

## Space-saving Signal Conditioners M3-UNIT Series

-2.5 - +2.5 V DC  
-10 - +10 V DC

### SIGNAL TRANSMITTER

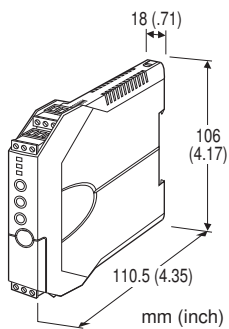
(field- and PC-configurable)

#### Functions & Features

- Accepts a DC mV, V or mA input and provides an isolated DC signal
- Easy 'One-Step Cal' calibration using the front three control buttons without needing a PC; PC software is also usable.
- Both input and output type and range are configurable
- Front control button function can be locked
- CE marking
- UL approval

#### Typical Applications

- Signal conversion between control room and field instrumentation with isolation
- Ideal for use as a fast solution, multifunctional spare part



## MODEL: M3LV-R4/[1][2]

### ORDERING INFORMATION

- Code number: M3LV-R4/[1][2]
- Specify a code from below for [1] and [2]. (e.g. M3LV-R4/A)
- Orders will be shipped with default factory settings (4 - 20 mA input / 4 - 20 mA output).

### INPUT - Field-selectable

#### DC Current & Voltage

**Current:** 0 - 20 mA DC

**Millivolt:** -1000 - +1000 mV DC

**Voltage:** -10 - +10 V DC

### OUTPUT - Field-selectable

#### Current

0 - 20 mA DC

#### Voltage

### POWER INPUT

#### DC Power

**R4:** 10 - 32 V DC

(Operational voltage range 9 - 36 V, ripple 10 %p-p max.)

### [1] CONFIGURATION OPTIONS

**A:** PC and field configurable

**B:** Field configurable

### [2] OPTIONS

#### STANDARDS & APPROVALS

**blank:** CE marking

**/UL:** UL approval, CE marking

### RELATED PRODUCTS

- PC configurator software (model: M3CON) 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:** Small-sized front terminal structure

**Connection:** Euro type connector terminal

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

**Isolation:** Input to output to power

**Overrange output:** -15 to +115 %

**Zero adjustment:** -15 to +15 % (front)

**Span adjustment:** 85 to 115 % (front)

**Status indicator LED:** Tri-color (green/amber/red) LED;

Flashing patterns indicate operation status of the transmitter.

#### Configuration

##### Programmable features include:

- I/O type and range
- Zero and span adjustments
- User's linearization table setting (max. 101 points, specified within -15 to +115 % for both input and output) (Refer to the instruction manual)
- 'One-Step Cal' calibration: With I/O type and the full-scale range configured via the internal DIP switches, precise 0 % and 100 % ranges are calibrated via the front control buttons with a help of LED.

**INPUT SPECIFICATIONS**

■ **DC CURRENT:** 49.9 Ω resistor incorporated  
**Maximum range:** 0 - 20 mA DC  
**Minimum span:** 2 mA  
**Offset:** Lower range can be any specific value within the input range provided that the minimum span is maintained.

■ **DC mV & VOLTAGE**  
**Narrow Spans (mV)**  
**Maximum range:** -1000 mV - +1000 mV DC  
**Minimum span:** 100 mV  
**Wide Spans (V)**  
**Maximum range:** -10 - +10 V DC  
**Minimum span:** 1 V  
**Offset:** Lower range can be any specific value within the input range provided that the minimum span is maintained.  
**Input resistance:** 1 MΩ minimum

**OUTPUT SPECIFICATIONS**

■ **DC CURRENT**  
**Maximum range:** 0 - 20 mA DC  
**Minimum span:** 1 mA  
**Conformance range:** 0 - 24 mA DC  
(Negative overrange current below 0 mA is not available.)  
**Offset:** Lower range can be any specific value within the output range provided that the minimum span is maintained.  
**Load resistance:** Output drive 12 V maximum;

■ **DC VOLTAGE**  
**Narrow Spans (mV)**  
**Maximum range:** -2.5 - +2.5 V DC  
**Minimum span:** 250 mV  
**Conformance range:** -3 - +3 V DC  
**Wide Spans (V)**  
**Maximum range:** -10 - +10 V DC  
**Minimum span:** 1 V  
**Conformance range:** -11.5 - +11.5 V DC  
**Offset:** Lower range can be any specific value within the output range provided that the minimum span is maintained.  
**Load resistance:** Output drive 1 mA maximum

**INSTALLATION**

**Power Consumption**  
• **DC power input:** Approx. 3 W  
**Operating temperature:** -25 to +65°C (-13 to +149°F)  
Max. 55°C (131°F) for UL approval  
**Operating humidity:** 0 to 95 %RH (non-condensing)  
**Mounting:** DIN rail  
**Weight:** 100 g (3.53 oz)

**PERFORMANCE**

**Accuracy:** Input Accuracy + Output Accuracy  
**Input accuracy:** (% of input range)  
(Inversely proportional to the span.)  
-1000 - +1000 mV : ±0.01 (%)  
-10 - +10 V : ±0.01  
0 - 20 mA : ±0.02 (Except the accuracy of input resistor.)  
**Output accuracy:** ±0.04 % of output range  
(Inversely proportional to the span.)  
**Temp. coefficient:** ±0.015 %/°C (±0.008 %/°F) of max. span  
**Response time:** ≤ 0.5 sec. (0 - 90 %)  
**Line voltage effect:** ±0.1 % over voltage range  
**Insulation resistance:** ≥ 100 MΩ with 500 V DC  
**Dielectric strength:** 1500 V AC @ 1 minute  
(input to output or power to ground)  
500 V AC @ 1 minute (output to power)

