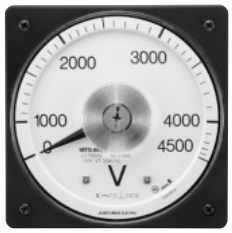
AC Voltmeters

YS-8NAV



LS-110NAV

■Specifications

			Rectangular indicators						Wide-angle indicators	
			Y-2N Series			Y-N Series			L-N Series	
Size (width × height) mm			64×60	85×75	100×85	82×82	102×102	122×122	80×80	110×110
Model name			YS-206NAV	YS-208NAV	YS-210NAV	YS-8NAV	YS-10NAV	YS-12NAV	LS-80NAV	LS-110NAV
Operation principle			Movable iron core			Movable iron core			Movable iron core	
Accuracy (grade)			2.5			2.5		1.5	2.5	1.5
Frequency			50 and 60Hz							
Scale length (mm)			55	70	85	70	90	100	124	175
Consumption VA (VA)			3	3	3	3	3	6	3	3
Weight (kg)			0.1	0.1	0.15	0.15	0.15	0.4	0.4	0.5
Indicator rating	Maximum scale value		Delivery period classification							
	Direct indicator	50V	○	○	○	○	○	○	—	—
		75, 100, 110V	○	○	○	○	○	○	—	—
		150V	◎	○	○	◎	○	○	◎	◎
		190, 260V	○	○	○	○	○	○	—	—
		300V	◎	◎	◎	◎	◎	◎	◎	◎
		400, 500V	—	—	—	—	—	○	—	—
		600V	—	—	—	—	—	◎	○	○
	Indicator combined with VT	VT ratio / Scale								
		440/110V 600V	○	○	○	◎	◎	◎	○	◎
		3300/110V 4500V								
		6600/110V 9000V								
		Besides the above □/110V VT ratio × 150V	○	○	○	○	○	○	○	○
Page with outer dimensions drawing			35			36			37	

Remarks (1) A specially rated AC voltmeter with a rectifier indicator and a maximum scale of 600V or less is manufactured.
(2) Please make sure to read the "Safety Precautions" (pp.5-8) and the "Selection Precautions" (p.9) to assist in selecting the model and use specifications suited to the application.

Note 1. The LS-110NAV and LS-NAV direct 600V indicators are provided with the KR-1 multiplier as an accessory (power consumption is approximately 6VA). The KR-1 multiplier is a dedicated accessory (non-compatible accessory), and thus cannot be used in combinations other than those designated for the indicators.

Delivery period classification

Symbol	◎Standard product	○Quasi-standard product	△Special product
Reference delivery period	Immediate delivery	Within 20 days	21 to 60 days

■Connection diagrams

Fig. 1 AC voltmeter (direct)

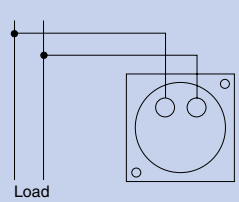


Fig. 2 AC voltmeter (combined with VT)

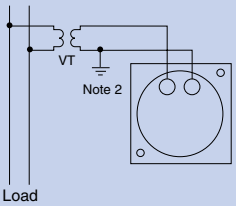


Fig. 3 AC voltmeter (with KR-1 type resistor)

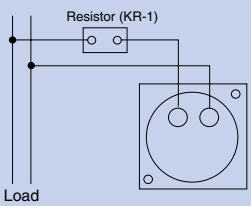
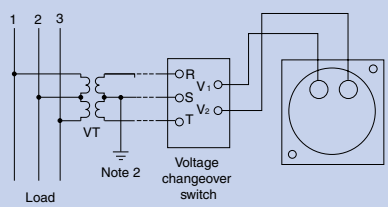


Fig. 4 AC voltmeter (combination with 3-phase circuit voltage changeover switch)



Note 2. For low-voltage circuits, grounding of the secondary side of the instrument voltage transformer is unnecessary.

■Ordering method

The items in [ ] must be specified.

