

## Plug-in Signal Conditioners M-UNIT

### SPLIT-RANGE TRANSMITTER

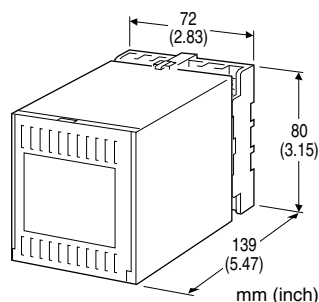
(isolated four outputs)

#### Functions & Features

- Generates four isolated signals which could control multiple final control elements
- PC programmable
- High-density mounting

#### Typical Applications

- Manipulating multiple valves for split-range control



## MODEL: MFS2-[1][2]-[3][4]

### ORDERING INFORMATION

- Code number: MFS2-[1][2]-[3][4]  
Specify a code from below for each of [1] through [4].  
(e.g. MFS2-A4-M/Q)
- Use Ordering Information Sheet (No. ESU-1383)
- Factory default setting (See "OPERATION DIAGRAM") 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 250 Ω)

#### Voltage

4: 0 – 10 V DC (Input resistance 1 MΩ min.)

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

### [2] OUTPUT 1 through 4

#### Current

A: 4 – 20 mA DC (Load resistance 500 Ω max.)

#### Voltage

4: 0 – 10 V DC (Load resistance 10 kΩ min.)

6: 1 – 5 V DC (Load resistance 5000 Ω min.)

### [3] POWER INPUT

#### AC Power

M: 85 – 264 V AC (Operational voltage range 85 – 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 M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

#### TERMINAL SCREW MATERIAL

/S01: Stainless steel

### RELATED PRODUCTS

- PC configurator software (model: MFS2CFG)  
Software downloadable at M-System's web site.  
A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

### GENERAL SPECIFICATIONS

**Construction:** Plug-in

**Connection:** M3.5 screw terminals

**Screw terminal:** Chromated steel (standard) or stainless steel

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

**Isolation:** Input to output 1 to output 2 to output 3 to output 4 to power

**Overrange output:** 0 to 100 %

**Zero adjustment:** -5 to +5 % (PC programming)

**Span adjustment:** 95 to 105 % (PC programming)

**Power LED:** Green light turns on in normal operating conditions.

**Programming:** Downloaded from PC; I/O characteristics, high/low limits, fixed output, etc.

**Configurator connection:** 2.5 dia. miniature jack;  
RS-232-C level

**Fixed output:** Preset fixed outputs provided by contact signal control at the terminals 5 – 6 (Open or Close trigger conditions can be programmed.)

## INPUT SPECIFICATIONS

### ■ DC Current:

Shunt resistor attached to the input terminals (0.5 W)

### ■ Contact Input

Detecting voltage/current: Approx. 2 V DC / 50  $\mu$ A

### Detection levels

ON resistance:  $\leq 200 \Omega$ ,  $\leq 0.5 \text{ V}$

OFF resistance:  $\geq 100 \text{ k}\Omega$ ,  $\geq 1.7 \text{ V}$

## INSTALLATION

### Power consumption

#### •AC:

approx. 4 VA at 100 V

approx. 5.5 VA at 200 V

approx. 6.5 VA at 264 V

#### •DC: Approx. 2 W

Operating temperature: 0 to 50°C (32 to 122°F)

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

Mounting: Surface or DIN rail

Weight: 400 g (0.88 lb)

## PERFORMANCE in percentage of span

Accuracy:  $\pm 0.5 \%$

Temp. coefficient:  $\pm 0.05 \%/^{\circ}\text{C}$  ( $\pm 0.03 \%/^{\circ}\text{F}$ )

Response time:  $\leq 0.5 \text{ sec.}$  (0 – 90 %)

Line voltage effect:  $\pm 0.5 \%$  over voltage range

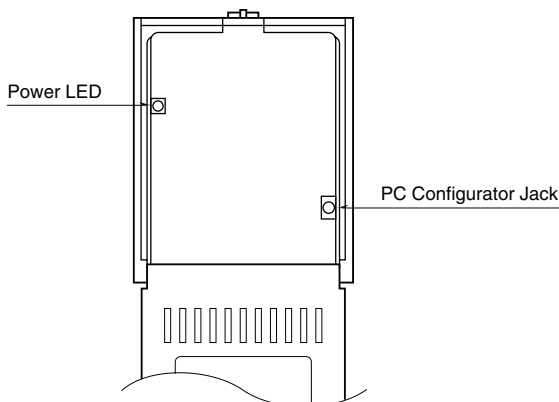
Insulation resistance:  $\geq 100 \text{ M}\Omega$  with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute

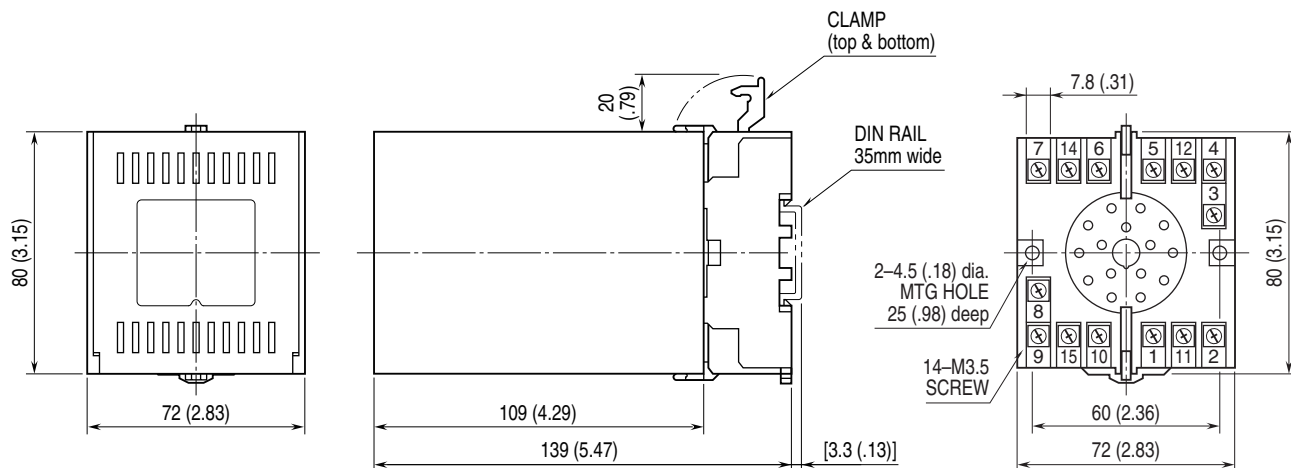
(input to output 1 or output 2 or output 3 or output 4 to power to ground)

500 V AC @ 1 minute (between each output)

## EXTERNAL VIEW

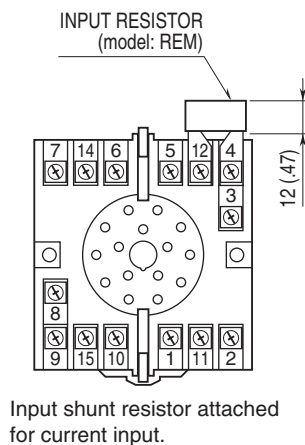


## EXTERNAL DIMENSIONS unit: mm (inch)

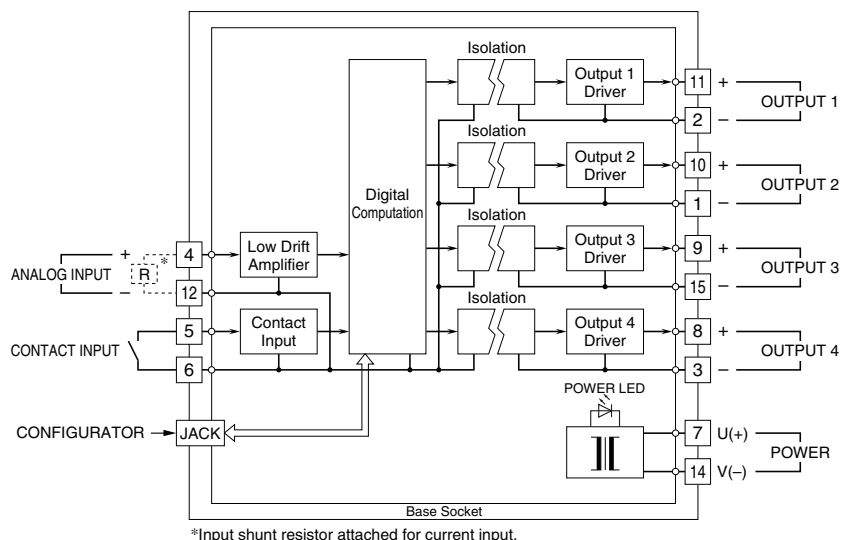


• When mounting, no extra space is needed between units.

## TERMINAL ASSIGNMENTS unit: mm (inch)



## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



\*Input shunt resistor attached for current input.

## OPERATION DIAGRAM

The diagram below shows an example of I/O characteristics as specified in Table 1.

The split-range operations can be specified when ordering, by using Ordering Information Sheet, or programmed by the user using PC Configurator Software. Please refer to Users Manual for the PC Configurator for more information.

1) Two pairs of input and output in % define each split I/O range.

Proportional (positive) or inverted (negative) characteristics can be specified.

2) High and low limits for each output can be specified independently within the full-scale range.

3) Fixed output value for each output can be specified independently in advance.

These outputs are provided when the contact input is closed or opened (predefined).

H limit  $\geq$  Fixed output  $\geq$  Low limit

4) Applying the fixed output or not can be specified independently for each output.

In the figure, fixed output is applied to the output 2 with contact input. The solid line shows the function when contact input is shorted. The chain double-dashed line shows the function when contact input is opened.

