## Plug-in Signal Conditioners M-UNIT

## STRAIN GAUGE TRANSMITTER

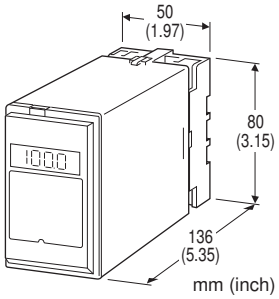
(remote sensing; non-isolated)

Functions & Features

• Provides a DC output signal compatible with a bridge type strain gauge utilized in load cells, pressure transducers
• Six-wire remote sensing compensates for lead resistance variations
• Excitation adjustable from 2 V to 5 V
• Wide-range adjustment: 0 – 80 % for zero, 100 – 20 % for span
• High-density mounting

Typical Applications

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




## MODEL: LC2–[1][2]–[3][4]

## ORDERING INFORMATION

• Code number: LC2-[1][2]-[3][4]
Specify a code from below for each of [1] through [4].
(e.g. LC2-2A-B/E/K/Q)
• Special output range (For codes Z & 0)
• Specify the specification for option code /Q
(e.g. /C01/S01)

## [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 100 Ω min.)
**4**: 0 – 10 V DC (Load resistance 1000 Ω min.)
**5**: 0 – 5 V DC (Load resistance 500 Ω min.)
**6**: 1 – 5 V DC (Load resistance 500 Ω min.)
**4W**: -10 – +10 V DC (Load resistance 2000 Ω min.)
**5W**: -5 – +5 V DC (Load resistance 1000 Ω min.)
**0**: Specify voltage (See OUTPUT SPECIFICATIONS)

## [3] POWER INPUT

**AC Power**

**B**: 100 V AC
**C**: 110 V AC
**D**: 115 V AC
**F**: 120 V AC
**G**: 200 V AC
**H**: 220 V AC
**J**: 240 V AC

**DC Power**

**R**: 24 V DC

## [4] OPTIONS (multiple selections)

**Input Signal Indicator**

**blank**: Without
**/E**: With (0.0 - 100.0 % display)

**Response Time (0 – 90 %)**

**blank**: Standard (≤ 0.5 sec.)
**/K**: Fast Response (Approx. 25 msec.)

**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

**TERMINAL SCREW MATERIAL**

**/S01**: Stainless steel

## GENERAL SPECIFICATIONS

**Construction**: Plug-in
**Connection**: M3.5 screw terminals
**Screw terminal**: Chromated steel (standard) or stainless steel
**Housing material**: Flame-resistant resin (black)
**Isolation**: Input or output to power
**Overrange output**: Approx. -10 to +120 % at 1 – 5 V
**Excitation adjustment**: 2 – 5 V (front) limited to ≤ 10 V when the remote sensing terminals are open.
**Zero adjustments (tare)**: 0 – 80 % (front)
(Excitation voltage: factory default)
**Span adjustment**: 100 – 20 % (front)
(Excitation voltage: factory default)
■ **DISPLAY (Input indicator)**
**LCD digital display**: 0.0 - 100.0 % (min. digit 0.1 %)
(No scaling)

## INPUT SPECIFICATIONS

**Input**: Bridge voltage from load cells
**Allowable leadwire resistance**: ≤ Total Strain Gauge Resistance × 0.25
• **Strain Gauge**
**Rated output from strain gauge**: 1 – 20 mV/V; Input to the transmitter must be over 3 mV.
• **Excitation**: 2 – 5 V adjustable (5 V standard)
**Maximum current**: 65 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 10 mA max.; 5 mA for negative voltage output; at ≥ 0.5 V

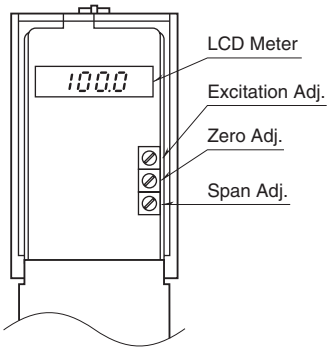
## INSTALLATION

**Power input**
•**AC**: Operational voltage range: rating ±10 %, 50/60 ± 2 Hz, approx. 5 VA
•**DC**: Operational voltage range: 24 V ±10 %, approx. 150 mA, ripple 10 %p-p max.
**Operating temperature**: -5 to +60°C (23 to 140°F)
**Operating humidity**: 30 to 90 %RH (non-condensing)
**Mounting**: Surface or DIN rail
**Weight**: 430 g (0.95 lb)

