

# SWITCHBOARD INSTRUMENTS

## 2100A SERIES



**YOKOGAWA founded in 1915 is a world leader in the field of indicating & measuring instruments and industrial control instrumentation.**



**Yokogawa Meters & Instruments Corporation**



**Suzhou Yokogawa Meter Company**

**Yokogawa started its business with analog meters and products have been widely used at various customers such as industries, power plants, research laboratories and schools, etc. Through more than 90 years of analog meters manufacturing, Yokogawa provides you with high quality products with reliable trademark.**

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# Usage Precautions

## Safety instructions for Panel meters



### Warning

Indicates usage precautions that must be read to ensure the safety of users and the equipment.

### 1. Usage environment and conditions

Do not use YOKOGAWA panel meters in locations such as the following:

- Locations where the ambient temperature is outside the range of 0 to 40°C
- Locations where relative humidity is outside the range of 25 to 80%
- Locations subject to vibrations or shock impact
- Locations subject to rain, dripping water, or direct sunlight
- Locations exposed to large amounts of dust, salt, soot, or corrosive gases (sulfurous acid gas, ammonia gas, hydrogen sulfide gas, or other gases that corrode metals or plastics)
- Locations subject to strong external noise or electromagnetic waves
- Locations subject to large amounts of static electricity
- Locations subject to large amounts of high frequencies and waveform distortion (e.g., from inverters or thyristor circuits)

### 2. Mounting method

Adhere to safety rules at the construction, maintenance and inspection

- Check the appearance of the packing box and panel meters and confirm that there is no damage.
- Use the metal for mounting panel and ground it.
- If necessary, combine with washers and others and fasten, in the case of panel boards and switchboards are thin.
- Fasten nuts of mounting on boards to the proper torque for the size of screw being used with the proper tool.

Recommended tightening torque : M3 screws - 0.6N·m  
M4 screws - 1.2N·m  
M5 screws - 2.0N·m

### 3. Wiring

Adhere to the following rules when connecting the wires:

- When connecting an instrument with accessories, first make sure none of the wires are live.
- When connecting main power directly, install and use the proper fuse.
- The connector terminals on the wires should be appropriate for the electricity load and terminal size.
- Connect the wires properly as illustrated in the wiring diagrams of catalogs or on product labels.
- Attach to terminal cover for safety.
- Fasten terminal screws to the proper torque for the size of screw being used with the proper tool.

Recommended tightening torque : M3 screws - 0.6N·m  
M4 screws - 1.2N·m  
M5 screws - 2.0N·m

- Instruments that are combined with current transformers (CT) should be properly connected to the secondary side of the CT. Improper connection may result in a CT failure, burned components, or a fire. When the secondary side of a CT is disconnected, especially

while the primary side is powered, the secondary side terminal will carry a high voltage which could result in electrical shock. Therefore, the secondary side should be short-circuited before the instrument is disconnected.

### 4. Usage precautions

- Use the instruments at the front of mounting panel.
- Never touch the inside of mounting panel.
- Use the instrument within the rated specifications. Failure to do so can cause the equipment to malfunction or result in a failure.
- While the power is on, do not touch any terminals or open the cover or case.
- The current transformer emits heat while powered, so do not touch it.

### 5. What to do if the equipment functions abnormally or fails

- If you notice abnormal heating, or a strange odor, noises, or smoking or if the equipment seems to have failed, immediately take steps such as cutting off the input. Next, contact your YOKOGAWA sales office.

### 6. Maintenance and inspection

To ensure that your instrument operates properly, perform the following checks on a regular basis:

- Check for damage to the instrument or accessories due to heating or other factors.
- Check for loose attachments or screws (always turn off the power before doing this to ensure safety).
- The instrument covers have been coated with an antistatic agent to block static electricity. Gently wipe dirt off the cover surfaces with a soft, dry cloth. Do not use a wet cloth as this will reduce the effects of the antistatic coating. Do not allow cloths made from synthetic materials to contact the cover for an extended period of time, and do not use benzene, paint thinner, or similar substances. Doing so may cause the cover to become deformed, discolor it, or cause cracking.
- If the indicator reading becomes unstable due to static electricity, coat the front and back of the cover with a commercially available antistatic agent.
- Instrument service life will vary according to usage conditions. In general, however, we recommend replacing the instrument after about 10 years of use.

### 7. Disposal of product

- Panel meters do not contain batteries.
- Dispose of panel meters as general industrial waste.

### 8. For aluminum electrolytic capacitors

Frequency meters use aluminum electrolytic capacitors. The lifetime of aluminum electrolytic capacitors are around 10 years when ambient temperatures are 23°C. If aluminum electrolytic capacitors run down and meters are damaged, replace new frequency meters.

# SWITCHBOARD INSTRUMENTS

Yokogawa offers a complete line of switchboard instruments to meet your every needs.

Model are available 110 mm and 80 mm square size 250° to measure all electrical quantities.

All switchboard instruments in the series feature rugged, friction free and shock resistant taut-band suspension elements.

All model of AC instruments except 80 mm size wattmeters and varmeters are self-contained transducer needless external transducer boxes.

The built-in transducer system offer many advantages including low cost, linear scales, greatly reduced volt-ampere loss.

Yokogawa switchboard instruments offer a variety Models, such as from single phase to three phase four wire instruments, as well as model for balanced and unbalanced circuits. All instruments except synchroscope are complied with JIS C 1102.



Type 2101A to 2109A

110 mm square size switchboard instruments Series. Plastic case with safety terminal protection cover.

## Features

- RMS rectifier type AC instruments
- Platform scale --- No shadow on scale and readable, even from sharp angles
- Interchangeable scales save time
- Easy to read linear scales and wide deflection angles
- Taut-Band suspension --- eliminate friction and protects against shock
- Uni-framable case and terminal board
- Provide terminal protect cover for safety



Type 2181A to 2188A

80 mm square size miniature switchboard instruments series high space utility.

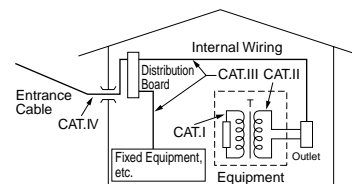
## Specifications

In accordance with Japan Industrial Standard JIS C 1102: 2007


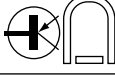

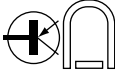
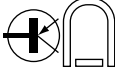
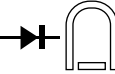
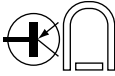
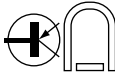
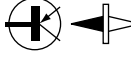
- Accuracy ----- See next page
- Full Scale Deflection Angle ----- 250°(360° for Synchroscope)
- Full Scale Length ----- Approx. 196mm (7.7") for 110mm SQ  
140mm (5.5") for 80mm SQ
- Position of Use ----- Vertical (Scale)
- Pointer ----- Lance type Pointer, Black
- Operating Temperature Range ----- 0 to 40 °C
- Operating Humidity Range ----- 25 to 80 %RH
- Storage Temperature Range ----- -10 to 50°C
- Storage Humidity Range ----- 25 to 80 %RH
- Dielectric Strength ----- Between electrical circuit and the case: 3320V AC for 5 seconds  
Between current circuit and voltage circuit: 2600V AC for 5 seconds  
For Wattmeters, Varmeters and Power factormeters (2000V AC for 2185A, 2186A and 2187A)
- Insulation Resistance ----- More than 10 MΩ/500V DC between electrical circuit and the case, current circuit and voltage circuit.  
More than 5MΩ/500V DC between current circuit and voltage circuit.  
For Wattmeters, Varmeters and Power factormeters
- Safety Requirements ----- Structural requirements are in accordance with JIS C 1010 for safety of voltage test, insulation and other.  
Reinforced insulation, between electrical circuit and case  
Indoors, Altitudes up to 2000m, Pollution degree 2  
Measurement category III  
(Measurement category is not applied for non- JIS products.)  
Maximum working voltage:600V

Measurement Category

Measurement Category	Description	Remarks
CAT.I	For measurements performed on circuits not directly connected to MAINS.	
CAT.II	For measurements performed on circuits directly connected to the low voltage installation.	Appliances, portable equipments, etc.
CAT.III	For measurements performed in the building where distribution panels and circuit breaker, etc are installed.	Distribution board, circuit breaker, etc.
CAT.IV	For measurements performed at the source of the low-voltage installation.	Overhead wire, cable systems, etc.



# SWITCHBOARD INSTRUMENTS LINE UP

Name		Operating Principle	Symbol	Accuracy	Model	
					110mm SQ	80mm SQ
DC AMMETERS / VOLTMETERS		Moving coil type		1.5	2101A30	2181A00
DC SUPPRESSED METERS					2101A35,36,37	2181A35,36,37
AC AMMETERS / VOLTMETERS		RMS rectifier type		1.5	2102A30	2182A00
		Mean rectifier type		2.5	2102A31	2182A01
WATTMETERS	Single phase 2-wire	Feedback time division multiplier type		1.5	2105A31	2185A31(*1)
	Single phase 3-wire				2105A32	2185A32(*1)
	3-phase 3-wire (Unbalanced)				2105A35	2185A35(*1)
	3-phase 4-wire (Balanced)				2105A34	2185A34(*1)
	3-phase 4-wire (Unbalanced)				2105A36	2185A36(*1)
VARMETERS	Single phase 2-wire	Feedback time division multiplier type		1.5	2106A31	2186A31(*1)
	3-phase 3-wire (Balanced)				2106A33	2186A33(*1)
	3-phase 3-wire (Unbalanced)				2106A35	2186A35(*1)
	3-phase 4-wire (Balanced)				2106A34	2186A34(*1)
	3-phase 4-wire (Unbalanced)				2106A36	2186A36(*1)
POWER FACTOR METERS	Single phase 2-wire	Phase deflection type		5.0	2107A31	2187A31
	3-phase 3-wire (Balanced)				2107A33	2187A33
	3-phase 3-wire (Unbalanced)	Feedback time division multiplier type			2107A35	2187A35(*1)
	3-phase 4-wire (Unbalanced)				2107A36	2187A36(*1)
FREQUENCY METERS		Differential type		0.5 1.0	2108A30	2188A30
SYNCHRO-SCOPE (*2)	Single phase	Moving Magnet type		2.5	2109A30	—
	3-phase					

Note:

\*1: Attached external transducer box.

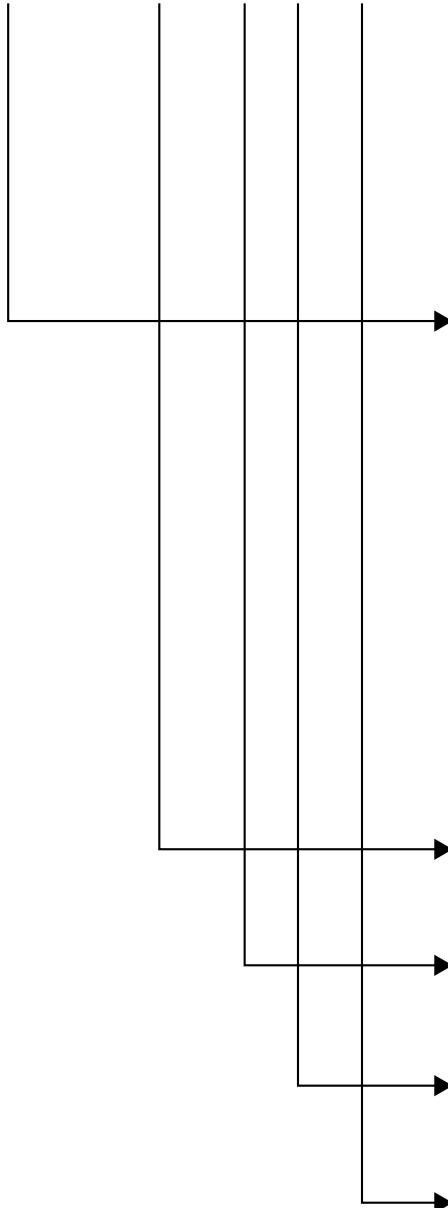
\*2: not complied with JIS standard.

# KEY TO SWITCHBOARD NUMBERING SYSTEM

[Model/Suffix Code]

21□□(A)□□ - □□□□ - □ - L - □□

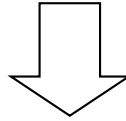
\* Specify Full scale value and Unit



Model		
110 SQUARE	80 SQUARE	
2101A 30	2181A 00	DC AMMETERS,DC VOLTMETERS
2101A 35 36 37	2181A 35 36 37	DC AMMETERS ,VOLTMETERS SUPPRESSED METER
2102A 30	2182A 00	AC AMMETERS ,VOLTMETERS RMS rectifier type
2102A 31	2182A 01	AC AMMETERS ,VOLTMETERS Mean rectifier type
2105A 31 32 34 35 36	2185A 31 32 34 35 36	WATTMETERS
2106A 31 33 34 35 36	2186A 31 33 34 35 36	VARMETERS
2107A 31 33 35 36	2187A 31 33 35 36	POWER FACTOR METERS
2108A 30	2188A 30	FREQUENCY METERS
2109 31 33		SYNCHROSCOPE
<b>Rating</b>		
Refer to Suffix Code		
<b>Designation of Frequency Used</b>		
N	Always "N" or 50/60Hz Common	
A	50Hz	
B	60Hz	
C	400Hz	
<b>Pointer</b>		
L	Lance type pointer	
<b>Cover color and Set pointer</b>		
BL	Munsell N1.5	
BG	Munsell 7.5BG4/1.5	
BS	Munsell N1.5 with Set pointer (red color)	
GS	Munsell 7.5BG4/1.5 with Set pointer (red color)	

**[EX.]**

Model	Rating	Full scale value and Unit	Designation of Frequency Used	Pointer	Cover color and Set pointer
110 SQUARE AC AMMETERS	0 to 5A	0 to 100A	50/60Hz Common	Lance type pointer	Munsell N1.5



