

Limit Alarms M-PAC

POTENTIOMETER INPUT LIMIT ALARM

MODEL MP1800-1823

MODEL & SUFFIX CODE SELECTION

MODEL _____ MP18□□-0-□/□

INPUT TYPE _____

8 : Potentiometer

RELAY CONTACT OUTPUT _____

0 : Single (Hi) trip, non-latching
 1 : Single (Hi) trip, latching
 2 : Dual (Hi/Lo) trip, non-latching

SETPOINT CONTROL _____

0 : Front-accessed three-turn screwdriver adjust.
 2 : Remote dial connections (total resistance 1k – 100kΩ)
 3 : DC programmable (0 – 1V)

INPUT RESISTANCE _____

0 : Total resistance 100Ω – 100kΩ

POWER INPUT _____

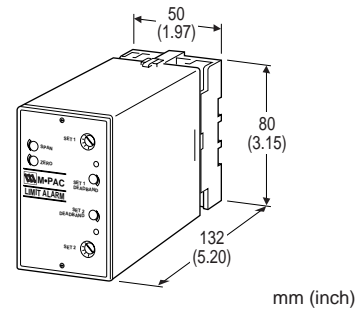
F : 120V AC
 J : 240V AC
 R : 24V DC
 S : 12V DC

OPTIONS _____

H : Latching operation for dual trip (182X only);
 Reset at power off (5 seconds min.)
 R : Reversed relay sense
 T : Transmitter output (0 – 1V DC)
 V : Relay drive voltage output
 X : Lo-trip sense for single trip; Lo/Lo for dual trip
 Y : Hi/Hi-trip sense for dual trip (182X only)

ORDERING INFORMATION

Specify code number. (e.g. MP1800-0-F/T/V)



Functions & Features

- Accepting potentiometer resistance and providing relay contact closure(s) at a preset input level
- Single, latching or dual setpoint
- Failsafe operation available
- Deadband adjustable from 1 to 100%
- Indicator LED provided

Typical Applications

- Annunciator
- Various alarm applications

GENERAL SPECIFICATIONS

Construction: plug-in

Connection: M3.5 screw terminals on base socket

Housing material: flame-resistant resin (black)

Isolation: input to output to power (non-isolated between I/O with Option V)

Zero/span adjustments: multi-turn screwdriver (front); 0 – 50% of total resistance for zero; 50 – 100% for span

Setpoint adjustments: front accessed three-turn screwdriver, remote dial potentiometer or DC input

Deadband adjustments: front accessed single-turn screwdriver; 1 – 100%

Front LEDs: red lights turn on at a tripped condition

Power ON timer: relays de-energized for approx. 2 seconds after power is turned on.

INPUT & OUTPUT

■ **INPUT:** potentiometer; 100Ω – 100kΩ

■ **REMOTE SETPOINT INPUT**

MP18X2: potentiometer; any value of 1k – 100kΩ;
excitation 4V

MP18X3: 0 – 1V DC

■ **RELAY CONTACT OUTPUT**

- **Single/Latching:** isolated DPDT relay; de-energized at trip
- **Dual:** isolated SPDT relay; energized at trip

Rating: 120V AC @3A (cosφ=1)
30V DC @3A (resistive load)

Relay life

Electrical: 10⁵ cycles

Mechanical: 10⁷ cycles

For maximum relay life with inductive loads, external protection is recommended.

■ **VOLTAGE OUTPUT (Option V):** 24V DC average;
Drives 1.2kΩ or greater coil impedance

■ **TRANSMITTER OUTPUT (Option T):** 0 – 1V DC;
1mA max. (setpoint and process input)

INSTALLATION

Power input

AC: rating ±10%, 50/60 ±2 Hz, approx. 2VA

DC: rating ±10% (ripple 10% p-p max.)
80mA at 24V, 160mA at 12V

Operating temperature: -5 to +60°C (23 to 140°F)

Storage temperature: -20 to +85°C (-5 to +185°F)

Operating humidity: 30 to 90% RH (non-condensing)

Mounting: surface (DIN rail available for 11-pin base)

Dimensions

11-pin base: W50×H80×D132 mm
(1.97"×3.15"×5.20")

See General Spec. Sheet Figure A.

20-pin base: W80×H101×D136 mm
(3.15"×3.98"×5.35")

See General Spec. Sheet Figure B.

