

**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)
Mounting screws	
Bolt (M8 × 15).....	(4)
Spring washer for M8 .....	(4)
Unit label (optional).....	(1) sheet
Mounting bracket assembly (optional)	
Mounting bracket.....	(1)
M10 U-bolt.....	(2)
Nut for M10.....	(4)
Spring washer for M10 .....	(4)
Cable glands (TIIS explosion-proof approval option).....	(2)

**■ 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.

When using this product in potentially explosive atmosphere or hazardous (classified) location, you have to follow the safety procedure to install it. Please refer to "SAFE INSTALLATION MANUAL" for each type of certification.

**POINTS OF CAUTION****■ CONFORMITY WITH EU DIRECTIVES**

- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.

**■ GENERAL PRECAUTIONS**

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

**■ ENVIRONMENT**

- 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 -40 to +85°C (-40 to +185°F) to ensure adequate life span and operation.
- Seal unused electrical wiring conduits.

**■ WIRING**

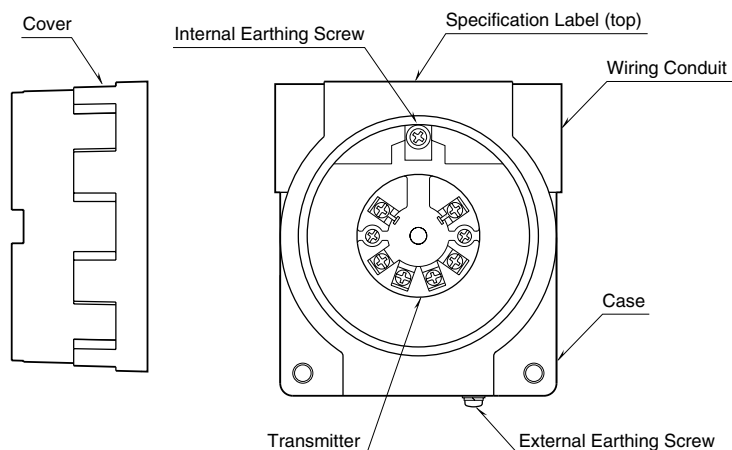
- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.
- When the unit is used in an environment where inductive noise interference is expected, ground the earthing terminal.

**■ AND ....**

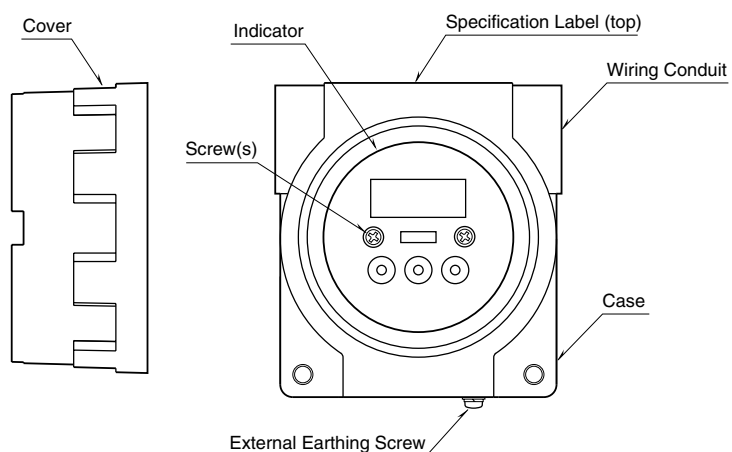
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

# COMPONENT IDENTIFICATION

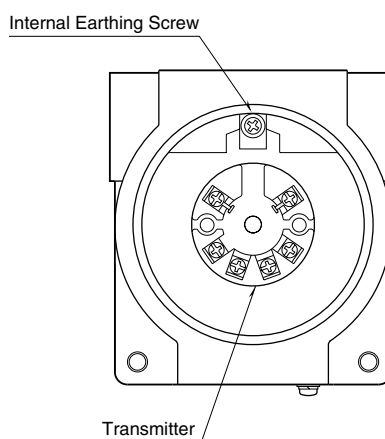
## ■ WITHOUT TERMINAL BLOCK (NO LED INDICATOR)



