

## **SPECIFICATIONS**

### DISPLAY

4-digit (7 segment LED) 0.5" height Display Messages: "Sbr" - a) Appears when measurement exceeds

display scaling range(9999) for signal inputs b) When open sensor is detected. (Applicable for TC/RTD/-5 to 56mV)

"Sre" a) Appears when measurement is below display scaling range (-1999) for signal inputs. B) Sensor reverse condition occurs.

(Applicable for TC/RTD/mV) Display alternating between PV and ALrM with LED of respective alarm flashing.

(Programmable annunciator option)

LED Status Annunciators - Alarm ON (2 nos)

## **POWER**

85 to 270V AC (AC: 50 or 60Hz), 4VA Max 24V DC. 4VA

## **SETTINGS**

Via three keys on front panel.

## **MEMORY**

Nonvolatile EEPROM retains all programmable parameters and values.

### MAIN SENSOR INPUT (Universal)

Thermocouple inputs

: -200 to 750°C Κ : -200 to 1350°C : -200 to 400°C R : 0 to 1750°C : 0 to 1750°C

RTD input (2 wire or 3 wire)

PT100: -100 to 850°C

Signal inputs

mV (linear): - 5 to 56mV Voltage : 0 - 10V DC Current : 0 - 20mA DC

## INDICATION ACCURACY

TC Input: 0.25% of Span ±1°C (20min.Warmup) R&S Input: 0.5% of Span ±2°C (20min.Warmup)

RTD Input: 0.1% of Span ±1°C

Signal input: 0.5% of FS

### **ALARM OUTPUTS**

2 nos: Relay output: 5A @ 250V AC or 24V DC Alarm modes - Alarm High, Alarm Low, Band, Fault Hysteresis - Programmable.

Annunciator - Programmable.

Reset Action - Programmable: automatic or latched. Standby(Hold) - Programmable : enable or disable.

### **SENSOR SUPPLY**

24V DC supply to power the sensor (30mA)

## LINEAR DC OUTPUT

Re-transmission: 0 to 20mA / 4 to 20 mA or 0 to 10V / 0 to 5V (Programmable)

Update rate: 100msec. Accuracy: 0.25% of FS

### **ENVIRONMENTAL CONDITIONS**

Operating Range: 0°C to 50°C Storage Range : -20°C to 75°C Humidity : 85% max.

### ISOLATION BREAKDOWN RATINGS

AC line with respect to all inputs and outputs: 2000 Volts. All other inputs and outputs with respect to relay contacts: 2000V AC

### CONNECTION

Wire clamping screw terminals

### WEIGHT

220 grams

## SAFETY PRECAUTIONS

All safety related codifications : symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not handled in a manner specified by the manufacturer it might impair the protection provided by the equipment.

↑ CAUTION : Read complete instructions prior to installation and operation of the unit.

A CAUTION : Risk of electric shock.

### WIRING GUIDELINES

## A CAUTION :

- 1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement.
- 2. Wiring shall be done strictly according to the terminal layout with shortest connections. Confirm that all connections are correct.
- 3. Use lugged terminals to meet M3 screws.
- 4. To eliminate electromagnetic interference use of short wire with adequate ratings and twists of the same in equal size shall be made.
- 5. Cable used for connection to power source, must have a cross section of 1mm2 or greater. These wires shall have insulation capacity made of at least 1.5KV.

#### MAINTENANCE

- 1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
- 2. Clean the equipment with a clean soft cloth. Do not use Isopropyl alcohol or any other cleaning agent.

## **INSTALLATION GUIDELINES**

#### ∴ CAUTION :

- 1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
- 2. Conductors must not come in contact with the internal circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
- 3. Circuit breaker or mains switch must be installed between power source and supply terminals to facilitate power 'ON' or 'OFF' function. However this switch or breaker must be installed in a convenient position normally accessible to the operator.

### 

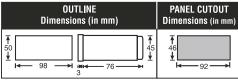
- 1. The equipment shall not be installed in environmental conditions other than those mentioned in this manual.
- 2. Fuse Protection: The equipment does not have a built in-type fuse. Installation of external fuse of rating 275V AC/1Amp for electrical circuitry is highly recommended.

- 3. Thermal dissipation of equipment is met through ventilation holes provided on chassis of equipment. Such ventilation holes shall not be obstructed else it can lead to a safety hazard.
- 4. The output terminals shall be strictly loaded to the manufacturer specified values/range.

