

## Super-mini Signal Conditioners with Display Mini-M M2E Series

### SIGNAL TRANSMITTER

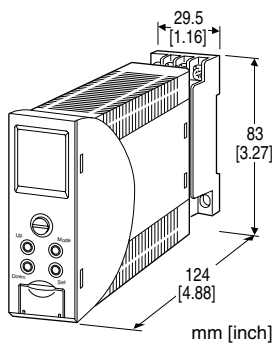
(PC programmable)

#### Functions & Features

- Converts DC input from a sensor into a standard process signal
- Adjustments with the front button
- OEL display with good visibility

#### Typical Applications

- Isolation between control room and field instrumentation
- Ideal for quick spare part



### MODEL: M2EXV-[1][2]

#### ORDERING INFORMATION

- Code number: M2EXV-[1][2]
- Specify a code from below for each of [1] and [2].  
(e.g. M2EXV-M2/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

#### OUTPUT - Field-selectable

##### ◆ DC Output

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

#### [1] POWER INPUT

##### AC Power

M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)

##### DC Power

R: 24 V DC

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

P: 110 V DC

(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### [2] 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

##### EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet  
(No. ESU-5133)

#### RELATED PRODUCTS

- M2E configurator software (model: M2ECFG)

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 (EM-5147) for the M2E configurator for applicable cable types.

#### GENERAL SPECIFICATIONS

**Construction:** Plug-in

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

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

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

**Isolation:** Input to output to power

**Overrange output:** Approx. -5 to +105 % (Not available for current output not greater than 0 mA)

**Zero fine adjustment:** -5 to +5 % (front button)

**Span fine adjustment:** 95 to 105 % (front button)

**Output setting:** DIP Switch on side panel (refer to the instruction manual)

**Configuration:** Program with front buttons or Via PC.

**Programmable features include:** Refer to the parameter list.

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

## DISPLAY

**Display functions:** Displays and sets measured range, engineering unit

**Display size:** Approx. 15.6 × 20.8 mm (0.61" × 0.82")

**Number of pixels:** 68 × 95 (horizontal × vertical)

**Character color:** Yellow

**Display life:** Approx. 60000 hours

(Expected time for the Display brightness to be reduced to 50 % when the Display is used continuously with brightness setting 2 in 25 °C)

**Display type:** OEL display

**Display digit:** Negative 5 digits, positive 6 digits (-99999 to 999999)

**Decimal point position:** Selectable

## INPUT SPECIFICATIONS

### ■ DC Current

**Input resistance:** Incorporated (24.9 Ω)

**Input range:** 0 - 50 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. The measurement available for -5 - +105% of input setting range.

### ■ DC Voltage

#### •Narrow Spans (mV)

**Input range:** -1000 - +1000 mV DC

**Minimum span:** 100 mV

#### •Wide Spans (V)

**Input 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

The measurement available for -5 - +105% of input setting range.

## OUTPUT SPECIFICATIONS

### ■ DC Current

**Output range:** 0 - 20 mA DC

**Conformance range:** 0 - 21mA DC

**Minimum span:** 1 mA

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

**Load resistance:** Output drive 15 V max.

(Not available to output less than 0 mA, output range may not be extended to -5 %)

### ■ DC Voltage

**Output range:** -5 - +5 V DC, -10 - +10 V DC

**Conformance range:** -5.5 - +5.5 V DC, -11 - +11 V DC

**Minimum span:** 250 mV, 1 V

**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 max.

## INSTALLATION

### Power Consumption

#### •AC:

Max. 4.5 VA at 100 V

Max. 6.5 VA at 200 V

Max. 8.5 VA at 264 V

#### •DC: Max. 2.3 W

**Operating temperature:** -5 to +55°C (23 to 131°F)

**Operating humidity:** 10 to 85 %RH (non-condensing)

**Mounting:** Surface or DIN rail

**Weight:** Approx. 200 g (0.44 lb)

## PERFORMANCE (without linearization)

**Accuracy:** Input accuracy + output accuracy

See CALCULATION EXAMPLES OF OVERALL ACCURACY.

Inversely proportional to the setting span.

Except the accuracy of input resistor.

**Input accuracy:** (% of max. input range)

-1000 - +1000 mV : ±0.01 %

-10 - +10 V : ±0.01 %

0 - 50 mA : ±0.02 %

**Display accuracy:**

Input display: Input accuracy ±1 digit

Output display: Input accuracy + output accuracy ±1 digit

**Output accuracy:** ±0.04 % of max. output range

**Temp. coefficient (% of max. I/O range):** ±0.015 %/°C (±0.008 %/°F)

**Input resolution:** Max. 16 bits

**Output resolution:** Max. 16 bits

**Response time (filter time constant: 0 sec.):** ≤ 0.5 sec. (0 - 90 %)

**Line voltage effect:** ±0.1 % over voltage range

**Insulation resistance:** ≥ 100 MΩ with 500 V DC

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

## CALCULATION EXAMPLES OF OVERALL ACCURACY

[Example] Input Range -10 - +10 V, Input Setting 1 - 5 V, Output Range 0 - 20 mA, Output Setting 4 - 20 mA

