

CONTROL TECHNIQUES



PUMP DRIVE F600

SIMPLE, RELIABLE FLOW CONTROL
SPECIALIST DRIVE

DRIVE OBSESSED

PUMP DRIVE F600

THE SPECIALIST

PUMP DRIVE

From the drive specialists

Applications involving the flow of water demand extreme reliability and low energy consumption. Control Techniques' F600 drive, part of the Specialist series of industry-specific drive technologies, builds on our company's five decades of drives expertise, delivering precise, dependable flow control.

Everything you need is baked into the drive itself. The F600 packs all of the features you'll need, presented using terminology you'll understand. This isn't a generic drive with pump features tacked on; it's a dedicated, specialist pump drive, designed from the ground up to deliver the reliability and efficiency you need.

Free 5 year warranty*

To share our confidence in the reliability of Control Techniques, drives in the F600 range are eligible for Control Techniques' extended warranty, at no extra cost.

It is a testament to our exceptional track record for reliability, giving you total peace of mind that your investment is protected and your site will continue to run uninterrupted.

* Free 5 year warranty covers drives up to and including frame 7

Warranty terms and conditions apply.



The perfect mix of application-specific features developed into a single solution



Speaks your language

The F600 drive is tuned to suit your every need, optimised for minimal setup time yet sacrificing none of the flexibility. Whatever the challenge, our dedicated approach to clear parameter naming and structuring ensures we not only have the answers, but in a format you'll understand.



Energy savings, unlocking the potential

On average, 85% of a pump's life-cycle cost is attributed to its energy consumption, therefore, optimising the energy usage can mean a significant reduction in the total cost of ownership. The F600 drive thrives on delivering more efficient ways of operating your variable torque application. You'll see the benefits in reduced running costs and lower energy requirements.



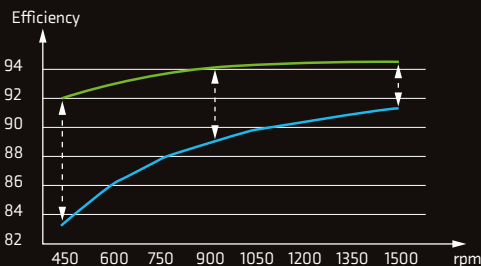
Engineered for your application

The F600 Pump Drive offers a host of dedicated features including dry-run prevention, pipe fill, pump cleaning, over-cycling protection and level switch control. A range of different control modes covering single pumps and also different parallel pump configurations make Control Techniques' F600 a truly versatile solution.



Total control

The F600 can also control the most efficient motors available, meeting IE5 efficiency levels, such as the Nidec Leroy Somer Dyneo+ hybrid permanent-magnet motor. With all of this combined, the F600 is your best choice to save you money every day.



● AC PMA SynRM Dyneo+ ● AC IE2 IM with VSD

PIONEERING GROUNDWATER SPRINKLER SYSTEM DEPENDS ON ADVANCED DRIVES

Domina Inn and Conference Centre, located in Rotterdam, features a pioneering sprinkler system that uses groundwater pumped up from a sand layer 60 metres underground. Control Techniques AC drives were chosen to power the main and back-up pumps, due to the 'Fire' mode they offer, guaranteeing uninterrupted emergency operation.

UNMATCHED TOTAL COST OF OWNERSHIP

With innovative protective features and extended equipment life

The F600 has comprehensive pump and motor protection features which minimise unplanned downtime, improving overall effectiveness and guaranteeing better value for money. Bring true resilience to your application and easily ride-through component failures.

Automatic error recovery

In the unlikely event of detecting an error with your pump, the F600 has the ability to dynamically recover and resume normal operation.

Limit protection

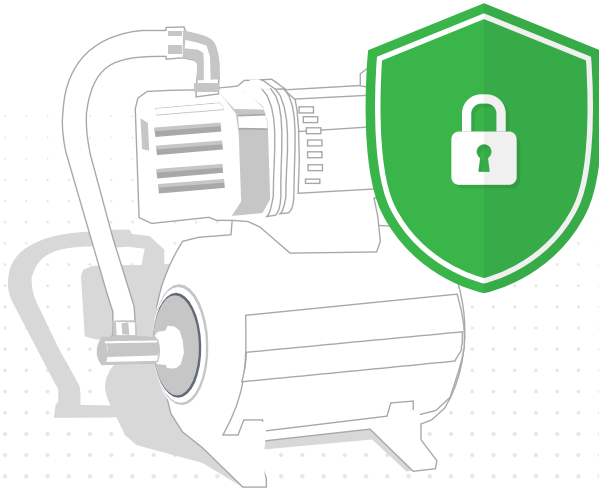
If the feedback exceeds the limits defined for your application, the F600 has the ability to raise an alarm or stop the drive to protect your equipment and preserve its lifetime.

Transducer loss protection

In the event of losing connection to the transducer, the F600 can stop, continue to run at a fixed speed or ignore the fault depending on the application requirements.

Fire mode

Fire mode allows the drive to disable all trips and to continue to run uninterrupted during emergency events if the application requires.



SAVE ON ENERGY THROUGH A WIDE RANGE OF ENERGY FEATURES

The F600 is 98% efficient, meaning very little energy is lost in power conversion.

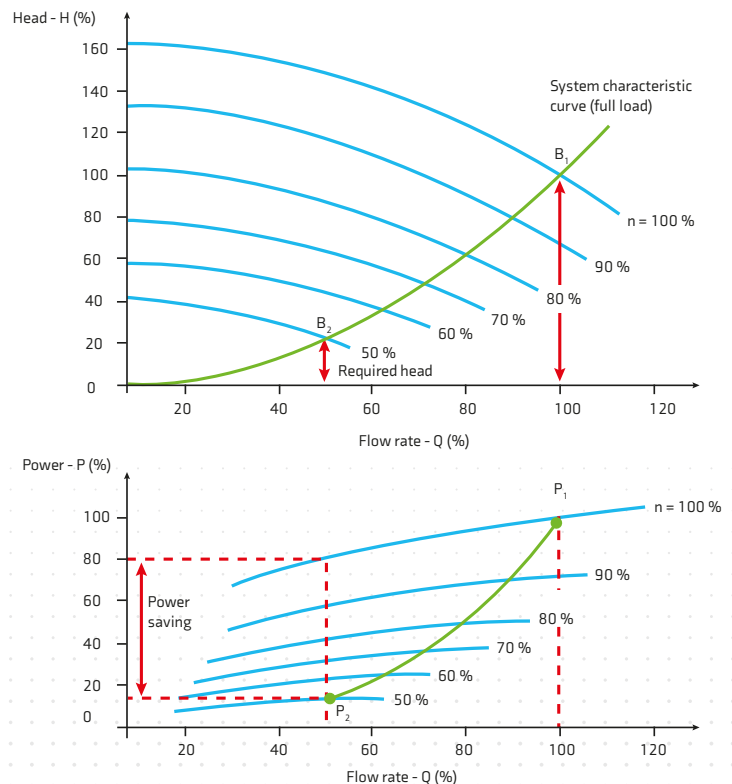
Even more, the real savings potential gets unlocked by the F600's built-in features that can further reduce energy consumption:

