

## Super-mini Signal Conditioners Mini-M Series

0: Specify (strain gauge and excitation)

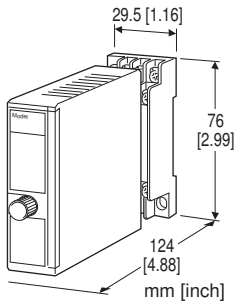
### STRAIN GAUGE TRANSMITTER

#### Functions & Features

- Provides a DC output signal compatible with a bridge type strain gauge utilized in load cells, pressure transducers
- Supplies required excitation voltage
- Excitation adjustable from 2 to 10 V
- Wide-range adjustment: 0 - 80 % for zero, 100 - 20 % for span
- Three-way isolation

#### Typical Applications

- Weighing system for tanks, hoppers, silos
- Weighing system using cranes
- Float level meter utilizing strain gauges



### MODEL: M2LCS-[1][2]-[3][4]

#### ORDERING INFORMATION

- Code number: M2LCS-[1][2]-[3][4]  
Specify a code from below for each of [1] through [4].  
(e.g. M2LCS-2A-M2/K/CE/Q)
- Special output range (For codes Z & 0)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

Note: Must be used with its socket. NOT installable to a multi-unit installation base. (e.g. model: M2BS-16)

#### [1] INPUT STRAIN GAUGE

- 1: 1 mV/V
- 12: 1.25 mV/V
- 15: 1.5 mV/V
- 2: 2 mV/V
- 3: 3 mV/V
- 4: 4 mV/V
- 5: 5 mV/V
- 6: 10 mV/V
- 7: 20 mV/V

#### [2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)
- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)
- G: 0 - 1 mA DC (Load resistance 15 kΩ max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 kΩ min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 kΩ min.)
- 5W: -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

#### [3] POWER INPUT

AC Power

- M2: 100 - 240 V AC (Operational voltage range 85 - 264 V, 47 - 66 Hz)  
(90 - 264 V for UL)

DC Power

- R: 24 V DC  
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)
- R2: 11 - 27 V DC  
(Operational voltage range 11 - 27 V, ripple 10 %p-p max.)  
(Select '/N' for 'Standards & Approvals' code.)
- P: 110 V DC  
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)  
(110 V ±10 % for UL)

#### [4] OPTIONS (multiple selections)

Response Time (0 - 90 %)

blank: Standard (≤ 0.5 sec.)

/K: Fast Response (Approx. 25 msec.)

Standards & Approvals (must be specified)

/N: Without CE or UL

/CE: CE marking

/UL: UL approval, 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 (UL not available)

/C04: Polyolefin coating (UL not available)

TERMINAL SCREW MATERIAL

/S01: Stainless steel (UL not available)

## 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

**Overrange output:** Approx. -10 to +120 % at 1 - 5 V

**Excitation adjustment:** 2 - 10 V (front)

**Zero adjustments (tare):** 0 - 80 % (front)

(Excitation voltage: factory default)

**Span adjustment:** 100 - 20 % (front)

(Excitation voltage: factory default)

## INPUT SPECIFICATIONS

■ **Input:** Bridge voltage from load cells

• **Strain Gauge**

**Rated output from strain gauge:** 1 - 20 mV/V;

Input to the transmitter must be over 3 mV.

• **Excitation:** 2 - 10 V adjustable (5 V standard)

**Maximum current:** 35 mA

## OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC

**Minimum span:** 1 mA

**Offset:** Max. 1.5 times span

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

■ **DC Voltage:** -10 - +12 V DC

**Minimum span:** 5 mV

**Offset:** Max. 1.5 times span

**Load resistance:** Output drive 1 mA max.; at  $\geq 0.5$  V

## INSTALLATION

**Power Consumption**

• **AC:**

Approx. 3 VA at 100 V

Approx. 4 VA at 200 V

Approx. 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

**Weight:** 150 g (0.33 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.1$  % (input  $\geq 3$  mV)

**Linearity:**  $\pm 0.05$  % (Input  $\geq 3$  mV)

**Temp. coefficient:**  $\pm 0.02$  %/°C ( $\pm 0.01$  %/°F) (input  $\geq 3$  mV)

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

**Insulation resistance:**  $\geq 100$  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

Installation Category II

Pollution Degree 2

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

Input to output: Basic insulation (300 V)

