

MENTOR MP



The Ultimate DC Drive

As a world leader in DC drive technology, our innovative products are used in the most demanding applications requiring performance, reliability & energy efficiency.

Mentor MP integrates the control platform from the world's leading intelligent AC drive technology making it the most advanced DC drive available. With optimum performance and flexible system interfacing capability, the Mentor MP drive allows you to maximize motor performance & enhance system reliability. Interface digitally with modern control equipment using Ethernet & fieldbus networks. Mentor MP power connection positions are compatible with Mentor II to simplify retrofit.

Benefits:

- Easy to set-up and commission
- Drive intelligence and system integration
- Machine communications flexibility

KEY FUNCTIONS

| Function | | Function | |
|--|------------|---------------------------------------|-----|
| Jog | ✓ | Supply loss detection | ✓ |
| Bi-polar reference | ✓ | Low voltage operation | ✓ |
| Pre-set speeds | 8 | Analogue input control | ✓ |
| Preset timer | ✓ | Analogue output control | ✓ |
| Skip speed | 3 | Temperature monitoring | ✓ |
| Skip speed bands | ✓ | Digital input control | ✓ |
| Local/Remote | ✓ | Digital output control | ✓ |
| S-Ramp | ✓ | Relay control | ✓ |
| Acceleration rates | 8 | Mechanical brake controller | ✓ |
| Deceleration rates | 8 | Keypad button assignment | ✓ |
| Pulse train frequency reference | 0 - 500kHz | Motorised potentiometer | ✓ |
| Torque reference | ✓ | Logic function control | ✓ |
| Control mode: speed | ✓ | Timer function control | ✓ |
| Control mode: torque | ✓ | Limit switch control | ✓ |
| Control mode: torque control with speed override | ✓ | Variable selector | ✓ |
| Control mode: winder (torque control) | ✓ | PID Control | ✓ |
| Armature voltage drop compensation | ✓ | Energy meter | ✓ |
| Inertia compensation | ✓ | Trip time stamping | ✓ |
| Auto-tune static | ✓ | Trip logging | 8 |
| Auto-tune rotating | ✓ | Run time log | ✓ |
| Autotune continuous | ✓ | Parallel 6, 12 and 24 pulse operation | ✓ |
| Catch a spinning motor | ✓ | Control word control | ✓ |
| Stop mode: Ramp | ✓ | Auto reset | ✓ |
| Stop mode: Coast | ✓ | Cloning | ✓ |
| Stop mode: Fast ramp | ✓ | On-board PLC | 6kB |
| Regen braking (four quadrant drives) | ✓ | Additional application parameters | 64 |
| Programmable braking | ✓ | Second motor set-up | ✓ |
| Field economy control | ✓ | Speed feedback via options | ✓ |
| Field weakening control mode | ✓ | Field voltage control mode | ✓ |
| DC contactor control | ✓ | Position controller | ✓ |

SPECIFICATION

| Mentor MP | |
|---------------------------------------|---|
| Items supplied with the drive | The drive is supplied with a Short Form Guide, a SMARTCARD, safety information, grounding bracket, power terminal shrouds (for sizes 1, 2A and 2B) and mounting feet brackets for size 1 drives. |
| Storage temperature | -40°C to 55°C, -40°F to 131°F |
| Operating temperature without de-rate | 0°C to 40°C, 32°F to 104°F |
| Operating temperature with de-rate | 0°C to 55°C, 32°F to 131°F |
| Supply requirements | 480 V: 24 V to 480 V -20 % +10 % 575 V: 500 V to 575 V -10 % +10 % 690 V: 500 V to 690 V -10 % +10 % |
| Switching frequency range | N/A |
| Approvals | CE (European Union), cUL Listed (USA and Canada), KC (Korea), RCM (Australia/ New Zealand), EAC (Russian Customs Union) |
| Product safety standard | EN61800-5-1 |
| Functional safety (Dual STO function) | N/A |
| Altitude | 1000m – No de-rate. 1000m to 3000m - 1% de-rate/100m |
| Humidity | 95% Non-condensing at 40°C |
| Pollution | Degree 2. Dry, non-conducting pollution only |
| IP Rating | Frame 1 – IP20 Frame 2A and 2B – IP10 Frame 2C and 2D – IP00 |
| Vibration | Shock test: Referenced standard: BS EN 60068-2-27 Bump Test: Referenced standard: IEC 60068-2-29 Random vibration test: Referenced standard: IEC 60068-2-64 Sinusoidal vibration test: Referenced standard: IEC 60068-2-6, EN 61800-5-1:2007 |
| Mounting methods | Surface mount |
| Output frequency/speed range | N/A |
| Braking | Regen braking with four quadrant drives. |
| Operating modes | Estimated speed (open loop), tacho feedback (closed loop) and encoder feedback (closed loop) |
| Overload capability | 150% for 30seconds |

