

Bargraph Indicators 48N Series

BARGRAPH INDICATOR	MODEL 48NV
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MODEL & SUFFIX CODE SELECTION

48NV-□□□□-□□

MODEL _____

BAR GRAPHS _____

1 : Single
2 : Dual

LED COLOR _____

Single
R : Red
Y : Amber
G : Green
B : Blue

Dual (left / right)
RR : Red / Red GR : Green / Red
RY : Red / Amber GY : Green / Amber
RG : Red / Green GG : Green / Green
RB : Red / Blue GB : Green / Blue
YR : Amber / Red BR : Blue / Red
YY : Amber / Amber BY : Blue / Amber
YG : Amber / Green BG : Blue / Green
YB : Amber / Blue BB : Blue / Blue

MOUNTING DIRECTION _____

V : Vertical
H : Horizontal

INPUT _____

Current	Voltage
A : 4 – 20mA DC	3 : 0 – 1V DC
B : 2 – 10mA DC	4 : 0 – 10V DC
C : 1 – 5mA DC	5 : 0 – 5V DC
D : 0 – 20mA DC	6 : 1 – 5V DC
E : 0 – 16mA DC	4W : -10 – +10V DC
F : 0 – 10mA DC	5W : -5 – +5V DC
G : 0 – 1mA DC	0 : Specify voltage
H : 10 – 50mA DC	
Z : Specify current	

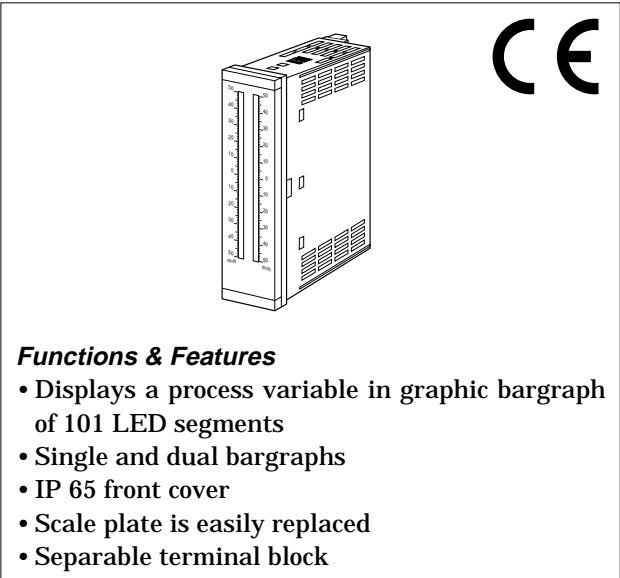
POWER INPUT _____

M : 85 – 264V AC *1
M2: 100 – 240V AC
R : 24V DC

*1 : CE marking not available

OPTIONS _____

/CE : CE marking
/D : Bezels for DIN panel cutout *2
*2 : Bezels for M-System's 48 Series panel cutout will be attached to the product package if Option /D is not specified.



- Functions & Features**
- Displays a process variable in graphic bargraph of 101 LED segments
 - Single and dual bargraphs
 - IP 65 front cover
 - Scale plate is easily replaced
 - Separable terminal block

ORDERING INFORMATION

- Specify code number and variables.
- **Code number** (e.g. 48NV-2BBV4W-R/CE/D)
 - **Special input range** (For codes Z & 0)
 - **Bargraph scale** (e.g. 0 – 100%) (See 'Scale Plate.')

GENERAL SPECIFICATIONS

- Construction:** Panel flush mounting
Connection: M3 screw terminals (nickel plated steel; torque 0.6 N·m)
- Material**
- Housing:** Flame resistant resin (black)
 - Scale plate:** Flame resistant resin (white scale & characters on black base)
- Bargraph:** 101-segment LED, 100 mm (3.96") long, 3.00 mm (.12") wide
- Scale** (Scale plate is replaceable.)
Characters including decimal points:
- | | |
|-------------------|-------------------------|
| Vertical mount. | Max. 6 charac. (48NV-1) |
| | Max. 4 charac. (48NV-2) |
| Horizontal mount. | Max. 4 charac. (48NV-1) |
| | Max. 4 charac. (48NV-2) |
- Divisions:** Min. 22, max. 100
- Engineering unit:**
- | | |
|-------------------|-------------------------|
| Vertical mount. | Max. 8 charac. (48NV-1) |
| | Max. 5 charac. (48NV-2) |
| Horizontal mount. | Max. 8 charac. (48NV-1) |
| | Max. 3 charac. (48NV-2) |
- If there is only one engineering unit with dual bargraph type, the position and maximum number of characters for single type are applied.
- Isolation:** Input 1 to input 2 to power