Weight: 400 g (0.88 lbs)

PERFORMANCE in percentage of span

Repeatability: ±0.2%

Temp. coefficient: ±0.05%/°C (±0.027%/°F)

Response time: 100 milliseconds, typical

Common mode rejection

60 Hz: greater than 120 dB

DC: greater than 140 dB

Line voltage effect: ±0.1% over voltage range

Insulation resistance: ≥100MΩ with 500V DC

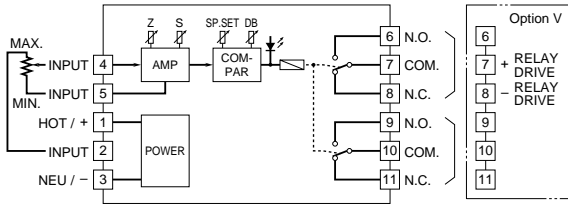
Dielectric strength: 1000V AC @1 minute

(input to output to power)

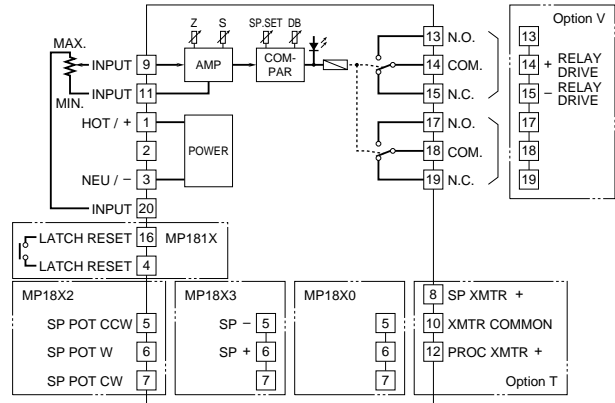
2000V AC @1 minute (output to ground)

BLOCK DIAGRAM

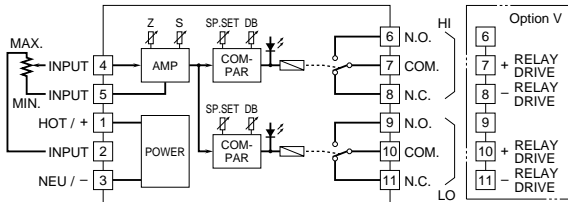
■ SINGLE / LATCHING OUTPUT •11-pin Base



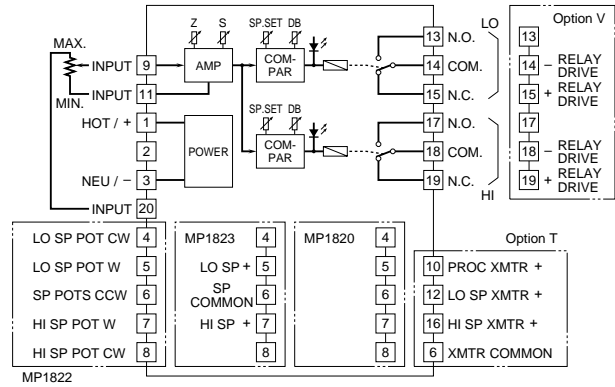
•20-pin Base



■ DUAL OUTPUT •11-pin Base



•20-pin Base



TERMINAL ASSIGNMENT

■SINGLE OUTPUT

| PIN | MP1800 | MP1800 w/Option T | MP1802 | MP1802 w/Option T | MP1803 | MP1803 w/Option T |
|-----|----------------|----------------------|----------------|----------------------|----------------|----------------------|
| 1 | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) |
| 2 | INPUT Max. CW | No Connection | No Connection | No Connection | No Connection | No Connection |
| 3 | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) |
| 4 | INPUT W | No Connection | No Connection | No Connection | No Connection | No Connection |
| 5 | INPUT Min. CCW | No Connection | SP Pot CCW | SP Pot CCW | SP - | SP - |
| 6 | N.O. | No Connection | SP Pot W | SP Pot W | SP + | SP + |
| 7 | COM * | No Connection | SP Pot CW | SP Pot CW | No Connection | No Connection |
| 8 | N.C. * | SP Xmtr + | No Connection | SP Xmtr + | No Connection | SP Xmtr + |
| 9 | N.O. | INPUT W | INPUT W | INPUT W | INPUT W | INPUT W |
| 10 | COM | Xmtr Common | No Connection | Xmtr Common | No Connection | Xmtr Common |
| 11 | N.C. | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW |
| 12 | | No Connection | Proc Xmtr + | No Connection | Proc Xmtr + | |
| 13 | | N.O. | N.O. | N.O. | N.O. | N.O. |
| 14 | | COM * | COM * | COM * | COM * | COM * |
| 15 | | N.C. * | N.C. * | N.C. * | N.C. * | N.C. * |
| 16 | | No Connection | No Connection | No Connection | No Connection | No Connection |
| 17 | | N.O. | N.O. | N.O. | N.O. | N.O. |
| 18 | | COM | COM | COM | COM | COM |
| 19 | | N.C. | N.C. | N.C. | N.C. | N.C. |
| 20 | | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW |

KEYS
 N.O. = Normally Open
 COM = Common
 N.C. = Normally Closed
 Proc = Process
 Xmtr = Transmitter
 SP = Setpoint
 W = Wiper
 CW = Clockwise
 CCW = Counterclockwise