●Indicator combined with instrument voltage transformer

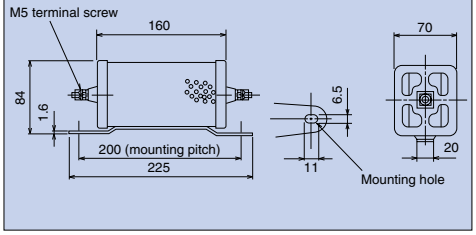
Model name	Indicator rating	Scale	VT ratio	Cover type	Special specifications	Number of units
YS-8NAV	150V	0-9000V	6600/110V	B	Double scale, colored lines, etc.	10

●Direct indicator

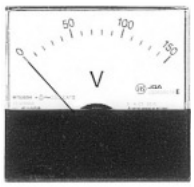
Model name	Indicator rating	Scale	Cover type	Special specifications	Number of units
YS-8NAV	300V	0-300V	B	Double scale, colored lines, etc.	10

■Outer dimensions of accessory

KR-1 multiplier



Uniform scale



YR-206NAV

YR-8NAV

■Specifications

			Rectangular indicators						Wide-angle indicators	
			Y-2N Series			Y-N Series			L-N Series	
Size (width × height) mm			64×60	85×75	100×85	82×82	102×102	122×122	80×80	110×110
Model name			YR-206NAV	YR-208NAV	YR-210NAV	YR-8NAV	YR-10NAV	YR-12NAV	LR-80NAV	LR-110NAV
Operation principle			Rectifier			Rectifier			Rectifier	
Accuracy (grade)			2.5			2.5		1.5	2.5	1.5
Frequency			50 and 60Hz							
Scale length (mm)			55	70	85	70	90	100	124	175
Weight (kg)			0.07	0.1	0.1	0.1	0.15	0.5	0.4	0.5
Indicator rating	Maximum scale value		Consumption current and delivery period classification							
			Consumption / Delivery period							
	Direct indicator	5, 10, 30V	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	0.1VA ○	0.1VA ○
		50V	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	0.2VA ○	0.2VA ○
		75, 100, 110V	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	0.5VA ○	0.5VA ○
		150V	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	0.6VA ○	0.6VA ○
		190, 260V	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	1mA ○	1.2VA ○	1.2VA ○
		300V	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	1.2VA ○	1.2VA ○
		400, 500, 600V	(1mA) (Note 1) ○	(1mA) (Note 1) ○	(1mA) (Note 1) ○	1mA ○	1mA ○	1mA ○	0.6VA ○	0.6VA ○
	Combined with VT	VT ratio×150V	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	2mA ○	0.6VA ○	0.6VA ○
Page with outer dimensions drawing			35			36			37	

Remarks (1) Although the scale of the rectifier AC voltmeter is substantially uniform with an indicator having a maximum scale value of 10V or less, the divisions are slightly reduced near "0".
(2) Error may occur due to waveform distortion.
(3) LR-110NAV and LR-80NAV models rated 75V to 300V incorporate an approximate effective value rectifying circuit.
(4) Please make sure to read the "Safety Precautions" (pp.5-8) and the "Selection Precautions" (p.9) to assist in selecting the model and use specifications suited to the application.

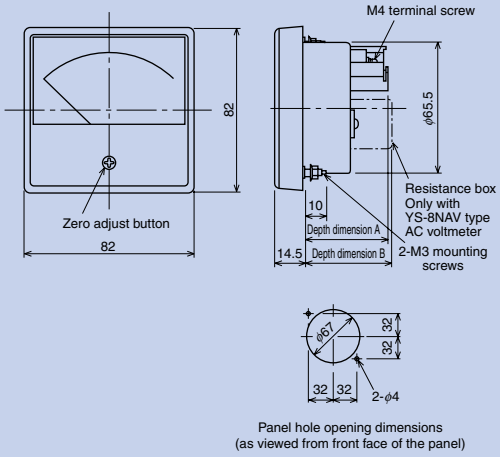
Note 1. These models do not have a JIS mark.

Delivery period classification

Symbol	◎Standard product	○Quasi-standard product	△Special product
Reference delivery period	Immediate delivery	Within 20 days	21 to 60 days

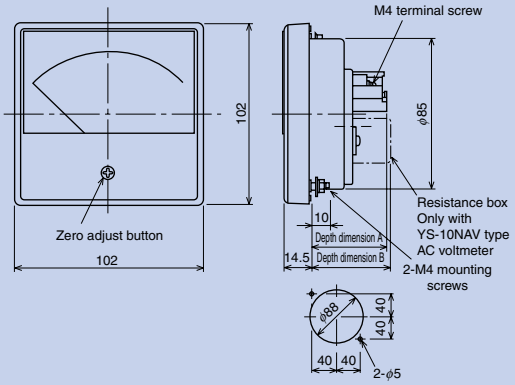
Rectangular indicators (Y-N Series)

