

## Super-mini Signal Conditioners with LCD Display M7E-UNIT Series

### DC ALARM

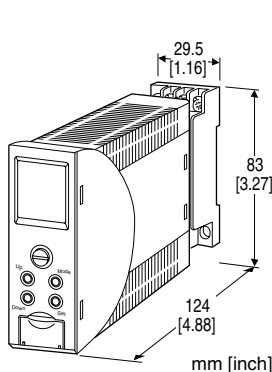
(dual or quad alarm trip)

#### Functions & Features

- Provides relay outputs at preset DC input levels
- Quad or dual trip
- Front LCD display indicating values in scaled engineering unit range is used to program the module
- Adjustable deadband (hysteresis)
- Software lock
- 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
- High-density mounting on DIN rail

#### Typical Applications

- Annunciator
- Various alarm applications



### [2] OUTPUT

- 2: 4 points; N.O. or make contact
- 3: 4 points; N.C. or break contact
- 5: 2 points; SPDT or transfer contact

### [3] 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.)

### [4] OPTIONS (multiple selections)

Standards & Approvals

**blank:** Without CE

**/CE:** CE marking

Other Options

**blank:** none

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

#### SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our 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-7762)

Default setting will be used if not otherwise specified.

## MODEL: M7EASV-[1][2]-[3][4]

### ORDERING INFORMATION

- Code number: M7EASV-[1][2]-[3][4]

Specify a code from below for each of [1] through [4].

(e.g. M7EASV-Z12-M2/CE/Q)

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

### [1] INPUT

Current

**Z1:** Range 0 - 50 mA DC (Input resistance 100  $\Omega$ )

Voltage

**S1:** Range -1000 - +1000 mV DC (Input resistance 1 M $\Omega$  min.)

**S2:** Range -10 - +10 V DC (Input resistance 1 M $\Omega$  min.)

## FACTORY DEFAULT SETTING

INPUT CALIBRATION	Z1: 4 – 20 mA DC S1: 1 – 100 mV DC S2: 1 – 5 V DC
MOVING AVERAGE	NONE
SCALING RANGE	0.0 – 100.0
DECIMAL POINT	XXX.X
SCALING UNIT	°C
L1 ALARM VALUE	20.0
L1 ALARM TRIP OPERATION	Lo alarm trip
L1 ALARM HYSTERESIS	1.0
L1 ALARM COIL AT ALARM	Coil energized
L2 ALARM VALUE	80.0 (2 point alarm) 30.0 (4 point alarm)
L2 ALARM TRIP OPERATION	Hi alarm trip (2 point alarm) Lo alarm trip (4 point alarm)
L2 ALARM HYSTERESIS	1.0
L2 ALARM COIL AT ALARM	Coil energized
L3 ALARM VALUE	70.0
L3 ALARM TRIP OPERATION	Hi alarm trip
L3 ALARM HYSTERESIS	1.0
L3 ALARM COIL AT ALARM	Coil energized
L4 ALARM VALUE	80.0
L4 ALARM TRIP OPERATION	Hi alarm trip
L4 ALARM HYSTERESIS	1.0
L4 ALARM COIL AT ALARM	Coil energized
POWER ON DELAY TIMER	5
ALARM ON DELAY TIMER	0
LATCHING	Invalid
LCD CONTRAST	50
LCD BACK LIGHT	Off Timer
LCD BACK LIGHT OFF TIME	10

## RELATED PRODUCTS

- PC configurator software (model: M7CFG)

Downloadable at our 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:** Plug-in

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

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

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

**Isolation:** Input to output to power

**Programming:** Front buttons or PC software

**Programmable parameters:**

- Input range
- Input fine adjustments
- Moving average (None, 4, 8, 16 or 32 samples)
- Scale Range: -9999 to +9999  
Unit: User specific unit programmable.  
Decimal point position
- Alarm output (L1...L4 independently)  
Setpoint (scaled value)  
Trip action (Hi or Lo)  
Deadband (hysteresis) (scaled value)  
Relay coil (energized or de-energized)
- Power ON delay time (0 to 99 sec.)
- Alarm ON delay time (0 to 999 sec.)
- Latching or not
- LCD Contrast  
Back Light (On, Off, Off timer)
- Tag name
- Alarm test

Refer to the instruction manual for details.

