

**RTD TRANSMITTER**  
(field-selectable temp. range)

MODEL

**6R**

**BEFORE USE ....**

Thank you for choosing us. Before use, please check contents of the package you received as outlined below. If you have any problems or questions with the product, please contact our sales office or representatives.

**PACKAGE INCLUDES:**

- Signal conditioner .....(1)
- (Option) DIN rail mounting plate (model: A-31) .....(1 set)
- (Option) Spring clip (model: A-02).....(1 set)

**MODEL NO.**

Confirm Model No. marking on the product to be exactly what you ordered.

**INSTRUCTION MANUAL**

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

**POINTS OF CAUTION**

**GENERAL PRECAUTIONS**

- Before you remove the unit or mount it, turn off the power supply and input signal for safety.

**ENVIRONMENT**

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -5 to +70°C (23 to 158°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

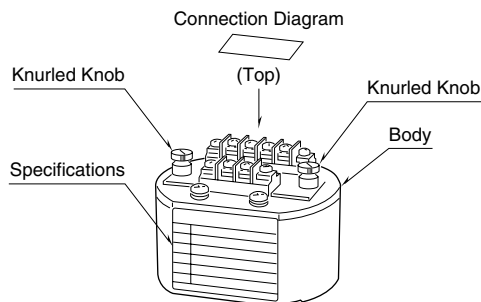
**WIRING**

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

**AND ....**

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

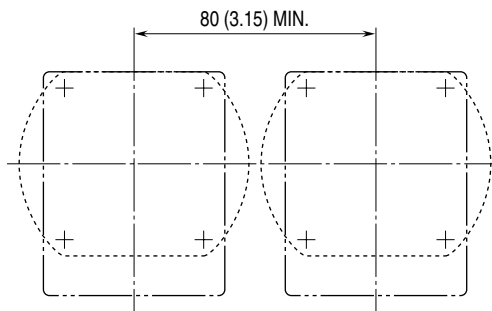
**COMPONENT IDENTIFICATION**



**INSTALLATION**

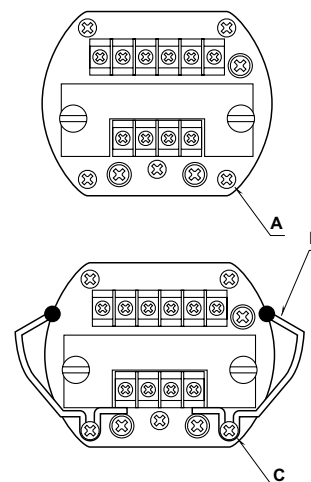
**35-mm DIN RAIL MOUNTING PLATE A-31 (optional) unit: mm (inch)**

- 1) Attach the unit to the DIN rail mounting plate with screws included in the package.
- 2) Set the plate so that its DIN rail adapter is at the bottom. Hang the upper hook at the rear side on the DIN rail and push in the lower. When removing the plate, push down the DIN rail adapter utilizing minus screwdriver and pull.



**SPRING CLIP A-02 (optional)**

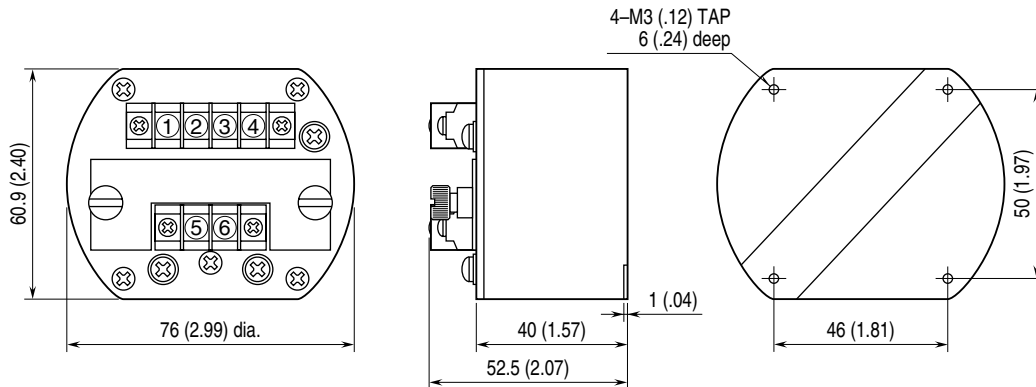
- 1) Remove the two flat-head screws **A** located at the bottom as shown to the right.
- 2) Set Spring Clip **B** on the mounting hole and tighten it as shown to the right with a binding screw **C** included in the package.
- 3) Check that the clips contract and release smoothly.



