



## MENTOR MP

High-performance DC drive  
25 A to 7400 A



## Mentor MP: Innovation guaranteeing the longevity of your product

DC (direct current) motors are used in numerous industrial processes all over the world. For more than thirty years, Leroy-Somer has been innovating in the field of DC drive technologies and developing motor-drive solutions which now represent the benchmark within the industry.

### Always one step ahead

**Mentor MP** integrates the control platform of the Unidrive SP, a market-leading intelligent AC drive, thus making it the first DC drive with a built-in programmable automation controller. Optimum performance, combined with excellent capacity for interfacing with the standard communication protocols, make **Mentor MP** the most advanced on the market and the most competitive in terms of reducing energy bills. Cost-efficient, effective and easy to use, it offers numerous advantages, especially for regenerative and high-power applications.

### Our experience serving your business

**Mentor MP** is designed to:

- Improve system reliability and ensure the longevity of the DC installation
- Optimise motor performance
- Minimise intervention time and downtime when replacing an older drive thanks to both electrical and mechanical compatibility

### Respect for the environment

Conformity with the RoHS directive due to lead-free manufacturing processes. The drive components can be recycled by companies who specialise in handling electronic products.

### Global high-performance service

In conjunction with **Mentor MP**, the **Guaranteed Availability** and **Rapid Assembly Centre Service** offer for **LSK DC** motors positions Leroy-Somer as the ideal partner when it comes to improving the performance of new or existing installations in conventional DC applications:

- Metal processing
- Rubber and plastics industries
- Hoisting, magnetic grabs
- Test benches
- Ski lifts, lifts, etc



**RoHS  
Compliant**



## ion tool!

AC power supply connections  
with removable protection

Drive identification  
marker rail

Nameplate

Motor armature connection  
terminals with removable  
covers

Armature voltage  
feedback for use  
with DC contactor  
system

Fuses for field  
protection  
(removable cartridge)

Built-in excitation controller

Connection for external field  
controller

Optional keypad, available with  
LED or LCD display

3 slots for optional  
modules: fieldbus,  
application card, etc

Smartcard for storing  
parameters and programs

Modbus communication port  
for PC programming

Pluggable terminal block for  
I/O, relays, tacho feedback,  
encoder, etc

EMC taken into account with earthed shielding



## Quick and easy commissioning

Setting the Mentor MP parameters is quick and easy. The drives can be configured using the removable keypad, the Smartcard or a PC. The autotune and easy parameter-setting functions ensure that the best performance is obtained by measuring the motor and machine characteristics and automatically optimising the control parameters.

### User interface options

Mentor MP offers the choice between two keypads to meet the needs of your application.

#### ■ *SM-Keypad*

*Extra-bright LED display, hot pluggable*

#### ■ *MP-Keypad*

*Multilingual backlit LCD display, hot pluggable, plain text (English, French, German, Italian, Spanish, etc)*

*The display can be customised with specific text*

#### Smartcard

*Storage memory provided with each Mentor MP*

*Storage and backup of parameter sets*

*Parameters can be copied from one drive to another*

*Backup automation programs*

*Quick configuration for sequential application building*

*Program availability*



## Software tools

Simplify access to all the drive parameter settings and can optimise parameter adjustment, data backup and fieldbus configuration. Communication with software tools can be achieved with an Ethernet, serial, or USB link or via CTNet (proprietary network).