Low load savings

The F600 helps maximise energy savings when demand is low. Activating Control Techniques' leading-edge Low Load Power Saving function, the drive dynamically reduces the voltage applied to reduce losses in the motor and make the system more efficient.

Sleep mode

When demand falls below a specified set-point the drive will automatically enter sleep mode and restart itself once demand rises above the set-point. Not only does this greatly reduce the amount of energy consumed, it also saves on equipment wear to preserve its lifetime.



Drives provide unique cost-saving solution in the water industry

Byzak Limited, a Framework Contractor to Northumbrian Water, worked with Control Techniques to solve the problem of pump blockages at Seaton Sluice, near Whitley Bay, UK

The F600 features optimised control for your flow applications

Customisable units

Whether working with standard units of flow or pressure or an alternative feedback device, the F600 offers fully customisable units, to ensure the drive will always work seamlessly with your application.

Pipe fill

Prevent spikes in pressure at start-up using a controlled ramp, to protect your piping system and the pump itself.

Over-cycling protection

Optimise drive, motor and pump sizing, and regulate pump wear by limiting the number of start-stops per hour. Flexible configurations allow to dynamically alter cycling reference limits, set an alarm or stop the drive when a limit is reached.

Cleaning

Live, continuous monitoring of the system is used to trigger an automatic drive-based cleansing cycle to clear the pump impeller and help avoid maintenance costs on cleaning pump blockages.

Dry-run prevention

Prevent the pump running dry by checking the load against a threshold; with flexible configurations to dynamically adjust output, set an alarm or stop the drive.

No-flow detection

Where there is no-flow or low-flow, the F600 drive can automatically enter sleep mode to save energy, based on the feedback of a pulsed flow transducer, or triggered by a flow switch, or detected by the software alone.

Level switch control

Level switches provide critical protection for tanks in the event of the level reaching a “high” switch, whereby the pump is stopped, or a “low” switch, whereby the pump is started, to ensure pumping within tank levels.

Flow compensation

Flow compensation offers energy savings in large water delivery systems, such as irrigation, where for practical reasons the pressure sensor must be fitted close to the pump rather than at the furthest point on the pipe system.

PUMP CONTROL MODES

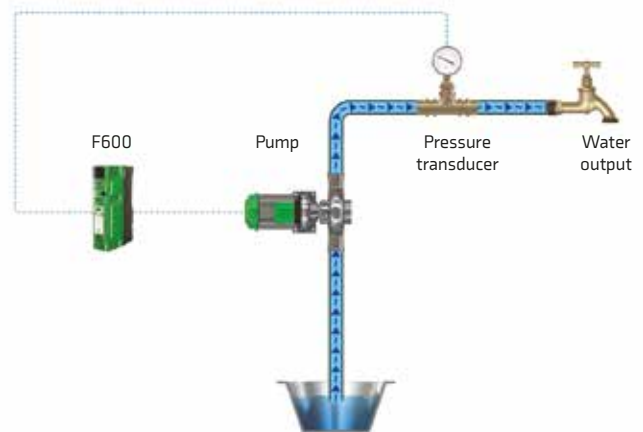
FLEXIBLE SUPPORT

FOR EVERY SYSTEM

Single pump

Control Techniques' Single Pump mode is an effective and versatile variable speed control solution for maintaining a constant set-point in a single pump configuration.

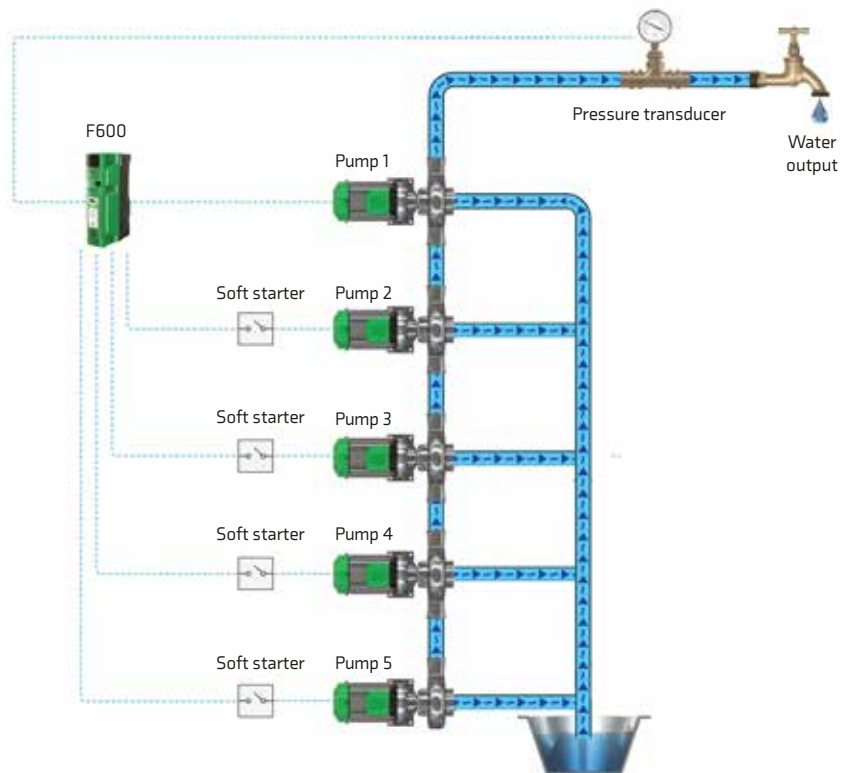
- Fire mode allows the drive to disable all trips and to continue to run uninterrupted during emergency events if the application requires



Cascade

Cascade mode allows the F600 to operate with up to 4 assist pumps to aid the primary pump when required.

