EMERSON™
Industrial Automation

MENTOR MP

High performance DC drive Solution Platform

25A to 7400A

400V / 575V / 690V

Two or four quadrant operation

CONTROL TECHNIQUES

EMERSON
Industrial Automation

CONTROL TECHNIQUES

Mentor MP, the ultimate DC drive

25A to 7400A, 400V / 575V / 690V

Mentor MP is Control Techniques 5th generation DC drive and integrates the control platform from the world's leading intelligent AC drive, Unidrive SP. This makes Mentor MP the most advanced DC drive available, giving optimum performance and flexible system interfacing capability.

Upgrading your control system

There are large numbers of DC motors in service throughout the world in various applications, the majority of which are easily capable of providing ongoing service. Upgrading your DC drive allows you to maximise the motor performance, enhance system reliability and interface digitally with modern control equipment using Ethernet and Fieldbus networks. Downtime is minimised as only the drive needs to be replaced.

Driving forward with DC technology

DC drive technology remains cost effective, efficient and is relatively simple to implement. For new applications DC provides many advantages, especially for regenerative and high power applications.

Simple upgrade

Mentor MP has been engineered as an easy replacement for Mentor II. It has the same physical dimensions and connection layout. Software tools have been developed to easily migrate to the new platform.

"Our main objective is to enhance the reliability and performance. Upgrading the DC drive system allows us to achieve this without replacing the motor; with minimum downtime and lost production."

N1652

RoHS Compliant

BSI REGISTERED Certificate No. EMS 54446 UKAS ENVIROMENTAL MANAGEMENT 003

BSI REGISTERED Certificate No. Q 05176 UKAS QUALITY MANAGEMENT 003

2+ YEAR Worldwide Warranty

www.controltechniques.com

EMERSON
Industrial Automation

Mentor MP DC drive features

AC supply input connections wih removable safety covers

Drive identification marker rail

Drive rating label

Output power connections to motor with removable covers

Armature voltage feedback for use with DC contactor and inverter common DC bus systems

Fuses for field protection (removable cartridge)

Integrated field controller

Optional Keypad, available as high brightness LED or multi-language LCD with plain text

Smartcard for parameter and custom application program storage

Standard onboard Modbus communications port for PC programming and device interfacing

Safety terminal cover

Safety finger guard

3 universal option module slots for communications, I/O, additional feedback devices and automation/ motion controllers

Communications port for external field controller or parallel drives

Pluggable terminals for I/O, relays, tacho feedback, encoder, and a current feedback test pin for fine tuning armature current loop

Sturdy cable management system providing a grounding point for shielded control cables

Pioneers of intelligent DC drive technology

Over the last 35 years Control Techniques have pioneered many of the DC drive technologies that are now taken for granted. These include the first digital DC drive and the first DC drive with an onboard programmable automation controller.

Our exemplary track record and experience in DC drive technology means that you can be sure Mentor MP will excel in the widest possible range of applications.

Leading edge control technology in a DC drive

Control Techniques have a comprehensive portfolio of AC and DC drive solutions. We can offer you impartial advice on the best solution for your application needs and future upgrade paths.

Mentor MP inherits the world beating control platform and software tools from Control Techniques AC drive range, so you retain the flexibility of changing to an AC drive system in the future if your application requirements evolve.

Control Techniques has a patent pending to protect one unique aspect of the Mentor MP design. Galvanic isolation between power and control is a standard feature in AC drives and, in the case of failure, protects the control circuits and connected equipment from high voltage on the power circuit. Mentor MP uses a novel technology to achieve galvanic isolation without compromising performance or reliability.

Working with a supplier that really understands and invests in DC technologies is a big plus for us.

EMERSON
Industrial Automation

Our expertise in your industry

Our extensive expertise across a wide range of industries mean that we are the ideal partner for DC solutions. Typical applications for Mentor MP include:

- Crane & hoist
- Test rigs & dynamometers
- Magnetic grabs
- Elevator
- Tyre & rubber
- Metals
- Wire drawing
- Paper
- Marine
- Winders
- Extruders
- Glass
- Materials handling
- Fair ground
- Spindle drives
- Crushers
- Active front end for DC bus connected AC drive systems

Global service

Being one of the market leaders in DC technology, we understand your needs. Control Techniques 91 subsidiary Drive Centres and resellers in 67 countries ensure that service, support and expertise are just around the corner, all around the world.

Environmentally sound

Re-use of existing DC motors	No new motor required	✔
High efficiency solution	DC drives and motors offer high efficiency equivalent to many AC solutions	✔
RoHS compliant	Mentor MP is manufactured using lead-free processes	✔
Simple regenerative solution	Mentor MP allows mechanical energy to be easily regenerated back to the line power supply	✔
Recyclability	Virtually all Mentor MP component parts are suitable for recycling	✔

Emerson motor and drive solutions

Control Techniques Mentor MP DC drives and Leroy Somer DC motors offer a total Emerson solution. Both companies offer quality and technology leadership to deliver the best possible combination of motors and drives. High efficiency DC motors combined with variable speed control offers a matched energy optimized solution.

Higher power DC motors

Control Techniques has access to several other ranges of DC motors, allowing us to cover the complete power range of Mentor MP DC drives.