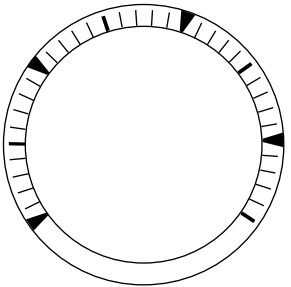
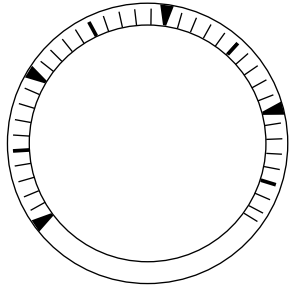
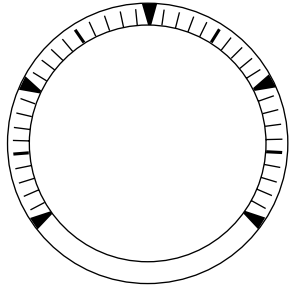
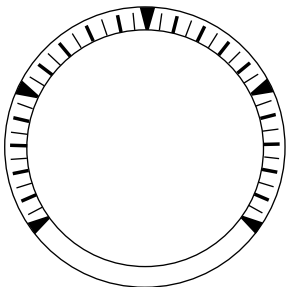
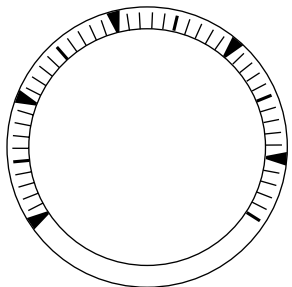
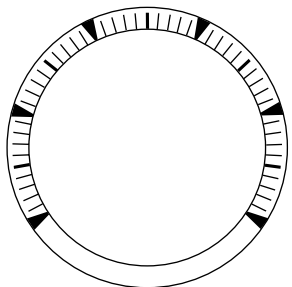
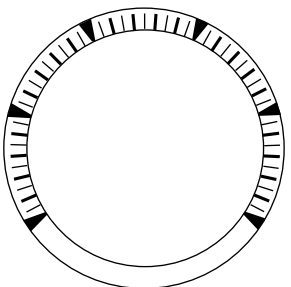
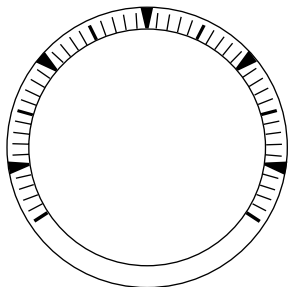
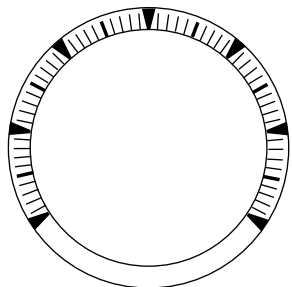
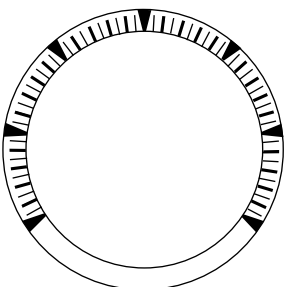
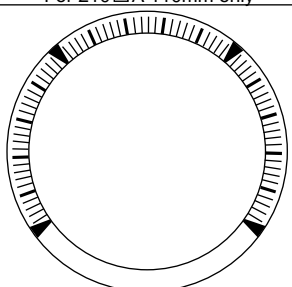
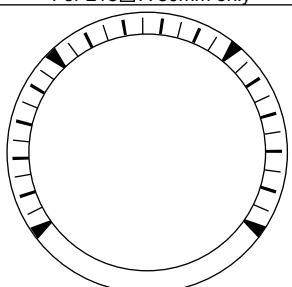
<b>2102A30-A42-N-L-BL</b>	<b>0 to 100A</b>
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## ACCESSORIES AND PARTS

Model		Descriptions	
Standard Scale Plate		219900	1set (Specify Model and suffix codes, Full scale value and unit,VT ratio and CT ratio) EX.: 2101A36-AHE-N-L-BL 0 to 250kPa
Blank Scale Plate (With YOKOGAWA mark)		219900/001	1set (Specify Model and suffix codes, and Blank scale) EX.: 2101A36-AHE-N-L-BL Blank scale
110 SQUARE	Cover	(Black)	219930-11 1 pce
		(Blue Green)	219930-12 1 pce
	Cover with Set pointer	(Black)	219930-13 1 pce (Set pointer is red)
		(Blue Green)	219930-14 1 pce (Set pointer is red)
80 SQUARE	Cover	(Black)	219930-31 1 pce
		(Blue Green)	219930-32 1 pce
	Cover with Set pointer	(Black)	219930-33 1 pce (Set pointer is red)
		(Blue Green)	219930-34 1 pce (Set pointer is red)
Terminal Cover (6 Terminal)		219930-22	10 sheets (up side)
Terminal Cover (5 Terminal)		219930-21	10 sheets (down side)
Terminal Cover (3 Terminal):(For 80 SQUARE)		219930-23	10 sheets
Shunt lead		219930-24	Round Resits 0.05Ω less, For M4 terminal, 1.5m 1set

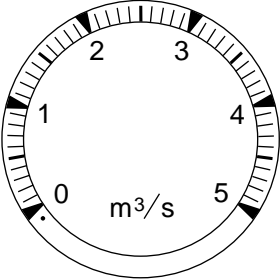
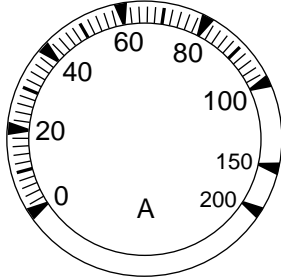
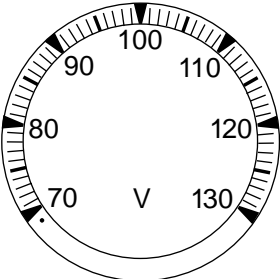
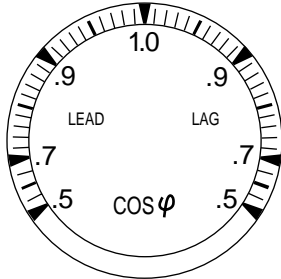
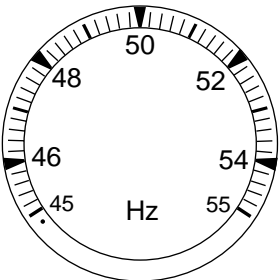
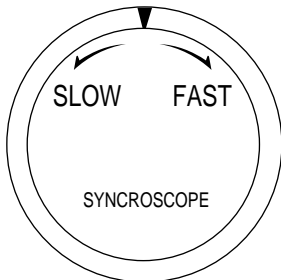
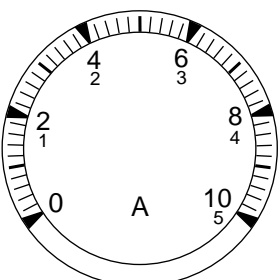
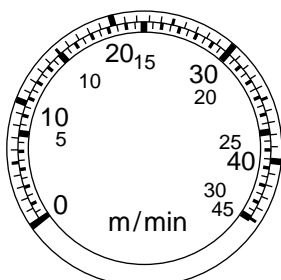


# SCALE FORMS AND DIVISIONS

Maximum scale value	Divisions	Maximum scale value	Divisions	Maximum scale value	Divisions
3.5 35 350 3500	35 Division 	7.5 75 750 7500	37.5 Division 	4 40 400 4000	40 Division A 
				8 80 800 8000 ±2 ±20 ±200 ±2000 ±4 ±40 ±400 ±4000	
2 20 200 2000	40 Division B 	4.5 45 450 4500	45 Division 	1 10 100 1000	50 Division A 
				±1 ±10 ±100 ±1000	
2.5 25 250 2500	50 Division B 	±2.5 ±25 ±250 ±2500	50 Division C 	1.2 12 120 1200	60 Division A 
				±5 ±50 ±500 ±5000	
3 30 300 3000	60 Division B 	1.5 15 150 1500	75 Division For 210□A 110mm only 	6 60 600 6000	30 Division For 218□A 80mm only 
				±3 ±30 ±300 ±3000 ±6 ±60 ±600 ±6000	
±1.5 ±15 ±150 ±1500				1.5 15 150 1500	

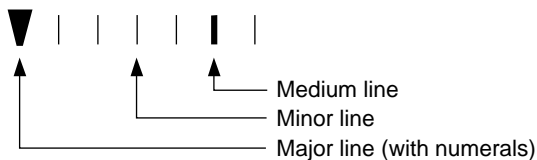
- Note
1. This standard scale divisions are applied to 2101A, 2102A, 2105A, 2106A, 2181A, 2182A, 2185A and 2186A.
  2. Numerals are indicated to the major line (▼).
  3. All scales divisions are linear distribution.
  4. To be applied this standard scale division, when specify special maximum value.
    - not standard maximum scale value (Ex.) 2300 --- 46 divisions
    - minimum scale value are not zero (Ex.) 50 to 100 --- 50 divisions

# SCALE FORMS AND DIVISIONS

<p>For Suppressed meter 2101A, 2181A</p>		<p>Extended scale Ammeters 2102A, 2182A (Ex.)100A 2 times</p> <p>Red line and numerals for extended portion (Ex. 2 Times 150 and 200A) 3 Times -- 2 and 3 Times 5 Times -- 3 and 5 Times</p>	
<p>For Expanded scale 2102A, 2182A voltmeter</p> <p>Ex. 70 to 130V=245°</p>		<p>For Power Factor meter 2107A, 2187A</p>	
<p>For Frequency meter 2108A, 2188A</p> <p>Ex. 45 to 55Hz</p>		<p>For Synchroscope 2109A</p>	
<p>Single division/Double numerals Ex. 0 to 5/0 to 10A (50 Div.) All div.line and numerals are black. Size of numerals are different high. Apply same division only.</p>		<p>Double division/Double numerals Ex.0 to 300/0 to 450 m/min (60 Div./45 Div.) Outer -- Black line and numerals Inner -- Red line and numerals</p>	

## Kinds of division lines

### 1. Kinds of division lines

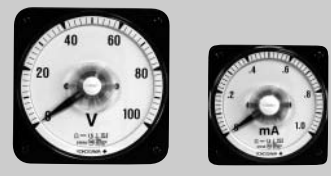


### 2. 3 characters, standard.

EX. (1) 1200V → 1.2kV

(2) 20000rpm → 20 × 1000rpm

# 2101A/2181A



## DC AMMETERS

Model	Suffix Codes	Descriptions	
2101A 30		110 SQUARE	Class 1.5
2181A 00		80 SQUARE	Class 1.5
Rating	-AEG	0 to 300 microA	(Approx. Internal Resistance : 1,050 ohm)
	-AEM	0 to 500 microA	(Approx. Internal Resistance : 630 ohm)
	-AFA	0 to 1mA	(Approx. Internal Resistance : 185 ohm)
	-AFN	0 to 3mA	(Approx. Internal Resistance : 17 ohm)
	-AFX	0 to 5mA	(Approx. Internal Resistance : 10 ohm)
	-AGZ	0 to 10mA	(Voltage Drop : 50mV)
	-AHM	0 to 30mA	
	-AHY	0 to 50mA	
	-AJR	0 to 100mA	
	-AKG	0 to 300mA	
	-AKM	0 to 500mA	
	-ALA	0 to 1A	
	-ALC	0 to 1.5A	
	-ALE	0 to 2A	
	-ALJ	0 to 3A	
-ALS	0 to 5A		
-AMF	0 to 7.5A		
-AMT	0 to 10A		
-AND	0 to 15A		
-ANG	0 to 20A		
-ANL	0 to 30A		
-A00	0 to (300 microA to 1A), Optional intermediate rating		
-D00	-a to 0 to +b where a or less 72% × (a+b), a+b=1mA to 2A For zero-center and similar scale meter		
-A01	0 to 50mV, For external shunt use		
-A04	0 to 60mV	Specify scale range (No shunt is manufactured)	
-A05	0 to 100mV		
-D00	-a to 0 to +b (b=50mV) where a or less 50mV, For zero-center and similar scale meter		
-A06	0 to 50mV, Meter with VR, 0 to 2 ohm Variable		
Designation of Frequency Used	-N	Always "-N"	
Pointer	-L	Lance type pointer (Black), Always "-L"	
Cover color and Set pointer	-BL	Munsell N1.5	
	-BG	Munsell 7.5BG4/1.5	
	-BS	Munsell N1.5 with Set pointer (red color)	
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)	

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) For suffix code A00 or D00, specify rating and full scale value.

### Notes :

- (1) Scale other than Yokogawa' standard format will be special order.
- (2) For each meter with the rating of 50mV,60mV or 100mV, one-pair(1.5m) of shunt leads are supplied.
- (3) External shunts are not supplied.

## DC VOLTMETERS

Model	Suffix Codes	Descriptions		
2101A 30		110 SQUARE	Class 1.5	
2181A 00		80 SQUARE	Class 1.5	
Rating	-VLA -VLJ -VLS -VMT -VNL -VNT -VPK -VRX -VSF -VSJ -V00	0 to 1V 0 to 3V 0 to 5V 0 to 10V 0 to 30V 0 to 50V 0 to 100V 0 to 300V 0 to 500V 0 to 600V 0 to (50mV to 600V), Optional intermediate rating	(Current Consumption : 1mA), Where less than 1V : 2mA	
	-V07	0 to (1V to 300V),		Current Consumption : 300 microA
	-V08	Optional full scale value		Current Consumption : 500 microA
	-E00	-a to 0 to +b where a or less $72\% \times (a+b)$ , $a+b=100mV$ to 600V For zero-center and similar scale meter		
	-E00*	-a to 0 to +b (b=1mA) where a or less 1mA, For zero-center and similar scale meter		
	-V01*	0 to 1mA For external multiplier		
	-V11	0 to (10V to 300V) Optional intermediate rating, Voltmeter with VR, (Current Consumption : 1mA), $\pm 25\%$ Variable		
Designation of Frequency Used	-N	Always "-N"		
Pointer	-L	Lance type pointer (Black), Always "-L"		
Cover color and Set pointer	-BL	Munsell N1.5		
	-BG	Munsell 7.5BG4/1.5		
	-BS	Munsell N1.5 with Set pointer (red color)		
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)		

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) For suffix code E00,V00,V07,V08 or V11, specify rating and full scale value.

### Notes :

- (1) Scale other than Yokogawa' standard format will be special order.
- (2) External multiplier are not supplied.
- (3) \*: For non- JIS products.

## DC AMMETERS ,VOLTMETERS SUPPRESSED METER

Model	Suffix Codes	Descriptions	
2101A		110 SQUARE	Class 1.5
2181A		80 SQUARE	Class 1.5
Rating	35 -AHX 36 -AHE 37 -VLR	10 to 50mA DC, General type 4 to 20mA DC, General type 1to 5V DC, General type	(Approx. Internal Resistance : 13 ohm) (Approx. Internal Resistance : 6 ohm) (Approx. Internal Resistance : 4k ohm)
Designation of Frequency Used	-N	Always "-N"	
Pointer	-L	Lance type pointer (Black), Always "-L"	
Cover color and Set pointer	-BL	Munsell N1.5	
	-BG	Munsell 7.5BG4/1.5	
	-BS	Munsell N1.5 with Set pointer (red color)	
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)	

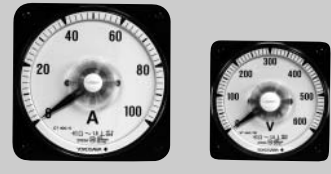
### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) Specify TagNO., if necessary.

### Notes :

- (1) Special unit symbol is available to suppressed meters.  
Standard symbol is small letter.  
Specify "Capital letter", if necessary.  
EX.: M/MIN,TON,etc.
- (2) Scale other than Yokogawa' standard format will be special order.

# 2102A/2182A



## AC AMMETERS, VOLTMETERS RMS rectifier type

Model	Suffix Codes	Descriptions	
2102A 30		110 SQUARE	Class 1.5
2182A 00		80 SQUARE	Class 1.5
Rating	-ALA -ALJ -ALS -AMT -ANL -A00 -A41 -A42 -A21 -A22 -A25 -A26 -A32 -A34 -A35 -A36 -A52 -A55 -A43 -A44 -A45 -A46 -A47 -A48	0 to 1A 0 to 3A 0 to 5A 0 to 10A 0 to 30A 0 to (1A to 30A) Optional intermediate rating 0 to 1A 0 to 5A 0 to 0.5 to 1 A 0 to 1 to 2 A 0 to 5 to 10A 0 to 10 to 20 A 0 to 1 to 3 A 0 to 3 to 9A 0 to 5 to 15 A 0 to 10 to 30A 0 to 1 to 5A 0 to 5 to 25A 0 to 1 to 2A 0 to 5 to 10A 0 to 1 to 3A 0 to 5 to 15A 0 to 1 to 5A 0 to 5 to 25A	(For external CT) Two-fold extended Three-fold extended Five-fold extended Two-fold extended (For external CT) Three-fold extended (For external CT) Five-fold extended (For external CT)
	-VNT -VPK -VPZ -VRX -VSJ -V00 -V12 -V13 -V20 -V21	0 to 50V 0 to 100V 0 to 150V 0 to 300V 0 to 600V 0 to (50V to 600V), Optional intermediate rating 0 to 150V For use with external VT 0 to 150/√3V For use with external VT Expanded scale 70 to 130V Expanded scale 140 to 260V	(Power Consumption : 0.1VA) (Power Consumption : 0.6VA) (Power Consumption : 0.9VA) (Power Consumption : 1.8VA) (Power Consumption : 1.2VA) (Power Consumption : 0.9VA) (Power Consumption : 0.2VA) (Power Consumption : 0.5VA) (Power Consumption : 1.0VA)
Designation of Frequency Used	-N -C	50/60Hz Common 400Hz	
Pointer	-L	Lance type pointer (Black), Always "-L"	
Cover color and Set pointer	-BL -BG -BS -GS	Munsell N1.5 Munsell 7.5BG4/1.5 Munsell N1.5 with Set pointer (red color) Munsell 7.5BG4/1.5 with Set pointer (red color)	

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) For suffix code A00 or V00, specify rating and full scale value.
- (4) VT ratio and CT ratio

### Notes :

VT and CT are not supplied.

