

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

### TWO-WIRE TRANSMITTER ALARM

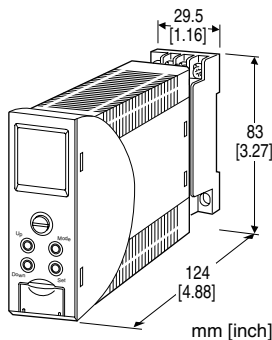
(PC programmable, dual or quad alarm trip)

#### Functions & Features

- Quad or dual trip
- Settable with front button
- ON delay time selectable
- Hi/Lo trip and energized/de-energized coil independently selectable for each setpoint
- Enclosed relays
- Relays can be powered by 200 V AC and 100 V DC
- Segment linearization and square root extraction configurable

#### Typical Applications

- Annunciator
- Various alarm applications



## MODEL: M2EAXDY-[1]-[2][3]

### ORDERING INFORMATION

- Code number: M2EAXDY-[1]-[2][3]

Specify a code from below for each of [1] through [3].

- (e.g. M2EAXDY-2-M2/Q)
- Specify the specification for option code /Q (e.g. /C01/S01/SET)

### INPUT - Field-selectable

#### Current

4 - 20 mA DC (Input resistance 250 Ω)  
(Selectable within 0 - 20 mA DC)

### [1] OUTPUT

- 2: 4 points; N.O. or make contact
- 3: 4 points; N.C. or break contact

5: 2 points; SPDT or transfer contact

### [2] 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 ±10 %, ripple 10 %p-p max.)

P: 110 V DC

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

### [3] 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-5169)

Default setting will be used if not otherwise specified.

### RELATED PRODUCTS

- M2EA configurator software (model: M2EACFG)

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-5151) for the M2EA 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 L1 or L4 alarm output to L2 or L3 alarm output to power

(for output code 5, L3 alarm output and L4 alarm output is not available)

**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 (reversing display of the current value and the alarm setting value when alarm is tripped)  
**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

## SUPPLY OUTPUT

■ **SUPPLY OUTPUT (across the terminals 1 - 2)**  
**Output voltage:** 24 - 28 V DC with no load  
 19 V DC minimum at 20 mA  
**Current rating:** ≤ 22 mA DC  
**Permissible load resistance:**  
 $LR (\Omega) \leq (19 - \text{Min. Operational Voltage})V \div 0.02 A$   
 • **Shortcircuit Protection**  
**Current limited:** 35 mA max.  
**Protected time duration:** No limit

## INPUT SPECIFICATIONS

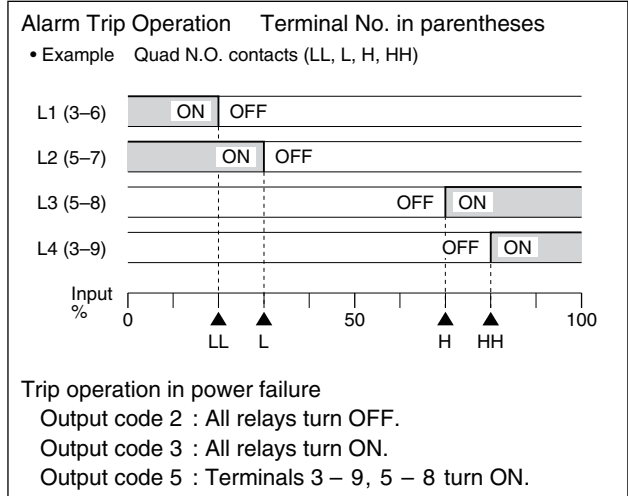
■ **DC Current**  
**Input resistance:** Incorporated (250 Ω)  
**Input range:** 0 - 20 mA DC  
**Minimum span:** 1 mA DC  
 The measurement available for -7.5 - +107.5% of input setting range.

## OUTPUT SPECIFICATIONS

■ **Quad Alarm**  
**Relay rating:** 100 V AC @ 1 A (cos φ = 1)  
 120 V AC @ 1 A (cos φ = 1)  
 240 V AC @ 0.5 A (cos φ = 1)  
 30 V DC @ 1 A (resistive load)  
**Maximum switching voltage:** 250 V AC or 125 V DC  
**Maximum switching power:** 120 VA or 30 W  
**Minimum load:** 5 V DC @ 10 mA  
**Mechanical life:** 5 × 10<sup>7</sup> cycles

■ **DUAL ALARM**  
**Relay rating:** 100 V AC @ 4 A (cos φ = 1)  
 120 V AC @ 4 A (cos φ = 1)  
 240 V AC @ 2 A (cos φ = 1)  
 30 V DC @ 4 A (resistive load)  
**Maximum switching voltage:** 250 V AC or 125 V DC

