

Field-mounted Two-wire Signal Conditioners 6-UNIT

3: PG 13.5

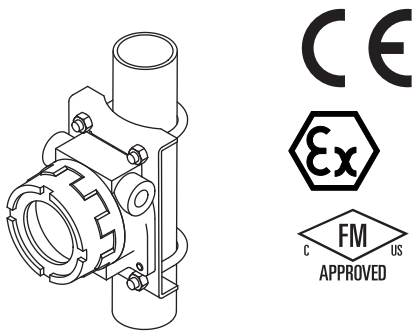
4-DIGIT LOOP POWERED INDICATOR

(outdoor enclosure, intrinsically safe)

Functions & Features

- 4-digit LED display
- No external power source needed
- Scaling, linearization and other configurations selectable via three front control buttons
- Stainless steel enclosure optional

Note: Differences between the 6DV-B and the 6DVI-B exist only in safety parameters. Refer to the relevant section for more information.



[4] MOUNTING BRACKET

0: Without

1: With

[5] OPTIONS

Enclosure Materials

Blank: Diecast aluminium enclosure

/S: Stainless steel enclosure

PACKAGE INCLUDES...

- **Mounting screws**
Bolt (M8 x 15): 4 pcs.
Spring washer for M8: 4 pcs.
- **Mounting bracket assembly (option)**
Mounting bracket: 1
M10 U-bolt: 2
Nut for M10: 4
Spring washer for M10: 4
- **Material:** Stainless steel 304 (for aluminum enclosure)
Stainless steel 316 (for stainless steel enclosure)
- **Applicable pipe:** 1 1/2" min.; 2" max.
- **Engineering unit label (1)**

MODEL:6DVI-B-[1][2][3][4][5]

ORDERING INFORMATION

- Code number: 6DVI-B-[1][2][3][4][5]
Specify a code from below for each of [1] through [5].
(e.g. 6DVI-B-2T01/S)
- Use Ordering Information Sheet (No. ESU-4220). Factory standard setting will be used if not otherwise specified.
- Specify the country in which the product is to be used with the Safety Approval code 2.

[1] SAFETY APPROVAL

1: FM intrinsically safe

2: ATEX intrinsic safety

[2] TERMINAL BLOCK

0: None (Euro type terminal block at the rear of indicator module)

T: Incorporated

[3] WIRING CONDUIT

0: G 1/2

1: 1/2 NPT

2: M20 x 1.5

GENERAL SPECIFICATIONS

Degree of protection: NEMA 4X, IP66/IP67

Wiring conduit: See 'Ordering information.'

Electrical connection:

- **Without terminal block:** Euro terminal block (Applicable wire size: 0.14 – 1.5 mm² (AWG26 – 16), stripped length 6 mm)

- **With terminal block:**

M3 screw terminal (torque 0.5 N·m)

Screw terminal:

- **With terminal block:** Nickel-plated steel

Materials

Meter housing: Flame-resistant resin (black)

Enclosure: Diecast aluminium standard; stainless steel casting optional (equivalent to type 316); silver color, epoxy resin coated

Isolation: Input to outdoor enclosure

Linearization: Proportional, SQRT ($X^{1/2}$), RT32 ($X^{3/2}$), RT52 ($X^{5/2}$), user's linearization table (max. 21 calibration points) (Default setting: Proportional)

A/D conversion: Dual-slope integration

Security: Protecting settings

Scaling: Programming via the front buttons

DISPLAY

LED: 8 mm (.3") 7-segment, red
Number of display digits: 4
Scaling range: -1999 to 9999 counts
Offset range: -1999 to 9999 counts
Decimal point position: 10^{-1} , 10^{-2} , 10^{-3} or none
Polarity sign: Minus (-) sign added automatically according to the computation result
Over-range warning: All segments dark except the top ones that blink with the input exceeding the display/measurable range; or the bottom ones that blink with the input below the range.
Read rate: 2.5/s
Engineering unit indication: Sticker label attached
 DC, AC, W, °C, °F, V, mV, A, mA, %, kW, mW, kV, kA, psi, K, bar, barg, Nl/min, kvar, Mvar, var, m, mm, kg, kg/h, kPa, MPa, N·m, Nm³/h, m³/h, m³/sec, m/sec, kgf/cm², l/min, %RH, l, l/h, t/h, rpm, ppm, pH, Pa

