

## Space-saving Plug-in Signal Conditioners F-UNIT

### STRAIN GAUGE TRANSMITTER

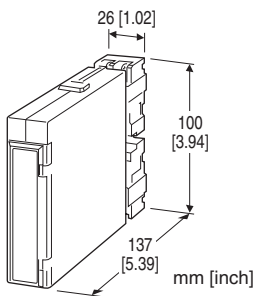
(isolated)

#### Functions & Features

- Providing a DC output signal proportional to a bridge type strain gauge utilized in load cells, pressure transducers
- Supplying required excitation voltage
- Drives bridges of various ratings
- Excitation adjustable from 2 V to 10 V
- Wide-range adjustment: 0 - 80 % for zero, 20 - 100 % for span
- Fast response type available
- High-density mounting

#### Typical Applications

- Weighing system for tanks, hoppers, silos
- Weighing system using cranes
- Float level meter utilizing strain gauges



### MODEL: FLCS-[1][2]-[3][4]

#### ORDERING INFORMATION

- Code number: FLCS-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. FLCS-2A-L/K/Q)
- Special output range (For codes Z & 0)
  - Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT STRAIN GAUGE

- 1: 1 mV/V
- 12: 1.25 mV/V
- 15: 1.5 mV/V
- 2: 2 mV/V
- 3: 3 mV/V
- 4: 4 mV/V
- 5: 5 mV/V
- 6: 10 mV/V

- 7: 20 mV/V
- 0: Specify (strain gauge and excitation)

#### [2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)
- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)
- G: 0 - 1 mA DC (Load resistance 15 kΩ max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 kΩ min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 kΩ min.)
- 5W: -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

#### [3] POWER INPUT

AC Power

- K: 85 - 132 V AC  
(Operational voltage range 85 - 132 V, 47 - 66 Hz)
- L: 170 - 264 V AC  
(Operational voltage range 170 - 264 V, 47 - 66 Hz)

DC Power

- R: 24 V DC  
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)
- P: 110 V DC  
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### [4] OPTIONS (multiple selections)

Response Time (0 - 90 %)

- blank: Standard (≤ 0.5 sec.)
- /K: Fast Response (Approx. 25 msec.)

Other Options

- blank: none
- /Q: Option other than the above (specify the specification)

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

- /C01: Silicone coating
  - /C02: Polyurethane coating
  - /C03: Rubber coating
- TERMINAL SCREW MATERIAL

/S01: Stainless steel

## GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3.5 screw terminals (torque 0.8 N·m)

**Screw terminal:** Nickel-plated steel (standard) or stainless steel

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output to power

**Overrange output:** Approx. -10 to +120 % at 1 - 5 V

**Excitation adjustment:** 2 - 10 V (front)

**Zero adjustments (tare):** 0 - 80 % (front)

(Excitation voltage: factory default)

**Span adjustment:** 100 - 20 % (front)

(Excitation voltage: factory default)

## INPUT SPECIFICATIONS

■ **Input:** Bridge voltage from load cells

• **Strain Gauge**

**Rated output from strain gauge:** 1 - 20 mV/V;

Input to the transmitter must be over 3 mV.

• **Excitation:** 2 - 10 V adjustable (5 V standard)

**Maximum current:** 35 mA

## OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 15 V max.

■ **DC Voltage:** -10 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max.; at  $\geq 0.5$  V

## INSTALLATION

**Power input**

• **AC:** Approx. 5 VA

• **DC:** 24 V approx. 120 mA

110 V approx. 40 mA

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Surface or DIN rail; Standard Rack Mounting

Frame BX-16H available

**Weight:** 200 g (0.44 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.1$  % (input  $\geq 3$  mV)

**Temp. coefficient:**  $\pm 0.015$  %/°C ( $\pm 0.008$  %/°F) (input  $\geq 3$  mV)

**Line voltage effect:**  $\pm 0.1$  % over voltage range

**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

**Dielectric strength**

**Power input code R:**

1000 V AC @ 1 minute (input to output)

2000 V AC @ 1 minute (input or output or power to ground)

500 V AC @ 1 minute (I/O to power)

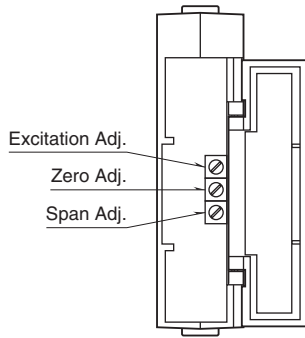
**Power input code K, L, P:**

1000 V AC @ 1 minute (input to output)

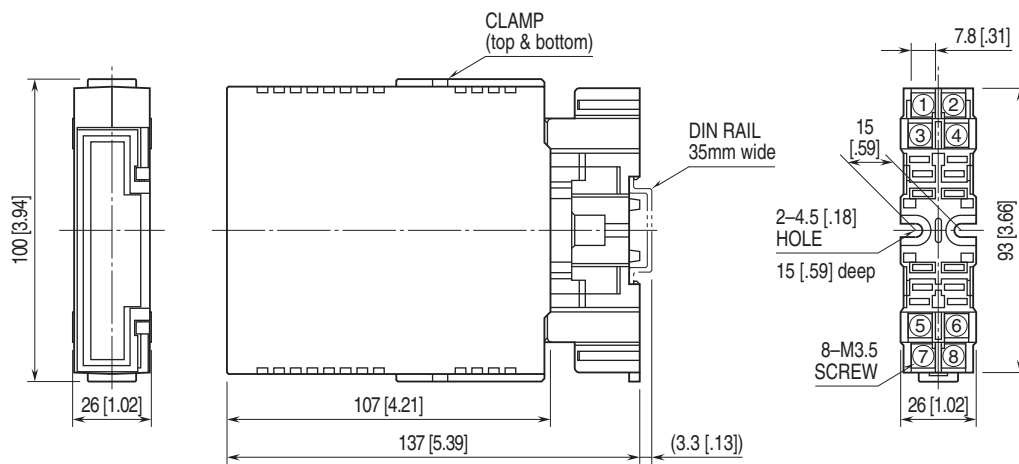
2000 V AC @ 1 minute (input or output or power to ground)

1500 V AC @ 1 minute (I/O to power)

## EXTERNAL VIEW

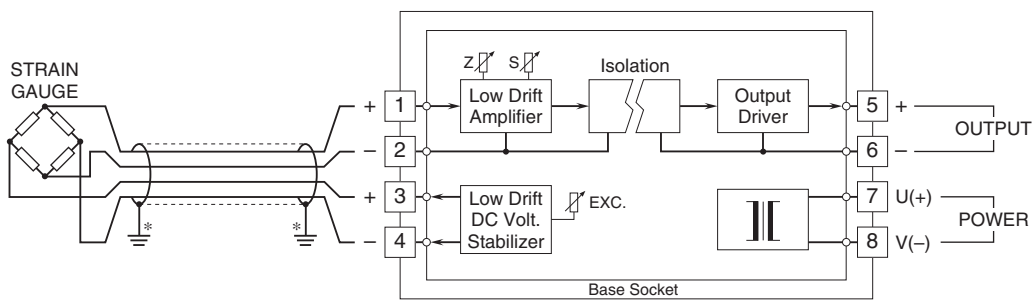


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



•When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



\*Ground the shield cable at either strain gauge or transmitter side.



Specifications are subject to change without notice.