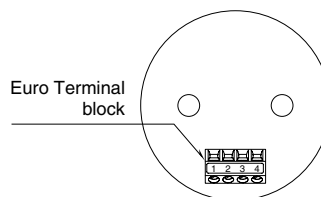
## ■ WITHOUT TERMINAL BLOCK (LED INDICATOR)



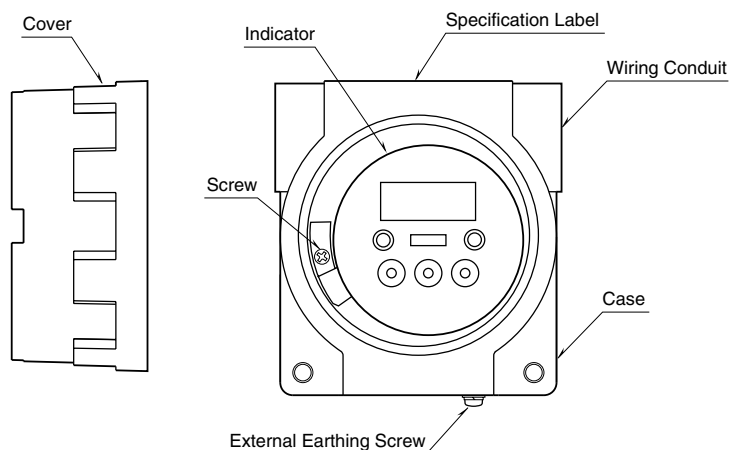
### • When the indicator is removed



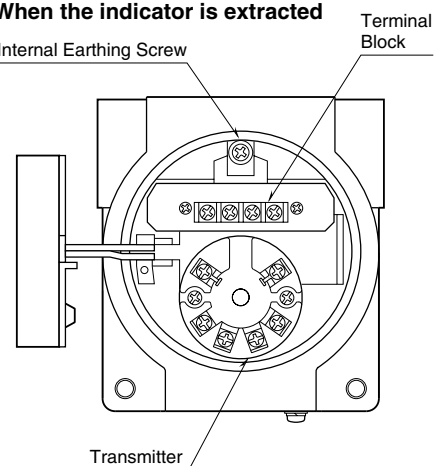
### • Rear view of the indicator



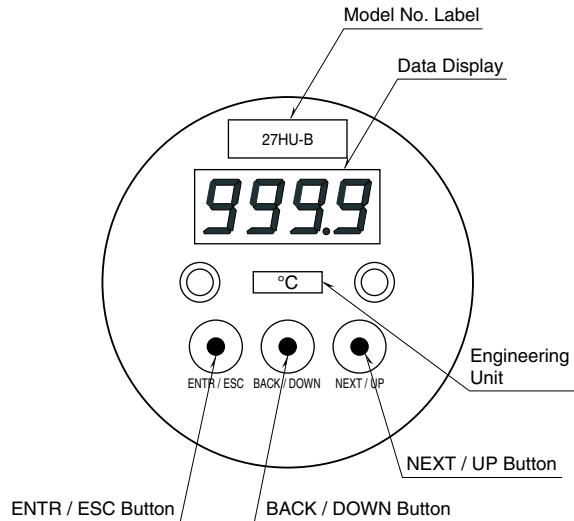
## ■ WITH TERMINAL BLOCK



### • When the indicator is extracted



## INDICATOR TOP VIEW (option)



### ENTR / ESC Button

- Used to call up the program menu and to apply parameter changes. (Press for longer than 2 seconds.)
- Used to cancel menu selections and to cancel parameter changes. (Push for a brief period.)