| | |
|----------------------------------|--|
| Overvoltage category | IEC 60664-1. Evaluated for OVC III. |
| Corrosive environments | Referenced standard: EN 50178:1998: Table A2 Referenced standard: IEC 60721-3-3 Class 3C2 |
| Immunity Compliance | IEC61800-3, IEC 61000-4-2, IEC 61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEC61000-4-11, IEC61000-6-1, IEC 61000-6-2. |
| Emission compliance | Capable of meeting the requirements of Equipment Category C3 without external filters or line reactors. Capable of meeting the requirements of Equipment Category C2 when installed with the recommended filters and line reactors. IEC61800-3, IEC61800-6-3, IEC61000-6-4 |
| Cooling | Forced cooled |
| Safe Torque off | N/A |
| Communications* | RS485, EtherCAT, PROFIBUS, Ethernet, DeviceNET, CANopen, Interbus |
| Control I/O | 3 x Analogue input, 2 x Analog output, 3 x Digital I/O programmable, 4 x Digital input, 2 x NO relay 250Vac Max., 6 x 0V common, 1 x 24V user output, 1 x 10V user output, 1 x 24V external input. Additional I/O available with SM-I/O option modules. |
| Resolution/Accuracy | Analogue input 1: 14 bits plus sign, Analogue input 2 and 3: 10 bits plus sign. Analog output: 10 bits plus sign. Speed control typically 5% in estimated speed mode and dependent on the feedback device in closed loop mode. Current control typical 5%. |
| On-Board user program capability | 6kB |
| Keypad (LCD) | LED keypad, LCD keypad |
| PC Tools | 'CTSoft' commissioning and cloning tool |
| Warranty | 2 years |
| Supported options | RS485-Communications lead, SM-EtherCAT, SM-PROFIBUS, SM-Ethernet, SM-DeviceNET, SM-CANopen, SM-I/O Plus, SM-I/O 32, SM-I/O Lite, SM-I/O Timer, SM-I/O PELV, SM-I/O 120V, SM-I/O 24V Protected, SM-Universal Encoder Plus, SM-Encoder Plus, SM-Encoder Output Plus, Single ended encoder interface, SM-Applications Plus, SM-Applications Lite V2 SM-Register, FXMP25 (25A field controller). |
| Accessories | External EMC filters, Grounding bracket (supplied with the drive) |

Documentation & Downloads

Product documentation and PC tools available for download from:

