

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

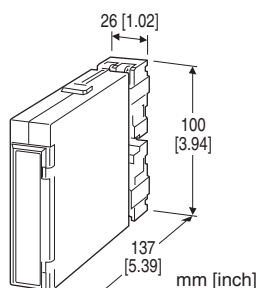
## INPUT LOOP POWERED ISOLATOR

## Functions &amp; Features

- Loop-powered design eliminates output loop power supply
- 500 V DC input-to-output isolation
- 2 isolators housed in one enclosure
- 350  $\Omega$  output drive with 4 – 20 mA
- High-density mounting

## Typical Applications

- Isolation between control room and field instrumentation, between telemetering system and input device
- Eliminates ground problems in existing systems thanks to easiness of application without requiring additional power wiring



## MODEL: FSN-1[1][2]

## ORDERING INFORMATION

- Code number: FSN-1[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. FSN-2/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

## [1] INPUT / OUTPUT

## Single-channel

1: 4 – 20 mA DC / 1 – 5 V DC

1H6: 10 – 50 mA DC / 1 – 5 V DC

1AA: 4 – 20 mA DC / 4 – 20 mA DC

1HA: 10 – 50 mA DC / 4 – 20 mA DC

## Dual-channel

2: 4 – 20 mA DC / 1 – 5 V DC

2H6: 10 – 50 mA DC / 1 – 5 V DC

2AA: 4 – 20 mA DC / 4 – 20 mA DC

2HA: 10 – 50 mA DC / 4 – 20 mA DC

## [2] OPTIONS

blank: none

/Q: With options (specify the specification)

## SPECIFICATIONS OF OPTION: Q (multiple selections)

## COATING (For the detail, refer to M-System's 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; between channels

## Zero adjustment (front)

Voltage output: -5 to +5 %

Current output: -0.5 to +0.5 %

## Span adjustment (front)

Voltage output: 95 to 105 %

Current output: 98.5 to 101.5 %

## INPUT &amp; OUTPUT

## ■ Input 4 – 20 mA DC / Output 1 – 5 V DC

Equivalent input impedance: Approx. 250  $\Omega$  with 20 mA input

Operational range: 3 – 22 mA DC

(Accuracy is assured within 4 – 22 mA)

Load resistance:  $\geq 50$  k $\Omega$ 

## ■ Input 10 – 50 mA DC / Output 1 – 5 V DC

Equivalent input impedance: Approx. 100  $\Omega$  with 50 mA input

Operational range: 7 – 55 mA DC

(Accuracy is assured within 8 – 55 mA)

Load resistance:  $\geq 50$  k $\Omega$ 

## ■ Input 4 – 20 mA DC / Output 4 – 20 mA DC

Equivalent input impedance: 230  $\Omega$  plus load resistance with 20 mA input

Operational range: 3 – 22 mA DC

(Accuracy is assured within 4 – 22 mA)

Load resistance: 50 – 350  $\Omega$  (min. 50  $\Omega$  required for adequate operation)

## ■ Input 10 – 50 mA DC / Output 4 – 20 mA DC

Equivalent input impedance: 90  $\Omega$  + [load resistance  $\times$  0.16]

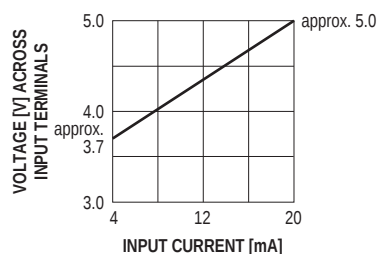
with 50 mA input

**Operational range:** 7 – 55 mA DC

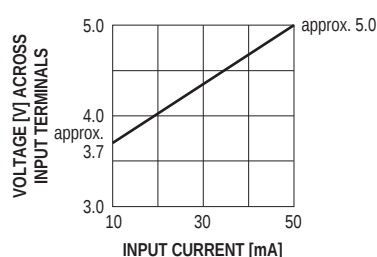
(Accuracy is assured within 8 – 55 mA)

**Load resistance:** 50 – 600  $\Omega$  (min. 50  $\Omega$  required for adequate operation)

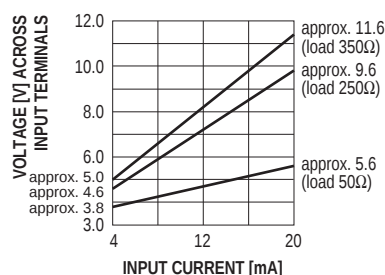
• **INPUT 4 – 20 mA DC / OUTPUT 1 – 5 V DC**



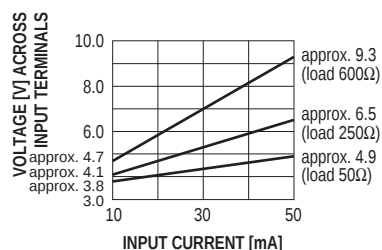
• **INPUT 10 – 50 mA DC / OUTPUT 1 – 5 V DC**