### ■ Overall accuracy

• Input Accuracy = Input Range Span (20 V) ÷ Input Span Setting (4 V) × 0.01 % = 0.05 %

• Output Accuracy = Output Range Span (20 mA) ÷ Output Span Setting (16 mA) × 0.04 % = 0.05 %

Overall Accuracy = 0.05 + 0.05 = ±0.10 %

## STANDARDS & APPROVALS

### EU conformity:

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Installation Category II

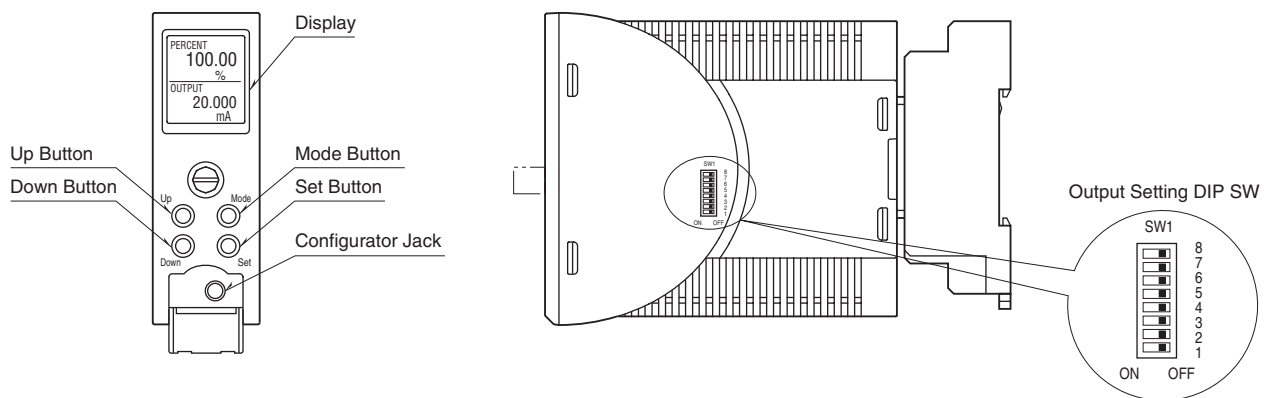
Pollution Degree 2

Input or output to power: Reinforced insulation (300 V)

Input to output: Basic insulation (300 V)

RoHS Directive

## EXTERNAL VIEW



COMPONENT	FUNCTION
Display	Indicates present values, setting values and abnormal information. Two types of present values are displayed respectively at the upper and lower parts according to setting.
Mode Button	Shifts from Measuring mode to each setting mode. The destination changes depending on how long the button is held down. Pressing Mode button for $\geq 2$ seconds returns to Measuring mode from each setting mode..
Set Button	Shifts the setting value of each setting parameter item to a setting changeable state. When at setting changeable state, used to move through the digits of setting value for input/output scaling and to enter (save) the setting value.
Up Button	Shifts through setting parameter items and to increase or select the setting value.
Down Button	Shifts through setting parameter items and to decrease or select the setting value.
Configurator Jack	Used to perform configuration with M2E configurator software (model: M2ECFG). When using the software, set the Lockout setting of the unit to 'Lock'.

Refer to the operating manual (EM-5133-B) for detailed procedures.

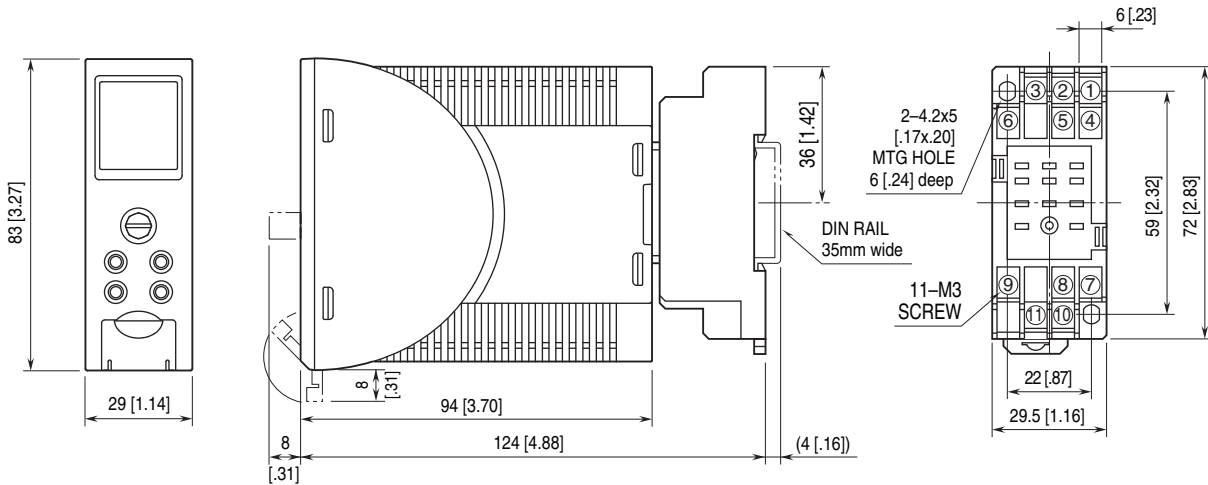
## PARAMETER LIST

It is available to configure or confirm settings shown below by using front button. Configuring or confirming with PC is available when using M2E configurator software (model: M2ECFG).

