

## Plug-in Signal Conditioners M-UNIT

### CURRENT LOOP SUPPLY

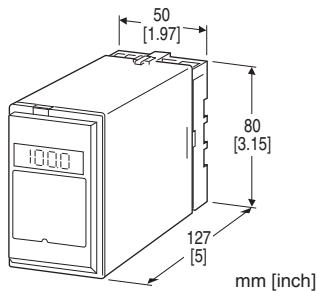
(with square root extractor; isolated)

#### Functions & Features

- Powering a 4 - 20 mA DC current loop
- Square root extraction
- Shortcircuit protection
- Applicable to smart transmitters
- Isolation up to 2000 V AC
- 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: FNDS-[1][2]

### ORDERING INFORMATION

- Code number: FNDS-[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. FNDS-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 to 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:  $10^{-1}$  -  $10^{-4}$  or no decimal point

**Engineering unit:** %,  $\mu\text{V}$ , mV, V, mA, A,  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$ ,  $\Omega$ , 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:**  $\leq 22$  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  $\pm 10$  %, 50/60  $\pm 2$  Hz, approx. 2 VA

(approx. 3 VA with Option /E2)

• **DC:** Operational voltage range: rating  $\pm 10$  %, 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  $+60^{\circ}\text{C}$  (23 to  $140^{\circ}\text{F}$ )

**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:**  $\pm 0.2$  % (input 1 - 100 %)

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

**Simple loop test output setting accuracy:**  $\pm 0.5$  %

**Temp. coefficient:**  $\pm 0.015$  %/ $^{\circ}\text{C}$  ( $\pm 0.008$  %/ $^{\circ}\text{F}$ )

**Response time:**  $\leq 0.5$  sec. (0 - 90 %)

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

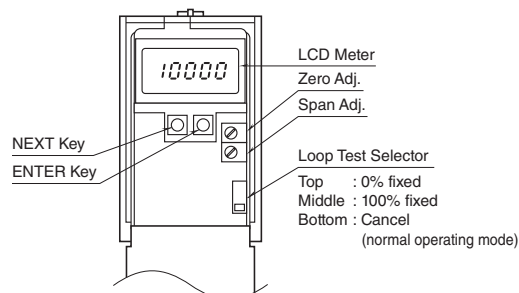
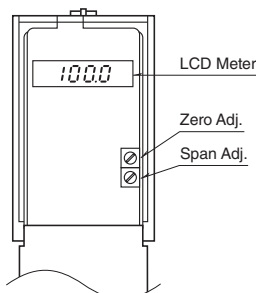
**Insulation resistance:**  $\geq 100$  M $\Omega$  with 500 V DC

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

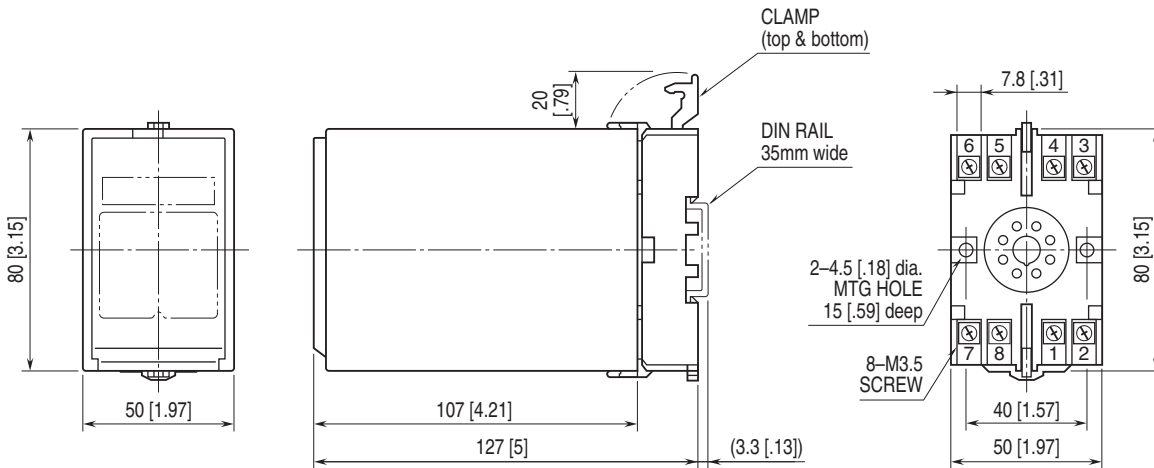
## EXTERNAL VIEW

■ OPTION /E

■ OPTION /E2

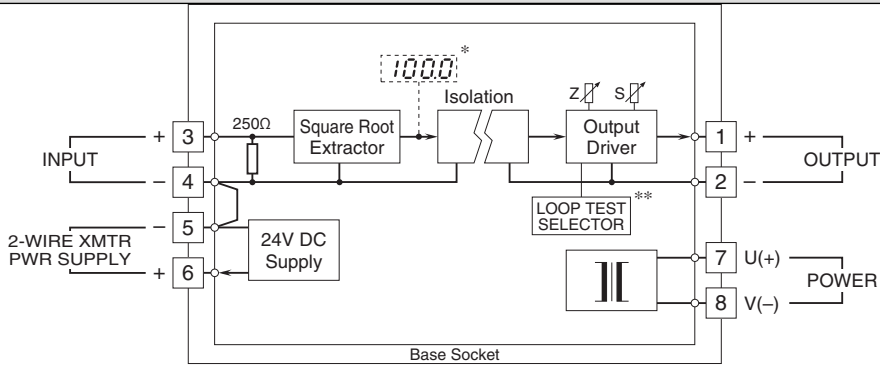


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



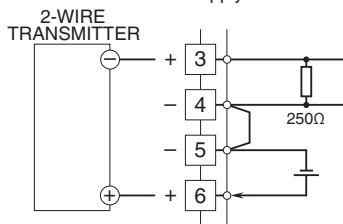
• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

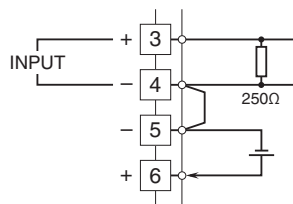


\* Option /E, E2  
\*\* Option /E2

■ When Used as DC Supply



■ When Used as Square Root Extractor



Specifications are subject to change without notice.