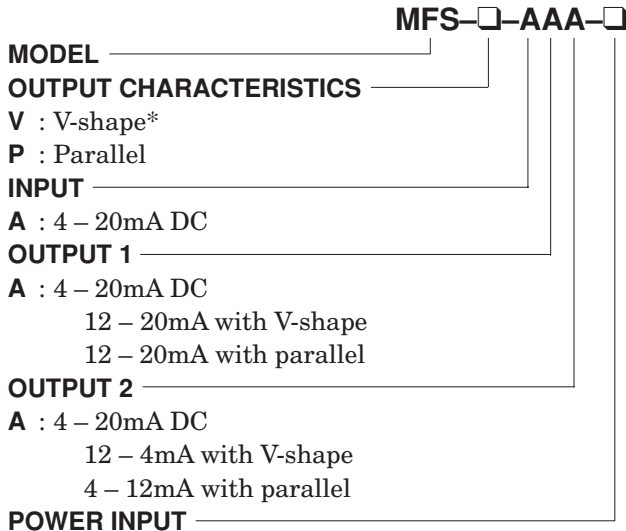


Plug-in Signal Conditioners M-UNIT

SPLIT-RANGE TRANSMITTER

MODEL **MFS**

MODEL & SUFFIX CODE SELECTION

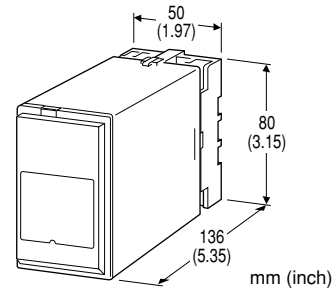


AC Power		DC Power
B : 100V AC	G : 200V AC	R : 24V DC
C : 110V AC	H : 220V AC	
D : 115V AC	J : 240V AC	
F : 120V AC		

*Output 2 is assigned to the reversed output in V-shape characteristics.

ORDERING INFORMATION

Specify code number. (e.g. MFS-V-AAA-B)



Functions & Features

- Generating two signals which control two final control elements
- High-density mounting

Typical Applications

- Balancing two final control elements in opposite actions used in heating-cooling or humidifying-dehumidifying processes

GENERAL SPECIFICATIONS

- Construction:** plug-in
- Connection:** M3.5 screw terminals
- Housing material:** flame-resistant resin (black)
- Isolation:** input or output 1 or output 2 to power
- Overrange output:** approx. -25 – +150%
- Monitor jacks:** direct monitoring of output current; accessible at front; 2 mm (.08") dia.
- Ammeter requirement:** input resistance 10Ω max.
- Output characteristics**
- V-shape:** two signals vary in opposite directions; used when both final control devices have the same action (direct-direct or reverse-reverse).
- Parallel:** two signals vary in the same direction; used when one final control device is direct and another is reverse.

INPUT & OUTPUT

- **INPUT:** 4 – 20mA DC; input resistor incorporated (2W)
- Input resistance:** 250Ω
- **OUTPUT (two):** 4 – 20mA DC
- Load resistance:** 600Ω maximum

INSTALLATION

Power input

AC: operational range: rating $\pm 10\%$,
50/60 ± 2 Hz, approx. 2VA

DC: operational range: 24V $\pm 10\%$,
approx. 80mA (ripple 10% p-p max.)

Operating temperature: -5 to +60°C (23 to 140°F)

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

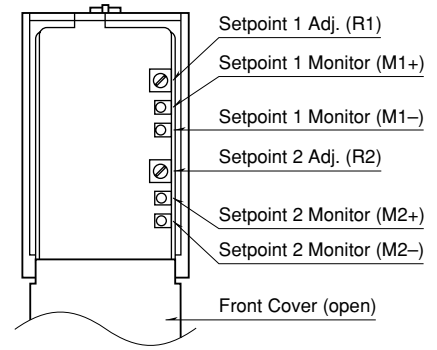
Mounting: surface or DIN rail

Dimensions: W50×H80×D136 mm (1.97"×3.15"×5.35")
See General Spec. Sheet Figure C-1.

Weight: 400 g (0.88 lbs)

Terminal assignment: See General Spec. Sheet Figure D-1.

