

Bargraph Indicators 48 Series

BARGRAPH INDICATING ALARM
(with 4-digit digital meter)

MODEL **49AV2**

MODEL & SUFFIX CODE SELECTION

49AV2-□W1□-□

MODEL _____
 ALARM OUTPUT _____
 0 : None
 2 : 2 points
 4 : 4 points
 LED COLOR _____
 W : Multi-color (red, orange and green)
 DIGITAL METER _____
 1 : With
 INPUT _____

Current	Voltage
A : 4 – 20mA DC	3 : 0 – 1V DC
D : 0 – 20mA DC	4 : 0 – 10V DC
G : 0 – 1mA DC	5 : 0 – 5V DC
Z : Specify current*	6 : 1 – 5V DC
	0 : Specify voltage*

*0% input must be 0mA or 0V.
POWER INPUT _____
 M : 85 – 264V AC
 R : 24V DC

ORDERING INFORMATION

Specify code number and variables. Use Ordering Information Sheet (No. ESU-9333). Default setting will be used unless otherwise specified.

- Code number (e.g. 49AV2-4W1A-R)
- Special input range (For codes Z & 0)
- Digital meter scale (e.g. 0 – 150.0)

GENERAL SPECIFICATIONS

Construction: panel flush mounting

Connection: M4 screw terminals

Material

Housing: ABS resin

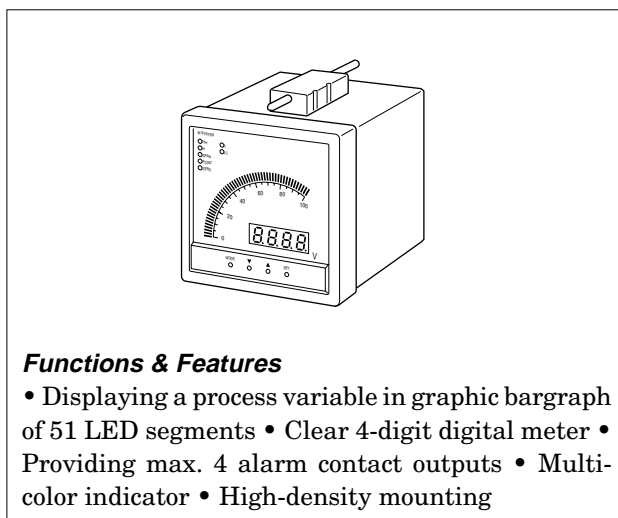
Scale plate: aluminium (white scale & characters on black base)

Bargraph

LED: 51 segments

Scale: 0 – 100%

Scale length: 89 mm (3.50") long, angle 120°



Functions & Features

- Displaying a process variable in graphic bargraph of 51 LED segments
- Clear 4-digit digital meter
- Providing max. 4 alarm contact outputs
- Multi-color indicator
- High-density mounting

Digital display

LED: 10 mm (.39"), red

Number of digits: 4 digits

Range: -1999 to 9999 (default 0 – 100.0)

Decimal point position: field-selectable

Read rate: 12.5/s

Number of samples for moving average: 4 (1, 2, 8 or 16 optional)

Engineering unit: standard unit label sheet* is included in the the product package.

H & L alarm output delay: 0 seconds (1 to 15 seconds by 1 sec. increments optional)

Zero & span adjustments: ±10%

Setpoint adjustment

49AV2-2:H [L setpoint] to 100%
 L 0 to [H setpoint]

49AV2-4:HH [H setpoint] to 100%
 H [L setpoint] to [HH setpoint]
 L [LL setpoint] to [H setpoint]
 LL 0 to [L setpoint]

Isolation: input to alarm output to power

*Standard Engineering Unit: %, m, N/m², m³/h, mm, °C, Pa, A, pH, m³, Nm³/h, t/h, l/h, kg/h, kPa, abs, ppm, psi, kg/cm²G, N/cm², lb/h, J, kJ, NI, lbs, Ω, μΩ, 1°, km³/h, Sm³

INPUT & OUTPUT

INPUT

•DC Current: 0 – 50mA DC; input resistor incorporated (2W)