### ■ CTSoft

*Commissioning, optimisation and supervision of all Leroy-Somer drives*

*Configuration wizard*

*Parameter reading, saving and loading*

*Display and modification of the configuration by means of animated diagrams*

*Home page which minimises the time it takes new users to learn to use the program*

*Handy shortcuts for experienced users*

*Motor data entered as real units*

*Help with replacing old drives: a migration wizard guides you throughout the process of configuring a Mentor MP for a DMV 2322, DMV 2342 or Mentor II application. Groups of parameters can be imported from a stored file, or read directly from an existing drive.*

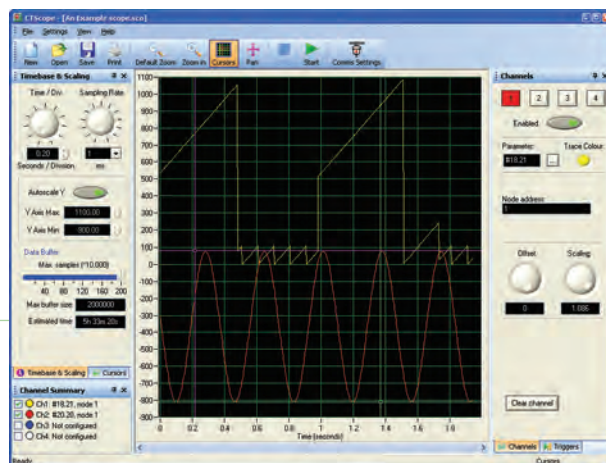
### ■ CTScope

*4-channel real-time oscilloscope for displaying, analysing and backing up the application data*

*Adjustable time base and scales*

*"Trigger" function*

*Zoom and measurement cursors*



Download the full version of the software free of charge from our website [www.leroy-somer.com](http://www.leroy-somer.com)



## Optimising the process

### "Onboard" automation

**Mentor MP** can be used to create a simple Ladder sequential program using an integrated memory space and the SYPTLite software workshop which complies with programming standard IEC 61131-3.

It is possible to develop bespoke solutions for applications for one or more drives with the SYPTPro software workshop. In compliance with IEC 61131-3 it handles three languages: Ladder, function blocks and Structured Text. Execution control can be configured using the new PLCopen motion control language.

*Real-time access to all the drive parameters and data from the I/O or from other drives. Very fast multitask operating system with execution time of up to 250 µs. Tasks synchronised with the Mentor MP speed controller.*

#### ■ SM-Applications Plus

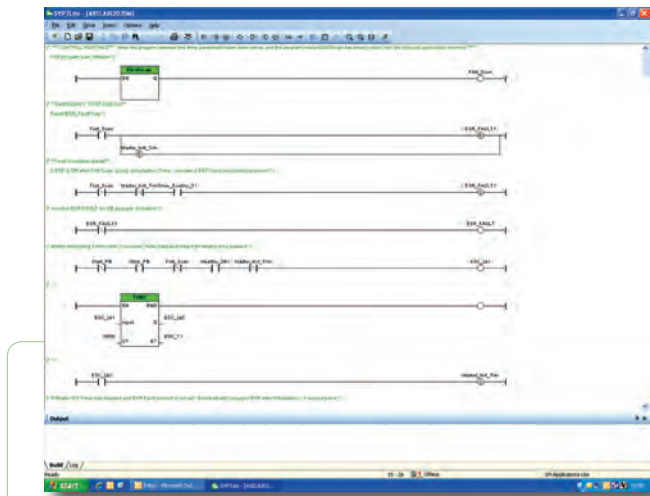


*The same characteristics as the SM-Applications Lite V2 module plus Modbus RTU or CTNet\* communications capability, two inputs and two outputs (high-speed logic type) for position acquisition or actuator tripping. Programmed with the SyPTPro software workshop.*

#### ■ Communication



*Availability of the main fieldbuses which can be incorporated in the various Automation architectures and offer a high degree of flexibility: Modbus as standard, completed with add-on communication modules: Ethernet TCP/IP, Ethernet IP, CANopen, Profibus DP, DeviceNet, EtherCAT, Sercos, etc.*



### High-performance automation

All the Leroy-Somer SM-Applications modules contain a high-performance microprocessor, ensuring that the drive processor provides the best possible motor servo-control.