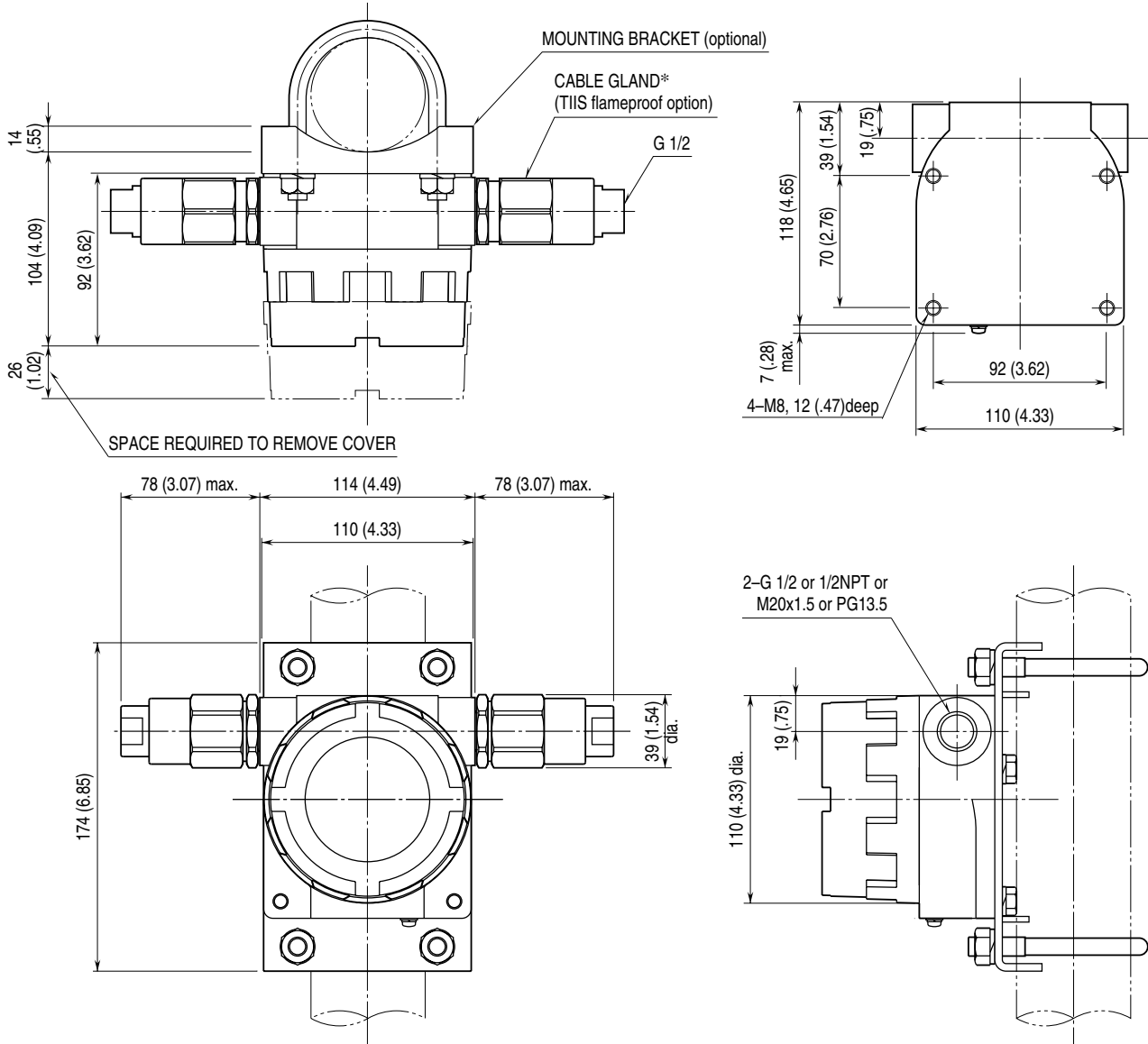
**BACK / DOWN Button:** Used to select a menu item or to decrease parameter values.

**NEXT / UP Button:** Used to select a menu item or to increase parameter values.

### • How to Reset All Parameters to the Factory Setting

Turn off the power supply to the module. In pressing all the three control buttons at once, turn it on. When a message appears on the data display, press ENTR / ESC. If you want to cancel the procedure, turn the power supply off.