# AC AMMETERS, VOLTMETERS

## Mean rectifier type

Model	Suffix Codes	Descriptions	
2102A 31		110 SQUARE	Class 2.5
2182A 01		80 SQUARE	Class 2.5
Rating	-AEG -AEM -AFA -AFN -AFX -AGZ -AHM -AHY -AJR -AKG -AKM -A00	300 microA 500 microA 0 to 1mA 0 to 3mA 0 to 5mA 0 to 10mA 0 to 30mA 0 to 50mA 0 to 100mA 0 to 300mA 0 to 500mA 0 to (300 microA to 500mA) Optional intermediate rating	(Voltage Drop : 3V)
	-VLJ -VLS -VMT -VNL -VNT -VPK -VPZ -VRX -VSJ -V00  -V11  -V12  -V13	0 to 3V 0 to 5V 0 to 10V 0 to 30V 0 to 50V 0 to 100V 0 to 150V 0 to 300V 0 to 600V 0 to (3V to 600V) Optional intermediate rating  0 to (10V to 300V) Optiona intermediate rating, Voltmeter with VR  0 to 150V (For external VT use)  0 to 150 $\sqrt{3}$ V (For external VT use)	
Designation of	-N -C	50/60Hz Common 400Hz	
Frequency Used	-L	Lance type pointer (Black), Always "-L"	
Pointer	-BL	Munsell N1.5	
Cover color and Set pointer	-BG	Munsell 7.5BG4/1.5	
	-BS	Munsell N1.5 with Set pointer (red color)	
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)	

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) For suffix code A00, V00 or V11, specify rating and full scale value.
- (4) VT ratio and CT ratio

### Notes :

VT and CT are not supplied.

# 2105A/2185A



## WATTMETERS

Model	Suffix Codes	Descriptions	
2105A 31		Single phase 2-wire	110 SQUARE
2105A 32		Single phase 3-wire	
2105A 35		3-phase 3-wire (Unbalanced)	
2105A 34		3-phase 4-wire (Balanced)	
2105A 36		3-phase 4-wire (Unbalanced)	
2185A 31		Single phase 2-wire	80 SQUARE With external transducer
2185A 32		Single phase 3-wire	
2185A 35		3-phase 3-wire (Unbalanced)	
2185A 34		3-phase 4-wire (Balanced)	
2185A 36		3-phase 4-wire (Unbalanced)	
Rating (Zero-left)	-W13	110V/1A	Single phase 2-wire
	-W14	110V/5A	
	-W15	220V/1A	
	-W16	220V/5A	
	-W19	110/220V 1A	Single phase 3-wire
	-W20	110/220V 5A	
	-W21	220/440V 1A	
	-W22	220/440V 5A	
	-W13	110V/1A	3-phase 3-wire
	-W14	110V/5A	
	-W15	220V/1A	
	-W16	220V/5A	
	-W11	110/√3V 1A	3-phase 4-wire
	-W12	110/√3V 5A	
	-W17	220/√3V 1A	
	-W18	220/√3V 5A	
	-W51	100V/1A	Semi-standard meters For 21□5A31,35
	-W52	100V/5A	
	-W53	115V/1A	
	-W54	115V/5A	
-W55	120V/1A		
-W56	120V/5A		
-W61	200V/1A		
-W62	200V/5A		
-W63	230V/1A		
-W64	230V/5A		
-W65	240V/1A		
-W66	240V/5A		
(Off-center)	-S13	110V/1A	Zero-center and similar scale Scale : -a W to 0 to +b W where a ≤ b
	-S14	110V/5A	
	-S15	220V/1A	
	-S16	220V/5A	
	-S13	110V/1A	For calibration power range : The "+b" side is the same as its standard power where a ≤ b
	-S14	110V/5A	
	-S15	220V/1A	
	-S16	220V/5A	
	-S53	115V/1A	3-phase 3-wire
	-S54	115V/5A	
	-S11	110/√3V 1A	
	-S12	110/√3V 5A	
-S17	220/√3V 1A	3-phase 4-wire	
-S18	220/√3V 5A		
Designation of Frequency Used	-N -C	50/60Hz Common 400Hz	
Pointer	-L	Lance type pointer (Black), Always "-L"	
Cover color and Set pointer	-BL	Munsell N1.5	
	-BG	Munsell 7.5BG4/1.5	
	-BS	Munsell N1.5 with Set pointer (red color)	
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)	

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) In case of using external CT/or VT, calculate the possible full scale value form the following page and be sure that is within the range shown above.
- (4) VT ratio and CT ratio

### Notes :

VT and CT are not supplied.

# WATTMETERS

## [Available Calibration Watts]

Standard Rating			Available Calibration Watts			
VOLTAGE	Operating voltage range	CURRENT	Single phase 2-wire	Single phase 3-wire	3-phase 3-wire	3-phase 4-wire
110/√3V	52 to 75V	1A	48 to 80W	-	-	125 to 285W
		5A	240 to 400W	-	-	625 to 1400W
110V 115V 120V	90 to 130V	1A	72 to 164W	145 to 330W	125 to 285W	-
		5A	360 to 820W	715 to 1650W	625 to 1400W	-
220/√3V	104 to 150V	1A	-	-	-	250 to 570W
		5A	-	-	-	1250 to 2850W
200V 220V 240V	180 to 260V	1A	144 to 328W	290 to 660W	250 to 570W	-
		5A	720 to 1640W	1430 to 3300W	1250 to 2850W	-

(1) Calibration Watts are 65 to 150%. Standard Watts beyond the limits are not available.

Single phase 2-wire: Standard Watts = Voltage Rating × Current Rating

Single phase 3-wire: Standard Watts = 2 × Voltage Rating (P1-N) × Current Rating

3-phase 3-wire: Standard Watts =  $\sqrt{3}$  × Line Voltage Rating × Current Rating

3-phase 4-wire: Standard Watts = 3 × Phase Voltage Rating × Current Rating

(2) When using VT and CT, Calibration watts will be as follows;

$$\text{Caribration watts} = \frac{\text{MAX.Full scale value}}{(\text{VT ratio}) \times (\text{CT ratio})}$$

	Connection	Full scale value	VT ratio	CT ratio	Calibration watts
EX.1	3-phase 3-wire	20kW	440/110V	30/5A	$FS = \frac{20kW}{440/110 \times 30/5} = 833.3W$ Available
EX.2	Single phase 2-wire	7.5kW	660/110V	20/5A	$FS = \frac{7.5kW}{660/110 \times 20/5} = 312W$ Special order with TOKUCHU sheet



# Available Calibration Watts

## WATTMETERS

Single-Phase 2-Wire      =W,  
 Single-Phase 3-Wire      =kW,  
 =MW

Wiring	Single-Phase 2-Wire					Single-Phase 3-Wire					
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
CT	—	—	—	—	—	—	—	—	—	—	—
10A/5A	720 ~ 1640	1440 ~ 3280	2880 ~ 6560	7.2 ~ 16.4	14.4 ~ 32.8	21.6 ~ 49.2	43.2 ~ 98.4	72 ~ 164	144 ~ 328	216 ~ 492	432 ~ 984
15A/5A	1080 ~ 2460	2160 ~ 4920	4320 ~ 9940	10.8 ~ 24.6	21.6 ~ 49.2	32.4 ~ 73.8	64.8 ~ 147.6	108 ~ 246	216 ~ 492	324 ~ 738	648 ~ 1476
20A/5A	1440 ~ 3280	2880 ~ 6560	576 ~ 1312	14.4 ~ 32.8	28.8 ~ 65.6	43.2 ~ 98.4	86.4 ~ 196.8	144 ~ 328	288 ~ 656	432 ~ 984	864 ~ 1968
30A/5A	2160 ~ 4920	4320 ~ 9940	8.64 ~ 19.68	21.6 ~ 49.2	43.2 ~ 98.4	64.8 ~ 147.6	129.6 ~ 295.2	216 ~ 492	432 ~ 984	648 ~ 1476	1296 ~ 2952
50A/5A	3600 ~ 8200	7.2 ~ 16.4	14.4 ~ 32.8	36 ~ 82	72 ~ 164	108 ~ 246	216 ~ 492	360 ~ 820	720 ~ 1640	1080 ~ 2460	2160 ~ 4920
60A/5A	4320 ~ 9940	8.64 ~ 19.68	17.28 ~ 39.36	43.2 ~ 98.4	86.4 ~ 196.8	129.6 ~ 295.2	259.2 ~ 590.4	432 ~ 984	864 ~ 1968	1296 ~ 2952	2592 ~ 5904
100A/5A	7.2 ~ 16.4	14.4 ~ 32.8	28.8 ~ 65.6	7.2 ~ 16.4	14.4 ~ 32.8	21.6 ~ 49.2	43.2 ~ 98.4	72 ~ 164	144 ~ 328	216 ~ 492	432 ~ 984
200A/5A	10.8 ~ 24.6	21.6 ~ 49.2	43.2 ~ 98.4	10.8 ~ 24.6	21.6 ~ 49.2	32.4 ~ 73.8	64.8 ~ 147.6	108 ~ 246	216 ~ 492	324 ~ 738	648 ~ 1476
500A/5A	18 ~ 41	36 ~ 82	72 ~ 164	180 ~ 410	360 ~ 820	540 ~ 1230	1080 ~ 2460	1800 ~ 4100	3600 ~ 8200	5400 ~ 12300	10800 ~ 24600
1000A/5A	21.6 ~ 49.2	43.2 ~ 98.4	86.4 ~ 196.8	216 ~ 492	432 ~ 984	648 ~ 1476	1296 ~ 2952	2160 ~ 4920	4320 ~ 9840	6480 ~ 14760	12960 ~ 29520
3000A/5A	36 ~ 82	72 ~ 164	144 ~ 328	360 ~ 820	720 ~ 1640	1080 ~ 2460	2160 ~ 4920	3600 ~ 8200	7200 ~ 16400	10800 ~ 24600	21600 ~ 49200
600A/5A	43.2 ~ 98.4	86.4 ~ 196.8	172.8 ~ 393.6	432 ~ 984	864 ~ 1968	1296 ~ 2952	2592 ~ 5904	4320 ~ 9840	8640 ~ 19680	12960 ~ 29520	25920 ~ 59040
750A/5A	54 ~ 123	108 ~ 246	216 ~ 492	540 ~ 1230	1080 ~ 2460	1620 ~ 3690	3240 ~ 7380	5400 ~ 12300	10800 ~ 24600	16200 ~ 36900	32400 ~ 73800
1000A/5A	72 ~ 164	144 ~ 328	288 ~ 656	720 ~ 1640	1440 ~ 3280	2160 ~ 4920	4320 ~ 9840	7200 ~ 16400	14400 ~ 32800	21600 ~ 49200	43200 ~ 98400
1500A/5A	108 ~ 246	216 ~ 492	432 ~ 984	1080 ~ 2460	2160 ~ 4920	3240 ~ 7380	6480 ~ 14760	10800 ~ 24600	21600 ~ 49200	32400 ~ 73800	64800 ~ 147600
2000A/5A	144 ~ 328	288 ~ 656	576 ~ 1312	1440 ~ 3280	2880 ~ 6560	4320 ~ 9840	8640 ~ 19680	14400 ~ 32800	28800 ~ 65600	43200 ~ 98400	86400 ~ 196800

