

**AC INPUT LIMIT ALARM**

model  
**MP1600 through MP1623**

Thank you for choosing us. Before use, check specifications on the unit label.  
If you have any problems or questions with the product, please contact our sales office or representatives.

**General Description**

The M-PAC Model MP1600 through MP1623 accept AC current and voltage inputs and provide relay contact closure(s) at a preset input level. The MP1600 Series reflects three styles of output selection:

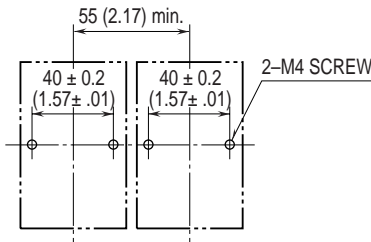
- MP1600 – MP1603** Single (Hi) trip, non-latching (DPDT, 3A)
- MP1610 – MP1613** Single (Hi) trip, latching (DPDT, 3A)
- MP1620 – MP1623** Dual (Hi/Lo) trip, non-latching (SPDT, 3A)

- Failsafe operation available
- Deadband adjustable from 1 to 100%
- Indicator LED provided

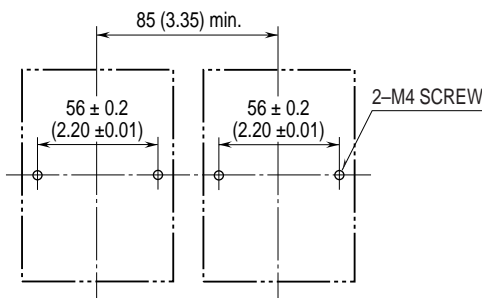
**Installation [Scale: mm(inch)]**

- Operating temperature: -5 to +60°C (23 to 140°F)
  - Operating humidity: 30 to 90% RH (non-condensing)
- Keep away from water, corrosive gas, dust and vibration. DIN rail mounting available for 11-pin-base modules. Use DIN rail of 35 mm width.

**•11-Pin Base**



**•20-Pin Base**



**Terminal Connections**

Make wiring to terminals as shown in the Tables in Page 2 through 3. Use the socket provided with the module.

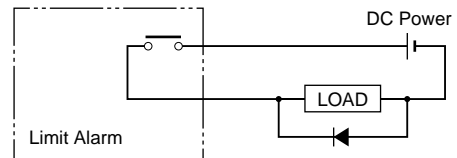
**Adjustments**

- Setpoint** The MP1600 Series has five styles of setpoint adjustment:
  - MP16X0** Top-accessed, 3-turn screw(s)
  - MP16X2** Remote dial connection(s), 1k to 100k ohms
  - MP16X3** DC-programmable, 0 to 1V
 The setpoint is adjustable over the entire input span.
  - A) Set deadband at its minimum (fully counterclockwise) before adjusting the setpoint.
  - B) With the specified trip voltage or current input applied, adjust setpoint until the relay trips. For Hi trip calibration, start with the setpoint above the desired trip. For Lo trip calibration start below the desired trip.
- Deadband** The deadband is independently adjustable for both setpoints in dual alarms.
  - A) Set deadband at its minimum (fully counterclockwise). Set setpoint to desired trip.
  - B) Adjust voltage/current input until relay trips.
  - C) Re-adjust deadband to 100% (fully clockwise).
  - D) Set voltage/current input to desired deadband position.
  - E) Slowly adjust deadband until relay untrips.
- Transmitter Output (Option T)**
  - A) With the specified minimum input applied, adjust Zero for 0.00V at the transmitter output.
  - B) With the specified maximum input applied, adjust Span for 1.00V. Repeat A) to B) for best accuracy.

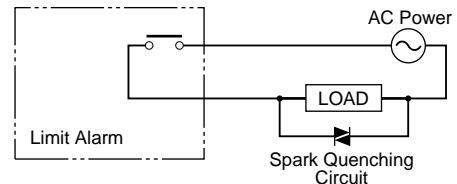
**Relay Protection**

- Output Relay Rating** 30V DC @3A (resistive load) or 120V AC @3A (cosφ=1)
- For maximum relay life with inductive loads, external protection is recommended. Refer to the Figures below.

- DC Line Powered Loop** Place a diode across the load.

