

**CONTROL<sup>TM</sup>  
TECHNIQUES**

# POWERDRIVE F300

FAN, PUMP AND COMPRESSOR DRIVE



1.1 kW to 2.8 MW  
(1.5 hp to 4,200 hp)

Optimum energy efficiency,  
flexible functionality and  
ease of use

**Nidec**  
All for dreams

# CONTROL<sup>TM</sup> TECHNIQUES

## DRIVE SPECIALISTS SINCE 1973

Drives: they're what we do. Whether you're designing a new machine or installing a replacement, we know you need quick delivery and an easy set up, with the confidence that your drive's going to keep on performing with accurate control.

So leave it to the specialists. We've dedicated ourselves to designing and manufacturing variable speed drives since 1973. This means quick set up, high reliability, maximum motor control and fast, efficient service.



**1,000+**  
OEM  
CUSTOMERS



**5M+**  
INSTALLED  
DRIVES



**1,000+**  
EMPLOYEES  
WORLDWIDE



**70**  
COUNTRIES

## Control Techniques' market leading, energy efficient fan, pump and compressor control solutions

Control Techniques has been involved with fan, pump and compressor applications for over 40 years. Our technological expertise and experience working with equipment manufacturers, system installers and end users allow us to provide a range of products and services to meet and exceed all your needs:

- Cutting edge drives and motors technology – providing reliable, high performance and energy efficient solutions for industrial flow applications
- Scalable automation solutions – from simple drive and motor compressor or pump control up to a fully engineered process system. Our products and services are backed by global industrial expertise and full support at a local level. We can provide turn-key solutions or integrate with system designers or machine manufacturers, as required
- Customized local services – ensuring all elements of your system are supported, ranging from consultation, energy audits, cabinet building, installation, commissioning and maintenance, to specific training on your application, ensuring maximum performance throughout the lifetime of your application





### The Powerdrive F300: optimum energy efficiency for fan, pump and compressor applications

The Control Techniques Powerdrive F300 enables the most efficient performance and highest energy savings for fan, pump and compressor applications. Designed in conjunction with Nidec's LSRPM and PLSRPM permanent magnet (PM) motors, the Dyneo® solution provides the highest energy savings available in the market today.

Powerdrive F300 is also designed to control standard AC induction motors. The drive is matched with IEC induction motors from Nidec Industrial Automation IMFinity® range, providing the control, reliability and ease of installation and commissioning required for your pumping, ventilation or compression application.

Further advantages include:

- Reliability and high uptime enabled by robust product design, matched motor and drive compatibility and quality service support
- Fast and simple drive set-up and management plus efficient customer care from a complete drive and motor solution provider



# **Powerdrive F300**

## **Optimum energy efficiency, flexible functionality and ease of use**

### **Powerdrive F300: Cabinet-mount drive solution**

End users, OEMs and integrators need to maximize energy efficiency and minimize build costs while providing the necessary programming and functionality. Powerdrive F300 has been designed to solve these needs with several innovative features.

### **Optimizing for energy efficiency**

As part of a Dyneo® PM solution, Powerdrive F300 achieves the most energy efficient industrial drive and motor combination available, exceeding IE4 and NEMA Premium standards.

### **Lowering system costs with flexible intelligent drives**

The Powerdrive F300 variable speed drive provides flexibility in mounting options and functionality including I/O and fieldbus communications. For those who want even more flexibility, Powerdrive F300 also provides the most comprehensive on-board drive programming available for fan, pump and compressor applications: an on-board PLC provides extensive IEC 61131-3 compliant programming functionality without the additional cost, footprint and resource required to procure, install and commission an external PLC.

### **Reducing design, build and commissioning time**

Powerdrive F300 has been designed according to system integrator, OEM and end user needs, based on extensive hands-on customer research. The result is smaller drive dimensions to allow for easier, more economical installation; the programming software enables rapid, clear code development and the drive interface and PC tools also allow fast, simple drive commissioning, diagnostics and maintenance.





# Dyneo<sup>+</sup> solutions that exceed IE4-equivalent and NEMA premium ratings

## Industry-leading energy efficiency

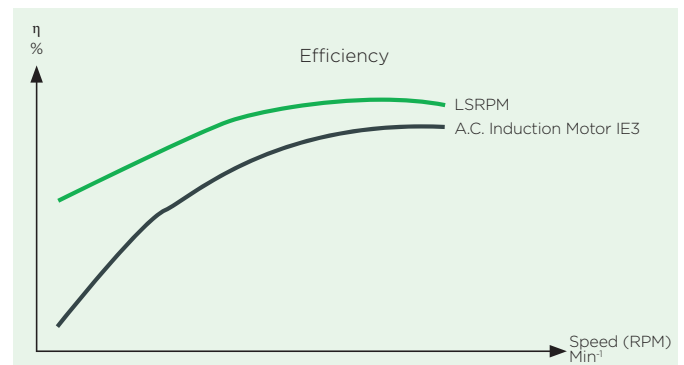
At the equivalent rated speed, the Dyneo<sup>+</sup> drive and motor solution has a significantly higher efficiency level than an AC induction motor. Below this rated speed, the energy efficiency advantage is even greater.