## MECHANICAL INSTALLATION

For installing the controller

1. Prepare the panel cutout with proper dimensions as shown



- 2. Remove clamp from the controller and push the controller into the panel cutout. Secure the controller in its place by pushing the clamp on rear side.
- 3. For proper sealing, tighten the screws evenly with required torque.

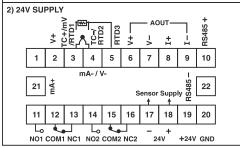
## ⚠ CAUTION:

The equipment in its installed state must not come in close proximity to any heating sources, caustic vapors. oils, steam, or other unwanted process by-products.

#### **EMC Guidelines:**

- 1. Use proper input power cables with shortest connections and twisted type.
- 2. Layout of connecting cables shall be away from any Internal EMI source.

### TERMINAL CONNECTIONS 1) 230V SUPPLY 21 | \$ 22 Sensor Supply 13 14 | 15 16 17 18 19 L 24V NO1 COM1 NC1 NO2 COM2 NC2



TERMINAL	SYMBOL	DESCRIPTION
2	V+	Signal I/P 0 to 10 V
3	TC+/RTD1/mV	Thermocouple I/P +
4	TC-/mA-/V-/RTD2	Thermocouple I/P -
5	RTD 3	Terminal for 3wire RTD
6	V+(Aout)	Analog VTG O/P (+)
7	V-(Aout)	Analog VTG O/P (-)
8	I+(Aout)	Analog CURR O/P (+)
9	I-(Aout)	Analog CURR O/P (-)

10	RS485+	RS485 Communication (+)
11	NO1	NO of Relay 1
12	COM1	COM of Relay 1
13	NC1	NC of Relay 1
14	NO2	NO of Relay 2
15	COM2	COM of Relay 2
16	NC2	NC of Relay 2
17	Sensor Supply (-)	-Ve of Sensor Supply
18	Sensor Supply (+)	+Ve of Sensor Supply
19	N	Neutral
20	L	Live
21	mA +	Signal input 0-20mA
22	RS485-	RS485 Communication (-)

## FRONT PANEL DESCRIPTION



Functions	Key press				
To enter or exit program mode	Press for 3 seconds				
To change levels.	♠ Press Once				
To increase or decrease the value of a particular function.					
To view next function.	key once				
NOTE: The unit will autoexit program mode after 60 seconds of inactivity.					

PROGRAMMING OF LEVELS					
PROGRAMMING OF LEVEL 0					
KEY PRESS DISPLAY DESCRIPTION					
Press For 3 Sec [ UL. 0					

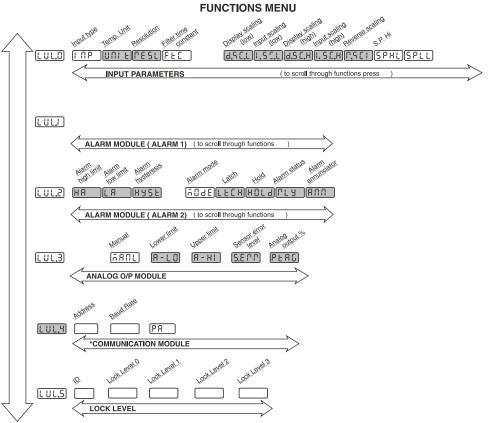
# Press kev to select input sensor type

Default setting: J

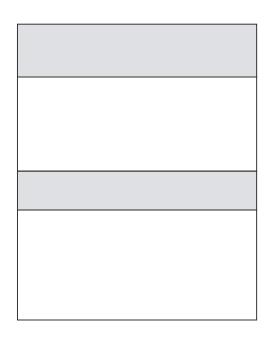
Display for 1sec Input sensor selection J (-200 to 750°C) K (-200 to 1350°C) Press A Press A T (-200 to 400°C) Press A R (0 to 1750°C) S (0 to 1750°C) Press A Press A PT100 ( -100 to 850°C)