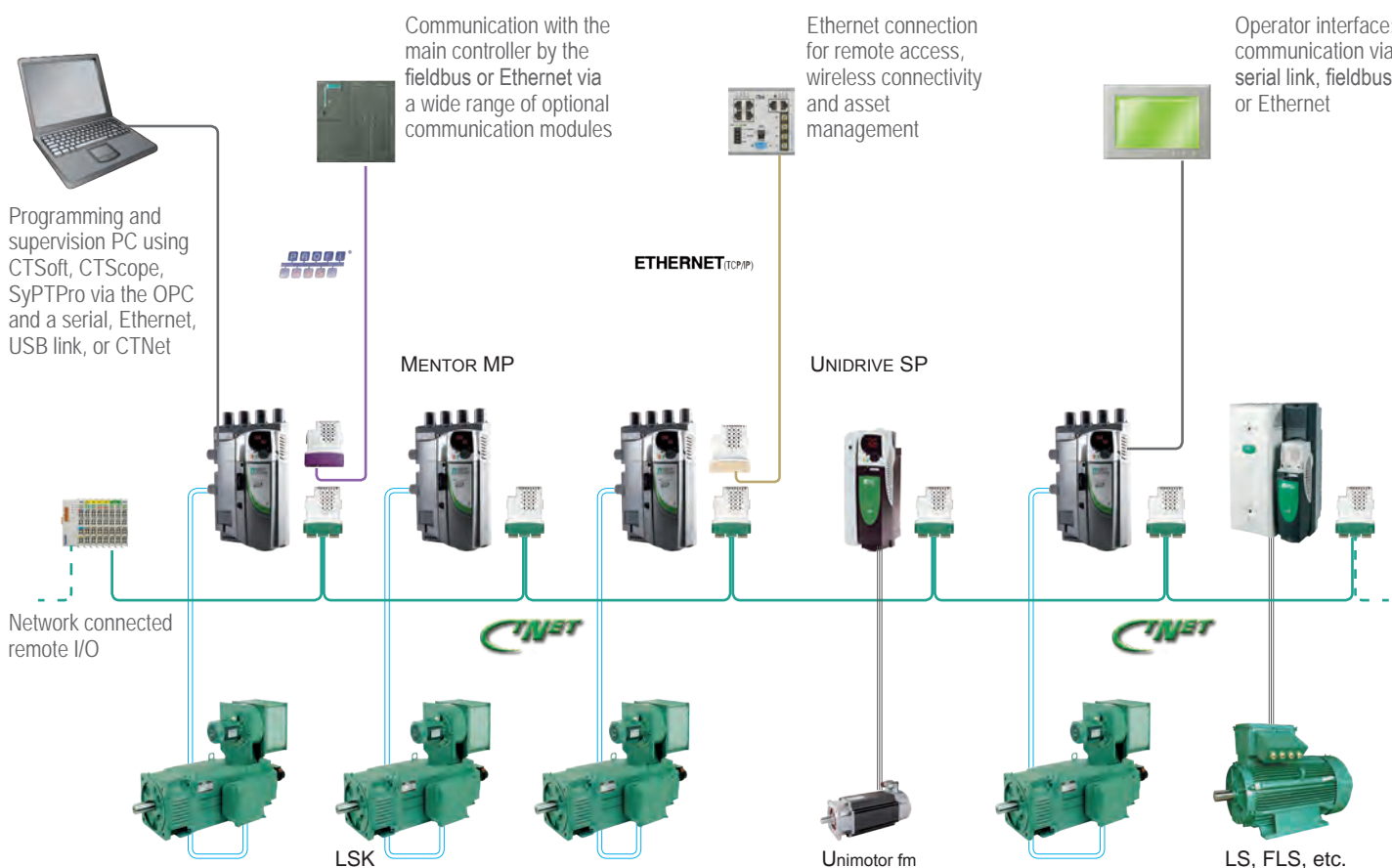
#### ■ SM-Applications Lite V2



*Designed to integrate more intelligence and ensure complete autonomy, for decentralised or centralised applications, via I/O or a fieldbus. Programming of the simple on/off sequence with a single drive, or more complex machines. Easily developed with SyPTLite or SyPTPro.*

