

## Plug-in Signal Conditioners M-UNIT

### CURRENT LOOP SUPPLY

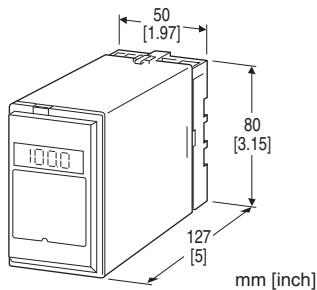
(with square root extractor; non-isolated)

#### Functions & Features

- Powering a 4 – 20 mA DC current loop
- Square root extraction
- Shortcircuit protection
- Applicable to smart transmitters
- LCD meter (engineering unit display selectable)
- Simple loop test output (0 % and 100 %)
- High-density mounting

#### Typical Applications

- Various 2-wire transmitters
- Square root extractor application (4 – 20 mA input)



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

### ORDERING INFORMATION

- Code number: FND-[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. FND-B/E2/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

### INPUT

Current

4 – 20 mA DC (Input resistance 250 Ω)

### OUTPUT

Voltage

1 – 5 V DC (Load resistance 500 Ω min.)

### [1] POWER INPUT

AC Power

**B:** 100 V AC

**C:** 110 V AC

**D:** 115 V AC

**F:** 120 V AC

**G:** 200 V AC

**H:** 220 V AC

**J:** 240 V AC

DC Power

**S:** 12 V DC

**R:** 24 V DC

**V:** 48 V DC

**P:** 110 V DC (Not selectable with Option /E2.)

### [2] OPTIONS (multiple selections)

LCD Meter (after function or low-end cutout)

**blank:** Without

**/E:** LCD meter (0.0 – 100.0 %)

**/E2:** With (in engineering unit with backlight and the simple loop test output)

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

**Screw terminal:** Chromated steel (standard) or stainless steel

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

**Isolation:** Input or output to power

**Overrange output:** 0 – 105 % at 1 – 5 V

**Zero adjustment:** -5 to +5 % (front)

**Span adjustment:** 95 to 105 % (front)

**Low-end cutout:** Approx. 5 – 8 % (output)

**Simple loop test output:** 0 % and 100 % signal simulated by selecting the front switch positions. (Only for option code /E2)

#### ■ DISPLAY (LCD meter)

- Option code: /E

**LCD digital display:** 0.0 - 100.0 % (min. digit 0.1 %)  
(No scaling)

- Option code: /E2

**LCD digital display:** Engineering unit

**Display scaling:** -10000 – +10000

**Decimal position:** 10<sup>-1</sup> - 10<sup>-4</sup> or no decimal point

**Engineering unit:** %, μV, mV, V, mA, A, °C, °F, Ω, DEG K,

mHz, Hz, kHz, VAC, AAC, mg, g, kg, t, rpm or rps selectable

**Back light:** Green at normal, red at loop test output enable

**Factory setting:** scaling 0.00 - 100.00, unit: %

## SUPPLY OUTPUT

**Output voltage:** 24 - 28 V DC with no load

**Current rating:** ≤ 22 mA DC

• **Shortcircuit Protection**

**Current limited:** 35 mA max.

**Protected time duration:** No limit

## INPUT SPECIFICATIONS

■ **DC Current:** Input resistor incorporated

## INSTALLATION

**Power input**

• **AC:** Operational voltage range: rating ±10 %, 50/60 ±2 Hz, approx. 2 VA

(approx. 3 VA with Option /E2)

• **DC:** Operational voltage range: rating ±10 %, or 85 - 150 V for 110 V rating (ripple 10 % p-p max.) approx. 2.6 W (110 mA at 24 V; approx. 3.6 W with Option /E2)

