

M SERIES OUTPUT MODULES



- AC Modules have High Current Thyristors with 100 Amp Surge Capability
- Plug into mounting boards for 0.6" modules
- Zero or Random Turn-On Available in AC Modules
- 4kV Optical isolation (1500 VAC Isolation for FET DC Output Modules)
- UL Recognized, CSA Certified, CE Compliant
- Industry standard packaging and Color Coding
Black (AC Output) Red (DC Output)

SPECIFICATIONS (1)

Input

| Part Number | M-OAC5 | M-OAC5A | M-OAC5AH | M-OAC5AR | M-OAC5R |
|-------------------------|--------|---------|----------|----------|---------|
| Nominal Voltage VDC | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Voltage VDC (2) | 2.75 | 2.75 | 2.75 | 2.75 | 2.75 |
| Maximum Voltage VDC | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 20 | 20 | 20 | 20 | 20 |
| Resistance (4) | 220 | 220 | 220 | 220 | 220 |

Output

| | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Nominal Line Voltage | 120 VAC | 240 VAC | 240 VAC | 240 VAC | 120 VAC |
| Minimum Line Voltage | 12 VAC | 24 VAC | 24 VAC | 24 VAC | 12 VAC |
| Maximum Line Voltage | 140 VAC | 280 VAC | 280 VAC | 280 VAC | 140 VAC |
| Max Off-State Voltage (5) | 400 Vpeak | 600 Vpeak | 600 Vpeak | 600 Vpeak | 400 Vpeak |
| Max Off-State Leakage (6) | 0.1mArms | 0.1mArms | 0.1mArms | 0.1mArms | 0.1mArms |
| Static Off-State dv/dt (7) | 200 V/usec | 200 V/usec | 200 V/usec | 200 V/usec | 200 V/usec |
| Maximum Rated On-State Current (8) | 3.5 Arms | 3.5 Arms | 5.0 Arms | 3.5 Arms | 3.5 Arms |
| Minimum On-State Current | 50 mArms | 50 mArms | 50 mArms | 50 mArms | 50 mArms |
| Max Surge Current (9) | 100 Apeak | 100 Apeak | 100 Apeak | 100 Apeak | 100 Apeak |
| On-State Voltage Drop or Resistance (10) | 1.6 V | 1.6 V | 1.6 V | 1.6 V | 1.6 V |
| Maximum Turn-On Time [msec] (13) | 8.33 | 8.33 | 8.33 | 0.1 | 0.1 |
| Maximum Turn-Off Time [msec] (13) | 8.33 | 8.33 | 8.33 | 8.33 | 8.33 |
| Input/Output Isolation Voltage (14) | 4000 | 4000 | 4000 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | 47 to 63 | 47 to 63 | 47 to 63 | 47 to 63 | 47 to 63 |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |

SPECIFICATIONS (1)

Input

| Part Number | M-OAC24 | M-OAC24A | M-ODC5 | M-ODC5A | M-ODC5F |
|-------------------------|---------|----------|--------|---------|---------|
| Nominal Voltage VDC | 24 | 24 | 5.0 | 5.0 | 5.0 |
| Minimum Voltage VDC (2) | 18 | 18 | 2.75 | 2.75 | 2.75 |
| Maximum Voltage VDC | 32 | 32 | 8.0 | 8.0 | 8.0 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 13 | 13 | 18 | 18 | 18 |
| Resistance (4) | 2000 | 2000 | 250 | 250 | 250 |

