

Space-saving Plug-in Signal Conditioners F-UNIT

LOW FREQUENCY TRANSMITTER

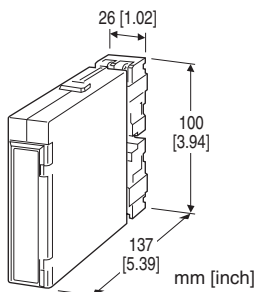
(50 Hz minimum)

Functions & Features

- Converting the output from a pulse-type transducer into a standard process signal
- Excitation
- High-density mounting

Typical Applications

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



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

ORDERING INFORMATION

- Code number: FSP-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4].
(e.g. FSP-2A-L/Q)
- Frequency range (e.g. 0 - 10 kHz)
 - Special output range (For codes Z & 0)
 - Specify the specification for option code /Q
(e.g. /C01/S01)

[1] INPUT

- 1: Dry contact
- 2: Voltage pulse

[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 kΩ max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 kΩ min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[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 ±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 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 (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

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

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

Span adjustment: 95 to 105 % (front)

Input pulse sensing: DC coupled; detecting pulse rise

Low-end cutout: 2 to 5 %

INPUT SPECIFICATIONS

Excitation: 12 V DC @30 mA; shortcircuit protection

Frequency range: 0 - 50 Hz through 10 kHz

■ Dry Contact: Mechanical contact or open collector

Pulse width time requirement: 20 μ sec. min. for ON and OFF

Sensing: Approx. 12 V DC @3 mA

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

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

Pulse width time requirement: 20 μ sec. min. for high and low levels

Hi level: 2 – 50 V

Lo level: ≤ 1 V

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:** 0 – 12 V DC

Minimum span: 5 mV

Offset: Max. 1.5 times span

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

INSTALLATION

Power input

•**AC:** Approx. 5.5 VA

•**DC:** 24 V approx. 85 mA

110 V approx. 25 mA

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

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

Mounting: Surface or DIN rail; Standard Rack Mounting

Frame BX-16H available

Weight: 200 g (0.44 lb)

PERFORMANCE in percentage of span

Accuracy: ± 0.1 % (output 10 – 100 %)

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

Response time: (0 – 90%)

Approx. 1.8 sec. with 0 – 50 Hz

Approx. 0.7 sec. with 0 – 100 Hz

Approx. 0.5 sec. with 0 – 500 Hz

Approx. 0.5 sec. with 0 – 10 kHz

Ripple: 0.2 %p-p max. with input ≥ 10 %

Line voltage effect: ± 0.1 % over voltage range

Insulation resistance: $\geq 100 \text{ M}\Omega$ 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)

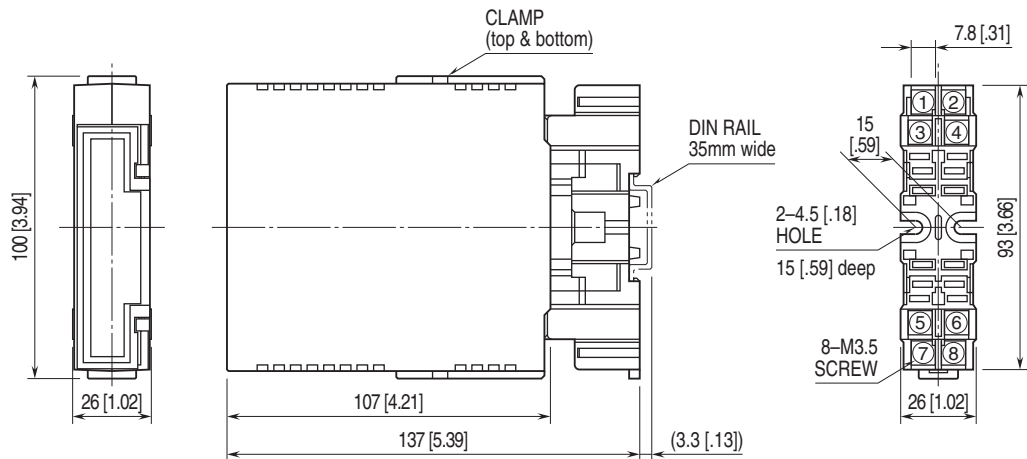
Power input code K, L, P:

1000 V AC @ 1 minute (input to output)

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

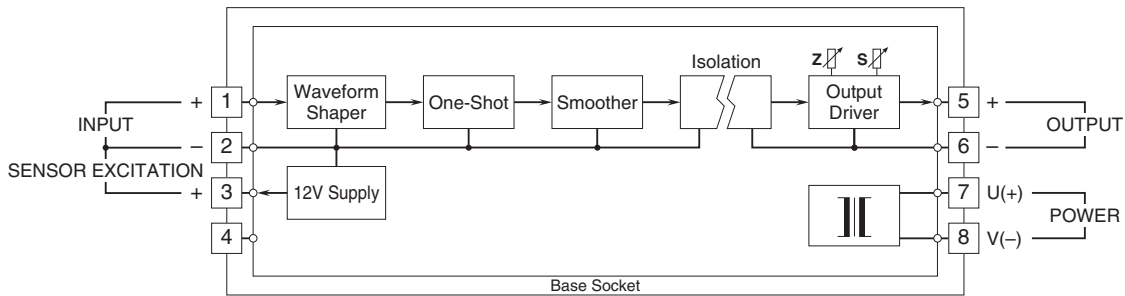
1500 V AC @ 1 minute (I/O to power)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



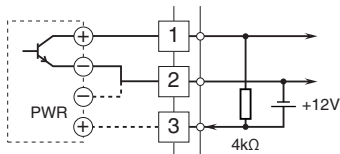
•When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

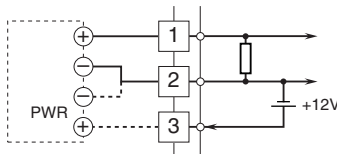


Input Connection Examples

■ Dry Contact



■ Voltage Pulse



Specifications are subject to change without notice.