**Operating temperature:** -5 to +60°C (23 to 140°F)

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

**Mounting:** Surface or DIN rail

**Weight:** 300 g (0.66 lb)

## PERFORMANCE in percentage of span

**Accuracy:** ±0.2 % (input 1 - 100 %)

**Display accuracy:** ± (0.2 % of FS + 1 digit) (Input 1 - 100 %)

**Simple loop test output setting accuracy:** ±0.5 %

**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F)

**Response time:** ≤ 0.5 sec. (0 - 90 %)

**Line voltage effect:** ±0.1 % over voltage range

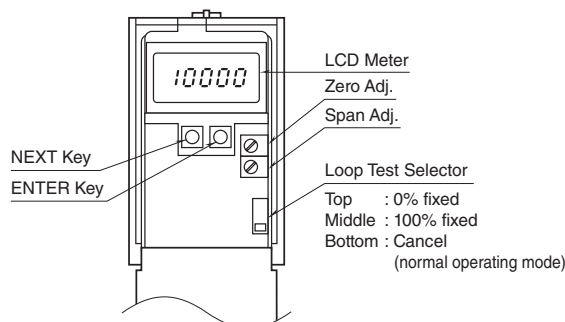
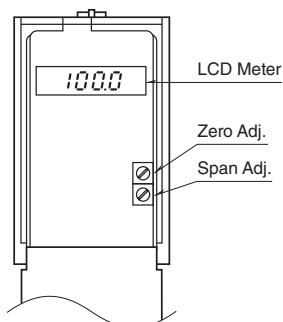
**Insulation resistance:** ≥ 100 MΩ with 500 V DC

**Dielectric strength:** 2000 V AC @1 minute (input or output to power to ground)

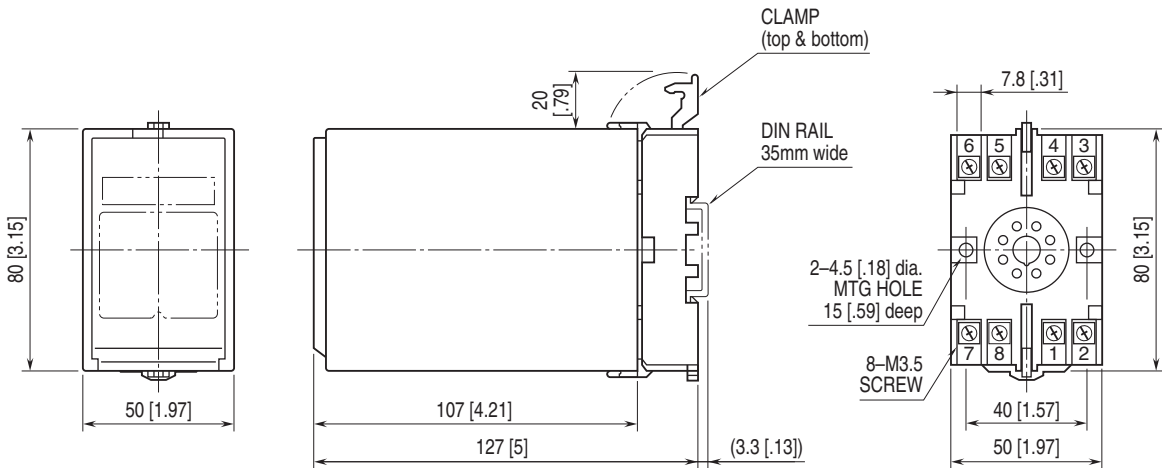
## EXTERNAL VIEW

■ OPTION /E

■ OPTION /E2

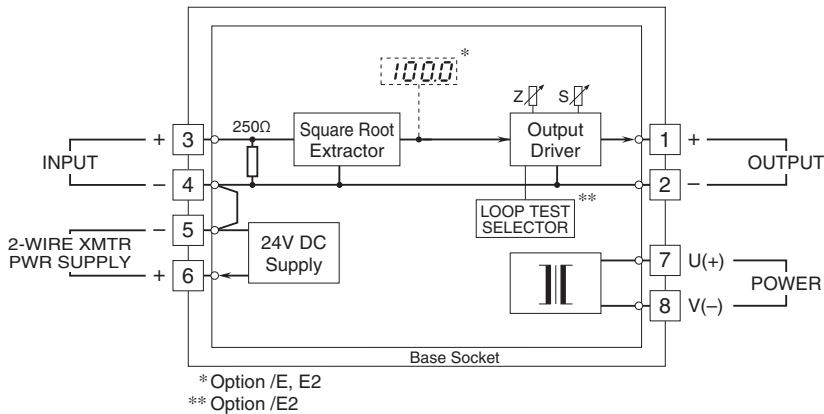


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]

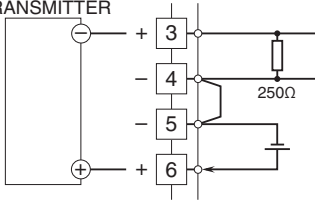


• When mounting, no extra space is needed between units.

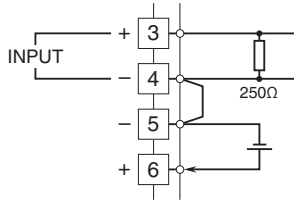
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



■ When Used as DC Supply  
2-WIRE  
TRANSMITTER



■ When Used as Square Root Extractor



Specifications are subject to change without notice.