

Plug-in Signal Conditioners M-UNIT

STRAIN GAUGE ALARM

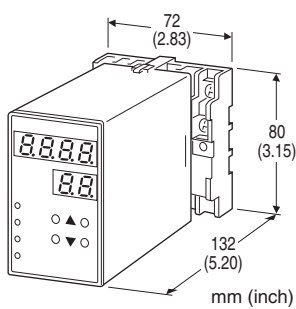
(dual or quad alarm trip; field-configurable)

Functions & Features

- Accepts a bridge type strain gauge utilized in load cells, pressure transducers
- Quad or dual trip
- Setting and display in engineering unit values
- Setpoint adjustments with the front keypad
- Software lock
- Adjustable hysteresis (deadband)
- On-delay timer
- 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

Typical Applications

- Annunciator
- Various alarm applications



MODEL: AS4LC-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: AS4LC-[1][2]-[3][4]
- Specify a code from below for each of [1] through [4]. (e.g. AS4LC-S12-R/Q)
- Specify the specification for option code /Q (e.g. /C01/S01/SET)

[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

- 2:** 4 points; N.O. or make contact
- 3:** 4 points; N.C. or break contact
- 5:** 2 points; SPDT or transfer contact

[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 ±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

EX-FACTORY SETTING

/SET: Preset according to the Ordering Information Sheet (No. ESU-1601)

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 to output to power
- Excitation adjustment:** 0.1 – 12.0 V (front)
- Zero adjustment:** -19.99 – 99.99 % (front)
- Gain adjustment:** 0.000 – 9.999 (front)
- Tare adjustment:** -199.9 – 999.9 % (front or by contact input (Di))
- Sampling cycle:** 100 msec.
- User-configurable items:** Front key pad
 - Alarm setpoint
 - Display range scaling
 - Power ON-delay time
 - Alarm ON-delay time
 - Moving average
 - Hi/Lo trip operation
 - Coil at alarm
 - Hysteresis (deadband)
 - Sensor sensitivity
 - Contact input (Tare adjustment, Peak hold, Valley hold, Sample hold)
 - 0 %, 100 % input setting

• Others
(Refer to the instruction manual)

■ DISPLAY

LED: 8 mm (.31") 7 segment, red

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

Range: -1999 to 9999

(decimal point position selectable)

PV indication: Input signal in engineering unit

Overrange indication: LEDs blinking

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

LEDs: Red LEDs turn on when coils are energized.

(PL1 and PL2 for 2-point alarm. PL1, PL2, PL3 and PL4 for 4-point alarm.)

INPUT SPECIFICATIONS

■ Strain Gauge Input

• Strain Gauge

Sensor sensitivity setting

S1: 0.010 - 3.000mV/V

S2: 0.010 - 9.999mV/V

S3: 0.10 - 30.00mV/V

Sensor sensitivity setting min. step:

S1: 0.001 mV/V

S2: 0.001 mV/V

S3: 0.01 mV/V

Default setting:

S1: 3.000 mV/V

S2: 9.999 mV/V

S3: 30.00 mV/V

Rated output from strain gauge:

S1: -30.00 - +30.00 mV, span 1.00 - 30.00 mV

S2: -99.99 - +99.99 mV, span 3.00 - 99.99 mV

S3: -300.0 - +300.0 mV, span 10.0 - 300.0 mV

Input voltage setting min. step:

S1: 0.01 mV

S2: 0.01 mV

S3: 0.1 mV

Note: Consult factory for use with a compression/tension load cells.

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

Maximum current: 30 mA

Default setting: 1.0 V

■ **Contact Input:** TTL level (5V-CMOS level), open collector or dry contact (detecting voltage: approx. 5 V, saturation voltage: ≤ 1 V, sink current: 0.5 mA)

OUTPUT SPECIFICATIONS

Relay rating:

120 V AC @ 1 A (cos ϕ = 1)

240 V AC @ 0.5 A (cos ϕ = 1)

30 V DC @ 1 A (resistive load)

(Limited within 0.5 A to conform with EU Directive)