FIG. 1 Y-8N



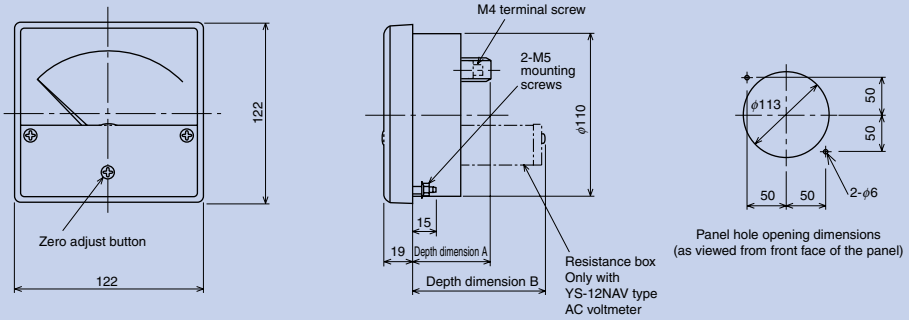
Panel hole opening dimensions
(as viewed from front face of the panel)

FIG. 2 Y-10N



Panel hole opening dimensions
(as viewed from front face of the panel)

FIG. 3 Y-12N



Panel hole opening dimensions
(as viewed from front face of the panel)

●Depth dimension details

Indicator type			Y-8N			Y-10N			Y-12N		
			Type name	A dimension	B dimension	Type name	A dimension	B dimension	Type name	A dimension	B dimension
DC	Ammeters		YM-8NDA	41	—	YM-10NDA	41	—	YM-12NDA	50	—
	Voltmeters		YM-8NDV	41	—	YM-10NDV	41	—	YM-12NDV	50	—
AC	Ammeters		YS-8NAA	41	—	YS-10NAA	41	—	YS-12NAA	50	—
		Uniform scale	YR-8NAA	41	—	YR-10NAA	41	—	YR-12NAA	50	—
	Voltmeters		YS-8NAV	41	43	YS-10NAV	41	43	YS-12NAV	50	85
		Uniform scale	YR-8NAV	41	—	YR-10NAV	41	—	YR-12NAV	50	—
	Wattmeters		YP-8NW	41	—	YP-10NW	41	—	YP-12NW	100	—
	Varmeters		YP-8NVAR	41	—	YP-10NVAR	41	—	YP-12NVAR	100	—
	Power-factor meters	Balanced	YP-8NPF	81	—	YP-10NPF	81	—	YP-12NPF	50 Note	—
		Unbalanced	YP-8NPFU	41	—	YP-10NPFU	41	—	YP-12NPFU	100	—
	Frequency meters		YP-8NF	81	—	YP-10NF	81	—	YP-12NF	50	—
	Receiving indicators	DC indicators	YM-8NRI	41	—	YM-10NRI	41	—	YM-12NRI	50	—
		AC indicators	YR-8NRI	41	—	YR-10NRI	41	—	YR-12NRI	50	—

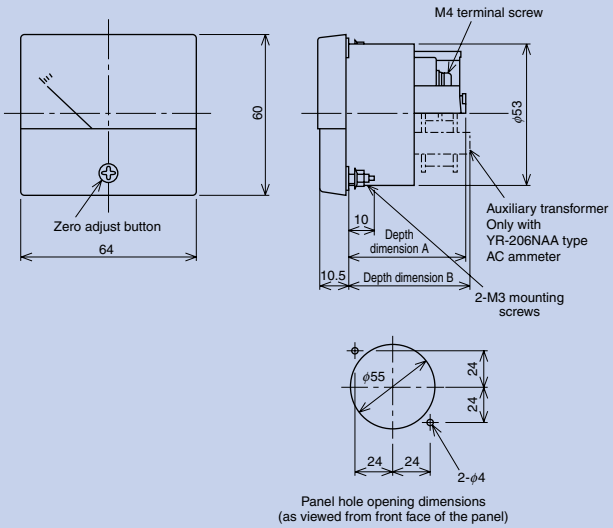
Note. 100mm in the case of a model for 1-phase 2-wire systems.

Outer Dimension Drawings

(Refer to the specification tables regarding models other than the Y-2N series, Y-N series, and L-N series.)