INPUT & OUTPUT**INPUT**

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

Minimum span: 1mA

Input resistance

Input	Input Resistance
4 – 20mA	: 10 (Ω)
2 – 10mA	: 20
1 – 5mA	: 39
0 – 20mA	: 10
0 – 16mA	: 12
0 – 10mA	: 20
0 – 1mA	: 200
10 – 50mA	: 5.1

•DC Voltage: 0 – 10V DC

Minimum span: 1V

Input resistance: 1M Ω minimum

Zero suppression/elevation: Max. 1.5 times span

INSTALLATION

Power input

AC: Operational voltage range 85 – 264V,
47 – 66 Hz,
approx. 3VA (48NV-1) or 4VA (48NV-2)

DC: 24V \pm 15%,
approx. 1.5W (48NV-1) or 2W (48NV-2)
(ripple 10% p-p max.)

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

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

Front panel ingress protection: IP 65
(single unit in mounting)

Mounting: Panel flush mounting

Panel cutout: 31.5×138 mm (1.24"×5.43")

Panel thickness: 1.6 – 8.0 mm (0.06" – 0.31")

Dimensions

Vertical mounting: W36×H144×D103 mm
(1.42"×5.67"×4.06")

Horizontal mounting: W144×H36×D103 mm
(5.67"×1.42"×4.06")

Weight: 300 g (0.66 lbs)

PERFORMANCE in percentage of span

Accuracy: \pm 1% \pm 1 digit

Response time: \leq 0.5 seconds

Insulation resistance: \geq 100M Ω with 500V DC
(input to power)

Dielectric strength: 2000V AC @1 minute (input or power to ground, input to power, input 1 to input 2)

STANDARDS & APPROVALS

CE conformity: EMC Directive (89/336/EEC)

EMI EN61000-6-4

EMS EN61000-6-2

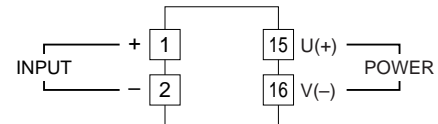
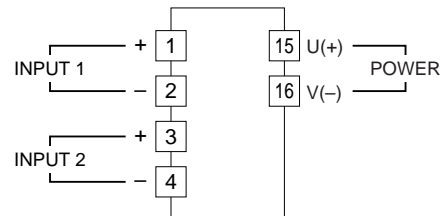
Low Voltage Directive (73/23/EEC)

Installation category II

Pollution degree 2

Max. operating voltage 300V

Input to power – Reinforced insulation

CONNECTION DIAGRAM**48NV-1****48NV-2**

SCALE PLATE

■WHAT MUST BE SPECIFIED WHEN ORDERING

Please specify the bargraph scale range and engineering unit. Number of divisions, division line length, character font are determined by M-System.

[Example] : Bargraph range 0 to 300 cm
 Bargraph scale range: 0 – 300
 Engineering unit for the bargraph: cm

■TYPES OF DIVISIONS

Five (5) types of divisions are used depending upon the scale span, which determined by the following equation:

$$\text{Scale Span} = (\text{Max. range value} - \text{Min. range value}) \times 10^n$$

where n = integer (used to limit the calculated scale span to the minimum of 1.1, below 11.0.)

•Type 1: $1.1 \leq \text{Scale Span} < 1.3$

Number of divisions: 22 to 25.9

Scale: Starts at 0, increments by 2 (2, 4, 6, 8, 10, 12)

Min. and max. values are indicated.

Division lines: Long, Short, Medium, Short, Long

Minimum Divisions	Maximum Divisions	Bipolar Scale
11 —	1.29 —	600 —
10 —	1.2 —	400 —
8 —	1.0 —	200 —
6 —	0.8 —	0 —
4 —	0.6 —	-200 —
2 —	0.4 —	-400 —
0 —	0 —	-600 —

•Type 3: $2.0 \leq \text{Scale Span} < 2.6$

Number of divisions: 40 to 51.9

Scale: Starts at 0, increments by 5 (5, 10, 15, 20, 25)

Min. and max. values are indicated.

Division lines: Long, Short, Medium, Short, Medium, Short, Medium, Short, Medium, Short, Long

Minimum Divisions	Maximum Divisions	Bipolar Scale
20 —	2.59 —	120 —
15 —	2.5 —	100 —
10 —	2.0 —	50 —
5 —	1.5 —	0 —
0 —	1.0 —	-50 —
	0.5 —	-100 —
	0 —	-120 —

•Type 2: $1.3 \leq \text{Scale Span} < 2.0$

Number of divisions: 26 to 39.9

Scale: Starts at 0, increments by 3 (3, 6, 9, 12, 15, 18)

Min. and max. values are indicated.