**Maximum switching power:** 480 VA or 150 W  
**Minimum load:** 5 V DC @ 10 mA  
**Mechanical life:** 5 × 10<sup>7</sup> cycles

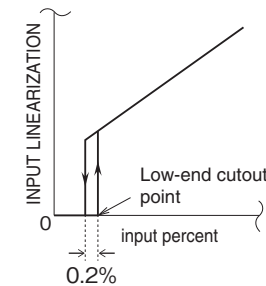


## LINEARIZATION

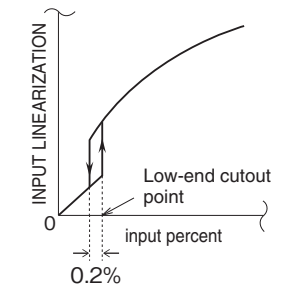
■ **Linearization Types**  
**Linear:** Proportional to the input  
**Square root:** The input is square root extracted.  
**User's table:** Segment linearization  
**Calibration points:** Max. 128 points; the input % and linearized value in scaling are specified in pairs.  
**Selectable range:** -7.5 to +107.5 % as input %; -99999 to +999999 as linearized values

■ **Low-end Cutout:** Low-end cutout (Low Cut) point selectable within the range of 0 to 100 %  
 With linear or segment linearization, the output signal is forcibly set to 0 % for the input lower than the low-cut point. With the square root extraction, the output signal is linear to the input when the latter is lower than the low-cut point.

• Linear or User Table



• Square Root



## INSTALLATION

### Power Consumption

• **AC:**  
 ≤ 7 VA at 100 V

≤ 10 VA at 200 V

≤ 12 VA at 264 V

•DC: ≤ 4 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:** 200 g (0.44 lb)

## PERFORMANCE

**Accuracy (display accuracy, setting accuracy):** differs depending on the linearization type.

Linear:  $\pm(0.08 \% \text{ of FS} + 1 \text{ digit})$

Square root extraction (1 % or more of input):  $\pm(0.15 \% \text{ of FS} + 1 \text{ digit})$

Segment linearization:

$\pm(0.08 \% \text{ of FS} + 1 \text{ digit})$  [gain ≤ 1]

$\pm(0.08 \% \times \text{gain of FS} + 1 \text{ digit})$  [gain > 1]

See CALCULATION EXAMPLES OF OVERALL ACCURACY.

**Temp. coefficient:**  $\pm 0.015 \% / ^\circ\text{C}$  ( $\pm 0.008 \% / ^\circ\text{F}$ )

**Response time (Filter time constant: 0 sec.):** ≤ 0.5 sec.

(0 - 100 % at 90 % setpoint)

**Line voltage effect:**  $\pm 0.1 \%$  over voltage range

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

**Dielectric strength:** 2000 V AC @ 1 minute (input to L1 or L4

alarm output to L2 or L3 alarm output to power to ground)

(for output code 5, L3 alarm output and L4 alarm output is not available)

## CALCULATION EXAMPLES OF OVERALL ACCURACY

[Example] Input Range: 0 - 20 mA, Input Setting: 4 - 20 mA

(when the linearization type is linear)

• Accuracy = Input Range Span (20 mA) ÷ Input Span

Setting (16 mA) × 0.08 % =  $\pm 0.1 \% + 1 \text{ digit}$

## STANDARDS & APPROVALS

**EU conformity:**

EMC Directive

EMI EN 61000-6-4

EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (output)

Installation Category II (power)

Pollution Degree 2

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

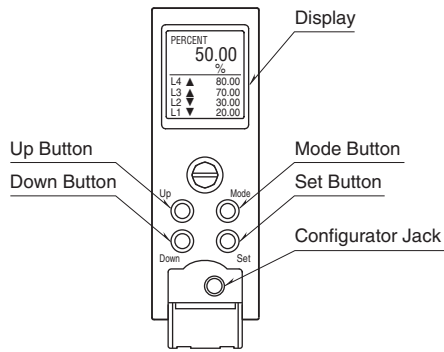
Input to output: Basic insulation (300 V)

L1 or L4 alarm output to L2 or L3 alarm 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 scaling and to enter (save) the setting value. Used to release latching alarm in measuring mode (press and hold for 2 sec. or more).
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 M2EA configurator software (model: M2EACFG). When using the software, set the Lockout setting of the unit to 'Lock'.