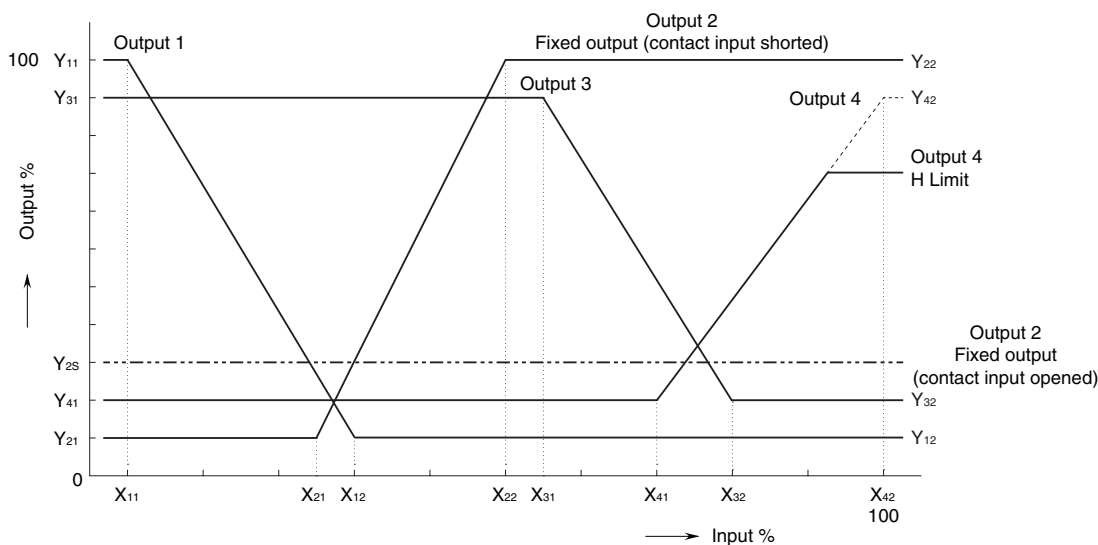


Table 1

	INPUT %	OUTPUT %	LIMIT %	FIXED OUTPUT %	CONTACT INPUT	TRIGGER CONDITION
Output 1	X <sub>11</sub> = 0.00 X <sub>12</sub> = 30.00	Y <sub>11</sub> = 100.00 Y <sub>12</sub> = 0.00	H <sub>1</sub> = 100.00 L <sub>1</sub> = 0.00	Y <sub>1S</sub> = 0.00	Not applied	----
Output 2	X <sub>21</sub> = 25.00 X <sub>22</sub> = 50.00	Y <sub>21</sub> = 0.00 Y <sub>22</sub> = 100.00	H <sub>2</sub> = 100.00 L <sub>2</sub> = 0.00	Y <sub>2S</sub> = 30.00	Applied	Open
Output 3	X <sub>31</sub> = 55.00 X <sub>32</sub> = 80.00	Y <sub>31</sub> = 90.00 Y <sub>32</sub> = 10.00	H <sub>3</sub> = 90.00 L <sub>3</sub> = 10.00	Y <sub>3S</sub> = 0.00	Not applied	----
Output 4	X <sub>41</sub> = 70.00 X <sub>42</sub> = 100.00	Y <sub>41</sub> = 10.00 Y <sub>42</sub> = 90.00	H <sub>4</sub> = 70.00 L <sub>4</sub> = 10.00	Y <sub>4S</sub> = 0.00	Not applied	----

Factory default setting used if no Ordering Information is provided:

	INPUT %	OUTPUT %	LIMIT %	FIXED OUTPUT %	CONTACT INPUT	TRIGGER CONDITION
Output 1	X <sub>11</sub> = 0.00 X <sub>12</sub> = 100.00	Y <sub>11</sub> = 0.00 Y <sub>12</sub> = 100.00	H <sub>1</sub> = 100.00 L <sub>1</sub> = 0.00	Y <sub>1S</sub> = 0.00	Not applied	Open
Output 2	X <sub>21</sub> = 0.00 X <sub>22</sub> = 100.00	Y <sub>21</sub> = 0.00 Y <sub>22</sub> = 100.00	H <sub>2</sub> = 100.00 L <sub>2</sub> = 0.00	Y <sub>2S</sub> = 0.00	Not applied	Open
Output 3	X <sub>31</sub> = 0.00 X <sub>32</sub> = 100.00	Y <sub>31</sub> = 0.00 Y <sub>32</sub> = 100.00	H <sub>3</sub> = 100.00 L <sub>3</sub> = 0.00	Y <sub>3S</sub> = 0.00	Not applied	Open
Output 4	X <sub>41</sub> = 0.00 X <sub>42</sub> = 100.00	Y <sub>41</sub> = 0.00 Y <sub>42</sub> = 100.00	H <sub>4</sub> = 100.00 L <sub>4</sub> = 0.00	Y <sub>4S</sub> = 0.00	Not applied	Open



Specifications are subject to change without notice.