

## Limit Alarms *M-PAC*

# POTENTIOMETER INPUT LIMIT ALARM

# MODEL MP1800-1823

### MODEL & SUFFIX CODE SELECTION

**MP18□□-0-□/□**

**MODEL** \_\_\_\_\_

**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)

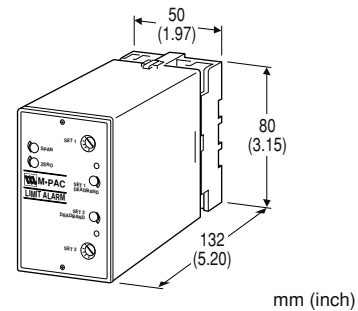
**V** : Relay drive voltage output

**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:** 10<sup>5</sup> cycles

**Mechanical:** 10<sup>7</sup> 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:** ≤0.5 sec. (0 – 100% at 90% setpoint)

**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

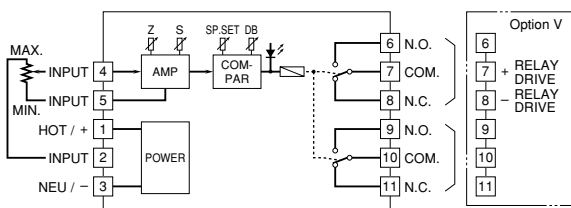
(input to output to power)

2000V AC @1 minute (output to ground)

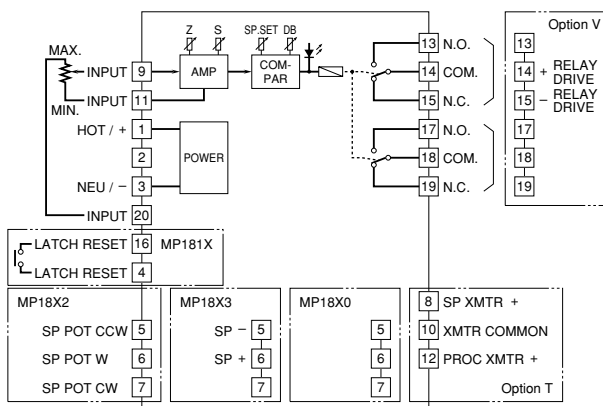
# BLOCK DIAGRAM

## ■ SINGLE / LATCHING OUTPUT

•11-pin Base

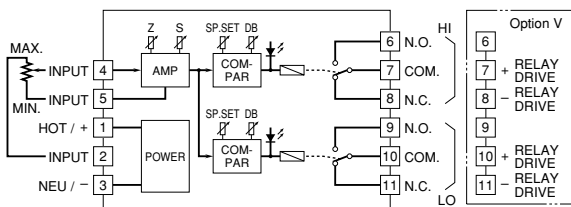


•20-pin Base

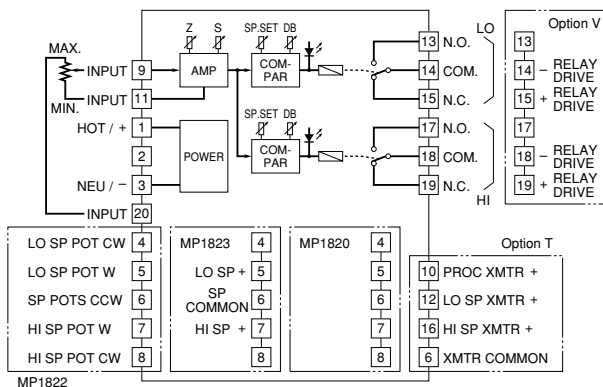


## ■ DUAL OUTPUT

•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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 Xmtr = Transmitter  
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 CCW = Counterclockwise

**\*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  
 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.