Minimum span: 1mA

Input resistance

Input	Input Resistance
4 – 20mA	: 10 (Ω)
0 – 20mA	: 10
0 – 1mA	: 200

•DC Voltage: 0 – 10V DC

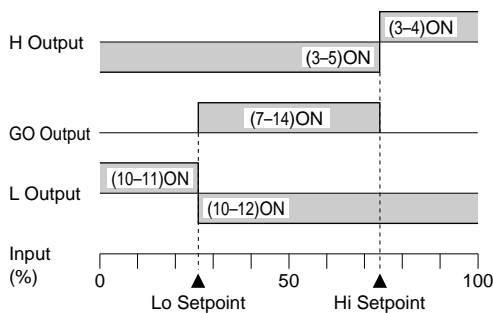
Minimum span: 1V

Input resistance: 1MΩ

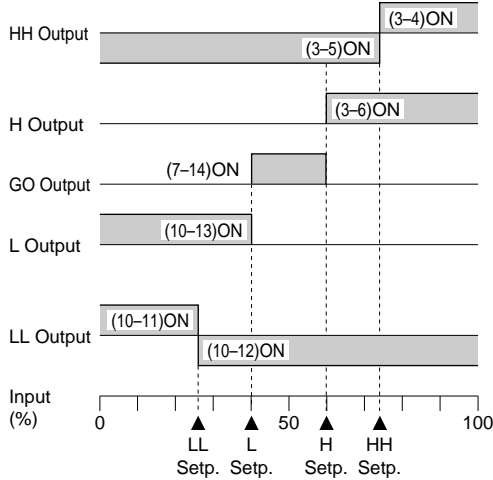
ALARM OUTPUT

Alarm Trip Operation Terminal No. in parentheses

•Output Code : 2



•Output Code : 4



Trip Operation in Power Failure

: terminals 3 – 5, 10 – 12 turn ON

Memory compensation in power failure: setpoint data are stored in non-volatile memory.

•Relay Contact: 250V AC @3A (cosφ=1)
30V DC @3A (resistive load)
electrical life ≥10⁵ cycles (rate 30/min.)

Maximum switching voltage: 300V AC or 50V DC

Maximum switching power: 750VA or 90W

Minimum load: 5V DC @100mA

Mechanical life: ≥2 × 10⁷ cycles (rate 300/min.)

INSTALLATION

Power input

AC: 85 – 264V, 50/60 Hz, approx. 7VA

DC: 24V ±15%, approx. 6W
(ripple 10% p-p max.)

Operating temperature: 0 to 45°C (32 to 113°F)

Operating humidity: 40 to 80% RH (non-condensing)

Mounting: panel flush mounting

Dimensions: W96×H96×D116 mm (3.78"×3.78"×4.61")

Weight: 500 g (1.10 lbs)

PERFORMANCE in percentage of span

Accuracy

Bargraph: ±2%

Digital meter: ±0.5%

Setpoint accuracy

Bargraph: ±2%

Digital meter: ±0.5%

Response time: 0.5 seconds

Insulation resistance: ≥10MΩ with 500V DC (input to alarm output to power to ground)

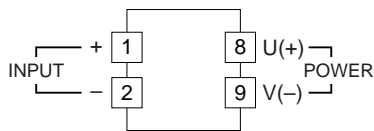
Dielectric strength: 2000V AC @1 minute

(input to power, input or alarm output or power to ground)

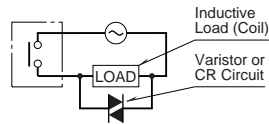
1500V AC @1 minute (input to alarm output, power to alarm output)

