

## Plug-in Signal Conditioners M-UNIT

### STRAIN GAUGE/DIGITAL CONVERTER

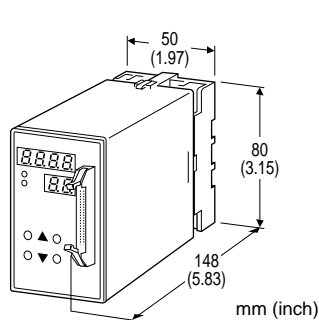
(16-bit resolution)

#### Functions & Features

- Accepting a bridge type strain gauge utilized in load cells, pressure transducers
- BCD, binary, reflected binary, two's complement outputs
- Open collector or CMOS for output levels
- Output and setting can be scaled in convenient engineering unit
- Output display

#### Typical Applications

- Interface of analog signal to computers and PLC
- Input to a digital panel meter



### MODEL: AD2LC-[1][2]-[3][4]

#### ORDERING INFORMATION

- Code number: AD2LC-[1][2]-[3][4]
- Specify a code from below for each [1] through [4].  
(e.g. AD2LC-S1C-M2/Q)
- Specify the specification for option code /Q  
(e.g. /C01/S01)

#### [1] INPUT STRAIN GAUGE

- S1: 0.0 - 3.0 mV/V  
S2: 0.0 - 10.0 mV/V  
S3: 0.0 - 30.0 mV/V

#### [2] OUTPUT LEVEL

- A: Open collector  
C: CMOS level

#### [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.)  
P: 110 V DC  
(Operational voltage range 85 - 150 V, ripple 10 %p-p max.)

#### [4] OPTIONS

blank: none  
/Q: With options (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

#### RELATED PRODUCTS

- Connector terminal block (model: CNT)
- Special cable (model: MCN26)

#### GENERAL SPECIFICATIONS

Construction: Plug-in

Connection

Input & power: M3.5 screw terminals

Output: 26-pin connector (OMRON XG4A-2634)

Paired connector: OMRON XG4M-2630-T, XG5M-263x-N

Cover: OMRON XG5S-2612

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Excitation adjustment: 0.1 - 12.0 V (front)

Zero adjustment: 0 - 100 % (front)

Gain adjustment: 0 - 9.99 (front)

Tare adjustment: -999.9 - 999.9 % (front or by external contact)

##### ■ DISPLAY

LED: 7 mm (.28") 7 segment, red

Number of display digits: 4 digits for DATA display; 2 digits for ITEM display

PV indication: Output signal in engineering unit

Overrange indication: LEDs blinking

Power saving mode: Displays turn off if the keys are untouched for a preset time period

PL1 (POL) LED: Red light turns on at negative polarity.

PL2 (HOLD) LED: Red light turns on at HOLD.

Setting: (Front key pad)

- Scaled range



- Moving average
- Output code
- Available number of bits
- POL/OVF output logic
- Data output logic
- HOLD input logic
- DAV output logic
- DAV output time
- Zero and gain adjustment
- Tare adjustment
- etc.

For detailed information, refer to the instruction manual.

## INPUT SPECIFICATIONS

### ■ Strain Gauge Input

- Strain Gauge

**Rated output from strain gauge:**

0.0 – 3.0 mV/V

(-30.0 – +30.0 mV, span 1.0 – 30.0 mV)

0.0 – 10.0 mV/V

(-99.9 – +99.9 mV, span 3.0 – 99.9 mV)

0.0 – 30.0 mV/V

(-300.0 – +300.0 mV, span 10.0 – 300.0 mV)

- **Excitation:** 0.1 – 12.0 V adjustable (0.1 V increments)

**Maximum current:** 30 mA

■ **Contact Input:** TTL level (5V-CMOS level), open collector or dry contact (saturation voltage  $\leq 1$  V, sink current 0.5 mA)

■ **Hold Input:** Commands to stop data renewal;

Hold with low or short

Hold with high or open

(Default Setting will be hold with low or short)

## OUTPUT SPECIFICATIONS

■ **Output Code:** Code, logic and scaling are user-selectable.

BCD with polarity

Binary with polarity

Offset binary

Two's complement

Reflected binary

■ **Output Level**

- Open Collector

**Max. collector-emitter voltage:** 30 V DC

**Max. collector current:** 30 mA

**Saturation voltage:**  $\leq 1.1$  V

**Common:** Negative

- CMOS Level

**H output:**  $\geq 4.5$  V DC

**L output:**  $\leq 0.5$  V DC

**Common:** Negative

- **POL output (Polarity):** Same logic as for the output code

- **OVF output (Overflow):** Same logic and level as for the output code
- **DAV output (Data available):** Same level as for the output code; logic user-selectable (default: DAV at "H")

## INSTALLATION

### Power consumption

• **AC:** Approx. 10 VA

• **DC:** Approx. 7 W (300 mA at 24 V)

