

Limit Alarms M-PAC

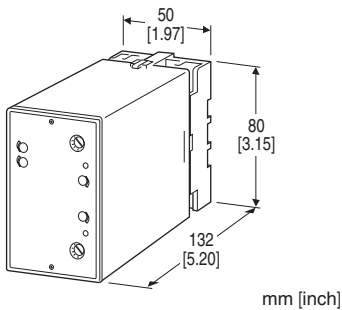
POTENTIOMETER INPUT LIMIT ALARM

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



MODEL: MP18[1][2]-0-[3]/[4]

ORDERING INFORMATION

- Code number: MP18[1][2]-0-[3]/[4]
- Specify a code from below for each of [1] through [4].
(e.g. MP1800-0-F/T/V)

[1] RELAY CONTACT OUTPUT

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

[2] SETPOINT CONTROL

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

INPUT POTENTIOMETER

Total resistance 100 Ω - 100 k Ω

[3] POWER INPUT

- AC Power**
F: 120 V AC

- J: 240 V AC
DC Power
S: 12 V DC
R: 24 V DC

[4] OPTIONS

- H: Latching operation for dual trip; reset at power off (5 seconds min.) (dual trip type only)
R: Reversed relay sense
T: Transmitter output (0 - 1 V 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 (dual trip type only)

GENERAL SPECIFICATIONS

- Construction:** Plug-in
Connection: M3.5 screw terminals
Screw terminal: Chromated steel
Housing material: Flame-resistant resin (black)
Isolation: Input to output to power (non-isolated between I/O with Option V)
Zero adjustment: 0 - 50 % of total resistance (front)
Span adjustment: 50 - 100 % of total resistance (front)
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 LED turns on at a tripped condition
Power ON timer: Relays de-energized for approx. 2 seconds after power is turned on.

INPUT SPECIFICATIONS

- **Input Potentiometer:** 100 Ω - 100 k Ω
Minimum span: 50 % of total resistance
- **Setpoint Control**
 - **Remote dial connections**
Potentiometer: Total resistance 1 k - 100 k Ω
Excitation: 4 V DC
 - **DC programmable:** 0 - 1 V DC

OUTPUT SPECIFICATIONS

- **Relay Contact**
 - **Single / Latching:** Isolated DPDT relay; de-energized at trip
 - **Dual:** Isolated SPDT relay; energized at trip
 - Rating:** 120 V AC @ 3 A ($\cos\phi=1$)
30 V DC @ 3 A (resistive load)
 - Electrical life:** 10⁵ cycles
 - Mechanical life:** 10⁷ cycles
- For maximum relay life with inductive loads, external

protection is recommended.

■ **Relay Drive Voltage Output (option V):** 24 V DC average; drives 1.2 k Ω or greater coil impedance

■ **Transmitter Output (option T):** 0 – 1 V DC; 1 mA max. (setpoint and process input)

INSTALLATION

Power input

• **AC:** Operational voltage range: rating $\pm 10\%$, 50/60 ± 2 Hz, approx. 2 VA

• **DC:** Operational voltage range: rating $\pm 10\%$ ripple 10 %p-p max.

80 mA at 24 V

160 mA at 12 V

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

Storage temperature: -20 to +85°C (-4 to +185°F)

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

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

Weight: 400 g (0.88 lb)

PERFORMANCE in percentage of span

Repeatability: $\pm 0.2\%$

Temp. coefficient: $\pm 0.05\%/^{\circ}\text{C}$ ($\pm 0.03\%/^{\circ}\text{F}$)

Response time: ≤ 0.5 sec. (0 – 100 % at 90 % setpoint)

Line voltage effect: $\pm 0.1\%$ over voltage range

Insulation resistance: $\geq 100\text{ M}\Omega$ with 500 V DC

Dielectric strength: 1000 V AC @ 1 minute

(input to output to power)