*\* CTNet: High-speed inter-drive proprietary network, optimised for an architecture of Leroy-Somer intelligent drives offering highly flexible communication between the axes.*

## Communicating, flexible architecture



	External PLC*	SM-Applications Lite V2	SM-Applications Plus
Protection of intellectual property	✓	✓	✓
SyPTLite programming		✓	
SyPTPro programming		✓	✓
Multitask environment		✓	✓
Motion Control capability		✓	✓
CTNet drive to drive network			✓
4-wire RS 485 serial link			✓
High-speed I/O 24 V <sub>DC</sub>			✓

\*: **Programmable Logic Controller**

**An unrivalled offer**

Centralised control systems

Execution controller



PLC



PC



Drive and operator interface programming

Operator interface



Software pack



MP-Keypad



SM-Keypad



Standard

Smartcard



Input/Output

Standard

Options

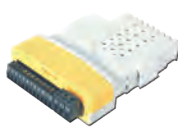


7 logic I/O  
5 analogue I/O  
2 relay outputs

SM-I/O 32



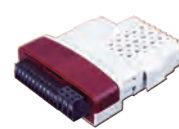
SM-I/O Plus



SM-I/O Lite



SM-I/O Timer



Remote I/O



Field control

Options

Standard

2nd Mentor MP



in field mode greater than 25 A  
Managed by a second drive

FXMP25



Field control up to 25 A

- Motors with reduced excitation voltage
- Reduction in flux faster than the winding time constant (eg.: machine tool spindle, etc)

Built-in excitation control



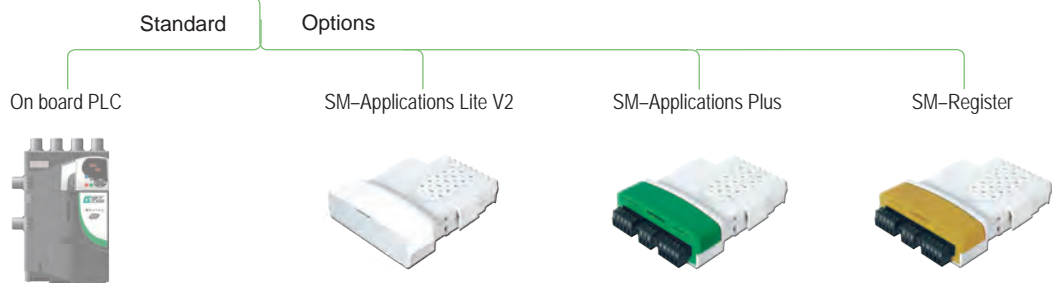
8 or 20 A depending on rating

Control mode (open loop or closed loop)

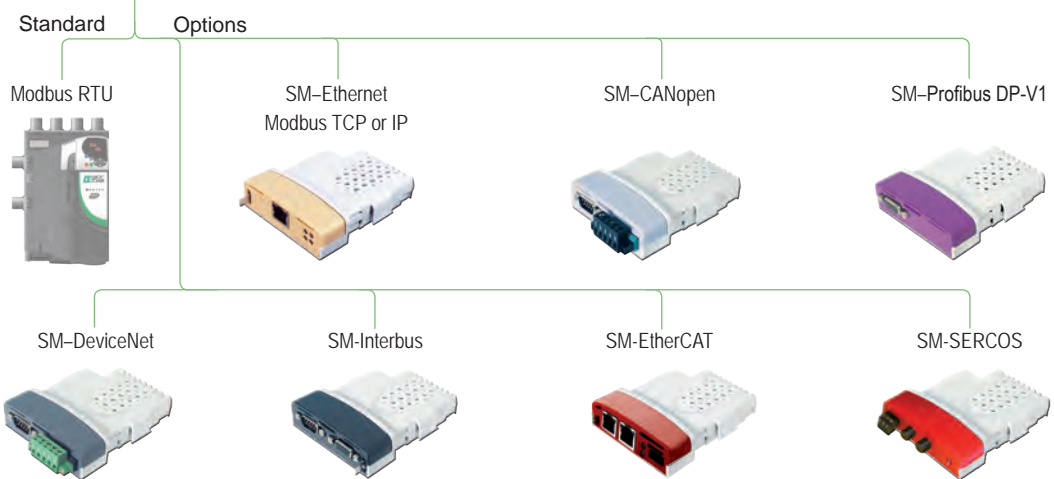
- Calculated speed
- Tacho feedback
- Encoder feedback