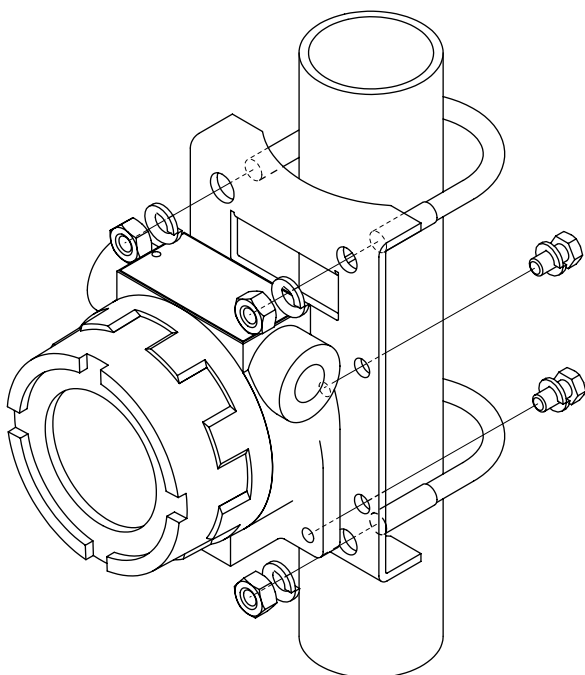
## EXTERNAL DIMENSIONS unit: mm (inch)



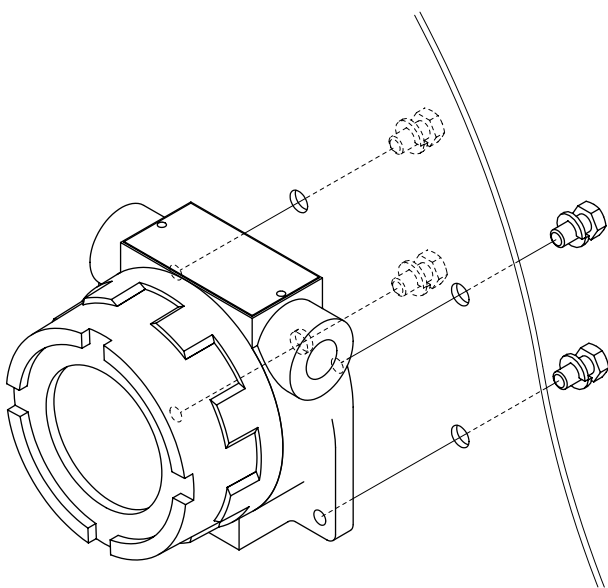
\*Two sets of cable gland are attached with TIIS flameproof option.

## INSTALLATION

### ■ MOUNTING THE ENCLOSURE ON A PIPE

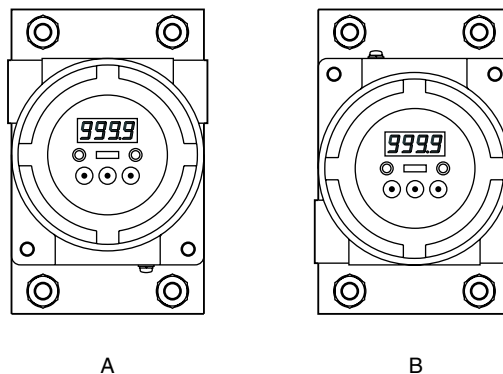


### ■ MOUNTING THE ENCLOSURE ON A WALL



### ■ MOUNTING DIRECTION

When an optional LED indicator is used, it can be mounted in two different directions in relation to the position of the external earthing screw.



## TERMINAL CONNECTION

### ⚠ Warning!

For use in a hazardous location, refer to "Installation Diagram" in the "Safe Installation Manual."

### ■ WITHOUT TERMINAL BLOCK (NO LED INDICATOR)

- 1) Fasten wires to terminals of the transmitter.  
(torque: 0.5 N·m)

### ■ WITHOUT TERMINAL BLOCK (LED INDICATOR)

- 1) Loosen the screws on top of the indicator and separate the module from the case.
- 2) Fasten wires to the transmitter terminals and to the terminals at the rear side of the indicator.