- Energy usage is optimised whereby the assist pumps are only enabled when demand reaches sufficient levels.
- Assist pumps are used alternately to apply uniform wear and increase pump availability.
- Over-cycling protection for assist pumps to control the number of starts and stops per hour.

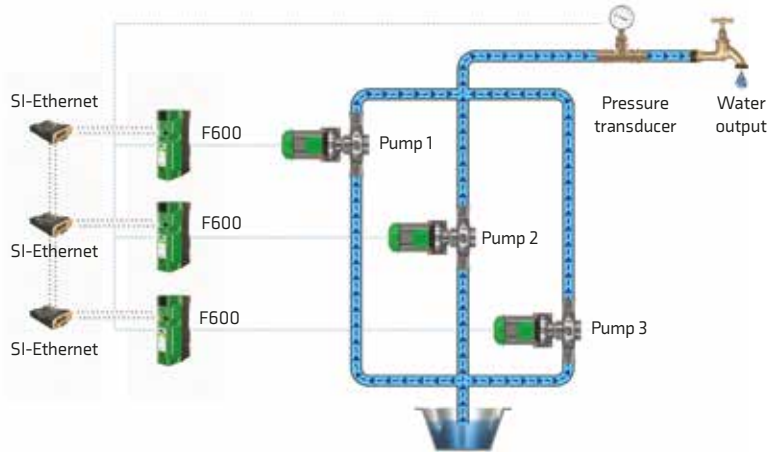




Multi-leader

Complete control of your application with up to 3 x F600 drives and maximum energy savings with these variable frequency drives running parallel.

- The Multi-leader drive configuration provides redundancy and removes the need for a PLC
- The “lead” drive is automatically cycled to apply uniform wear
- If the “lead” drive loses its transducer, it can access the transducer feedback from another F600 in the system over Ethernet
- Dynamic re-selection of “lead” pump if a pump is taken out of service or develops a fault



SIMPLE COMMISSIONING FOR HASSLE-FREE, EFFICIENT INSTALLATION

Install and go. Application-focused design and dedicated pump functions mean optimum performance can be achieved straight out of the box, with minimal set-up.

Guided commissioning tool

Gain complete control of your drive with Control Techniques' Connect PC Software. The dedicated Pump Drive setup screens guide you through every step of quickly getting your drive up and running.

Everything is covered in a simple, logical format, from configuring your multi-pump system, through the input of motor characteristics, to setting up the PID process control loop. All the pump features are also readily available, providing intuitive setup with contextual help through a single tool.

Single setup menu

Setup using only the keypad couldn't be easier. There's no need to waste time looking for all the parameters - we've grouped them all together for you in one, streamlined menu.

All relevant parameters are literally at your fingertips to easily configure and monitor your application.

All additional parameters are still accessible through the advanced menus, for un-precedented control and finetuning.



Guided setup screen within the Connect PC software

FREE STANDING DRIVE RANGE

Ready to use pre-engineered high power drives

Highly efficient pre-engineered motor control system

Control Techniques' Free Standing Drive optimises motor energy efficiency and comes ready to use, pre-assembled in its own industry-standard cabinet with all necessary system components included. The Pump Drive F600's Free Standing Drive variant complements and extends the product range, while having all of the core product's capabilities and features.

No extra engineering required

The Free Standing Drive fits a small footprint, and it's easy to integrate with common cubicles, including as standard: load switch, fuses, fan, line and sharing chokes and cabling. The cabinet can also come with a door-mounted HMI with Real-Time Clock, for easy set-up and maintenance.

Thanks to the dedicated online configurator, getting a quote and ordering is as simple as can be. Even more, we can ship your Free Standing Drive to you at very short lead times, saving weeks on typical industry standards.

Light weight, but no light weight!

The F600 is also available with Control Techniques' largest frame, which not only offers 500 kW of power in a single module, but at 130 kg is up to 60 kg lighter than competitor drives. Its small footprint and pre-engineered accessories make it easy to install or retrofit in industry-standard cubicles.

Please see the Drive Free Standing brochure for more information.



Large frame power module in pre-assembled cabinet

DUST AND WATER RESISTANT PUMP DRIVE F600 HIGH IP VARIANT

The Pump Drive F600 offers a full IP65 solution with exactly the same dedicated pump features & capabilities as the standard models.

IP65 provides protection from total dust ingress and low pressure water jets from any direction, making it a simple choice for harsh environments and the outdoors*. The Pump Drive F600 is now one of the most protected drives on the market, maximising pump uptime and productivity, while cutting maintenance costs.

Standard and High IP drives

The High IP drive will already be familiar to users of the F600, with all the same features that make commissioning effortless. The Hand-Off-Auto keypad with the built-in real-time clock is still available, sealed, and the protective casing has been designed with easy servicing and usability in mind.

This new variant enables customers to use both standard and high IP drives for the same project, so there is no longer any headache with mixing-and-matching vendors or product feature sets, making project qualification straightforward.

Save on installation

The F600 High IP drive is enclosed in a sturdy, protective yet light casing, providing a compact solution. This not only allows easy integration in harsh environments but wall mounting close to the pump reduces installation costs, through:

- No cabinet required
- Shorter cable lengths
- Less labour time/cost to install drive

Free 5 year warranty

To share our confidence in the reliability of Control Techniques, the Pump Drive F600 High IP product is also eligible for Control Techniques' extended warranty, at no extra cost.



*Shading from direct sunlight is required

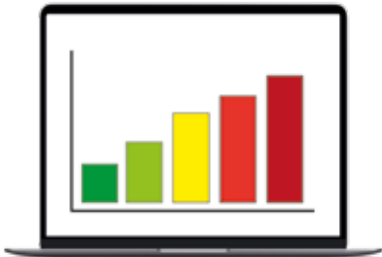
Warranty terms and conditions apply.

CONTROL TECHNIQUES PC TOOLS

Energy savings estimation

Control Techniques' energy optimisation software helps you analyse energy usage for flow applications and quantify the cost savings of using your Control Techniques drive.

- Estimation of energy usage using Control Techniques variable frequency drives for pump applications
- Identify the payback period through the energy savings from using a Pump Drive F600 over conventional control methods
- Graphical representation of flow versus cost, hours and time



Diagnostic Tool

The Diagnostic Tool App is a fast and simple tool, which allows users to quickly solve any error codes that the drive may show. Built within the app are easy to locate wiring diagrams for first time setup and fault finding with links to the relevant comprehensive manuals.