## Further benefits of using a Dyneo<sup>+</sup> solution

- Potential return on investment in less than 12 months - energy meter automatically calculates energy usage
- Significant experience on permanent magnet motor solutions installation demonstrated by the Nidec Industrial Automation installed base - currently the largest industrial permanent magnet motor installed base in the world
- Matched drive and motor ensures optimum performance with minimal set-up

## Eliminate the need for mechanical transmission devices

LSRPM and PLSRPM motors are market leaders in producing high torque at high speeds, and at equivalent torque they have higher rotational speed than competitive motors. This allows their motor speed to be adapted to that of the driven application, eliminating transmission devices such as gearboxes and enhances performance of the driven machine by increasing its speed. A permanent magnet motor demands variable speed drive control and Powerdrive F300 has been developed specifically for this role, with optimum motor control capabilities.



# Increased energy saving with induction motors

## Induction motors: meet the new energy efficiency legislation and future proof your investment

Energy efficiency legislation is changing globally. Since 2015 all motors in Europe from 0.75 kW to 375 kW must achieve IE3 standard or IE2 standard providing the motor is controlled by a variable speed drive.

- Powerdrive F300 is IE2 motors legislation compliant
- Future proof against further legislation by harnessing the efficiency of Powerdrive F300



## Powerdrive F300: efficiency on-board

Powerdrive F300 also increases application efficiency as a result of its own energy saving features:

- Up to 98 % efficient with very low losses
- Low Power Standby Mode and Sleep/Wake using programmable real-time clock (with KI-HOA Keypad RTC) ensure minimal wasted energy
- Advanced Rotor Flux Control (RFC) for optimum energy and performance
- Lower losses at part load for open loop induction motor control as a result of Dynamic V-F





# Specific features for exact control of fans, pumps and compressors

Powerdrive F300 is equipped with wide motor control functionality flexible for ventilation, pumping and compression application needs, which can be rapidly accessed to exacting levels of flow control. A comprehensive I/O offering boosts component connectivity and multiple fieldbus protocols are supported, combined with a wide power range to suit your fan, pump and compressor rating.

## Flexible control capability

Powerdrive F300 has been designed with specific fan, pump and compressor control features including:

- Fan and pump macros embedded within Powerdrive F300's PC Tools provide fast, simple access to flow performance
- Two PID controllers with anti-windup and user scaling provide flow-specific functionality, enhancing application productivity
- Logic functions including 'AND', 'OR', 'invert', 'binary sum' and 'timer' achieved through easy menu setup
- Realtime Clock available on the KI-HOA Keypad RTC enables precision in application productivity according to demand, improving control accuracy and saving energy
- Water hammer control with S-ramp deceleration
- Catch a spinning motor – improved starting sequences for fan and pump control
- On-board Fire Mode allowing run to failure in the event of a fire for the extraction of smoke
- Low load condition monitoring and hysteresis for broken belt and dry pump detection

## Motor control options available include:

- Open loop permanent magnet motor control (RFC-S)

### → Control Type - Speed

Utilizing closed loop current control, this mode offers good dynamic performance and enables more compact and higher efficiency motor technologies to be used

- Open loop Rotor Flux Control for induction motors (RFC-A)

### → Control Type - Speed

Open loop motor control for induction motors utilizing closed loop current control to enhance performance

- Open loop vector or V/Hz induction motor control

### → Control Type - Frequency

Open loop motor control for induction motors and easiest configuration. V/Hz can be used in multi-motor systems



# Flexible control of fans, pumps and compressors

## Flexible I/O range

I/O specific to pumping, ventilation and compression application requirements boosts component connectivity and flexibility. I/O connectivity includes:

- 2 x analog input, 2 x analog output, 3 x digital input, 3 x configurable digital output; 2 x form C relay output, 1 x Safe Torque Off input
- SI-I/O option provides additional 4 x Digital I/O, 3 x Analog inputs (default)/Digital inputs, 1 x Analog output (default)/Digital input, 2 x Relays

## Communication connectivity choice

Powerdrive F300 provides flexible communication integration with a wide variety of fieldbus networks. Modbus RTU is supported on-board the drive and additional networks are accessed by Powerdrive F300's option modules.

Networks supported include:

- Ethernet (including Modbus TCP/IP, Ethernet/IP and PROFINET)
- Modbus RTU, DeviceNet and PROFIBUS

## Wide power range - 1.1 kW to 2.8 MW (1.5 hp to 4,200 hp)

Powerdrive F300 extends from a rating of 1.1 kW through to 2.8 MW, making it suited to a wide variety of applications. The high power drives from Powerdrive F300's power range are also highly robust and high availability of STO product enables rapid replacement when required.

- Easier, faster installation as a result of modular approach to building high power drives
- Proven drive reliability through high volume production
- Rapid replacement thanks to high stock availability of standard production drive modules





### Safe torque off

When used as part of a correctly designed safety control system, Powerdrive F300's Safe Torque Off functionality can remove the need for a contactor and can avoid a complete power-down for safe access to machinery.

