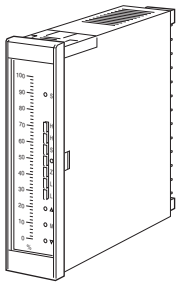


Bargraph Indicators 48 Series

BARGRAPH INDICATING ALARM

Functions & Features

- Displaying a process variable in graphic bargraph of 101 LED segments
- Clear LED
- Providing max. 4 alarm contact outputs
- Relays can be used with 110 V DC power
- Multi-color indicator



MODEL: 48AV-[1][2][3][4]-[5]

ORDERING INFORMATION

- Code number: 48AV-[1][2][3][4]-[5]
Specify a code from below for each [1] through [5].
(e.g. 48AV-4RVA-R)
- Special input range (For codes Z & 0)
- Scale (e.g. 0 - 100 %)
- Color pattern for multi-color indicator (e.g. pattern 2)

[1] ALARM OUTPUT

- 2: 2 points
- 4: 4 points

[2] BAR LED COLOR

- R: Red
- Y: Amber
- G: Green
- C: Multi-color (red, amber and green)

[3] MOUNTING DIRECTION

- V: Vertical
- H: Horizontal

[4] INPUT

Current

- A: 4 - 20 mA DC (Input resistance 10 Ω)
- B: 2 - 10 mA DC (Input resistance 20 Ω)

- C: 1 - 5 mA DC (Input resistance 39 Ω)
- D: 0 - 20 mA DC (Input resistance 10 Ω)
- E: 0 - 16 mA DC (Input resistance 12 Ω)
- F: 0 - 10 mA DC (Input resistance 20 Ω)
- G: 0 - 1 mA DC (Input resistance 200 Ω)
- H: 10 - 50 mA DC (Input resistance 5.1 Ω)
- Z: Specify current (See INPUT SPECIFICATIONS)

Voltage

- 3: 0 - 1 V DC (Input resistance 100 k Ω)
- 4: 0 - 10 V DC (Input resistance 330 k Ω)
- 5: 0 - 5 V DC (Input resistance 250 k Ω)
- 6: 1 - 5 V DC (Input resistance 250 k Ω)
- 0: Specify voltage (See INPUT SPECIFICATIONS)

[5] POWER INPUT

AC Power

- K: 85 - 132 V AC
(Operational voltage range 85 - 132 V, 47 - 63 Hz)
- L: 170 - 264 V AC
(Operational voltage range 170 - 264 V, 47 - 63 Hz)

DC Power

- R: 24 V DC
(Operational voltage range 24 V $\pm$ 15 %, ripple 10 %p-p max.)

GENERAL SPECIFICATIONS

- Construction:** Panel flush mounting
- Connection:** M3 screw terminals (torque 0.6 N·m)
- Screw terminal:** Chromated brass
- Housing material:** ABS resin
- Isolation:** Input to output to power
- Zero adjustment:** -5 to +5 % (front)
- Span adjustment:** 95 to 105 % (front)
- Scale plate:** Aluminium (white scale & characters on black base)
- Scale**
 - Characters including decimal points:** Max. 4 characters
 - Divisions:** 22 - 54.9
 - Engineering unit:** Max. 8 characters
- Setpoint adjustment**
 - 2 points:**
 - H: [L setpoint + 1 %] to 100 %
 - L: 0 % to [H setpoint - 1 %]
 - 4 points:**
 - HH: [H setpoint + 1 %] to 100 %
 - H: [L setpoint + 1 %] to [HH setpoint - 1 %]
 - L: [LL setpoint + 1 %] to [H setpoint - 1 %]
 - LL: 0 % to [L setpoint - 1 %]
- Alarm deadband (hysteresis):** 1 %
- Bargraph:** 101-segment LED, 100 mm (3.96") long, 1.5 mm (.06") wide

INPUT SPECIFICATIONS

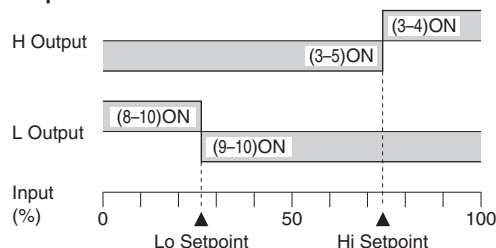
- **DC Current:** 0 – 50 mA DC; input resistor incorporated
- Minimum span:** 1 mA
- 0 % input:** 0 mA DC
- **DC Voltage:** 0 – 10 V DC
- Minimum span:** 1 V
- 0 % input:** 0 V DC