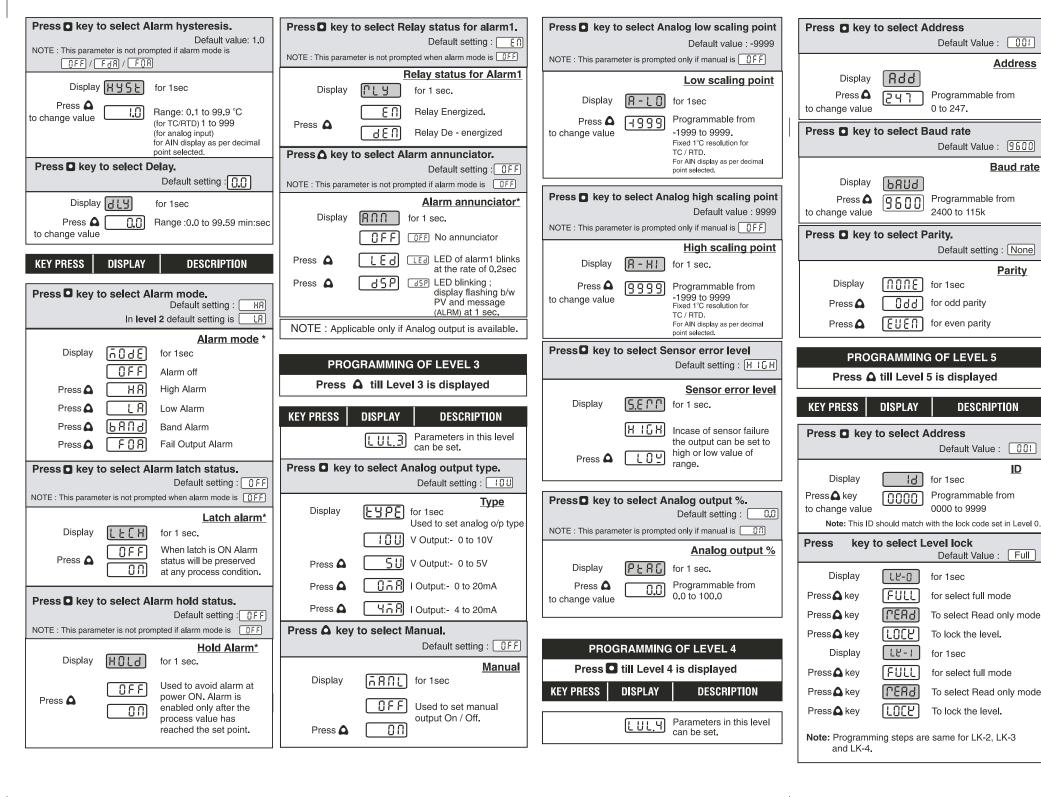
Press 🛕 mV (linear) -5 to 56mV Press 🛆 10V DC

Press 🛕 20mA DC Doc. name: OP INST PIC152A OP631-V01 (Page 1 of 4)



Appearance of all shaded menus dependent on selection of other parameters. Refer programming for further details.
\*-Applicable only for Communication models.





**Parity** 

ID



### USER GUIDE

### **ALARM MODES**

#### High Alarm:

The alarm is turned ON when PV rises above a preset value.

#### Low Alarm:

The alarm is turned ON when PV falls below a preset

#### Band Alarm:

The alarm is turned ON when PV rises above or falls below a preset value.

#### Fail Output Alarm:

The alarm is turned ON in case of :

- a) measurement value exceeds range
- b)Sensor reverse condition(applicable for TC/RTD).

### Latch Alarm:

This function is used to latch the alarm. When activated. the alarm is latched until it is acknowledged manually, even though the alarm condition may have disappeared.

### Hold Alarm:

When hold is selected, in any alarm mode, it prevents an alarm signal on power-up. The alarm is enabled only if the process temperature is within alarm range.

## Alarm display options:

- (1) Press the **D** key to view the status of alarm1
- (2) Press the A key to view the status of alarm2

### Only the alarms that are active can be viewed.

Alarm status (e.g : of alarm 1) will be displayed as follows:

- LA-1 for low alarm, HA-1 for high alarm,
- FO-1 for Fail output alarm.
- (3) Press to acknowledge the particular alarm (Alarm will be acknowledged only if latch ON).

## FILTER TIME CONSTANT:

The filter is an adaptive digital filter that discriminates between measurement noise and actual process changes. If the signal is varying too greatly due to measurement noise, increase the filter value. If the fastest controller response is needed, decrease the filter value.

## BIAS:

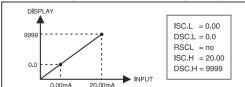
This value offsets the indicator's PV display value by the entered amount. This is useful in applications in which the sensor cannot provide the actual temperature signal due to mounting constraints, inaccuracy etc.

#### SCALING FOR ANALOG INPUT:

To scale the controller, two scaling points are necessary. Each scaling point has a coordinate pair of Display Values and Input Values. It is recommended that the two scaling points be at the low and high ends of the input signal being measured. Process value scaling will be linear between and continue past the entered points to thelimits of the input range.