The app also has full contact details of the technical support teams around the world to aid you with technical assistance.

Available for iOS, Android and Windows™, download the app for free at www.controltechniques.com/mobile-applications



*For Microsoft users, please note that this mobile app operates with Windows 10 only.

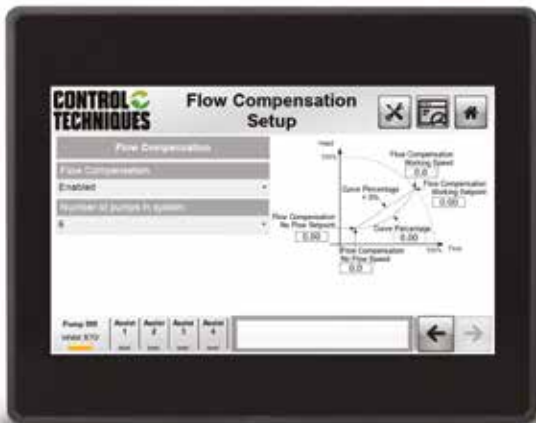
F600 HMI

The dedicated F600 HMI panel provides the ultimate interface for configuring and monitoring your Pump Drive F600.

Designed specifically for pumping applications, the F600 HMI supports configuring the F600 in Single Pump, Cascade and Multi-leader modes, connecting via Modbus RTU or Modbus TCP/IP with the option for remote access via the OPC-UA protocol.

The pre-configured pages are comprehensive in supporting drive configurations, application configurations, pump control and more. With access to PID monitoring and historic trends, the F600 HMI allows real-time access as well as analysis in an intuitive, simple to understand graphical interface.

The out of the box setup is bursting with features, but can also be tailored to suit specific applications where further customisation is required.



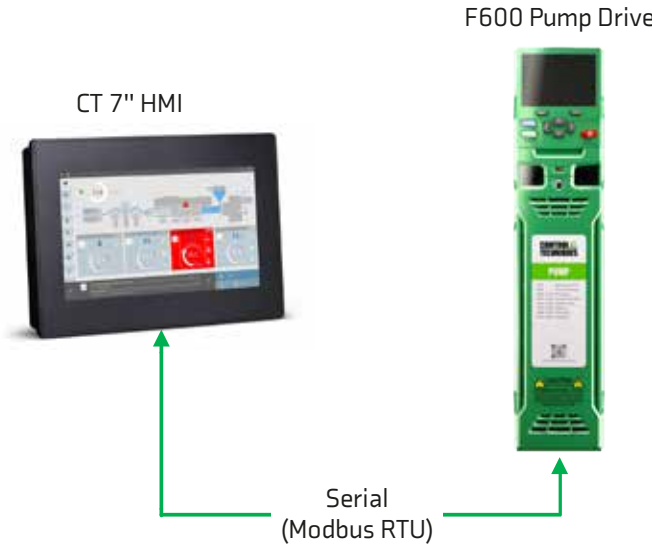
F600 HMI compatibility

| Operating Mode | Modbus RTU | Modbus TCP |
|----------------|------------|------------|
| Single-pump | ✓ | ✓ |
| Cascade | ✓ | ✓ |
| Multi-leader | | ✓ |

Modbus RTU

The simplest method of communication with an F600 HMI is via the built-in F600 RS-485 connector using Modbus RTU, requiring no additional components.

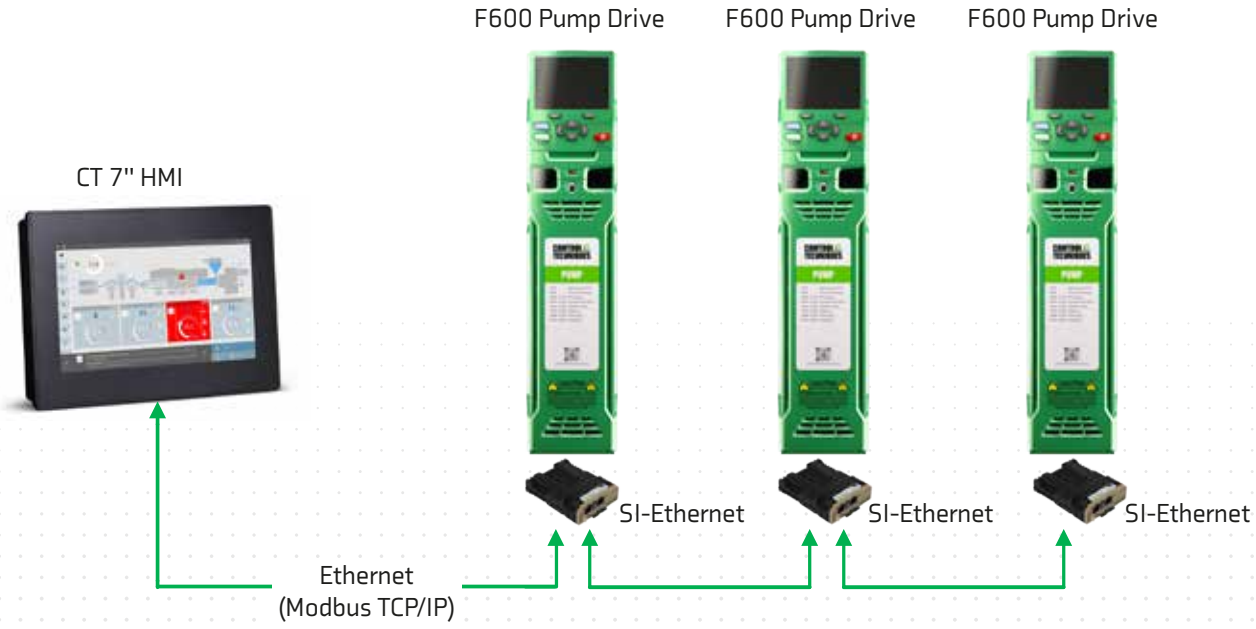
Simply connect the F600 to the HMI and go.



Single-pump operation via Modbus RTU

Modbus TCP/IP

Using SI-Ethernet module(s) with Pump Drive F600 allows communication via TCP/IP and operating in Multi-leader mode, the most robust of the three operating modes.



