

## Super-mini Signal Conditioners F2 Series

### LOW FREQUENCY TRANSMITTER

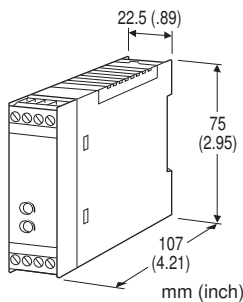
(50 Hz minimum)

#### Functions & Features

- Converting the output from a pulse-type transducer into a standard process signal

#### Typical Applications

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



### MODEL: F2SP-[1][2]-R[3]

#### ORDERING INFORMATION

- Code number: F2SP-[1][2]-R[3]

Specify a code from below for each of [1] through [3].

- (e.g. F2SP-2A-R/CE/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)

#### [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)

#### POWER INPUT

DC Power

R: 24 V DC

(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

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

Standards & Approvals (must be specified)

/N: Without CE

/CE: CE marking

Other Options

blank: none

/Q: With options (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

#### GENERAL SPECIFICATIONS

**Construction:** Stand-alone; terminal access at the front

**Connection:** Euro type connector terminal (applicable wire size: 0.2 to 2.5 mm<sup>2</sup>, stripped length 7 mm)

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output to power

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

**Span adjustment:** 95 to 105 % (front)

**Input pulse sensing:** DC coupled; detecting pulse rise

**Input filter:** Provided with input range <100 Hz with dry contact input

(time constant approx. 1 msec.)

**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  $\mu$ sec. min. for ON and OFF (2 msec. for ranges <100 Hz)  
**Sensing:** Approx. 12V DC @3 mA  
**ON/OFF level:**  $\leq 200 \Omega / 0.6 \text{ V}$  for ON,  $\geq 100k \Omega / 6 \text{ V}$  for OFF  
 • **Voltage Pulse:** Square or sine waveforms  
**Pulse width time requirement:** 20  $\mu$ sec. min. for high and low levels  
**Voltage range:** -30 - +30 V DC  
**Hi level:** 2 - 30 V p-p  
**Lo level:**  $\leq 1 \text{ V}$   
**Input impedance:** 10k  $\Omega$  minimum

**STANDARDS & APPROVALS**

**EU conformity:**  
 EMC Directive  
 EMI EN 61000-6-4  
 EMS EN 61000-6-2  
 RoHS Directive

**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  $\geq 0.5 \text{ V}$

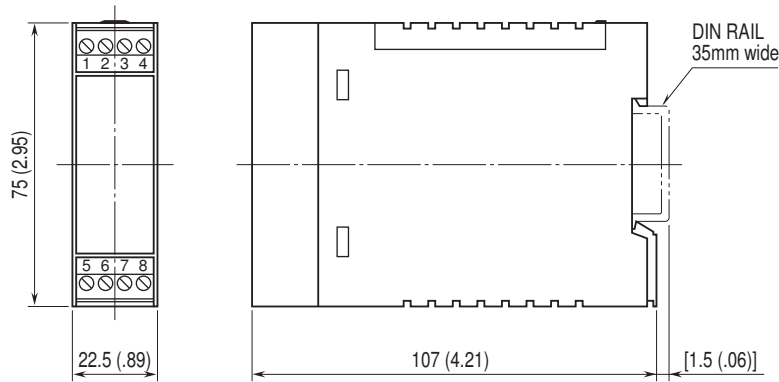
**INSTALLATION**

**Current consumption**  
 • **DC:** Approx. 80 mA  
**Operating temperature:** -5 to +55°C (23 to 131°F)  
**Operating humidity:** 30 to 90 %RH (non-condensing)  
**Mounting:** DIN rail  
**Weight:** 150 g (0.33 lb)

**PERFORMANCE in percentage of span**

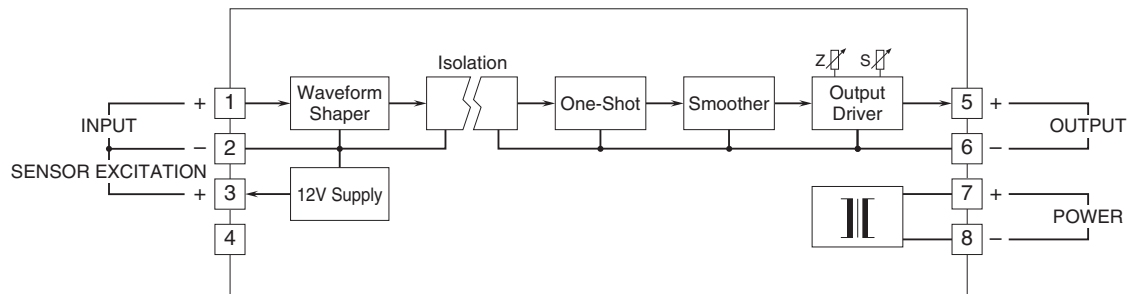
**Accuracy:**  $\pm 0.1 \%$  (output 10 - 100 %)  
**Temp. coefficient:**  $\pm 0.015 \%/^{\circ}\text{C}$  ( $\pm 0.008 \%/^{\circ}\text{F}$ )  
**Response time:** (0 - 90%)  
 Approx. 1.8 sec. with 0 - 50 Hz  
 Approx. 0.8 sec. with 0 - 100 Hz  
 Approx. 0.5 sec. with 0 - 500 Hz  
 Approx. 0.5 sec. with 0 - 10 kHz  
**Ripple:** 0.2 %p-p max. with input  $\geq 10 \%$   
**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]



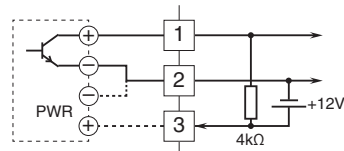
• When mounting, no extra space is needed between units.

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

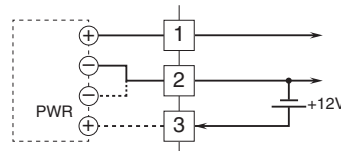


### Input Connection Examples

#### ■ Dry Contact



#### ■ Voltage Pulse



Specifications are subject to change without notice.