Leroy Somer LSK square frame DC motors:

- Power rating 4.7kW to 750kW
- Frame size 112 to 355
- IP23S drip proof
- S1 duty
- PTC thermistors
- IC06 forced vent cooling with standard polyester filter
- Class H insulation
- 3-phase full bridge supply
- Terminal box in any position
- Forced vent top
- Tacho type REO444
- Incremental and absolute encoders

EMERSON
Industrial Automation

Enhanced control performance

Greater motor field control

Every Mentor MP has a motor field controller as standard which gives excellent field control for the majority of DC motors. However, for the following situations, the optional FXMP25 external field controller is recommended:

- The required field current is greater than that offered by the standard drive, up to 25A. For example, older motors with low field voltages.
- The field is required to be forced down more quickly than is possible with a standard half controlled field bridge. For example, on spindle motors or motors with high field time constants where the field is required to weaken more quickly than the natural time constant of the field winding.
- Applications can be implemented with simple field current reversal, without armature reversal. For example, applications where a rapid change in torque direction is not required. With the Mentor MP it is possible to implement a four quadrant system with a two quadrant armature converter where a slow change in torque direction can be tolerated.

FXMP25 - External motor field controller

The FXMP25 may be controlled digitally by the Mentor MP using a standard RJ45 connection, allowing set-up by standard drive parameters.

The FXMP25 can also function in standalone mode using its integrated keypad and display.

For older motors, with very low field voltages and field currents greater than 25A, the Mentor MP itself has a field mode, allowing it to be implemented as a field controller with no additional components.

Long life design

The longest possible working life is a design feature of Mentor MP. An example of which is the heatsink cooling fans that are all intelligently controlled and only run when required, thus reducing maintenance.

Add the extra features you need

Click-in option modules allow you to customise the drive to suit your needs. 18 different options are available including Fieldbus, Ethernet, I/O, extra feedback devices and programmable automation controllers.

Intelligently driven

Mentor MP allows the drive system designer to embed automation and motion control within the drive, eliminating communication delays that reduce performance while CTNet, a high performance drive-to-drive network links the different parts of the system.

Reliability and innovation

Mentor MP is designed using a well proven development process that prioritises innovation and reliability. This process has resulted in Control Techniques having a market leading reputation for both product performance and quality, and reflects the results of significant amount of customer feedback.

Mentor MP set-up, configuration and monitoring

Mentor MP is quick and easy to set-up. The drives may be configured using a removable keypad, Smartcard or the supplied PC commissioning software that guides the user through the configuration process. Existing Mentor ll users benefit from our free migration wizard software.

SM-Keypad

MP-Keypad

SP Control Platform

User interface options

Mentor MP benefits from a choice of interfaces to meet your application needs.

Order Code	Details
SM–Keypad	Hot pluggable, high-brightness LED display.
MP-Keypad	Multi-lingual, hot pluggable, backlit LCD display. The display can be customised to provide application specific text.
SP Control Platform	Control platform without power stage

EMERSON
Industrial Automation

PC software and Smartcard tools for rapid commissioning

Control Techniques' software suite makes it easier to access the drive's full feature set. It allows you to optimize the drive tuning, back-up the configuration and set-up a communications network. The software tools can connect using Ethernet, Serial, USB or Control Techniques drive-to-drive network, CTNet. Migration tools make the process of transferring parameter sets from Mentor II to Mentor MP a simple process.

CTSoft

CTSoft is our free drive configuration tool for commissioning, optimising and monitoring Control Techniques drives. It allows you to:

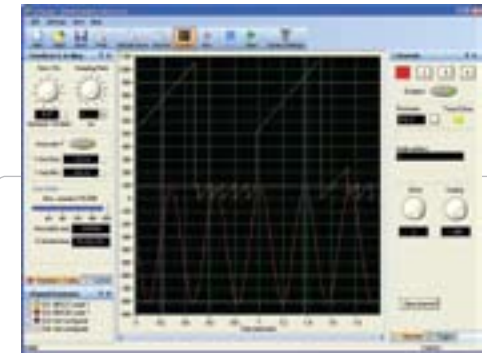
- Use the configuration wizards to commission your drive
- Read, save and load drive configuration settings
- Manage the drive's Smartcard data
- Visualise and modify the configuration with live animated diagrams

- The CTSoft home page shortens the learning curve for new users and provides powerful shortcuts for experienced users

- Migration Wizard guides experienced and new users systematically through the process of configuring a Mentor MP for an existing Mentor II application. Existing parameter sets can be imported from a stored file or read directly from an existing drive.

- All motor data is entered in real units and the current limit window will calculate parameter settings based on ambient temperature and required overload ratings.

CTScope



CTScope is a full featured software oscilloscope for viewing and analysing changing values within the drive. The time base can be set to give high speed capture for tuning or for longer term trends. The user interface is based on a traditional oscilloscope, making it familiar and friendly to all engineers across the globe.

Try it free, download the full version of CTSoft and CTScope software from www.controltechniques.com

FREE Software

CTOPCServer

CTOPCServer is an OPC compliant server which allows PCs to communicate with Control Techniques drives. The server supports communication using Ethernet, CTNet, RS485 and USB. OPC is a standard interface on SCADA packages and is widely supported within Microsoft® products. The server is supplied free of charge and may be downloaded from www.controltechniques.com.

Try it free, download the full version of CTOPCServer from www.controltechniques.com

FREE Software

Smartcard

The Smartcard is a useful memory device that is supplied free with every Mentor MP, it can be used to back-up parameter sets and PLC programs and copy them from one drive to another.