2000 V AC @ 1 minute (output to ground)

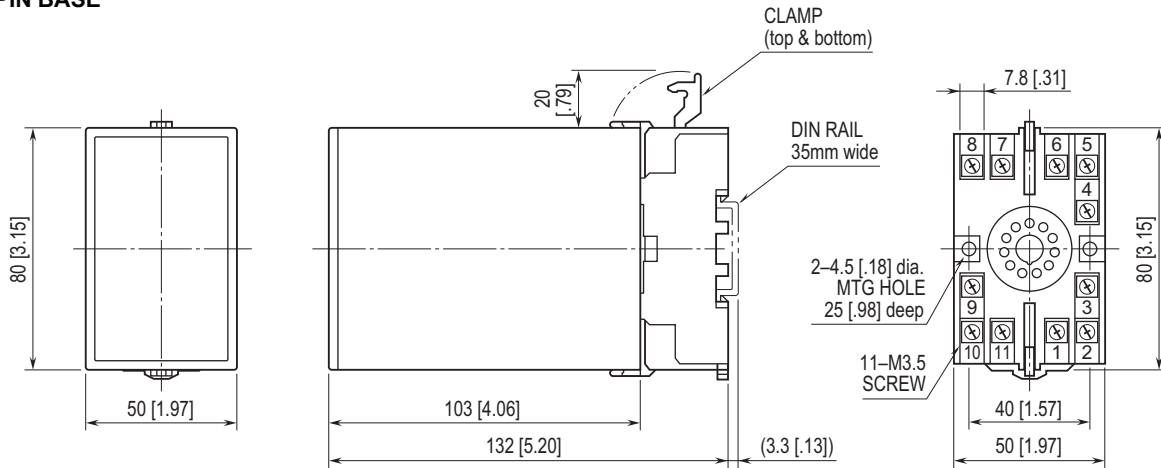
Common mode noise rejection:

60 Hz: Greater than 120 dB

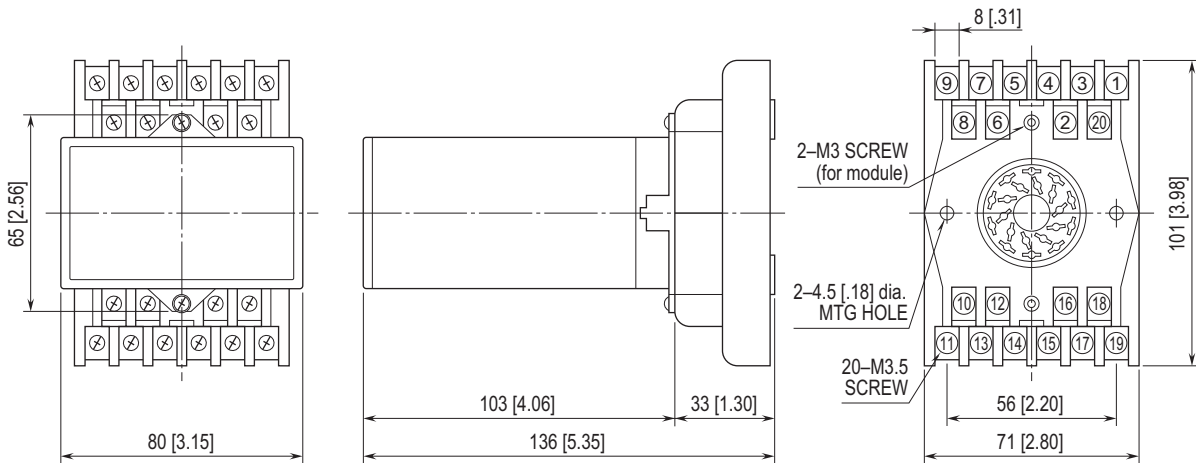
DC: Greater than 140 dB

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

11-PIN BASE

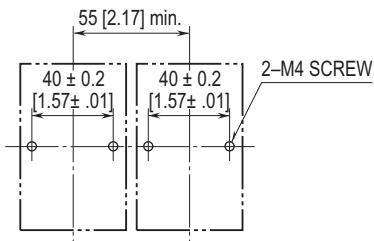


20-PIN BASE

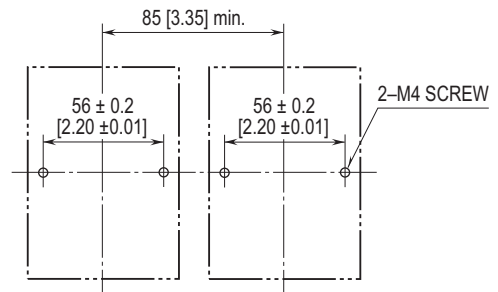


MOUNTING REQUIREMENTS unit: mm [inch]

11-PIN BASE



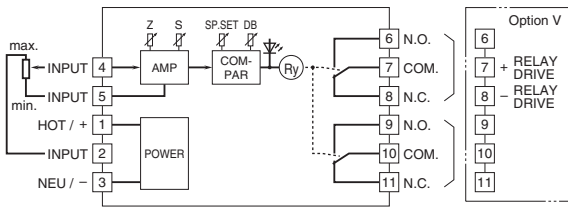
20-PIN BASE



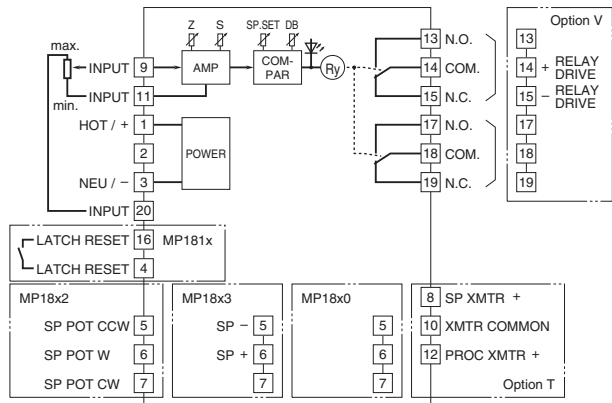
BLOCK DIAGRAM

■ SINGLE / LATCHING OUTPUT

•11-pin Base

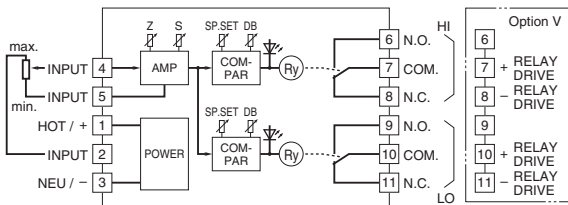


•20-pin Base

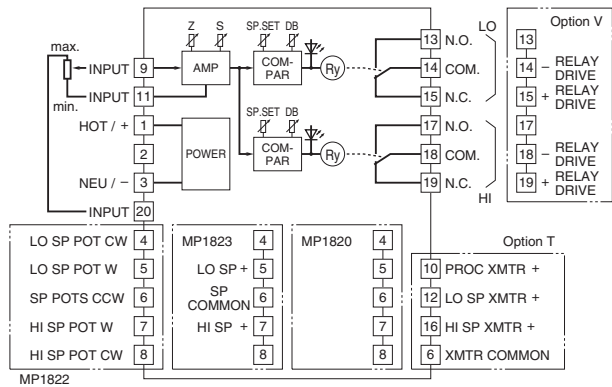


■ DUAL OUTPUT

•11-pin Base



•20-pin Base



I/O 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 |

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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 *] Hi Set | 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 *] Lo Set | 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 *] Lo Set | COM *] Lo Set | COM *] Lo Set |
| 15 | | N.C. *] | N.C. *] | N.C. *] | N.C. *] | 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 *] Hi Set | COM *] Hi Set | COM *] Hi Set |
| 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
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Proc = Process
Xmtr = Transmitter
SP = Setpoint
W = Wiper
CW = Clockwise
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*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 are subject to change without notice.