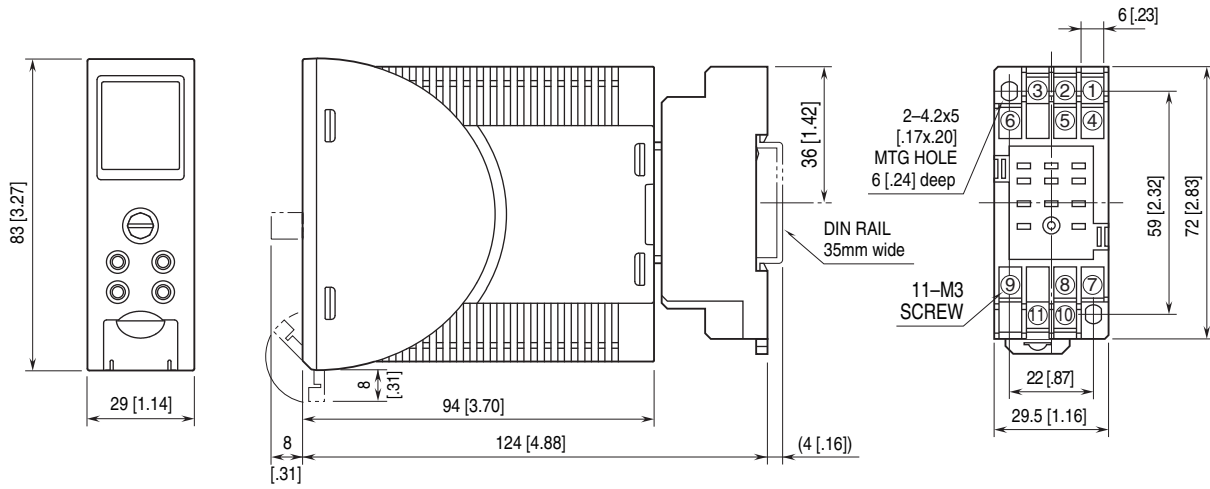
Refer to the operating manual (EM-5169-B) for detailed procedures.

## PARAMETER LIST

MODE	ITEM	SETTING PARAMETER	RANGE	UNIT	INITIAL VALUE
Basic setting	01	Lockout setting	Lock / Unlock	—	Lock
	12	0 % input setting	0.00 – 19.00	mA	4.00
	13	100 % input setting	1.00 – 20.00	mA	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	Unit (INP Scaling)	Choose from 68 types*	—	%
	24	Low cut	Enable / Disable	—	Disable
	25	Low cut point	0.00 – 100.00	%	0.00
	30	L1 alarm enable	Enable / Disable	—	Enable
	31	L1 alarm setpoint	-99999 – 999999	—	20.00
	32	L1 trip action	High / Low	—	Low
	33	L1 deadband	0 – 999999	—	0.01
	34	L1 coil at alarm	Energized / De-energized	—	Energized
	40	L2 alarm enable	Enable / Disable	—	Enable
	41	L2 alarm setpoint	-99999 – 999999	—	80.00 (2 points alarm) 30.00 (4 points alarm)
	42	L2 trip action	High / Low	—	High (2 points alarm) Low (4 points alarm)
	43	L2 deadband	0 – 999999	—	0.01
	44	L2 coil at alarm	Energized / De-energized	—	Energized
	50	L3 alarm enable	Enable / Disable	—	Enable
	51	L3 alarm setpoint	-99999 – 999999	—	70.00
	52	L3 trip action	High / Low	—	High
	53	L3 deadband	0 – 999999	—	0.01
	54	L3 coil at alarm	Energized / De-energized	—	Energized
	60	L4 alarm enable	Enable / Disable	—	Enable
	61	L4 alarm setpoint	-99999 – 999999	—	80.00
	62	L4 trip action	High / Low	—	High
	63	L4 deadband	0 – 999999	—	0.01
	64	L4 coil at alarm	Energized / De-energized	—	Energized
	70	Alarm ON-delay time	0 – 999	sec.	0
71	Power ON-delay time	0 – 999	sec.	5	
72	Latching alarm	Enable / Disable	—	Disable	
89	Alarm test	—	—	Cancel	
Option	79	Filter time constant	0 – 30	sec.	0
	80	Input Zero fine adjust	-5.000 – 5.000	%	0.000
	81	Input Span fine adjust	95.000 – 105.000	%	100.000
Advanced	01	Lockout setting	Lock / Unlock	—	Lock
	91	Display setting	Upper: choose from 3 types* Lower: choose from 5 types*	—	Upper: INPUT (Scaling) Lower: ALARM
	92	Brightness	1 (darkest) – 4 (brightest)	—	4
	93	Display timeout	0 (always on), 1 – 60	min.	10
	94	Reset all settings	OFF / RESET	—	OFF
95	Version indication	—	—	—	
Linearization	01	Lockout setting	Lock / Unlock	—	Lock
	100	Linearization	Linear, Square root, User's table	—	Linear
	166	Number of points	2 – 128	—	2
	167 – 422	Table	-7.50 – 107.50 (X) -99999 – 999999 (Y)	% (X) — (Y)	X001 -7.50 Y001 -7.50 X002 107.50 Y002 107.50
01	Lockout setting	Lock / Unlock	—	Lock	

\* For detailed types, refer to the operating manual (EM-5169-B).

