

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

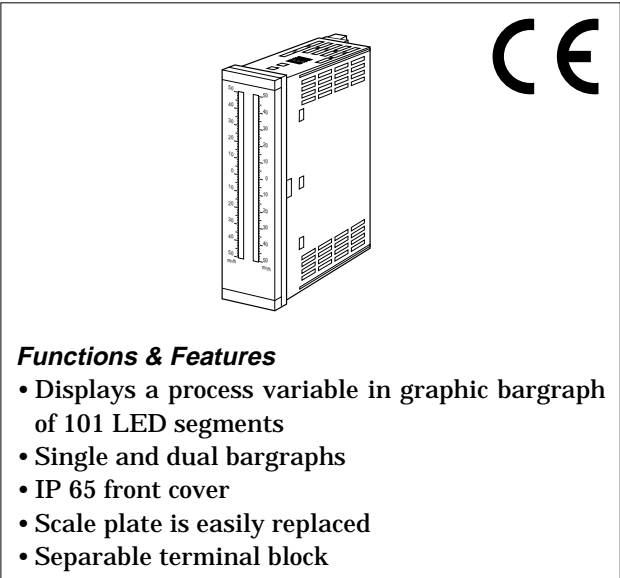
*1 : CE marking not available

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**
- Characters:** Max. 4 characters including decimal point and negative sign
- Divisions:** Min. 22, max. 100
- Engineering unit:** Max. 6 characters
- 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

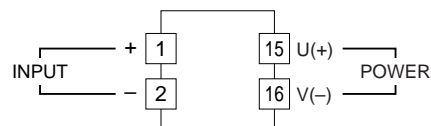
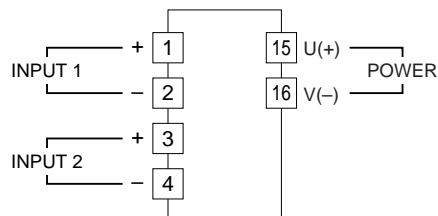
Low Voltage Directive (73/23/EEC)

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. The overall scale plate design including the number of divisions, division line length, character font is 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.)

The number of divisions is automatically determined by the scale span.

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

Number of divisions: 22 to 25.9

Scale: Starts at 0, increments by 0.02 / 0.2 / 2 / 20 / 200. Min. and max. values indicated. 4 digits including negative sign and decimal point.

Division lines: Long, Short, Medium, Short, Long (4 divisions repeated)

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 —	0.2 —	-600 —

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

Number of divisions: 40 to 51.9

Scale: Starts at 0, increments by 0.05 / 0.5 / 5 / 50 / 500. Min. and max. values indicated. 4 digits including negative sign and decimal point.

Division lines: Long, Short, Medium, Short, Medium, Short, Medium, Short, Medium, Short, Long (10 divisions repeated)

Minimum Divisions	Maximum Divisions	Bipolar Scale
20 —	2.59 —	120 —
15 —	2 —	100 —
10 —	1.5 —	50 —
5 —	1 —	0 —
0 —	0.5 —	-50 —
	0 —	-100 —
		-120 —

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

Number of divisions: 26 to 39.9

Scale: Starts at 0, increments by 0.03 / 0.3 / 3 / 30 / 300. Min. and max. values indicated. 4 digits including negative sign and decimal point.

Division lines: Long, Short, Medium, Short, Medium, Short, Long (6 divisions repeated)

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 54.9

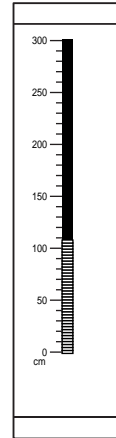
Scale: Starts at 0, increments by 0.05 / 0.5 / 5 / 50 / 500. Min. and max. values indicated. 4 digits including negative sign and decimal point.

Division lines: Long, Medium, Medium, Medium, Medium, Long (5 divisions repeated)

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 —
	0.5 —	-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 0.01 / 0.1 / 1 / 10 / 100 / 1000. Min. and max. values indicated.
 4 digits including negative sign and decimal point.
 Division lines: Long, Medium, Medium, Medium, Medium, Long (5 divisions repeated)

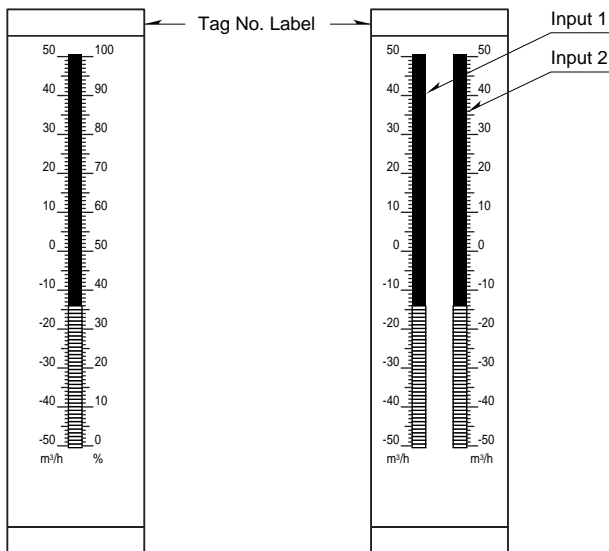
[Example] : Bargraph range 0 to 300 cm (Type 4)