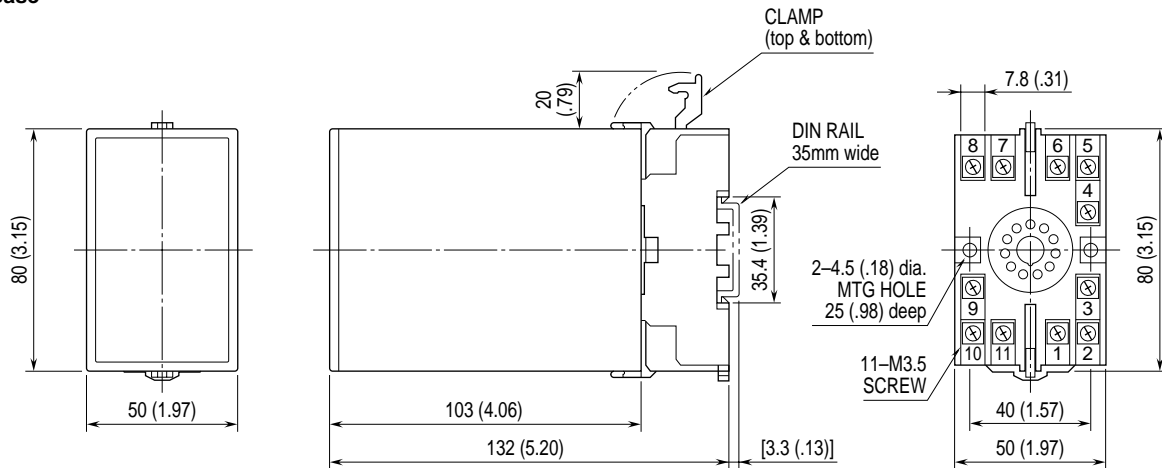


- AC Line Powered Loop** Place a varistor or CR spark killer across the load.

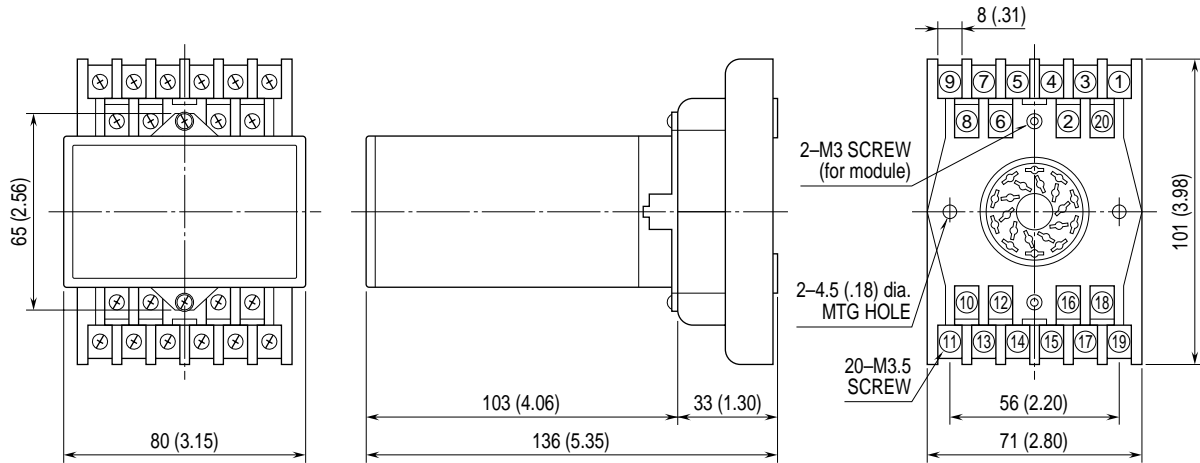


**External Dimensions [Scale: mm(inch)]**

**•11-Pin Base**



**•20-Pin Base**



**Terminal Assignment**

**•Single Output**

MP1600	MP1600 w/Option T	MP1602	MP1602 w/Option T	MP1603	MP1603 w/Option T
1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)
2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection
3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)
4 INPUT (Hot)	4 No Connection	4 No Connection	4 No Connection	4 No Connection	4 No Connection
5 INPUT (Neu)	5 No Connection	5 SP Pot CCW	5 SP Pot CCW	5 SP -	5 SP -
6 N.O.	6 No Connection	6 SP Pot W	6 SP Pot W	6 SP +	6 SP +
7 COM *	7 No Connection	7 SP Pot CW	7 SP Pot CW	7 No Connection	7 No Connection
8 N.C. *	8 SP Xmtr +	8 No Connection	8 SP Xmtr +	8 No Connection	8 SP Xmtr +
9 N.O.	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)
10 COM	10 Xmtr Common	10 No Connection	10 Xmtr Common	10 No Connection	10 Xmtr Common
11 N.C.	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)
	12 Proc Xmtr +	12 No Connection	12 Proc Xmtr +	12 No Connection	12 Proc Xmtr +
	13 N.O.	13 N.O.	13 N.O.	13 N.O.	13 N.O.
	14 COM *	14 COM *	14 COM *	14 COM *	14 COM *
	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *
	16 No Connection	16 No Connection	16 No Connection	16 No Connection	16 No Connection
	17 N.O.	17 N.O.	17 N.O.	17 N.O.	17 N.O.
	18 COM	18 COM	18 COM	18 COM	18 COM
	19 N.C.	19 N.C.	19 N.C.	19 N.C.	19 N.C.
	20 No Connection	20 No Connection	20 No Connection	20 No Connection	20 No Connection