- Parameter and program storage
- Simplify drive maintenance and commissioning
- Quick set-up for sequential build of machines
- Machine upgrades can be stored on a Smartcard and sent to the customer for installation

Easy performance tuning

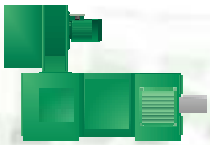
Mentor MP's advanced Autotune features, accessible through CTSoft or the keypad, help you to get the best performance by measuring the motor and machine attributes and automatically optimising control parameters.

EMERSON
Industrial Automation

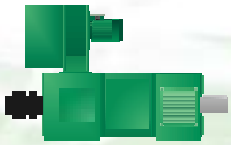
Mentor MP - Unparalleled integration flexibility

Control Mode

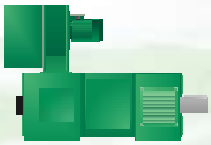
Estimated speed Feedback



Tacho Feedback



Encoder Feedback



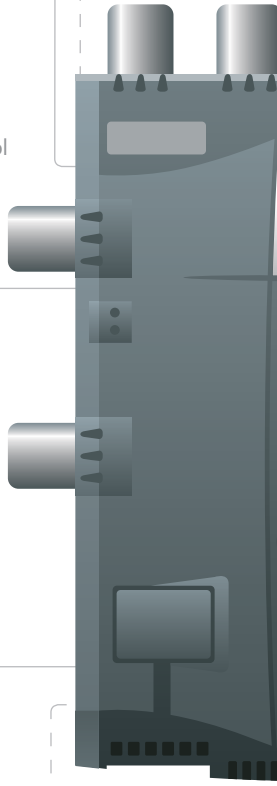
Field Control

Options | Standard

Mentor MP in field mode greater than 25A

FXMP25 Field Control up to 25A

Integrated Field Control
Size 1: 8A
Size 2: 20A



Drive Programming and Operator Interface

Options | Standard

Operator Interface

MP-Keypad
LCD with MP firmware

SM-Keypad
LED standard

Smartcard

Input/Output

Standard | Options

7 Digital I/O
5 Analog I/O
2 Form C relays

SM–I/O 32

SM–I/O Plus

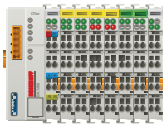
SM–I/O Lite

SM–I/O Timer

SM–I/O 120V

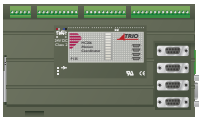
SM–PELV

REMOTE I/O



Centralised PLC/Motion Control

Motion Controller



PLC

PC

Applications with PLC or Motion functionality

Standard

Onboard PLC

Easy to use onboard ladder logic PLC at zero cost, ideal for simple applications requiring extra drive functionality

Configured using SyPTLite software

Options

SM–Applications Lite V2

Powerful automation controller using a dedicated microprocessor giving full drive parameter access

Configured using SyPTLite or SyPTPro software

SM–Applications Plus

Powerful automation controller with drive to drive networking and full motion capability

Configured using SyPTPro software

SM–Register

High speed motion and registration control

Configured using SyPTPro software

Communications

Standard

Modbus RTU

Options

SM–EtherCAT

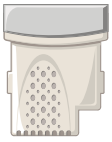
SM–Profibus DP-V1

SM-Interbus

SM–DeviceNet

SM–Ethernet

SM–CANopen



SM-PROFINET

Feedback

Standard

Estimated speed
Tacho
Encoder

Options

SM–Universal Encoder Plus

Accepts or replicates all standard feedback types, Input and output

SM–Encoder Plus

Incremental input

SM–Encoder Output Plus

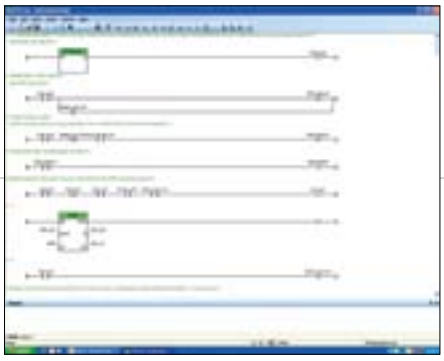
Incremental encoder input / buffered output

EMERSON
Industrial Automation

Mentor MP drive intelligence and system integration

Control Techniques' intelligent drives offer more compact, higher-performance and lower cost solutions in machinery automation applications. Over the past 25 years Control Techniques has pioneered the embedding of programmable automation, motion and communications features within drives.

SyPTLite and onboard automation



Mentor MP has an inbuilt programmable controller. It is configured using SyPTLite, an easy-to-use ladder logic program editor, suitable for replacing relay logic or a micro PLC for simple drive control applications.

The software is supplied free of charge. For evaluation, download the full version from www.syptlite.com.

FREE Software

SyPTPro automation development environment

SyPTPro is a full featured automation development environment that can be used for developing tailored solutions for single or multiple drive applications. The programming environment fully supports three industry standard languages: Function Block, Ladder and Structured Text. Motion control is configured using the new PLCopen motion language, supporting multiple axes.

CTNet, a high-speed, deterministic drive-to-drive network links the drives, SCADA and I/O together to form an intelligent networked system, with SyPTPro managing both the programming and communications.

A migration wizard makes it easy to adapt existing Mentor II SYPT programmes to Mentor MP.

For evaluation, download a demonstration version from www.controltechniques.com.

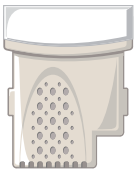
TRIAL Software

High performance automation

All of Control Techniques' automation option modules contain a high performance microprocessor, leaving the drive's own processor to give you the best possible motor performance.

SM-Applications Lite V2

The SM-Applications Lite V2 module is designed to provide programmable control for standalone drive applications or when the drive is connected to a centralised controller via I/O or fieldbus.