### Harmonics and drive conformance

Sensitive to its environment, Powerdrive F300 has been designed for low harmonic emissions and achieves high conformance levels.

- Total Harmonic Distortion reduced as a result of:
  - DC bus inductor power from 5.5 kW to 55 kW (7.5 hp to 75 hp)
  - AC line reactor power from 75 kW (100 hp) and higher
  - Solutions for 12, 18 and 24 pulse rectifier
  - Active Front End (optional)
- Electromagnetic immunity complies with EN 61800-3 and EN 61000-6-2
- Electromagnetic emission complies with EN 61800-3:
  - With on-board EMC filter, category C3
  - With optional external EMC filter, category C1 or C2 depending on power rating
  - Also complies with EN 61000-3-12 with optional line reactor

# On-board PLC

## Reduce system build cost, increase programming flexibility

### Flexible programming

As a result of its on-board PLC, Powerdrive F300 provides the most flexible drive programming functionality in the fan, pump and compressor market. The on-board PLC gives you the power to create and run programs and enhance automated system control of your applications.

### Ease and speed of programming

Programming Powerdrive F300 is rapid and simple, achieved using the drive's accompanying software which is based on an open IEC 61131-3 compliant programming environment. Developed in conjunction with significant user input and testing, the software is clear and intuitive to use resulting in reduced programming time.

The Powerdrive F300 programming software provides:

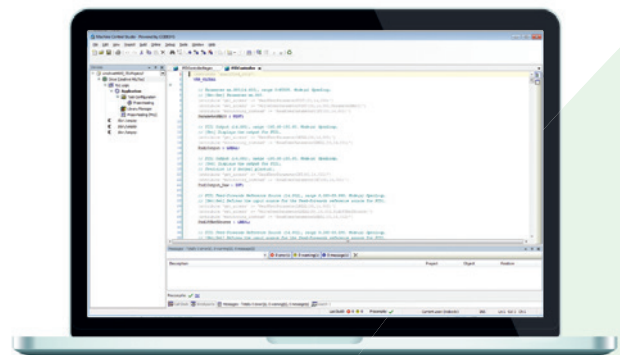
- Simplicity and speed in application programming plus IntelliSense predictive code writing functionality which helps develop consistent code – fast
- Fully IEC 61131-3 compliant open programming software – an industry standard for millions of developers worldwide
- Access to a wide range of open-source function blocks
- Support for the following IEC 61131-3 programming languages:
  - Ladder Diagram (LD)
  - Structured Text (ST)
  - Function Block Diagram (FBD)
  - Sequential Function Chart (SFC)
  - Instruction List (IL)

### Reducing system build cost with on-board drive programming

Powerdrive F300's on-board programming capabilities also result in reduced overall cost, physical space and resources required in drive system build by:

- Removing the need for an external controller or additional components required to achieve the equivalent level of logic control
- Reducing the requirements for wiring
- Lowering the time required for system design and installation
- Diminishing the time and cost required in system installation

F300's programming software is included at no additional charge.







# Ease of system build, commissioning and maintenance

Powerdrive F300 has been designed for ease and speed of cabinet system build and integration, from physical installation through to drive commissioning. This means reduced physical drive sizes and flexible mounting options, together with clear, easy-to-use drive keypads and PC tools which have been developed through extensive end user collaboration. To assist in a rapid, efficient system build, clear user documentation is supplied and is reinforced by a comprehensive Technical Support Service provided by your local Drive Center.

## Fast, flexible system build

### Flexible drive mounting options

Powerdrive F300 can be mounted directly into a panel or cabinet for efficiency of design in a variety of flexible positions:

- Through-panel mounting: the drive's heat sink can be mounted through the panel, enabling greater heat dissipation and reducing temperature rise inside the control panel or cabinet.
  - This also enables a reduction in the size of the cabinet, removing the need to accommodate design for heat dissipation from the power stage
- Panel mounting: fitting directly into the cabinet or panel
- Tile mounting: utilizing an optional bracket, the drive can be mounted side-on with the option of changing the position of the drive keypad interface to suit, ideal for installations where depth is limited (Available on frame sizes 3, 4 and 5)

Pluggable connectors also enable easy access for wiring and cabinet installation.

### High power density through reduced physical dimensions

Powerdrive F300 drives have reduced dimensions and weight at every drive frame size (see figures on pages 22 - 23). Reduced size and weight enable greater efficiency of system design, easier installation and improved maintenance efficiency.







## Rapid, easy to use commissioning tools

In addition to the drive's user-friendly programming software, Powerdrive F300 enables fast, simple drive commissioning via keypad interfaces, PC tools, SD cards and Smartcards, and manuals.

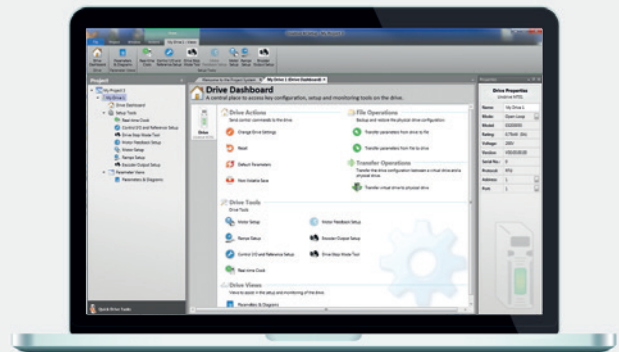
## Powerdrive F300 Connect PC Tool benefits

With design focussed on ease of use, the Connect PC Tool configures, optimizes and monitors drive/system control and performance. Developed in a familiar Windows interface, the PC Tool has been created with extensive user input to ensure a highly efficient configuration experience.

