

# High Performance Process Limit Controllers

**L62 L42 L22**



## Introduction

The L22, L62 & L42 are FM approved limit controller that can be configured either as a high limit or as a low limit controller by the user.

These limit controllers are powered by an 11-26 or 90-250 VDC / VAC supply, incorporating a 2 Amp relay output as a standard. The second output can be used as an alarm. Both outputs can be selected as a 5VDC or 14VDC logic output to drive an external device. The limit controllers can be incorporated with two event inputs, up to 3 alarm outputs, RS-485 communication, retransmission voltage or current output optionally.

The limit controllers are fully programmable for linear current, linear voltage, Pt100 and thermocouple types J, K, T, E, B, R, S, N, L, U, P, C, and D. The input signal is digitized by using an 18-bit A to D converter. Its fast-sampling rate allows the limit controller to protect fast processes.

## Features

The new generation of limit controllers have a lot of unique features. The unique features are listed below.

- ◆ LCD display
- ◆ High accuracy 18 Bit A-D Conversion and 15 Bit D-A Conversion
- ◆ Fastest sampling rate of 200 msec
- ◆ Universal input
- ◆ Up to 2 event inputs
- ◆ Remote reset
- ◆ Remote lock
- ◆ RS-485 communication
- ◆ Lockout protection
- ◆ Bidirectional menu navigation
- ◆ On-field calibration
- ◆ °C / °F temperature measurements
- ◆ DIN rail mount option
- ◆ Configurable display logic -SAFE

## Specifications

Specification	L22	L62	L42	
Power Supply	90 to 250VAC, 47 to 63Hz, 20 to 28 VAC, 47-63Hz / 11 to 40 VDC			
Power Consumption	8VA, 4W maximum	10VA, 5W maximum.,	12VA, 6W maximum	
Over Voltage Category	II			
<b>Signal Input</b>				
Type	Thermocouple (J, K, T, E, B, R, S, N, L, U, P, C, D), RTD (Pt100(DIN), Pt100(JIS)), Current (mA), Voltage (V, mV)			
Resolution	18 Bits			
Sampling Rate	5 Times / Second (200msec)			
Maximum Rating	-2VDC minimum, 12VDC maximum			
Input Characteristics	Type	Range	Accuracy @ 25°C	Input Impedance
	J	-120°C to 1000°C (-184°F to 1832°F)	±2°C	2.2 MΩ
	K	-200°C to 1370°C (-328°F to 2498°F)	±2°C	2.2 MΩ
	T	-250°C to 400°C (-418°F to 752°F)	±2°C	2.2 MΩ
	E	-100°C to 900°C (-148°F to 1652°F)	±2°C	2.2 MΩ
	B	0°C to 1820°C (32°F to 3308°F)	±2°C (200°C to 1800°C)	2.2 MΩ
	R	0°C to 1767.8°C (32°F to 3214°F)	±2°C	2.2 MΩ
	S	0°C to 1767.8°C (32°F to 3214°F)	±2°C	2.2 MΩ
	N	-250°C to 1300°C (-418°F to 2372°F)	±2°C	2.2 MΩ
	L	-200°C to 900°C (-328°F to 1652°F)	±2°C	2.2 MΩ
	U	-200°C to 600°C (-328°F to 1112°F)	±2°C	2.2 MΩ
	P	0°C to 1395°C (32°F to 2543°F)	±2°C	2.2 MΩ
	C	0°C to 2300°C (32°F to 4172°F)	±2°C	2.2 MΩ
	D	0°C to 2300°C (32°F to 4172°F)	±2°C	2.2 MΩ
	Pt100(DIN)	-210°C to 700°C (-346°F to 1292°F)	±0.4°C	1.3KΩ
	Pt100(JIS)	-200°C to 600°C (-328°F to 1112°F)	±0.4°C	1.3KΩ
	mA	-3mA to 27mA	±0.05%	2.5Ω
	VDC	-1.3VDC to 11.5VDC	±0.05%	1.5MΩ
	mV	0 to 50mV	±0.05%	2.2 MΩ
Temperature Effect	1.5μV /°C for all inputs except mA input, 3.0μV /°C for mA			
Sensor Lead Resistance Effect	Thermocouple: 0.2 μV / Ω; 3-wire RTD: 2.6°C / Ω of difference of resistance of two leads 2-wire RTD: 2.6°C / Ω of sum of resistance of two leads			
Burn-out Current	200 nA			
CMRR	120 dB			
NMRR	55 dB			
Sensor Break Detection	Sensor open for Thermocouple, RTD and mV inputs, Sensor short for RTD input, Below 1mA for 4-20mA input, Below 0.25VDC for 1 - 5VDC input, Not available for other inputs.			
Sensor Break Response Time	Within 4 seconds for Thermocouple, RTD and mV inputs, 0.1 second for 4-20mA and 1 - 5VDC inputs.			