RoHS Directive

**Approval:**

UL/C-UL nonincendive Class I, Division 2,

Groups A, B, C, and D

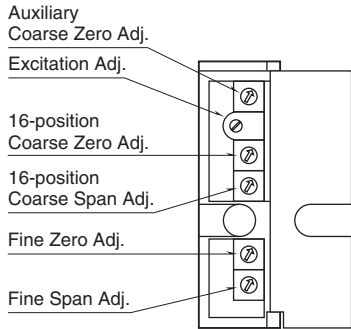
(ANSI/ISA-12.12.01, CAN/CSA-C22.2 No.213)

UL/C-UL general safety requirements

(UL 61010-1, CAN/CSA-C22.2 No.61010-1)

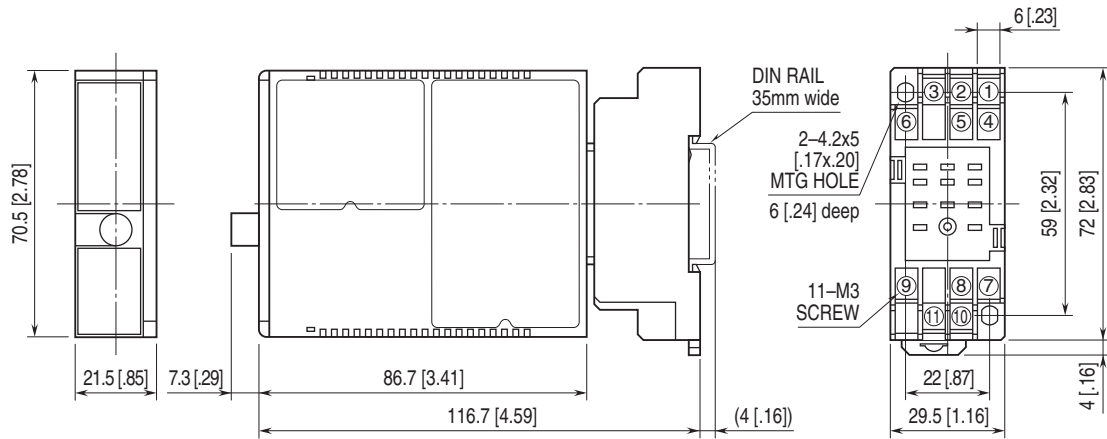
**FRONT VIEW**

(with the cover open)



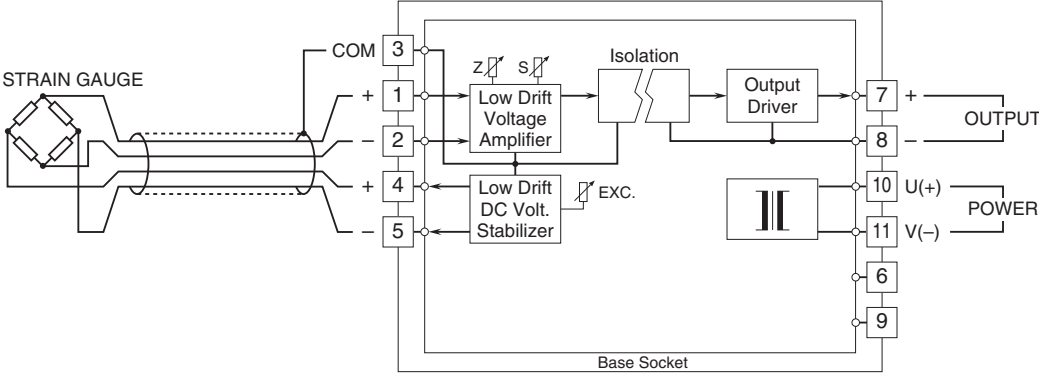
- **Coarse Zero Adj. (auxiliary):** Used when the zero cannot be adjusted with only the coarse and fine zero adjustments.
- **Excitation Adj.:** Factory adjusted.
- **Coarse Zero Adj.:** Tare adjustment. Approx. 5 % of input span adjustable with each increment. Max. 80 % by 16 positions.
- **Coarse Span Adj.:** Gain adjustment. 100 - 20 % of input span adjusted by 16 positions.
- **Fine Zero Adj.:** Tare adjustment
- **Fine Span Adj.:** Gain adjustment

**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.