## 3-Phase 3-Wire

Wiring	1100V					2200V					33000V					66000V				
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V	11000V	22000V	33000V	66000V	11000V	22000V	33000V	66000V	
CT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10A/5A	1250 ~ 2800	2500 ~ 5600	5 ~ 11.2	12.5 ~ 28	25 ~ 56	37.5 ~ 84	75 ~ 168	125 ~ 280	250 ~ 560	375 ~ 840	750 ~ 1680	1250 ~ 2800	2500 ~ 5600	3750 ~ 8400	7500 ~ 16800	12500 ~ 28000	25000 ~ 56000	37500 ~ 84000	75000 ~ 168000	
15A/5A	1875 ~ 4200	3750 ~ 8400	7.5 ~ 16.8	18.75 ~ 42	37.5 ~ 84	56.25 ~ 126	112.5 ~ 252	187.5 ~ 420	375 ~ 840	562.5 ~ 1260	1125 ~ 2520	1875 ~ 4200	3750 ~ 8400	5625 ~ 12600	11250 ~ 25200	18750 ~ 42000	37500 ~ 84000	56250 ~ 126000	112500 ~ 252000	
20A/5A	2500 ~ 5600	5 ~ 11.2	10 ~ 22.4	25 ~ 56	50 ~ 112	75 ~ 168	150 ~ 336	250 ~ 560	500 ~ 1120	750 ~ 1680	1500 ~ 3360	2500 ~ 5600	5000 ~ 11200	7500 ~ 16800	15000 ~ 33600	25000 ~ 56000	50000 ~ 112000	75000 ~ 168000	150000 ~ 336000	
30A/5A	3750 ~ 8400	15 ~ 33.6	15 ~ 33.6	37.5 ~ 84	75 ~ 168	112.5 ~ 252	225 ~ 504	375 ~ 840	750 ~ 1680	1125 ~ 2520	2250 ~ 5040	3750 ~ 8400	7500 ~ 16800	11250 ~ 25200	22500 ~ 50400	37500 ~ 84000	75000 ~ 168000	112500 ~ 252000	225000 ~ 504000	
50A/5A	6.25 ~ 14	12.5 ~ 28	25 ~ 56	62.5 ~ 140	125 ~ 280	187.5 ~ 420	375 ~ 840	625 ~ 1400	1250 ~ 2800	1875 ~ 4200	3750 ~ 8400	6250 ~ 14000	12500 ~ 28000	18750 ~ 42000	37500 ~ 84000	62500 ~ 140000	125000 ~ 280000	187500 ~ 420000	375000 ~ 840000	
60A/5A	7.5 ~ 16.8	15 ~ 33.6	30 ~ 67.2	75 ~ 168	150 ~ 336	225 ~ 504	450 ~ 1008	750 ~ 1680	1500 ~ 3360	2250 ~ 5040	4500 ~ 10080	7500 ~ 16800	15000 ~ 33600	22500 ~ 50400	45000 ~ 100800	75000 ~ 168000	150000 ~ 336000	225000 ~ 504000	450000 ~ 1008000	
100A/5A	12.5 ~ 28	25 ~ 56	50 ~ 112	125 ~ 280	250 ~ 560	375 ~ 840	750 ~ 1680	1250 ~ 2800	2500 ~ 5600	3750 ~ 8400	7500 ~ 16800	12500 ~ 28000	25000 ~ 56000	37500 ~ 84000	75000 ~ 168000	125000 ~ 280000	250000 ~ 560000	375000 ~ 840000	750000 ~ 1680000	
150A/5A	18.75 ~ 42	37.5 ~ 84	75 ~ 168	187.5 ~ 420	375 ~ 840	562.5 ~ 1260	1125 ~ 2520	1875 ~ 4200	3750 ~ 8400	5625 ~ 12600	11250 ~ 25200	18750 ~ 42000	37500 ~ 84000	56250 ~ 126000	112500 ~ 252000	187500 ~ 420000	375000 ~ 840000	562500 ~ 1260000	1125000 ~ 2520000	
250A/5A	25 ~ 56	50 ~ 112	100 ~ 224	250 ~ 560	500 ~ 1120	750 ~ 1680	1500 ~ 3360	2500 ~ 5600	5000 ~ 11200	7500 ~ 16800	15000 ~ 33600	25000 ~ 56000	50000 ~ 112000	75000 ~ 168000	150000 ~ 336000	250000 ~ 560000	500000 ~ 1120000	750000 ~ 1680000	1500000 ~ 3360000	
300A/5A	37.5 ~ 84	75 ~ 168	150 ~ 336	375 ~ 840	750 ~ 1680	1125 ~ 2520	2250 ~ 5040	3750 ~ 8400	7500 ~ 16800	11250 ~ 25200	22500 ~ 50400	37500 ~ 84000	75000 ~ 168000	112500 ~ 252000	225000 ~ 504000	375000 ~ 840000	750000 ~ 1680000	1125000 ~ 2520000	2250000 ~ 5040000	
500A/5A	62.5 ~ 140	125 ~ 280	250 ~ 560	625 ~ 1400	1250 ~ 2800	1875 ~ 4200	3750 ~ 8400	6250 ~ 14000	12500 ~ 28000	18750 ~ 42000	37500 ~ 84000	62500 ~ 140000	125000 ~ 280000	187500 ~ 420000	375000 ~ 840000	625000 ~ 1400000	1250000 ~ 2800000	1875000 ~ 4200000	3750000 ~ 8400000	
600A/5A	75 ~ 168	150 ~ 336	300 ~ 672	750 ~ 1680	1500 ~ 3360	2250 ~ 5040	4500 ~ 10080	7500 ~ 16800	15000 ~ 33600	22500 ~ 50400	45000 ~ 100800	75000 ~ 168000	150000 ~ 336000	225000 ~ 504000	450000 ~ 1008000	750000 ~ 1680000	1500000 ~ 3360000	2250000 ~ 5040000	4500000 ~ 10080000	
750A/5A	109.5 ~ 240	219 ~ 480	438 ~ 974.4	1095 ~ 2400	2190 ~ 4800	3285 ~ 7272	6570 ~ 14496	10950 ~ 24000	21900 ~ 48000	32850 ~ 72720	65700 ~ 144960	109500 ~ 240000	219000 ~ 480000	328500 ~ 727200	657000 ~ 1449600	1095000 ~ 2400000	2190000 ~ 4800000	3285000 ~ 7272000	6570000 ~ 14496000	
1000A/5A	125 ~ 280	250 ~ 560	500 ~ 1120	1250 ~ 2800	2500 ~ 5600	3750 ~ 8400	7500 ~ 16800	12500 ~ 28000	25000 ~ 56000	37500 ~ 84000	75000 ~ 168000	125000 ~ 280000	250000 ~ 560000	375000 ~ 840000	750000 ~ 1680000	1250000 ~ 2800000	2500000 ~ 5600000	3750000 ~ 8400000	7500000 ~ 16800000	
1500A/5A	187.5 ~ 420	375 ~ 840	750 ~ 1680	1875 ~ 4200	3750 ~ 8400	5625 ~ 12600	11250 ~ 25200	18750 ~ 42000	37500 ~ 84000	56250 ~ 126000	112500 ~ 252000	187500 ~ 420000	375000 ~ 840000	562500 ~ 1260000	1125000 ~ 2520000	1875000 ~ 4200000	3750000 ~ 8400000	5625000 ~ 12600000	11250000 ~ 25200000	
2000A/5A	250 ~ 560	500 ~ 1120	1000 ~ 2240	2500 ~ 5600	5000 ~ 11200	7500 ~ 16800	15000 ~ 33600	25000 ~ 56000	50000 ~ 112000	75000 ~ 168000	150000 ~ 336000	250000 ~ 560000	500000 ~ 1120000	750000 ~ 1680000	1500000 ~ 3360000	2500000 ~ 5600000	5000000 ~ 11200000	7500000 ~ 16800000	15000000 ~ 33600000	

## 3-Phase 4-Wire

Wiring	1100V					2200V					33000V					66000V				
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V	11000V	22000V	33000V	66000V	11000V	22000V	33000V	66000V	
CT	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10A/5A	2180 ~ 4950	4360 ~ 9900	8.72 ~ 19.8	21.8 ~ 49.5	43.6 ~ 99	65.4 ~ 148.5	130.8 ~ 297	218 ~ 495	436 ~ 990	654 ~ 1485	1308 ~ 2970	2180 ~ 4950	4360 ~ 9900	6540 ~ 14850	13080 ~ 29700	21800 ~ 49500	43600 ~ 99000	65400 ~ 148500	130800 ~ 297000	
15A/5A	3270 ~ 7425	6540 ~ 14850	13.08 ~ 29.7	32.7 ~ 74.25	65.4 ~ 148.5	98.1 ~ 222.8	196.2 ~ 444.5	327 ~ 742.5	654 ~ 1485	981 ~ 2228	1962 ~ 4445	3270 ~ 7425	6540 ~ 14850	9810 ~ 22280	19620 ~ 44450	32700 ~ 74250	65400 ~ 148500	98100 ~ 222800	196200 ~ 444500	
20A/5A	4360 ~ 9900	8.72 ~ 19.8	17.44 ~ 39.6	43.6 ~ 99	87.2 ~ 198	130.8 ~ 297	261.6 ~ 594	436 ~ 990	872 ~ 1980	1308 ~ 2970	2616 ~ 5940	4360 ~ 9900	8720 ~ 19800	13080 ~ 29700	26160 ~ 59400	43600 ~ 99000	87200 ~ 198000	130800 ~ 297000	261600 ~ 594000	
30A/5A	6.54 ~ 14.85	13.08 ~ 29.7	26.16 ~ 59.4	65.4 ~ 148.5	130.8 ~ 297	196.2 ~ 444.5	392.4 ~ 889.1	654 ~ 1485	1308 ~ 2970	1962 ~ 4445	3924 ~ 8891	6540 ~ 14850	13080 ~ 29700	19620 ~ 44450	39240 ~ 88910	65400 ~ 148500	130800 ~ 297000	196200 ~ 444500	392400 ~ 889100	
50A/5A	10.9 ~ 24.75	21.8 ~ 49.5	43.6 ~ 99	109 ~ 247.5	218 ~ 495	327 ~ 742.5	654 ~ 1485	1090 ~ 2475	2180 ~ 4950	3270 ~ 7425	6540 ~ 14850	10900 ~ 24750	21800 ~ 49500	32700 ~ 74250	65400 ~ 148500	109000 ~ 247500	218000 ~ 495000	327000 ~ 742500	654000 ~ 1485000	
60A/5A	16.35 ~ 37.13	32.7 ~ 74.25	65.4 ~ 148.5	163.5 ~ 371.3	327 ~ 742.5	490.5 ~ 1114	981 ~ 2228	1635 ~ 3713	3270 ~ 7425	4905 ~ 11145	9810 ~ 22280	16350 ~ 37130	32700 ~ 74250	49050 ~ 111450	98100 ~ 222800	163500 ~ 371300	327000 ~ 742500	490500 ~ 1114500	981000 ~ 2228000	
100A/5A	21.8 ~ 49.5	43.6 ~ 99	87.2 ~ 198	218 ~ 495	436 ~															

# 2106A/2186A

## VARMETERS



Model	Suffix Codes	Descriptions		
2106A 31		Single phase 2-wire	110 SQUARE	
2106A 33		3-phase 3-wire (Balanced)		
2106A 35		3-phase 3-wire (Unbalanced)		
2106A 34		3-phase 4-wire (Balanced)		
2106A 36		3-phase 4-wire (Unbalanced)		
2186A 31		Single phase 2-wire	80 SQUARE With external transducer	
2186A 33		3-phase 3-wire (Balanced)		
2186A 35		3-phase 3-wire (Unbalanced)		
2186A 34		3-phase 4-wire (Balanced)		
2186A 36		3-phase 4-wire (Unbalanced)		
Rating (Zero-center)	-M13	110V/1A	Single phase 2-wire	
	-M14	110V/5A		
	-M15	220V/1A		
	-M16	220V/5A		
	-M13	110V/1A		3-phase 3-wire
	-M14	110V/5A		
	-M15	220V/1A		
	-M16	220V/5A		
	-M11	110/ $\sqrt{3}$ V 1A	3-phase 4-wire For 21□6A36	
	-M12	110/ $\sqrt{3}$ V 5A		
	-M13	110V/1A	3-phase 4-wire For 21□6A34	
	-M14	110V/5A		
	-M15	220V/1A		
	-M16	220V/5A		
	-M17	220/ $\sqrt{3}$ V 1A		3-phase 4-wire For 21□6A36
	-M18	220/ $\sqrt{3}$ V 5A		
	-M51	100V/1A	Semi-standard meters For 21□6A31,33,35	
	-M52	100V/5A		
-M53	115V/1A			
-M54	115V/5A			
-M55	120V/1A			
-M56	120V/5A			
-M61	200V/1A			
-M62	200V/5A			
-M63	230V/1A			
-M64	230V/5A			
-M65	240V/1A			
-M66	240V/5A			
(Single deflecting or Unbalanced scale)	-P13	110V/1A	Single phase 2-wire	
	-P14	110V/5A		
	-P15	220V/1A		
	-P16	220V/5A		
	-P13	110V/1A	3-phase 3-wire For 21□6A34	
	-P14	110V/5A		
	-P15	220V/1A		
	-P16	220V/5A		
	-P53	115V/1A	3-phase 4-wire For 21□6A36	
	-P54	115V/5A		
	-P11	110V/ $\sqrt{3}$ V 1A		
	-P12	110V/ $\sqrt{3}$ V 5A		
	-P17	220V/ $\sqrt{3}$ V 1A		
	-P18	220V/ $\sqrt{3}$ V 5A		
Designation of Frequency Used	-N	50/60Hz Common	For 21□6A33,34	
	-A	50Hz	For 21□6A31,35,36	
	-B	60Hz		
	-C	400Hz		
Pointer	-L	Lance type pointer (Black), Always "-L"		
Cover color and Set pointer	-BL	Munsell N1.5		
	-BG	Munsell 7.5BG4/1.5		
	-BS	Munsell N1.5 with Set pointer (red color)		
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)		

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) Full scale value and unit
- (3) In case of using external CT/or VT, calculate the possible full scale value from the following page and be sure that is within the range shown above.
- (4) VT ratio and CT ratio

### Notes :

VT and CT are not supplied.

### [Scale scope]

- (1) Zero-center meter:  
LEAD a to 0 to LAG b var where a=b
- (2) Single deflecting meter:  
0 to LEAD □var or 0 to LAG □var
- (3) Unbalanced scale meter:  
LEAD a to 0 to LAG b var where a less than b

# VARMETERS

[Available Calibration Vars]

Zero-center meter

Standard Rating			Available Calibration Varmeters		
VOLTAGE	Operating voltage range	CURRENT	Single phase 2-wire	3-phase 3-wire	3-phase 4-wire
110/√3V	52 to 75V	1A	LEAD 24 to LAG 80var	—	LEAD 62 to LAG 285var
		5A	LEAD 120 to LAG 400var	—	LEAD 312 to LAG 1400var
110V 115V 120V	90 to 130V	1A	LEAD 36 to LAG 164var	LEAD 62 to LAG 285var	LEAD 109 to LAG 495var
		5A	LEAD 180 to LAG 820var	LEAD 312 to LAG 1400var	LEAD 545 to LAG 2475var
220/√3V	104 to 150V	1A	—	—	LEAD 125 to LAG 570var
		5A	—	—	LEAD 625 to LAG 2850var
200V 220V 240V	180 to 260V	1A	LEAD 72 to LAG 328var	LEAD 125 to LAG 570var	LEAD 218 to LAG 990var
		5A	LEAD 360 to LAG 1640var	LEAD 625 to LAG 2850var	LEAD 1090 to LAG 4950var

Available Calibration Varmeters are 33 to 150%. Standard Vars beyond the limits are not available.

Single phase 2-wire : Standard Vars = Voltage Rating × Current Rating

3-phase 3-wire : Standard Vars = root3 × Line Voltage Rating × Current Rating

3-phase 4-wire : Standard Vars = 3 × Phase Voltage Rating × Current Rating

## Single deflecting meter and Unbalanced scale meter (on the "b" side)

Standard Rating			Available Calibration Varmeters		
VOLTAGE	Operating voltage range	CURRENT	Single phase 2-wire	3-phase 3-wire	3-phase 4-wire
110/√3V	52 to 75V	1A	LEAD 48 to LAG 80var	—	LEAD 125 to LAG 285var
		5A	LEAD 240 to LAG 400var	—	LEAD 625 to LAG 1400var
110V 115V 120V	90 to 130V	1A	LEAD 72 to LAG 164var	LEAD 125 to LAG 285var	LEAD 218 to LAG 495var
		5A	LEAD 360 to LAG 820var	LEAD 625 to LAG 1400var	LEAD 1090 to LAG 2475var
220/√3V	104 to 150V	1A	—	—	LEAD 250 to LAG 570var
		5A	—	—	LEAD 1250 to LAG 2850var
200V 220V 240V	180 to 260V	1A	LEAD 144 to LAG 328var	LEAD 250 to LAG 570var	LEAD 430 to LAG 990var
		5A	LEAD 720 to LAG 1640var	LEAD 1250 to LAG 2850var	LEAD 2150 to LAG 4950var

Available Calibration Varmeters are 65 to 150%. Standard Vars beyond the limits are not available.

