

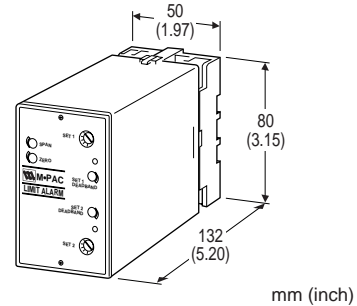
DC INPUT LIMIT ALARM

MODEL MP1000-1023

MODEL & SUFFIX CODE SELECTION

MP10□□-□□□□

- MODEL** _____
- INPUT TYPE** _____
- RELAY CONTACT OUTPUT** _____
- SETPOINT CONTROL** _____
- INPUT RANGE** _____
- | | |
|---------------------|--|
| Current | Voltage |
| A : 4 – 20mA DC | 1 : 0 – 10mV DC |
| B : 2 – 10mA DC | 2 : 0 – 100mV DC |
| C : 1 – 5mA DC | 3 : 0 – 1V DC |
| D : 0 – 20mA DC | 4 : 0 – 10V DC |
| E : 0 – 16mA DC | 5 : 0 – 5V DC |
| F : 0 – 10mA DC | 6 : 1 – 5V DC |
| G : 0 – 1mA DC | U1: Specify voltage
(10≤span<100mV) |
| H : 10 – 50mA DC | U2: Specify voltage
(0.1≤span<1V) |
| Z : Specify current | U3: Specify voltage
(1V≤span) |
- POWER INPUT** _____
- F : 120V AC
J : 240V AC
R : 24V DC
S : 12V DC
- OPTIONS** _____
- H : Latching operation for dual trip (102X 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 (102X only)



Functions & Features

- Accepting a large variety of DC inputs 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:** ±5% (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 lights turn on at a tripped condition
- Power ON timer:** relays de-energized for approx. 2 seconds after power is turned on.

ORDERING INFORMATION

- Specify code number and variables.
- **Code number** (e.g. MP1000-6-F/T/V)
 - **Special input range** (For codes Z, U1, U2 & U3)

INPUT & OUTPUT**■INPUT**

•**DC Current:** input resistor incorporated

Input resistance: For resistance values other than listed below, specify when ordering.

Input	Input Resistance
4 – 20mA	: 250 (Ω)
2 – 10mA	: 500
1 – 5mA	: 1000
0 – 20mA	: 50
0 – 16mA	: 62.5
0 – 10mA	: 100
0 – 1mA	: 1000
10 – 50mA	: 100

•**DC Voltage:** -300 – +300V DC

Minimum span: 10mV

Zero suppression/elevation: max. 1.5 times span

Input resistance

Input Span	Input Resistance
10 – 100mV	: 10k (Ω minimum)
0.1 – 1V	: 100k
≥1V	: 1M

■REMOTE SETPOINT INPUT

MP10X2: potentiometer; any value of 1k – 100kΩ; excitation 4V

MP10X3: 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 ($\cos\phi=1$)
30V DC @3A (resistive load)

Relay life

Electrical: 10^5 cycles

Mechanical: 10^7 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 $\pm 10\%$, 50/60 ± 2 Hz, approx. 2VA

DC: rating $\pm 10\%$ (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: $\pm 0.2\%$

Temp. coefficient: $\pm 0.05\%/^{\circ}\text{C}$ ($\pm 0.027\%/^{\circ}\text{F}$)

Response time: 100 milliseconds, typical

Common mode rejection

60 Hz: greater than 120 dB

DC: greater than 140 dB

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

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

Dielectric strength: 1000V AC @1 minute

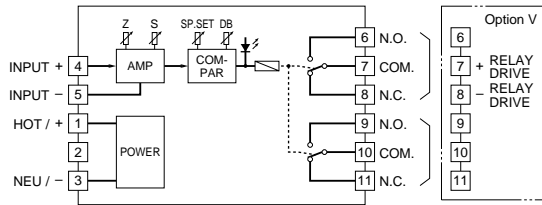
(input to output to power)

2000V AC @1 minute (output to ground)

