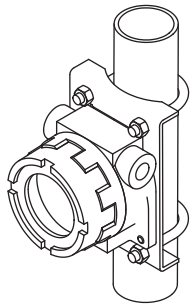
Field-mounted Two-wire Signal Conditioners 6-UNIT

4-DIGIT LOOP POWERED INDICATOR

(outdoor enclosure, intrinsic safety/explosion-proof)

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 available



MODEL:FXE-B-[1]0[2][3][4]

ORDERING INFORMATION

- Code number: FXE-B-[1]0[2][3][4]

Specify a code from below for each [1] through [4].
(e.g. FXE-B-402A1)

- Use Ordering Information Sheet (No. ESU-TNFFXE).

Factory standard setting will be used if not otherwise specified.

[1] SAFETY APPROVAL

0: None
2: CENELEC intrinsic safety (ATEX)
4: CENELEC flameproof (ATEX)
Confirm selectable combinations of approval and wiring conduit types in the table.

TERMINAL BLOCK

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

[2] WIRING CONDUIT

0: G 1/2 (Not selectable for CENELEC flameproof approval)
1: 1/2 NPT
2: M20 × 1.5
3: PG 13.5 (Not selectable for CENELEC flameproof approval)

[3] ENCLOSURE MATERIAL

A: Diecast aluminum
S: Stainless steel casting

[4] MOUNTING BRACKET

0: Without
1: With

GENERAL SPECIFICATIONS

Degree of protection: NEMA 4X, IP66/IP67
Wiring conduit: See 'Ordering information.'
Connection: Euro terminal
Materials
Transmitter housing: Flame-resistant resin (black)
Screw terminals: Nickel-plated brass
Enclosure: Diecast aluminium standard (polyurethane coated) or stainless steel casting (equivalent to type 316, epoxy resin coated)
Enclosure color
Body: Silver
Cover: Blue (equivalent to Munsell GPB3.5/10.5) Silver for stainless steel
Mounting bracket assembly:
Stainless steel 304 (for aluminum enclosure)
Stainless steel 316 (for stainless steel enclosure)
Applicable pipe: 1 1/2" min.; 2" max.
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
Offset range: -1999 to 9999
Decimal point position: 10^{-1}, 10^{-2}, 10^{-3}, or no decimal point
Polarity sign: Minus (–) sign added automatically according to the computation result
Read rate: 2.5/s
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.
Engineering unit display: Unit label included; LED backlight provided

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INPUT SPECIFICATIONS

■ **DC Current**: 4 – 20 mA DC
Measurable range: 3.75 – 23 mA DC
Maximum input current
Non-approved: 100 mA
Explosion-proof: 23 mA
Intrinsically safe: Refer to 'Safety Parameters.'
Voltage drop: Approx. 3.7 V with 4 mA
Approx. 4.0 V with 20 mA
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: -40 to +85°C (-40 to +185°F)
(See Safety Parameters for use in a hazardous location.)
Operating humidity: 0 to 95 % RH (non-condensing inside)
Weight: Approx. 1.3 kg (2.9 lb), aluminium
Approx. 4.0 kg (8.8 lb), stainless steel
Approx. 2.0 kg (4.4 lb), TIIS flameproof

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
Accuracy = 0.01 mA ÷ (20 – 4)mA × 100 = 0.063 %
Display Error = (100 – 0) × 0.063 % = ±0.063 digits
Example 2: 10 – 20 mA input, Scale 100 – 1000
Accuracy = 0.01 mA ÷ (20 – 10)mA × 100 = 0.1 %
Display Error = (1000 – 100) × 0.1 % = ±0.9 digits

STANDARDS & APPROVALS

Refer to the manuals to comply with the standards.
CE conformity:
ATEX Directive (94/9/EC)
Ex ia EN 60079-11: 2007 (for ATEX intrinsic safety)
Cat. 1G EN 60079-26: 2007 (for ATEX intrinsic safety)
Ex d EN 60079-1: 2007 (for ATEX flameproof)
EMC Directive (2004/108/EC)
EMI EN 61000-6-4: 2007
EMS EN 61000-6-2: 2005
Safety approval:
CENELEC: Intrinsic safety (ATEX)
Ⓔx II 1G, Ex ia IIC, T4, T5, Ga
(EN 60079-0: 2009)
(EN 60079-11: 2007)
(EN 60079-26: 2007)
CENELEC: Flameproof (ATEX)
Ⓔx II 2G, Ex d IIC; T5, T6 Gb
(EN 60079-0: 2009)
(EN 60079-1: 2007)