- Fan and pump macros ensure fast, easy access to pre-programmed functionality
- Task-based commissioning enables fast, optimized drive set-up with minimal drive knowledge required
- Full drive cloning feature provides rapid commissioning of drives with duplicate settings
- Multiple simultaneous communications channels provide a complete system view

- Drive discovery tool increases speed of commissioning by automatically locating network drives
- Scope functionality enables parameter logging.
- Includes a comprehensive database of Leroy-Somer motors to simplify setup through the tool

The Connect PC tool is also included at no additional charge.



# High uptime guaranteed

## Drive reliability and rapid support service

Ensuring uptime of your critical applications is vital with system downtime potentially resulting in significant cost or business penalties. Powerdrive F300 has been designed to operate in demanding environments and uses highly robust, reliable drive modules. As a result of a comprehensive standard drive module stocking system, in the event of a replacement being required, drives can be rapidly despatched and installed.

### Robust drive construction

Powerdrive F300 drive modules incorporate the following resilience features:

- Conformally coated PCBs ensure increased resilience to conditions and greater reliability
- System protection features include: over current, over temperature, under voltage and low speed
- Wide supply voltage tolerance
- Intelligent 10 speed user-replaceable cooling fan

### Rapid availability replacement program

In the event of drive failure, you are supported by a comprehensive and rapid replacement service.

- Standard replacements: Our range – including high power – is based on mass produced standard product, enabling rapid accessibility to replacements whatever your specification
- Comprehensive stock: regional distribution centers carry a broad and deep stock of drive modules, ensuring rapid availability across the range
- Rapid delivery from international distribution hubs: with distribution centers based across the globe, replacement drive modules are always located within rapid delivery distance









## Rapid cabinet system build service

For end users who require the benefits of a complete fan, pump and compressor automation solution rated up to IP65, Powerdrive F300 is also available readily supplied by Control Techniques in a cabinet drive system. Available globally as standard, a Powerdrive F300 cabinet drive system can be supplied directly from your local Drive Center.

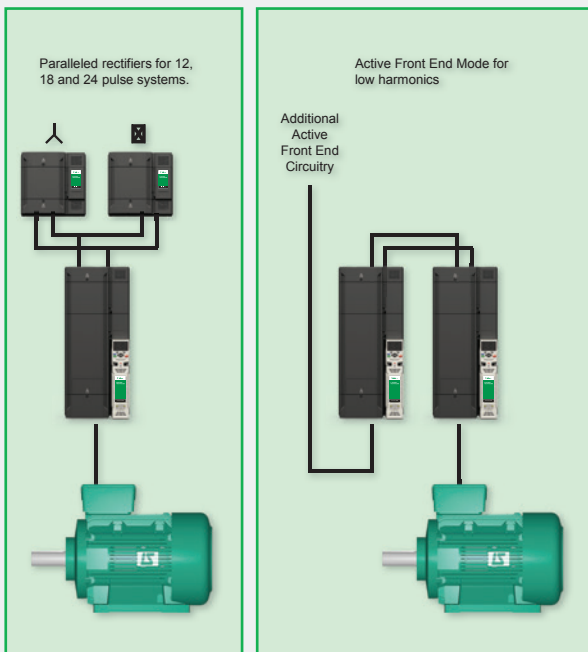
- Flexibility maximized by build-to-order service
- Powerdrive F300 can achieve IP65 and NEMA4, UL Type 12 when through panel mounted in a suitably rated cabinet
- Powerdrive F300 cabinet drive systems are built to your specification and designed by your local Drive Center engineers, providing you with control and flexibility in system build
- Optimizes floor space where multiple Powerdrive F300 drives can be incorporated into a cabinet system
- Drive Centers are distributed globally and equipped with experienced cabinet build engineers with rapid access to standard drive modules, resulting in fast build and delivery
- Quality and reliability guaranteed: Control Techniques has a proven track record of designing, building and supplying cabinet drive systems