SM-Applications Lite V2 may be programmed using ladder logic with SyPTLite or can make use of the full automation and motion capabilities contained within SyPTPro.

- Easy powerful configuration – SM-Applications Lite V2 can be used to tackle automation problems from simple start/stop sequencing with a single drive to more complex machine and motion control applications
- Real time control –The SM-Applications Lite V2 module gives you real-time access to all of the drives parameters plus access to data from I/O and other drives. The module uses a high speed multi-tasking operating system with task update times as low as 250µs. Tasks are synchronised to the drive's own speed loop to give you the best possible performance for drive control and motion.

SM-Applications Plus

SM-Applications Plus offers all of the features of the SM-Applications Lite V2 module but with additional communications and high speed I/O.
SM-Applications Plus is programmed using SyPTPro system programming tool.

- Inputs/Outputs – The module has two digital inputs and two digital outputs for high-speed I/O operations such as position capture and actuator firing.
- High speed serial port - The module features a serial communications port supporting standard protocols such as Modbus for connection to external devices such as operator interface panels.
- Drive-to-drive communications - SM-Applications Plus option modules include a high speed drive-to-drive network called CTNet. This network is optimised for intelligent drive systems offering flexible peer to peer communications. The bus has the capability to connect to remote I/O, operator panels, Mentor MP drives and PCs using an OPC server.

EMERSON
Industrial Automation

Mentor MP machine communications flexibility

Fieldbus or Ethernet connection to main controller using a wide range of communications option modules

AC/servo drive

PC for programming and monitoring using CTSoft, CTScope, SyPT or OPC. Connect using Serial, Ethernet, USB or CTNet

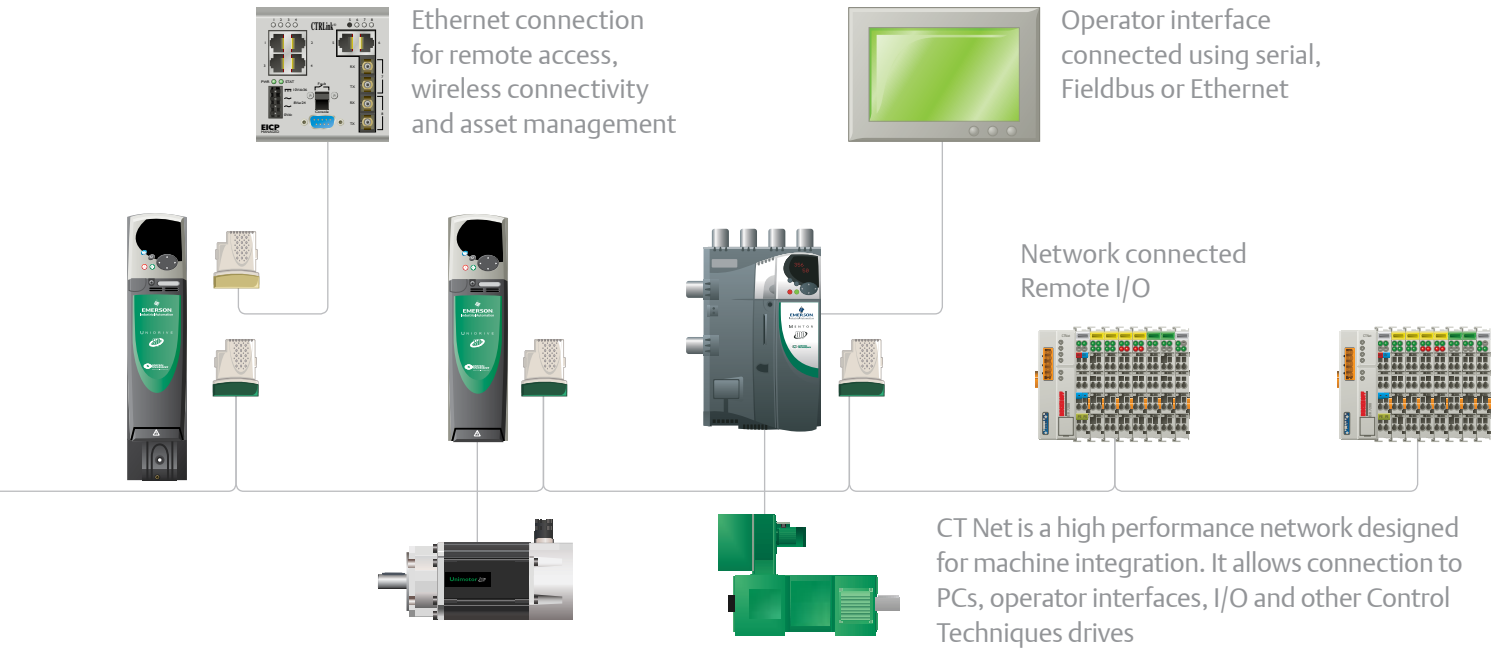
SP Control Platform

The unique control flexibility of the Unidrive SP/Mentor MP has led to many applications where it is being used solely for its option modules, with no motor connected. Examples include:

- Application as a protocol converter between a supervisory control system using one protocol and a drive system using another.
- Addition of an extra Unidrive SP/Mentor MP to a system when all the existing drive option slots are full simply to accommodate additional option modules. Additional position feedback devices can also be added to a system in this way.

The SP Control Platform provides all the same functions as a Unidrive SP/Mentor MP thus expanding the control flexibility without the ability to run a motor, eliminating a redundant power stage.