INPUT SPECIFICATIONS

■ **DC Current:** 4 – 20 mA DC
Measurable range: 3.75 – 23 mA DC
Maximum input current: Refer to 'Safety Parameters.'
Voltage drop: Approx. 3.7 V with 4 mA
 Approx. 4.0 V with 20 mA (Equivalent input impedance: Approx. 200 Ω)
 (The minimum required supply voltage to the 2-wire transmitter added with the indicator's voltage drop at the maximum input current must be within the output voltage range of the 2-wire transmitter's excitation supply.)

INSTALLATION

Operating temperature: Refer to the 'Safety Parameters' section.
Weight:
 • Unit
 Approx. 1.3 kg (2.9 lb), aluminium
 Approx. 4.0 kg (8.8 lb), stainless steel
 • Mounting bracket assembly (option)
 Approx. 0.78 kg (1.72 lb)

PERFORMANCE

Accuracy: ±0.01 mA
Temp. coefficient: ±0.015 %/°C (±0.008 %/°F) at 4 – 20 mA input
Dielectric strength: 1500 V AC @ 1 minute
 (input to outdoor enclosure)

HOW TO CALCULATE ACCURACY AGAINST SCALE

Example 1: 4 – 20 mA input, Scale 0 – 100
 $\text{Accuracy} = 0.01 \text{ mA} \div (20 - 4) \text{ mA} \times 100 = 0.063 \%$
 $\text{Display Error} = (100 - 0) \times 0.063 \% = \pm 0.063 \text{ digits}$
 Example 2: 10 – 20 mA input, Scale 100 – 1000
 $\text{Accuracy} = 0.01 \text{ mA} \div (20 - 10) \text{ mA} \times 100 = 0.1 \%$
 $\text{Display Error} = (1000 - 100) \times 0.1 \% = \pm 0.9 \text{ digits}$

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.

EU conformity:

ATEX Directive (for ATEX intrinsic safety)

Ex ia EN 60079-11

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

RoHS Directive

Safety approval:

FM: Intrinsically safe (US, Canada)

Class I, Div. 1, Groups A, B, C and D

Class II, Div. 1, Groups E, F and G

Class III, Div. 1

Class I, Zone 0, AEx ia IIC (US)

Class I, Zone 0, Ex ia IIC (Canada)

T4 and T5

(Class 3600)

(Class 3610)

(ANSI/ISA 60079-0)

(ANSI/ISA 60079-11)

(CAN/CSA-C22.2 E60079-0)

(CAN/CSA-C22.2 E60079-11)

ATEX: Intrinsic safety

⊕ II 1G, Ex ia IIC; T4, T5, Ga

(EN 60079-0)

(EN 60079-11)

SAFETY PARAMETERS

Operating temperature

Temp. class: Operating temperature

T4: -40 to +85°C

T5: -40 to +60°C

Intrinsic safety Ex data

Ui: (Vmax) 28 V DC

Ii: (Imax) 120 mA DC (Max. current allowed for the safety approval; Not to guarantee the product's performance.)

Pi: (Pmax) 0.84 W

Ci: 1.0 nF

Li: 0 mH

DISPLAY DESCRIPTIONS**■ 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	-1.000 ... -1.999
	-0.001 thr . -0.999	-0.001 ... -0.999
2	-1.00 thr . -1.99	- 1.00 ... - 1.99
	-0.01 thr . -0.99	-0.01 ... -0.99

■ ERROR INDICATION

The data display blinks when an abnormality is detected.