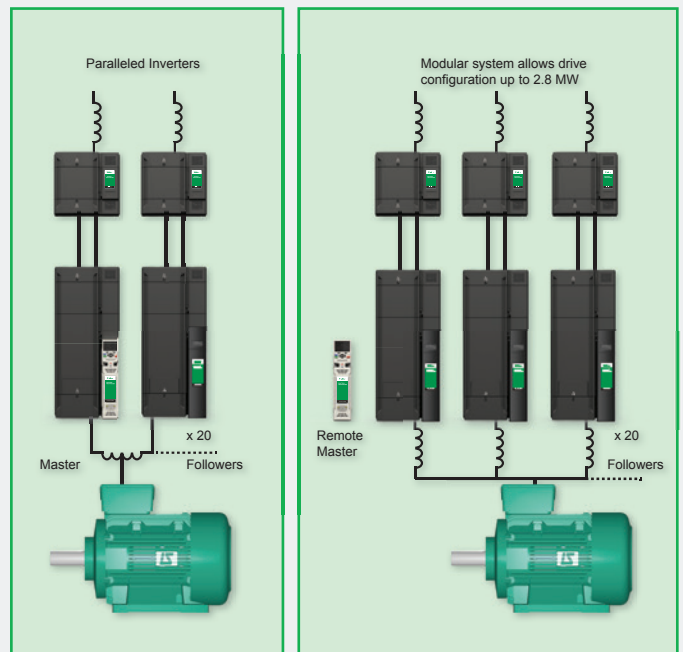


## Power configurations

### Standard solutions for harmonic conformance



### High power parallel inverter system



## Comprehensive options for flexibility

Keypad type*	Description
KI-HOA Keypad RTC: Removable plain text LCD with Realtime clock	 The KI-HOA Keypad RTC provides Hand-Off-Auto control. The display presents up to four lines of real text with multi-language translation, enhancing clarity and increasing ease of use. A battery operated Realtime clock allows accurate time stamping of diagnostics and aids quick fault resolution
Remote LCD Keypad	 Remote mountable, plain text, multi-language LCD keypad allows flexible mounting on the outside of a panel and meets IP66 (NEMA 4)
Remote HOA keypad RTC	 Remote mountable keypad, allowing flexible mounting on the outside of a panel (meets IP54/NEMA 12). The keypad offers Hand-Off-Auto control and a four line plain text, multi-language LCD keypad for rapid set-up and helpful diagnostics. Battery operated real-time clock allows accurate time stamping of events, aiding diagnostics
System Integration Modules - Communications	
SI-PROFIBUS	 PROFIBUS interface module PROFIBUS-DP (Decentralized Peripheral) interface module enables follower connectivity. It is possible to use more than one SI-PROFIBUS or a combination of SI-PROFIBUS and other option modules to add additional functionality such as extended I/O, gateway functionality, or additional PLC features
SI-DeviceNet	 DeviceNet networking system interface module enables follower connectivity. It is possible to use more than one SI-DeviceNet or a combination of SI-DeviceNet and other option modules to provide additional functionality such as extended I/O, gateway functionality, or additional PLC features
SI-CANopen	 CANopen interface module supporting various profiles, including several drive profiles
SI-Ethernet	 External Ethernet module that supports PROFINET RT, EtherNet/IP and Modbus TCP/IP and has an integrated web server that can generate emails. The module can be used to provide high speed drive access, global connectivity and integration with IT network technologies, such as wireless networking
SI-PROFINET RT	 PROFINET RT interface module provides fast, high-precision communications for maximum plant productivity. Dual port cable connection ensures rapid and easy installation
System Integration Modules - Additional I/O	
SI-I/O	 Extended I/O interface module to increase the number of I/O points on a drive. Provides additional: 4 x Digital I/O, 3 x Analog inputs (default)/Digital inputs, 1 x Analog output (default)/Digital input, 2 x Relays
Smartcard	 The optional Smartcard memory device can be used to back-up parameter sets and basic PLC programs, as well as copying them from one drive to another
SD Card Adaptor	 Conversion device that allows an SD card to be inserted into the Smartcard slot, for parameter cloning and application programs
Drive interface units - Communications	
CT USB Comms Cable	 The CT USB Comms cable allows the drive to connect to a PC for use with Powerdrive F300 Connect - the latest drive configuration tool for commissioning, optimizing and monitoring drive/ system performance