## Specifications

Specification	L22	L62	L42
<b>Digital Filter</b>			
Function	First Order		
Time Constant	0, 0.2, 0.5, 1, 2, 5, 10, 20, 30, 60 Seconds, Programmable		
<b>Event Input</b>			
<b>Number of Event Inputs</b>	<b>1</b>	<b>2</b>	<b>3</b>
Logic Low	-10VDC minimum, 0.8VDC maximum.		
Logic High	2VDC minimum, 10VDC maximum		
Functions	Remote lock, Remote reset output1, HSP2, LSP2, HLS2, HSP3, LSP3, HLS3, Reset alarm1, Reset alarm2, Reset alarm 3, Reset all alarms, Cancel latch, Reset reference data		
<b>Output 1 /Output 2</b>			
Limit Control Function	High Limit, Low Limit and High / Low Limit		
Type	Relay, Pulsed Voltage		
Relay Type	Form A		
Relay Rating	2A, 240V AC, 200000 Life cycles for resistive load		
Pulsed Voltage	Source voltage 5VDC, Current limiting resistance 66Ω		
Temperature Effect	±0.01% of Span/ °C		
<b>Alarm</b>			
Relay Type	Form A		
Maximum Rating	2A, 240VAC, 200000 Life cycles for resistive load		
Alarm Functions	Process High, Process Low		
Alarm Mode	Latching, normal, Latching reverse, Normal reverse		
<b>Data Communication</b>			
Interface	RS-485		
Protocol	Modbus RTU (Slave mode)		
Address	1 to 247		
Baud Rate	2.8KBPS to 115.2KBPS		
Parity Bit	None, Even or Odd		
Stop Bit	1 or 2 Bits		
Data Length	7 or 8 Bits		
Communication Buffer	160 Bytes		
<b>Analog Retransmission</b>			
Output Signal	4-20mA, 0-20 mA, 0 - 10VDC		
Resolution	15 Bits		
Accuracy	±0.05% of Span ± 0.0025% / °C		
Load Resistance	0 to 500Ω for current output, 10KΩ minimum for voltage output		
Output Regulation	0.01% for full load change		
Output Setting Time	0.1Second (stable to 99.9%)		
Isolation Breakdown	1000VAC min		
Integral Linearity Error	±0.005% of span		
Temperature Effect	±0.0025% of span /°C		
Saturation Low	0mA or 0VDC		
Saturation High	22.2mA or 5.55V, 11.1V min		
Linear Output Ranges	0-22.2mA (0-20mA/4-20mA), 0-5.55VDC (0-5VDC, 1-5VDC), 0-11.1VDC (0 - 10VDC)		

## Specifications

Specification	L22	L62	L42
<b>User Interface</b>			
Keypad	4 Keys		
Display Type	4 Digit LCD display		
No of Display	2		
Upper Display Size	0.31" (8mm)	0.58" (15mm)	0.98" (25mm)
Lower Display Size	0.25" (6.5mm)	0.3" (7.8mm)	0.55" (14mm)
<b>Programming Port</b>			
Interface	Micro USB		
PC Communication Function	Firmware upgrade		
<b>Environmental and Physical Specifications</b>			
Operating Temperature	-10°C to 50°C		
Storage Temperature	-40°C to 60°C		
Humidity	0 to 90 % RH (Non-Condensing)		
Altitude	2000 Meters maximum		
Pollution	Degree II		
Insulation Resistance	20MΩ minimum (@500V DC)		
Dielectric Strength	2000VAC, 50/60 Hz for 1 minute		
Vibration Resistance	10 to 55 Hz, 10m/s <sup>2</sup> for 2 hours		
Shock Resistance	200 m/s <sup>2</sup> (20g)		
Housing	Flame retardant polycarbonate		
Mounting	DIN-Rail	Panel	Panel
DIN Size	-	1/16	1/4
Dimensions (W*H*D) (mm)	22.5*96*83	48*48*59	96*96*59
Depth Behind Panel (mm)	-	50	50
Cut Out Dimensions (mm)	-	45*45	92*92
Weight (grams)	160	160	290
<b>Approval Standards</b>			
Safety	FM Class 3545, UL/cUL 61010-1 Category QUYYX/QUYYX7, ROHS, REACH		
Protective Class	IP50 for the front panel, IP20 for rear terminals and housing. All indoor use.		
EMC	EN61326		

