

Super-mini Signal Conditioners F2 Series

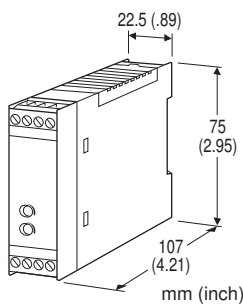
DC/FREQUENCY CONVERTER

Functions & Features

- Providing a pulse rate output in proportion to DC input signal
- High-density mounting

Typical Applications

- Totalizing applications in combination with a counter



MODEL: F2AP-[1][2]-R[3]

ORDERING INFORMATION

- Code number: F2AP-[1][2]-R[3]

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

- (e.g. F2AP-61-R/CE/Q)
- Special input range (For codes Z & 0)
- Output frequency range (e.g. 0 - 500 Hz)
- Specify the specification for option code /Q (e.g. /C01)

[1] INPUT

Current

- A:** 4 - 20 mA DC (Input resistance 250 Ω)
- D:** 0 - 20 mA DC (Input resistance 50 Ω)
- G:** 0 - 1 mA DC (Input resistance 1000 Ω)
- H:** 10 - 50 mA DC (Input resistance 100 Ω)
- Z:** Specify current (See INPUT SPECIFICATIONS)
(0 % input must be 0 mA.)

Voltage

- 3:** 0 - 1 V DC (Input resistance 1 MΩ min.)
- 4:** 0 - 10 V DC (Input resistance 1 MΩ min.)
- 5:** 0 - 5 V DC (Input resistance 1 MΩ min.)
- 6:** 1 - 5 V DC (Input resistance 1 MΩ min.)
- 0:** Specify voltage (See INPUT SPECIFICATIONS)
(0 % input must be 0 V.)

[2] OUTPUT

- 1: Open collector (max. 1 kHz)
- 2: 5 V pulse (max. 1 kHz)

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 mm², stripped length 7 mm)

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Zero adjustment: 0 - 5 % (front)

Span adjustment: 95 to 105 % (front)

INPUT SPECIFICATIONS

■ **DC Current:** Input resistor incorporated

Specify input resistance value for code Z.

($R \leq 0.5 W \div [F.S. Current]^2$)

■ **DC Voltage:** 0 - 30 V DC

Minimum span: 1 V

Input resistance: $\geq 1 M\Omega$

OUTPUT SPECIFICATIONS

■ **Open Collector:** 30 V DC @100 mA (resistive load)

Frequency range: 0 - 10 pulses/hour through 1 kHz

Saturation voltage: 0.6 V DC

■ **5 V Pulse**

Frequency range: 0 - 10 pulses/hour through 1 kHz

Hi level: 3.0 - 5.5 V

Lo level: $\leq 0.5 V$

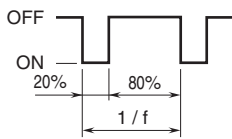
Load resistance: 250 Ω min.

OUTPUT PULSE WIDTH

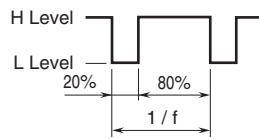
■ Frequency less than 500 Hz at 100% input

→ Duty ratio 20% (See the figure below)

• Open Collector



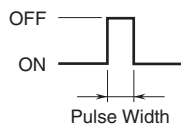
• Voltage Pulse



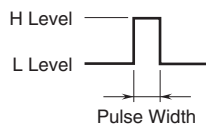
■ Frequency greater than 500 Hz at 100% input

→ See the figure and equation below.

• Open Collector



• Voltage Pulse



$$\text{Pulse Width [millisec.]} = \frac{1}{2.09 \times 100\% \text{ Frequency [kHz]}}$$

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: ±0.1 %

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

Line voltage effect: ±0.1 % over voltage range

Insulation resistance: ≥ 100 MΩ with 500 V DC

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

STANDARDS & APPROVALS

EU conformity:

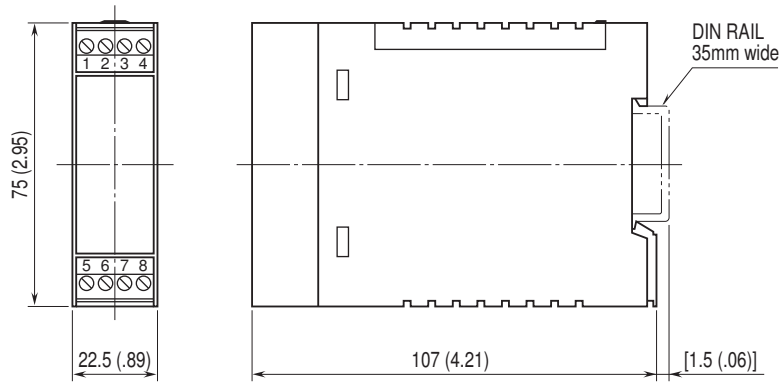
EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

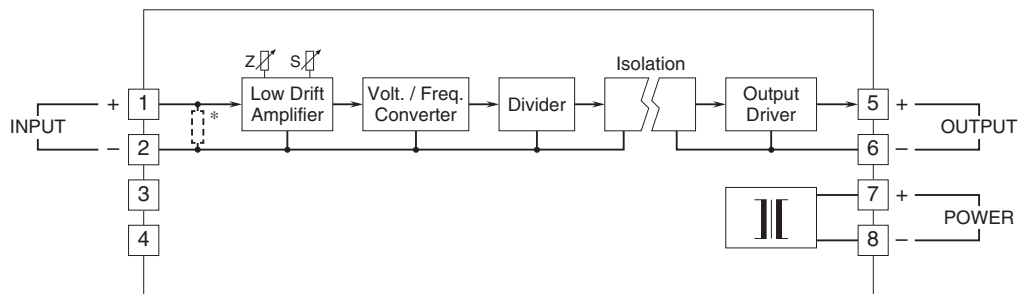
RoHS Directive

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

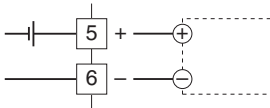
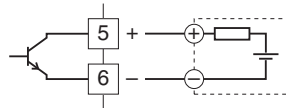


*Input shunt resistor incorporated for current input.

Output Connection Examples

■ Open Collector

■ Voltage Pulse



Specifications are subject to change without notice.