OUTPUT SPECIFICATIONS

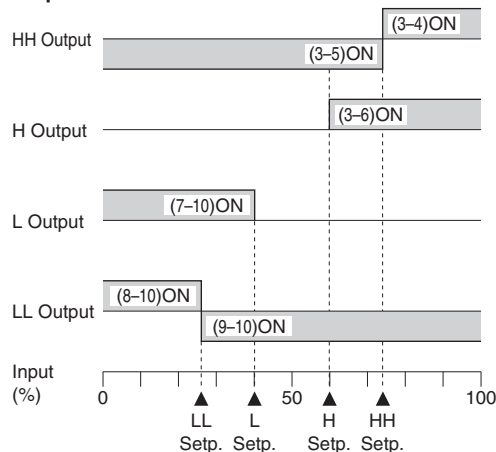
- **Alarm Output:** Relay contact
- Rated load:** 125 V AC @ 0.5 A ($\cos \phi = 1$)
- 30 V DC @ 2 A (resistive load)
- Maximum switching voltage:** 250 V AC or 220 V DC
- Maximum switching power:** 125 VA or 60 W
- Minimum load:** 10 mV DC @ 10 μ A
- Mechanical life:** $\geq 10^8$ cycles

Alarm Trip Operation Terminal No. in parentheses

•Output Code : 2



•Output Code : 4



Trip Operation in Power Failure:

Terminals 3 – 5, 9 – 10 turn ON

INSTALLATION

Power consumption

- **AC:** Approx. 5 VA (7 VA for multi-color LED)
- **DC:** Approx. 4 W (6 W for multi-color LED)
- Operating temperature:** 0 to 45°C (32 to 113°F)
- Operating humidity:** 40 to 80 % RH (non-condensing)
- Mounting:** Panel flush mounting

Weight: 590 g (1.30 lbs)

PERFORMANCE in percentage of span

- Accuracy:** $\pm 1\%$ ± 1 digit
- Setting accuracy:** $\pm 1\%$
- Response time:** 0.5 sec.
- Insulation resistance:** $\geq 10\text{ M}\Omega$ with 500 V DC (input to output to power)
- Dielectric strength:** 1500 V AC @ 1 minute (input to power or ground)
- 1000 V AC @ 1 minute (power to ground, output to input or power or ground)

STANDARD SCALE & UNIT EXAMPLES

■ DIVISIONS

Number of divisions depends upon the scale range.

■ STANDARD SCALES & DIVISIONS (example)

	Pattern 1		Pattern 2		Pattern 3		Pattern 4		Pattern 5	
Span of Scale Range	$1.1 \leq \text{SPAN} < 1.3$		$1.3 \leq \text{SPAN} < 2.0$		$2.0 \leq \text{SPAN} < 2.6$		$2.6 \leq \text{SPAN} < 5.5$		$5.5 \leq \text{SPAN} < 11.0$	
Standard Divisions	22 through 25.9		26 through 39.9		40 through 51.9		26 through 54.9		27.5 through 54.9	
Ratio	20		20		20		10		5	
Standard Scales	1.1 —	1.29 —	1.3 —	1.99 —	2 —	2.59 —	2.6 —	5.49 —	5.5 —	10.9 —
	1 —	1.2 —	1.2 —	1.8 —		2.5 —	2.5 —	5 —	5 —	10 —
								4.5 —		9 —
	.8 —	1 —	.9 —	1.5 —	1.5 —	2 —	2 —	4 —	4 —	8 —
		.8 —		1.2 —		1.5 —	1.5 —	3.5 —		7 —
	.6 —	.6 —	.6 —	.9 —	1 —	1 —	1 —	3 —	3 —	6 —
		.6 —		.6 —		1 —		2.5 —		5 —
	.4 —	.4 —	.3 —	.3 —	.5 —	.5 —	.5 —	2 —	2 —	4 —
		.4 —		.3 —		.5 —		1.5 —		3 —
	.2 —	.2 —	.3 —	.3 —				1 —	1 —	2 —
		.2 —		.3 —				.5 —		1 —
	0 —	0 —	0 —	0 —	0 —	0 —	0 —	0 —	0 —	0 —
	22 div.	25.9 div.	26 div.	39.9 div.	40 div.	51.9 div.	26 div.	54.9 div.	27.5 div.	54.9 div.