CONNECTION DIAGRAM

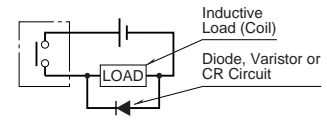
■49AV2-0



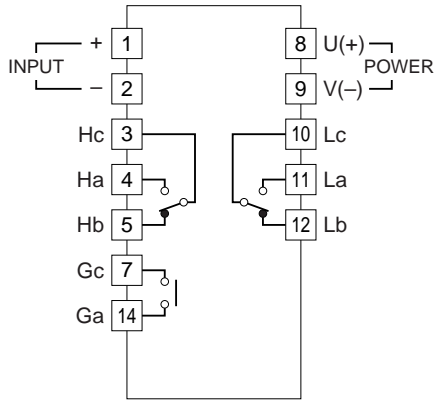
■Relay Protection •AC Powered



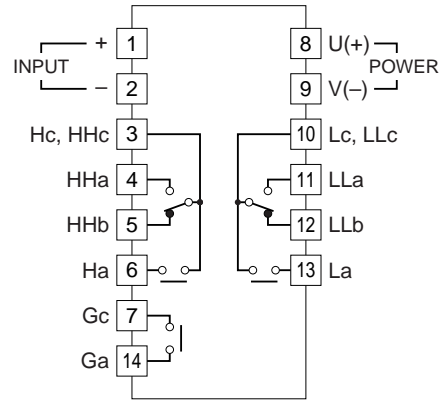
•DC Powered



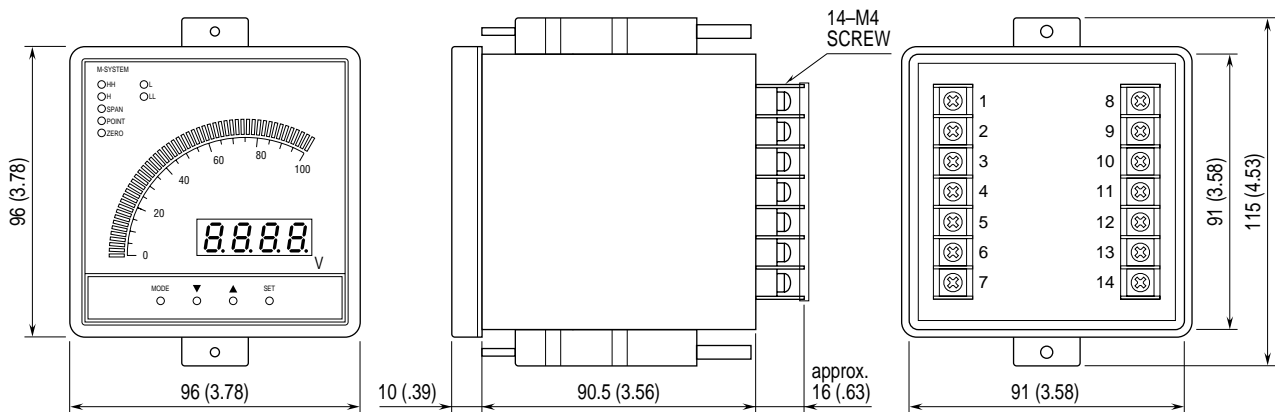
■49AV2-2



■49AV2-4

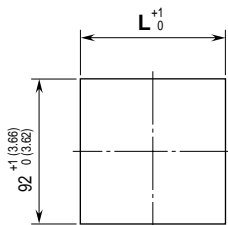


EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT mm (inch)



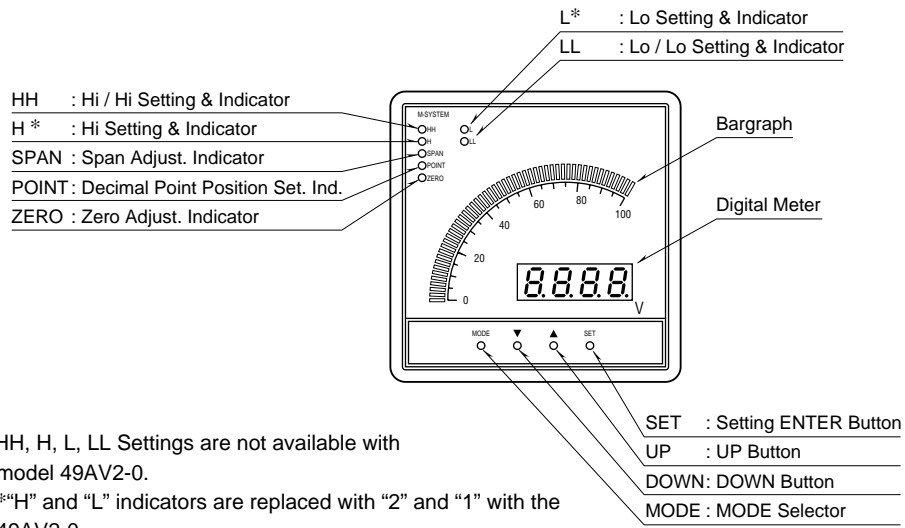
MOUNTING REQUIREMENTS mm (inch)