Transmitter terminal screw

(torque: 0.5 N·m)

Indicator

Applicable wire size: 0.14 to 1.5 mm<sup>2</sup> (AWG26 to 16)

Stripped length: 6 mm (0.27")

Recommended pin terminal: Phoenix Contact AI0,25-6BU

- 3) Put the indicator back inside the case and tighten with the screws. (torque: 0.8 N·m)

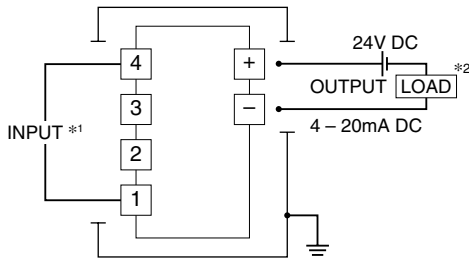
### ■ WITH TERMINAL BLOCK

- 1) Loosen the screw on the left side of the indicator and extract module from the case.
- 2) Fasten wires to the transmitter terminals and to the terminal block of the indicator. (torque: 0.5 N·m)
- 3) Put the indicator back inside the case and tighten with the screw. (torque: 0.8 N·m)

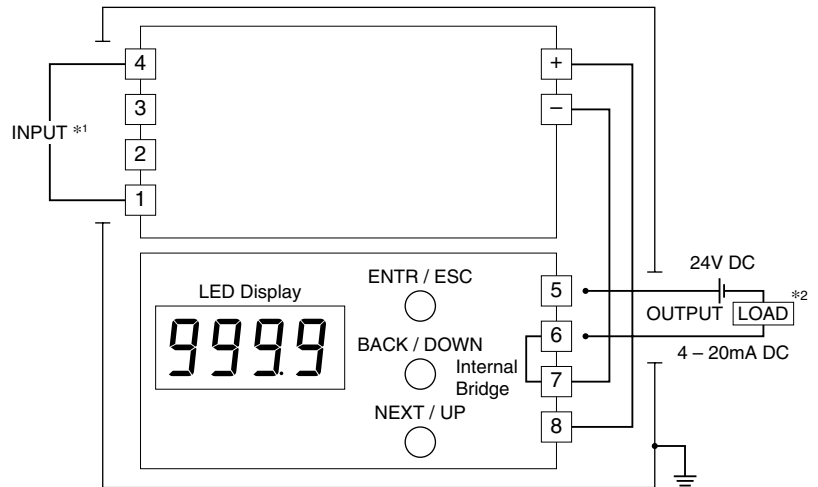
# CONNECTION DIAGRAM

## WITHOUT TERMINAL BLOCK (Output connection: Terminals on module)

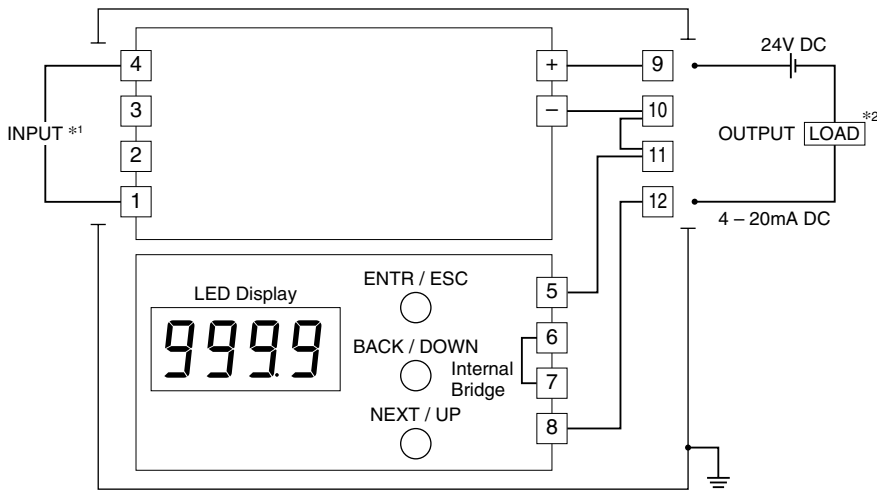
### Without LED Indicator



### With LED Indicator

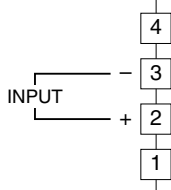


## WITH TERMINAL BLOCK



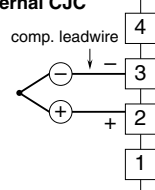
### \*1. Input Connection Examples

#### DC MILLIVOLT

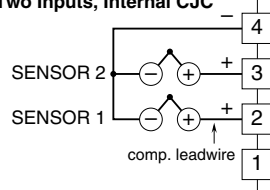


#### THEMOCOUPLE

##### Internal CJC

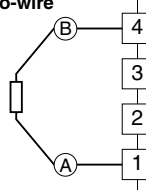


##### Two Inputs, Internal CJC

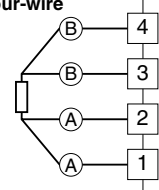


#### RTD & RESISTANCE

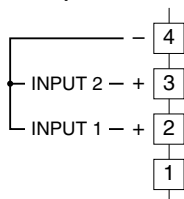
##### Two-wire



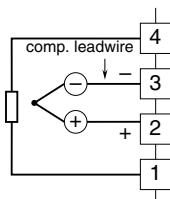
##### Four-wire



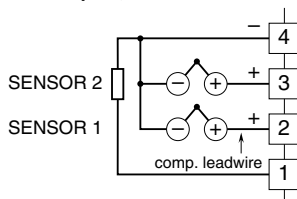
##### Two Inputs



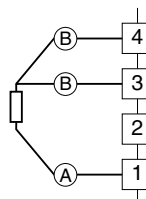