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

Span of Scale Range = (Full Scale – Zero Scale) × 10ⁿ

where n = integer (Determine 'n' so that the span of scale range is 1.1 or greater than 1.1, and smaller than 11.0.)

[Example 1] Scale range 0 to 100

Span of Scale Range = (100 – 0) × 10⁻¹ = 10

Span of 10 falls into Pattern 5 according to the above table. Number of divisions is calculated from the Span of Scale Range multiplied by the ratio (10 × 5).

The scale range 0 to 100 is provided with 50 divisions.

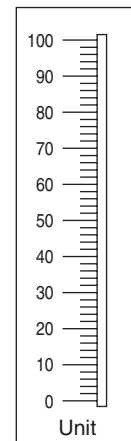
[Example 2] Scale range -10 to +10

Span of Scale Range = (10 – (-10)) × 10⁻¹ = 2

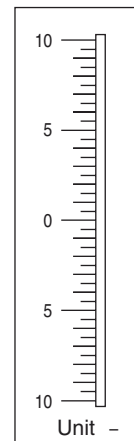
Span of 2 falls into Pattern 3 according to the above table. Number of divisions is calculated from the Span of Scale Range multiplied by the ratio (2 × 20).

The scale range -10 to +10 is provided with 40 divisions.

Example 1

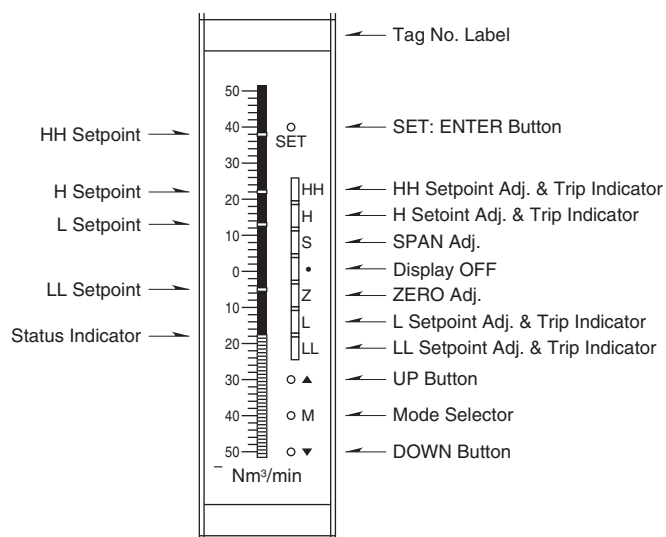


Example 2



EXTERNAL VIEW

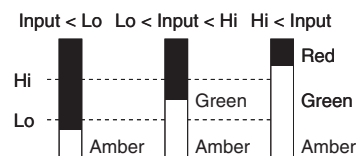
■ VERTICAL MOUNTING



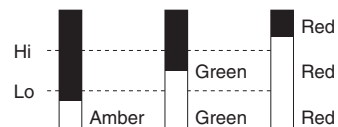
HH and LL Setpoint Adj. are deleted with model 48AV-2.

Multi-Color Indication

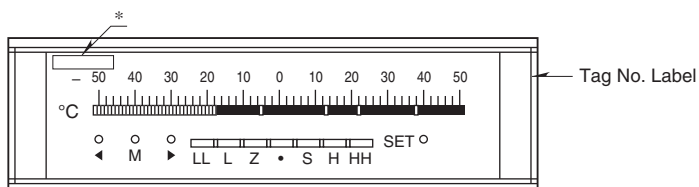
Pattern 1



Pattern 2



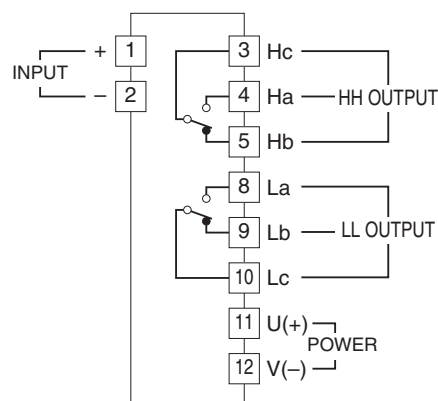
■ HORIZONTAL MOUNTING



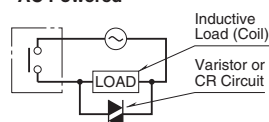
*Engineering units longer than 3 characters are indicated here.
HH and LL Setpoint Adj. are deleted with model 48AV-2.