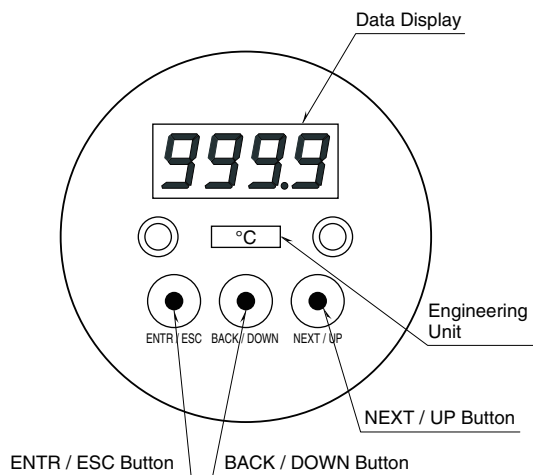
The unit display backlight also blinks.

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.

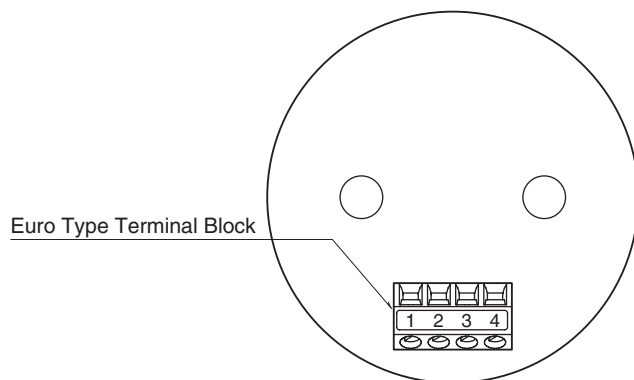
ERROR TYPE	DATA DISPLAY
Over-scale	----
Under-scale	----
Setting error	Err
Security code error	Err

EXTERNAL VIEW (indicator module)