Single phase 2-wire: Standard Vars = Voltage Rating × Current Rating

3-phase 3-wire: Standard Vars = root3 × Line Voltage Rating × Current Rating

3-phase 4-wire: Standard Vars = 3 × Phase Voltage Rating × Current Rating

When using VT and CT, Calibration Varmeters will be as follows ;

$$\text{Caribration Vars} = \frac{\text{MAX.Full scale value}}{(\text{VT ratio}) \times (\text{CT ratio})}$$

	Connection	Full scale value	VT ratio	CT ratio	Calibration Varmeters
EX.1	3-phase 3-wire	LEAD 10 to 0 to LAG 10 kvar	660/110V	20/5A	FS = $\frac{\text{LEAD LAG } 10\text{kvar}}{660/110 \times 20/5} = \text{LEAD LAG } 416.7\text{var}$ Available
EX.2	Single phase 2-wire	LEAD 3 to 0 to LAG 3 kvar	660/110V	20/5A	FS = $\frac{\text{LEAD LAG } 3\text{kvar}}{660/110 \times 20/5} = \text{LEAD LAG } 125\text{var}$ Special order with TOKUCHU sheet

# Available Calibration Varmeter

## Varmeteres : Zero-centermeter

\* + : LEAD. -: LAG

□ =Var, □ =kvar, □ =kVar

Wiring CT	Single-Phase 2-Wire										
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±360 ~ ±1640	±720 ~ ±3280	±1440 ~ ±6560	±3.6 ~ ±16.4	±7.2 ~ ±32.8	±10.8 ~ ±49.2	±21.6 ~ ±98.4	±3.6 ~ ±16.4	±7.2 ~ ±32.8	±10.8 ~ ±49.2	±21.6 ~ ±98.4
15A/5A	±540 ~ ±2460	±1080 ~ ±4920	±2160 ~ ±9840	±5.4 ~ ±24.6	±10.8 ~ ±49.2	±16.2 ~ ±73.8	±32.4 ~ ±147.6	±5.4 ~ ±24.6	±10.8 ~ ±49.2	±16.2 ~ ±73.8	±32.4 ~ ±147.6
20A/5A	±720 ~ ±3280	±1440 ~ ±6560	±2880 ~ ±13120	±7.2 ~ ±32.8	±14.4 ~ ±65.6	±21.6 ~ ±98.4	±43.2 ~ ±196.8	±10.8 ~ ±49.2	±21.6 ~ ±98.4	±32.4 ~ ±147.6	±64.8 ~ ±295.2
30A/5A	±1080 ~ ±4920	±2160 ~ ±9840	±4320 ~ ±19680	±10.8 ~ ±49.2	±21.6 ~ ±98.4	±32.4 ~ ±147.6	±64.8 ~ ±295.2	±16.2 ~ ±73.8	±32.4 ~ ±147.6	±48.0 ~ ±216.0	±96.0 ~ ±432.0
50A/5A	±1800 ~ ±8200	±3600 ~ ±16400	±7200 ~ ±32800	±18.0 ~ ±82.0	±36.0 ~ ±164.0	±54.0 ~ ±246.0	±108.0 ~ ±492.0	±36.0 ~ ±164.0	±72.0 ~ ±328.0	±108.0 ~ ±492.0	±216.0 ~ ±984.0
60A/5A	±2160 ~ ±9840	±4320 ~ ±19680	±8640 ~ ±39360	±21.6 ~ ±98.4	±43.2 ~ ±196.8	±64.8 ~ ±295.2	±129.6 ~ ±590.4	±36.0 ~ ±164.0	±72.0 ~ ±328.0	±108.0 ~ ±492.0	±216.0 ~ ±984.0
100A/5A	±3600 ~ ±16400	±7200 ~ ±32800	±14400 ~ ±65600	±36.0 ~ ±164.0	±72.0 ~ ±328.0	±108.0 ~ ±492.0	±216.0 ~ ±984.0	±72.0 ~ ±328.0	±144.0 ~ ±656.0	±216.0 ~ ±984.0	±432.0 ~ ±1968.0
150A/5A	±5400 ~ ±24600	±10800 ~ ±49200	±21600 ~ ±98400	±54.0 ~ ±246.0	±108.0 ~ ±492.0	±162.0 ~ ±738.0	±324.0 ~ ±1476.0	±81.0 ~ ±369.0	±162.0 ~ ±738.0	±243.0 ~ ±1098.0	±486.0 ~ ±2232.0
200A/5A	±7200 ~ ±32800	±14400 ~ ±65600	±28800 ~ ±131200	±72.0 ~ ±328.0	±144.0 ~ ±656.0	±216.0 ~ ±984.0	±432.0 ~ ±1968.0	±108.0 ~ ±492.0	±216.0 ~ ±984.0	±324.0 ~ ±1476.0	±648.0 ~ ±2952.0
300A/5A	±10800 ~ ±49200	±21600 ~ ±98400	±43200 ~ ±196800	±108.0 ~ ±492.0	±216.0 ~ ±984.0	±324.0 ~ ±1476.0	±648.0 ~ ±2952.0	±162.0 ~ ±738.0	±324.0 ~ ±1476.0	±486.0 ~ ±2232.0	±972.0 ~ ±4464.0
500A/5A	±18000 ~ ±82000	±36000 ~ ±164000	±72000 ~ ±328000	±180.0 ~ ±820.0	±360.0 ~ ±1640.0	±540.0 ~ ±2460.0	±1080.0 ~ ±4920.0	±360.0 ~ ±1640.0	±720.0 ~ ±3280.0	±1080.0 ~ ±4920.0	±2160.0 ~ ±9840.0
600A/5A	±21600 ~ ±98400	±43200 ~ ±196800	±86400 ~ ±393600	±216.0 ~ ±984.0	±432.0 ~ ±1968.0	±648.0 ~ ±2952.0	±1296.0 ~ ±5904.0	±360.0 ~ ±1640.0	±720.0 ~ ±3280.0	±1080.0 ~ ±4920.0	±2160.0 ~ ±9840.0
1000A/5A	±36000 ~ ±164000	±72000 ~ ±328000	±144000 ~ ±656000	±360.0 ~ ±1640.0	±720.0 ~ ±3280.0	±1080.0 ~ ±4920.0	±2160.0 ~ ±9840.0	±720.0 ~ ±3280.0	±1440.0 ~ ±6560.0	±2160.0 ~ ±9840.0	±4320.0 ~ ±19680.0
2000A/5A	±72000 ~ ±328000	±144000 ~ ±656000	±288000 ~ ±1312000	±720.0 ~ ±3280.0	±1440.0 ~ ±6560.0	±2160.0 ~ ±9840.0	±4320.0 ~ ±19680.0	±1080.0 ~ ±4920.0	±2160.0 ~ ±9840.0	±3240.0 ~ ±14760.0	±6480.0 ~ ±29520.0

Wiring CT	3-Phase 3-Wire										
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±624 ~ ±2800	±1248 ~ ±5600	±2496 ~ ±11200	±6.24 ~ ±28.0	±12.48 ~ ±56.0	±18.72 ~ ±84.0	±37.44 ~ ±168.0	±6.24 ~ ±28.0	±12.48 ~ ±56.0	±18.72 ~ ±84.0	±37.44 ~ ±168.0
15A/5A	±936 ~ ±4200	±1872 ~ ±8400	±3744 ~ ±16800	±9.36 ~ ±42.0	±18.72 ~ ±84.0	±28.08 ~ ±126.0	±56.16 ~ ±252.0	±9.36 ~ ±42.0	±18.72 ~ ±84.0	±28.08 ~ ±126.0	±56.16 ~ ±252.0
20A/5A	±1248 ~ ±5600	±2496 ~ ±11200	±4992 ~ ±22400	±12.48 ~ ±56.0	±24.96 ~ ±112.0	±37.44 ~ ±168.0	±74.88 ~ ±336.0	±12.48 ~ ±56.0	±24.96 ~ ±112.0	±37.44 ~ ±168.0	±74.88 ~ ±336.0
30A/5A	±1872 ~ ±8400	±3744 ~ ±16800	±7488 ~ ±33600	±18.72 ~ ±84.0	±37.44 ~ ±168.0	±56.16 ~ ±252.0	±112.32 ~ ±504.0	±18.72 ~ ±84.0	±37.44 ~ ±168.0	±56.16 ~ ±252.0	±112.32 ~ ±504.0
50A/5A	±3120 ~ ±14400	±6240 ~ ±28800	±12480 ~ ±57600	±31.2 ~ ±144.0	±62.4 ~ ±288.0	±93.6 ~ ±420.0	±187.2 ~ ±840.0	±31.2 ~ ±144.0	±62.4 ~ ±288.0	±93.6 ~ ±420.0	±187.2 ~ ±840.0
60A/5A	±3744 ~ ±16800	±7488 ~ ±33600	±14976 ~ ±67200	±37.44 ~ ±168.0	±74.88 ~ ±336.0	±112.32 ~ ±504.0	±224.64 ~ ±1008.0	±37.44 ~ ±168.0	±74.88 ~ ±336.0	±112.32 ~ ±504.0	±224.64 ~ ±1008.0
100A/5A	±7488 ~ ±33600	±14976 ~ ±67200	±29952 ~ ±134400	±74.88 ~ ±336.0	±149.76 ~ ±672.0	±224.64 ~ ±1008.0	±449.28 ~ ±2016.0	±74.88 ~ ±336.0	±149.76 ~ ±672.0	±224.64 ~ ±1008.0	±449.28 ~ ±2016.0
150A/5A	±11232 ~ ±50400	±22464 ~ ±100800	±44928 ~ ±201600	±112.32 ~ ±504.0	±224.64 ~ ±1008.0	±336.96 ~ ±1512.0	±673.92 ~ ±3024.0	±112.32 ~ ±504.0	±224.64 ~ ±1008.0	±336.96 ~ ±1512.0	±673.92 ~ ±3024.0
200A/5A	±15360 ~ ±70400	±30720 ~ ±140800	±61440 ~ ±281600	±153.6 ~ ±704.0	±307.2 ~ ±1408.0	±460.8 ~ ±2150.4	±921.6 ~ ±4300.8	±153.6 ~ ±704.0	±307.2 ~ ±1408.0	±460.8 ~ ±2150.4	±921.6 ~ ±4300.8
300A/5A	±23040 ~ ±105600	±46080 ~ ±211200	±92160 ~ ±422400	±230.4 ~ ±1056.0	±460.8 ~ ±2112.0	±691.2 ~ ±3232.0	±1382.4 ~ ±6464.0	±230.4 ~ ±1056.0	±460.8 ~ ±2112.0	±691.2 ~ ±3232.0	±1382.4 ~ ±6464.0
500A/5A	±37440 ~ ±168000	±74880 ~ ±336000	±149760 ~ ±672000	±374.4 ~ ±1680.0	±748.8 ~ ±3360.0	±1123.2 ~ ±5040.0	±2246.4 ~ ±10080.0	±374.4 ~ ±1680.0	±748.8 ~ ±3360.0	±1123.2 ~ ±5040.0	±2246.4 ~ ±10080.0
600A/5A	±45120 ~ ±201600	±90240 ~ ±422400	±180480 ~ ±844800	±451.2 ~ ±2016.0	±902.4 ~ ±4224.0	±1353.6 ~ ±6336.0	±2707.2 ~ ±12672.0	±451.2 ~ ±2016.0	±902.4 ~ ±4224.0	±1353.6 ~ ±6336.0	±2707.2 ~ ±12672.0
750A/5A	±56400 ~ ±252000	±112800 ~ ±528000	±225600 ~ ±1036800	±564.0 ~ ±2520.0	±1128.0 ~ ±5280.0	±1702.4 ~ ±7968.0	±3404.8 ~ ±15936.0	±564.0 ~ ±2520.0	±1128.0 ~ ±5280.0	±1702.4 ~ ±7968.0	±3404.8 ~ ±15936.0
1000A/5A	±75200 ~ ±344000	±150400 ~ ±712000	±300800 ~ ±1424000	±752.0 ~ ±3440.0	±1504.0 ~ ±7120.0	±2256.0 ~ ±10368.0	±4512.0 ~ ±20736.0	±752.0 ~ ±3440.0	±1504.0 ~ ±7120.0	±2256.0 ~ ±10368.0	±4512.0 ~ ±20736.0
1500A/5A	±112800 ~ ±528000	±225600 ~ ±1036800	±451200 ~ ±2073600	±1128.0 ~ ±5280.0	±2256.0 ~ ±10368.0	±3384.0 ~ ±15936.0	±6768.0 ~ ±31872.0	±1128.0 ~ ±5280.0	±2256.0 ~ ±10368.0	±3384.0 ~ ±15936.0	±6768.0 ~ ±31872.0
2000A/5A	±153600 ~ ±704000	±307200 ~ ±1408000	±614400 ~ ±2816000	±1536.0 ~ ±7040.0	±3072.0 ~ ±14080.0	±4512.0 ~ ±21504.0	±9024.0 ~ ±43008.0	±1536.0 ~ ±7040.0	±3072.0 ~ ±14080.0	±4512.0 ~ ±21504.0	±9024.0 ~ ±43008.0

Wiring CT	3-Phase 4-Wire										
	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±1090 ~ ±4950	±2180 ~ ±9900	±4360 ~ ±19800	±10.9 ~ ±49.5	±21.8 ~ ±99.0	±32.7 ~ ±148.5	±65.4 ~ ±297.0	±10.9 ~ ±49.5	±21.8 ~ ±99.0	±32.7 ~ ±148.5	±65.4 ~ ±297.0
15A/5A	±1635 ~ ±7425	±3270 ~ ±14850	±6540 ~ ±29700	±16.35 ~ ±74.25	±32.7 ~ ±148.5	±49.05 ~ ±222.8	±98.1 ~ ±445.5	±16.35 ~ ±74.25	±32.7 ~ ±148.5	±49.05 ~ ±222.8	±98.1 ~ ±445.5
20A/5A	±2180 ~ ±9900	±4360 ~ ±19800	±8720 ~ ±39600	±21.8 ~ ±99.0	±43.6 ~ ±198.0	±65.4 ~ ±297.0	±130.8 ~ ±594.0	±21.8 ~ ±99.0	±43.6 ~ ±198.0	±65.4 ~ ±297.0	±130.8 ~ ±594.0
30A/5A	±3270 ~ ±14850	±6540 ~ ±29700	±13080 ~ ±59400	±32.7 ~ ±148.5	±65.4 ~ ±297.0	±98.1 ~ ±445.5	±196.2 ~ ±891.0	±32.7 ~ ±148.5	±65.4 ~ ±297.0	±98.1 ~ ±445.5	±196.2 ~ ±891.0
50A/5A	±5450 ~ ±24750	±10900 ~ ±49500	±21800 ~ ±99000	±54.5 ~ ±247.5	±109.0 ~ ±495.0	±163.5 ~ ±742.5	±327.0 ~ ±1485.0	±54.5 ~ ±247.5	±109.0 ~ ±495.0	±163.5 ~ ±742.5	±327.0 ~ ±1485.0
60A/5A	±6540 ~ ±29700	±13080 ~ ±59400	±26160 ~ ±118800	±65.4 ~ ±297.0	±130.8 ~ ±594.0	±196.2 ~ ±891.0	±392.4 ~ ±1782.0	±65.4 ~ ±297.0	±130.8 ~ ±594.0	±196.2 ~ ±891.0	±392.4 ~ ±1782.0
100A/5A	±10900 ~ ±49500	±21800 ~ ±99000	±43600 ~ ±198000	±109.0 ~ ±495.0	±218.0 ~ ±990.0	±327.0 ~ ±1485.0	±654.0 ~ ±2970.0	±109.0 ~ ±495.0	±218.0 ~ ±990.0	±327.0 ~ ±1485.0	±654.0 ~ ±2970.0
150A/5A	±16350 ~ ±74250	±32700 ~ ±148500	±65400 ~ ±297000	±163.5 ~ ±742.5	±327.0 ~ ±1485.0	±490.5 ~ ±2228.0	±981.0 ~ ±4455.0	±163.5 ~ ±742.5	±327.0 ~ ±1485.0	±490.5 ~ ±2228.0	±981.0 ~ ±4455.0
200A/5A	±21800 ~ ±99000	±43600 ~ ±198000	±87200 ~ ±396000	±218.0 ~ ±990.0	±436.0 ~ ±1980.0	±654.0 ~ ±2970.0	±1308.0 ~ ±5940.0	±218.0 ~ ±990.0	±436.0 ~ ±1980.0	±654.0 ~ ±2970.0	±1308.0 ~ ±5940.0
300A/5A	±32700 ~ ±148500	±65400 ~ ±297000	±130800 ~ ±594000	±327.0 ~ ±1485.0	±654.0 ~ ±2970.0	±981.0 ~ ±4455.0	±1962.0 ~ ±8910.0	±327.0 ~ ±1485.0	±654.0 ~ ±2970.0	±981.0 ~ ±4455.0	±1962.0 ~ ±8910.0
500A/5A	±54500 ~ ±247500	±109000 ~ ±495000	±218000 ~ ±990000	±545.0 ~ ±2475.0	±1090.0 ~ ±4950.0	±1635.0 ~ ±7425.0	±3270.0 ~ ±14850.0	±545.0 ~ ±2475.0	±1090.0 ~ ±4950.0	±1635.0 ~ ±7425.0	±3270.0 ~ ±14850.0
600A/5A	±65400 ~ ±297000	±130800 ~ ±594000	±261600 ~ ±1188000	±654.0 ~ ±2970.0	±1308.0 ~ ±5940.0	±1962.0 ~ ±8910.0	±3924.0 ~ ±17820.0	±654.0 ~ ±2970.0	±1308.0 ~ ±5940.0	±1962.0 ~ ±8910.0	±3924.0 ~ ±17820.0
750A/5A	±81750 ~ ±371250	±163500 ~ ±742500	±327000 ~ ±1485000	±817.5 ~ ±3712.5	±1635.0 ~ ±7425.0	±2445.0 ~ ±11115.0	±4890.0 ~ ±22230.0	±817.5 ~ ±3712.5	±1635.0 ~ ±7425.0	±2445.0 ~ ±11115.0	±4890.0 ~ ±22230.0
1000A/5A	±109000 ~ ±495000	±218000 ~ ±990000	±436000 ~ ±1980000	±1090.0 ~ ±4950.0	±2180.0 ~ ±9900.0	±3270.0 ~ ±14850.0	±6540.0 ~ ±29700.0	±1090.0 ~ ±4950.0	±2180.0 ~ ±9900.0	±3270.0 ~ ±14850.0	±6540.0 ~ ±29700.0
1500A/5A	±163500 ~ ±742500	±327000 ~ ±1485000	±654000 ~ ±2970000	±1635.0 ~ ±7425.0	±3270.0 ~ ±14850.0	±4905.0 ~ ±22280.0	±9810.0 ~ ±44550.0	±1635.0 ~ ±7425.0	±3270.0 ~ ±14850.0	±4905.0 ~ ±22280.0	±9810.0 ~ ±44550.0
2000A/5A	±218000 ~ ±990000	±436000 ~ ±1980000	±872000 ~ ±3960000	±2180.0 ~ ±9900.0	±4360.0 ~ ±19800.0	±6540.0 ~ ±29700.0	±13080.0 ~ ±59400.0	±2180.0 ~ ±9900.0	±4360.0 ~ ±19800.0	±6540.0 ~ ±29700.0	±13080.0 ~ ±59400.0