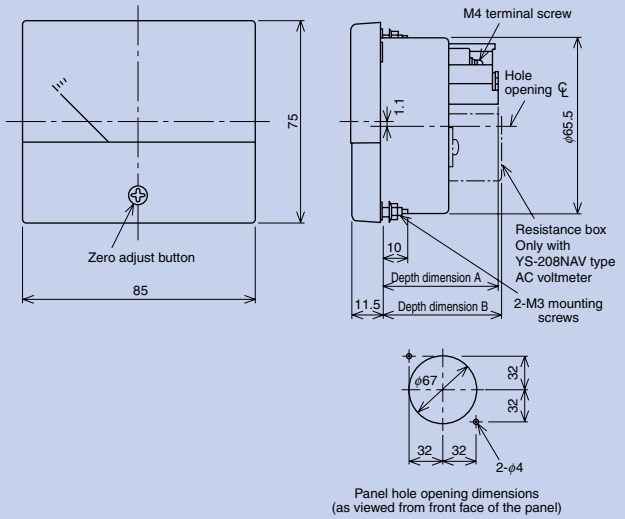
Rectangular indicators (Y-2N Series)

FIG. 1 Y-206N



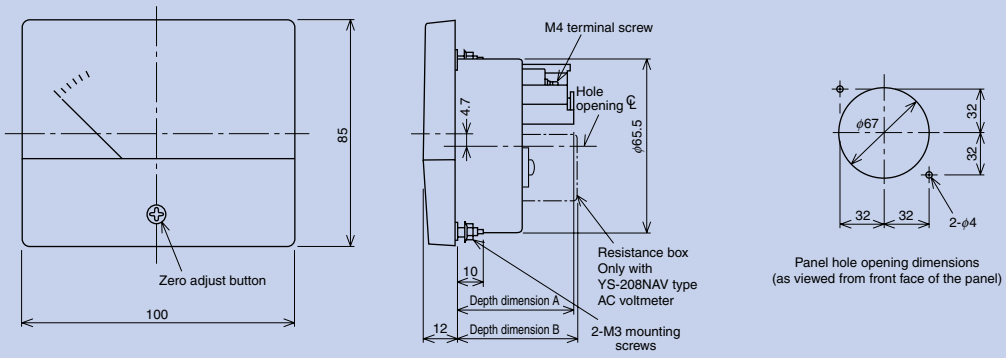
Panel hole opening dimensions (as viewed from front face of the panel)

FIG. 2 Y-208N



Panel hole opening dimensions (as viewed from front face of the panel)

FIG. 3 Y-210N



Panel hole opening dimensions (as viewed from front face of the panel)

●Depth dimension details

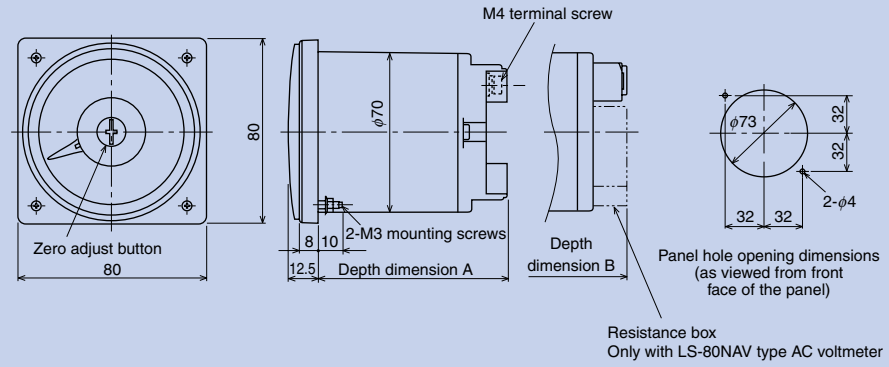
Indicator type			Y-206N			Y-208N			Y-210N		
			Type name	A dimension	B dimension	Type name	A dimension	B dimension	Type name	A dimension	B dimension
DC	Ammeters		YM-206NDA	43	—	YM-208NDA	43	—	YM-210NDA	43	—
	Voltmeters		YM-206NDV	43	—	YM-208NDV	43	—	YM-210NDV	43	—
AC	Ammeters		YS-206NAA	43	—	YS-208NAA	43	—	YS-210NAA	43	—
		Uniform scale	YR-206NAA	43	44	YR-208NAA	43	—	YR-210NAA	43	—
	Voltmeters		YS-206NAV	43	—	YS-208NAV	43	45	YS-210NAV	43	45
		Uniform scale	YR-206NAV	43	—	YR-208NAV	43	—	YR-210NAV	43	—
	Wattmeters		YP-206NW	43	—	YP-208NW	43	—	YP-210NW	43	—
	Varmeters		YP-206NVAR	43	—	YP-208NVAR	43	—	YP-210NVAR	43	—
	Power-factor meters	Balanced	YP-206NPF	43	—	YP-208NPF	43	—	YP-210NPF	43	—
		Unbalanced	YP-206NPFU	43	—	YP-208NPFU	43	—	YP-210NPFU	43	—
	Frequency meters		YP-206NF	83	—	YP-208NF	83	—	YP-210NF	83	—
	Receiving indicators	DC indicators	YM-206NRI	43	—	YM-208NRI	43	—	YM-210NRI	43	—
		AC indicators	YR-206NRI	43	—	YR-208NRI	43	—	YR-210NRI	43	—