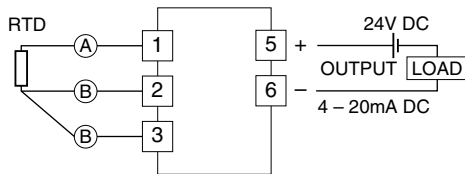
## TERMINAL CONNECTIONS

Connect the unit as in the diagram below or refer to the connection diagram on the top of the unit.

### EXTERNAL DIMENSIONS unit: mm (inch)

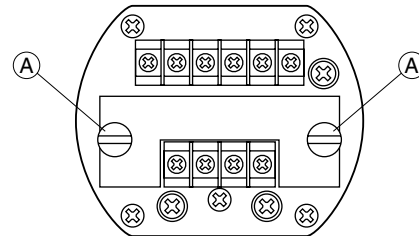


### CONNECTION DIAGRAM



### PREPARATION

- 1) Loosen Screw (A) on top and open the covering.



## WIRING INSTRUCTIONS

### SCREW TERMINAL

Torque: 0.6 N·m

## CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Input: Check voltage across the terminal 1 – 2 with a sensitive voltmeter (With 20°C or 68°F, approx. 220mV with Pt 100, approx. 110mV with Pt 50Ω).  
If RTD wires are broken, the output goes over 100% (below 0% with downscale) due to burnout function. Check leadwires in such a case.
- 3) Output: Check that the load is within the permissible limit including wiring resistance.

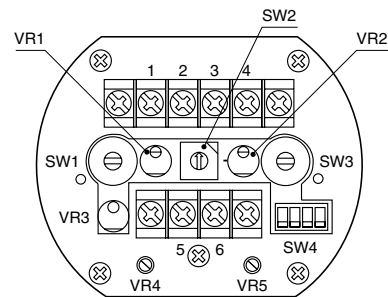
$$\text{Load Resistance } (\Omega) = \frac{\text{Supply Voltage (V)} - 13 \text{ (V)}}{0.02 \text{ (A)}}$$

(including leadwire resistance)

## ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to meet the ordered specifications, therefore you usually do not need any calibration.

For matching the signal to a receiving instrument or in case of regular calibration, adjust the output as explained in the following. Zero and Span adjustments are located behind the top cover. Release the knurled knobs and open the cover.



- SW1 : 0% Input Adjustment
- SW2 : 100% Input Adjustment (coarse)
- SW3 : 100% Input Adjustment (fine)
- SW4 : Span Selector
- VR1 : Output Zero Adjustment
- VR2 : Output Span Adjustment
- VR3 : Cancelling RTD Resistance

### 0% TEMPERATURE ADJUSTMENT

- 1) Adjust SW1 to appropriate position according to Table below.  
Check also that 100% temperature to be adjusted is within the available range in the right column of the table. (The available range means that for which we guarantee  $\pm 0.2\%$  accuracy.)
- 2) Connect a digital voltmeter across the terminal 1 (+) – 4 (–).
- 3) With minimum (0%) input, adjust output reading to  $0 \pm 0.001\text{V}$  with VR3.