■PANEL CUTOUT



Panel thickness 1.6 – 5.5 mm
 $L = 96 \times (N - 1) + 92$ (mm)
 where N : number of units

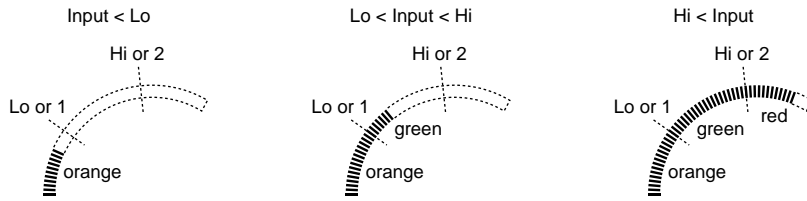
FRONT PANEL CONFIGURATION



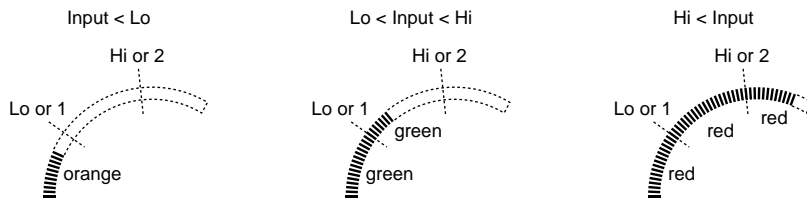
Remark 1: HH, H, L, LL Settings are not available with model 49AV2-0.
*“H” and “L” indicators are replaced with “2” and “1” with the 49AV2-0.
“2” and “1” determine where the bargraph color changes.
Remark 2: HH, LL Settings are not available with model 49AV2-2.

Multicolor Indication

Pattern 1



Pattern 2



ADJUSTMENT PROCEDURE

■ TURNING OFF DISPLAYS

Pressing DOWN key for longer than 2 seconds when the unit is not in the adjustment mode will turn the digital display off. Pressing UP key for longer than 2 seconds likewise will turn the bargraph off. In order to return these displays on, proceed the same, or turn power supply off and on.

■ MULTI-COLOR PATTERN

Pressing UP and DOWN keys at once for longer than 2 seconds when the unit is not in the adjustment mode will switch between the Multi-Color Bargraph Pattern 1 and Pattern 2.

• Digital Zero Adjustment

- 1) Press MODE key once or several times until ZERO LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired 0% value.
- 3) Press SET key. The setting is complete and the ZERO LED turns off.

• Decimal Point Position Adjustment

- 1) Press MODE key once or several times until POINT LED starts blinking.
- 2) Press UP or DOWN keys to move the decimal point on the digital meter.
- 3) Press SET key. The setting is complete and the POINT LED turns off.

• Digital Span Adjustment

- 1) Press MODE key once or several times until SPAN LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired 100% value.
- 3) Press SET key. The setting is complete and the SPAN LED turns off.

• Low Setpoint Adjustment

*Replaced with '1' LED or '1' setpoint for the display-only type. With no alarm, this adjustment determines the position where the LED color changes.)

- 1) Press MODE key once or several times until L* LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired L* setpoint.
- 3) Press SET key. The setting is complete and the L* LED turns off except in Low alarm state.

• LL Setpoint Adjustment (for 4-point alarm output type only)

- 1) Press MODE key once or several times until LL LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired LL setpoint.
- 3) Press SET key. The setting is complete and the LL LED turns off except in LL alarm state.

• High Setpoint Adjustment

*Replaced with '2' LED or '2' setpoint for the display-only type. With no alarm, this adjustment determines the position where the LED color changes.)

- 1) Press MODE key once or several times until H* LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired H* setpoint.
- 3) Press SET key. The setting is complete and the H* LED turns off except in High alarm state.

• HH Setpoint Adjustment (for 4-point alarm output type only)

- 1) Press MODE key once or several times until HH LED starts blinking.
- 2) Press UP or DOWN keys until the 4-digit meter shows a desired HH setpoint.
- 3) Press SET key. The setting is complete and the HH LED turns off except in HH alarm state.