## LCD DISPLAY

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

**Effective visual area:** Approx. 15.6 × 18.9 mm (0.61" × 0.74")

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

**Character color:** Black

**Backlight:** LED (orange in normal status, red when an alarm is tripped.)

**Backlight life:** Approx. 50 000 hours

(Expected time for the LCD brightness to be reduced by half when the LCD is used continuously in 50 % brightness in 25°C)

**LCD type:** Transreflective FSTN

**Display range:** -9999 to +9999

**Decimal point position:** Selectable

**Display rate:** 150 msec.

## INPUT SPECIFICATIONS

■ **DC Current:** Shunt resistor attached to the input terminals (0.5 W)

**Operational range:** 0 – 70 mA DC with 100 Ω, 0.5 W

**Input range:** 0 – 50 mA DC

**Minimum span:** 2 mA

**Factory default setting:** 4 – 20 mA DC

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

### ■ DC VOLTAGE

**Code S1 (narrow spans)**

**Operational range:** -1150 – +1150 mV DC

**Input range:** -1000 – +1000 mV DC

**Minimum span:** 10 mV

**Factory default setting:** 0 – 100 mV DC

**Code S2 (wide spans)**

**Operational range:** -11.5 – +11.5 V DC

**Input range:** -10 – +10 V DC

**Minimum span:** 0.1 V

**Factory default setting:** 1 – 5 V DC

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

## OUTPUT SPECIFICATIONS

### ■ Quad Alarm

**Relay rating:** 100 V AC @ 1 A ( $\cos \phi = 1$ )

120 V AC @ 1 A ( $\cos \phi = 1$ )

240 V AC @ 0.5 A ( $\cos \phi = 1$ )

30 V DC @ 1 A (resistive load)

**Maximum switching voltage:** 250 V AC or 125 V DC  
(Limited to the max. voltage 150 V AC or to the use for Measurement Category I in order to conform with EU Directive)

**Maximum switching power:** 120 VA or 30 W

**Minimum load:** 5 V DC @ 10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

### ■ DUAL ALARM

**Relay rating:** 100 V AC @ 4 A ( $\cos \phi = 1$ )

120 V AC @ 4 A ( $\cos \phi = 1$ )

240 V AC @ 2 A ( $\cos \phi = 1$ )

30 V DC @ 4 A (resistive load)

**Maximum switching voltage:** 250 V AC or 125 V DC  
(Limited to the max. voltage 150 V AC or to the use for Measurement Category I in order to conform with EU Directive)

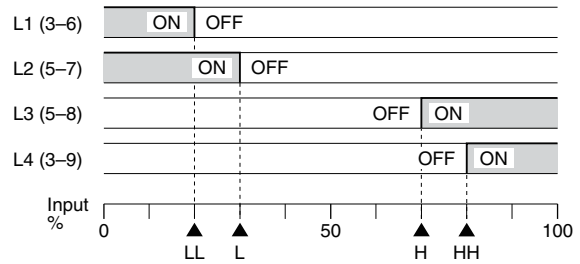
**Maximum switching power:** 480 VA or 150 W

**Minimum load:** 5 V DC @ 10 mA

**Mechanical life:**  $5 \times 10^7$  cycles

### Alarm Trip Operation Terminal No. in parentheses

• Example Quad N.O. contacts (LL, L, H, HH)



Trip operation in power failure

Output code 2 : All relays turn OFF.

Output code 3 : All relays turn ON.

Output code 5 : Terminals 3 – 9, 5 – 8 turn ON.

