

## Plug-in Signal Conditioners M-UNIT

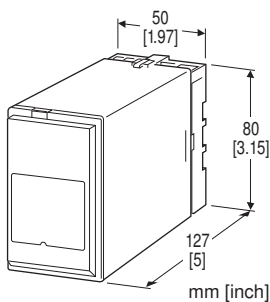
### FREQUENCY TRANSDUCER

#### Functions & Features

- Providing a DC output signal in proportion to deviation ( $\pm 1, 2$  or  $5$  Hz) from center frequency (50 Hz or 60 Hz)
- DC output containing little ripple is ideal for computer input
- Isolation up to 2000 V AC
- High-density mounting

#### Typical Applications

- Centralized monitoring and control of power management system in manufacturing facility or building
- Measuring frequency for UPS



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

### ORDERING INFORMATION

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

#### [1] INPUT

- 1: 49 - 51 Hz
- 2: 48 - 52 Hz
- 3: 45 - 55 Hz
- 6: 59 - 61 Hz
- 7: 58 - 62 Hz
- 8: 55 - 65 Hz

#### [2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750  $\Omega$  max.)
- B: 2 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- C: 1 - 5 mA DC (Load resistance 3000  $\Omega$  max.)
- D: 0 - 20 mA DC (Load resistance 750  $\Omega$  max.)
- E: 0 - 16 mA DC (Load resistance 900  $\Omega$  max.)

- F: 0 - 10 mA DC (Load resistance 1500  $\Omega$  max.)
- G: 0 - 1 mA DC (Load resistance 15 k $\Omega$  max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)
- Voltage
- 1: 0 - 10 mV DC (Load resistance 10 k $\Omega$  min.)
- 2: 0 - 100 mV DC (Load resistance 100 k $\Omega$  min.)
- 3: 0 - 1 V DC (Load resistance 1000  $\Omega$  min.)
- 4: 0 - 10 V DC (Load resistance 10 k $\Omega$  min.)
- 5: 0 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 6: 1 - 5 V DC (Load resistance 5000  $\Omega$  min.)
- 4W: -10 - +10 V DC (Load resistance 10 k $\Omega$  min.)
- 5W: -5 - +5 V DC (Load resistance 5000  $\Omega$  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
- P: 110 V DC

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

Output limit

- blank: none
- /LM: Limit 0 %, 100 %

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:** Approx. -10 to +120 % at 1 - 5 V  
 (For 'LM' (limit 0 %, 100 %), 0 to 100 %)  
**Zero adjustment:** -5 to +5 % (front)  
**Span adjustment:** 95 to 105 % (front)

**Ripple:** 0.5 %p-p max.

**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)

## INPUT SPECIFICATIONS

**Operational range:** 80 - 250 V AC  
**Overload capacity:** 450 V for 1 min.  
**Input burden:** 0.1 VA max.

## 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.

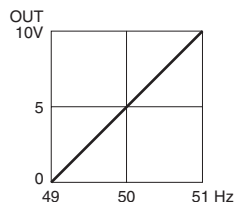
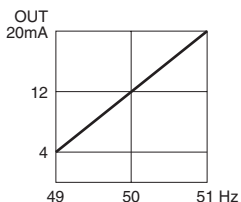
■ **DC Voltage:** -10 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

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

■ **OPERATION DIAGRAM (example)**



## INSTALLATION

**Power input**

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

• **DC:** Operational voltage range: rating  $\pm 10$  %, or 85 - 150 V

for 110 V rating, ripple 10 %p-p max., approx. 3 W (27 mA at 110 V)

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

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

**Mounting:** Surface or DIN rail

**Weight:** 450 g (0.99 lb)

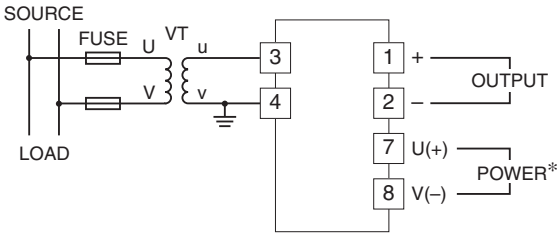
## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.3$  %

**Temp. coefficient:**  $\pm 0.02$  %/°C ( $\pm 0.01$  %/°F)

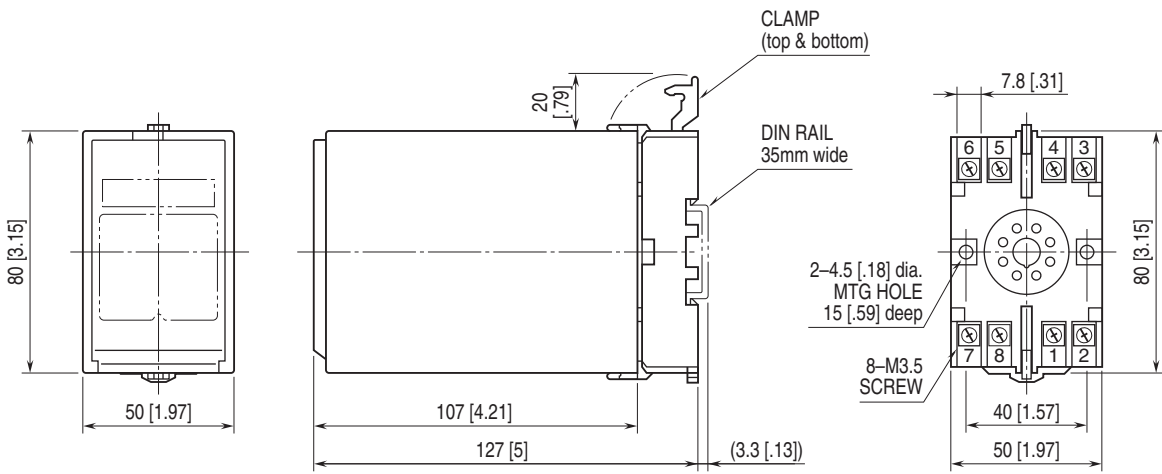
**Response time:**  $\leq 0.5$  sec. (0 - 90 %)

**CONNECTION DIAGRAM**



\*The transducer can be powered from the input voltage when the voltage is sufficiently stable and meets other supply voltage requirements.

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



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



Specifications are subject to change without notice.