#### • 100°C or Wider Span (180°F or Wider Span)

SWITCH POSITION	0% TEMPERATURE		100% TEMPERATURE	
	°C	°F	°C	°F
SW1-1	0 – 50	32 – 122	100 – 500	212 – 932
SW1-2	50 – 100	122 – 212	150 – 350	302 – 662
SW1-3	100 – 150	212 – 302	200 – 400	392 – 752
SW1-4	200 – 250	392 – 482	300 – 500	572 – 932
SW1-5	300	572	500	932
SW1-6	-50 – 0	-58 – +32	50 – 350	122 – 662
SW1-7	-100 – -50	-148 – -58	0 – 50	32 – 122
SW1-8	Unused		Unused	
SW1-9	Unused		Unused	
SW1-10	Unused		Unused	

#### • 50 – 100°C Span (90 – 180°F Span)

SWITCH POSITION	0% TEMPERATURE		100% TEMPERATURE	
	°C	°F	°C	°F
SW1-1	0 – 50	32 – 122	50 – 100	122 – 212
SW1-2	50 – 100	122 – 212	100 – 150	212 – 302
SW1-3	100 – 150	212 – 302	150 – 200	302 – 392
SW1-4	Unused		Unused	
SW1-5	Unused		Unused	
SW1-6	-50 – 0	-58 – +32	0 – 50	32 – 122
SW1-7	-100 – -50	-148 – -58	-50 – 0	-58 – 32
SW1-8	Unused		Unused	
SW1-9	Unused		Unused	
SW1-10	Unused		Unused	

#### ■ TEMPERATURE SPAN

##### • 100°C or Wider Span (180°F or Wider Span)

4) Adjust SW4 to the following positions:

SW4-1 : OFF      SW4-2 : OFF  
SW4-3 : OFF      SW4-4 : ON

5) Adjust SW2 by 100°C unit and SW3 by 10°C unit according to Table below. Total value of SW2 and SW3 is the temperature span.

SWITCH POSITION	SPAN		SWITCH POSITION	SPAN	
	°C	°F		°C	°F
SW2-1	100	180	SW3-1	10	18
SW2-2	200	360	SW3-2	20	36
SW2-3	300	540	SW3-3	30	54
SW2-4	400	720	SW3-4	40	72
SW2-5	500	900	SW3-5	50	90
			SW3-6	60	108
			SW3-7	70	126
			SW3-8	80	144
			SW3-9	90	162
			SW3-10	0	0

Example: For temperature range 50 – 180°C, span equals 130°C. Turn SW2-1 and SW3-3 ON.  
[SW2-1] (100°C) + [SW3-3] (30°C) = 130°C.

##### • 50 – 100°C Span (90 – 180°F Span)

4) Adjust SW4 to the following positions:

SW4-1 : ON      SW4-2 : ON  
SW4-3 : ON      SW4-4 : OFF

5) Adjust SW2 by 50°C unit and SW3 by 5°C unit according to Table below. Total value of SW2 and SW3 is the temperature span.

SWITCH POSITION	SPAN		SWITCH POSITION	SPAN	
	°C	°F		°C	°F
SW2-1	50	90	SW3-1	5	9
SW2-2	100	180	SW3-2	10	18
SW2-3	Unused		SW3-3	15	27
SW2-4	Unused		SW3-4	20	36
SW2-5	Unused		SW3-5	25	45
			SW3-6	30	54
			SW3-7	35	63
			SW3-8	40	72
			SW3-9	45	81
			SW3-10	0	0

Example: For temperature range 50 – 120°C, span equals 70°C. Turn SW2-1 and SW3-4 ON.  
[SW2-1] (50°C) + [SW3-4] (20°C) = 70°C.

#### ■ OUTPUT ZERO & SPAN ADJUSTMENT

- 1) ZERO: Apply 0% input and adjust output to 0% with the VR1.
- 2) SPAN: Apply 100% input and adjust output to 100% with the VR2.
- 3) Check ZERO adjustment again with 0% input.
- 4) When ZERO value is changed, repeat the above procedure 1) – 3).

## MAINTENANCE

Regular calibration procedure is explained below:

#### ■ CALIBRATION

Warm up the unit for at least 10 minutes. Apply 0%, 25%, 50%, 75% and 100% input signal. Check that the output signal for the respective input signal remains within accuracy described in the data sheet. When the output is out of tolerance, recalibrate the unit according to the “ADJUSTMENT PROCEDURE” explained earlier.

## LIGHTNING SURGE PROTECTION

We offer a series of lightning surge protector for protection against induced lightning surges. Please contact us to choose appropriate models.