

Plug-in Signal Conditioners M-UNIT

ULTRA-LOW FREQUENCY TRANSMITTER

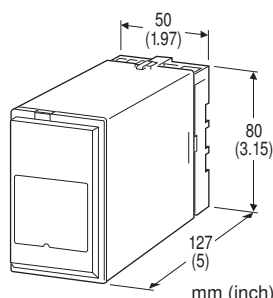
(0.01 Hz minimum)

Functions & Features

- Converting the output from a pulse-type transducer into a standard process signal
- Excitation
- Isolation up to 2000 V AC
- High-density mounting

Typical Applications

- Positive displacement flowmeters, turbine flowmeters and vortex flowmeters
- Proximity switches



MODEL: EP-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: EP-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].
(e.g. EP-33-B/Q)
- Frequency range (e.g. 0 – 5 Hz)
 - Special output range (For codes Z & 0)
 - Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

- 1: Open collector (Excitation: 12 V @ 30 mA)
- 2: Voltage pulse (Excitation: 12 V @ 30 mA)
- 3: Mechanical contact (Excitation: 12 V @ 30 mA)

[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 k Ω max.)

Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

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

[3] 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

[4] 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

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Overrange output: 0 to 120 % at 1 – 5 V

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

Span adjustment: 95 to 105 % (front)

INPUT SPECIFICATIONS

Excitation: Shortcircuit protection

Pulse width (time) requirement: 10 msec. min. at
< 20 Hz; duty ratio 20 – 80 % at ≥ 20 Hz

■ **Open Collector**

Frequency range: 0 – 0.01 Hz through 50 Hz

Sensing: approx. 12 V DC @ 3 mA

ON/OFF level: $\leq 800\ \Omega$ / 2 V for ON,
 $\geq 1.2\ \text{k}\Omega$ / 3.6 V for OFF

■ **Mechanical Contact**

Frequency range: 0 – 0.01 Hz through 5 Hz

Sensing: Approx. 12 V DC @ 3 mA

ON/OFF level: $\leq 800\ \Omega$ / 2 V for ON,
 $\geq 1.2\ \text{k}\Omega$ / 3.6 V for OFF

■ **Voltage Pulse:** Square or sine waveforms

Input pulse sensing: Capacitor coupled; detecting pulse rise

Frequency range: 0 – 0.01 Hz through 50 Hz

Input amplitude: 2 – 50 Vp-p

Input impedance: 10 k Ω min.

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 – +20 V DC

Span: Min. 5 mV, max. 20 V

Offset: Max. 1.5 times span

Load resistance: Output drive 1 mA max.; at ≥ 0.5 V

INSTALLATION

Power input

• **AC:** Operational voltage range: rating $\pm 10\%$,
50/60 ± 2 Hz, approx. 3 VA

• **DC:** Operational voltage range: rating $\pm 10\%$,
ripple 10 %p-p max., approx. 2 W (90 mA at 24 V)

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

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

Mounting: Surface or DIN rail

Weight: 350 g (0.77 lb)

PERFORMANCE in percentage of span

Accuracy: $\pm 0.1\%$

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

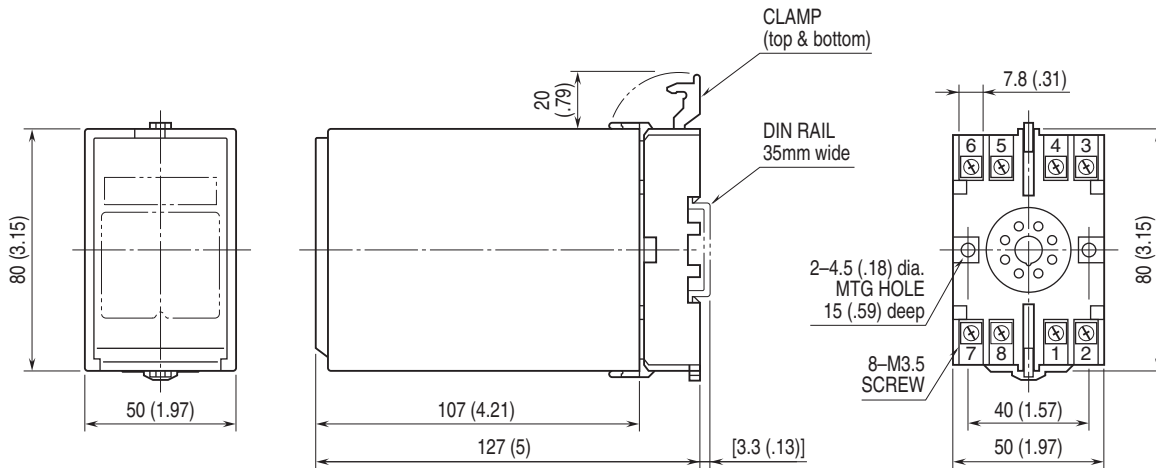
Response time: 0.5 sec. + 1 pulse cycle (0 – 90 %)

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

Insulation resistance: $\geq 100\ \text{M}\Omega$ with 500 V DC

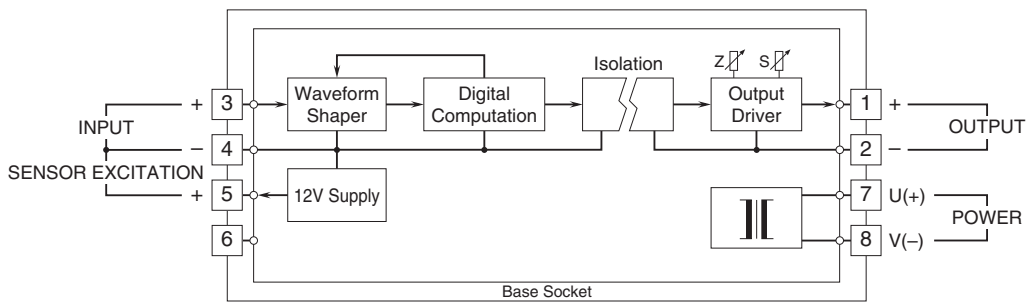
Dielectric strength: 2000 V AC @1 minute (input to output
to power to ground)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



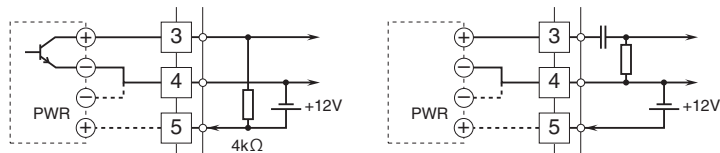
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Input Connection Examples

■ Open Collector or Mechanical Contact ■ Voltage Pulse



Specifications are subject to change without notice.