Multi-leader operation via Modbus TCP/IP





Slot for Smartcard/SD card for parameter storage and cloning

Easy click-in keypad connector

Multi-language LCD keypad

With Hand, Off and Auto controls and built-in real-time clock for run time scheduling

3x System Integration (SI) module slots for communications and I/O**

Onboard I/O

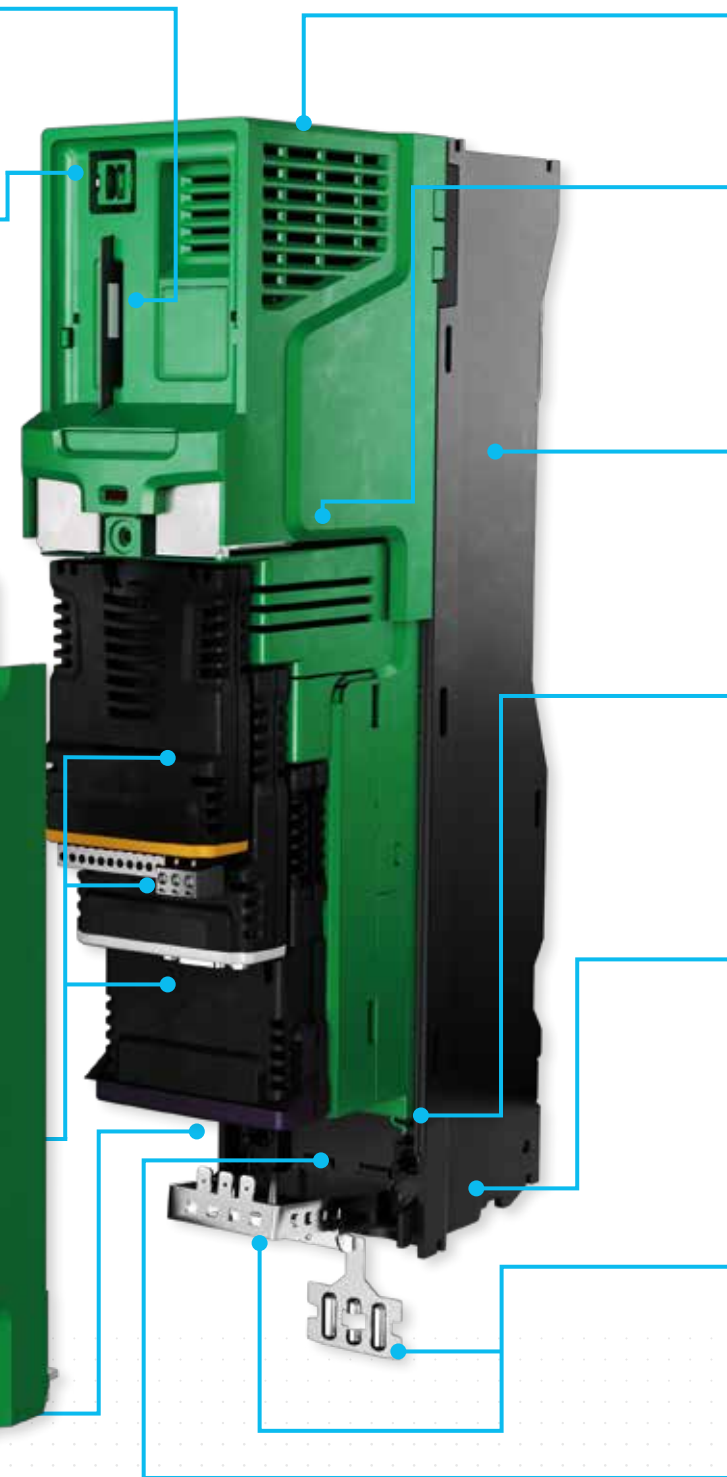
- | | |
|--------------------|---------------------------------|
| 2 x analog inputs | 3 x configurable digital I/O |
| 2 x analog outputs | 2 x form C relay outputs |
| 3 x digital inputs | 1 x Safe Torque Off (STO) input |

**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

User-friendly pluggable control connections



*Features and their locations vary on some drive sizes



Onboard EMC filter*

Conformal coating as standard

Aluminium chassis

Allows flexible mounting, with high performance extruded heatsink.

User-friendly power connections

With removable terminals*.

Adaptive multi-speed fan control

The fan can also be replaced by the user after installation

Robust cable management system

Grounding point for shielded control and power cables

3-pin RS485 Modbus communications as standard

PUMP DRIVE F600

ORDERING GUIDE

Normal duty operation only

Suitable for pump 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 (-4 °F to 104 °F) as standard. Up to 55 °C (131 °F) with derating
- Humidity 95 % maximum (non-condensing) at 40 °C (104 °F)
- Altitude: 0 to 3000 m (9900 ft), derate 1 % per 100 m (330 ft) between 1000 m (3300 ft) and 3000 m (9900 ft)
- 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 (-40 °F to 131 °F) or up to 70 °C (158 °F) 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)

Keypads

| Description | Order code |
|------------------------|----------------|
| KI-HOA Keypad RTC F600 | 82400000018500 |
| Remote HOA Keypad RTC | 82400000019700 |
| KI-485 Adaptor | 82400000016100 |