The SP Control Platform requires a 24Vdc power supply with a 3A, 50Vdc fuse.



Fieldbus communications

Option modules for all common Industrial Ethernet, Fieldbus networks such as Ethernet/IP and Profibus, and servo networks such as EtherCAT are available. We continually develop new modules as new technologies emerge.

Easy gateway

SM-Applications and CTNet allow machine designers to design an easy gateway into which customers are able to interface using their preferred fieldbus or Ethernet interface. This solution improves the machine performance, simplifies the problem of being able to meet customer specifications for different fieldbus communications and helps to protect your intellectual property.

	Onboard PLC	SM-Applications Lite V2	SM-Applications Plus
Intellectual property protection	✔	✔	✔
SyPTLite Programming	✔	✔	
SyPTPro Programming		✔	✔
Multi-tasking environment		✔	✔
Motion control capabilities		✔	✔
CTNet drive-to-drive network			✔
Serial port			✔
High Speed I/O			✔

EMERSON
Industrial Automation

Ideal for retro-fit projects

Mentor MP is an ideal retro-fit choice with features to ensure it can integrate easily with your existing motor, power supply, application equipment and communication networks. Mentor MP brings new performance and new possibilities to your application with minimum projects costs.

We've done all the hard work

Mentor MP has been designed so existing Mentor II customers can easily migrate to the new platform. All power terminal locations and mounting points have been retained and software tools have been developed to assist transfer of drive parameters and programs. If you are planning to upgrade your DC system, whether it is a Mentor or other manufacturer's drive, Mentor MP is the clear choice.

Backwards compatible motor field control

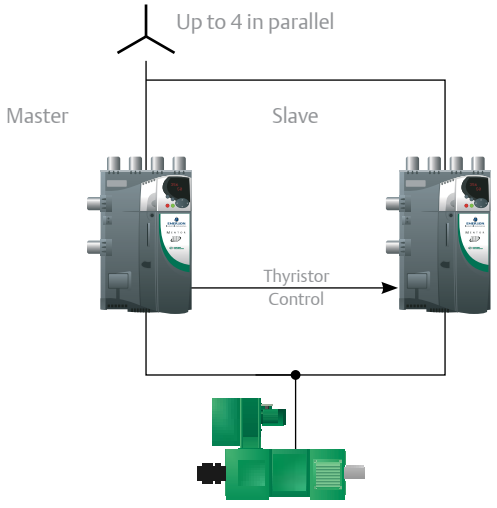
The new FXMP25 replaces our existing FXM5 option. It may be controlled digitally by the Mentor MP or Mentor II using a standard RJ45 connection, allowing set-up by standard drive parameters. The FXMP25 has the same physical dimensions as the existing FXM5, but extends its current range to 25A. In standalone mode it is configured by its own keypad and display.

Mentor MP drops straight into the space used by older Mentor drives, making it easy for us to retrofit. We also plan to use Mentor MP to upgrade obsolete drives from other manufacturers

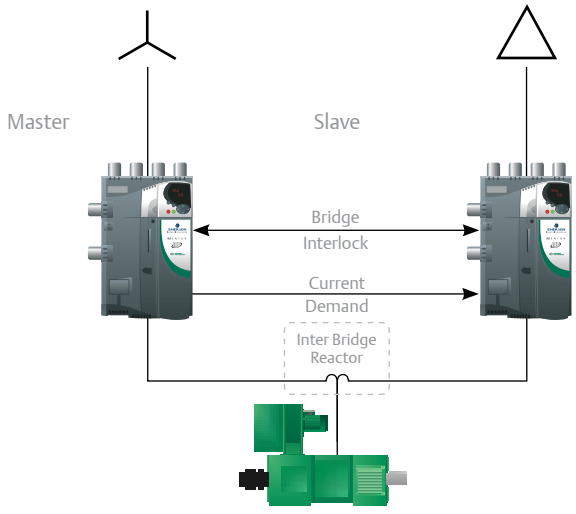
Power circuit configurations

For higher armature currents, higher armature voltages and harmonic minimisation the Mentor MP has standard features to enable the configurations below to be implemented.

