

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

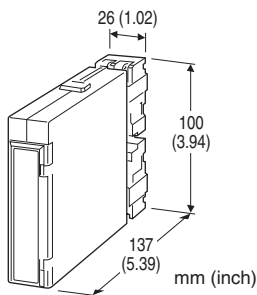
### PULSE ISOLATOR

#### Functions & Features

- Galvanically isolating pulse rate signals
- Input frequency = output frequency
- Various outputs (open collector, voltage pulses and photo MOSFET relay pulse)
- High-density mounting

#### Typical Applications

- Isolating field pulse signals in order to reduce noises
- Changing e.g. dry contact signal to e.g. 5 V signals



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

#### ORDERING INFORMATION

- Code number: FPP-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].  
(e.g. FPP-33-K/Q)
- Frequency range (e.g. 0 - 1000 Hz)
  - Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT

- 1: Mechanical contact (max. 30 Hz)
- 2: Open collector (max. 10 kHz)
- 3: Voltage pulse (max. 10 kHz)

#### [2] OUTPUT

- 1: Low frequency open collector (max. 30 Hz)
- 2: High frequency open collector (max. 10 kHz)
- 3: 5 V pulse (max. 10 kHz)
- 4: 12 V pulse (max. 10 kHz)
- 5: 24 V pulse (max. 10 kHz)
- 8: Photo MOSFET relay pulse (max. 30 Hz)

#### [3] POWER INPUT

##### AC Power

K: 85 - 132 V AC

(Operational voltage range 85 - 132 V, 47 - 66 Hz)

L: 170 - 264 V AC

(Operational voltage range 170 - 264 V, 47 - 66 Hz)

##### DC Power

R: 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

P: 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### [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 (torque 0.8 N·m)

Screw terminal: Nickel-plated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Frequency range: Input and output are the same.

Chattering protection: Filter provided for mechanical contact input

#### INPUT SPECIFICATIONS

Excitation: 12V DC  $\pm$ 2 V @ 30 mA; shortcircuit protection

##### ■ Open Collector

Maximum frequency: 10 kHz

Pulse width time requirement: 10  $\mu$ sec. min. for ON and OFF

Sensing: Approx. 12 V DC @3 mA

ON/OFF level:  $\leq$  200  $\Omega$  / 0.6 V for ON,  $\geq$  100 k $\Omega$  / 6 V for OFF

##### ■ Mechanical Contact

Maximum frequency: 30 Hz

Pulse width time requirement: 10 msec. min. for ON and OFF

Sensing: Approx. 12 V DC @3 mA

ON/OFF level:  $\leq$  200  $\Omega$  / 0.6 V for ON,  $\geq$  100 k $\Omega$  / 6 V for OFF