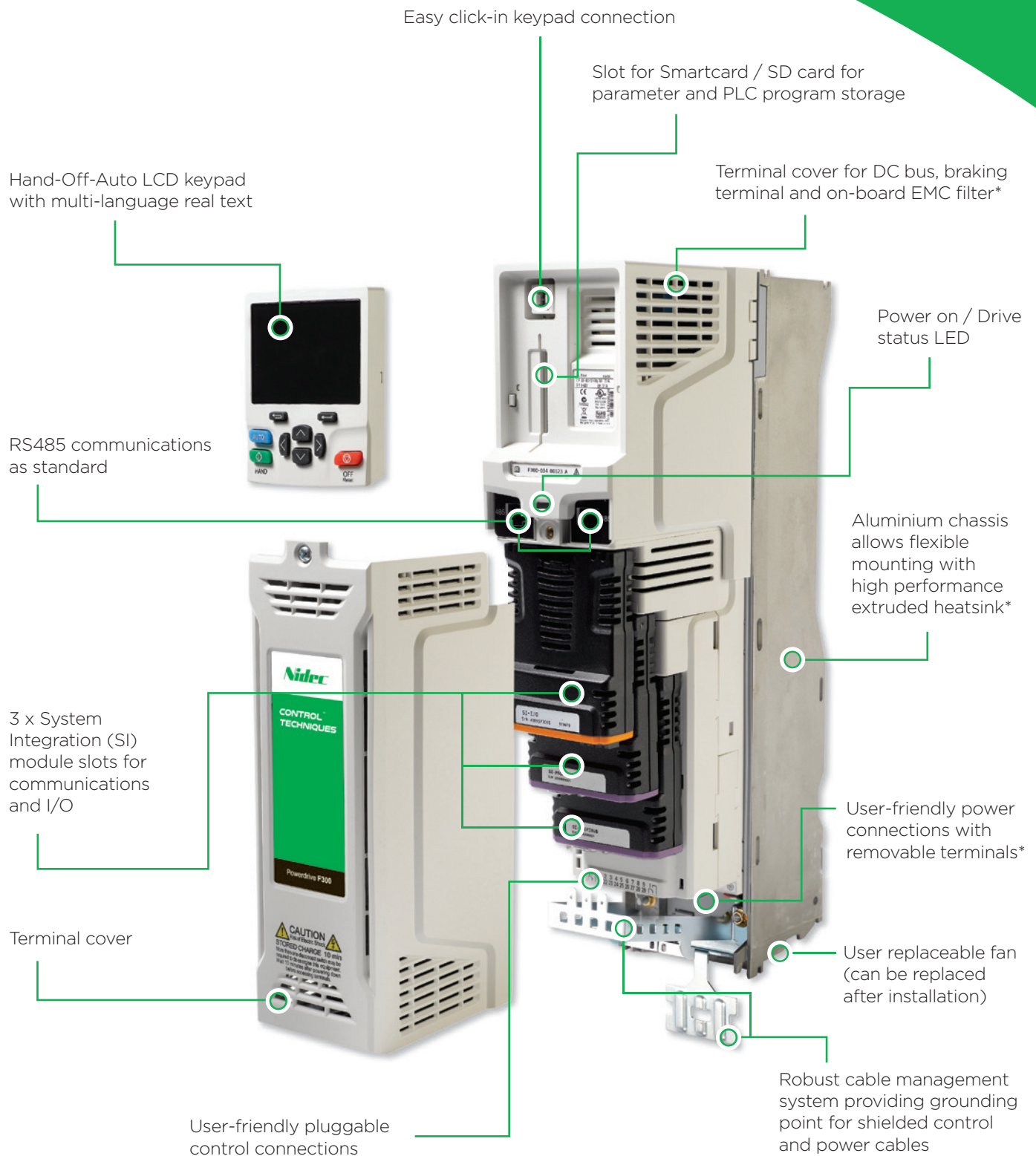
\*To reduce your cost, Powerdrive F300 can be supplied without a keypad. Please specify your preference when ordering.

## Manuals

Powerdrive F300 is supplied with a Getting Started Guide to assist with fast, efficient commissioning. A detailed user guide is also available to download online, or can be requested from Drive Centres.



## Powerdrive F300 features



\*Features and their locations vary on some drive sizes



# Drives and motors technology

## Drives and controllers

### AC drives for process control

#### Powerdrive F300

Flexible drive, easily adaptable to your particular application requirements

1.1 kW to 2.8 MW (1.5 - 4,200 hp)

6, 12 and 18 pulse and AFE



#### Drive Free Standing (DFS)

Ready to use cubicle drives with a fast turn around to reduce downtime and optimise engineering resources

55 kW to 1 MW  
400 or 690 VAC  $\pm 10\%$   
134 - 1672 A



## Motors

### General purpose permanent magnet motors

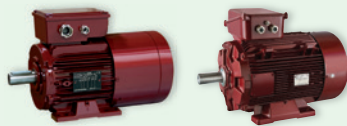
#### Dyneo® range

Premium efficiency PM synchronous motors with drive

IP55 & IP23, IE3 & IE4

0.75 - 550 kW (1 - 750 hp)

375 - 5,500 rpm



### General purpose asynchronous motors

#### IMfinity® and LS motor range

High and premium efficiency motors for fixed and variable speed

0.06 - 1,800 kW  
(0.8 - 2,500 hp)

Non IE, IE2, IE3 derivative ranges (Atex, Nuclear, High temp, liquid cooled and customized versions)



### Asynchronous motor with integrated drive

#### Commander ID300

Decentralized system combining performances and reliabilityFit to standard gears

Optimized machine performance thanks to integrated PLC, optional fieldbus modules, extra I/O and safety functions

0.25 kW - 7.5 kW (0.33 - 10 hp)



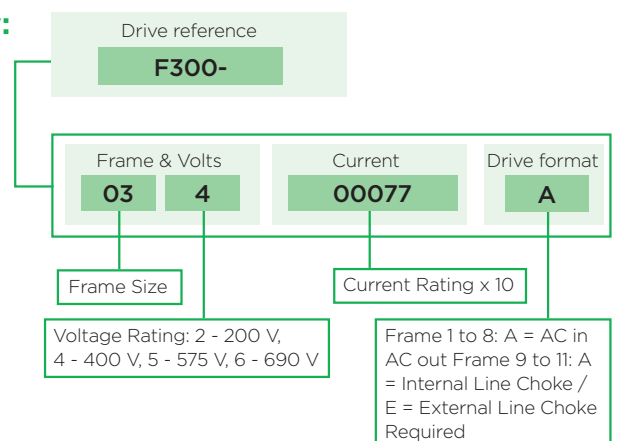
## Powerdrive F300 ratings and specifications