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

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

**Mounting:** Surface or DIN rail

**Weight:** 450 g (0.99 lb)

## PERFORMANCE in percentage of span

**Accuracy:**  $\pm 0.1$  %

**Temp. coefficient:**  $\pm 0.015$  %/°C ( $\pm 0.008$  %/°F) of max. span

**Resolution:** 16 bits

**Response time:** 1.5 sec. (0 – 90 %)

**Excitation:** Set value  $\pm 150$  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)

2000 V AC @ 1 minute

(input or output or power to ground)

## STANDARDS & APPROVALS

**CE conformity:**

EMC Directive (2004/108/EC)

EMI EN 61000-6-4: 2007

EMS EN 61000-6-2: 2005

Low Voltage Directive (2006/95/EC)

EN 61010-1: 2001

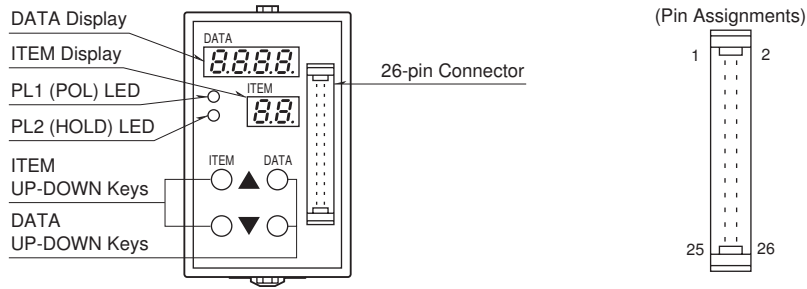
Installation Category II

Pollution Degree 2

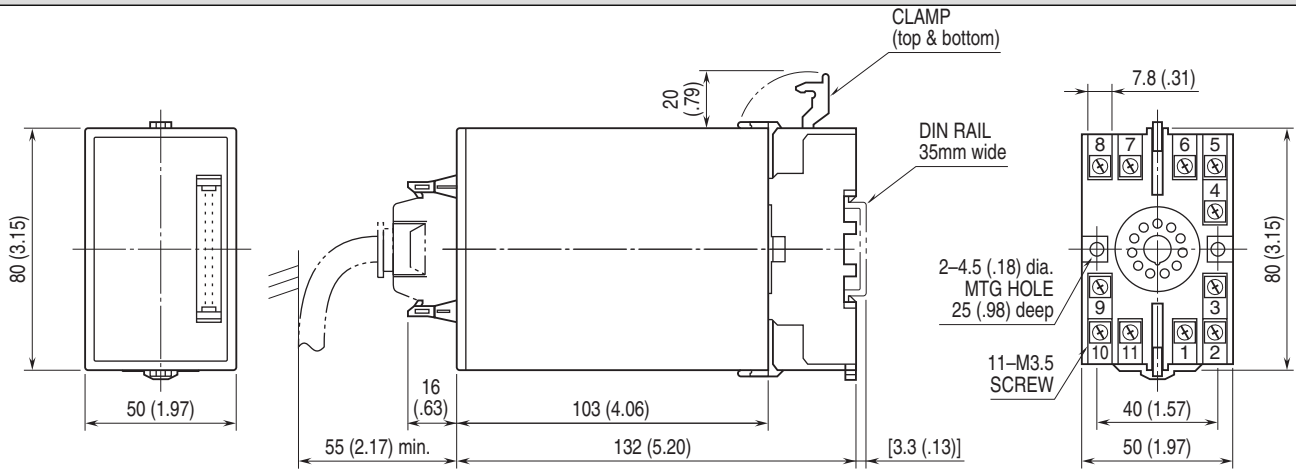
Input to output to power – Basic insulation (300 V)



## EXTERNAL VIEW

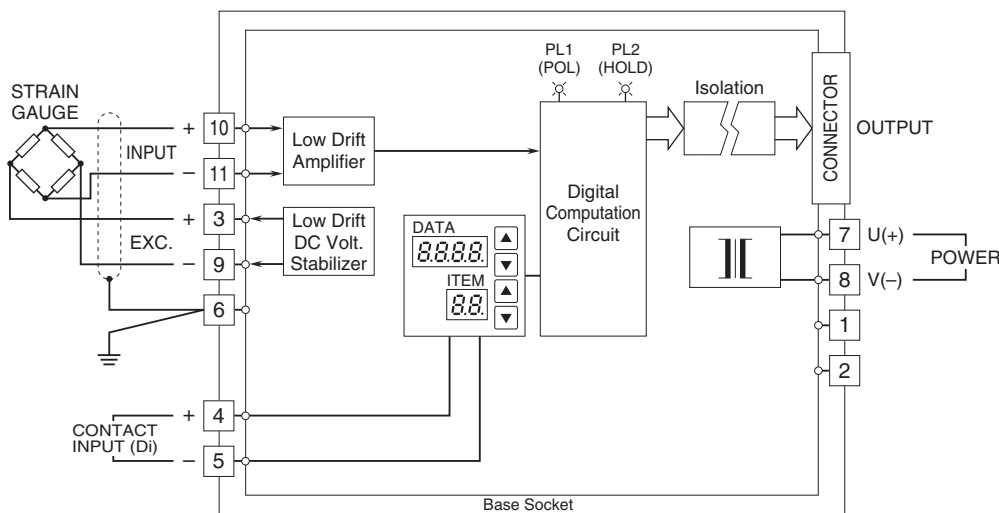


## EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



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

## SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



**OUTPUT CONNECTOR (26 pins)**

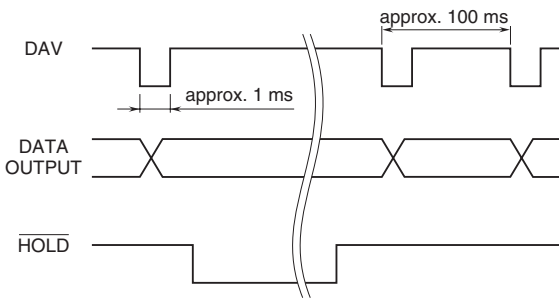
■BCD OUTPUT

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	$1 \times 10^0$	17	COM
2	$2 \times 10^0$	18	COM
3	$4 \times 10^0$	19	OVF
4	$8 \times 10^0$	20	POL
5	$1 \times 10^1$	21	$\overline{\text{DAV}}$
6	$2 \times 10^1$	22	$\overline{\text{HOLD}}$
7	$4 \times 10^1$	23	COM
8	$8 \times 10^1$	24	COM
9	$1 \times 10^2$	25	No connection
10	$2 \times 10^2$	26	No connection
11	$4 \times 10^2$		
12	$8 \times 10^2$		
13	$1 \times 10^3$		
14	$2 \times 10^3$		
15	$4 \times 10^3$		
16	$8 \times 10^3$		

■BINARY, TWO'S COMPLEMENT OUTPUTS

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	$B^0$	17	COM
2	$B^1$	18	COM
3	$B^2$	19	OVF
4	$B^3$	20	POL
5	$B^4$	21	$\overline{\text{DAV}}$
6	$B^5$	22	$\overline{\text{HOLD}}$
7	$B^6$	23	COM
8	$B^7$	24	COM
9	$B^8$	25	No connection
10	$B^9$	26	No connection
11	$B^{10}$		
12	$B^{11}$		
13	$B^{12}$		
14	$B^{13}$		
15	$B^{14}$		
16	$B^{15}$		

**TIMING CHART**



## INPUT-OUTPUT RELATION EXAMPLES

\*FS

-FS stands for 0 % of the input range configured by ITEM06. +FS stands for +100 % of the input range, configured by ITEM07.

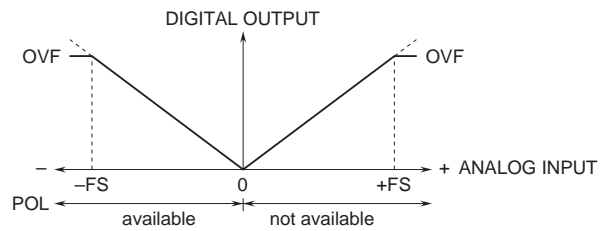
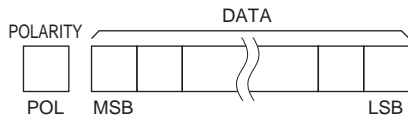
\*OVF

When one of the following conditions is true, the digital output overflows (OVF).

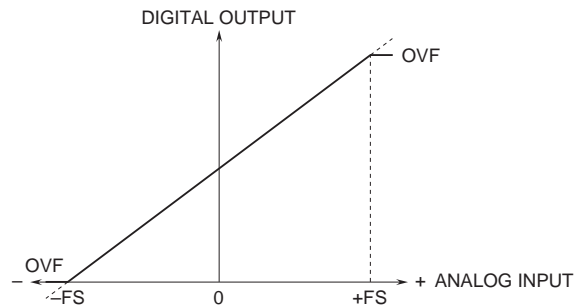
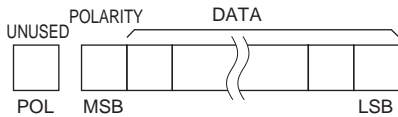
- 1) When the input signal is out of the range between -FS and +FS.
- 2) When the display value (= output signal) exceeds the display range.

The display range differs according to output code. For example, in case of BCD with polarity, it is -9999 to 9999. Please refer to the instruction manual for detail.

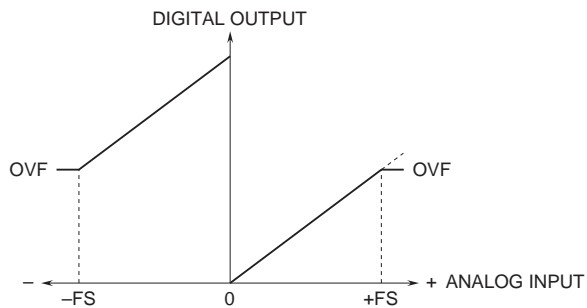
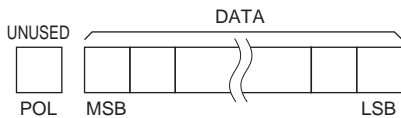
### ■BCD, BINARY (WITH POLARITY)



### ■OFFSET BINARY



### ■TWO'S COMPLEMENT



Specifications are subject to change without notice.