##### External CJC



##### Two Inputs, External CJC

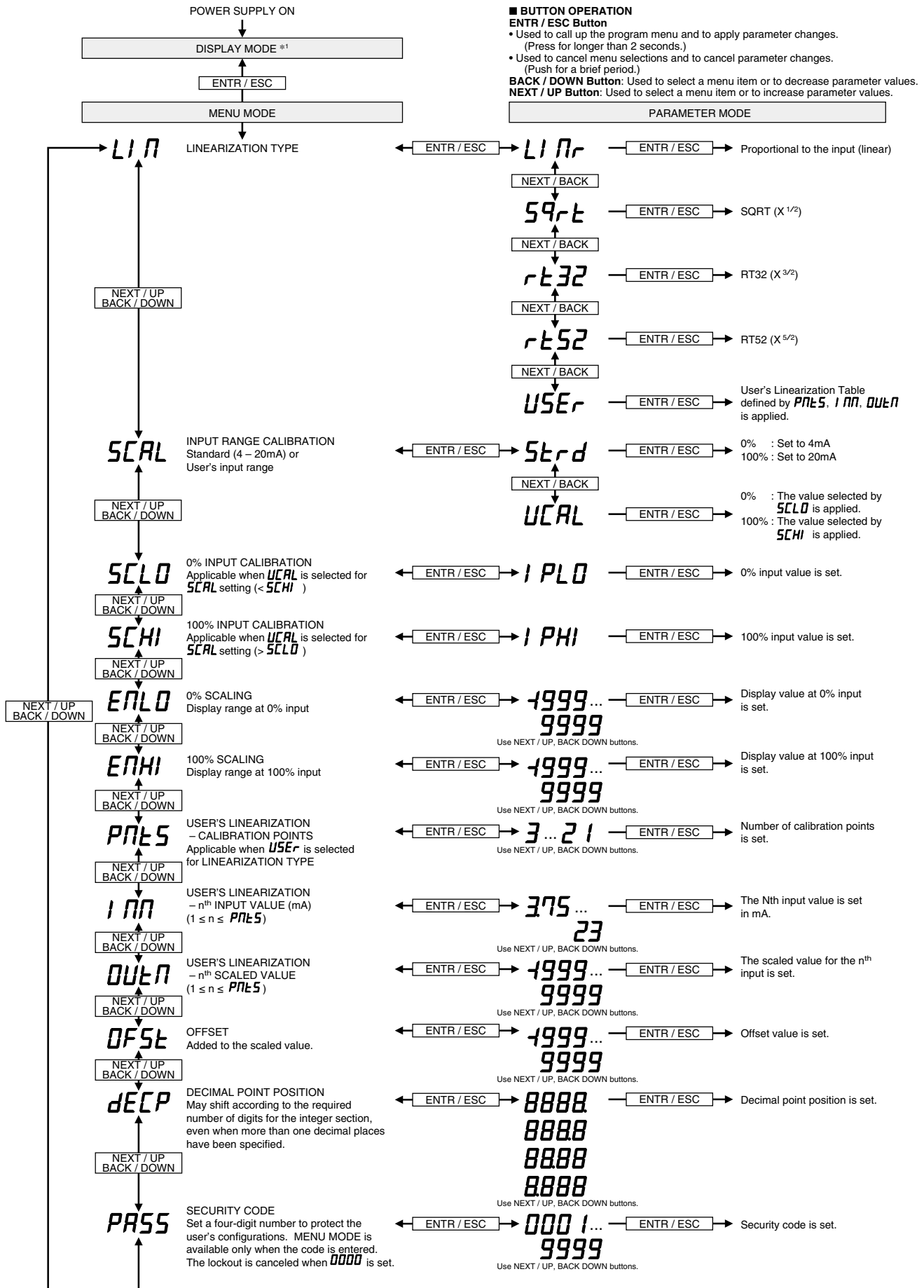


##### Three-wire



\*2. Limited to 250 – 1100Ω for HART communication

# PROGRAMMING PROCEDURE



\*1. Scaling value is displayed with the value fixed by 0% scaling, 100% scaling and number of digit after the decimal point specified by decimal point position.

## LED DISPLAY (option)

### ■ DISPLAY DIGITS

The decimal point position may shift according to the required number of digits for the integer section, even when more than one decimal places have been specified.

However, when the number of decimal places is set to 3, the '0' in the integer section is not shown in order to secure the number of effective digits, as explained in the table below.

The '0' is displayed when the number of decimal places is set to 2, though the number of effective digits in this case is reduced by 1 digit compared from the 3 decimal places.





Select appropriately for the application. Refer to 'Programming Procedure' for how to choose decimal point positions.

DECIMAL	VALUE	DATA DISPLAY
3	-1.000 thr. -1.999	<i>-1.000 ... -1.999</i>
	-0.001 thr. -0.999	<i>-0.001 ... -0.999</i>
2	-1.00 thr. -1.99	<i>-1.00 ... -1.99</i>
	-0.01 thr. -0.99	<i>-0.01 ... -0.99</i>

### ■ ERROR INDICATION

The data display blinks when an abnormality is detected. The unit display backlight also blinks.

When the setting error or the security code error occurs, press ENTR / ESC button once to cancel the error status and proceed to set again.