200/240 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
F300-03200066A10	6.6	1.1	1.5
F300-03200080A10	8	1.5	2
F300-03200110A10	11	2.2	3
F300-03200127A10	12.7	3	3
F300-04200180A10	18	4	5
F300-04200250A10	25	5.5	7.5
F300-05200300A10	30	7.5	10
F300-06200500A10	50	11	15
F300-06200580A10	58	15	20
F300-07200750A10	75	18.5	25
F300-07200940A10	94	22	30
F300-07201170A10	117	30	40
F300-08201490A10	149	37	50
F300-08201800A10	180	45	60
F300-09202160A10	216	55	75
F300-09202660A10	266	75	100
F300-09202160E10	216	55	75
F300-09202660E10	266	75	100
F300-10203250E10	325	90	125
F300-10203600E10	360	110	150
380/480 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
F300-03400034A10	3.4	1.1	1.5
F300-03400045A10	4.5	1.5	2
F300-03400062A10	6.2	2.2	3
F300-03400077A10	7.7	3	5
F300-03400104A10	10.4	4	5
F300-03400123A10	12.3	5.5	7.5
F300-04400185A10	18.5	7.5	10
F300-04400240A10	24	11	15
F300-05400300A10	30	15	20
F300-06400380A10	38	18.5	25
F300-06400480A10	48	22	30
F300-06400630A10	63	30	40
F300-07400790A10	79	37	50
F300-07400940A10	94	45	60
F300-07401120A10	112	55	75
F300-08401550A10	155	75	100
F300-08401840A10	184	90	125
F300-09402210A10	221	110	150
F300-09402660A10	266	132	200
F300-09402210E10	221	110	150
F300-09402660E10	266	132	200
F300-10403200E10	320	160	250
F300-10403610E10	361	200	300
F300-11404370E10	437	225	350
F300-11404870E10	487	250	400
F300-11405070E10	507	280	450

Information on higher powers will appear in subsequent issues of this brochure.

500/575 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
F300-05500039A10	3.9	2.2	3
F300-05500061A10	6.1	4	5
F300-05500100A10	10	5.5	7.5
F300-06500120A10	12	7.5	10
F300-06500170A10	17	11	15
F300-06500220A10	22	15	20
F300-06500270A10	27	18.5	25
F300-06500340A10	34	22	30
F300-06500430A10	43	30	40
F300-07500530A10	53	37	50
F300-07500730A10	73	45	60
F300-08500860A10	86	55	75
F300-08501080A10	108	75	100
F300-09501250A10	125	90	125
F300-09501550A10	155	110	150
F300-09501250E10	125	90	125
F300-09501500E10	150	110	150
F300-10502000E10	200	130	200
F300-11502480E10	248	175	250
F300-11502880E10	288	225	300
F300-11503150E10	315	250	350
500/690 Vac ±10%			
Drive	Normal Duty		
	Max Continuous Current (A)	Motor Shaft Power (kW)	Motor Shaft Power (hp)
F300-07600230A10	23	18.5	25
F300-07600300A10	30	22	30
F300-07600360A10	36	30	40
F300-07600460A10	46	37	50
F300-07600520A10	52	45	60
F300-07600730A10	73	55	75
F300-08600860A10	86	75	100
F300-08601080A10	108	90	125
F300-09601250A10	125	110	150
F300-09601500A10	150	132	175
F300-09601250E10	125	110	150
F300-09601550E10	155	132	175
F300-10601720E10	172	160	200
F300-10601970E10	197	185	250
F300-11602250E10	225	200	250
F300-11602750E10	275	250	300
F300-11603050E10	305	280	400

### Key:





# Powerdrive F300 ratings and specifications

## Normal duty operation only

Suitable for fan, pump and compressor applications, with a current overload requirement of 110% for 60 s\*.

## Conformance

- IP20 / NEMA1 / UL TYPE 1  
\*UL open class as standard, additional kit needed to achieve Type 1
- IP65 / NEMA4 / UL TYPE 12 rating is achieved on the rear of the drive when through panel mounted
- \*Frame size 9D, 9E, 10D and 10E achieve IP55 / NEMA 4 / UL Type 12
- Ambient temperature -20 °C to 40 °C as standard. Up to 55 °C with derating
- Humidity 95 % maximum (non-condensing) at 40 °C
- Altitude: 0 to 3000m, derate 1 % per 100 m between 1000 m and 3000 m
- Random Vibration Tested in accordance with IEC 60068-2-64
- Bump Tested in accordance with IEC 60068-2-29
- Sinusoidal Vibration Tested in accordance with IEC 60068-2-6
- Mechanical Shock Tested in accordance with IEC 60068-2-29
- Storage temperature -40 °C to 55 °C or up to 70 °C for short-term storage
- Electromagnetic Immunity complies with EN 61800-3 and EN 61000-6-2
- With onboard EMC filter, emissions comply with EN 61800-3 (category C3)
- EN 61000-6-3 and EN 61000-6-4 with optional footprint EMC filter
- IEC 60146-1-1 Supply conditions (category C1 or C2 depending on rating)
- IEC 61800-5-1 (Electrical Safety)
- IEC 61131-2 I/O
- EN 61000-3-12 with optional line reactor
- UL 508C (Electrical Safety)