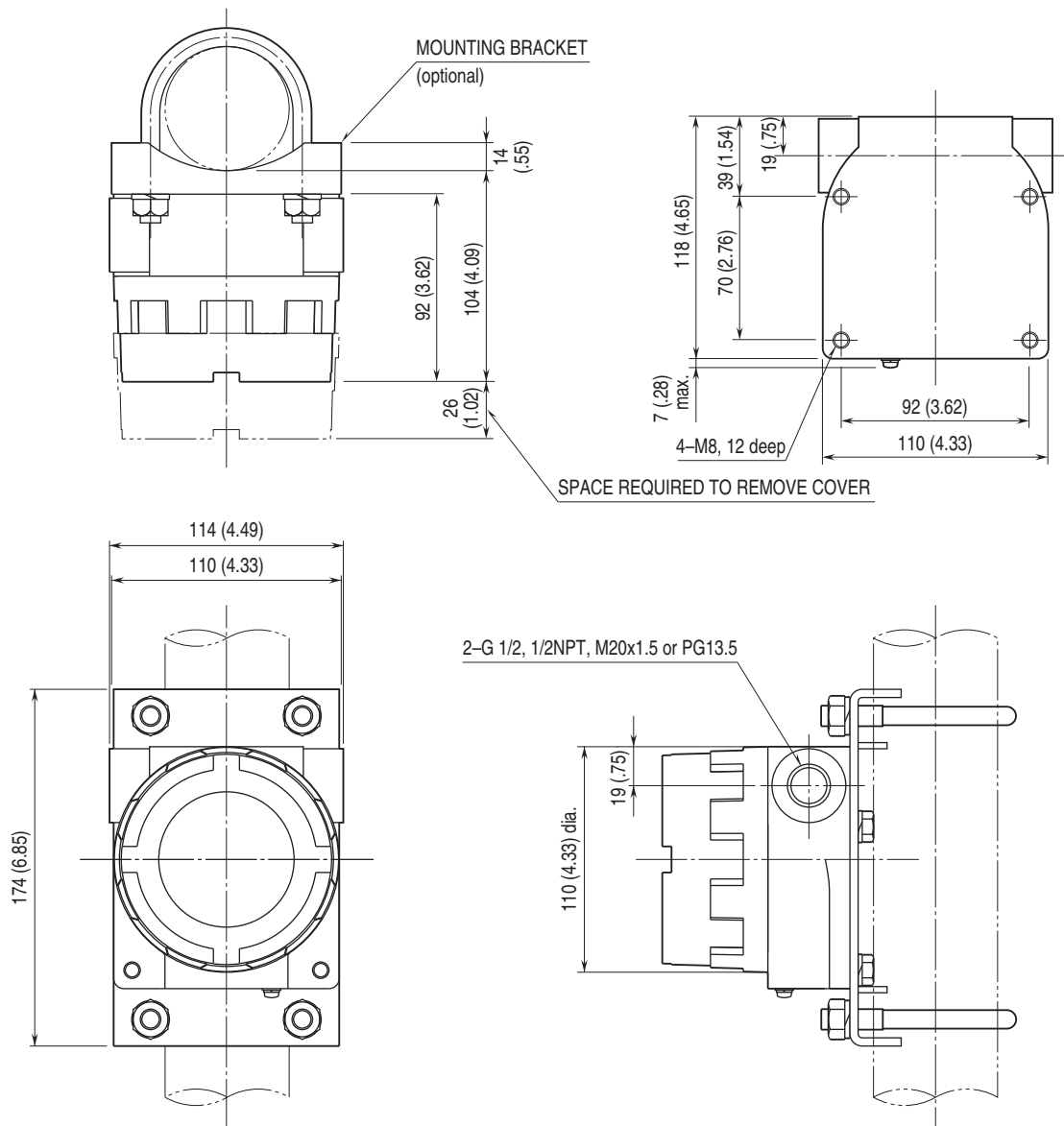
■ FRONT VIEW



■ REAR VIEW



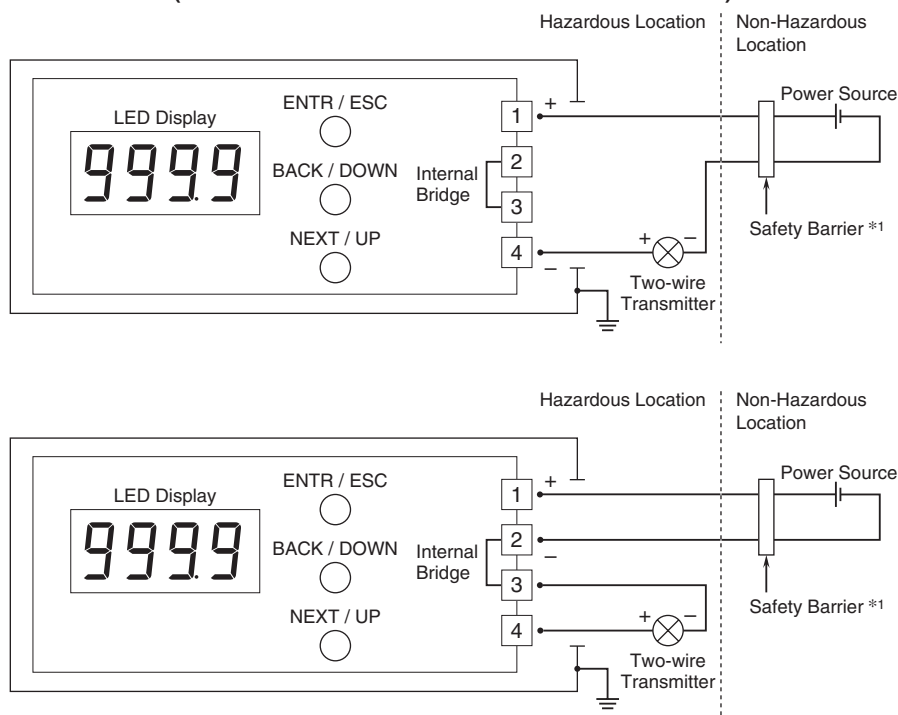
EXTERNAL DIMENSIONS unit: mm [inch]