# Available Calibration Varmeters

## Varmeters : Single deflecting meter and Unbalanced scale meter (on the "b" side)

\*+ : LEAD - : LAG      =var,      =kvar,      =Mvar

Wiring		Single-Phase 2-Wire										
CT	Voit VT	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±720 ~ ±1640	±2880 ~ ±6560	±1144 ~ ±3288	±2880 ~ ±6560	±772 ~ ±2164	±1444 ~ ±3928	±2116 ~ ±5844	±4324 ~ ±11844	±772 ~ ±2164	±1444 ~ ±3928	±2116 ~ ±5844	±4324 ~ ±11844
15A/5A	±1080 ~ ±2460	±4320 ~ ±9840	±3200 ~ ±7120	±4320 ~ ±9840	±1080 ~ ±2460	±2160 ~ ±4920	±3240 ~ ±7120	±6480 ~ ±14400	±1080 ~ ±2460	±2160 ~ ±4920	±3240 ~ ±7120	±6480 ~ ±14400
20A/5A	±1440 ~ ±3280	±5760 ~ ±12800	±576 ~ ±1312	±576 ~ ±1312	±1440 ~ ±3280	±2880 ~ ±6560	±4320 ~ ±9840	±8640 ~ ±19680	±1440 ~ ±3280	±2880 ~ ±6560	±4320 ~ ±9840	±8640 ~ ±19680
30A/5A	±2160 ~ ±4920	±8640 ~ ±19680	±864 ~ ±1968	±864 ~ ±1968	±2160 ~ ±4920	±4320 ~ ±9840	±6480 ~ ±14400	±12960 ~ ±28800	±2160 ~ ±4920	±4320 ~ ±9840	±6480 ~ ±14400	±12960 ~ ±28800
50A/5A	±3600 ~ ±8200	±14400 ~ ±32800	±1440 ~ ±3280	±1440 ~ ±3280	±3600 ~ ±8200	±7200 ~ ±16400	±10800 ~ ±23840	±21600 ~ ±47680	±3600 ~ ±8200	±7200 ~ ±16400	±10800 ~ ±23840	±21600 ~ ±47680
60A/5A	±4320 ~ ±9840	±17280 ~ ±39200	±1728 ~ ±3920	±1728 ~ ±3920	±4320 ~ ±9840	±8640 ~ ±19680	±12960 ~ ±28800	±25920 ~ ±57600	±4320 ~ ±9840	±8640 ~ ±19680	±12960 ~ ±28800	±25920 ~ ±57600
100A/5A	±720 ~ ±1640	±2880 ~ ±6560	±720 ~ ±1640	±720 ~ ±1640	±720 ~ ±1640	±1440 ~ ±3280	±2160 ~ ±4920	±4320 ~ ±9840	±720 ~ ±1640	±1440 ~ ±3280	±2160 ~ ±4920	±4320 ~ ±9840
150A/5A	±1080 ~ ±2460	±4320 ~ ±9840	±1080 ~ ±2460	±1080 ~ ±2460	±1080 ~ ±2460	±2160 ~ ±4920	±3240 ~ ±7120	±6480 ~ ±14400	±1080 ~ ±2460	±2160 ~ ±4920	±3240 ~ ±7120	±6480 ~ ±14400
200A/5A	±1440 ~ ±3280	±5760 ~ ±12800	±1440 ~ ±3280	±1440 ~ ±3280	±1440 ~ ±3280	±2880 ~ ±6560	±4320 ~ ±9840	±8640 ~ ±19680	±1440 ~ ±3280	±2880 ~ ±6560	±4320 ~ ±9840	±8640 ~ ±19680
250A/5A	±1800 ~ ±4120	±7560 ~ ±17120	±1800 ~ ±4120	±1800 ~ ±4120	±1800 ~ ±4120	±3600 ~ ±8200	±5400 ~ ±12160	±10800 ~ ±23840	±1800 ~ ±4120	±3600 ~ ±8200	±5400 ~ ±12160	±10800 ~ ±23840
300A/5A	±2160 ~ ±4920	±8640 ~ ±19680	±2160 ~ ±4920	±2160 ~ ±4920	±2160 ~ ±4920	±4320 ~ ±9840	±6480 ~ ±14400	±12960 ~ ±28800	±2160 ~ ±4920	±4320 ~ ±9840	±6480 ~ ±14400	±12960 ~ ±28800
500A/5A	±3600 ~ ±8200	±14400 ~ ±32800	±3600 ~ ±8200	±3600 ~ ±8200	±3600 ~ ±8200	±7200 ~ ±16400	±10800 ~ ±23840	±21600 ~ ±47680	±3600 ~ ±8200	±7200 ~ ±16400	±10800 ~ ±23840	±21600 ~ ±47680
600A/5A	±4320 ~ ±9840	±17280 ~ ±39200	±4320 ~ ±9840	±4320 ~ ±9840	±4320 ~ ±9840	±8640 ~ ±19680	±12960 ~ ±28800	±25920 ~ ±57600	±4320 ~ ±9840	±8640 ~ ±19680	±12960 ~ ±28800	±25920 ~ ±57600
750A/5A	±5400 ~ ±12160	±22320 ~ ±49600	±5400 ~ ±12160	±5400 ~ ±12160	±5400 ~ ±12160	±10800 ~ ±23840	±16200 ~ ±35840	±32400 ~ ±71360	±5400 ~ ±12160	±10800 ~ ±23840	±16200 ~ ±35840	±32400 ~ ±71360
1000A/5A	±7200 ~ ±16400	±30240 ~ ±67200	±7200 ~ ±16400	±7200 ~ ±16400	±7200 ~ ±16400	±14400 ~ ±32800	±21600 ~ ±47680	±43200 ~ ±95360	±7200 ~ ±16400	±14400 ~ ±32800	±21600 ~ ±47680	±43200 ~ ±95360
1500A/5A	±10800 ~ ±24600	±45360 ~ ±100800	±10800 ~ ±24600	±10800 ~ ±24600	±10800 ~ ±24600	±21600 ~ ±49200	±32400 ~ ±71200	±64800 ~ ±144000	±10800 ~ ±24600	±21600 ~ ±49200	±32400 ~ ±71200	±64800 ~ ±144000
2000A/5A	±14400 ~ ±32800	±59520 ~ ±132800	±14400 ~ ±32800	±14400 ~ ±32800	±14400 ~ ±32800	±28800 ~ ±65600	±43200 ~ ±98400	±86400 ~ ±196800	±14400 ~ ±32800	±28800 ~ ±65600	±43200 ~ ±98400	±86400 ~ ±196800

Wiring		3-Phase 3-Wire										
CT	Voit VT	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±1250 ~ ±2800	±5000 ~ ±11200	±1250 ~ ±2800	±1250 ~ ±2800	±1250 ~ ±2800	±2500 ~ ±5600	±3750 ~ ±8400	±7500 ~ ±16800	±1250 ~ ±2800	±2500 ~ ±5600	±3750 ~ ±8400	±7500 ~ ±16800
15A/5A	±1875 ~ ±4200	±7500 ~ ±16800	±1875 ~ ±4200	±1875 ~ ±4200	±1875 ~ ±4200	±3750 ~ ±8400	±5625 ~ ±12600	±11250 ~ ±25200	±1875 ~ ±4200	±3750 ~ ±8400	±5625 ~ ±12600	±11250 ~ ±25200
20A/5A	±2500 ~ ±5600	±10000 ~ ±22400	±2500 ~ ±5600	±2500 ~ ±5600	±2500 ~ ±5600	±5000 ~ ±11200	±7500 ~ ±16800	±15000 ~ ±33600	±2500 ~ ±5600	±5000 ~ ±11200	±7500 ~ ±16800	±15000 ~ ±33600
30A/5A	±3750 ~ ±8400	±15000 ~ ±33600	±3750 ~ ±8400	±3750 ~ ±8400	±3750 ~ ±8400	±7500 ~ ±16800	±11250 ~ ±25200	±22500 ~ ±50400	±3750 ~ ±8400	±7500 ~ ±16800	±11250 ~ ±25200	±22500 ~ ±50400
50A/5A	±6250 ~ ±14000	±25000 ~ ±56000	±6250 ~ ±14000	±6250 ~ ±14000	±6250 ~ ±14000	±12500 ~ ±28000	±18750 ~ ±42000	±37500 ~ ±84000	±6250 ~ ±14000	±12500 ~ ±28000	±18750 ~ ±42000	±37500 ~ ±84000
60A/5A	±7500 ~ ±16800	±30000 ~ ±67200	±7500 ~ ±16800	±7500 ~ ±16800	±7500 ~ ±16800	±15000 ~ ±33600	±22500 ~ ±50400	±45000 ~ ±100800	±7500 ~ ±16800	±15000 ~ ±33600	±22500 ~ ±50400	±45000 ~ ±100800
100A/5A	±12500 ~ ±28000	±50000 ~ ±112000	±12500 ~ ±28000	±12500 ~ ±28000	±12500 ~ ±28000	±25000 ~ ±56000	±37500 ~ ±84000	±75000 ~ ±168000	±12500 ~ ±28000	±25000 ~ ±56000	±37500 ~ ±84000	±75000 ~ ±168000
200A/5A	±25000 ~ ±56000	±100000 ~ ±224000	±25000 ~ ±56000	±25000 ~ ±56000	±25000 ~ ±56000	±50000 ~ ±112000	±75000 ~ ±168000	±150000 ~ ±336000	±25000 ~ ±56000	±50000 ~ ±112000	±75000 ~ ±168000	±150000 ~ ±336000
250A/5A	±31250 ~ ±70000	±125000 ~ ±280000	±31250 ~ ±70000	±31250 ~ ±70000	±31250 ~ ±70000	±62500 ~ ±140000	±93750 ~ ±210000	±187500 ~ ±420000	±31250 ~ ±70000	±62500 ~ ±140000	±93750 ~ ±210000	±187500 ~ ±420000
300A/5A	±37500 ~ ±84000	±150000 ~ ±336000	±37500 ~ ±84000	±37500 ~ ±84000	±37500 ~ ±84000	±75000 ~ ±168000	±112500 ~ ±252000	±225000 ~ ±504000	±37500 ~ ±84000	±75000 ~ ±168000	±112500 ~ ±252000	±225000 ~ ±504000
500A/5A	±62500 ~ ±140000	±250000 ~ ±560000	±62500 ~ ±140000	±62500 ~ ±140000	±62500 ~ ±140000	±125000 ~ ±280000	±187500 ~ ±420000	±375000 ~ ±840000	±62500 ~ ±140000	±125000 ~ ±280000	±187500 ~ ±420000	±375000 ~ ±840000
600A/5A	±75000 ~ ±168000	±300000 ~ ±672000	±75000 ~ ±168000	±75000 ~ ±168000	±75000 ~ ±168000	±150000 ~ ±336000	±225000 ~ ±504000	±450000 ~ ±1008000	±75000 ~ ±168000	±150000 ~ ±336000	±225000 ~ ±504000	±450000 ~ ±1008000
750A/5A	±93750 ~ ±210000	±375000 ~ ±840000	±93750 ~ ±210000	±93750 ~ ±210000	±93750 ~ ±210000	±187500 ~ ±420000	±281250 ~ ±630000	±562500 ~ ±1260000	±93750 ~ ±210000	±187500 ~ ±420000	±281250 ~ ±630000	±562500 ~ ±1260000
1000A/5A	±125000 ~ ±280000	±500000 ~ ±1120000	±125000 ~ ±280000	±125000 ~ ±280000	±125000 ~ ±280000	±250000 ~ ±560000	±375000 ~ ±840000	±750000 ~ ±1680000	±125000 ~ ±280000	±250000 ~ ±560000	±375000 ~ ±840000	±750000 ~ ±1680000
1500A/5A	±187500 ~ ±420000	±750000 ~ ±1680000	±187500 ~ ±420000	±187500 ~ ±420000	±187500 ~ ±420000	±375000 ~ ±840000	±562500 ~ ±1260000	±1125000 ~ ±2520000	±187500 ~ ±420000	±375000 ~ ±840000	±562500 ~ ±1260000	±1125000 ~ ±2520000
2000A/5A	±250000 ~ ±560000	±1000000 ~ ±2240000	±250000 ~ ±560000	±250000 ~ ±560000	±250000 ~ ±560000	±500000 ~ ±1120000	±750000 ~ ±1680000	±1500000 ~ ±3360000	±250000 ~ ±560000	±500000 ~ ±1120000	±750000 ~ ±1680000	±1500000 ~ ±3360000