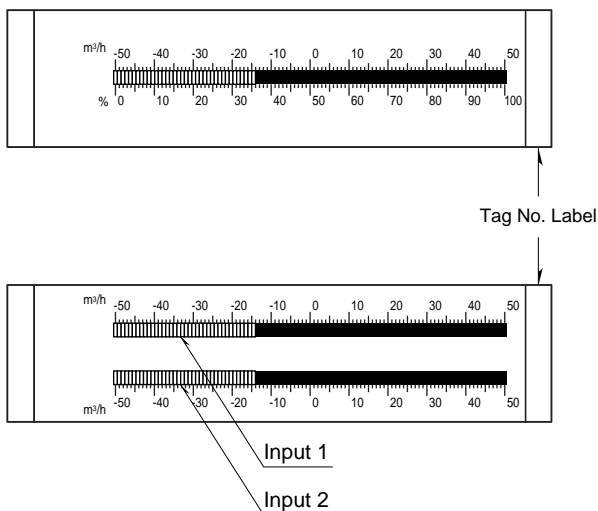
Minimum Divisions	Maximum Divisions	Bipolar Scale
550	10.9	0.5
500	10	0.4
	9	0.3
400	8	0.2
	7	0.1
300	6	0
	5	-0.1
200	4	-0.2
	3	-0.3
100	2	-0.4
	1	-0.5
0	0	-0.5

FRONT PANEL CONFIGURATION

■ **VERTICAL MOUNTING**



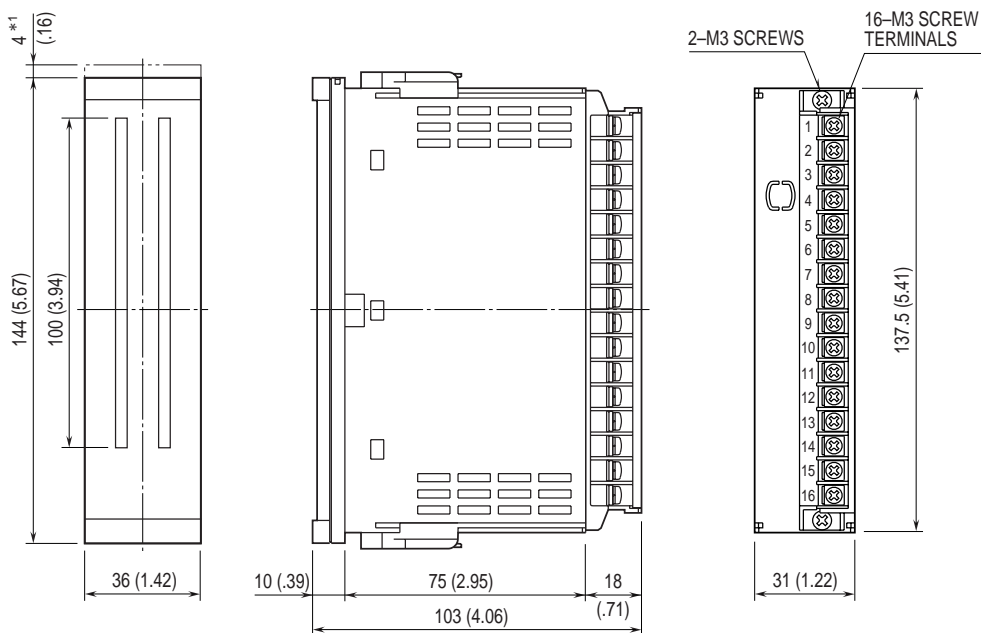
■ **HORIZONTAL MOUNTING**



- **Overrange Input**
 With an input below 0%, the low-end segment (0%) blinks.
 With an input above 100%, all segments are on and the high-end segment (100%) blinks.

Specifications subject to change without notice.

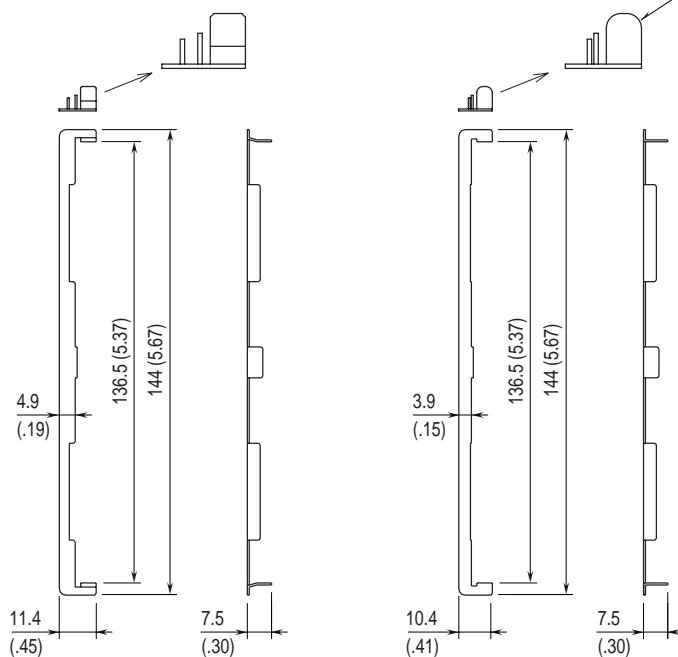
EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENT mm (inch)



■ STANDARD BEZEL *2

■ OPTION /D BEZEL *3

Rounded corners for the option /D



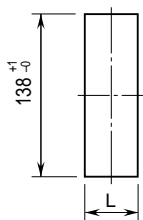
*1. Space required when replacing the scale plate.

*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



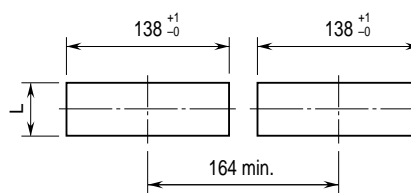
Panel thickness: 1.6 – 8.0 mm

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

(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)