

OPERATING INSTRUCTIONS

AL842



48 x 96

FEATURES

- Accepts Sensor Inputs : Thermocouple / RTD
- Analog inputs: mV, Current, Voltage.
- High Indication Accuracy: $\pm 0.25\%$.
- Sensor Break Detection.
- 24 VDC Sensor Supply.
- 85 to 270 VAC Supply Voltage.

SPECIFICATIONS

1. DISPLAY

4-digit (7 segment LED) 0.5" height
Display Messages:

"Or" - Appears when

- 1) Measurement exceeds display scaling range (9999)
- 2) Open sensor is detected.

"rE" - Appears when

- 1) Measurement is below display scaling range (-1999)
- 2) Sensor reverse condition occurs.

2. POWER SUPPLY

85 to 270 VAC/DC (AC: 50 or 60 Hz), 5 VA

3. SETTINGS

Via three keys on front panel.

4. MEMORY

Nonvolatile EEPROM retains all programmable parameters and values.

5. MAIN SENSOR INPUT

Thermocouple inputs
J : -200 to 750°C
K : -200 to 1350°C
T : -200 to 400°C
R : 0 to 1750°C
S : 0 to 1750°C

RTD input (2 wire or 3 wire)

PT100: -100 to 850°C

mV : 0 - 56 mV

Voltage: 0 to 10 VDC

Current: 0 to 20 mA

6. SENSOR SUPPLY

24 VDC (30mA) to power the sensors

7. INDICATION ACCURACY

Temperature: 0.25% of Span $\pm 1^\circ\text{C}$ (After 20min. Warmup)

8. ISOLATION BREAKDOWN RATINGS:

AC line with respect to all inputs and outputs:
2000 Volts

9. ENVIRONMENTAL CONDITIONS:

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

10. CONNECTION: Wire clamping screw terminal

11. WEIGHT: 250 grams

SAFETY SUMMARY

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.

CAUTION: Risk of electric shock.

WIRING GUIDELINES

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.

CAUTION:

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 275 VAC / 1 Amp for electrical circuitry is highly recommended.

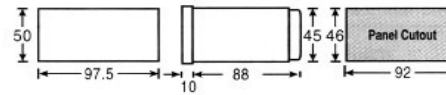
3. Thermal dissipation of equipment is met through ventilation holes provided on chassis of equipment. Such ventilation holes shall not be obstructed else it can lead to a safety hazard.

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 (in mm)



2. Push the controller into the panel cutout. Secure the controller in its place by pushing the clamp on the rear side. The screws, of the pane of the clamp, must be in the farthest forward slot.

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.

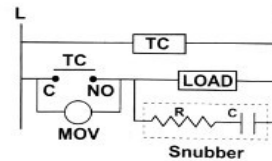
EMC Guidelines:

1. Use proper input power cables with shortest connections and twisted type.

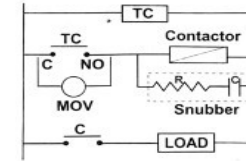
2. Layout of connecting cables shall be away from any internal EMI source.

LOAD CONNECTIONS

1. For load current less than 0.5A



2. For bigger loads, use interposing relay / contactor



1) Snubber Part No.: APRC - 01.

2) MOV Part No.: AP-MOV - 03.

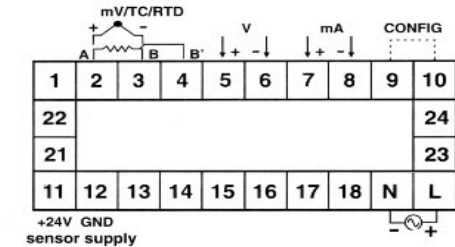
Note: For inductive loads, use of snubber and MOV, as shown above, is recommended.

ELECTRICAL PRECAUTIONS DURING USE

Electrical noise generated by switching of inductive loads can create momentary disruption, erratic display, latch up, data loss or permanent damage to the instrument. To reduce noise:

- a) Use of MOV across supply of temperature controller & snubber circuits across loads are Recommended
- b) Use separate shielded wires for inputs.

TERMINAL CONNECTIONS



CONFIGURATION SCHEME

METHOD 1:

1. Short terminals 9 and 10.
2. Turn Power ON.
3. Remove the shorting. Unit will directly enter into programming mode.

METHOD 2:

Press **5** + **0** for 3 sec to enter into Programming

Key press	Display	Description
1. Lock code for program entry		
	Factory setting: <input type="text" value="0"/>	
NOTE: This parameter will not be prompted if programming is entered using METHOD 1.		
	(Display <input type="text" value="CODE"/> for 1 second)	
	<input type="text" value="0"/>	
Press 5 + 0 key and program the lock code as 85		

Factory setting:

NOTE: This parameter will not be prompted if programming is entered using METHOD 1.