Maximum switching voltage: 380 V AC or 125 V DC

Maximum switching power: 120 VA or 30 W

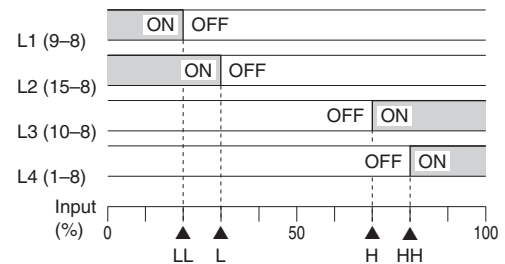
Minimum load: 5 V DC @ 10 mA

Mechanical life: 5×10^7 cycles

Alarm Trip Operation

Terminal No. in parentheses

Example with quad N.O. contacts (LL, L, H, HH)



Trip Operation in Power Failure

- Output code 2: All relays turn off.
- Output code 3: All relays turn on.
- Output code 5: Terminals 15 - 8, 1 - 8 turn on.

INSTALLATION

Power consumption

• AC: Approx. 11 VA

• DC: Approx. 8 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: 500 g (1.1 lb)

PERFORMANCE in percentage of span

Setpoint accuracy (trip point accuracy): $\pm(0.1\% \text{ of FS} + 1 \text{ digit})$

Display accuracy: $\pm(0.1\% \text{ of FS} + 1 \text{ digit})$

Temp. coefficient: $\pm 0.015\% / ^\circ\text{C}$ ($\pm 0.008\% / ^\circ\text{F}$) of max. span

Response time: $\leq 1.5 \text{ sec.}$ (0 - 100 % at 90 % setpoint)

Excitation: Set value $\pm 250 \text{ mV}$

Line voltage effect: $\pm 0.1\%$ 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

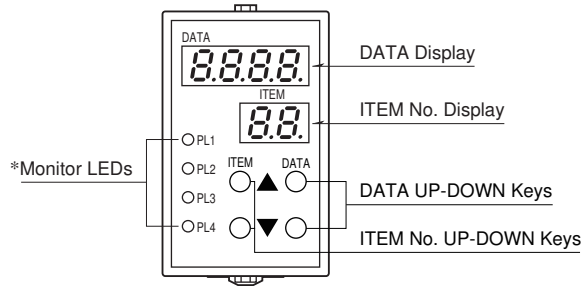
EMS EN 61000-6-2

Low Voltage Directive

EN 61010-1

Measurement Category II (output)
 Installation Category II (power)
 Pollution Degree 2
 Input to output to power: Basic insulation (300 V)
 RoHS Directive

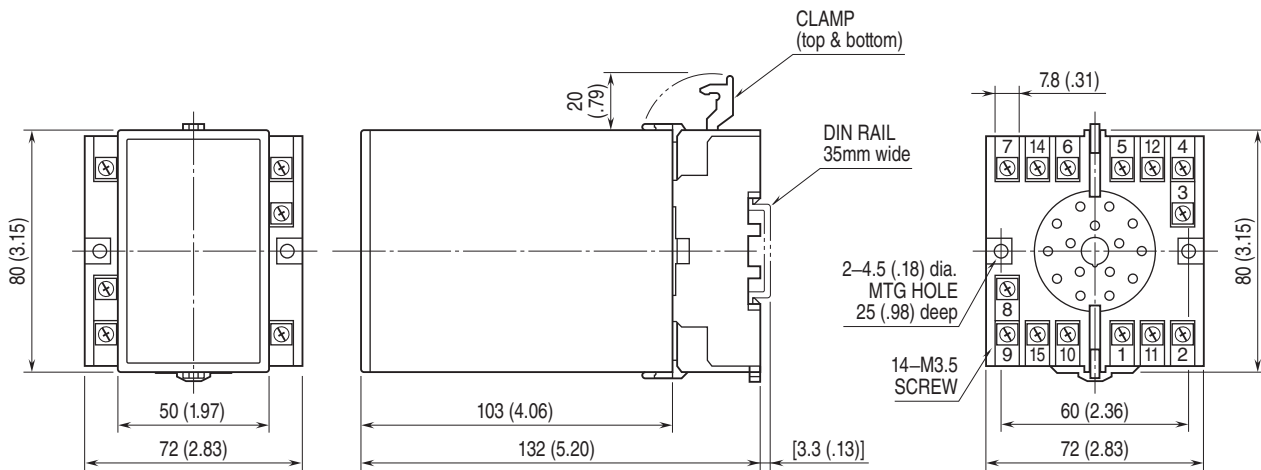
EXTERNAL VIEW



*PL3 or PL4 does not turn on for dual output type.