Dimensions

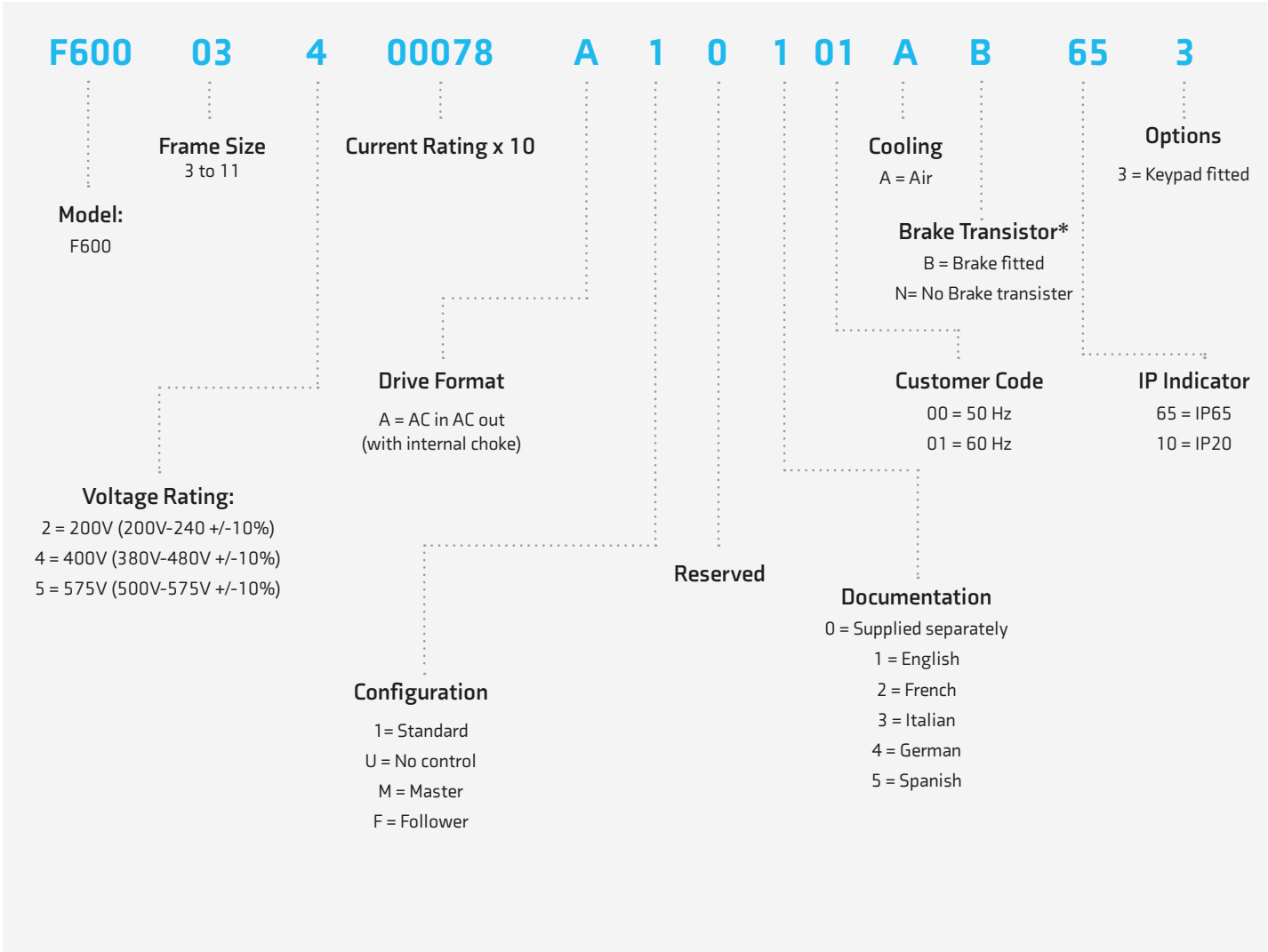


| Frame size | Dimensions | | Weight |
|------------|------------------------------|---------------------------------|--------------|
| | mm (HxWxD) | in (HxWxD) | |
| 3 | 382 x 83 x 200 | 15.0 x 3.3 x 7.9 | 4.5 (9.9) |
| 4 | 391 x 124 x 200 | 15.4 x 4.9 x 7.9 | 6.5 (14.3) |
| 5 | 391 x 143 x 200 | 15.4 x 5.6 x 7.6 | 7.4 (16.3) |
| 6 | 391 x 210 x 227 | 15.4 x 8.3 x 8.9 | 14 (30.9) |
| 7 | 557 x 270 x 280 | 21.9 x 10.6 x 11.0 | 28 (61.7) |
| 8 | 803 x 310 x 290 | 31.6 x 12.2 x 11.4 | 50 (110.2) |
| 9A | 1108 x 310 x 290 | 43.6 x 12.2 x 11.4 | 66.5 (146.6) |
| 9E/10E | 1069 x 310 x 290 | 42.1 x 12.2 x 11.4 | 46 (101.4) |
| 9D/10D | Rectifier 355 x 310 x 290 | Rectifier 15.8 x 12.2 x 11.4 | 12 (26.5) |
| | Inverter 773 x 310 x 290 | Inverter 30.4 x 12.2 x 11.4 | 34 (75) |
| 11E | 1242 x 310 x 312 | 48.9 x 12.2 x 12.3 | 63 (138.9) |
| 12T | 1750 x 295 x 526 | 68.9 x 11.6 x 20.7 | 130 (287) |

| High IP | Dimensions | | Weight |
|----------|-----------------|-------------------|-------------|
| | mm (HxWxD) | in (HxWxD) | |
| Frame 03 | 570 x 256 x 225 | 22.5 x 10.1 x 8.7 | 7.5 (16.5) |
| Frame 04 | 572 x 256 x 221 | 22.5 x 10.1 x 8.7 | 9.3 (20.5) |
| Frame 05 | 572 x 256 x 221 | 22.5 x 10.1 x 8.7 | 10.0 (22.0) |
| Frame 06 | 575 x 317 x 248 | 22.7 x 12.5 x 9.8 | 16.9 (37.3) |

*For more detailed information please see technical documents.

PRODUCT CODE STRUCTURE



*B only for frames 3 – 8. N only for frames 9 – 11.

Manuals

F600 is supplied with a Step-by-Step Setup Guide to assist with fast, efficient commissioning. A detailed user guide is also available to download online, or can be requested from Control Techniques Drive Centres and Partners.

PUMP DRIVE F600

MODEL NUMBER AND RATINGS

200/240 Vac $\pm 10\%$

| Product Code | Normal Duty | | | | |
|----------------|---------------|----------------------------------|------------------------|------------------------|-----------------------------------|
| | Supply Phases | IP20 Max continuous current (A)* | Motor shaft power (kW) | Motor shaft power (hp) | IP65 Max continuous current (A)** |
| F600-03200066A | 3 | 6.6 | 1.1 | 1.5 | 6.6 |
| F600-03200080A | 3 | 8 | 1.5 | 2 | 8 |
| F600-03200110A | 3 | 11 | 2.2 | 3 | 11 |
| F600-03200127A | 3 | 12.7 | 3 | 3 | 12.7 |
| F600-04200180A | 3 | 18 | 4 | 5 | 18 |
| F600-04200250A | 3 | 25 | 5.5 | 7.5 | 22 |
| F600-05200300A | 3 | 30 | 7.5 | 10 | 30 |
| F600-06200500A | 3 | 50 | 11 | 15 | 50 |
| F600-06200580A | 3 | 58 | 15 | 20 | |
| F600-07200750A | 3 | 75 | 18.5 | 25 | |
| F600-07200940A | 3 | 94 | 22 | 30 | |
| F600-07201170A | 3 | 117 | 30 | 40 | |
| F600-08201490A | 3 | 149 | 37 | 50 | |
| F600-08201800A | 3 | 180 | 45 | 60 | |
| F600-09202160A | 3 | 216 | 55 | 75 | |
| F600-09202660A | 3 | 266 | 75 | 100 | |
| F600-09202160E | 3 | 216 | 55 | 75 | |
| F600-09202660E | 3 | 266 | 75 | 100 | |
| F600-10203250E | 3 | 325 | 90 | 125 | |
| F600-10203600E | 3 | 360 | 110 | 150 | |