Outer Dimensional Drawings

(Refer to the specification tables regarding models other than the Y-2N series, Y-N series, and L-N series.)

Wide-angle indicators (L-N Series)

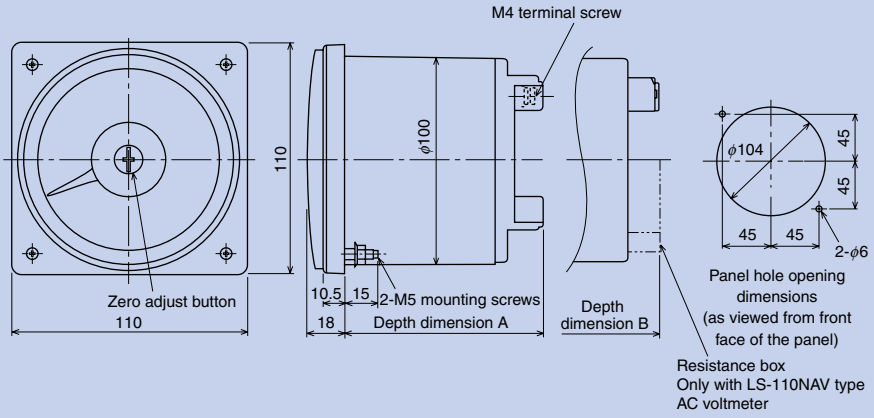
FIG. 1 L-80N



●Depth dimension details

Indicator type			L-80N Type name	A dimension	B dimension
DC	Ammeters		LM-80NDA	81	—
	Voltmeters		LM-80NDV	81	—
AC	Ammeters		LS-80NAA	—	81
		Uniform scale	LR-80NAA	81	—
	Voltmeters		LS-80NAV	—	81
		Uniform scale	LR-80NAV	81	—
	Wattmeters		LP-80NW	81	—
	Varmeters		LP-80NVAR	81	—
	Power-factor meters	Balanced	LP-80NPF	92	—
		Unbalance	LP-80NPFU	81	—
	Frequency meters		LP-80NF	92	—
Receiving indicators		DC indicators	LM-80NRI	81	—
		AC indicators	LR-80NRI	81	—

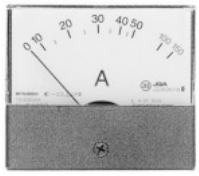
FIG. 2 L-110N



●Depth dimension details

Indicator type			L-110N Type name	A dimension	B dimension
DC	Ammeters		LM-110NDA	92	—
	Voltmeters		LM-110NDV	92	—
AC	Ammeters		LS-110NAA	—	92
		Uniform scale	LR-110NAA	92	—
	Voltmeters		LS-110NAV	—	92
		Uniform scale	LR-110NAV	92	—
	Wattmeters		LP-110NW	100	—
	Varmeters		LP-110NVAR	100	—
	Power-factor meters	Balanced	LP-110NPF	92	—
		Unbalance	LP-110NPFU	100	—
	Frequency meters		LP-110NF	92	—
Receiving indicators		DC indicators	LM-110NRI	92	—
		AC indicators	LR-110NRI	92	—

■Covers

Cover specification	Classification	Y-2N Series	Y-N Series	L-N Series
B design cover (Munsell N 1.5 semi-gloss)	◎			
G design cover (all transparent)	○			——
F design cover Note 1 (special color coating)	△			
Cover with red needle (can be manufactured for B, G, and F designs)	○			

Remarks The B design cover is standard specification. The G and F design covers and covers with red needles can be manufactured if required.
Note 1. When ordering the F-design cover, please use F as the cover code and specify the color coating. Munsell 7.5BG 4/1.5 will be used for orders with no color coating specified.