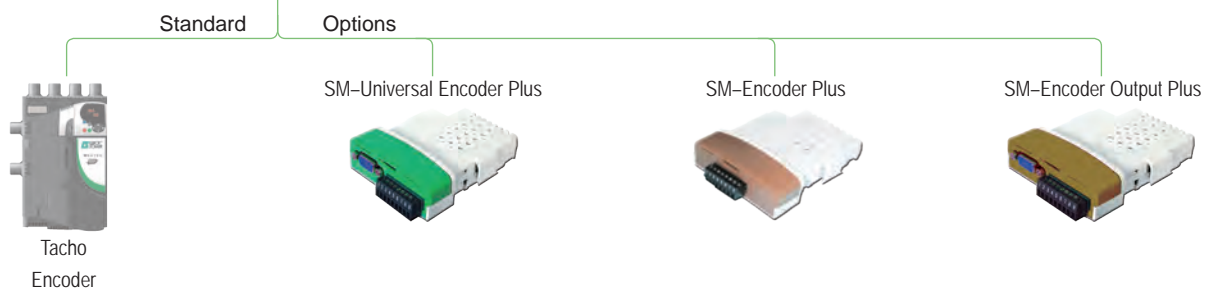
### Applications with Automation function



### Communication

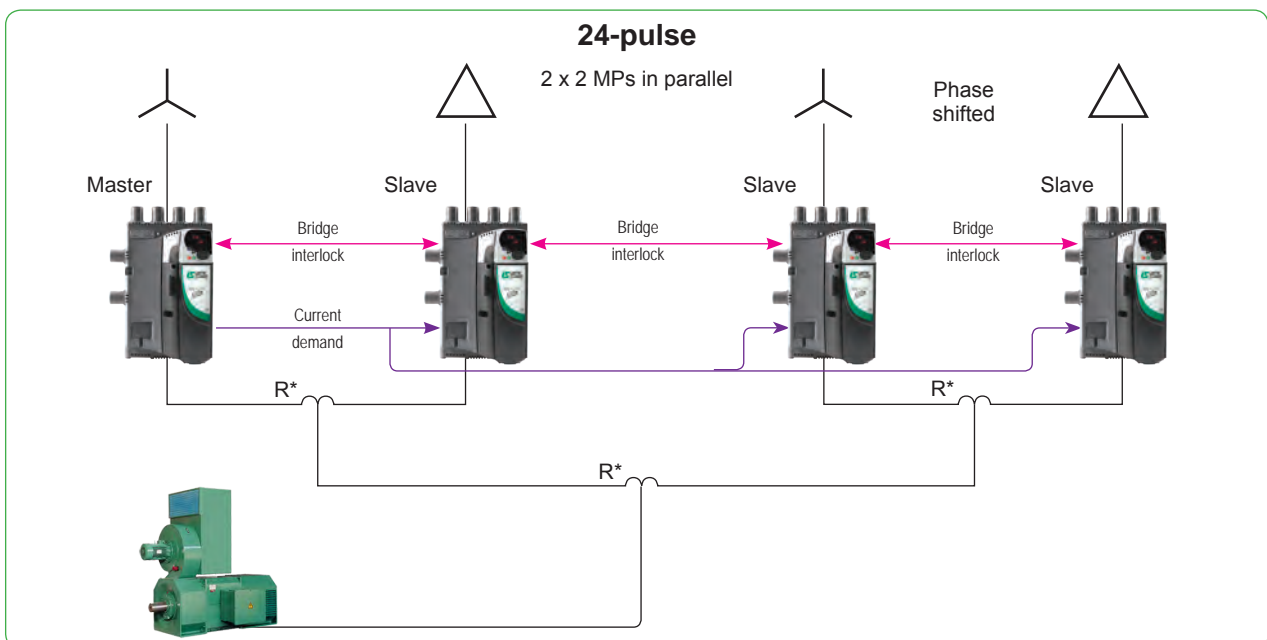
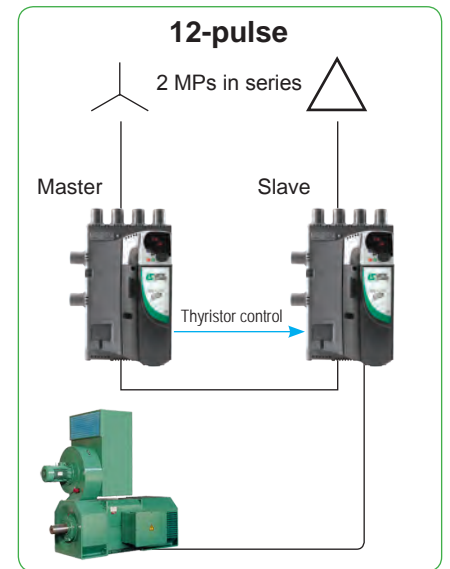
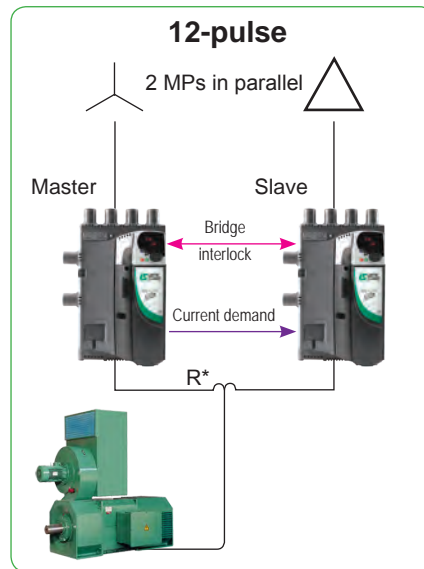
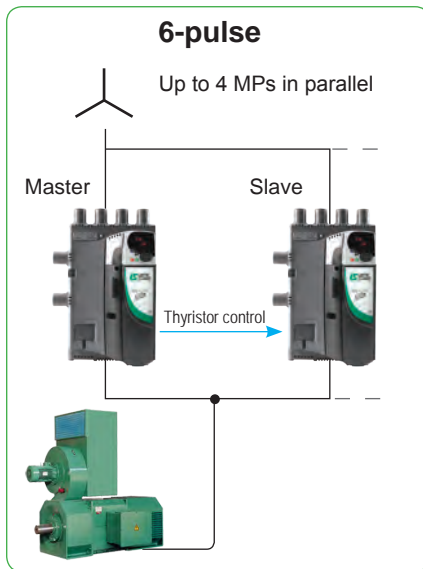


### Speed feedback



## High-power configurations: 2100 to 7400 A

The **Mentor MP** drive is equipped with standard functions suitable for higher armature currents and voltages or reduced harmonics.