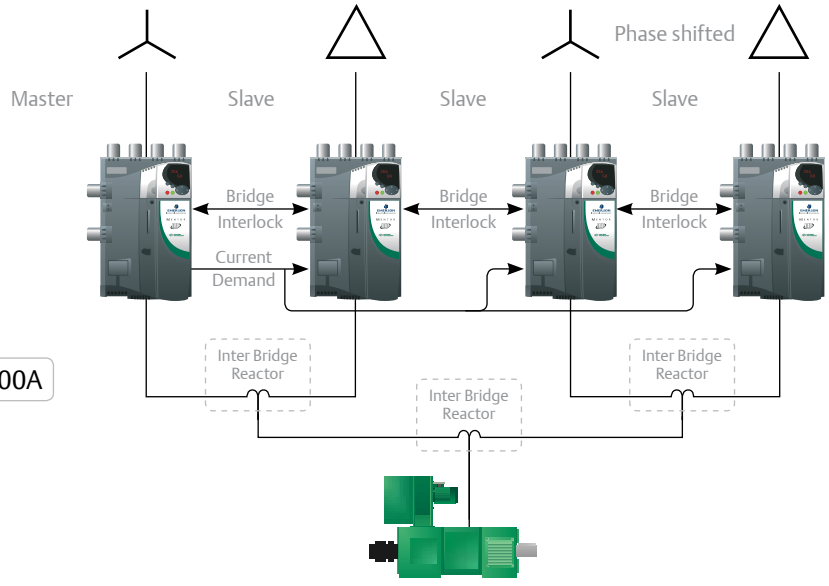
Parallel - 6 pulse



Parallel - 12 pulse



Parallel - 24 pulse



Paralleling is required to get 7400A

EMERSON
Industrial Automation

Mentor MP, the ultimate DC drive solution

- Models available for two or four quadrant (regenerative) operation
- 25A to 7400A, 400V / 575V / 690V
- Optional high-brightness LED or multi-language LCD keypad, simple configuration using plain text
- Modular serial and parallel connection for higher power motor operation
- 12/24 pulse operation to minimise harmonics
- IP20 protection for size 1, IP10 for size 2A and 2B, and IP00 for size 2C and 2D for easy, low cost installation
- Integrated drive and motor protection for:
  - Over current
  - Over temperature
  - Phase loss
  - Thyristor junction temperature
  - Feedback loss
  - Field loss
  - Armature open circuit
- Internal field controller with intelligent field weakening means that for 90% of applications no additional external controller is required
  - Frame size 1 to 8A
  - Frame size 2 to 20A
  - Flux control for enhanced open loop performance
- Optional FXMP25 external field controller for current fields up to 25A
  - Digital link for field control from Mentor MP or Mentor II
  - Standalone digital control mode for simple application
  - Flux control for enhanced open loop performance
  - Intelligent field weakening
  - Field forcing – for high dynamic machine reversal
  - Field reversal – low dynamic machine reversing using two quadrant main stack
- Mentor MP field control mode for fields requiring greater than 25A
- Serial port for Modbus RTU and PC communications
- 3 Universal option module slots, allowing Mentor MP to benefit from the solutions developed for Control Techniques market leading AC drive technology. Each option slot allows:
  - High performance PLC and motion control
  - Ethernet and Fieldbus communications
  - Connectivity to additional feedback devices
  - Additional I/O
- Galvanically isolated control
- Smartcard for drive parameter back-up and copying, allowing rapid installation and maintenance
- Integrated PLC as standard
- Standard software features for easy integration
  - PID controller
  - Motorised potentiometer
  - Digital lock (Slave operation from master encoder)
- Open loop control using estimated speed advanced processing based on armature voltage and field flux feedback
- Closed loop control using
  - Tacho-generator feedback for connection to traditional DC motors
  - Incremental encoder feedback for higher accuracy and position control
  - Optional SinCos, SSI, Hiperface and EnDAT connectivity for high performance applications
- High performance control strategy
  - 32 bit microprocessor
  - 35µs current sampling time
  - Speed controller and ramps update 250µs
  - Autotune features for armature, field current loops and speed loop

Conformance

- Humidity 95% maximum (non condensing) at 40°C (104°F)
- Ambient temperature -15°C to +40°C (5°F to +104°F), 55°C (131°F) with derating
- Altitude: 0 to 3000m, derate 1% per 100m between 1000m and 3000m
- Vibration: Tested in accordance with IEC 60068-2-64
- Mechanical shock tested in accordance with IEC 60068-2-29
- Storage temperature -40°C to +70°C (-40°F to +158°F)
- Electromagnetic immunity complies with EN 61800-3 and EN 61000-6-2
- Notch Immunity to IEC60146-1-1 class A
- IEC 61800-5-1 Electrical safety
- IEC 61131-2 I/O
- EN 60529 Ingress protection
- UL508C
- EN 61000-6-4 EMC
  - with optional EMC filters
- RoHS compliant

Note: Specifications for optional EMC filters are available from your Control Techniques supplier.

Order codes

DC Drive	External Field
MP1200A4R	**FXMP25**

MP - Mentor Platform

Maximum continuous armature current

Supply voltage rating
4 = 480V 24V to 480V -20% +10%
5 = 575V 500V to 575V -10% +10%
6 = 690V 500V to 690V -10% +10%

R - 4 quadrant operation
Blank - 2 quadrant operation

FX - External Field

MP - Mentor Platform

25 - Maximum field current (A)

Note: At the time of ordering, please select the required interface option. Refer to page 9.

Model			Frame	Armature current (A)*	Field current (A)	Overall dimensions			Quadrants of Operation
480V EN / IEC cULus	575V EN / IEC cULus to 600V	690V EN / IEC				Width (W)	Height (H)	Depth (D)	
MP25A4(R)	MP25A5(R)		1A	25	8	293mm (11.54in)	444mm (17.48in)	222mm (8.74in)	2 and 4
MP45A4(R)	MP45A5(R)			45					
MP75A4(R)	MP75A5(R)			75					
MP105A4(R)	MP105A5(R)		1B	105		293mm (11.54in)	444mm (17.48in)	251mm (9.88in)	2 and 4
MP155A4(R)	MP155A5(R)			155					
MP210A4(R)	MP210A5(R)			210					
MP350A4(R)	MP350A5(R)	MP350A6(R)	2A	350	20	495mm (19.49in)	640mm (25.20in)	301mm (11.85in)	2 and 4
MP420A4(R)				420					
	MP470A5(R)	MP470A6(R)		470**					
MP550A4(R)				550					
MP700A4(R)	MP700A5(R)	MP700A6(R)	2B	700		495mm (19.49in)	640mm (25.20in)	301mm (11.85in)	2 and 4
MP825A4(R)	MP825A5(R)	MP825A6(R)		825**					
MP900A4(R)				900					
MP1200A4	MP1200A5	MP1200A6	2C	1200		555mm (21.85in)	1050mm (41.34in) ***	611mm (24.06in)	2
MP1850A4	MP1850A5	MP1850A6		1850					
MP1200A4R	MP1200A5R	MP1200A6R	2D	1200		555mm (21.85in)	1510mm (59.45in) ***	611mm (24.06in)	4
MP1850A4R	MP1850A5R	MP1850A6R		1850					

*Current ratings are at 40°C with 150% overload for 30s. **For this rating at 575V and 690V, 150% overload time is 20s at 40°C and 30s at 35°C.
***Height including optional fit exhaust duct cover is 1252mm (49.29in) for size 2C and 1712mm (67.40in) for size 2D.