(Display for 1 second)


Press **5** + **0** key and program the lock code as **85**

Press **5** + **0** key and program the lock code as **85**

Press **5** + **0** key and program the lock code as **85**

Key press	Display	Description
2. Press \square to program Sensor type Factory setting: \square		
(Display \square for 1 second)	\square	J : -200 to 750°C
Press $\square + \square$	\square	K : -200 to 1350°C
Press $\square + \square$	\square	T : -200 to 400°C
Press $\square + \square$	\square	R : 0 to 1750°C
Press $\square + \square$	\square	S : 0 to 1750°C
Press $\square + \square$	\square	PT100 (-100 to 850°C)
Press $\square + \square$	\square	mV : 0 to 56 mV
Press $\square + \square$	\square	Current
Press $\square + \square$	\square	Voltage
3. Press \square to program Resolution. Factory setting: \square		
(Display \square for 1 second)	\square	TC/RTD: 1 / 0.1 °C
Press $\square + \square$	\square	Analog input: 1/0.1/0.01/0.001 (Decimal point position)
Press $\square + \square$	\square	
Press $\square + \square$	\square	
4. Press \square key to select Temperature unit. Factory setting: \square		
(Display \square for 1 second)	\square	
Press $\square + \square$	\square	
5. Press \square key to program Display scaling point low Factory setting: \square NOTE: Valid for analog inputs (mV, current, voltage)		
(Display \square for 1 second)	\square	Range: -1999 to DSCH (display as per decimal point selected)
Press $\square + \square / \square$ to change value.	\square	
6. Press \square key to program Input scaling point low Factory setting: \square NOTE: Valid for analog inputs (mV, current, voltage)		
(Display \square for 1 second)	\square	Range: 0.0mA/V/mV to ISCH (default value changes as per analog input selected)
Press $\square + \square / \square$ to change value.	\square	

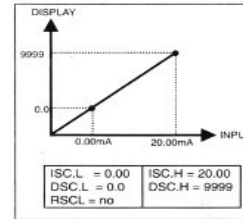
Key press	Display	Description
7. Press \square key to program Display scaling point high Factory setting: \square NOTE: Valid for analog inputs (mV, current, voltage)		
(Display \square for 1 second)	\square	
Press $\square + \square / \square$ to change value.	\square	Range: DSCL to 9999 (display as per decimal point selected)
8. Press \square key to program Input scaling point high Factory setting: \square NOTE: Valid for analog inputs (mV, current, voltage)		
(Display \square for 1 second)	\square	
Press $\square + \square / \square$ to change value.	\square	Range : ISCL to 20.00mA/10.00V/56mV (default value changes as per analog input selected)
9. Press \square key to select Reverse scaling Factory setting: \square NOTE: Valid for analog inputs (mV, current, voltage)		
(Display \square for 1 second)	\square	
Press $\square + \square$	\square	
10. Press \square key to program Filter time constant Factory setting: \square		
(Display \square for 1 second)	\square	Range : OFF, 1 to 99 sec.
Press $\square + \square / \square$ to change value.	\square	
11. Press \square key to program PV Bias Factory setting: \square		
(Display \square for 1 second)	\square	Range : -99.9 to +99.9 °C (Fixed 0.1 resl for TC/RTD & 1 unit for analog input)
Press $\square + \square / \square$ to change value.	\square	
12. Press \square key to select reset all Factory setting: \square		
(Display \square for 1 second)	\square	
Press $\square + \square$	\square	
Press \square key to reset all the parameters		

 Program Exit: Press $\square + \square$ key for 3 sec
Unit will auto exit the programming mode if no key is pressed for 60 sec

USER GUIDE

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 the limits of the input range. (Factory settings example will display 0.0 at 0 mA input and display 9999 at 20.00 mA input.) Reverse acting indication can be accomplished by setting



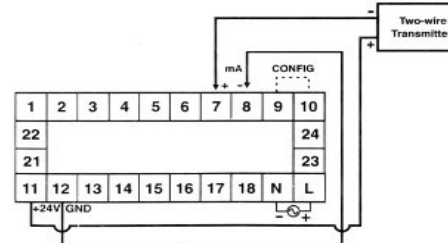
reverse scaling parameter as YES. In this case referring the above eg. for 0.00 mA input the display will show 9999 and 20.00 mA input the display will show 0.0.

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

Connection with 2-wire Transmitter

Eg. : for 4-20 mA input

Connection with Internal 24VDC Sensor supply :



Connection with external 24VDC supply :