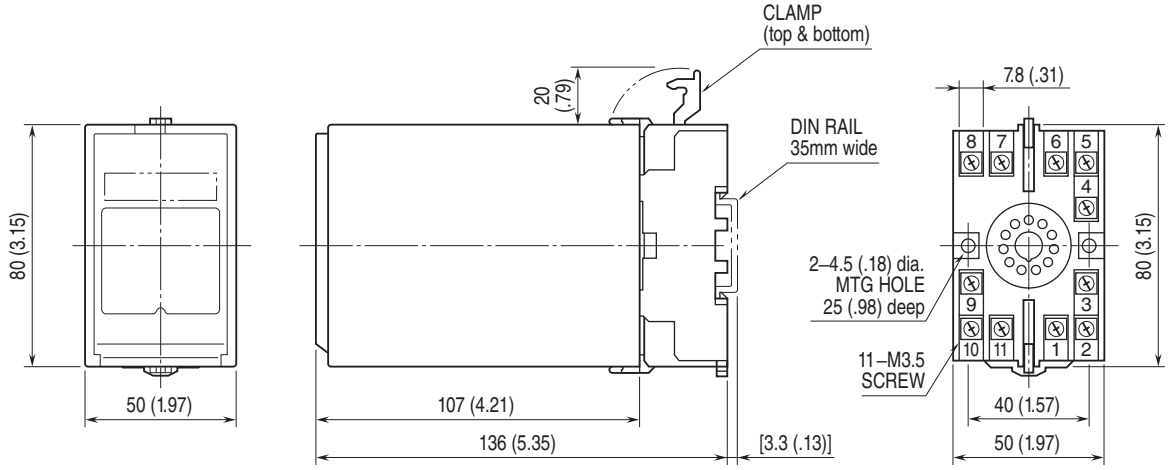
## PERFORMANCE in percentage of span

**Accuracy**: ±0.1 % (input ≥ 3 mV)
**Display accuracy**: ± (0.1 % of FS + 1 digit)
(input ≥ 3 mV)
**Temp. coefficient**: ±0.015 %/°C (±0.008 %/°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 for AC power
1000 V AC @1 minute for DC power
(input or output to power)
2000 V AC @1 minute
(input or output or power to ground)

## EXTERNAL VIEW

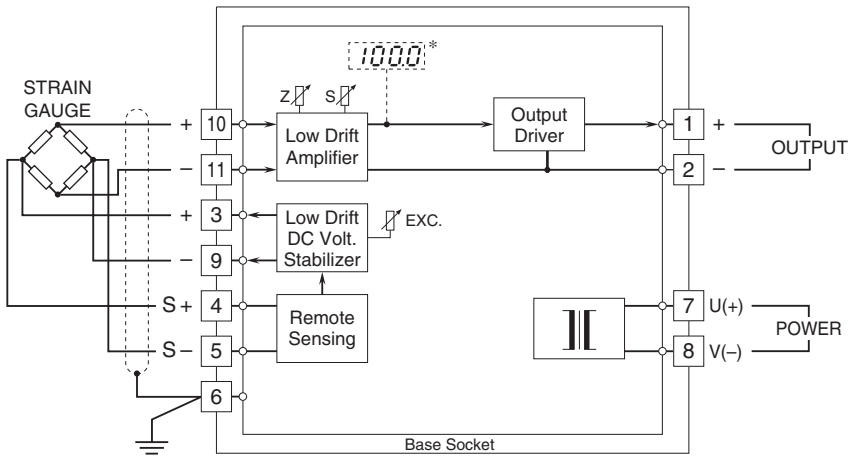



## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)




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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM




Close across the terminal 3 – 4 and 5 – 9 when the remote sensing is not used.
* Option /E

⚠ Specifications are subject to change without notice.