Wiring		3-Phase 4-Wire										
CT	Voit VT	110V	220V	440V	1100V	2200V	3300V	6600V	11000V	22000V	33000V	66000V
10A/5A	±2180 ~ ±4950	±8720 ~ ±19380	±2180 ~ ±4950	±2180 ~ ±4950	±2180 ~ ±4950	±4360 ~ ±9900	±6540 ~ ±14850	±13080 ~ ±29700	±2180 ~ ±4950	±4360 ~ ±9900	±6540 ~ ±14850	±13080 ~ ±29700
15A/5A	±3270 ~ ±7425	±12645 ~ ±28125	±3270 ~ ±7425	±3270 ~ ±7425	±3270 ~ ±7425	±6540 ~ ±14850	±9810 ~ ±22275	±19620 ~ ±44550	±3270 ~ ±7425	±6540 ~ ±14850	±9810 ~ ±22275	±19620 ~ ±44550
20A/5A	±4360 ~ ±9900	±16880 ~ ±37620	±4360 ~ ±9900	±4360 ~ ±9900	±4360 ~ ±9900	±8720 ~ ±19380	±13080 ~ ±29700	±26160 ~ ±59400	±4360 ~ ±9900	±8720 ~ ±19380	±13080 ~ ±29700	±26160 ~ ±59400
30A/5A	±6540 ~ ±14850	±25320 ~ ±56250	±6540 ~ ±14850	±6540 ~ ±14850	±6540 ~ ±14850	±13080 ~ ±29700	±19620 ~ ±44550	±39240 ~ ±89100	±6540 ~ ±14850	±13080 ~ ±29700	±19620 ~ ±44550	±39240 ~ ±89100
50A/5A	±10950 ~ ±24750	±41925 ~ ±93375	±10950 ~ ±24750	±10950 ~ ±24750	±10950 ~ ±24750	±21800 ~ ±49500	±32700 ~ ±74250	±65400 ~ ±148500	±10950 ~ ±24750	±21800 ~ ±49500	±32700 ~ ±74250	±65400 ~ ±148500
60A/5A	±13150 ~ ±30150	±49725 ~ ±111425	±13150 ~ ±30150	±13150 ~ ±30150	±13150 ~ ±30150	±26160 ~ ±59400	±39240 ~ ±89100	±78480 ~ ±178200	±13150 ~ ±30150	±26160 ~ ±59400	±39240 ~ ±89100	±78480 ~ ±178200
100A/5A	±2180 ~ ±4950	±8720 ~ ±19380	±2180 ~ ±4950	±2180 ~ ±4950	±2180 ~ ±4950	±4360 ~ ±9900	±6540 ~ ±14850	±13080 ~ ±29700	±2180 ~ ±4950	±4360 ~ ±9900	±6540 ~ ±14850	±13080 ~ ±29700
150A/5A	±3270 ~ ±7425	±12645 ~ ±28125	±3270 ~ ±7425	±3270 ~ ±7425	±3270 ~ ±7425	±6540 ~ ±14850	±9810 ~ ±22275	±19620 ~ ±44550	±3270 ~ ±7425	±6540 ~ ±14850	±9810 ~ ±22275	±19620 ~ ±44550
200A/5A	±4360 ~ ±9900	±16880 ~ ±37620	±4360 ~ ±9900	±4360 ~ ±9900	±4360 ~ ±9900	±8720 ~ ±19380	±13080 ~ ±29700	±26160 ~ ±59400	±4360 ~ ±9900	±8720 ~ ±19380	±13080 ~ ±29700	±26160 ~ ±59400
250A/5A	±5450 ~ ±12380	±20225 ~ ±45325	±5450 ~ ±12380	±5450 ~ ±12380	±5450 ~ ±12380	±10950 ~ ±24750	±16425 ~ ±37175	±32850 ~ ±74225	±5450 ~ ±12380	±10950 ~ ±24750	±16425 ~ ±37175	±32850 ~ ±74225
300A/5A	±6540 ~ ±14850	±25320 ~ ±56250	±6540 ~ ±14850	±6540 ~ ±14850	±6540 ~ ±14850	±13080 ~ ±29700	±19620 ~ ±44550	±39240 ~ ±89100	±6540 ~ ±14850	±13080 ~ ±29700	±19620 ~ ±44550	±39240 ~ ±89100
500A/5A	±10950 ~ ±24750	±41925 ~ ±93375	±10950 ~ ±24750	±10950 ~ ±24750	±10950 ~ ±24750	±21800 ~ ±49500	±32700 ~ ±74250	±65400 ~ ±148500	±10950 ~ ±24750	±21800 ~ ±49500	±32700 ~ ±74250	±65400 ~ ±148500
600A/5A	±13080 ~ ±29700	±49650 ~ ±111425	±13080 ~ ±29700	±13080 ~ ±29700	±13080 ~ ±29700	±26160 ~ ±59400	±39240 ~ ±89100	±78480 ~ ±178200	±13080 ~ ±29700	±26160 ~ ±59400	±39240 ~ ±89100	±78480 ~ ±178200
750A/5A	±16350 ~ ±37175	±59825 ~ ±133125	±16350 ~ ±37175	±16350 ~ ±37175	±16350 ~ ±37175	±32850 ~ ±74225	±49275 ~ ±111425	±98550 ~ ±222750	±16350 ~ ±37175	±32850 ~ ±74225	±49275 ~ ±111425	±98550 ~ ±222750
1000A/5A	±2180 ~ ±4950	±8720 ~ ±19380	±2180 ~ ±4950	±2180 ~ ±4950	±2180 ~ ±4950	±4360 ~ ±9900	±6540 ~ ±14850	±13080 ~ ±29700	±2180 ~ ±4950			

# 2107A/2187A



## POWER FACTOR METERS

Model	Suffix Codes	Descriptions			
2107A 31		Single phase 2-wire	110 SQUARE	Class 5.0	50 or 60Hz
2107A 33		3-phase 3-wire (Balanced)			50/60Hz Common
2107A 35		3-phase 3-wire (Unbalanced)			50 or 60Hz
2107A 36		3-phase 4-wire (Unbalanced)			50 or 60Hz
2187A 31		Single phase 2-wire	80 SQUARE	Class 5.0	50 or 60Hz
2187A 33		3-phase 3-wire (Balanced)			50/60Hz Common
2187A 35		3-phase 3-wire (Unbalanced)	80 SQUARE	Class 5.0	50 or 60Hz
2187A 36		3-phase 4-wire (Unbalanced)	With external transducer		50 or 60Hz
Rating	-C13	110V/1A	Single phase 2-wire, 3-phase 3-wire		
	-C14	110V/5A			
	-C15	220V/1A			
	-C16	220V/5A			
	-C11	110/√3V 1A	3-phase 4-wire		
	-C12	110/√3V 5A			
	-C17	220/√3V 1A			
	-C18	220/√3V 5A			
	-C51	100V/1A	Semi-standard meters For 21□7A31,33,35		
	-C52	100V/5A			
	-C53	115V/1A			
	-C54	115V/5A			
	-C55	120V/1A			
	-C56	120V/5A			
	-C61	200V/1A			
	-C62	200V/5A			
	-C63	230V/1A			
	-C64	230V/5A			
	-C65	240V/1A			
	-C66	240V/5A			
Designation of Frequency Used	-N	50/60Hz Common	For 21□7A33		
	-A	50Hz	For 21□7A31,35,36		
	-B	60Hz			
Pointer	-L	Lance type pointer (Black), Always "-L"			
Cover color and Set pointer	-BL	Munsell N1.5			
	-BG	Munsell 7.5BG4/1.5			
	-BS	Munsell N1.5 with Set pointer (red color)			
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)			

STANDARD RATING			
voltage	Current	Operating voltage range	Operating Current range
110/ root3V	1A	52 to 75V	0.3 to 1.2A
	5A		1.5 to 6.0A
100V, 110V, 115V,120V	1A	90 to 130V	0.3 to 1.2A
	5A		1.5 to 6.0A
220/√3V	1A	104 to 150V	0.3 to 1.2A
	5A		1.5 to 6.0A
220V	1A	180 to 260V	0.3 to 1.2A
	5A		1.5 to 6.0A

### SPECIFY THE FOLLOWING WHEN ORDERING

- (1) Model and Suffix codes
- (2) VT ratio and CT ratio

#### Notes :

VT and CT are not supplied.

Standard scale :  
LEAD 0.5 to 1.0 to LAG 0.5 power factor

Class5.0  
(Allowance :+/-4.5 degrees at electric angle)

# 2108A/2188A



## FREQUENCY METERS

Model	Suffix Codes	Descriptions		
2108A 30		110 SQUARE		
2188A 30		80 SQUARE		
Rating	-H10	110V	45-55Hz	Class 0.5
	-H11	110V	55-65Hz	
	-H12	110V	45-65Hz	Class 1.0
	-H19	110V	350-450Hz	
	-H20	220V	45-55Hz	Class 0.5
	-H21	220V	55-65Hz	
	-H22	220V	45-65Hz	Class 1.0
	-H29	220V	350-450Hz	
	-H30	100V	45-55Hz	Class 0.5
	-H31	100V	55-65Hz	
	-H32	100V	45-65Hz	Class 1.0
	-H39	100V	350-450Hz	
	-H40	115V	45-55Hz	Class 0.5
	-H41	115V	55-65Hz	
	-H42	115V	45-65Hz	Class 1.0
	-H49	115V	350-450Hz	
	-H50	200V	45-55Hz	Class 0.5
	-H51	200V	55-65Hz	
	-H52	200V	45-65Hz	Class 1.0
	-H59	200V	350-450Hz	
-H60	230V	45-55Hz	Class 0.5	
-H61	230V	55-65Hz		
-H62	230V	45-65Hz	Class 1.0	
-H69	230V	350-450Hz		
Designation of Frequency Used	-N	Always "-N"		
Pointer	-L	Lance type pointer (Black), Always "-L"		
Cover color and Set pointer	-BL	Munsell N1.5		
	-BG	Munsell 7.5BG4/1.5		
	-BS	Munsell N1.5 with Set pointer (red color)		
	-GS	Munsell 7.5BG4/1.5 with Set pointer (red color)		

### SPECIFY THE FOLLOWING WHEN ORDERING

Model and Suffix codes

#### Notes :

VT is not supplied.

# 2109A



## SYNCHROSCOPE

Model	Suffix Codes	Descriptions	
2109A30		Single phase / Three phase	equivalent to Class 2.5
Rating	-VPM	110V	
	-VRM	220V	
Designation of Frequency Used	N	50/60Hz Common	
	-C	400Hz	
Cover color and Set pointer	-BL	Munsell N1.5	
	-BG	Munsell 7.5BG4/1.5	

### SPECIFY THE FOLLOWING WHEN ORDERING

Model and Suffix codes

### Notes :

- (1) Phase : Single phase and 3-phase common use.
- (2) Scale : SLOW-FAST.
- (3) Model 2109A is not complied with JIS standards.
- (4) Pointer : Lance type pointer (Black)

Model	Rating	Power consumption VA	
		Incoming	Running
2109A30	110V	0.15VA	3.5VA
	220V	0.3VA	3.5VA



# DIMENSIONS AND PANEL MOUNTING

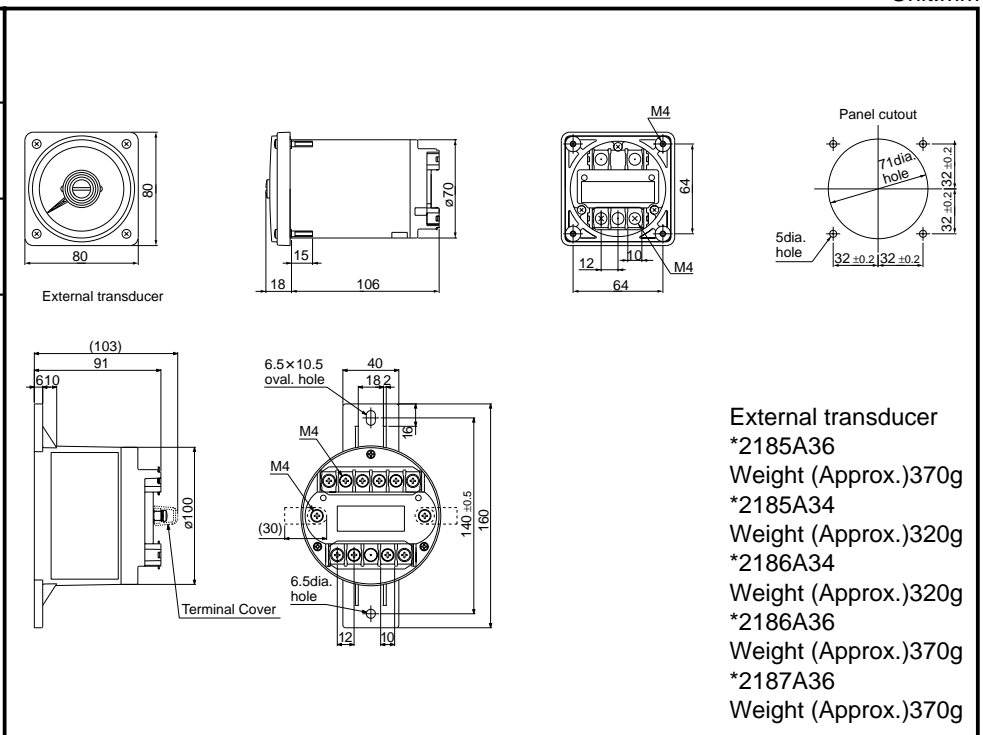
Unit:mm

<p>2101A30,35,36,37 Weight (Approx.)450g</p> <p>2102A30 Weight (Approx.)460g</p> <p>2107A31,33 Weight (Approx.)600g</p> <p>2108A30 Weight (Approx.)490g</p>	
<p>2181A00,35,36,37 Weight (Approx.)360g</p> <p>2182A00 Weight (Approx.)370g</p> <p>2187A31,33 Weight (Approx.)400g</p> <p>2188A30 Weight (Approx.)370g</p>	
<p>2105A31,32,34,35,36 Weight (Approx.)570g</p> <p>2106A31,33,34,35,36 Weight (Approx.)590g</p> <p>2107A35,36 Weight (Approx.)600g</p>	
<p>2185A31,32,35 Only meter Weight (Approx.)370g</p> <p>2186A31,33,35 Only meter Weight (Approx.)370g</p> <p>2187A35 Only meter Weight (Approx.)370g</p>	<p>External transducer</p> <p>External transducer *2185A31 Weight (Approx.)290g *2185A32,35 Weight (Approx.)320g *2186A31 Weight (Approx.)290g</p> <p>*2186A33 Weight (Approx.)340g *2186A35 Weight (Approx.)320g *2187A35 Weight (Approx.)340g</p>

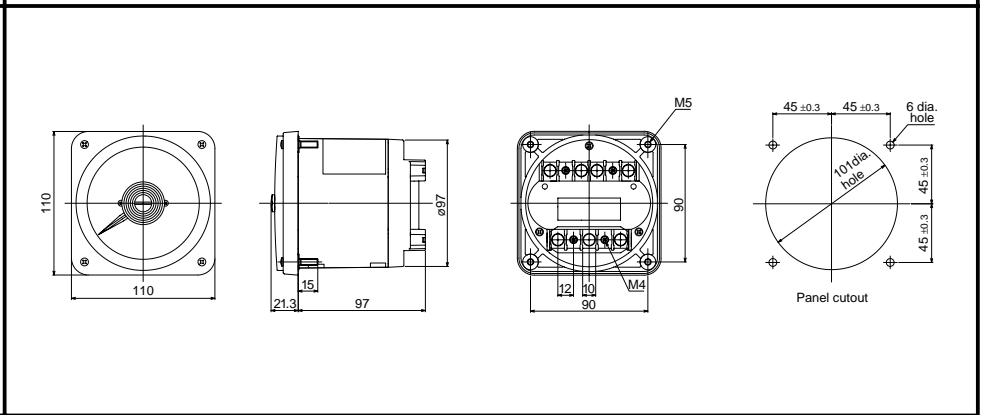
2185A34,36  
Only meter  
Weight (Approx.)370g