## L42 Ordering Code

L42 -

### Power Input

4 : 90 to 250 VAC, 47-63Hz  
5 : 20 to 28 VAC, 47-63Hz / 11 to 40 VDC

### Output 1

1 : Form A Relay (2A, 250V)  
2 : SSRD, 5VDC/30mA (33Ω, ¼W \*2)  
C : SSRD, 14VDC/40mA (OM94-7)

### Output 2 / Alarm 1

0 : None  
1 : Form A Relay (2A, 250V)  
2 : SSRD, 5VDC/30mA (33Ω, ¼W \*2)  
C : SSRD, 14VDC/40mA (OM94-7)

### Alarm 2 to 3

0 : None  
1 : Form A Relay on Alarm 2 (2A, 250V)  
2 : Form A Relay on Alarm 2 to 3 (2A, 250V)

### Event Inputs

0 : None  
1 : 2 Event Inputs

### Option 1

0 : None  
1 : RS-485

### Option 2

0 : None

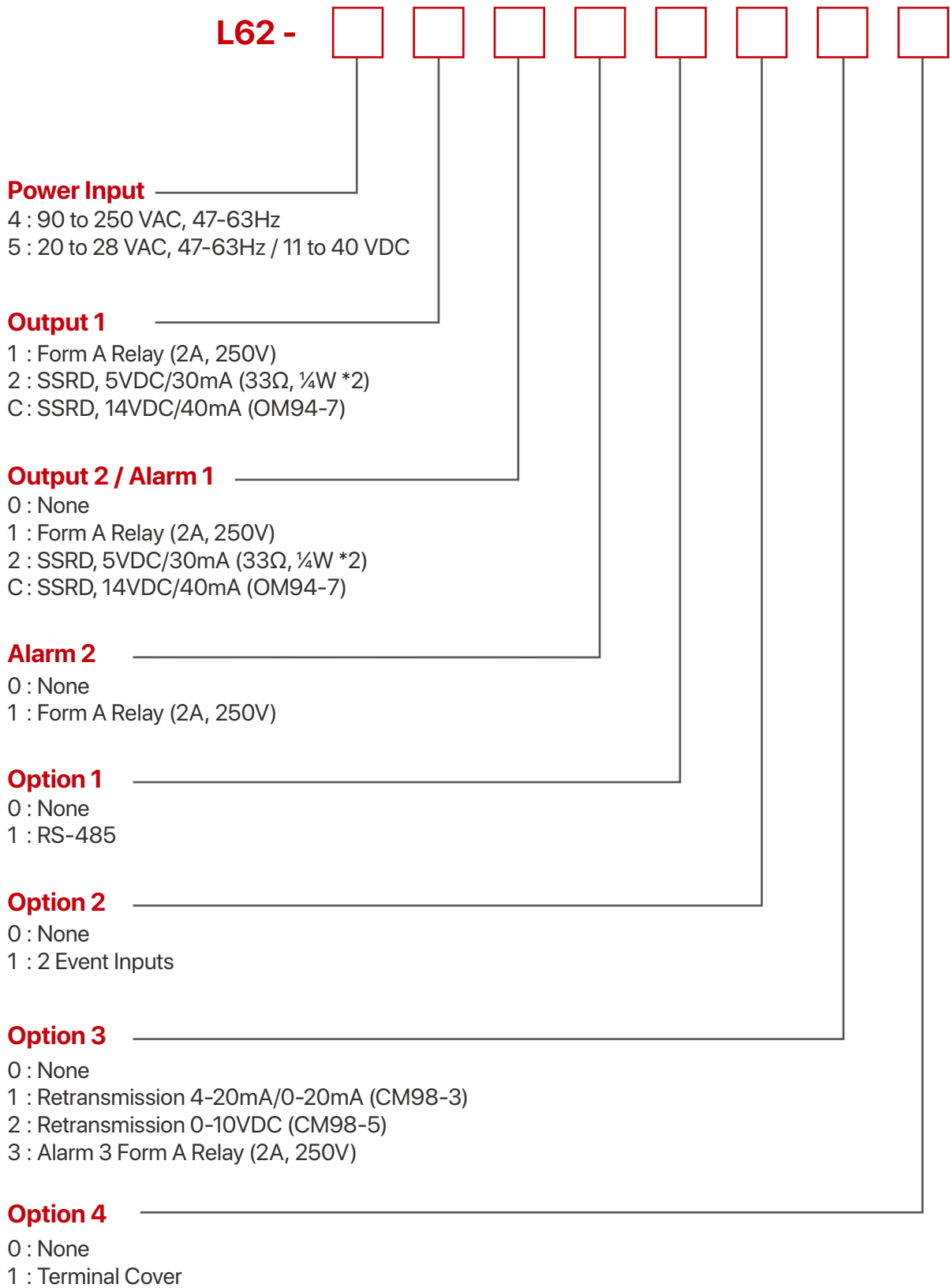
### Option 3

0 : None  
1 : Retransmission 4-20mA/0-20mA (CM98-3)  
2 : Retransmission 0-10VDC (CM98-5)

