

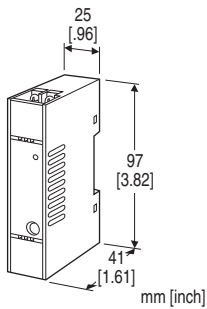
## Super-mini Terminal Block Signal Conditioners M5X-UNIT

### SIGNAL TRANSMITTER

(PC programmable)

#### Functions & Features

- Converts a DC input into an standard process signal
- PC programmable
- High-density mounting
- Power LED



### MODEL: M5XV-1-R[1]

#### ORDERING INFORMATION

- Code number: M5XV-1-R[1]

Specify a code from below for [1].

- (e.g. M5XV-1-R/Q)
- Specify the specification for option code /Q (e.g. /C01/S01/SET)

#### INPUT - Field-selectable

##### ◆ DC Input

- Current input: 0 - 50 mA DC
- Voltage input: -1000 - +1000 mV DC
- Voltage input: -10 - +10 V DC

#### EXTERNAL INTERFACE

##### ◆ OUTPUT SIGNAL

1: DC output (field-selectable)

- Current output: 0 - 20 mA DC
- Voltage output: -5 - +5 V DC
- Voltage output: -10 - +10 V DC

#### POWER INPUT

##### DC Power

R: 24 V DC

(Operational voltage range 24 V  $\pm$ 10 %, ripple 10 %p-p max.)

#### [1] OPTIONS

##### Other Options

blank: none

/Q: Option other than the above (specify the specification)

#### SPECIFICATIONS OF OPTION: Q

##### 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

##### EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet (No. ESU-2762)

#### RELATED PRODUCTS

- PC Configurator cable (model: COP-US)
  - PC configurator software (model: M5CFG)
- Downloadable at M-System's web site.

#### GENERAL SPECIFICATIONS

**Construction:** Terminal block

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

**Screw terminal:** Nickel-plated steel (standard) or stainless steel

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

**Isolation:** Input to output to power

**Power indicator LED:** Green LED; Blinking patterns indicate different operating status of the transmitter.

**Parameters:** Stored in non-volatile memory; write/erase cycle endurance: less than 20 000

**Programming:** Downloaded from PC;

- input type
- input range
- output type
- output range
- zero and span
- user's linearization table

For detailed information, refer to the users manual for the PC configurator.

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

#### INPUT SPECIFICATIONS

Standard default setting: DC current input 4 - 20 mA

##### ■ DC Current

**Input resistance:** Incorporated (15.5  $\Omega$ )

**Input range:** 0 - 50 mA DC

**Measurable range:** 0 - 52.5 mA DC

**Minimum span:** 2 mA DC

**Offset:** Lower range can be any specific value within the input range provided that the minimum span is maintained.

■ **DC Voltage**

**Input range**

- S1: -1000 - +1000 mV DC
- S2: -10 - +10 V DC

**Measurable range**

- S1: -1100 - +1100 mV DC
- S2: -11 - +11 V DC

**Minimum span:**

- S1: 100 mV DC
- S2: 1 V DC

**Offset:** Lower range can be any specific value within the input range provided that the minimum span is maintained. If not specified, the input range is shown below.

**Input resistance**

- S1:  $\geq 100 \text{ k}\Omega$
- S2:  $\geq 1 \text{ M}\Omega$

## OUTPUT SPECIFICATIONS

Standard default setting: DC current output 4 - 20 mA

**Output type**

- DC current output: 0 - 20 mA DC
  - DC voltage output: -10 - +10 V DC
  - DC voltage output: -5 - +5 V DC
- (3 types can be switched by DIP switch and PC)

■ **DC Current:** 0 - 20 mA DC

**Output range:** 0 - 23 mA DC

**Minimum span:** 1 mA

**Load resistance:** 550  $\Omega$

■ **DC Voltage**

• **Output range -10 - +10 V DC**

**Voltage range:** -11.5 - +11.5 V DC

**Minimum span:** 1 V

**Load resistance:** Output drive 1 mA max.

(ex. 0 - 10 V DC:  $10 \text{ V} \div 1 \text{ mA} = 10 \text{ k}\Omega$ )

• **Output range -5 - +5 V DC**

**Voltage range:** -5.75 - +5.75 V DC

**Minimum span:** 500 mV

**Load resistance:** Output drive 1 mA max.

(ex. 1 - 5 V DC:  $5 \text{ V} \div 1 \text{ mA} = 5000 \Omega$ )

## INSTALLATION

**Power consumption:**  $\leq 1 \text{ W}$

**Operating temperature:** -20 to +65°C (-4 to +149°F)

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

**Atmosphere:** No corrosive gas or heavy dust

**Mounting:** DIN rail

**Weight:** 80 g (2.8 oz)

## PERFORMANCE in percentage of span

**Input accuracy (% of max. input range):**  $\pm 0.01 \%$

( $\pm 0.02$  for current input)

**Output accuracy (% of max. output range):**  $\pm 0.02 \%$

( $\pm 0.04$  for current output)

**Temp. coefficient:**  $\pm 0.0075 \%/^{\circ}\text{C}$  ( $\pm 0.004 \%/^{\circ}\text{F}$ ) of max. span

**Response time:**  $\leq 500 \text{ msec.}$  (0 - 90 %)

**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)

## ACCURACY AND CALCULATION EXAMPLES

■ **Overall Accuracy**

The accuracy includes input accuracy, which converts the sensor input into a digital value, and output accuracy, which converts the digital value into an analog signal.