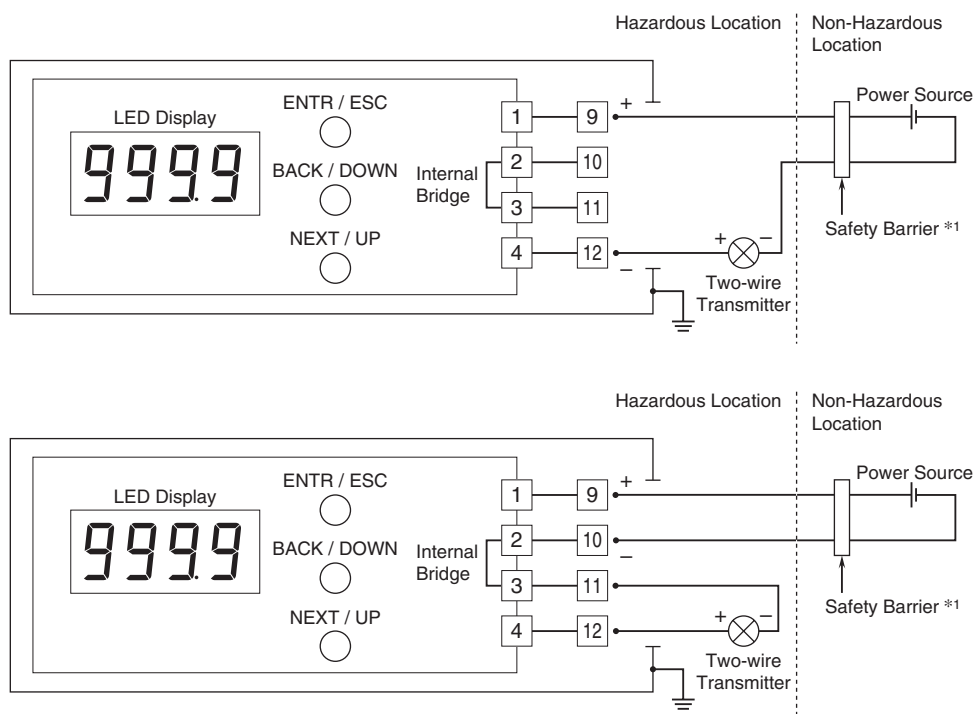
CONNECTION DIAGRAM

■ 2-WIRE CONNECTION EXAMPLE

• WITHOUT TERMINAL BLOCK (Euro terminal block at the rear of indicator module)