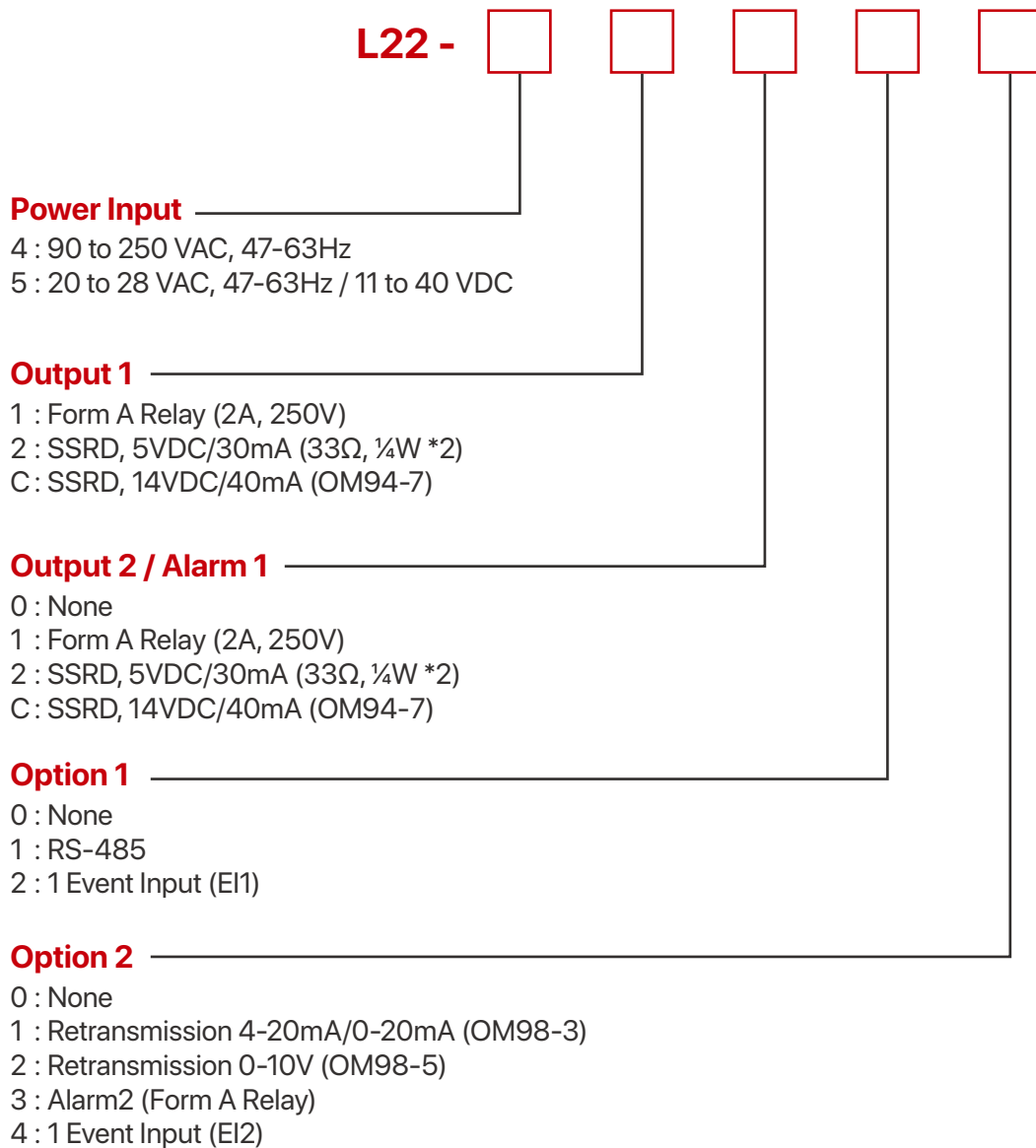
### Option 4

0 : None  
1 : Terminal Cover

## L62 Ordering Code



## L22 Ordering Code



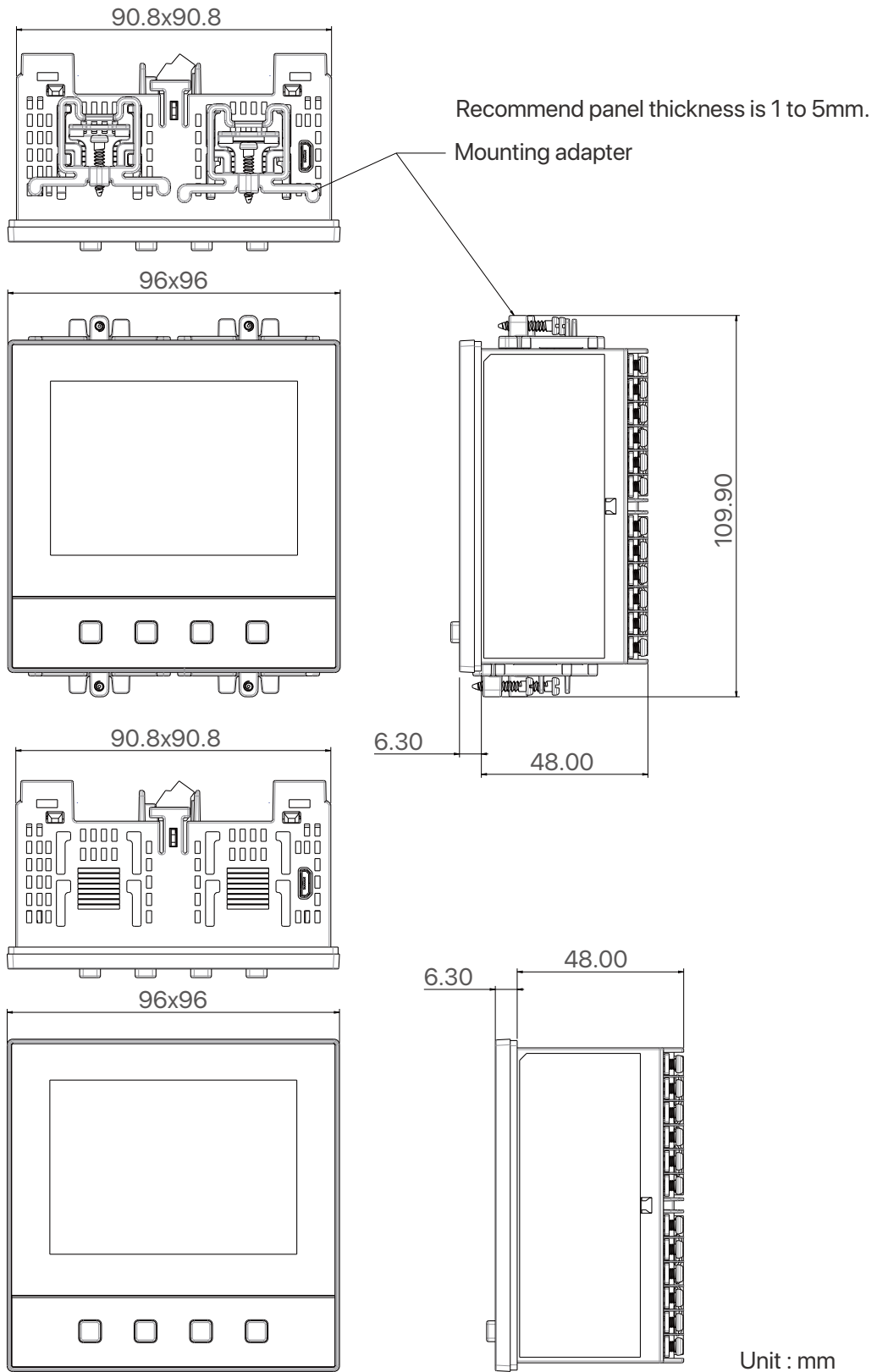
### Accessories

- OM94-7 = 14VDC/40mA SSR Drive Module
- OM98-3 = Isolated 4-20mA/0-20mA Retransmission Module for L22
- OM98-5 = Isolated 0-10VDC Retransmission Module for L22
- CM98-3 = Isolated 4-20mA/0-20mA Retransmission Module for L62 & L42
- CM98-5 = Isolated 0-10VDC Retransmission Module for L62 & L42
- PA98-1 = USB Programming Adaptor
- CC98-1 = Programming Port Cable (1.5m)