* Continuous currents at 2 kHz switching frequency for IP20 models with product codes: F600 (...) 103

** Continuous currents at 2 kHz switching frequency for IP65 models with product codes: F600 (...) 653

380/480 Vac $\pm 10\%$

| Product Code | Normal Duty | | | | |
|----------------|---------------|----------------------------------|------------------------|------------------------|-----------------------------------|
| | Supply Phases | IP20 Max continuous current (A)* | Motor shaft power (kW) | Motor shaft power (hp) | IP65 Max continuous current (A)** |
| F600-03400034A | 3 | 3.4 | 1.1 | 1.5 | 3.4 |
| F600-03400045A | 3 | 4.5 | 1.5 | 2 | 4.5 |
| F600-03400062A | 3 | 6.2 | 2.2 | 3 | 6.2 |
| F600-03400077A | 3 | 7.7 | 3 | 5 | 7.7 |
| F600-03400104A | 3 | 10.4 | 4 | 5 | 10.4 |
| F600-03400123A | 3 | 12.3 | 5.5 | 7.5 | 11 |
| F600-04400185A | 3 | 18.5 | 7.5 | 10 | 18.5 |
| F600-04400240A | 3 | 24 | 11 | 15 | 21 |
| F600-05400300A | 3 | 30 | 15 | 20 | 29 |
| F600-06400380A | 3 | 38 | 18.5 | 25 | 38 |
| F600-06400480A | 3 | 48 | 22 | 30 | 48 |
| F600-06400630A | 3 | 63 | 30 | 40 | |
| F600-07400790A | 3 | 79 | 37 | 50 | |
| F600-07400940A | 3 | 94 | 45 | 60 | |
| F600-07401120A | 3 | 112 | 55 | 75 | |
| F600-08401550A | 3 | 155 | 75 | 100 | |
| F600-08401840A | 3 | 184 | 90 | 125 | |
| F600-09402210A | 3 | 221 | 110 | 150 | |
| F600-09402660A | 3 | 266 | 132 | 200 | |
| F600-09402210E | 3 | 221 | 110 | 150 | |
| F600-09402660E | 3 | 266 | 132 | 200 | |
| F600-10403200E | 3 | 320 | 160 | 250 | |
| F600-10403610E | 3 | 361 | 200 | 300 | |
| F600-11404370E | 3 | 437 | 225 | 350 | |
| F600-11404870E | 3 | 487 | 250 | 400 | |
| F600-11405070E | 3 | 507 | 280 | 450 | |

* Continuous currents at 2 kHz switching frequency for IP20 models with product codes: F600 (...) 103

** Continuous currents at 2 kHz switching frequency for IP65 models with product codes: F600 (...) 653

500/575 Vac \pm 10%

| Product Code | Normal Duty | | | | |
|----------------|---------------|----------------------------------|------------------------|------------------------|-----------------------------------|
| | Supply Phases | IP20 Max continuous current (A)* | Motor shaft power (kW) | Motor shaft power (hp) | IP65 Max continuous current (A)** |
| F600-05500039A | 3 | 3.9 | 2.2 | 3 | 3.9 |
| F600-05500061A | 3 | 6.1 | 4 | 5 | 6.1 |
| F600-05500100A | 3 | 10 | 5.5 | 7.5 | 10 |
| F600-06500120A | 3 | 12 | 7.5 | 10 | 12 |
| F600-06500170A | 3 | 17 | 11 | 15 | 17 |
| F600-06500220A | 3 | 22 | 15 | 20 | 22 |
| F600-06500270A | 3 | 27 | 18.5 | 25 | 27 |
| F600-06500340A | 3 | 34 | 22 | 30 | 34 |
| F600-06500430A | 3 | 43 | 30 | 40 | |
| F600-07500530A | 3 | 53 | 37 | 50 | |
| F600-07500730A | 3 | 73 | 45 | 60 | |
| F600-08500860A | 3 | 86 | 55 | 75 | |
| F600-08501080A | 3 | 108 | 75 | 100 | |
| F600-09501250A | 3 | 125 | 90 | 125 | |
| F600-09501550A | 3 | 155 | 110 | 150 | |
| F600-09501250E | 3 | 125 | 90 | 125 | |
| F600-09501500E | 3 | 150 | 110 | 150 | |
| F600-10502000E | 3 | 200 | 130 | 200 | |
| F600-11502480E | 3 | 248 | 175 | 250 | |
| F600-11502880E | 3 | 288 | 225 | 300 | |
| F600-11503150E | 3 | 315 | 250 | 350 | |

* Continuous currents at 2 kHz switching frequency for IP20 models with product codes: F600 (...) 103

** Continuous currents at 2 kHz switching frequency for IP65 models with product codes: F600 (...) 653

500/690 Vac $\pm 10\%$

| Product Code | Normal Duty | | | | |
|----------------|---------------|----------------------------------|------------------------|------------------------|-----------------------------------|
| | Supply Phases | IP20 Max continuous current (A)* | Motor shaft power (kW) | Motor shaft power (hp) | IP65 Max continuous current (A)** |
| F600-07600230A | 3 | 23 | 18.5 | 25 | |
| F600-07600300A | 3 | 30 | 22 | 30 | |
| F600-07600360A | 3 | 36 | 30 | 40 | |
| F600-07600460A | 3 | 46 | 37 | 50 | |
| F600-07600520A | 3 | 52 | 45 | 60 | |
| F600-07600730A | 3 | 73 | 55 | 75 | |
| F600-08600860A | 3 | 86 | 75 | 100 | |
| F600-08601080A | 3 | 108 | 90 | 125 | |
| F600-09601250A | 3 | 125 | 110 | 150 | |
| F600-09601500A | 3 | 150 | 132 | 175 | |
| F600-09601250E | 3 | 125 | 110 | 150 | |
| F600-09601550E | 3 | 155 | 132 | 175 | |
| F600-10601720E | 3 | 172 | 160 | 200 | |
| F600-10601970E | 3 | 197 | 185 | 250 | |
| F600-11602250E | 3 | 225 | 200 | 250 | |
| F600-11602750E | 3 | 275 | 250 | 300 | |
| F600-11603050E | 3 | 305 | 280 | 400 | |