Division lines: Long, Short, Medium, Short, Medium, Short, Long

Minimum Divisions	Maximum Divisions	Bipolar Scale
130 —	1.99 —	0.8 —
120 —	1.8 —	0.6 —
90 —	1.5 —	0.3 —
60 —	1.2 —	0.0 —
30 —	0.9 —	-0.3 —
0 —	0.6 —	-0.6 —
	0.3 —	-0.8 —
	0.0 —	

•Type 4: $2.6 \leq \text{Scale Span} < 5.5$

Number of divisions: 26 to 39.9

Scale: Starts at 0, increments by 5 (5, 10, 15...45, 50)

Min. and max. values are indicated.

Division lines: Long, Medium, Medium, Medium, Medium, Long

Minimum Divisions	Maximum Divisions	Bipolar Scale
260 —	5.49 —	250 —
250 —	5 —	200 —
200 —	4.5 —	150 —
150 —	4 —	100 —
100 —	3.5 —	50 —
50 —	3 —	0 —
0 —	2.5 —	-50 —
	2 —	-100 —
	1.5 —	-150 —
	1 —	-200 —
	.5 —	-250 —
	0 —	

• Type 5: $5.5 \leq \text{Scale Span} < 11.0$

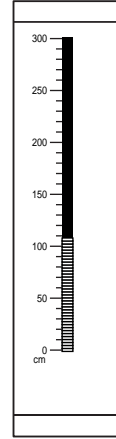
Number of divisions: 27.5 to 54.9

Scale: Starts at 0, increments by 1 (1, 2, 3...8, 9, 10)
Min. and max. values are indicated.

Division lines: Long, Medium, Medium, Medium,
Medium, Long

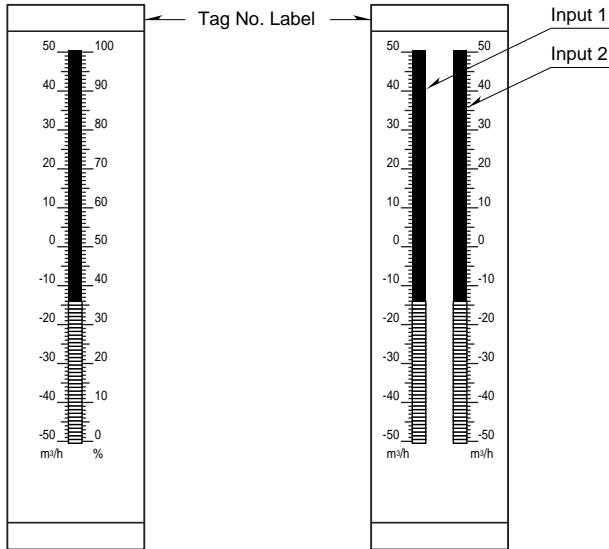
[Example] : Bargraph range 0 to 300 cm (Type 4)

Minimum Divisions	Maximum Divisions	Bipolar Scale
550	10.9	0.5
500	10.0	0.4
	9.0	0.3
400	8.0	0.2
	7.0	0.1
300	6.0	0
	5.0	-0.1
200	4.0	-0.2
	3.0	-0.3
100	2.0	-0.4
	1.0	-0.5
0	0.0	