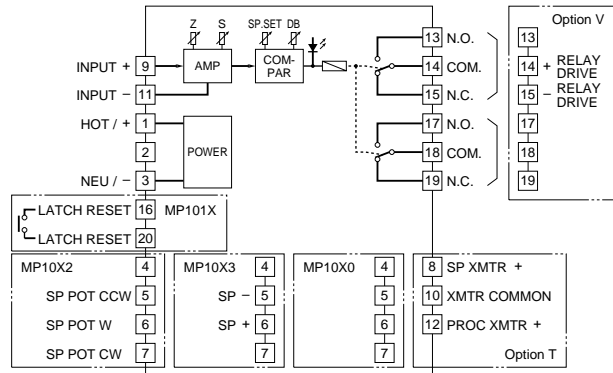
BLOCK DIAGRAM

■ SINGLE / LATCHING OUTPUT

•11-pin Base

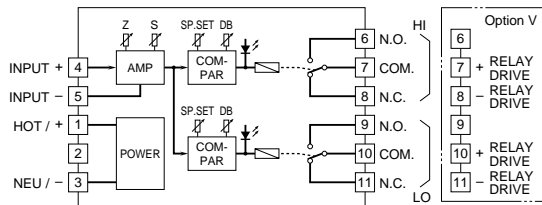


•20-pin Base

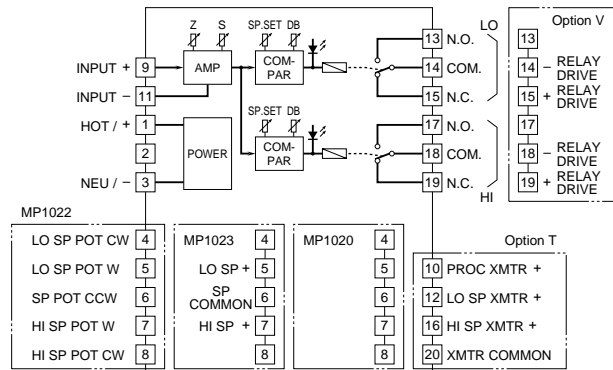


■ DUAL OUTPUT

•11-pin Base



•20-pin Base



TERMINAL ASSIGNMENT

■SINGLE OUTPUT

PIN	MP1000	MP1000 w/Option T	MP1002	MP1002 w/Option T	MP1003	MP1003 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	INPUT +	No Connection	No Connection	No Connection	No Connection	No Connection
5	INPUT -	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 +	INPUT +	INPUT +	INPUT +	INPUT +
10	COM]	Xmtr Common	No Connection	Xmtr Common	No Connection	Xmtr Common
11	N.C.]	INPUT -	INPUT -	INPUT -	INPUT -	INPUT -
12		Proc Xmtr +	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		No Connection	No Connection	No Connection	No Connection	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

PIN	MP1010	MP1010 w/Option T	MP1012	MP1012 w/Option T	MP1013	MP1013 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	No Connection	No Connection	No Connection	No Connection	No Connection	No Connection
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 +	INPUT +	INPUT +	INPUT +	INPUT +	INPUT +
10	No Connection	Xmtr Common	No Connection	Xmtr Common	No Connection	Xmtr Common
11	INPUT -	INPUT -	INPUT -	INPUT -	INPUT -	INPUT -
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	Latch Reset	Latch Reset	Latch Reset	Latch Reset	Latch Reset	Latch Reset

KEYS
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 CCW = Counterclockwise

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

■DUAL OUTPUT

PIN	MP1020	MP1020 w/Option T	MP1022	MP1022 w/Option T	MP1023	MP1023 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	INPUT +	No Connection	Lo SP Pot CW	Lo SP Pot CW	No Connection	No Connection
5	INPUT -	No Connection	Lo SP Pot W	Lo SP Pot W	Lo SP +	Lo SP +
6	N.O.]	No Connection	SP Pots CCW	SP Pots CCW	SP Common	SP 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 +	INPUT +	INPUT +	INPUT +	INPUT +
10	COM *] Lo Set	Proc Xmtr +	No Connection	Proc Xmtr +	No Connection	Proc Xmtr +
11	N.C. *]	INPUT -	INPUT -	INPUT -	INPUT -	INPUT -
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		Xmtr Common	No Connection	Xmtr Common	No Connection	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(-)

Specifications subject to change without notice.