The accuracy of the device is the total of the input accuracy and the output accuracy

**Input accuracy**

Input accuracy for the setting value span is shown as following formula.

Input accuracy =  $(\text{input range} \div \text{input setting value span}) \times 0.01\%$

For current input,

Input accuracy =  $(\text{input range} \div \text{input setting value span}) \times 0.02\%$

**Output accuracy**

Output accuracy for the setting value span is shown as following formula.

Output accuracy =  $(\text{output range} \div \text{output setting value span}) \times 0.02\%$

For current output,

Output accuracy =  $(\text{output range} \div \text{output setting value span}) \times 0.04\%$

**Calculation examples**

Ex1: Input 0 - 20 mA, output 4 - 20 mA

Input accuracy =  $(50 \text{ mA} \div 20 \text{ mA}) \times 0.02\% = 0.05\%$

Output accuracy =  $(20 \text{ mA} \div 16 \text{ mA}) \times 0.04\% = 0.05\%$

Accuracy = input accuracy 0.05% + output accuracy 0.05% = 0.10%

Ex2: Input 0 - 10 V, output 0 - 10 V

Input accuracy =  $(20 \text{ V} \div 10 \text{ V}) \times 0.01\% = 0.02\%$

Output accuracy =  $(20 \text{ V} \div 10 \text{ V}) \times 0.02\% = 0.04\%$

Accuracy = input accuracy 0.02% + output accuracy 0.04% = 0.06%

## STANDARDS & APPROVALS

**EU conformity:**

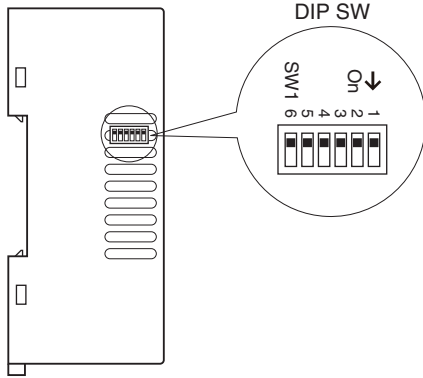
EMC Directive

EMI EN 61000-6-4  
 EMS EN 61000-6-2  
 RoHS Directive

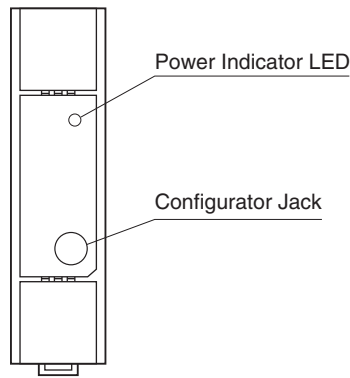
## EXTERNAL VIEW

Refer to the instruction manual for the setting procedure.

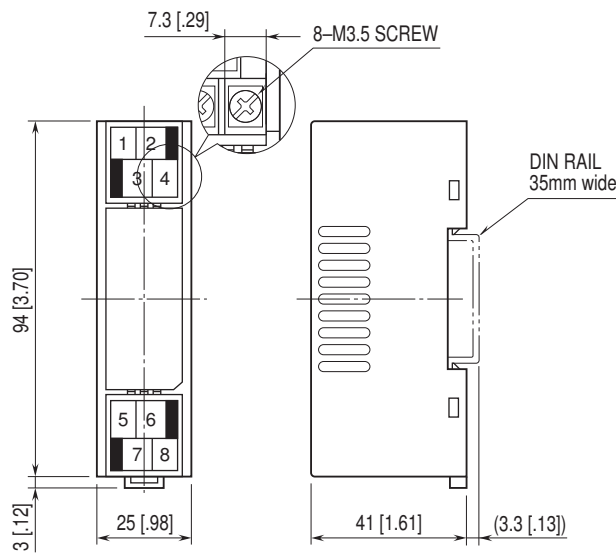
■ LEFT VIEW



■ FRONT VIEW

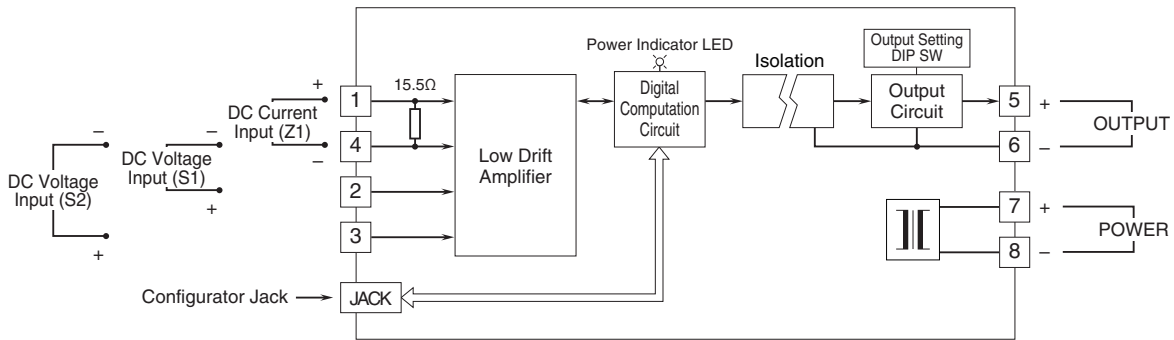


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



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

**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**



Specifications are subject to change without notice.