##### ■ Voltage Pulse

Maximum frequency: 10 kHz

**Pulse width time requirement:** 10  $\mu$ sec. min. for high and low levels

**Waveforms:** Square or sine

**Hi/Lo level:** 2 - 50 V for high level;  $\leq 1$  V for low level

**Input impedance:** 10 k $\Omega$  min.

**Power input code K, L, P:**

1000 V AC @ 1 minute (input to output)

2000 V AC @ 1 minute (input or output or power to ground)

1500 V AC @ 1 minute (I/O to power)

## OUTPUT SPECIFICATIONS

### ■ Low Frequency Open Collector

50 V DC @ 100 mA (resistive load)

**Maximum frequency:** 30 Hz

**Timer:** Limits ON time within 75  $\pm$ 25 msec. for wider than 75 msec. pulses

**Saturation voltage:** 0.5 V DC

### ■ High Frequency Open Collector

50 V DC @ 100 mA (resistive load)

**Maximum frequency:** 10 kHz

**Saturation voltage:** 0.5 V DC

### ■ Voltage Pulse

**Maximum frequency:** 10 kHz

**High level:** Rating (5, 12 or 24 V)  $\pm 10$  %

**Low level:**  $\leq 0.5$ V

**Load resistance:**

$\geq 250 \Omega$  for 5 V

$\geq 600 \Omega$  for 12 V

$\geq 1200 \Omega$  for 24 V

### ■ Photo MOSFET Relay Pulse

**Maximum frequency:** 30 Hz

**Timer:** Limits ON time within 75  $\pm$ 25 msec. for wider than 75 msec. pulses

**Rating:** 132 V AC @ 200 mA ( $\cos \theta = 1$ )

30 V DC @ 200 mA (resistive load)

**ON resistance:**  $\leq 2 \Omega$

## INSTALLATION

**Power input**

•AC: Approx. 4.5 VA

•DC: 24 V approx. 70 mA

110 V approx. 20 mA

**Operating temperature:** -5 to +55 $^{\circ}$ C (23 to 131 $^{\circ}$ F)

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

**Mounting:** Surface or DIN rail; Standard Rack Mounting

Frame BX-16H available

**Weight:** 180 g (0.40 lb)

## PERFORMANCE

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

**Dielectric strength**

**Power input code R:**

1000 V AC @ 1 minute (input to output)

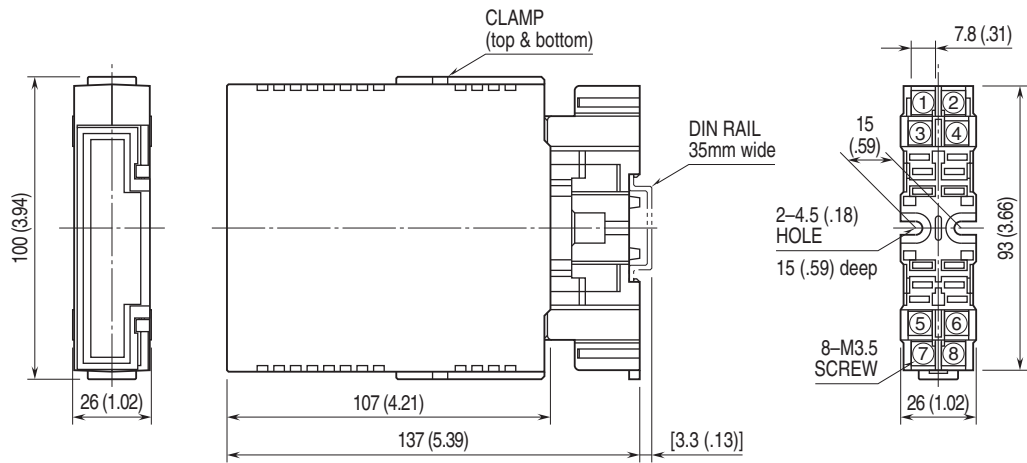
2000 V AC @ 1 minute (input or output or power to ground)

500 V AC @ 1 minute (I/O to power)

## OUTPUT LOGIC

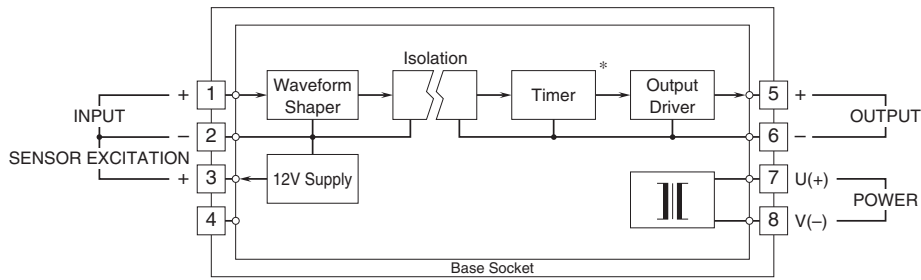
INPUT TYPE	INPUT	VOLTAGE PULSE OUTPUT	OPEN COLLECTOR or PHOTO MOSFET RELAY PULSE OUTPUT
Voltage Pulse	H L	H L	OFF ON
Mechanical Contact Open Collector	OFF ON	H L	OFF ON

## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



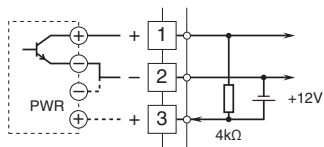
•When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

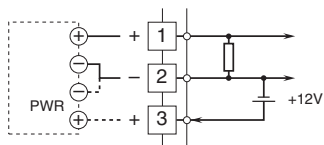


### Input Connection Examples

#### ■ Mechanical Contact or Open Collector

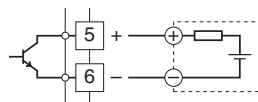


#### ■ Voltage Pulse

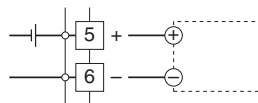


### Output Connection Examples

#### ■ Open Collector

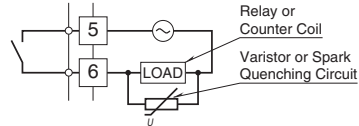


#### ■ Voltage Pulse

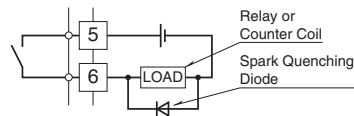


#### ■ Photo MOSFET Relay Pulse

##### • AC Powered



##### • DC Powered





Specifications are subject to change without notice.