Limit Alarms *M-PAC*

THERMOCOUPLE INPUT LIMIT ALARM

MODEL **MP1200-1223**

MODEL & SUFFIX CODE SELECTION

MP12❑❑–❑–❑/❑

MODEL

INPUT TYPE

2 : Thermocouple

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 THERMOCOUPLE

Srandard Span (10mV≤EMF)	**Narrow Span** (3mV≤EMF<10mV)
1 : (PR)	**1L**: (PR)
2 : K (CA)	**2L**: K (CA)
3 : E (CRC)	**3L**: E (CRC)
4 : J (IC)	**4L**: J (IC)
5 : T (CC)	**5L**: T (CC)
6 : B (RH)	**6L**: B (RH)
7 : R	**7L**: R
8 : S	**8L**: S
0 : Specify	**0L**: Specify

POWER INPUT

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

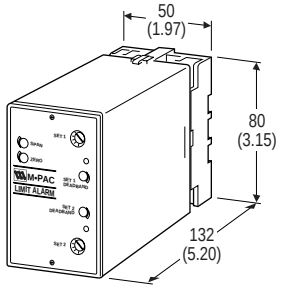
OPTIONS

H : Latching operation for dual trip (122X 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 (122X only)

ORDERING INFORMATION

Specify code number and variables.

- **Code number** (e.g. MP1200-2-F/T/V)
- **Temperature range** (e.g. 0 – 800°C)



mm (inch)

Functions & Features

• Accepting standard thermocouple inputs and providing relay contact closure(s) at a preset input level • Cold junction compensation and upscale burnout protection as standard • Downscale or no burnout optional • 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
Burnout protection: upscale standard; downscale or no burnout optional
Cold junction compensation: CJC sensor attached to the input terminals
Power ON timer: relays de-energized for approx. 2 seconds after power is turned on.

INPUT & OUTPUT

■INPUT: thermocouples
Span: standard span 10mV min., narrow span 3mV min.
Zero suppression/elevation: max. 1.5 times span
Input resistance: 10kΩ minimum
Burnout sensing: 0.1μA
Minimum span requirement*

T/C	STANDARD (≥10mV)		NARROW (<10mV)	
	°C	°F	°C	°F
R	962	1751	361	665
S	1036	1883	373	686
K (CA)	247	445	74	135
E (CRC)	153	282	50	92
J (IC)	186	339	58	106
T (CC)	214	394	73	135
Others	Consult factory or representatives.			

*Approximate values to obtain minimum e.m.f. span for your reference. Consult thermocouple reference tables, factory or representatives for confirmation.

■REMOTE SETPOINT INPUT
MP12X2: potentiometer; any value of 1k – 100kΩ; excitation 4V
MP12X3: 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 (cosø=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 ±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)

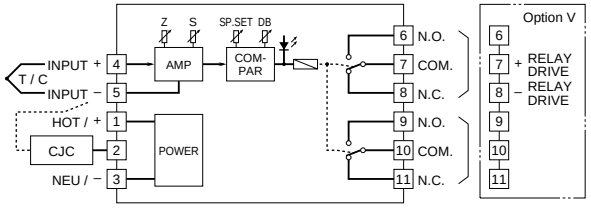
PERFORMANCE in percentage of span

Repeatability: ±0.2%
Cold junction compensation error (at 20°C ±10°C or 68°F ±18°F)
K, E, J & T: ±0.5°C or ±0.9°F maximum
S, R & PR: ±1°C or ±1.8°F maximum
Temp. coefficient: ±0.05%/°C (±0.027%/°F)
Response time: 100 milliseconds, typical
Burnout response: 1 second
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)

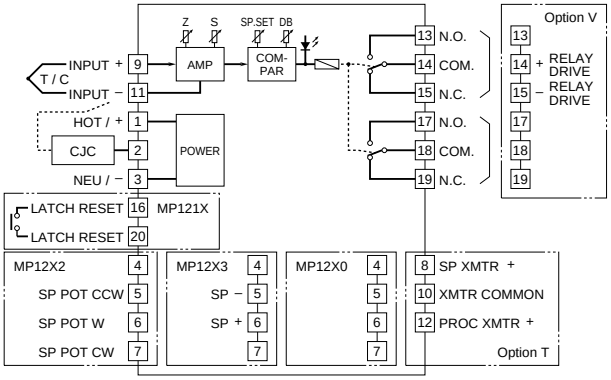
BLOCK DIAGRAM

■SINGLE / LATCHING OUTPUT

•11-pin Base

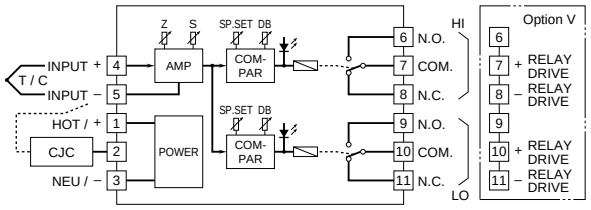


•20-pin Base

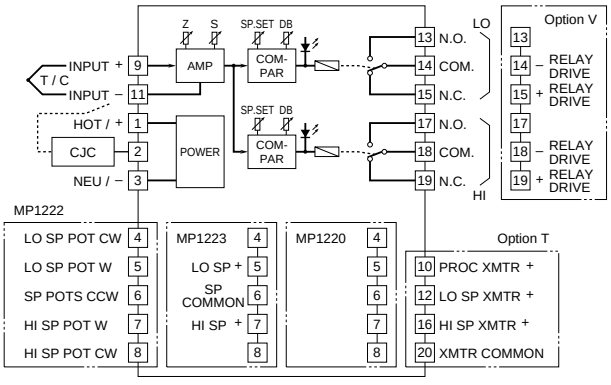


■DUAL OUTPUT

•11-pin Base



•20-pin Base



TERMINAL ASSIGNMENT

■SINGLE OUTPUT

PIN	MP1200	MP1200 w/Option T	MP1202	MP1202 w/Option T	MP1203	MP1203 w/Option T
1	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)
2	CJC	CJC	CJC	CJC	CJC	CJC
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	MP1210	MP1210 w/Option T	MP1212	MP1212 w/Option T	MP1213	MP1213 w/Option T
1	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)
2	CJC	CJC	CJC	CJC	CJC	CJC
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
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

PIN	MP1220	MP1220 w/Option T	MP1222	MP1222 w/Option T	MP1223	MP1223 w/Option T
1	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)	POWER (Hot/+)
2	CJC	CJC	CJC	CJC	CJC	CJC
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.