

## L91 48 x 48 mm limit controller



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The limit control LIMITROL L91 is an over temperature or a high limit safety device with a latching output that could remove the power while the process is in abnormal condition, for example the process higher than high limit set point or lower than the low limit set point.

## SPECIFICATIONS

### Power

90 - 264 VAC, 49 - 63 Hz, 10VA, 5W maximum

11 - 26 VAC / VDC, 10VA, 5W maximum

### Input

Resolution : 18 bits

Sampling Rate : 5 times / second

Maximum Rating : -2 VDC minimum, 12 VDC maximum( 1 minute for mA input )

Temperature Effect :  $\pm 1.5 \mu\text{V}/^\circ\text{C}$

Sensor Lead Resistance Effect :

T/C:  $0.2\mu\text{V}/\text{ohm}$

3-wire RTD: 2.6 °C/ohm of resistance difference of two leads

2-wire RTD: 2.6 °C/ohm of resistance sum of two leads

Burn-out Current : 200nA

Common Mode Rejection Ratio ( CMRR ) : 120dB

Sensor Break Detection :

Sensor open for TC, RTD and mV inputs,

below 1 mA for 4-20 mA input,

below 0.25V for 1 - 5 V input, unavailable for other inputs.

Sensor Break Responding Time :

Within 4 seconds for TC, RTD and mV inputs,

0.1 second for 4-20 mA and 1 - 5 V inputs.

Characteristics :

Type	Range	Accuracy@ 25 °C	Input Impedance
J	-120 ~ 1000 °C (-184 ~ 1832 °F)	±2 °C	2.2MΩ
K	-200 ~ 1370 °C (-328 ~ 2498 °F)	±2 °C	2.2MΩ
T	-250 ~ 400 °C (-418 ~ 752 °F)	±2 °C	2.2MΩ
E	-100 ~ 900 °C (-148 ~ 1652 °F)	±2 °C	2.2MΩ
B	0 ~ 1820 °C (32 ~ 3308 °F)	±2 °C (200 °C - 1820 °C)	2.2MΩ
R	0 ~ 1767.8 °C (32 ~ 3214 °F)	±2 °C	2.2MΩ
S	0 ~ 1767.8 °C (32 ~ 3214 °F)	±2 °C	2.2MΩ
N	-250 ~ 1300 °C (-418 ~ 2372 °F)	±2 °C	2.2MΩ
L	-200 ~ 900 °C (-328 ~ 1652 °F)	±2 °C	2.2MΩ
PT100 (DIN)	-210 ~ 700 °C (-346 ~ 1292 °F)	±0.4 °C	1.3KΩ

PT100 (JIS)	-200 ~ 600 °C (-328 ~ 1112 °F)	±0.4 °C	1.3KΩ
mV	-8 ~ 70mV	±0.05%	2.2MΩ
mA	-3 ~ 27mA	±0.05%	70.5Ω
V	-1.3 ~ 11.5V	±0.05%	510KΩ

### Event Input

Logic Low: Logic -10V minimum, 0.8V maximum.

Logic High: 2V minimum, 10V maximum.

Functions: Remote reset, remote lockout.

### Output 1 / Output 2

Relay Rating : 2A/240 VAC, life cycles 200,000 for resistive load

Pulsed Voltage : Source Voltage 5V, current limiting resistance 66Ω .

### Triac ( SSR ) Output

Rating : 1A / 240 VAC

Inrush Current : 20A for 1 cycle

Min. Load Current : 50 mA rms

Max. Off-state Leakage : 3 mA rms

Max. On-state Voltage : 1.5 V rms

Insulation Resistance : 1000 Mohms min. at 500 VDC

Dielectric Strength : 2500 VAC for 1 minute

### DC Voltage Supply Characteristics ( Installed at Output 2 )

Type	Tolerance	Max. Output Current	Ripple Voltage	Isolation Barrier
20V	±1 V	25 mA	0.2 Vp-p	500 VAC
12V	±0.6 V	40 mA	0.1 Vp-p	500 VAC
5V	±0.25 V	80 mA	0.05 Vp-p	500 VAC

### Data Communication

Interface : RS-232 ( 1 unit ), RS-485 ( up to 247 units )

Protocol : Modbus Protocol RTU mode

Address : 1 - 247

Baud Rate : 0.3 ~ 38.4 Kbits/sec

Data Bits : 8 bits

Parity Bit : None, Even or Odd

Stop Bit : 1 or 2 bits

Communication Buffer : 50 bytes

### **User Interface**

4-digit LED Displays : 0.4" (10mm),

Keypad : 4 keys

Programming Port : For automatic setup, calibration and testing

Communication Port : Connection to PC for supervisory control

### **Limit Control**

High Limit, Low limit and High/Low Limit programmable

### **Digital Filter**

Function : First order

Time Constant : 0, 0.2, 0.5, 1, 2, 5, 10, 20, 30, 60 seconds programmable

### **Environmental & Physical**

Operating Temperature : -10°C to 50°C

Storage Temperature : -40°C to 60°C

Humidity : 0 to 90 % RH ( non-condensing )

Insulation Resistance : 20 Mohms min. ( at 500 VDC )

Dielectric Strength : 2000 VAC, 50/60 Hz for 1 minute

Vibration Resistance : 10 - 55 Hz, 10 m/s<sup>2</sup> for 2 hours

Shock Resistance : 200 m/s<sup>2</sup> ( 20 g )

Moldings : Flame retardant polycarbonate

Dimensions : 48mm(W) X 48mm(H) X 94mm(D), 86 mm depth behind panel

Weight : 150 grams

### **Approval Standards**

Safety : FM Class 3545 (Oct. 1998), UL873 ( 11'th edition, 1994 ) , CSA C22.2 No. 24-93 , EN61010-1 (IEC1010-1)

Protective Class :

IP30 front panel, indoor use,

IP20 housing and terminals ( with protective cover)

EMC : EN61326

## ORDERING CODE

L91 - □□□□

**1 2 3 4**

### **1 Power Input**

4: 90 - 264 VAC, 50 / 60 HZ

5: 11 - 26 VAC or VDC

9: Special Order

### **2 Signal Input**

1: Standard Input

Thermocouple: J, K, T, E, B, R, S, N, L

RTD: PT100 DIN, PT100 JIS

mV: 0 - 60mV

2: Voltage 0-1 V

3: Voltage 0-10 V

4: Current 0-20 mA

9: Special Order

### **3 Output 1**

0: None

1: Form C relay rated 2A/240VAC

2: Pulsed voltage to drive SSR, 5V / 30mA

6: Triac output 1A / 240VAC,SSR

C: Pulsed voltage to drive SSR, 14V/40mA

9: Special order

### **4 Output 2**

0: None

1: Form A relay 2A / 240VAC

2: Pulsed voltage to drive SSR, 5V / 30mA

6: Triac output, 1A / 240VAC, SSR

7: Isolated 20V/25mA DC Output Power Supply

8: Isolated 12V/40mA DC Output Power Supply

9: Isolated 5V/80mA DC Output Power Supply

A: RS-485

B: Event input

C: Pulsed voltage to drive SSR, 14V/40mA

D: Retransmit 4-20mA / 0-20mA

E: Retransmit 1-5V / 0-5V

F: Retransmit 0-10V

H: Special order