MODE	ITEM	SETTING PARAMETER	RANGE	UNIT	INITIAL VALUE	
Basic setting	01	Lockout setting	Lock / Unlock	—	Lock	
	11	Input range	0 – 50 mA -1000 – +1000 mV -10 – +10 V	—	0 – 50 mA	
	12	0 % input setting	0.00 – 48.00 -1000.0 – 900.0 -10.000 – 9.000	mA mV V	4.00	
	13	100 % input setting	2.00 – 50.00 -900.0 – 1000.0 -9.000 – 10.000	mA mV V	20.00	
	14	0 % input scaling	-99999 – 999999	—	0.00	
	15	100 % input scaling	-99999 – 999999	—	100.00	
	16	Input decimal point	No decimal point The number of decimal places: 1 – 5	—	2 places of decimals	
	17	Output range	0 – 20 mA -5 – +5 V -10 – +10 V	—	0 – 20 mA	
	18	0 % output setting	0.000 – 19.000 -5.000 – 4.750 -10.000 – 9.000	mA V V	4.000	
	19	100 % output setting	1.000 – 20.000 -4.750 – 5.000 -9.000 – 10.000	mA V V	20.000	
	20	0 % output scaling	-99999 – 999999	—	0.0	
	21	100 % output scaling	-99999 – 999999	—	100.00	
	22	Output decimal point	No decimal point The number of decimal places: 1 – 5	—	2 places of decimals	
	26	Loop test	-5.00 – 105.00	%	Cancel	
	Option	60	Unit (INP Scaling)	Choose from 68 types*	—	%
		61	Unit (OUT Scaling)	Choose from 68 types*	—	%
67		Filter time constant	0 – 30	sec.	0	
69		Input Zero fine adjust	-5.000 – 5.000	%	0.000	
70		Input Span fine adjust	95.000 – 105.000	%	100.000	
71		Output Zero fine adjust	-5.000 – 5.000	%	0.000	
72		Output Span fine adjust	95.000 – 105.000	%	100.000	
Advanced	01	Lockout setting	Lock / Unlock	—	Lock	
	90	Display setting	Upper: choose from 5 types* Lower: choose from 6 types*	—	Upper: INPUT Lower: PERCENT	
	91	Brightness	1 (darkest) – 4 (brightest)	—	4	
	92	Display timeout	0 (always on), 1 – 60	min.	10	
	93	Reset all settings	OFF / RESET	—	OFF	
Linearization	94	Version indication	—	—	—	
	01	Lockout setting	Lock / Unlock	—	Lock	
	100	User's table linearization	Disable / Enable	—	Disable	
	166	Number of points	2 – 111	—	2	
167 – 388	Table	-5.00 – 105.00	%	X001 -5.00 Y001 -5.00 X002 105.00 Y002 105.00		
01	Lockout setting	Lock / Unlock	—	Lock		

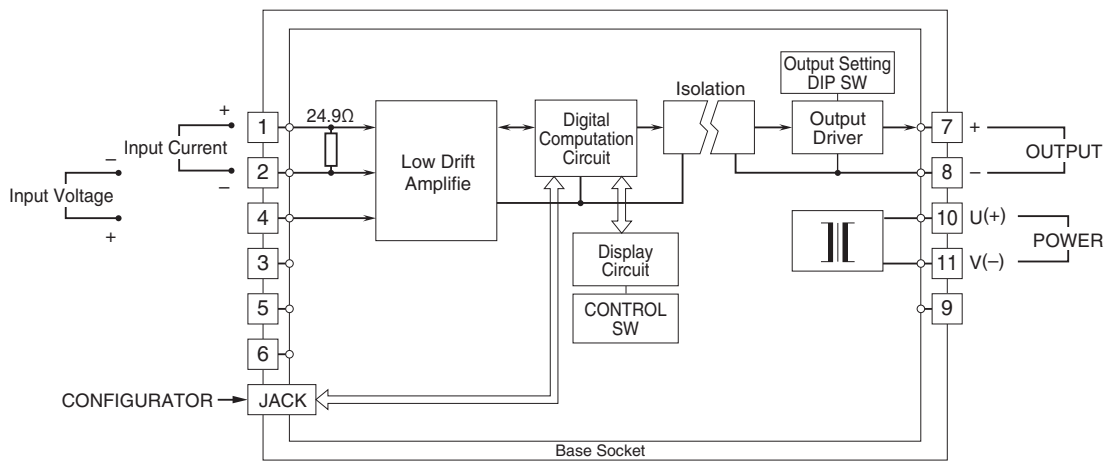
\* For detailed types, refer to the operating manual (EM-5133-B).

## 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.