## Keypad

Description	Order code
KI-HOA RTC Keypad	82400000018500
Remote LCD Keypad	82500000000001
Remote HOA Keypad RTC	82400000019700

## Optional media and accessories

Description	Order code
SD-Smartcard Adaptor	3470-0047
Smartcard (64 KB)	2214-0010
CT Comms Cable	4500-0096*

\*The USB Comms Cable provides PC connectivity to the drive, enabling drive configuration with the Connect PC Tool. Use of the Connect PC Tool is recommended for setup of LSRPM motors.

## Through hole IP65 kit UL type 1 conduit kit

Frame size	Order code
3	3470-0053
4	3470-0056
5	3470-0067
6	3470-0055
7	3470-0079
8	3470-0083

Frame size	Order code
3 & 4	6521-0071
5	3470-0069
6	3470-0059
7	3470-0080
8 & 9A	6500-0106
9E & 10E	3470-0115
11	3470-0136

## Through hole IP55 kit

Frame size	Order code
9A	3470-0119
9E/10E	3470-0105
10 Inverter	3470-0108
10 Rectifier	3470-0106
11E & 11T	3470-0126
11D Inverter	3470-0130
11 Rectifier	3470-0123

## Dimensions and weight



Frame Size		3	4	5	6	7	8
Dimensions (H x W x D)	mm	382 x 83 x 200	391 x 124 x 200	391 x 143 x 200	391 x 210 x 227	557 x 270 x 280	803 x 310 x 290
	in	15.0 x 3.3 x 7.9	15.4 x 4.9 x 7.9	15.4 x 5.6 x 7.6	15.4 x 8.3 x 8.9	21.9 x 10.6 x 11.0	31.6 x 12.2 x 11.4
Weight	kg (lb)	4.5 (9.9)	6.5 (14.3)	7.4 (16.3)	14 (30.9)	28 (61.7)	50 (110.2)

\*For more detailed information please see technical documents.

## Retrofit brackets

To allow Powerdrive F300 to be fitted in existing Unidrive SP and Affinity surface mount installations.

Frame size	Order code
4	3470-0062
5	3470-0066
6	3470-0074
7	3470-0078
8	3470-0087
9A, 9E & 10	3470-0118

## DC bus paralleling kit

Frame size	Order code
3	3470-0048
4	3470-0061
5	3470-0068
6	3470-0063
6 (connect to frame 3,4 & 5)	3470-0111

## Option Modules

Option Module	Order code
SI-PROFIBUS	82400000017500
SI-Ethernet	82400000017900
SI-DeviceNet	82400000017700
SI-CANopen	82400000017600
SI-PROFINET RT	82400000018200
SI-I/O	82400000017800

## Tile mount kits

Frame size	Order code
3	3470-0049
4	3470-0060
5	3470-0073



9A	9E/10E	9D/10D	11E
1108 x 310 x 290	1069 x 310 x 290	Rectifier 355 x 310 x 290 Inverter 773 x 310 x 290	1242 x 310 x 312
43.6 x 12.2 x 11.4	42.1 x 12.2 x 11.4	Rectifier 15.8 x 12.2 x 11.4 Inverter 30.4 x 12.2 x 11.4	48.9 x 12.2 x 12.3
66.5 (146.6)	46 (101.4)	-	63 (138.9)

## Line reactors

Frame size	Order code
9E 200 V/400 V	4401-0181
9E 575 V/690 V	4401-0183
10E 200 V/400 V	4401-0182
10E 575 V/690 V	4401-0184

## General kit items

Item	Order code
Keypad blanking cover (10 pieces in pack)	3470-0058
Frame size 3 & 4 power connector split kit	3470-0064

## Optional external EMC filters

Powerdrive F300 built-in EMC filter complies with EN 61800-3. External EMC filters are required for compliance with EN 61000-6-4.

Frame size	Voltage	Order code
3	200 V	4200-3230
	400 V	4200-3480
4	200 V	4200-0272
	400 V	4200-0252
5	200 V	4200-0312
	400 V	4200-0402
	575 V	4200-0122
6	200 V	4200-2300
	400 V	4200-4800
	575 V	4200-3690
7	200 V	4200-1132
	400 V	4200-1132
	575 V	4200-0672
	690 V	4200-0672
8	200 V	4200-1972
	400 V	4200-1972
	575 V	4200-1662
	690 V	4200-1662
9A	200 V	4200-3021
	400 V	4200-3021
	575 V	4200-1660
	690 V	4200-1660
9E & 10E	200 V	4200-4460
	400 V	4200-4460
	575 V	4200-2210
	690 V	4200-2210
11	400 V	4200-0400
	575 V & 690 V	4200-0690

For a full list of patents and patent applications, visit [www.controltechniques.com/patents](http://www.controltechniques.com/patents).

Dimensions include mounting brackets.

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