7400A is achieved by parallel connection of Mentor MP drives

DRIVING THE WORLD...

CONTROL TECHNIQUES

Control Techniques Drive & Application Centres

AUSTRALIA
Melbourne Application Centre
T: +613 973 81777
controltechniques.au@emerson.com

Sydney Drive Centre
T: +61 2 9838 7222
controltechniques.au@emerson.com

AUSTRIA
Linz Drive Centre
T: +43 7229 789480
controltechniques.at@emerson.com

BELGIUM
Brussels Drive Centre
T: +32 1574 0700
controltechniques.be@emerson.com

BRAZIL
São Paulo Application Centre
T: +55 11 3618 6688
controltechniques.br@emerson.com

CANADA
Toronto Drive Centre
T: +1 905 949 3402
controltechniques.ca@emerson.com

Calgary Drive Centre
T: +1 403 253 8738
controltechniques.ca@emerson.com

CHINA
Shanghai Drive Centre
T: +86 21 5426 0668
controltechniques.cn@emerson.com

Beijing Application Centre
T: +86 10 856 31122 ext 820
controltechniques.cn@emerson.com

CZECH REPUBLIC
Brno Drive Centre
T: +420 511 180111
controltechniques.cz@emerson.com

DENMARK
Copenhagen Drive Centre
T: +45 4369 6100
controltechniques.dk@emerson.com

FRANCE*
Angoulême Drive Centre
T: +33 5 4564 5454
controltechniques.fr@emerson.com

GERMANY
Bonn Drive Centre
T: +49 2242 8770
controltechniques.de@emerson.com

Chemnitz Drive Centre
T: +49 3722 52030
controltechniques.de@emerson.com

Darmstadt Drive Centre
T: +49 6251 17700
controltechniques.de@emerson.com

GREECE*
Athens Application Centre
T: +0030 210 57 86086/088
controltechniques.gr@emerson.com

HOLLAND
Rotterdam Drive Centre
T: +31 184 420555
controltechniques.nl@emerson.com

HONG KONG
Hong Kong Application Centre
T: +852 2979 5271
controltechniques.hk@emerson.com

INDIA
Chennai Drive Centre
T: +91 44 2496 1123/
2496 1130/2496 1083
controltechniques.in@emerson.com

Pune Application Centre
T: +91 20 2612 7956/2612 8415
controltechniques.in@emerson.com

New Delhi Application Centre
T: +91 112 2581 3166
controltechniques.in@emerson.com

IRELAND
Newbridge Drive Centre
T: +353 45 448200
controltechniques.ie@emerson.com

ITALY
Milan Drive Centre
T: +39 02575 751
controltechniques.it@emerson.com

Reggio Emilia Application Centre
T: +39 02575 751
controltechniques.it@emerson.com

Vicenza Drive Centre
T: +39 0444 933400
controltechniques.it@emerson.com

SOUTH KOREA
Seoul Application Centre
T: +82 2 3483 1605
controltechniques.kr@emerson.com

MALAYSIA
Kuala Lumpur Drive Centre
T: +603 5634 9776
controltechniques.my@emerson.com

REPUBLIC OF
SOUTH AFRICA
Johannesburg Drive Centre
T: +27 11 462 1740
controltechniques.za@emerson.com

Cape Town Application Centre
T: +27 21 556 0245
controltechniques.za@emerson.com

RUSSIA
Moscow Application Centre
T: +7 495 981 9811
controltechniques.ru@emerson.com

SINGAPORE
Singapore Drive Centre
T: +65 6891 7600
controltechniques.sg@emerson.com

SLOVAKIA
EMERSON A.S
T: +421 32 7700 369
controltechniques.sk@emerson.com

SPAIN
Barcelona Drive Centre
T: +34 93 680 1661
controltechniques.es@emerson.com

Bilbao Application Centre
T: +34 94 620 3646
controltechniques.es@emerson.com

Valencia Drive Centre
T: +34 96 154 2900
controltechniques.es@emerson.com

SWEDEN*
Stockholm Application Centre
T: +468 554 241 00
controltechniques.se@emerson.com

SWITZERLAND
Lausanne Application Centre
T: +41 21 637 7070
controltechniques.ch@emerson.com

Zurich Drive Centre
T: +41 56 201 4242
controltechniques.ch@emerson.com

TAIWAN
Taipei Application Centre
T: +886 2 8161 7695
controltechniques.tw@emerson.com

THAILAND
Bangkok Drive Centre
T: +66 2962 2092 99
controltechniques.th@emerson.com

TURKEY
Istanbul Drive Centre
T: +90 216 4182420
controltechniques.tr@emerson.com

UAE*
Emerson FZE
T: +971 4 8118100
ct.dubai@emerson.com

UNITED KINGDOM
Telford Drive Centre
T: +44 1952 213700
controltechniques.uk@emerson.com