• Analog/Digital Zero Adjustment (input sensitivity adjustment)

- 1) Apply a desired 0% input to the input terminals.
- 2) Press MODE key once or several times until ZERO LED starts blinking.
- 3) Press UP and DOWN keys at once. The ZERO LED now remains ON.
- 4) Press UP or DOWN keys until the 4-digit meter shows a desired 0% value.
- 5) Press SET key. The setting is complete and the ZERO LED turns off.

• Analog/Digital Span Adjustment (input sensitivity adjustment)

- 1) Apply a desired 100% input to the input terminals.
- 2) Press MODE key once or several times until SPAN LED starts blinking.
- 3) Press UP and DOWN keys at once. The SPAN LED now remains ON.
- 4) Press UP or DOWN keys until the 4-digit meter shows a desired 100% value.
- 5) Press SET key. The setting is complete and the SPAN LED turns off.

• Moving Average

The number of samples to be used for the moving average calculation can be selected among 1, 2, 4, 8 and 16.

- 1) Press MODE key once or several times until POINT LED starts blinking.
- 2) Press UP and DOWN keys at once. Now an 'A.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys until the 4-digit meter shows a desired number among 1, 2, 4, 8 and 16.
- 4) Press SET key. The setting is complete and the POINT LED turns off.

• Digital Display Read Rate

The digital display's read rate can be thinned out by one (80 msec.) to one-fifteenth (1200 msec.) against the unit's sampling rate. The bargraph read rate and the comparison rate of input signal against alarm setpoints is always 80 msec.

- 1) Press MODE key once or several times until POINT LED starts blinking.
- 2) Press UP and DOWN keys at once for twice. Now an 'r.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys until the 4-digit meter shows a desired number between 1 and 15. For example, setting '5' means that the digital display reading is changed once every 5 samplings; 80 msec. multiplied by 5 equals 400 msec.
- 4) Press SET key. The setting is complete and the POINT LED turns off.

• Digital Display for Negative Input

With this setting, you can specify either the digital display reading goes to negative or be fixed to zero for input signals below 0%.

- 1) Press MODE key once or several times until POINT LED starts blinking.
- 2) Press UP and DOWN keys at once for three times. Now an 'n.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys and choose ON or OFF shown on the 4-digit meter. The display shows negative value with ON setting, is fixed to zero with OFF setting.
- 4) Press SET key. The setting is complete and the POINT LED turns off.

• Bargraph Offset

The zero point on the bargraph can be shifted from the leftmost segment (0) up to the middle segment (50%) position.

- 1) Press MODE key once or several times until POINT LED starts blinking.
- 2) Press UP and DOWN keys at once for four times. Now a 'b.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys until the 4-digit meter shows a desired number between 0 (leftmost) and 25 (middle). One lighted segment on the bargraph indicates the selected point.
- 4) Press SET key. The setting is complete and the POINT LED turns off.

• Alarm Output Delay

Relay output can be turned ON with a delay after the alarm is tripped. Delay time can be specified between 0 and 15 seconds in 1-second increments, independently for each setpoint.

- 1) Press MODE key once or several times until the LED for the setpoint (HH, H, L, or LL) starts blinking.
- 2) Press UP and DOWN keys at once for twice. Now a 'c.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys until the 4-digit meter shows a desired number between 0 and 15 (seconds).
- 4) Press SET key. The setting is complete and the LED turns off except for normal alarm indicators.

• High or Low Trip

High or Low trip type can be specified for each alarm setpoint. For example, HH setpoint (High trip) can be changed to Low trip.

- 1) Press MODE key once or several times until the LED for the setpoint (HH, H, L, or LL) starts blinking.
- 2) Press UP and DOWN keys at once. Now a 'd.' is shown at the left end of the 4-digit meter.
- 3) Press UP or DOWN keys and choose H (High) or L (Low) shown on the 4-digit meter.
- 4) Press SET key. The setting is complete and the LED turns off except for normal alarm indicators.

[Remarks]

ANALOG ZERO/SPAN ARE FACTORY CALIBRATED TO APPROPRIATE STATE. THERE USUALLY IS NO NEED OF ADJUSTMENT BUT IF YOU NEED TO DO SO, BE SURE TO USE PROPER CALIBRATION EQUIPMENT.

- 1) Go through zero/span adjustment and digital scaling before adjusting alarm setpoints.
- 2) For adjusting analog zero, input 0%. For span, input 100%.
- 3) Alarm setpoint data are stored in memory even when the power is removed.