***Pins used for Option V**
 20-pin = 14(+) - 15(-)
 11-pin = 7(+) - 8(-)

■LATCHING OUTPUT

| PIN | MP1810 | MP1810 w/Option T | MP1812 | MP1812 w/Option T | MP1813 | MP1813 w/Option T |
|-----|----------------|----------------------|----------------|----------------------|----------------|----------------------|
| 1 | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) |
| 2 | No Connection | No Connection | No Connection | No Connection | No Connection | No Connection |
| 3 | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) |
| 4 | Latch Reset | Latch Reset | Latch Reset | Latch Reset | Latch Reset | Latch Reset |
| 5 | No Connection | No Connection | SP Pot CCW | SP Pot CCW | SP - | SP - |
| 6 | No Connection | No Connection | SP Pot W | SP Pot W | SP + | SP + |
| 7 | No Connection | No Connection | SP Pot CW | SP Pot CW | No Connection | No Connection |
| 8 | No Connection | SP Xmtr + | No Connection | SP Xmtr + | No Connection | SP Xmtr + |
| 9 | INPUT W | INPUT W | INPUT W | INPUT W | INPUT W | INPUT W |
| 10 | No Connection | Xmtr Common | No Connection | Xmtr Common | No Connection | Xmtr Common |
| 11 | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW |
| 12 | No Connection | Proc Xmtr + | No Connection | Proc Xmtr + | No Connection | Proc Xmtr + |
| 13 | N.O. | N.O. | N.O. | N.O. | N.O. | N.O. |
| 14 | COM * | COM * | COM * | COM * | COM * | COM * |
| 15 | N.C. * | N.C. * | N.C. * | N.C. * | N.C. * | N.C. * |
| 16 | Latch Reset | Latch Reset | Latch Reset | Latch Reset | Latch Reset | Latch Reset |
| 17 | N.O. | N.O. | N.O. | N.O. | N.O. | N.O. |
| 18 | COM | COM | COM | COM | COM | COM |
| 19 | N.C. | N.C. | N.C. | N.C. | N.C. | N.C. |
| 20 | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW |

KEYS
 N.O. = Normally Open
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***Pins used for Option V**
 20-pin = 14(+) - 15(-)

■DUAL OUTPUT

| PIN | MP1820 | MP1820 w/Option T | MP1822 | MP1822 w/Option T | MP1823 | MP1823 w/Option T |
|-----|----------------|----------------------|----------------|-----------------------------|---------------------------|---------------------------|
| 1 | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) | POWER (Hot/+) |
| 2 | INPUT max. CW | No Connection | No Connection | No Connection | No Connection | No Connection |
| 3 | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) | POWER (Neu/-) |
| 4 | INPUT W | No Connection | Lo SP Pot CW | Lo SP Pot CW | No Connection | No Connection |
| 5 | INPUT Min. CCW | No Connection | Lo SP Pot W | Lo SP Pot W | Lo SP + | Lo SP + |
| 6 | N.O. | Xmtr Common | SP Pots CCW | SP Pots CCW/ Xmtr Common | SP Common/ Xmtr Common | SP Common/ Xmtr Common |
| 7 | COM * | No Connection | Hi SP Pot W | Hi SP Pot W | Hi SP + | Hi SP + |
| 8 | N.C. * | No Connection | Hi SP Pot CW | Hi SP Pot CW | No Connection | No Connection |
| 9 | N.O. | INPUT W | INPUT W | INPUT W | INPUT W | INPUT W |
| 10 | COM * | Proc Xmtr + | No Connection | Proc Xmtr + | No Connection | Proc Xmtr + |
| 11 | N.C. * | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW | INPUT Min. CCW |
| 12 | | Lo SP Xmtr + | No Connection | Lo SP Xmtr + | No Connection | Lo SP Xmtr + |
| 13 | | N.O. | N.O. | N.O. | N.O. | N.O. |
| 14 | | COM * | Lo Set | COM * | Lo Set | COM * |
| 15 | | N.C. * | Lo Set | N.C. * | Lo Set | N.C. * |
| 16 | | Hi SP Xmtr + | No Connection | Hi SP Xmtr + | No Connection | Hi SP Xmtr + |
| 17 | | N.O. | N.O. | N.O. | N.O. | N.O. |
| 18 | | COM * | Hi Set | COM * | Hi Set | COM * |
| 19 | | N.C. * | Hi Set | N.C. * | Hi Set | N.C. * |
| 20 | | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW | INPUT Max. CW |

KEYS
 N.O. = Normally Open
 COM = Common
 N.C. = Normally Closed
 Proc = Process
 Xmtr = Transmitter
 SP = Setpoint
 W = Wiper
 CW = Clockwise
 CCW = Counterclockwise

***Pins used for Option V**
 20-pin:
 Hi Set = 19(+) - 18(-)
 Lo Set = 15(+) - 14(-)
 11-pin:
 Hi Set = 7(+) - 8(-)
 Lo Set = 10(+) - 11(-)

Specifications subject to change without notice.