USA
California Drive Centre
T: +1 562 943 0300
controltechniques.us@emerson.com

Charlotte Application Centre
T: +1 704 393 3366
controltechniques.us@emerson.com

Chicago Application Centre
T: +1 630 752 9090
controltechniques.us@emerson.com

Cleveland Drive Centre
T: +1 440 717 0123
controltechniques.us@emerson.com

Florida Drive Centre
T: +1 952 995 8000
controltechniques.us@emerson.com

Latin America Sales Office
T: +1 305 818 8897
controltechniques.us@emerson.com

Minneapolis US Headquarters
T: +1 952 995 8000
controltechniques.us@emerson.com

Oregon Drive Centre
T: +1 503 266 2094
controltechniques.us@emerson.com

Providence Drive Centre
T: +1 401 541 7277
controltechniques.us@emerson.com

Control Techniques Distributors

ARGENTINA
Euro Techniques SA
T: +54 11 4331 7820
eurotech@eurotechsa.com.ar

BAHRAIN
Emerson FZE
T: +971 4 8118100
ct.bahrain@emerson.com

BULGARIA
BLS - Automation Ltd
T: +359 32 968 007
info@blsautomation.com

CHILE
Ingeniería Y Desarrollo
Tecnológico S.A
T: +56 2 719 2200
rdunner@idt.cl

COLOMBIA
Sistronic LTDA
T: +57 2 555 60 00
luis.alvarez@sistronic.com.co

Redes Electricas S.A.
T: +57 1 364 7000
alvaro.rodriguez@redeselectricas.com

CROATIA
Zigg-Pro d.o.o
T: +385 1 3463 000
zigg-pro@zg.htnet.hr

CYPRUS
Acme Industrial Electronic
Services Ltd
T: +3572 5 332181
acme@cytanet.com.cy

EGYPT
Samiram
T:+202 29703868/+202 29703869
samiramz@samiram.com

EL SALVADOR
Servielectric Industrial S.A. de C.V.
T: +503 2278 1280
aeorellana@gruposervielectric.com

FINLAND
SKS Control
T: +358 207 6461
control@sks.fi

GUATEMALA
MICE, S.A.
T: +502 5510 2093
mice@itelgua.com

HONDURAS
Temtronics Honduras
T: +504 550 1801
temtronics@amnethn.com

HUNGARY
Control-VH Kft
T: +361 431 1160
info@controlvh.hu

ICELAND
Samey ehf
T: +354 510 5200
samey@samey.is

INDONESIA
Pt Apikon Indonesia
T: +65 6468 8979
info.my@controltechniques.com

Pt Yua Esa Sempurna Sejahtera
T: +65 6468 8979
info.my@controltechniques.com

ISRAEL
Dor Drives Systems Ltd
T: +972 3900 7595
info@dor1.co.il

KENYA
Kassam & Bros Co. Ltd
T: +254 2 556 418
kassambros@africaonline.co.ke

KUWAIT
Emerson FZE
T: +971 4 8118100
ct.kuwait@emerson.com

LATVIA
EMT
T: +371 760 2026
janis@emt.lv

LEBANON
Black Box Automation & Control
T: +961 1 443773
info@blackboxcontrol.com

LITHUANIA
Elinta UAB
T: +370 37 351 987
sales@elinta.lt

MALTA
Mekanika Limited
T: +35621 442 039
mfrancica@gasan.com

MEXICO
MELCSA S.A. de CV
T: +52 55 5561 1312
jcervera@melcsa.com

MOROCCO
Cietec
T: +212 22 354948
cietec@cietec.ma

NEW ZEALAND
Advanced Motor Control. Ph.
T: +64 (0) 274 363 067
info.au@controltechniques.com

PERU
Intech S.A.
T: +51 1 224 9493
artur.mujamed@intech-sa.com

PHILIPPINES
Control Techniques
Singapore Ltd
T: +65 6468 8979
info.my@controltechniques.com

POLAND
APATOR CONTROL Sp. z o.o
T: +48 56 6191 207
info@acontrol.com.pl

PORTUGAL
Harker Sumner S.A
T: +351 22 947 8090
drives.automation@harker.pt

PUERTO RICO
Motion Industries Inc.
T: +1 787 251 1550
roberto.diaz@motion-ind.com

QATAR
Emerson FZE
T: +971 4 8118100
ct.qatar@emerson.com

ROMANIA
C.I.T. Automatizari
T: +40212550543
office@citautomatizari.ro

SAUDI ARABIA
A. Abunayyan Electric Corp.
T: +9661 477 9111
aec-salesmarketing@
abunayyangroup.com

SERBIA & MONTENEGRO
Master Inzenjering d.o.o
T: +381 24 551 605
office@masterinzenjering.rs

SLOVENIA
PS Logatec
T: +386 1 750 8510
ps-log@ps-log.si

TUNISIA
SIA Ben Djemaa & CIE
T: +216 1 332 923
bendjemaa@planet.tn

URUGUAY
SECOIN S.A.
T: +5982 2093815
jose.barron@secoin.com.uy

VENEZUELA
Digimex Sistemas C.A.
T: +58 243 551 1634
digimex@digimex.com.ve

VIETNAM
N.Duc Thinh
T: +84 8 9490633
infotech@nducthinh.com.vn

P.N. 0776-0000-05 03/11

© Control Techniques 2011. The information contained in this brochure is for guidance only and does not form part of any contract. The accuracy cannot be guaranteed as Control Techniques have an ongoing process of development and reserve the right to change the specification of their products without notice.

* Operated by sister company

LEROY SOMER