### Related Products

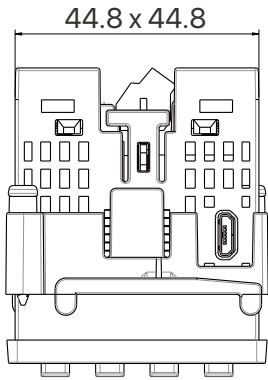
- FDC-Set = Configuration Software

## L42 Dimension with Clamps

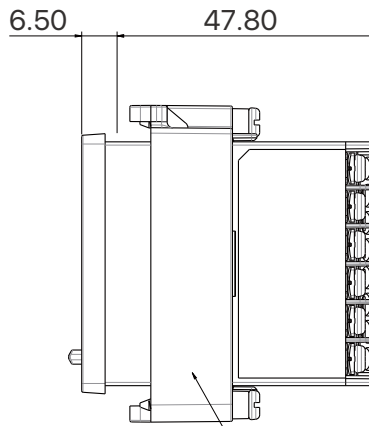
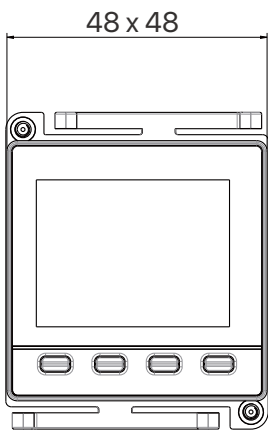




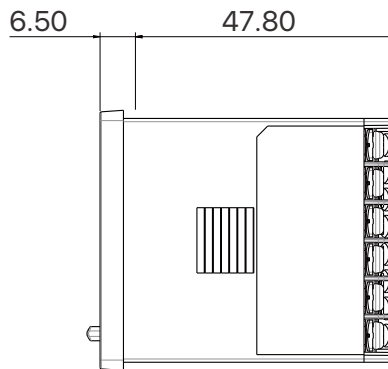
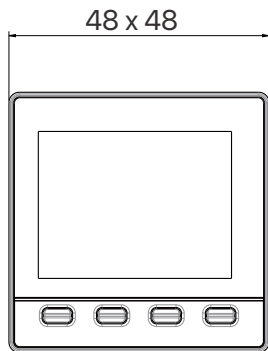
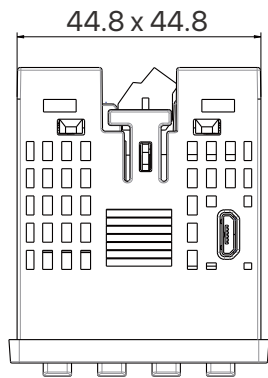
**L62 Dimension with Clamps**



Recommend panel thickness is 1 to 5mm.

