

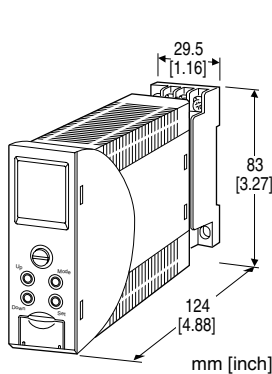
Super-mini Signal Conditioners with LCD Display M7E-UNIT Series

TWO-WIRE TRANSMITTER ALARM

(dual or quad alarm trip)

Functions & Features

- Provides relay outputs at preset DC input levels
- Quad or dual trip
- Powers a 4 - 20 mA DC current loop
- Shortcircuit protection
- Applicable to smart transmitters
- Linearization or square root extraction programmable
- 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



[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 \pm 10 %, ripple 10 %p-p max.)

[3] 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-7763)

MODEL: M7EASDY-[1]-[2][3]

ORDERING INFORMATION

- Code number: M7EASDY-[1]-[2][3]

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

(e.g. M7EASDY-2-R/CE/Q)

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

INPUT

Current

4 - 20 mA DC

(Selectable within 0 - 20 mA DC)

FACTORY DEFAULT SETTING

INPUT CALIBRATION	4 – 20 mA DC
LOW CUT POINT	0.00
MOVING AVERAGE	NONE
SCALING RANGE	0.0 – 100.0
DECIMAL POINT	XXX.X
SCALING UNIT	°C
LINEARIZATION	Linear
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

- Linearization (linear, square root, user table: 128 points)
- 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)

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.

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: 26 – 35 mA

Protected time duration: No limit

INPUT SPECIFICATIONS

■ **Input Signal:** Input resistor incorporated

Maximum range: 0 – 20 mA DC

Ex-factory setting: 4 – 20 mA DC

Minimum span: 2 mA

Offset: Lower range can be any specific value within the maximum 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: 5×10^7 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: 5×10^7 cycles

Alarm Trip Operation	Terminal No. in parentheses
• Example Quad N.O. contacts (LL, L, H, HH)	
L1 (3-6)	ON OFF
L2 (5-7)	ON OFF
L3 (5-8)	OFF ON
L4 (3-9)	OFF ON

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.

LINEARIZATION

■ Linearization Types

Linear: No linearization

Square root: The input is square root extracted.

User table

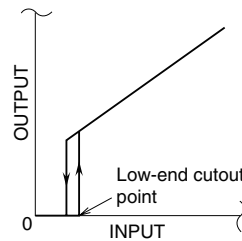
Calibration points: Max. 128 points; the input % and linearized value in scaling are specified in pairs.

Selectable range: -7.5 to +107.5 % as input %; -9999 to +9999 as linearized values

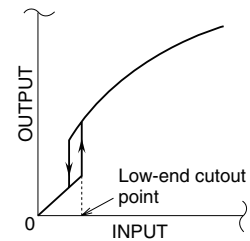
■ Low-end Cutout: Low-end cutout (Low Cut) point selectable within the range of 0 to 100 %.

With the linear or user table output type, 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: Approx. 5 VA at 100 V

Approx. 7 VA at 200 V

Approx. 8.5 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

With 4-point alarm type, leave extra 1-unit space on both sides of the unit if all 4 relay coils are to be energized in normal conditions.

Weight: 200 g (0.44 lb)

PERFORMANCE in percentage of FS input

Setpoint accuracy (trip point accuracy):

$\pm(0.1 \% \text{ of FS} + 1 \text{ digit})$ ($\text{gain} \leq 1$)

$\pm(0.1 \% \times \text{gain of FS} + 1 \text{ digit})$ ($\text{gain} > 1$)

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: $\pm 0.1 \% \text{ over voltage range}$

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)

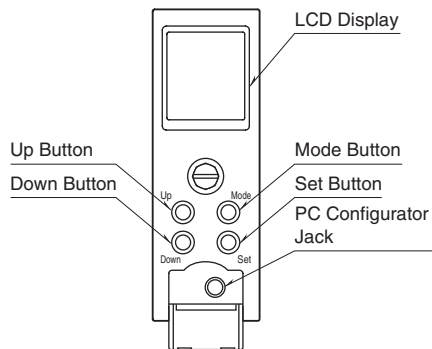
Input to output: Basic insulation (300 V)