www.controltechniques.com/support



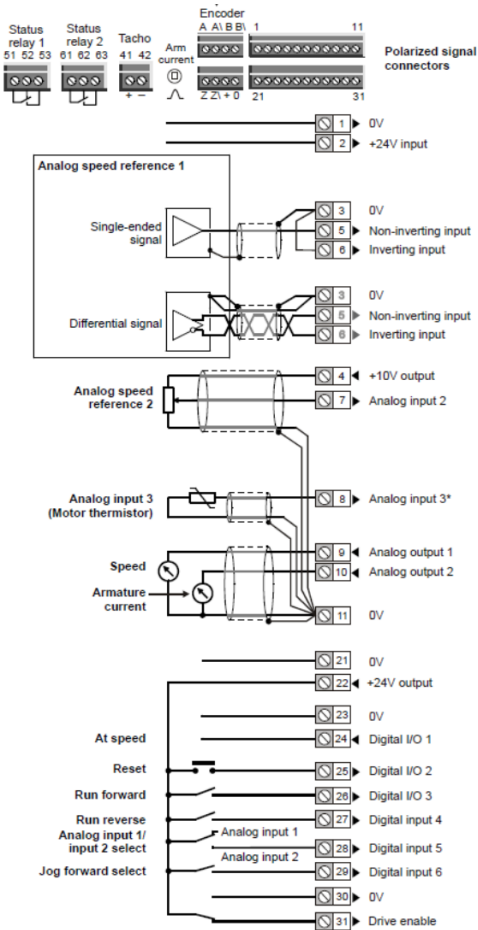
DIMENSIONS



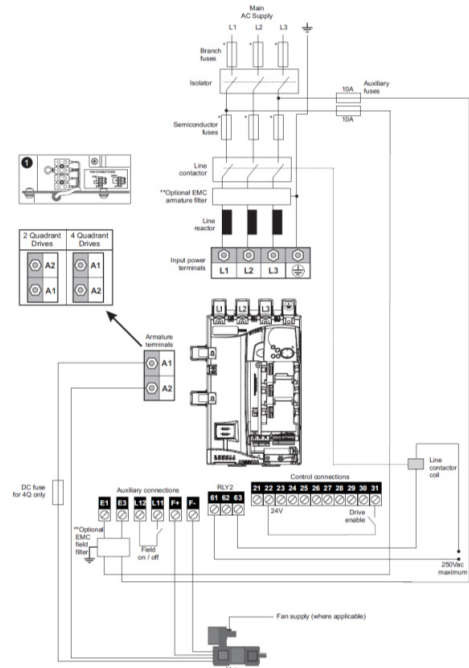
| Frame Size | Overall Dimensions | | | | | | Mounting Dimensions | | | | Mounting Hole Diameter | | Weight | |
|------------|--------------------|-----|-----|-------|-------|-------|---------------------|-----|-------|-------|------------------------|------|--------|-------|
| | mm | | | in | | | mm | | in | | mm | in | kg | lb |
| | H | W | D | H | W | D | H | W | H | W | | | | |
| 1A | 444 | 293 | 222 | 17.48 | 11.54 | 8.74 | 380 | 170 | 14.96 | 6.69 | 6.6 | 0.26 | 10.5 | 23.1 |
| 1B | 444 | 293 | 251 | 17.48 | 11.54 | 9.88 | 380 | 170 | 14.96 | 6.69 | 6.6 | 0.26 | 13 | 28.7 |
| 2A | 640 | 495 | 301 | 25.20 | 19.49 | 11.85 | 225 | 472 | 8.86 | 18.58 | 9 | 0.35 | 38 | 83.8 |
| 2B | 640 | 495 | 301 | 25.20 | 19.49 | 11.85 | 225 | 472 | 8.86 | 18.58 | 9 | 0.35 | 46 | 101.4 |
| 2C | 1050 | 555 | 611 | 41.43 | 21.85 | 24.06 | 605 | 394 | 23.82 | 15.51 | 11 | 0.43 | 100 | 220.5 |
| 2D | 1510 | 555 | 611 | 59.45 | 21.85 | 24.06 | 1065 | 394 | 41.93 | 15.51 | 11 | 0.43 | 138 | 304.2 |

CONNECTIONS

Default Control Connections



Recommended Power Connections



PART NUMBERS

MP
Model:
MP

-
Frame Size:
N/A

4
Voltage Rating:
4=480V (24 V to 480 V -20 % +10 %)
5=575V (500 V to 575 V -10 % +10 %)
6=690 V (500 V to 690 V -10 % +10 %)

1200A
Current Rating
Continuous armature
current rating (A)

R
Drive Format
Blank = two quadrant
R = four quadrant

MODEL NUMBER AND RATINGS

| Model Number | Frame Size | Max. armature current | | Motor power | | Max. field current |
|--------------|------------|-----------------------|------|-------------|----|--------------------|
| | | A | kW | HP | A | |
| MP25A4(R) | 1A | 25 | 9 | 15 | 8 | |
| MP45A4(R) | 1A | 45 | 15 | 27 | 8 | |
| MP75A4(R) | 1A | 75 | 27 | 45 | 8 | |
| MP105A4(R) | 1B | 105 | 37.5 | 60 | 8 | |
| MP155A4(R) | 1B | 155 | 56 | 90 | 8 | |
| MP210A4(R) | 1B | 210 | 75 | 125 | 8 | |
| MP350A4(R) | 2A | 350 | 125 | 200 | 20 | |
| MP420A4(R) | 2A | 420 | 150 | 250 | 20 | |
| MP550A4(R) | 2A | 550 | 200 | 300 | 20 | |
| MP700A4(R) | 2B | 700 | 250 | 400 | 20 | |
| MP825A4(R) | 2B | 825 | 300 | 500 | 20 | |
| MP900A4(R) | 2B | 900 | 340 | 550 | 20 | |
| MP1200A4(R) | 2C/D | 1200 | 450 | 750 | 20 | |
| MP1850A4(R) | 2C/D | 1850 | 700 | 1150 | 20 | |
| MP25A5(R) | 1A | 25 | 14 | 18 | 8 | |
| MP45A5(R) | 1A | 45 | 25 | 33 | 8 | |
| MP75A5(R) | 1A | 75 | 42 | 56 | 8 | |
| MP105A5(R) | 1B | 105 | 58 | 78 | 8 | |
| MP155A5(R) | 1B | 155 | 88 | 115 | 8 | |
| MP210A5(R) | 1B | 210 | 120 | 160 | 8 | |
| MP350A5(R) | 2A | 350 | 195 | 260 | 20 | |
| MP470A5(R) | 2A | 470 | 265 | 355 | 20 | |
| MP700A5(R) | 2B | 700 | 395 | 530 | 20 | |
| MP825A5(R) | 2B | 825 | 465 | 620 | 20 | |
| MP1200A5(R) | 2C/D | 1200 | 680 | 910 | 20 | |
| MP1850A5(R) | 2C/D | 1850 | 1045 | 1400 | 20 | |
| MP350A6(R) | 2A | 350 | 240 | 320 | 20 | |
| MP470A6(R) | 2A | 470 | 320 | 425 | 20 | |
| MP700A6(R) | 2B | 700 | 480 | 640 | 20 | |
| MP825A6(R) | 2B | 825 | 650 | 850 | 20 | |
| MP1200A6(R) | 2C/D | 1200 | 850 | 1150 | 20 | |
| MP1850A6(R) | 2C/D | 1850 | 1300 | 1750 | 20 | |



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