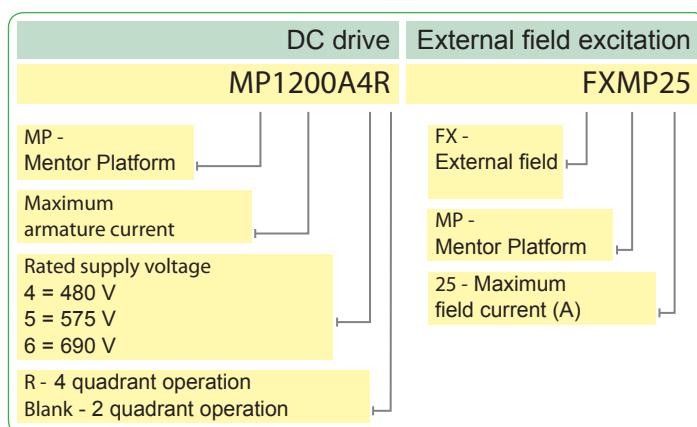
\* R: Inter bridge reactor

## Main characteristics

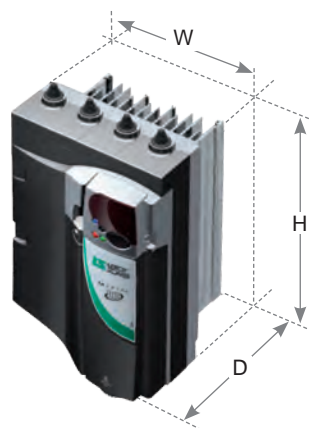
### Conformance

- Maximum humidity (non-condensing): 95% at 40°C
- Ambient temperature: -15°C to +40°C, 55°C with derating
- Altitude: 0 to 3000 m, with derating of 1% per 100 m between 1000 and 3000 m
- Vibration: Tested in accordance with IEC 60068-2-64
- Mechanical shocks: Tested in accordance with IEC 60068-2-29
- Storage temperature: -40°C to +70°C
- Electromagnetic immunity complies with EN 61800-3 and EN 61000-6-2
- Notch immunity to IEC 60146-1-1 class A (semi-conductors)
- Electrical safety: IEC 61800-5-1
- I/O: IEC 61131-2
- Ingress protection: EN 60529
- UL508C
- EMC: EN 61000-6-4 with optional filters (specifications on request)

### Designation

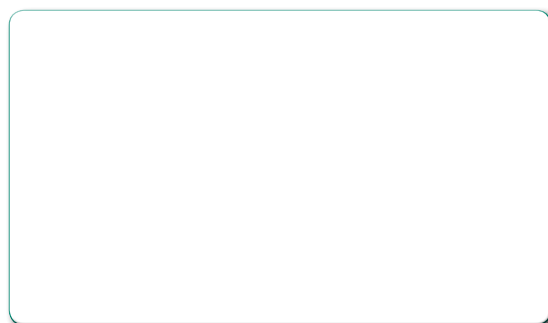


Note: When ordering, you should also indicate the keypad option required. Please refer to page 8.



Model		Size	Armature current (A)	Field current (A)	Width (W)	Height (H)	Depth (D)	Quadrants of Operation	
MP25A4(R)	MP25A5(R)	1A	25	8	250 mm	370 mm	222 mm	2 and 4	
MP45A4(R)	MP45A5(R)		45						
MP75A4(R)	MP75A5(R)		75						
MP105A4(R)	MP105A5(R)	1B	105		250 mm	370 mm	251 mm		2 and 4
MP155A4(R)	MP155A5(R)		155						
MP210A4(R)	MP210A5(R)		210						
MP350A4(R)	MP350A6(R)	2A	350	20	450 mm	423 mm	301 mm	2 and 4	
MP420A4(R)	-		420						
-	MP470A6(R)		470*						
MP550A4(R)	-	2B	550		450 mm	423 mm	301 mm		2 and 4
MP700A4(R)	MP700A6(R)		700						
-	MP825A6(R)		825*						
MP900A4(R)	-	2C	900	450 mm	1045 mm	510 mm	2		
MP1200A4	MP1200A6		1200						
MP1850A4	MP1850A6		1850						
MP1200A4R	MP1200A6R	2D	1200	450 mm	1505 mm	510 mm		4	
MP1850A4R	MP1850A6R		1850						

\* 150% overload at 35°C



MOTEURS LEROY-SOMER 16015 ANGOULEME CEDEX-FRANCE  
338 567 258 RCS ANGOULEME

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