SAFETY PARAMETERS

Operating temperature
For ATEX Intrinsic safety
(Temp Class: Operating temperature)
T4: -40 to +80°C
T5: -40 to +60°C
ATEX Flameproof
T5: -40 to +80°C
T6: -40 to +70°C
Ex-data:
Ui (Vmax): 30 V DC
Ii (Imax): 100 mA DC
Pi (Pmax): 0.75 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	-1000 ... -1999
	-0.001 thr . -0.999	-0001 ... -0999
2	-1.00 thr . -1.99	-100 ... -199
	-0.01 thr . -0.99	-001 ... -099

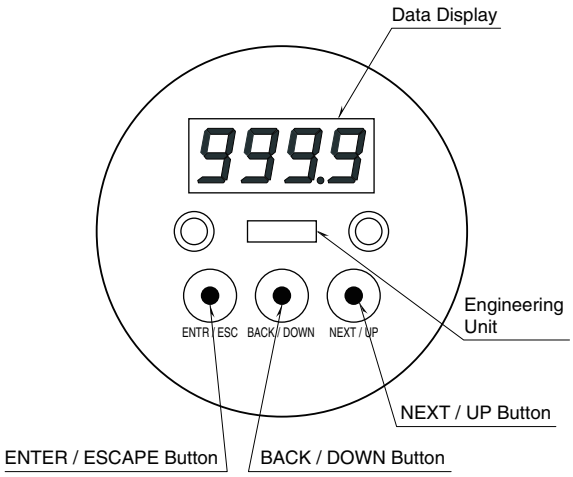
■ ERROR INDICATION

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 ESCAPE key once to cancel the error status and proceed to set again.

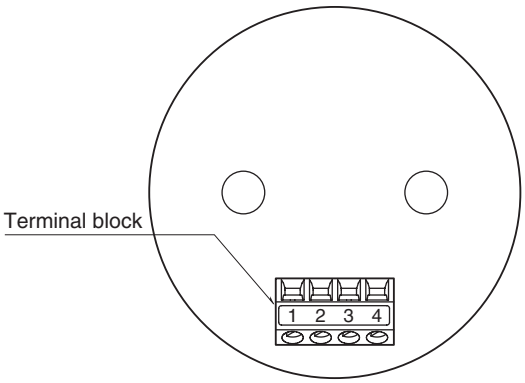
ERROR TYPE	DATA DISPLAY
Over-scale	----
Under-scale	----
Setting error	Err
Security code error	Err

EXTERNAL VIEW (indicator module)