• WITH TERMINAL BLOCK

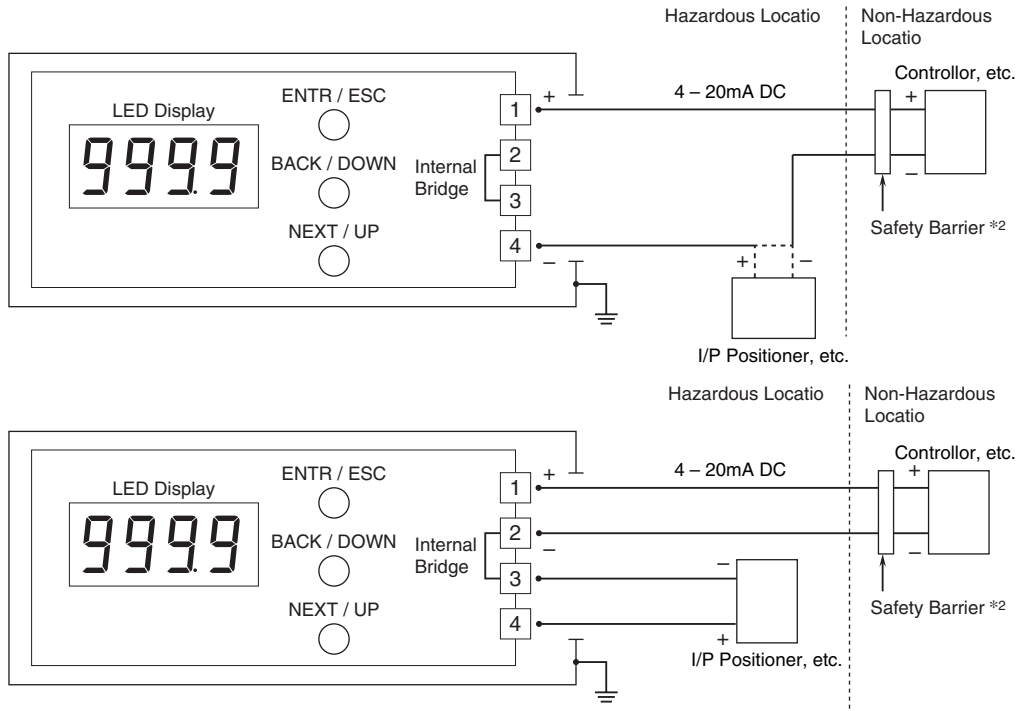


*1. A safety barrier must be installed.

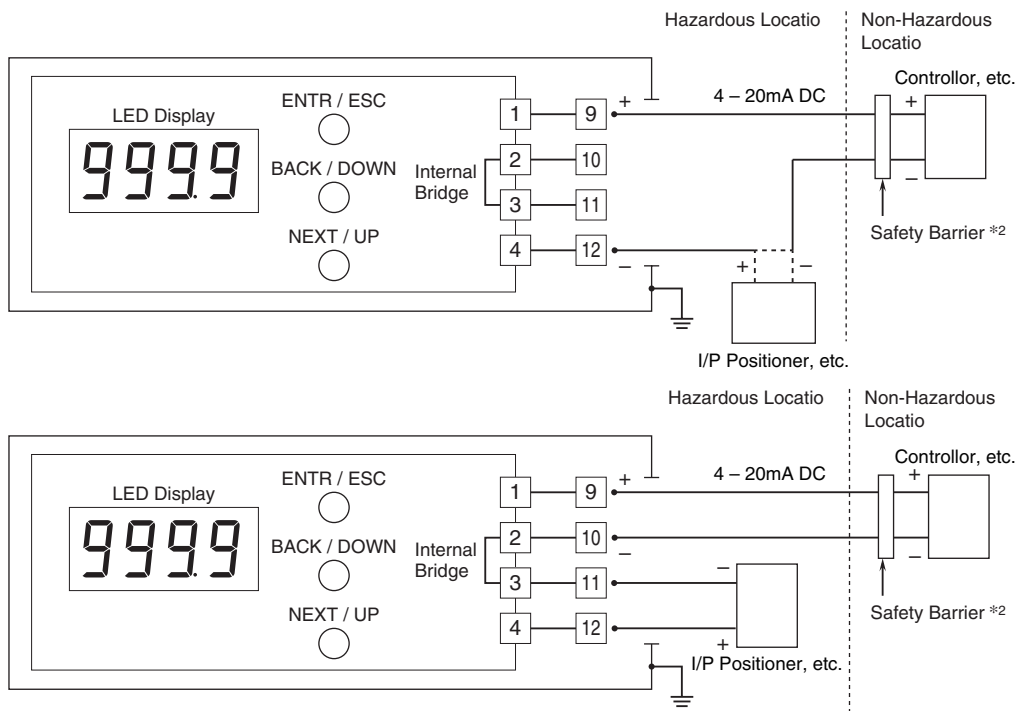
The safety barrier must meet the Ex-data of this unit and must be approved for the hazardous location.

■ 4-WIRE CONNECTION EXAMPLE

• WITHOUT TERMINAL BLOCK (Euro terminal block at the rear of indicator module)



• WITH TERMINAL BLOCK



*2. A safety barrier must be installed.

The safety barrier must meet the Ex-data of this unit and must be approved for the hazardous location.



Specifications are subject to change without notice.