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

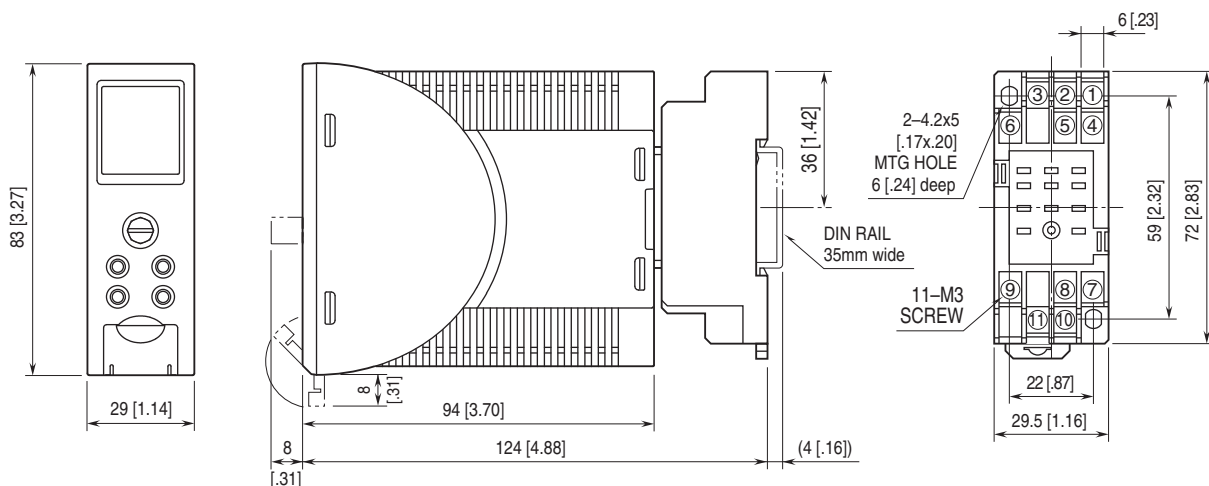
RoHS Directive

EXTERNAL VIEW

Refer to the instruction manual for the setting procedure.



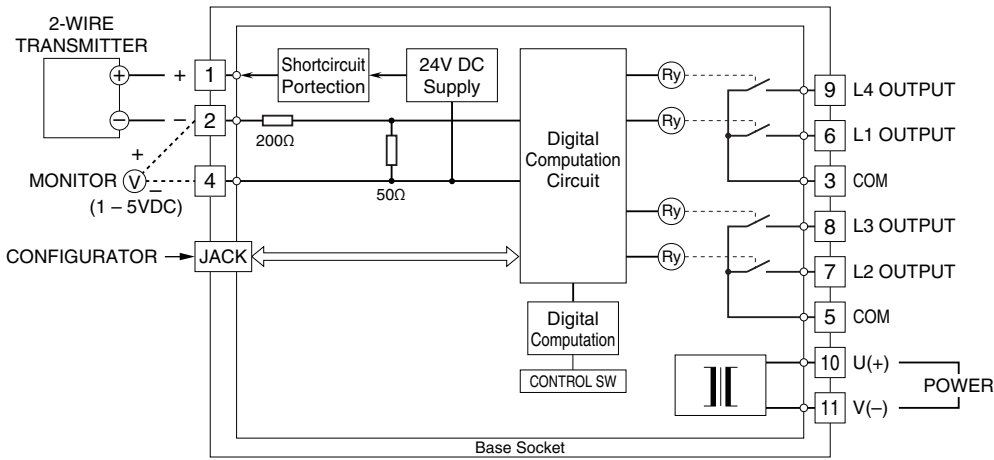
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



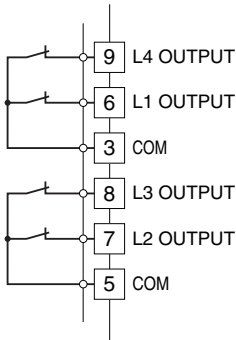
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

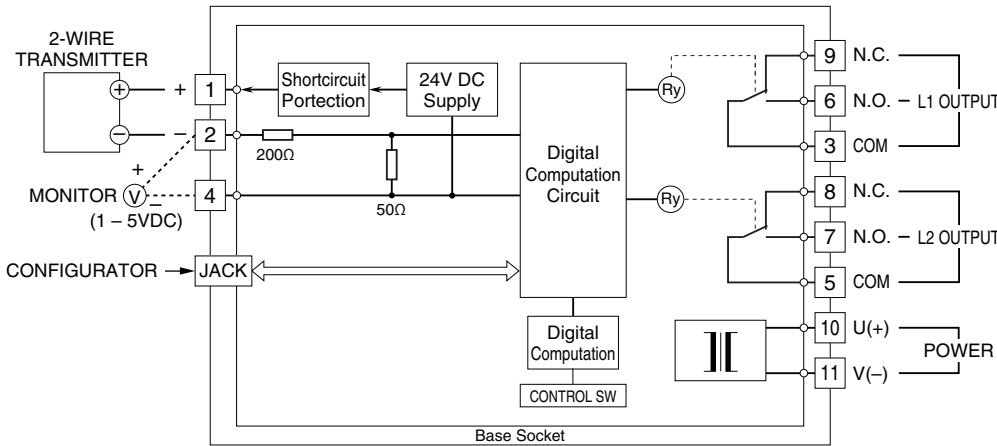
■ OUTPUT CODE 2: N.O. Relay



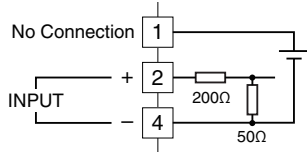
■ OUTPUT CODE 3: N.C. Relay



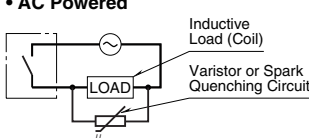
■ OUTPUT CODE 5: SPDT Relay



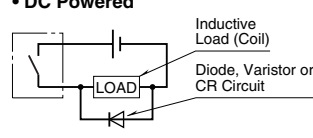
■ When 24V DC is Not Used



■ Relay Protection



• DC Powered



Specifications are subject to change without notice.