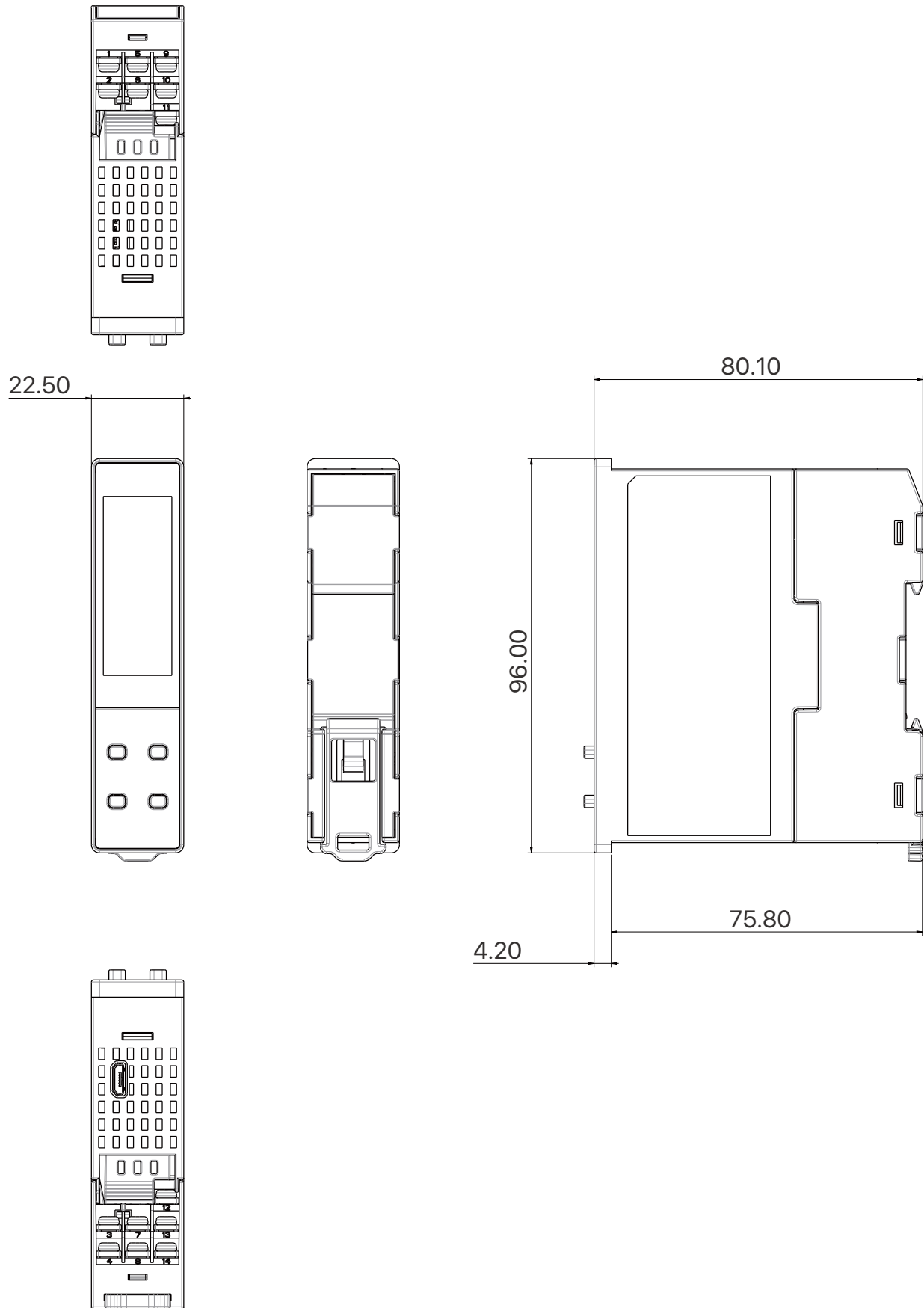


Mounting adapter



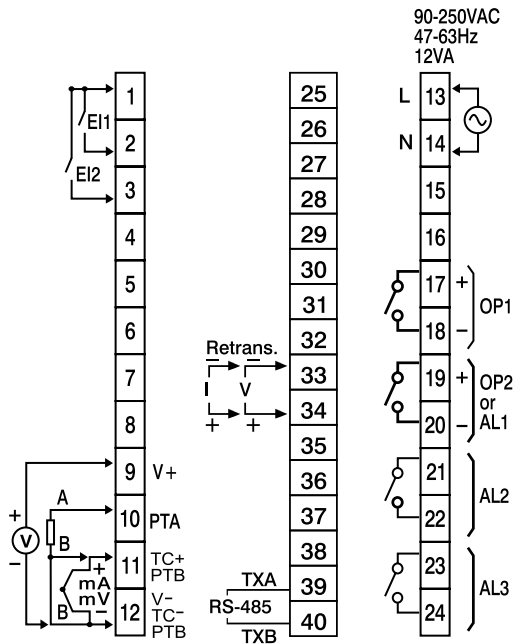
Unit : mm

## L22 Dimension with Clamps

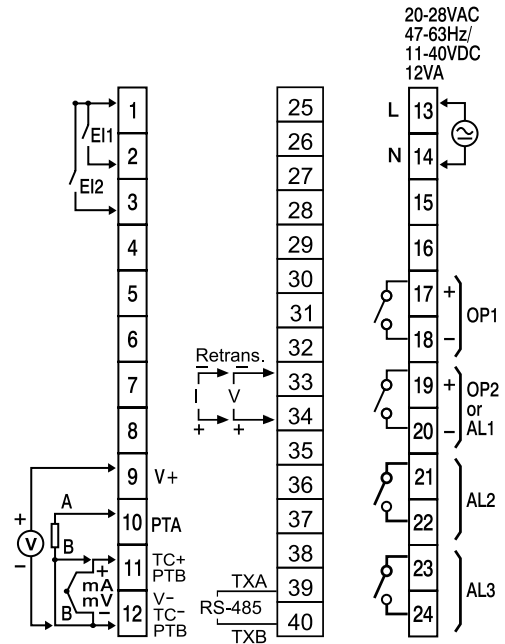


Unit : mm

## L42 Terminal Connection

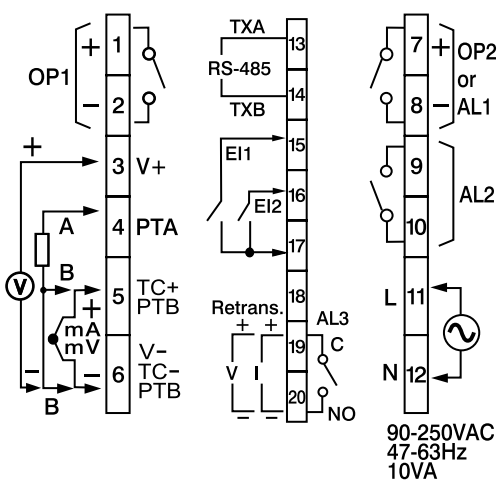


High Voltage Input Power