* Continuous currents at 2 kHz switching frequency for IP20 models with product codes: F600 (...) 103

** Continuous currents at 2 kHz switching frequency for IP65 models with product codes: F600 (...) 653

Frame 12

| Product Code* | Frame Size | Heavy Duty | | | | | Normal Duty | | | |
|--------------------|------------|-------------------|-------------------|------|----------------------------|----------------------|-------------------|-------------------|------|------------------|
| | | Rated Current (A) | Motor Shaft Power | | Peak Current Open Loop (A) | Peak Current RFC (A) | Rated Current (A) | Motor Shaft Power | | Peak Current (A) |
| | | | (kW) | (HP) | | | | (kW) | (HP) | |
| 380 - 480 V | | | | | | | | | | |
| M000-12404800T | 12 | 480 * | 250 | 400 | 672 | 672 | 608 * | 315 | 500 | 668 |
| M000-12405660T | 12 | 566 * | 315 | 450 | 792 | 792 | 660 * | 355 | 550 | 726 |
| M000-12406600T | 12 | 660 * | 355 | 550 | 924 | 924 | 755 * | 400 | 650 | 831 |
| M000-12407200T | 12 | 720 * | 400 | 600 | 1008 | 1008 | 865 * | 500 | 700 | 952 |
| 500 - 575 V | | | | | | | | | | |
| M000-12503150T | 12 | 315 * | 250 | 350 | 441 | 441 | 360 * | 250 | 350 | 396 |
| M000-12503600T | 12 | 360 * | 250 | 350 | 504 | 504 | 410 * | 300 | 400 | 451 |
| M000-12504100T | 12 | 410 * | 300 | 400 | 574 | 574 | 460 * | 330 | 450 | 506 |
| M000-12504600T | 12 | 460 * | 330 | 450 | 644 | 644 | 510 * | 370 | 500 | 561 |
| 500 - 690 V | | | | | | | | | | |
| M000-12603150T | 12 | 315 * | 280 | 500 | 441 | 441 | 360 * | 355 | 550 | 396 |
| M000-12603600T | 12 | 360 * | 355 | 550 | 504 | 504 | 410 * | 400 | 600 | 451 |
| M000-12604100T | 12 | 410 * | 400 | 600 | 574 | 574 | 460 * | 450 | 650 | 506 |
| M000-12604600T | 12 | 460 * | 450 | 650 | 644 | 644 | 510 * | 500 | 700 | 561 |

Notes:

Frame 12 is only available as an unassigned power module (M000) and an F600 control module must also be ordered

- Internal 125 kW brake chopper included as standard.
- * Continuous currents at 2 kHz switching frequency
- Implement 2.8 MW drive systems by connecting this module in parallel

For more information on these features and the rest of the capabilities of this module, please see the latest issue of the Modular Power Brochure



ACCESSORIES ORDERING GUIDE

Comprehensive options for flexibility

| Keypad type | | Description |
|---|---|---|
| KI-HOA Keypad RTC - Green (Supplied as standard) |  | 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 real-time clock allows scheduling of run and off periods and adds accurate time stamping to diagnostics to aid rapid fault resolution |
| 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 can present up to four lines of real text with multi-language translation, enhancing clarity and increasing ease of use. Battery operated real-time clock allows scheduling of run and off periods and adds accurate time stamping to logged events, aiding diagnostics |
| KI-485 Adaptor |  | This adaptor can be fitted in place of the drive keypad and provides additional ports to communicate via RS485. The adaptor is commonly used for programming the drive. |
| System Integration Modules - Communications | | |
| SI-Ethernet |  | External Ethernet module that supports 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. To use multiple F600 drives in Multi-leader mode in a parallel pump system, each F600 drive must have an SI-Ethernet module fitted. |
| SI-EtherCAT |  | SI-EtherCAT allows F600 to connect and interface with EtherCAT networks. |
| SI-PROFINET |  | SI-PROFINET allows F600 to communicate and interface with PROFINET PLCs and networks. |
| 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-POWERLINK |  | POWERLINK interface module supporting all AC drive families and conforming to the latest POWERLINK standard. |
| MCi200 |  | Second processor, providing advanced customisation using standard IEC61131-3 programming languages |
| MCi210 |  | Extended advanced machine control using industry standard IEC61131-3 programming languages with simultaneous Connectivity to 2 separate Ethernet networks |
| Additional I/O and NV media cards | | |
| 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, 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 |

ACCESSORIES ORDERING GUIDE

Retrofit brackets

To allow an F600 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 |

Through-hole IP65 kits

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

Through-hole IP55 kits

| 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 |

Option modules

| Option module | Order code |
|----------------|----------------|
| SI-PROFIBUS | 82400000017500 |
| SI-Ethernet | 82400000017900 |
| SI-EtherCAT | 82400000018000 |
| SI-DeviceNet | 82400000017700 |
| SI-CANopen | 82400000017600 |
| SI-POWERLINK | 82400000021600 |
| SI-PROFINET RT | 82500000018200 |
| MCI200 | 82400000017000 |
| MCI210 | 82400000016700 |
| SI-I/O | 82400000017800 |

Tile mount kit

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

General kit items

| Item | Order code |
|--|------------|
| Frame size 3 & 4 power connector split kit | 3470-0064 |

Optional media and accessories

| Description | Order code |
|----------------------|------------|
| SD-Smartcard Adaptor | 3470-0047 |
| Smartcard (64KB) | 2214-0010 |

ACCESSORIES ORDERING GUIDE

DC bus paralleling kits

| 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 |

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 |

UL type 1 conduit kits

| 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 |

Optional external EMC filters

The F600's 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 |
| 9A | 690 V | 4200-1662 |
| | 200 V | 4200-3021 |
| | 400 V | 4200-3021 |
| | 575 V | 4200-1660 |
| 9E & 10E | 690 V | 4200-1660 |
| | 200 V | 4200-4460 |
| | 400 V | 4200-4460 |
| 11 | 575 V | 4200-2210 |
| | 690 V | 4200-2210 |
| | 400 V | 4200-0400 |
| | 575 V & 690 V | 4200-0690 |

*For more detailed information please see technical documents.

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Registered in England and Wales. Company Reg. No. 01236886.

0781-0290-05 01/22