ERROR TYPE	DATA DISPLAY
Over-scale	
Under-scale	
Setting error	
Security code error	

## CHECKING

**⚠ Warning!** Whenever you need to measure voltage across the terminals or apply a simulated input signal to the terminals, make sure that there is no danger of explosion in the atmosphere.

1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.

2) Input: Check that the input signal is within 0 – 100% of full-scale.

If the thermocouple/RTD or its extension wires are broken, the output goes over 100% (below 0% with down-scale) due to the burnout function. Check leadwires in such a case.

3) Output: Check that the load is within the permissible limit including wiring resistance.

$$\text{Load Resistance } (\Omega) = \frac{\text{Supply Voltage (V)} - 8 \text{ (V)}^*}{0.023 \text{ (A)}}$$

(including leadwire resistance)

\*12 (V) with LED indicator option.

## ADJUSTMENT PROCEDURE

### ■ PC CONFIGURATOR SOFTWARE

To calibrate the signal to match with a receiving instrument or to change the factory-set configurations, use the PC Configurator software installed on a Windows PC via a HART modem connected to the PC.

The PC Configurator software is downloadable at our web site.

### ■ USING THE HART COMMUNICATION

Refer to the HART Setup Manual (EM-7651-B) for setting up the 27HU using the HHC. For operating an HHC (Hand-Held Communicator), refer to its instruction manual.

## LIGHTNING SURGE PROTECTION

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