●Cover codes

Cover specifications	Without red needle	With red needle
B design	B	BR*1
G design	G	GR
F design	F	FR

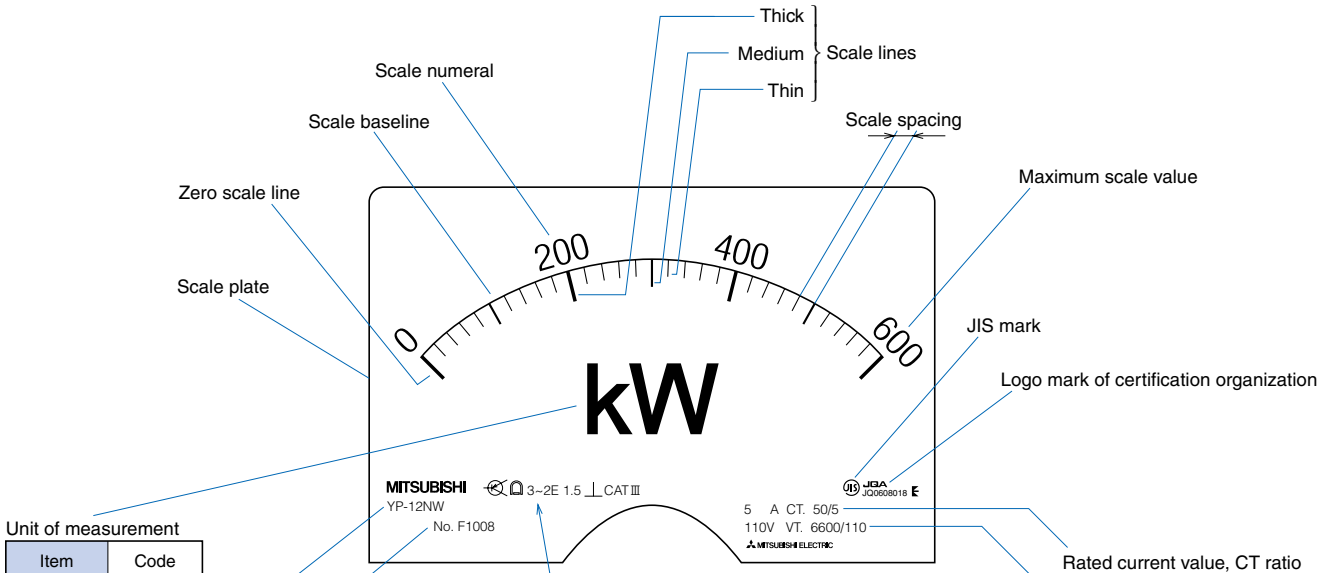
Remarks For the Y-N Series, a B cover with two red needles (BRR cover) can be manufactured depending on the model (please inquire for details).

●Accessories

Nuts for mounting screws are provided with all models. T-150 and other special accessories are indicated in the specification columns of the respective indicator types.

Common Specifications

■Scale plate components and items indicated



Item	Code
Ampere	A
Volt	V
Watt	W
Var	var
Power factor	cos ϕ or cos ψ
Hertz	Hz
Prefix	
Mega 10^6	M
Kilo 10^3	k
Milli 10^{-3}	m

3~2E 1.5 ⊥ CAT Ⅲ

Auxiliary symbols

Item	Symbol
Shunt	
Serial resistor	R
Accessory	

Operation principle

Item	Symbol
Permanent magnet/movable coil	
Movable iron core	
Bimetal	
Electronic device in measurement circuit	
Electronic device in auxiliary circuit	
Rectifier	

Type of measurement and number of elements measured

Item	Symbol
DC circuit	⎓
AC circuit	~
3-phase AC circuit	3~
Single element for 3-wire circuit	3~1E
Two elements for unbalanced load 3-wire circuit	3~2E
Two elements for unbalanced load 4-wire circuit	3N~2E
Three elements for unbalanced load 4-wire circuit	3N~3E