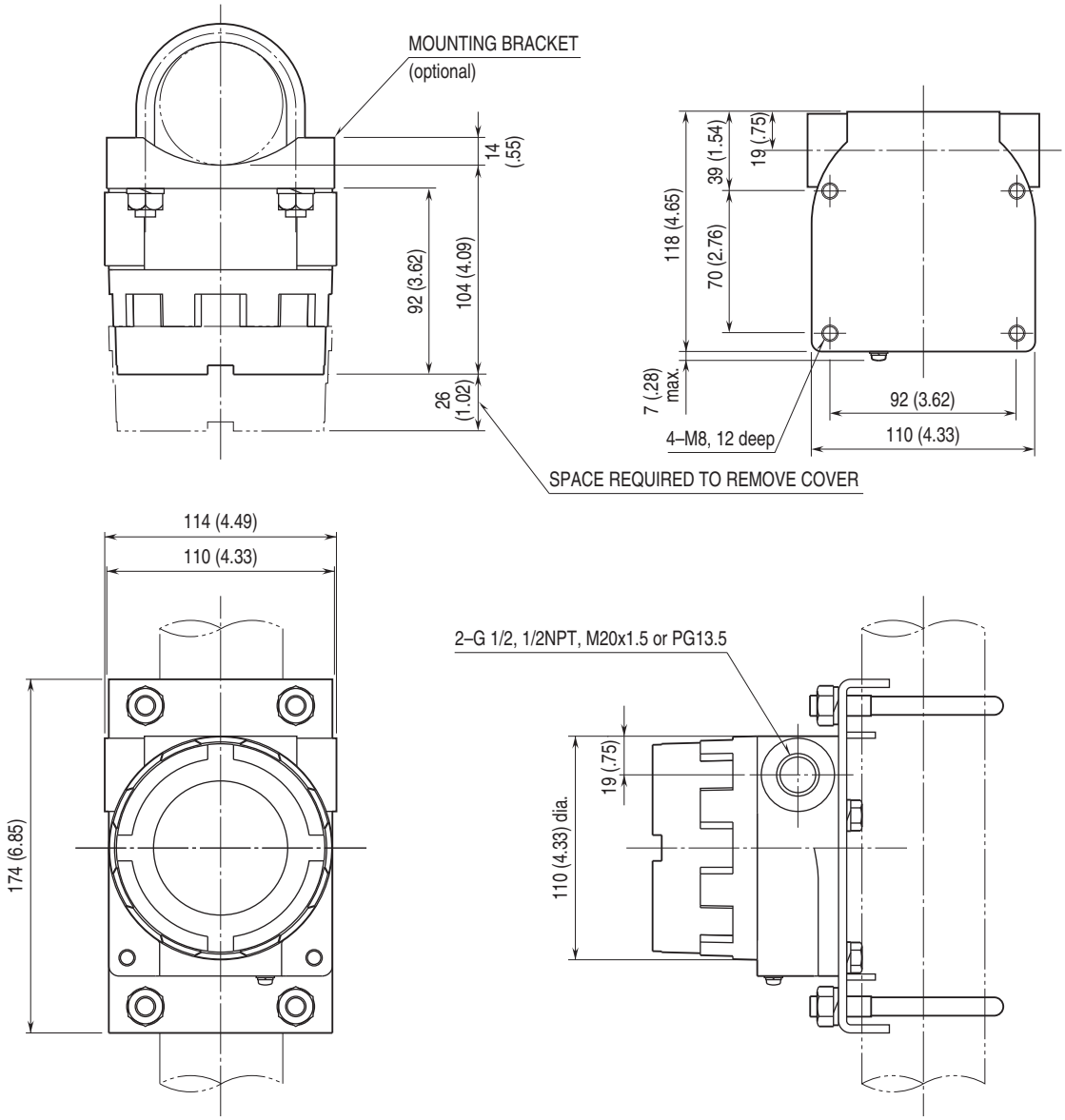
■ FRONT VIEW



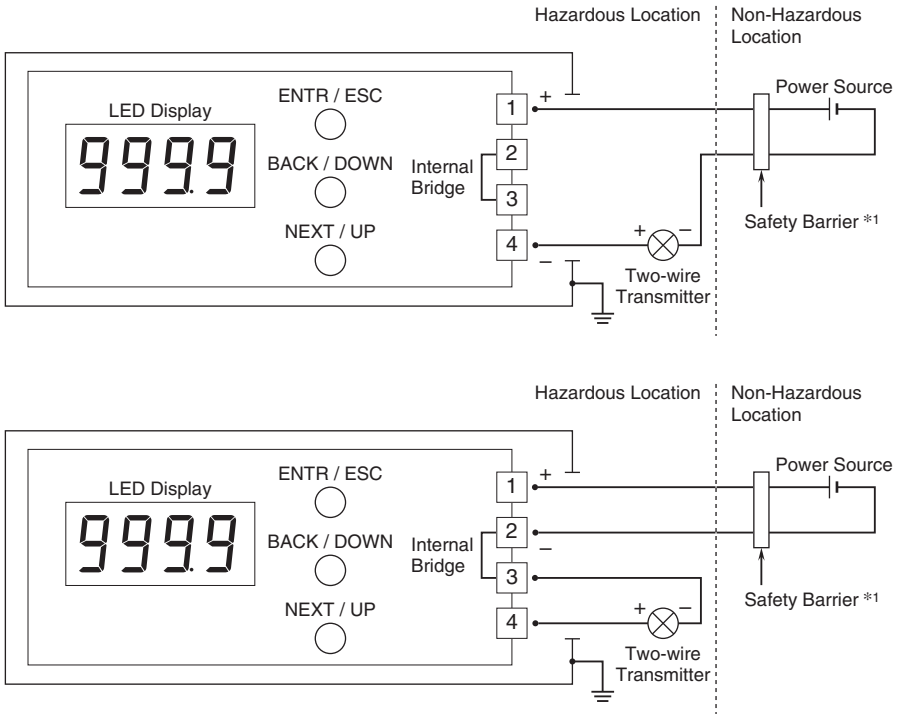
■ REAR VIEW



DIMENSIONS unit: mm (inch)



CONNECTION DIAGRAM



*1. A safety barrier must be installed for the intrinsic safety.
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.

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