## INSTALLATION

### Power Consumption

#### •AC:

Approx. 4 VA at 100 V

Approx. 5 VA at 200 V

Approx. 6 VA at 264 V

#### •DC: Approx. 3 W

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

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

**Mounting:** Surface or DIN rail

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

## PERFORMANCE in percentage of FS input

**Setpoint accuracy (trip point accuracy):**  $\pm(0.1\% \text{ of FS} + 1 \text{ digit})$

**Display accuracy:**  $\pm(0.1\% \text{ of FS} + 1 \text{ digit})$

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

**Response time:**  $\leq 0.5 \text{ sec.}$  (0 – 100 % at 90 % setpoint)

**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)

## 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)

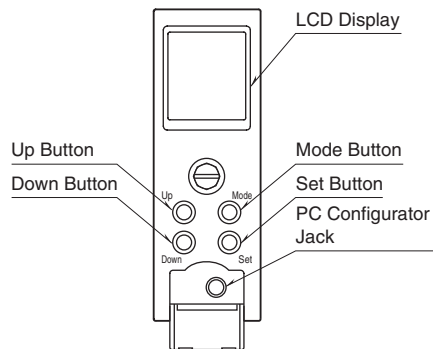
Input to output: Basic insulation (300 V)

(When 150 V AC max. load voltage or measurement category I, applicable as reinforced insulation)

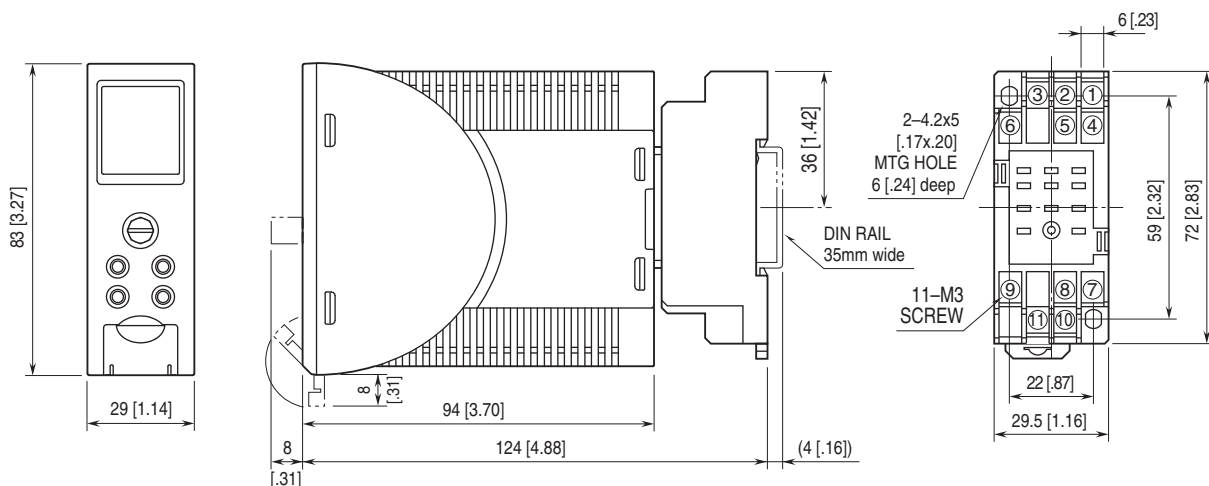
RoHS Directive

## EXTERNAL VIEW

Refer to the instruction manual for the setting procedure.