• **INPUT 4 – 20 mA DC / OUTPUT 4 – 20 mA DC**



• **INPUT 10 – 50 mA DC / OUTPUT 4 – 20 mA DC**



**Voltage output:**  $\pm 0.015\%$ /°C ( $\pm 0.008\%$ /°F)

**Current output:**  $\pm 0.02\%$ /°C ( $\pm 0.01\%$ /°F)

**Response time**

**Voltage output:**  $\leq 0.5$  sec. (0 – 90 %)

**Current output**

**4 – 20 mA DC input:** Approx. 15 msec. (0 – 90 %, 50  $\Omega$  load)

**10 – 50 mA DC input:** Approx. 8 msec. (0 – 90 %, 50  $\Omega$  load)

**Load effect (current output)**

**4 – 20 mA input:** 0.015 %/ $\Omega$  (50 – 150  $\Omega$ )

0.003 %/ $\Omega$  (150 – 350  $\Omega$ )

**10 – 50 mA input:** 0.015 %/ $\Omega$  (50 – 100  $\Omega$ )

0.003 %/ $\Omega$  (100 – 600  $\Omega$ )

(The unit is calibrated with 250  $\Omega$  load at the factory.)

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

**Dielectric strength:**

500 V AC @1 minute (input to output)

1500 V AC @1 minute (between channels)

1500 V AC @1 minute (input or output to ground)

## INSTALLATION

**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

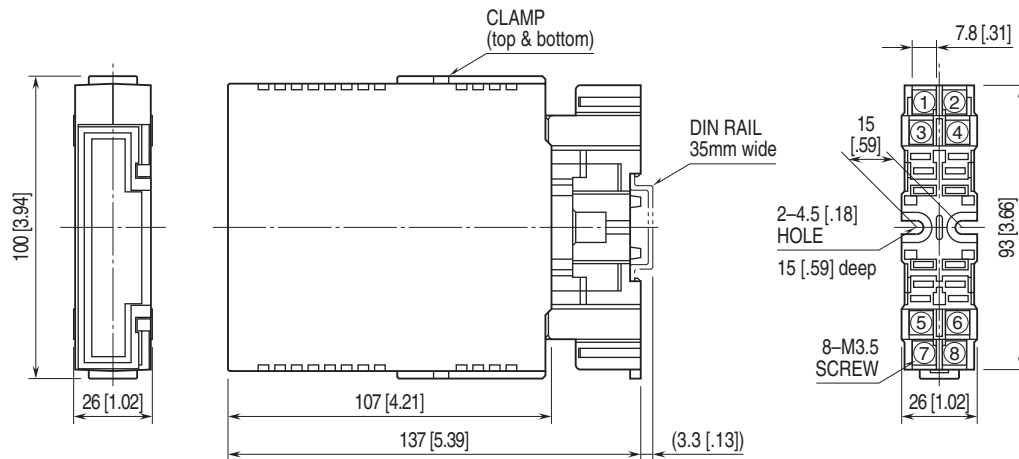
**Weight:** 200 g (0.44 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.1\%$

**Temp. coefficient**

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

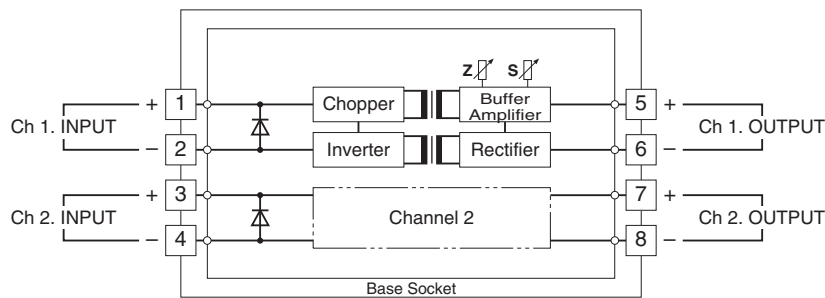


•When mounting, no extra space is needed between units.

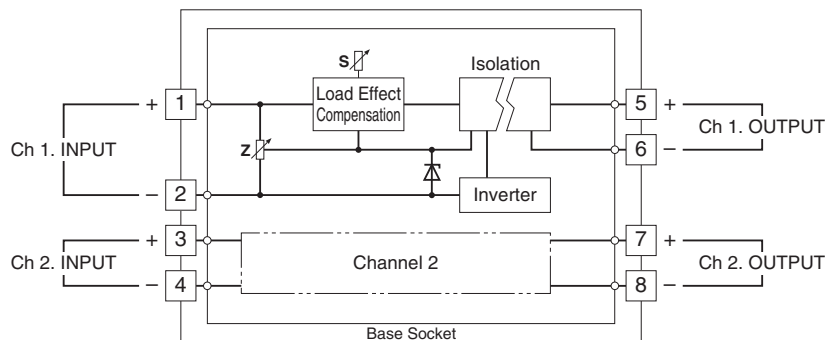
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Note: For the single-channel model, the terminals 3 - 4 and 7 - 8 are used.

### ■ VOLTAGE OUTPUT



### ■ CURRENT OUTPUT



Specifications are subject to change without notice.