(Factory settings example will display 0.0 at 0mA input and display 9999 at 20.00mA input.) Reverse acting indication car be accomplished by setting reverse scaling parameter as YES. In this case referring the above eg. For 0.00mA input the display will show 9999 and 20.00mA input the display will show 0.0.

NOTE: This change will not be visible in the programming menu.



### **SETTING FOR MANUAL OUTPUT MODE:**

KEY PRESS	DISPLAY	DESCRIPTION						
	. For 0-10V if constant 5V output Voltage is desired en setting for manual output :							
Press D key	to enter into mode.							
Press 🛕 key	till [LUL.3]							
Press 🖸	£46£	display						
Press 🛕	1 1001	for Selection of voltage						
Press 🗖		display						
Press 🛕		Selection for manual output mode)						
Press 🖸	PALG							
Press 🛕	S 0.0 (	Adjust the display to 50.0 to get 5V at putput						

## SETTING FOR RETRANSMISSION MODE

## Eg.: 1) For Temperature Input:

Input · RTD Input

Retransmission output : 0 - 20 mA Desired output : 0 mA at 0°C, 20mA at 400°C						
Settings:						
Press D	L U L.0					
Press	l NP					
Using 🛕	P 100	Select the Input type as RTD				
Press 🗖 till		is displayed				
Press 🛕 till	[ U L.3]	is displayed				
Press	FAbE	display momentarily				
Press 🛕	058	Select Analog output type				
Press	<u> Paur</u>	display momentarily				
and then display	OFF	(Selection for retransmission mode)				
Press	A-L0					
Press 🛕		Adjust the display to 0				
Press	8-X:					

KEY PRESS	DISPLAY	DESCRIPTION
Press 🛕	400	Adjust the display to 400
Press <b>T Eq.</b> : 2) For all	nalog Innut	(0-10V)·
Retransmission	• .	` '
Desired output		
Input Scaling : Settings :	0V - 0; 10V	- 400
Press D	LUL.O	
Press	1 NP	
Using 🛕	NOLE	Select the Input type as voltage
Press 🖸 until	d.S C.L	is displayed
Using 🛕		Adjust the display to 0
Press	1.5 C.L	
Press 🛕	0.00	Adjust the display to 0
Press	d.S C.H	
Press 🛕	400	Adjust the display to 400
Press	1.5 C.H	
Press 🛕	10.0	Adjust the display to 10
Note : By defau	It the display w	ill be 10.00 for 0-10V Inpu

Press 🛕

Setting for Retransmission:

Press 🚨 IIII	<u>[[ [] [] [] [] [] [] [] [] [] [] [] [] [</u>	
Press	FAbE) (	display momentarily
Press 🛕	45B (	Select Analog output type
Press	YBUF)	displays momentarily
and then display	0FF	
Press	A - L ()	
Press D		Adjust the display to 0
Press	A-X !	
Press D	400	Adjust the display to 400
Press		

## **CONNECTION WITH 2-WIRE TRANSMITTER**

Connection with Internal 24V DC supply:

Eg : 10	give	0-2	UIII	-1/4-	20111	Αυ	C ai	iaic	<del>-</del>	
	Two-wire Transmitter									
	[+[:::::::::::]									
II _			<u>+-</u>							
1	2	3	4	5	6	7	8	9	10	
‡ 2·	↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑									
11	12	13	14	15	16	17	18	N	L	
Т ом	1 COM	1 NC1	NO2	сома	NC2		L	<u> </u>	<u>À</u>	

## CALIBRATION CERTIFICATE

Date:

Model No:\_\_\_\_

Sr. No.:\_

Claimed Accuracy: ± 0.25 % of full scale ± 1 digit (After 20min warmup time)

The calibration of this unit has been verified at the following values:

SENSOR	CALIBRATION TEMP. (°C) ( 0.1Resolution)	DISPLAY VALUE (°C)
	35.0	35.0
K	700.0	700.0
	1350	1350
	0.0	0.0
PT100	500.0	500.0
	0.008	800.0

SENSOR	CALIBRATION VALUE ( 0.1Resolution)	DISPLAY VALUE
Voltage	0.0	0.0
(VDC)	10.0	10.0
Current	0.0	0.0
(mA)	20.0	20.0

The thermocouple / RTD curves are linearised in this microprocessor based product; and hence the values interpolated between the readings shown above are also equally accurate; at every point in the curve.

Unit is accepted as accuracy is within the specified limit of claimed accuracy and certificate is valid up to one year from the date of issue

### **CHECKED BY:**

(Specifications subject to change as development is a continuous process.)

### Selec Controls Pvt. Ltd., India

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