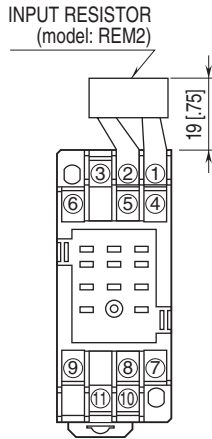
## EXTERNAL DIMENSIONS unit: mm [inch]



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

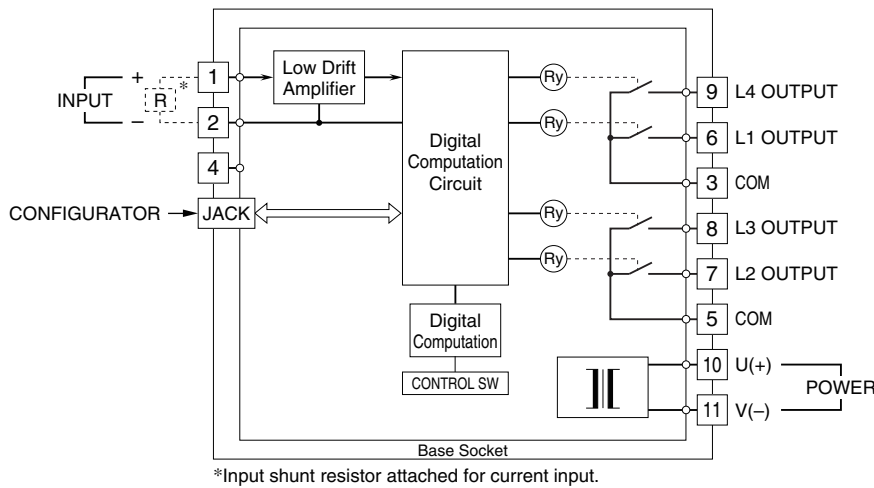
## TERMINAL ASSIGNMENTS unit: mm [inch]

Input shunt resistor (model: REM2) attached for current input

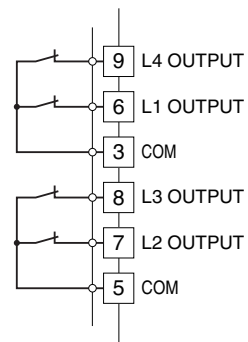


## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

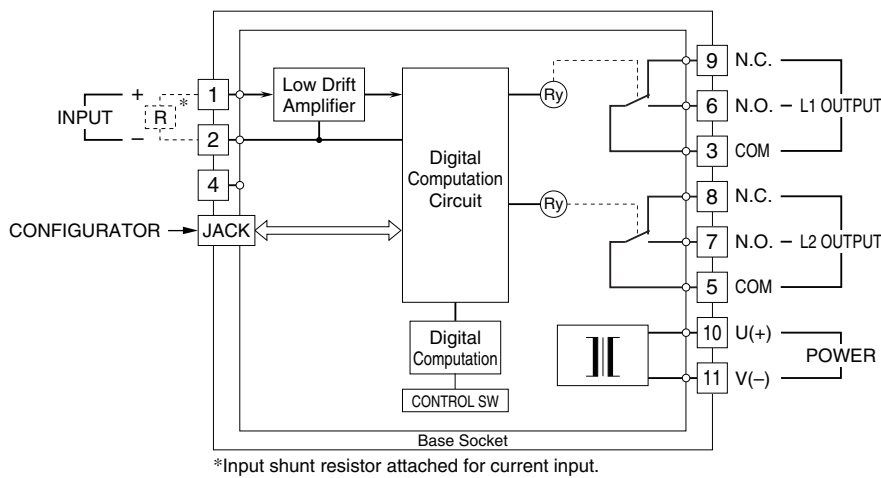
### ■ OUTPUT CODE 2: N.O. Relay



### ■ OUTPUT CODE 3: N.C. Relay

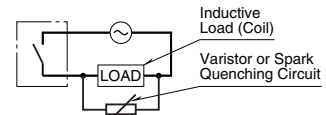


### ■ OUTPUT CODE 5: SPDT Relay

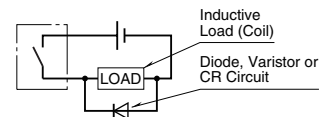


### ■ Relay Protection

#### • AC Powered



#### • DC Powered





Specifications are subject to change without notice.