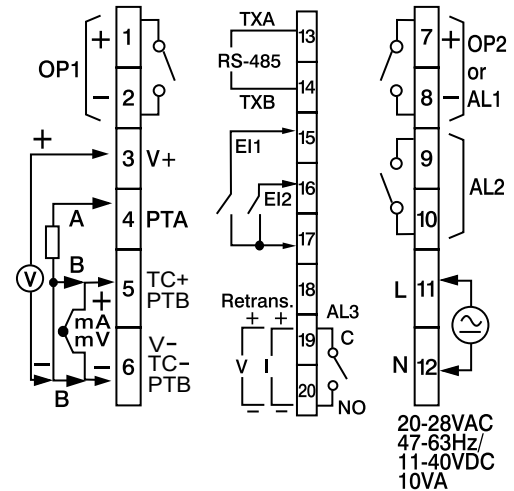


Low Voltage Input Power

## L62 Terminal Connection

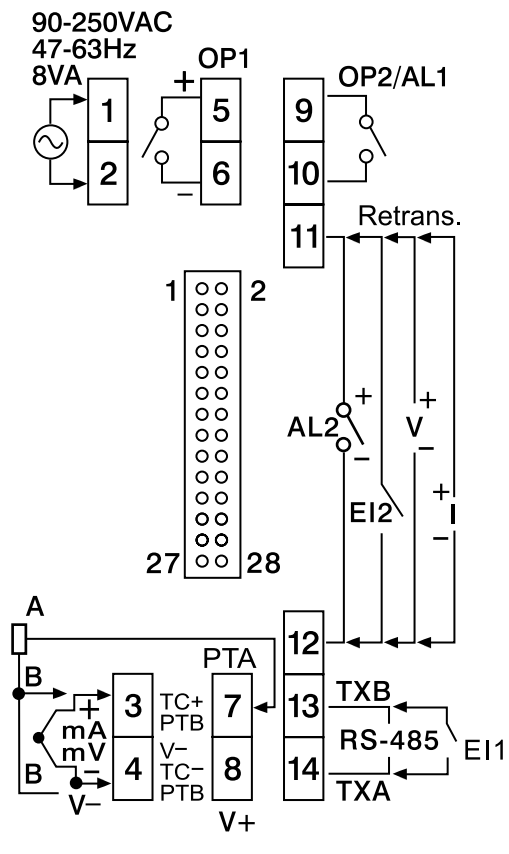


High Voltage Input Power

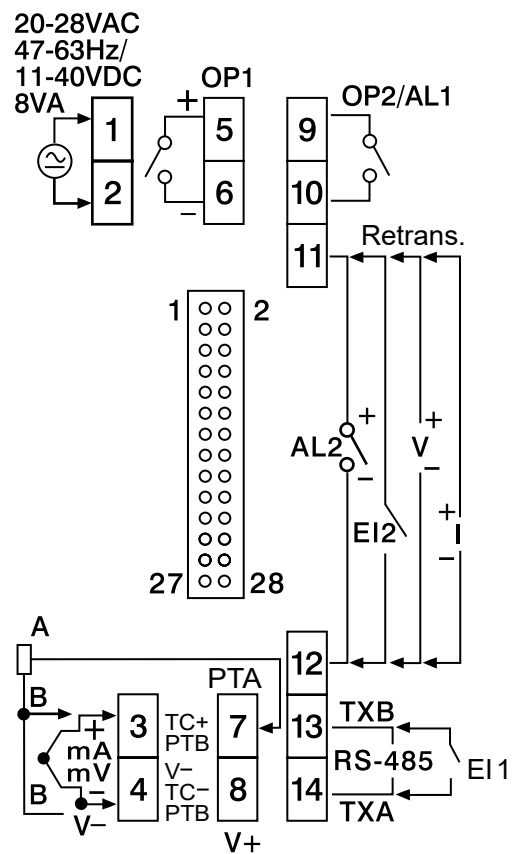


Low Voltage Input Power

## L22 Terminal Connection



High Voltage Input Power



Low Voltage Input Power