CONNECTION DIAGRAM

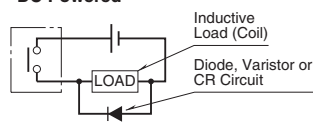
■ 48AV-2



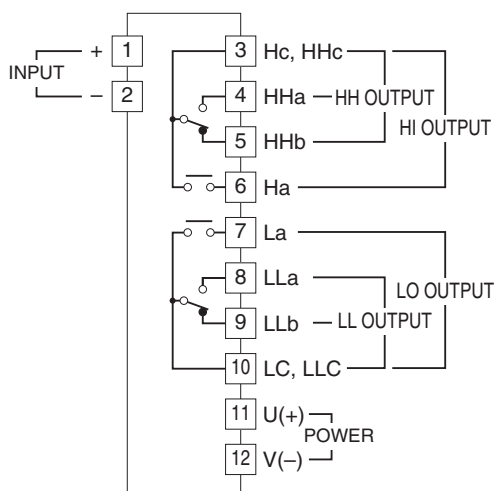
■ Relay Protection •AC Powered



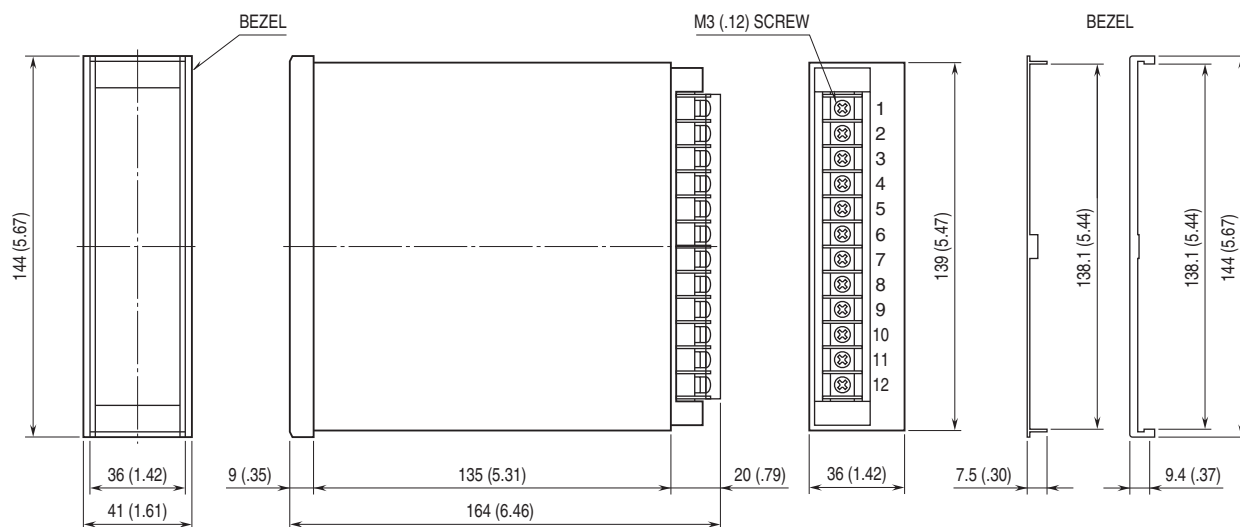
•DC Powered



■ 48AV-4



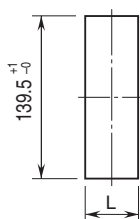
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)



PANEL CUTOUT unit: mm

■ VERTICAL MOUNTING

Panel thickness: 1.6 – 5.5 mm



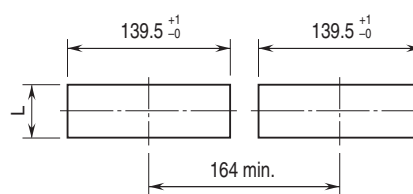
$$L = (38 \times n) + 36.5$$

(n: number of units)

- Note 1. A bezel is required between units for high-density mounting.
 Note 2. Observe at the minimum of 5 cm above and below the units for heat dissipation.

■ HORIZONTAL MOUNTING

Panel thickness: 1.6 – 5.5 mm



$$L = 38 \times (n-1) + 36.5$$

(n: number of units)

- Note 1. A bezel is required between units for high-density mounting.



Specifications are subject to change without notice.