FRONT PANEL CONFIGURATION



PERFORMANCE in percentage of span

Accuracy: $\pm 0.3\%$ (gain = 1 or -1)

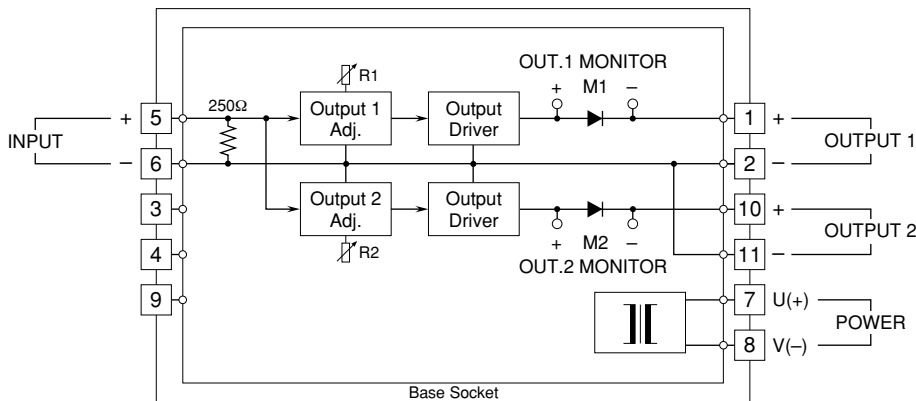
Temp. coefficient: $\pm 0.02\%/^{\circ}\text{C}$ ($\pm 0.01\%/^{\circ}\text{F}$)

Response time: ≤ 0.5 seconds (0 – 90%)

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

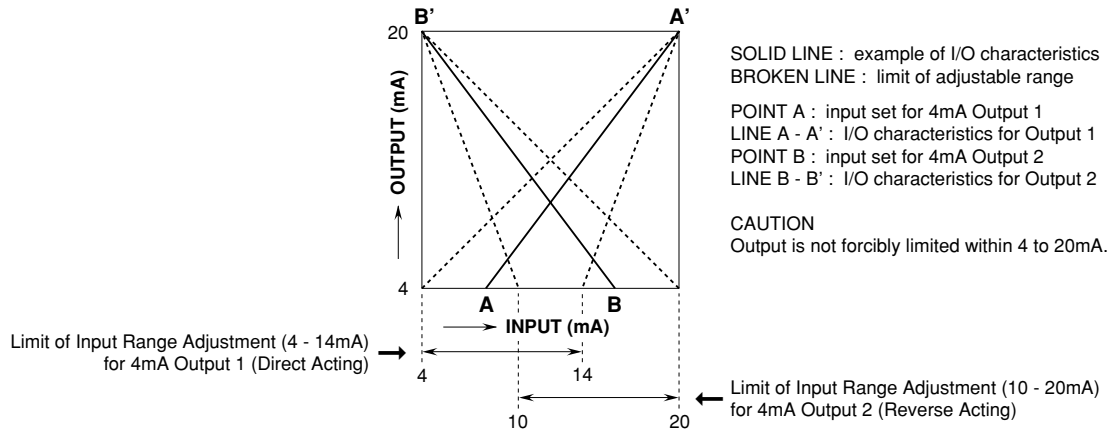
Dielectric strength: 2000V AC @1 minute (input or output 1 or output 2 to power to ground)

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



OPERATION DIAGRAM

■ V-SHAPE CHARACTERISTICS (model: MFS-V)