Refer to the instruction manual for detailed procedures.

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)

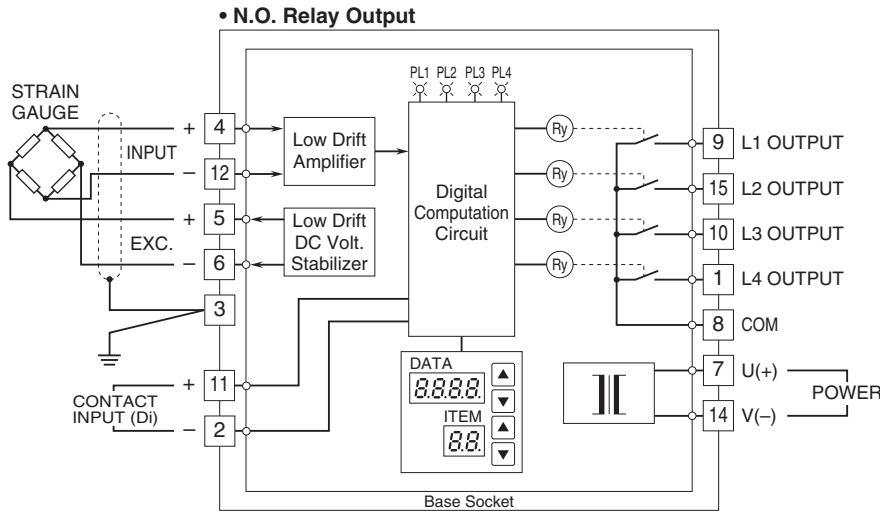


• When mounting, no extra space is needed between units.

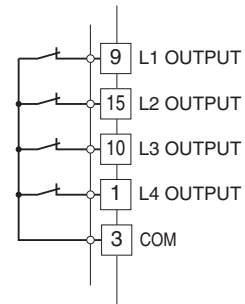
SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

■ OUTPUT CODE: 2

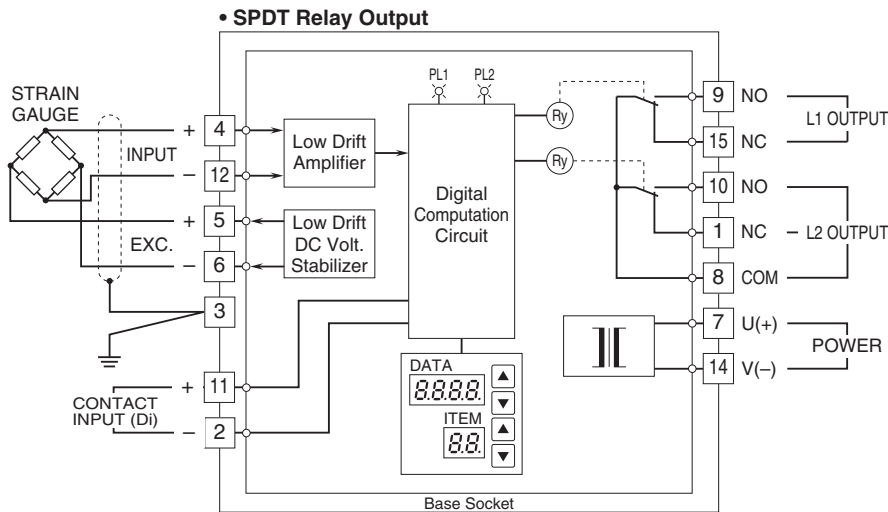
■ OUTPUT CODE: 3



• N.C. Relay Output

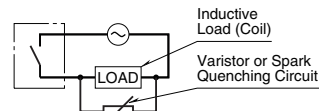


■ OUTPUT CODE: 5

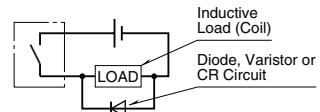


■ Relay Protection

• AC Powered



• DC Powered



Specifications are subject to change without notice.