Output

| | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Nominal Line Voltage | 120 VAC | 240 VAC | 5-48 VDC | 5-150 VDC | 5-48 VDC |
| Minimum Line Voltage | 12 VAC | 24 VAC | 3.0 VDC | 3.0 VDC | 3.0 VDC |
| Maximum Line Voltage | 140 VAC | 280 VAC | 60 VDC | 250 VDC | 60 VDC |
| Max Off-State Voltage (5) | 400 Vpeak | 600 Vpeak | 60 VDC | 250 VDC | 60 VDC |
| Max Off-State Leakage (6) | 0.1mArms | 0.1mArms | 10 uA | 10 uA | 10 uA |
| Static Off-State dv/dt (7) | 200 V/usec | 200 V/usec | N/A | N/A | N/A |
| Maximum Rated On-State Current (8) | 3.5 Arms | 3.5 Arms | 3.0 A | 1.0 A | 3.0 A |
| Minimum On-State Current | 50 mA | 50 mA | 10 mA | 10 mA | 10 mA |
| Max Surge Current (9) | 100 Apeak | 100 Apeak | 5.0 A | 5.0 A | 5.0 A |
| On-State Voltage Drop or Resistance (10) | 1.6 V | 1.6 V | 1.5 V | 1.5 V | 1.5 V |
| Maximum Turn-On Time [msec] (13) | 8.33 | 8.33 | 0.1 | 0.1 | 0.025 |
| Maximum Turn-Off Time [msec] (13) | 8.33 | 8.33 | 0.75 | 0.75 | 0.05 |
| Input/Output Isolation Voltage (14) | 4000 | 4000 | 4000 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | 47 to 63 | 47 to 63 | DC | DC | DC |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |

SPECIFICATIONS (1)

Input

| Part Number | M-ODC5MA | M-ODC5MC | M-ODC5ML | M-ODC24 | M-ODC24A |
|-------------------------|----------|----------|----------|---------|----------|
| Nominal Voltage VDC | 5.0 | 5.0 | 5.0 | 24 | 24 |
| Minimum Voltage VDC (2) | 2.75 | 2.75 | 2.75 | 18 | 18 |
| Maximum Voltage VDC | 8.0 | 8.0 | 8.0 | 32 | 32 |
| Drop-out Voltage | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Maximum Current (3) | 18 | 18 | 18 | 13 | 13 |
| Resistance (4) | 250 | 250 | 250 | 2000 | 2000 |

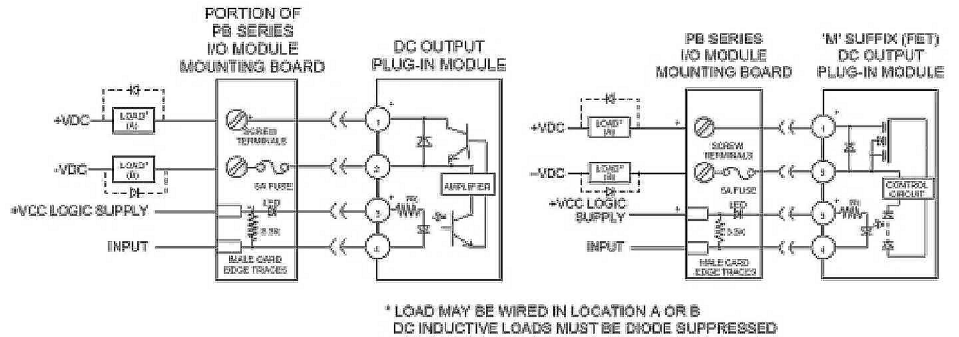
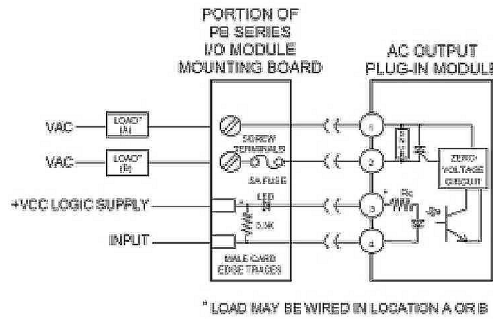
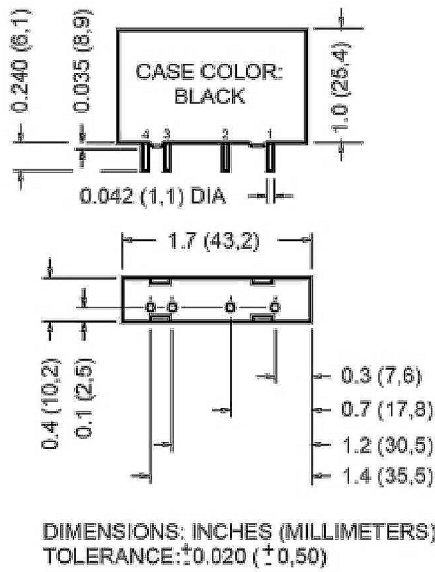
Output

| | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Nominal Line Voltage | 5-150 VDC | 5-90 VDC | 5-48 VDC | 5-48 VDC | 5-150 VDC |
| Minimum Line Voltage | 1.0 VDC | 1.0 VDC | 50 VDC | 60 VDC | 250 VDC |
| Maximum Line Voltage | 200 VDC | 100 VDC | 50 VDC | 60 VDC | 250 VDC |
| Max Off-State Voltage (5) | 200 VDC | 100 VDC | 50 VDC | 60 VDC | 250 VDC |
| Max Off-State Leakage (6) | 10 uA | 10 uA | 10 uA | 10 uA | 10 uA |
| Static Off-State dv/dt (7) | N/A | N/A | N/A | N/A | N/A |
| Maximum Rated On-State Current (8) | 3.0 A | 5.0 A | 1.0 A | 3.0 A | 1.0 A |
| Minimum On-State Current | 1.0 mA | 1.0 mA | 10 mA | 10 mA | 10 mA |
| Max Surge Current (9) | 10 A | 10 A | 10 A | 5.0 A | 5.0 A |
| On-State Voltage Drop or Resistance (10) | 0.25 Ohms | 0.10 Ohms | 0.05 Ohms | 1.5 V | 1.5 V |
| Maximum Turn-On Time [msec] (13) | 1.0 | 1.0 | 1.0 | 0.1 | 0.1 |
| Maximum Turn-Off Time [msec] (13) | 0.05 | 0.05 | 0.05 | 0.75 | 0.75 |
| Input/Output Isolation Voltage (14) | 1500 | 1500 | 1500 | 4000 | 4000 |
| Input/Output Capacitance | 8 | 8 | 8 | 8 | 8 |
| Operating Temperature Range | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C | -30 to 80°C |
| Storage Temperature Range | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C | -40 to 80°C |
| Line Frequency Range | DC | DC | DC | DC | DC |
| Weight | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) | 1.1 oz. (31.2g) |

General Notes:

- (1) Specifications apply to an ambient temperature of -30 to 80 °C unless otherwise noted.
- (2) Without external LED status indicator. Add 1.7 volts for external LED if utilized.
- (3) At nominal input voltage, without external LED status indicator.
- (4) +/-10% at 25°C.
- (5) Maximum 1 minute duration for OAC modules when applied as a DC voltage rather than a peak AC voltage.
- (6) At maximum line voltage, 25°C for OAC modules, and 80°C for ODC modules.
- (7) Minimum DV/DT per EIA/NARM RS433, method RS397, DV/DT ratings do not apply to DC output models.
- (8) At 40°C, derate OAC modules 58 mA/°C to 80°C, derate ODC, ODCxMC and ODCxML modules 50 mA/°C to 80°C. CSA rating of OAC modules is 3.0 Arms at 40°C.
- (9) At 25°C for 1 second maximum duration: 1 AC cycle for AC modules, 1 second for DC modules.
- (10) At maximum rated on-state current and 25°C.
- (11) At maximum line voltage, maximum rated output current, nominal input voltage and 25°C. Switching speed of OAC modules is based upon 60 Hz line frequency.
- (12) At 25°C for 1 second maximum duration.
- (13) 1/3 H.P. at 240 VAC, 1/8 H.P. at 120 VAC.

MECHANICAL SPECIFICATIONS



AGENCY APPROVALS

UL E46203
CSA 38595
CE