS166EN	86	75	63	55
xxxx-DFS176EN	108	90	86	75
xxxx-DFS186EN	125	110	104	90
xxxx-DFS196EN	155	132	131	110
xxxx-DFS1A6EN	172	160	150	132
xxxx-DFS1B6EN	197	185	178	160
xxxx-DFS1C6EN	225	200	210	185
xxxx-DFS1D6EN	265	235	221	185
	275 (2 kHz)	250 (2 kHz)	238 (2 kHz)	200 (2 kHz)
xxxx-DFS1E6EN	265	235	221	185
	305 (2 kHz)	280 (2 kHz)	263 (2 kHz)	250 (2 kHz)
xxxx-DFS2A6EN	327	300	285	260
xxxx-DFS2B6EN	374	355	338	315
xxxx-DFS2C6EN	428	400	399	370
xxxx-DFS2D6EN	504	440	420	370
	523 (2 kHz)	490 (2 kHz)	452 (2 kHz)	420 (2 kHz)
xxxx-DFS2E6EN	504	440	420	370
	580 (2 kHz)	540 (2 kHz)	500 (2 kHz)	460 (2 kHz)

40°C Ambient | IP23 and IP54				
500/690 VAC | ±10% | 50 Hz				
Order Code (Short)	Normal Duty 110 %		Heavy Duty Open Loop = 150 % RFC = 175 %	
	xxxx = F300, M700, M701, M702		xxxx = M700, M701, M702	
	Max Cont. Current	Motor Shaft Power	Max Cont. Current	Motor Shaft Power
	(A)	(kW)	(A)	(kW)
xxxx-DFS166EN	86	75	63	55
xxxx-DFS176EN	103	90	86	75
	106 (2 kHz)			
xxxx-DFS186EN	125	110	104	90
xxxx-DFS196EN	155	132	131	110
xxxx-DFS1A6EN	172	160	150	132
xxxx-DFS1B6EN	197	185	178	160
xxxx-DFS1C6EN	215	200	205	185
			210 (2 kHz)	
xxxx-DFS1D6EN	253	235	211	185
	263 (2 kHz)	250 (2 kHz)	238 (2 kHz)	200 (2 kHz)
xxxx-DFS1E6EN	253	235	211	185
	301 (2 kHz)	280 (2 kHz)	254 (2 kHz)	250 (2 kHz)
xxxx-DFS2A6EN	327	300	285	260
xxxx-DFS2B6EN	374	355	338	315
xxxx-DFS2C6EN	409	400	390	370
			399 (2 kHz)	
xxxx-DFS2D6EN	481	440	400	370
	499 (2 kHz)	490 (2 kHz)	452 (2 kHz)	420 (2 kHz)
xxxx-DFS2E6EN	481	440	400	370
	571 (2 kHz)	540 (2 kHz)	483 (2 kHz)	460 (2 kHz)

Notes:

- 3kHz Switching Frequency except where stated otherwise
- "kW" are motor dependant and for indication only
- A braking transistor is included in all drives
- Remaining digits of order code generated automatically for customer selected cubicle options

***Higher powers can be quoted on request**

DRIVE OBSESSED

CONTROL TECHNIQUES

Control Techniques has been designing and manufacturing the best variable speed drives in the world since 1973.

Our customers reward our commitment to building drives that outperform the market. They trust us to deliver on time every time with our trademark outstanding service.

More than 45 years later, we're still in pursuit of the best motor control, reliability and energy efficiency you can build into a drive. That's what we promise to deliver, today and always.

1.4K+
Employees

70
Countries

#1 FOR ADVANCED MOTOR AND DRIVE TECHNOLOGY

Nidec

Nidec Corporation is a global manufacturer of electric motors and drives.

Nidec was set up in 1973. The company made small precision AC motors and had four employees. Today, it's a global corporation that develops, builds and installs cutting-edge drives, motors and control systems in over 70 countries with a workforce of more than 110,000.

You'll find its innovations in thousands of industrial plants, IoT products, home appliances, cars, robotics, mobile phones, haptic devices, medical apparatus and IT equipment all over the world.

109K	$14.6B	70+	330+
Employees	Group Turnover	Countries	Companies

CONTROL TECHNIQUES

CONTROL TECHNIQUES IS YOUR GLOBAL DRIVES SPECIALIST.

With operations in over 70 countries, we're open for business wherever you are in the world.

For more information, or to find your local drive centre representatives, visit:

www.controltechniques.com

Connect with us

THE AUTOMATION ENGINEER

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All for dreams