

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

### 2-input MATH FUNCTION MODULE

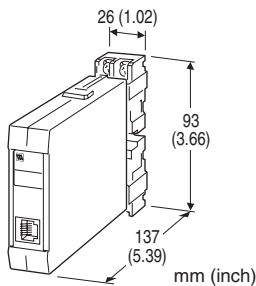
(field-programmable)

#### Functions & Features

- Providing temp. or pressure compensation for a gas flow, and other arithmetic operations
- Microprocessor based
- Equation and parameters selectable on site via hand-held programmer PU-2x
- Loop testing
- High-density mounting

#### Typical Applications

- Various flowmeters
- Adding two flows
- Ratio calculation
- Calculating average temperature



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

#### ORDERING INFORMATION

- Code number: HJF-[1][2]-R[3]
- Specify a code from below for each [1] through [3]. (e.g. HJF-6A-R/3/Q)
- Use Ordering Information Sheet (No. ESU-1980). Default setting will be used if not otherwise specified.
- Specify the specification for option code /Q (e.g. /C01/S01)

#### [1] INPUT

##### Current

A: 4 - 20 mA DC (Input resistance 100 Ω)

##### Voltage

6: 1 - 5 V DC (Input resistance 1 MΩ min.)

#### [2] OUTPUT

##### Current

A: 4 - 20 mA DC (Load resistance 600 Ω max.)

#### Voltage

6: 1 - 5 V DC (Load resistance 500 Ω min.)

#### POWER INPUT

##### DC Power

R: 24 V DC

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

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

##### Equation (Refer to the EQUATION table)

/1: Temperature compensation for DP flowmeter (ideal gas)

/2: Pressure compensation for DP flowmeter (ideal gas)

/3: Addition/subtraction

/4: Multiplication

/5: Division

##### 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 M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

##### TERMINAL SCREW MATERIAL

/S01: Stainless steel

#### EQUATION

##### Equation parameters

X<sub>0</sub>: output (%)

X<sub>1</sub> to X<sub>2</sub>: input (%)

K<sub>0</sub> to K<sub>2</sub>: gain ±29.999

A<sub>0</sub> to A<sub>2</sub>: bias (%) ±299.99 %

##### EQUATION

/1: Temperature compensation for DP flowmeter (ideal gas)

$$X_0 = \frac{K_1 X_1}{\sqrt{K_2 X_2 + A_2}}$$

where X<sub>0</sub>: compensated flow (linear characteristic)

X<sub>1</sub>: uncompensated flow (square root extraction available)

X<sub>2</sub>: temperature

/2: Pressure compensation for DP flowmeter (ideal gas)

$$X_0 = K_1 X_1 \sqrt{K_2 X_2 + A_2}$$

where X<sub>0</sub>: compensated flow (linear characteristic)

X<sub>1</sub>: uncompensated flow (square root extraction available)

X<sub>2</sub>: pressure

/3: Addition/subtraction

$$X_0 = K_0 \{K_1 (X_1 + A_1) + K_2 (X_2 + A_2)\} + A_0$$

/4: Multiplication

$$X_0 = K_0 (K_1 X_1 + A_1) (K_2 X_2 + A_2) + A_0$$

/5: Division

$$X_0 = \frac{K_0 (K_1 X_1 + A_1)}{(K_2 X_2 + A_2)} + A_0$$



## RELATED PRODUCTS

- JX configurator connection kit (model: JXCON)
- Programming Unit (model: PU-2x)

## GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3.5 screw terminals (torque 0.8 N·m)

**Screw terminal:** Nickel-plated steel

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

**Isolation:** input to output to power (non-isolated between inputs)

**Overrange input:** Approx. -25 to +125 %

**Overrange output:** Approx. -10 to +120 % at 1 - 5 V

**Adjustments:** Programming Unit (model: PU-2x); equation and parameters, square root extraction, zero and span, etc. (Refer to the users manual of JXCON for the adjustments configurable with JXCON.)

## INPUT SPECIFICATIONS

- **DC Current:** Input resistor incorporated

## INSTALLATION

**Current consumption:** Approx. 90 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:** 220 g (0.49 lbs)

## PERFORMANCE in percentage of span

**Input accuracy:**  $\pm 0.2$  %

**Output accuracy:**  $\pm 0.2$  %

**Temp. coefficient:**  $\pm 0.015$  %/°C ( $\pm 0.008$  %/°F)

**Response time:**  $\leq 0.8$  sec. (0 - 90 %)

**Line voltage effect:**  $\pm 0.1$  % over voltage range

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

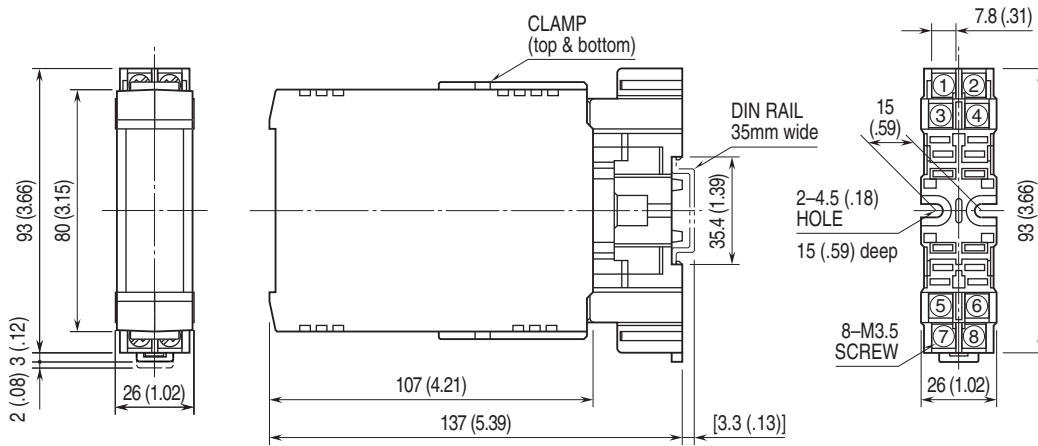
**Dielectric strength:** 500 V AC @ 1 minute

(input to output to power)

1500 V AC @ 1 minute (input or output or power to ground)

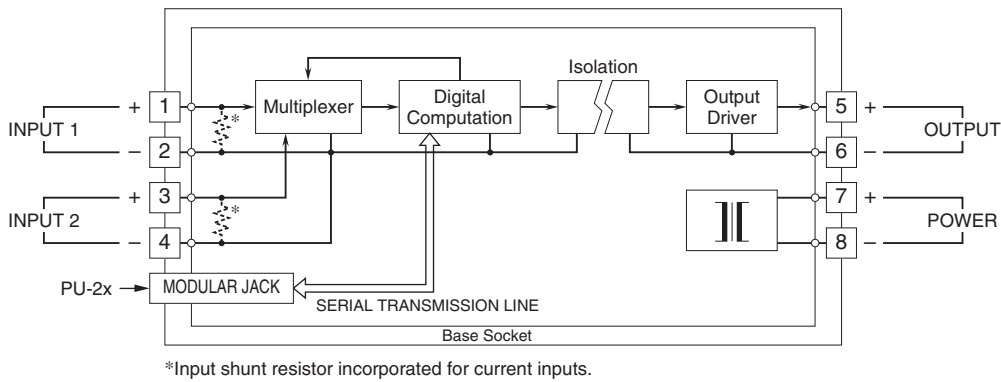


**EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)**



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

**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.