**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

MP1610	MP1610 w/Option T	MP1612	MP1612 w/Option T	MP1613	MP1613 w/Option T
1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)
2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection
3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)
4 No Connection	4 No Connection	4 No Connection	4 No Connection	4 No Connection	4 No Connection
5 No Connection	5 No Connection	5 SP Pot CCW	5 SP Pot CCW	5 SP -	5 SP -
6 No Connection	6 No Connection	6 SP Pot W	6 SP Pot W	6 SP +	6 SP +
7 No Connection	7 No Connection	7 SP Pot CW	7 SP Pot CW	7 No Connection	7 No Connection
8 No Connection	8 SP Xmtr +	8 No Connection	8 SP Xmtr +	8 No Connection	8 SP Xmtr +
9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)
10 No Connection	10 Xmtr Common	10 No Connection	10 Xmtr Common	10 No Connection	10 Xmtr Common
11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)
12 No Connection	12 Proc Xmtr +	12 No Connection	12 Proc Xmtr +	12 No Connection	12 Proc Xmtr +
13 N.O.	13 N.O.	13 N.O.	13 N.O.	13 N.O.	13 N.O.
14 COM *	14 COM *	14 COM *	14 COM *	14 COM *	14 COM *
15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *
16 Latch Reset	16 Latch Reset	16 Latch Reset	16 Latch Reset	16 Latch Reset	16 Latch Reset
17 N.O.	17 N.O.	17 N.O.	17 N.O.	17 N.O.	17 N.O.
18 COM	18 COM	18 COM	18 COM	18 COM	18 COM
19 N.C.	19 N.C.	19 N.C.	19 N.C.	19 N.C.	19 N.C.
20 Latch Reset	20 Latch Reset	20 Latch Reset	20 Latch Reset	20 Latch Reset	20 Latch Reset

**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(-)

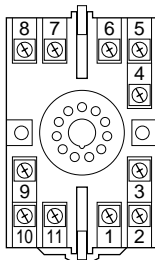
•Dual Output

MP1620	MP1620 w/Option T	MP1622	MP1622 w/Option T	MP1623	MP1623 w/Option T
1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)	1 POWER (Hot/+)
2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection	2 No Connection
3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)	3 POWER (Neu/-)
4 INPUT (Hot)	4 No Connection	4 Lo SP Pot CW	4 Lo SP Pot CW	4 No Connection	4 No Connection
5 INPUT (Neu)	5 No Connection	5 Lo SP Pot W	5 Lo SP Pot W	5 Lo SP +	5 Lo SP +
6 N.O.	6 No Connection	6 SP Pots CCW	6 SP Pots CCW	6 SP Common	6 SP Common
7 COM *	Hi Set	7 Hi SP Pot W	7 Hi SP Pot W	7 Hi SP +	7 Hi SP +
8 N.C. *	8 No Connection	8 Hi SP Pot CW	8 Hi SP Pot CW	8 No Connection	8 No Connection
9 N.O.	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)	9 INPUT (Hot)
10 COM *	Lo Set	10 No Connection	10 Proc Xmtr +	10 No Connection	10 Proc Xmtr +
11 N.C. *	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)	11 INPUT (Neu)
	12 Lo SP Xmtr +	12 No Connection	12 Lo SP Xmtr +	12 No Connection	12 Lo SP Xmtr +
	13 N.O.	13 N.O.	13 N.O.	13 N.O.	13 N.O.
	14 COM * } Lo Set	14 COM * } Lo Set	14 COM * } Lo Set	14 COM * } Lo Set	14 COM * } Lo Set
	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *	15 N.C. *
	16 Hi SP Xmtr +	16 No Connection	16 Hi SP Xmtr +	16 No Connection	16 Hi SP Xmtr +
	17 N.O.	17 N.O.	17 N.O.	17 N.O.	17 N.O.
	18 COM * } Hi Set	18 COM * } Hi Set	18 COM * } Hi Set	18 COM * } Hi Set	18 COM * } Hi Set
	19 N.C. *	19 N.C. *	19 N.C. *	19 N.C. *	19 N.C. *
	20 Xmtr Common	20 No Connection	20 Xmtr Common	20 No Connection	20 Xmtr Common

**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(-)

•Terminal No. for 11-Pin Base



•Terminal No. for 20-Pin Base