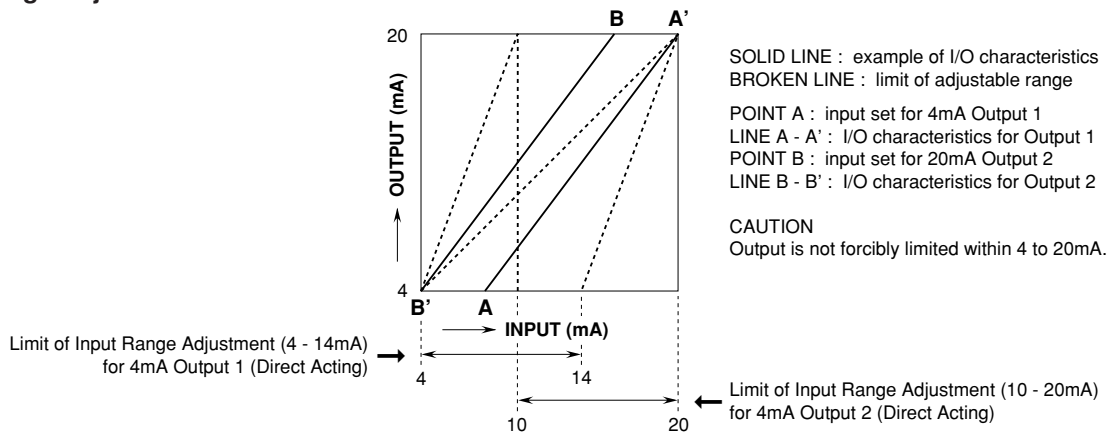


• Input Range Adjustment

1. Connect an ammeter to output 1 monitor terminal (M1).
 Current signal is measured at both ends of a diode inserted in series to the output 1 driver.
 Input resistance of the ammeter must be 10Ω at the maximum to ensure accurate measurement.
2. Apply an input signal desired for 4mA DC output. (within 4 – 14mA DC)
3. Turn output 1 adjustment (R1) until 4mA output is monitored.
4. Adjust output 2 the same way as output 1. Allowable input range for 4mA DC output is 10 – 20mA.
 Input signals for 20mA DC output are fixed to 20mA for output 1, 4mA for output 2.

■ PARALLEL CHARACTERISTICS (model: MFS-P)

• Input Range Adjustment



1. Connect an ammeter to output 1 monitor terminal (M1).
 Current signal is measured at both ends of a diode inserted in series to output 1 driver.
 Input resistance of the ammeter must be 10Ω at the maximum to ensure accurate measurement.
2. Apply an input signal desired for 4mA DC output. (within 4 – 14mA DC)
3. Turn output 1 adjustment (R1) until 4mA output is monitored.

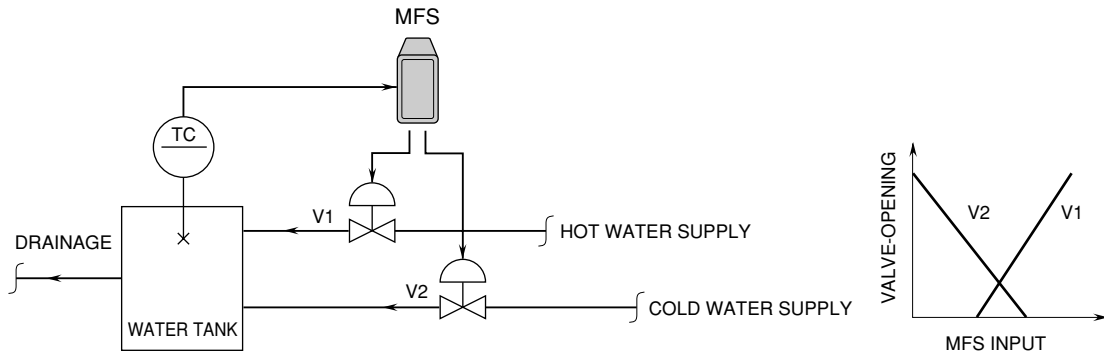
Proceed to output 2 adjustment.

4. Connect the ammeter (same type) to output 2 monitor terminal (M2).
 5. Apply input signal required for 20mA DC output. (within 10 – 20mA DC)
 6. Turn output 2 adjustment (R2) until 20mA output is monitored.
- For output 1, input signal for 20mA DC output is fixed to 20mA, while for output 2, input signal for 4mA DC output is fixed to 4mA.

APPLICATION

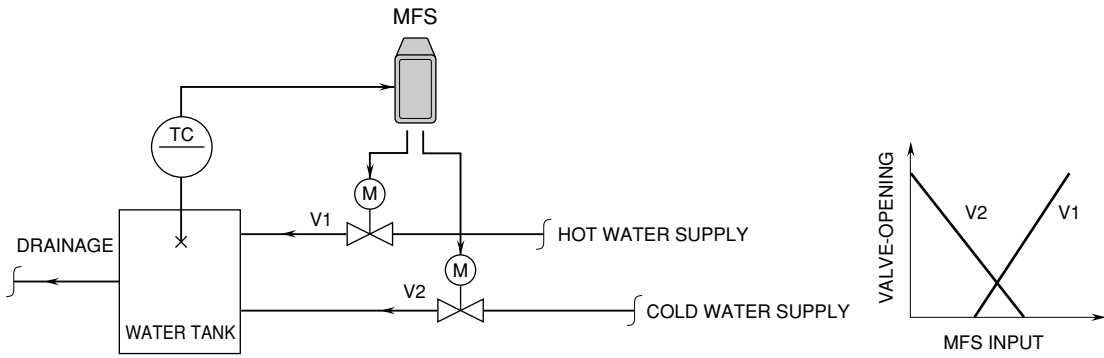
■V-SHAPE CHARACTERISTICS (model: MFS-V)

- When the relation between control signal and valve-opening for both valves has the same characteristic:



■PARALLEL CHARACTERISTICS (model: MFS-P)

- When the relation between control signal and valve-opening for one valve has the opposite characteristic to the other's:



- To control wide flow range with two valves of different capacities:

