Super-mini Signal Conditioners Mini-M Series

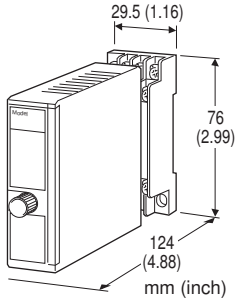
STRAIN GAUGE TRANSMITTER

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 [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
0: Specify (strain gauge and excitation)

[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 M-System's web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber 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 ≥ 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: ±0.1 % (input ≥ 3 mV)

Linearity: ±0.05 % (Input ≥3 mV)

Temp. coefficient: ±0.02 %/°C (±0.01 %/°F) (input ≥ 3 mV)

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)

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
EN 50581

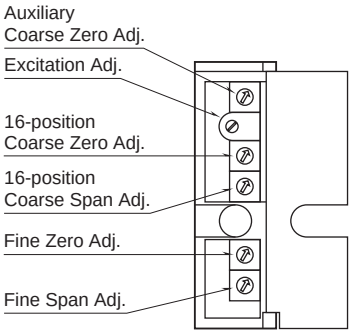
Approval:

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)

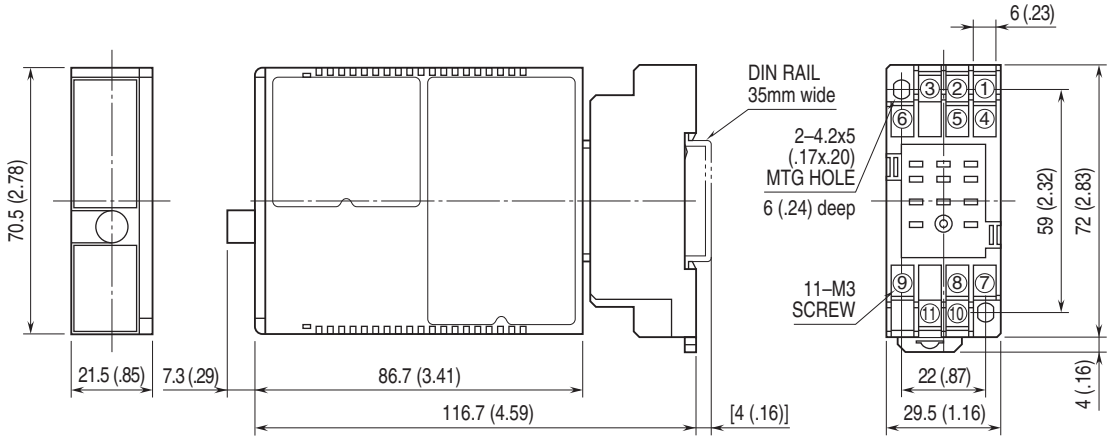
FRONT VIEW

(with the cover open)



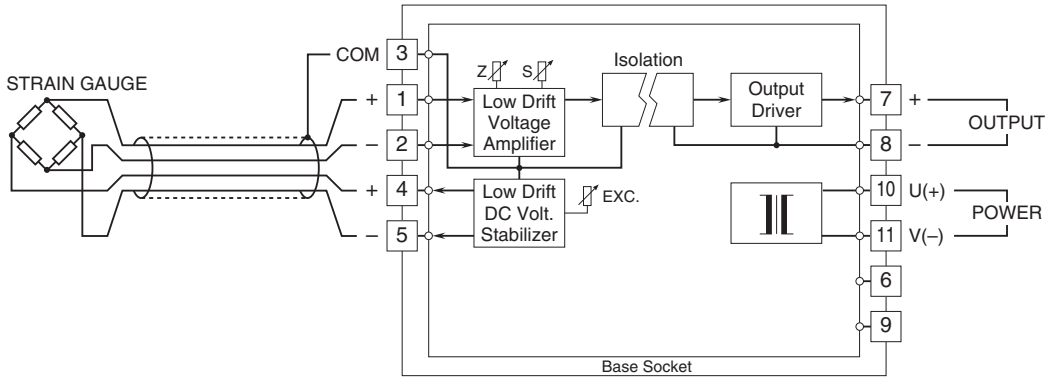
• **Coarse Zero Adj. (auxiliary)**: Used when the zero cannot be adjusted with only the coarse and fine zero adjustments.
• **Excitation Adj.**: Factory adjusted.
• **Coarse Zero Adj.**: Tare adjustment. Approx. 5 % of input span adjustable with each increment. Max. 80 % by 16 positions.
• **Coarse Span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