Accuracy class

Class index	Code
Class 0.5	0.5
Class 1	1
Class 1.5	1.5
Class 2.5	2.5
Class 5	5
Class 1.5 in the case where the base value corresponds to the span	|1.5|
Class 2.5 in the case where the base value corresponds to the span	|2.5|

Mounting attitude

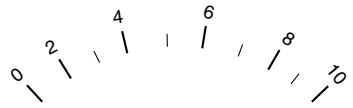
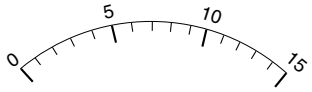
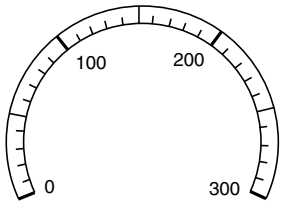
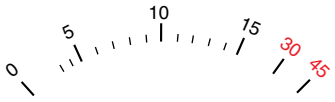
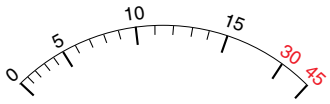
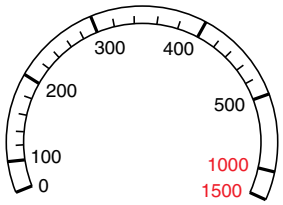
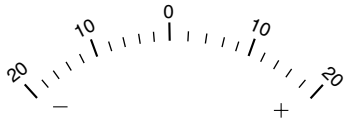
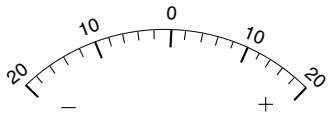
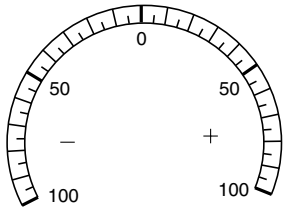
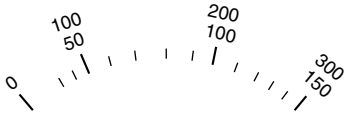
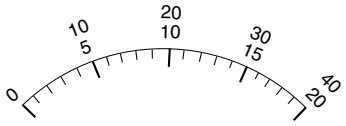
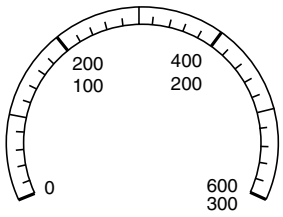
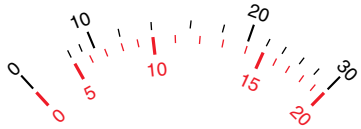
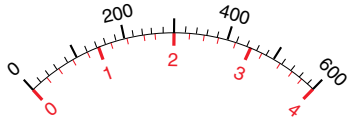
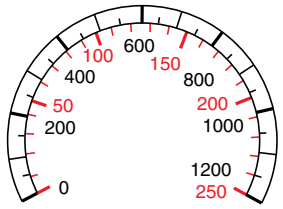
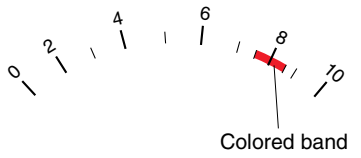
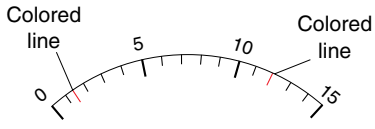
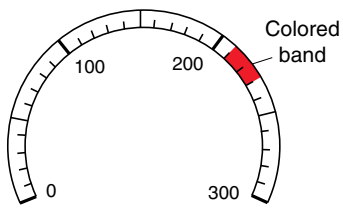
Item	Symbol
Instrument used with scale plate set vertically	⊥
Instrument used with scale plate set horizontally	⌐
Instrument used with scale plate set at a position inclined from the horizontal surface (example: 60°)	∠60°

Measurement category

Classification	Code
Measurement category Ⅲ	CAT Ⅲ

■Scale plate indications

The following tables show the scales, including numerals, colored lines, bands and colors, used as standard specifications.
Red, blue, green and yellow are used for the colored lines/bands.

	Y-2N Series	Y-N Series	L-N Series
Standard scale			
Expanded scale (expanded by 3 times)			
Positive/ Negative scale			
Single scale with double stamp			
Double scale with double stamp			
Colored lines Colored bands			

Remarks (1) See the “Standard Scale Diagrams” on pp.31 to 34 regarding the scale division with respect to the maximum scale value.
(2) Special scales can also be manufactured.