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

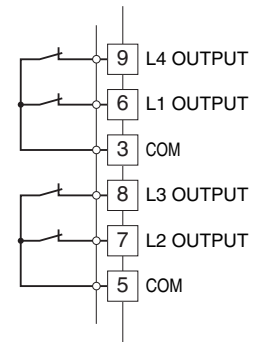
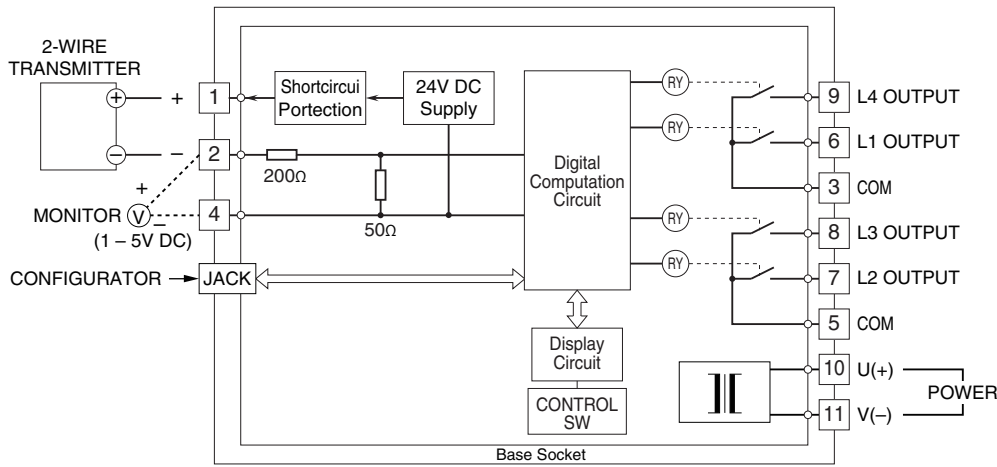


• When mounting, no extra space is needed between units.

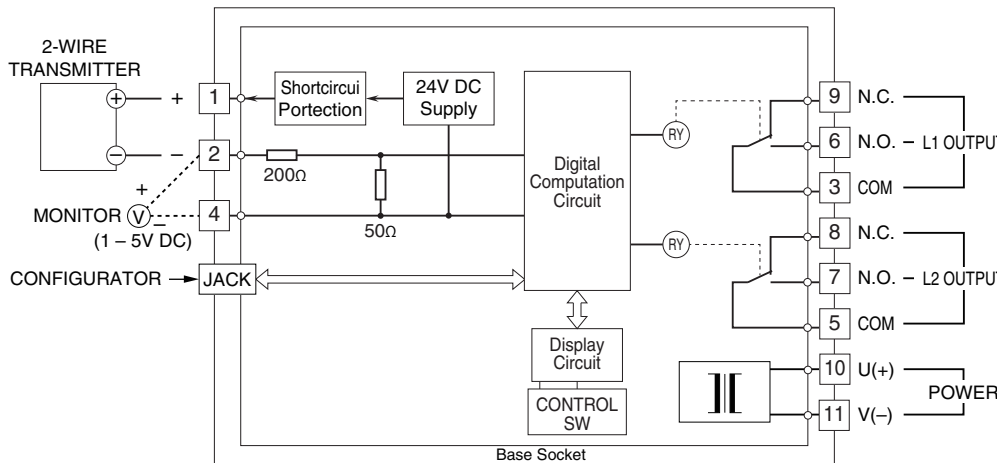
## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

### ■ OUTPUT CODE 2: N.O. Relay

### ■ OUTPUT CODE 3: N.C. Relay

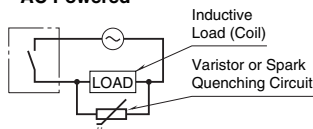


### ■ OUTPUT CODE 5: SPDT Relay

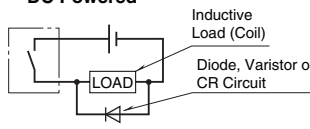


#### ■ Relay Protection

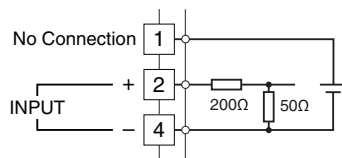
##### • AC Powered



##### • DC Powered



##### ■ When 24V DC is Not Used



Specifications are subject to change without notice.