**CALCULATION EXAMPLES OF OVERALL ACCURACY**

[Example] Input Range 1 - 5 V, Output Range 1 - 5 V  
Max. Input Range (20 V) ÷ Span (4 V) × 0.01 % +  
Max. Output Range (20 V) ÷ Span (4 V) × 0.04 % = 0.25 %

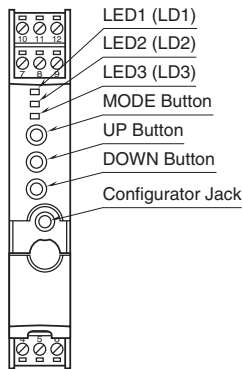
**STANDARDS & APPROVALS**

**CE conformity:**  
EMC Directive (2004/108/EC)  
EMI EN 61000-6-4: 2007  
EMS EN 61000-6-2: 2005

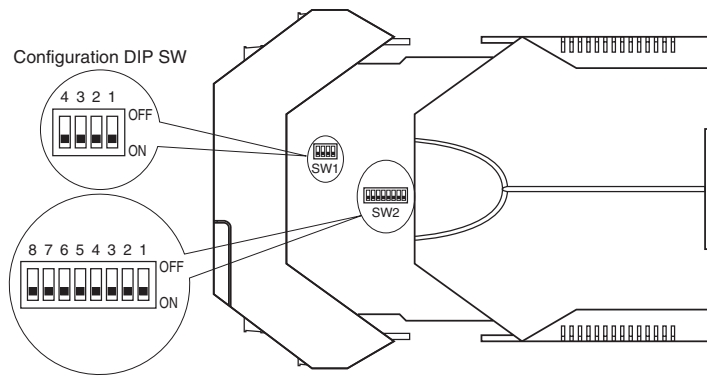
**Approval:**  
UL/C-UL general safety requirements  
(UL 61010-1, CAN/CSA-C22.2 No.1010-1)

## EXTERNAL VIEW

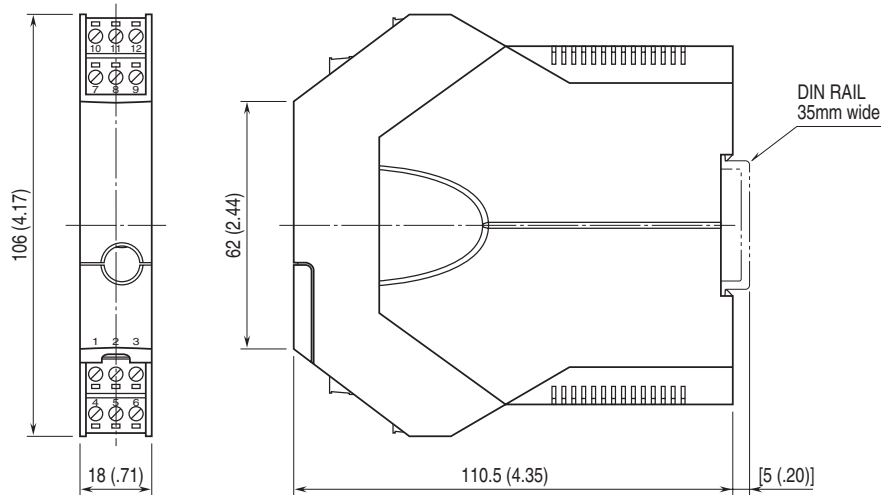
■ FRONT VIEW



■ SIDE VIEW

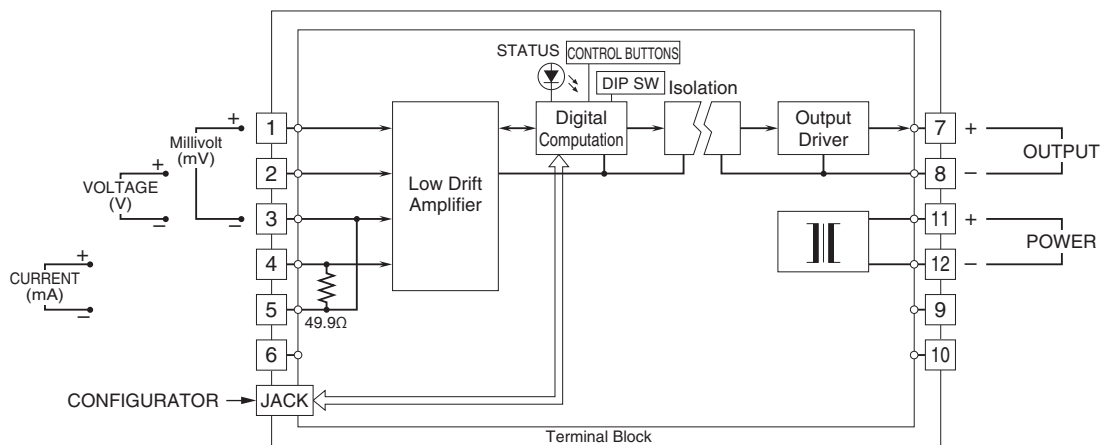


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



⚠ Specifications are subject to change without notice.