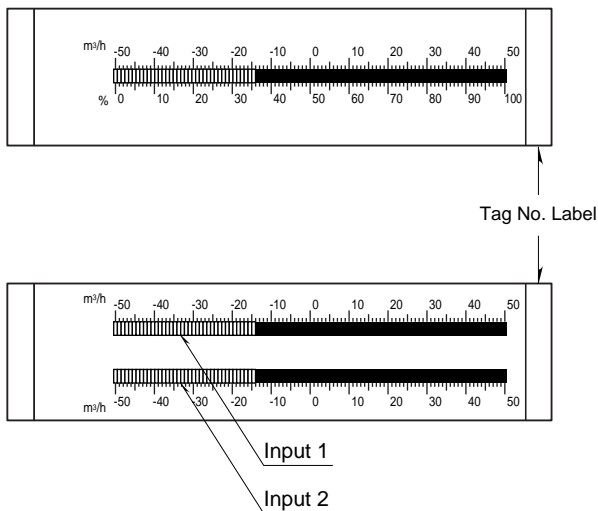


FRONT PANEL CONFIGURATION

■ VERTICAL MOUNTING

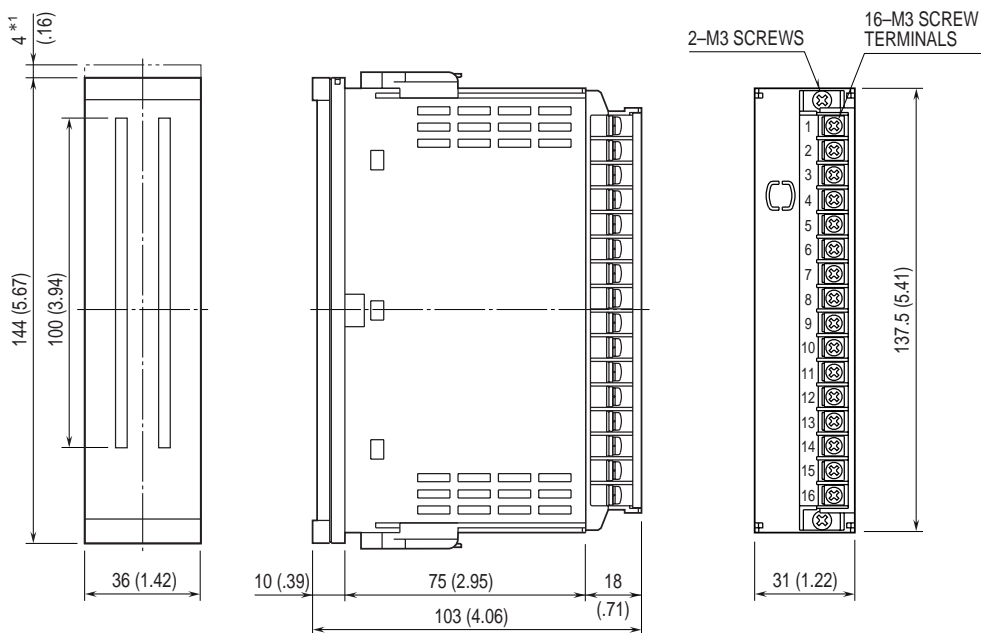


■ HORIZONTAL MOUNTING



Specifications subject to change without notice.

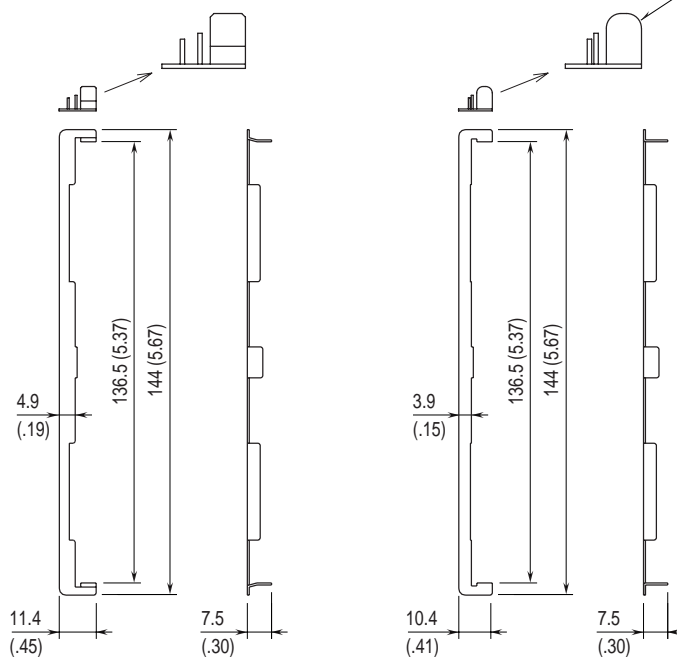
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT mm (inch)



■ STANDARD BEZEL *2

■ OPTION /D BEZEL *3

Rounded corners for the option /D



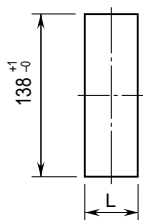
*1. Space required when replacing the scale plate.

*2. Used for the panel cutout size of M-System 48 Series (38 × 139.5 mm).

*3. Used for DIN panel cutout size (33 × 138 mm)

PANEL CUTOUT unit: mm

■ VERTICAL MOUNTING



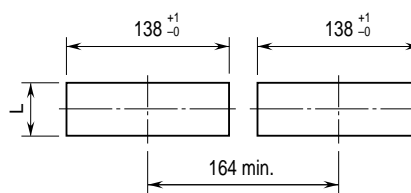
Panel thickness: 1.6 – 8.0 mm

$$L = \{31.5 + 36 \times (N - 1)\}^{+1}_{-0}$$

(N : number of units)

Note 1. Observe at the minimum of 3 cm above and below the units for heat dissipation.

■ HORIZONTAL MOUNTING



Panel thickness: 1.6 – 8.0 mm

$$L = \{31.5 + 36 \times (N - 1)\}^{+1}_{-0}$$

(N : number of units)