2186A34,36  
Only meter  
Weight (Approx.)370g

2187A36  
Only meter  
Weight (Approx.)370g

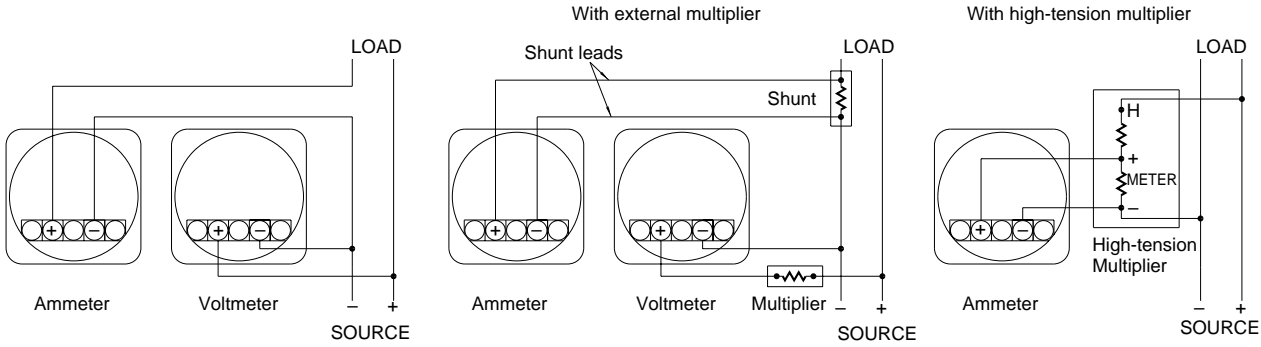


2109A30  
Only meter  
Weight (Approx.)550g

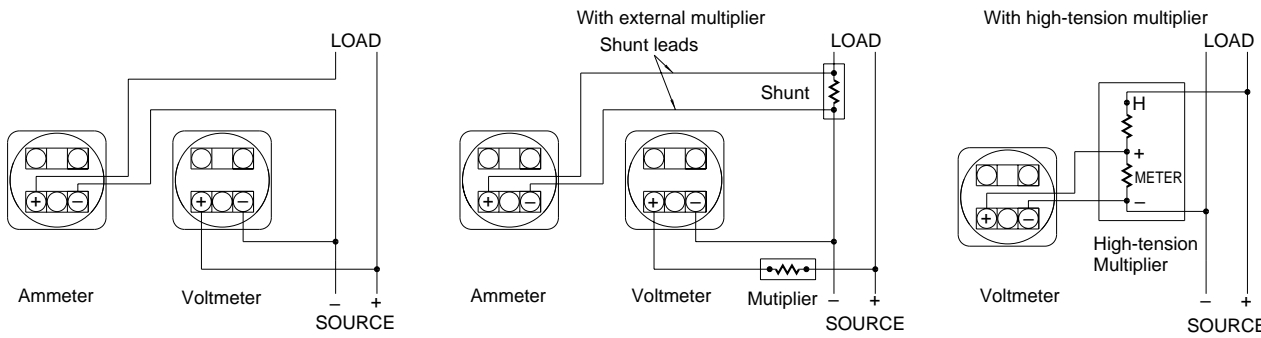


# CONNECTION DIAGRAMS

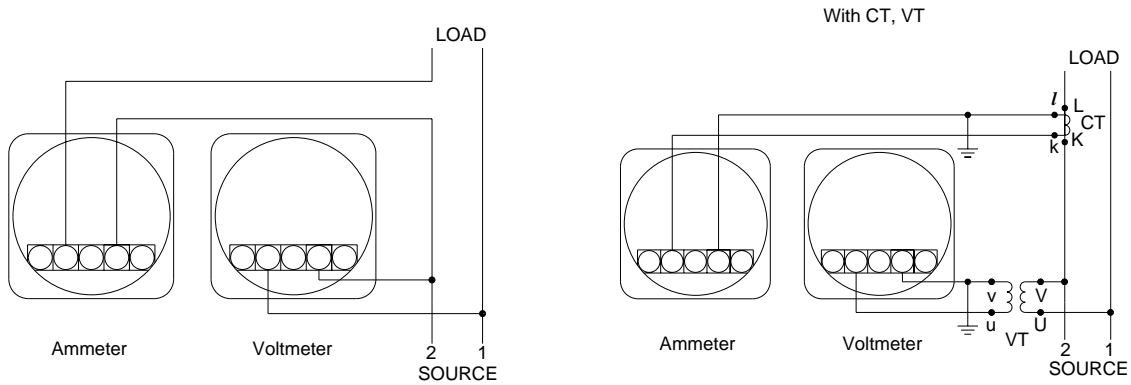
2101A 30, 35, 36, 37



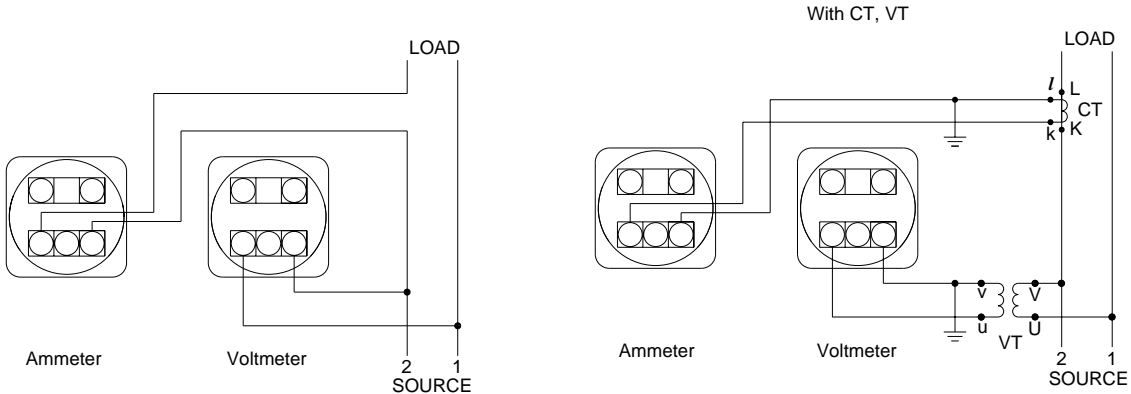
2181A 00, 35, 36, 37



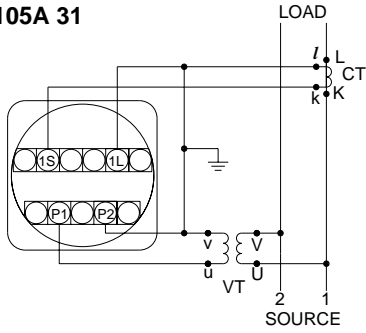
2102A 30, 31



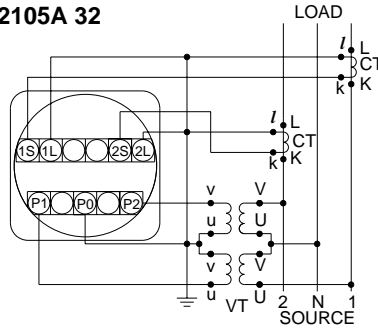
2182A 00, 01



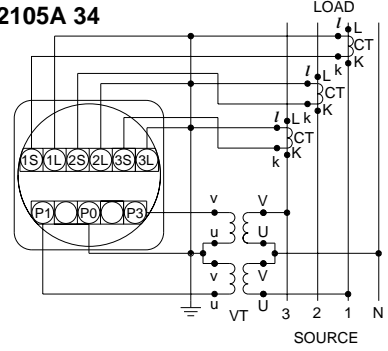
**Single-Phase 2-Wire**  
2105A 31



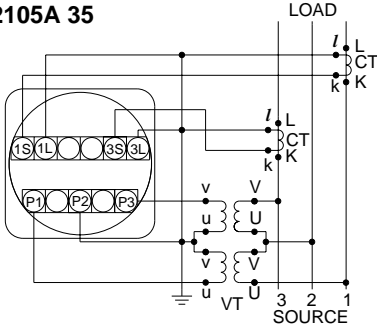
**Single-Phase 3-Wire**  
2105A 32



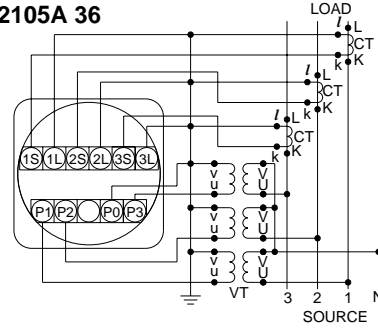
**3-Phase 4-Wire (Balanced)**  
2105A 34



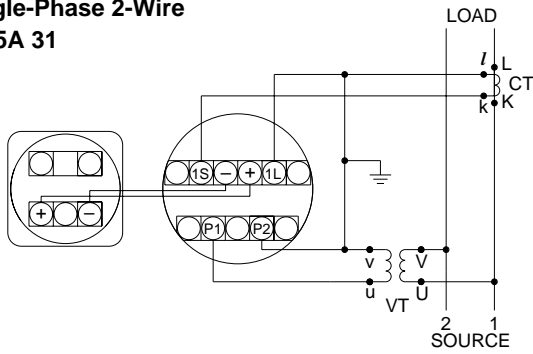
**3-Phase 3-Wire (Unbalanced)**  
2105A 35



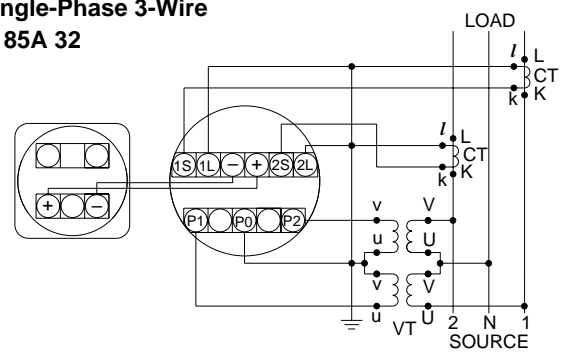
**3-Phase 4-Wire (Unbalanced)**  
2105A 36



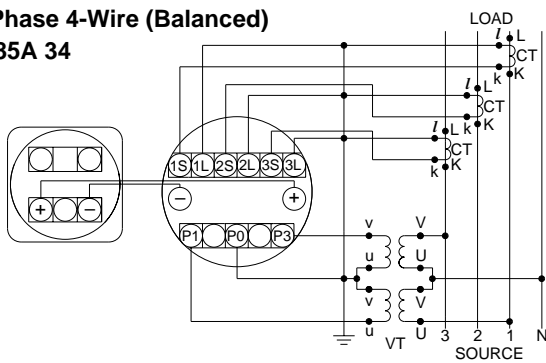
**Single-Phase 2-Wire**  
2185A 31



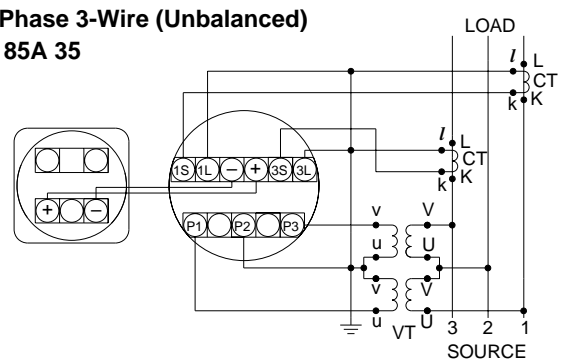
**Single-Phase 3-Wire**  
2185A 32



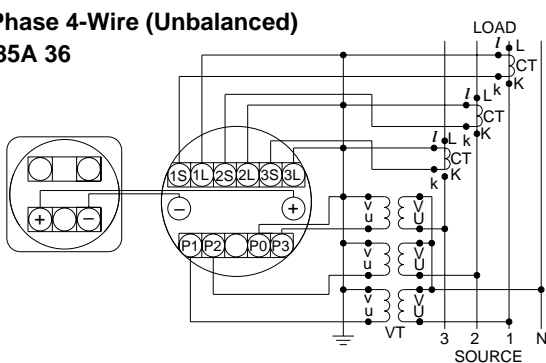
**3-Phase 4-Wire (Balanced)**  
2185A 34



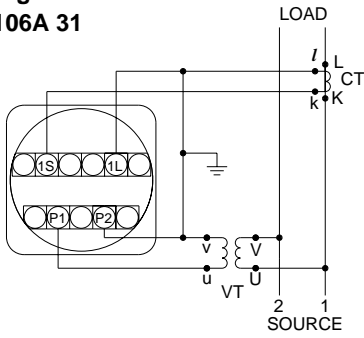
**3-Phase 3-Wire (Unbalanced)**  
2185A 35



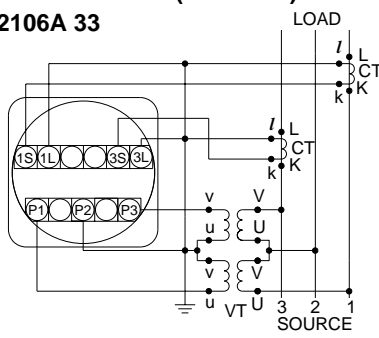
**3-Phase 4-Wire (Unbalanced)**  
2185A 36



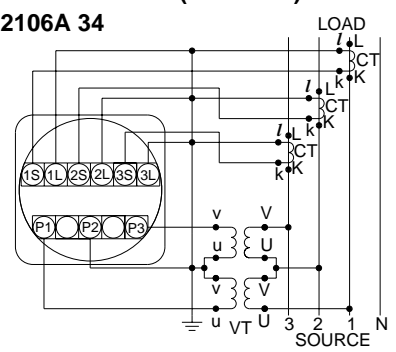
**Single-Phase 2-Wire**  
**2106A 31**



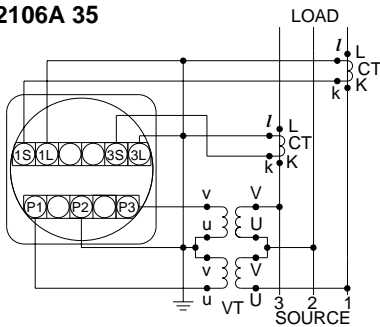
**3-Phase 3-Wire (Balanced)**  
**2106A 33**



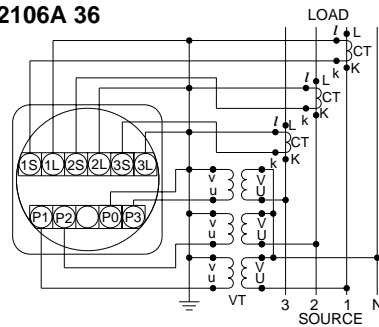
**3-Phase 4-Wire (Balanced)**  
**2106A 34**



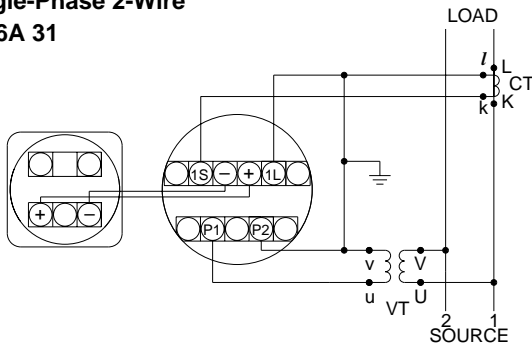
**3-Phase 3-Wire (Unbalanced)**  
**2106A 35**



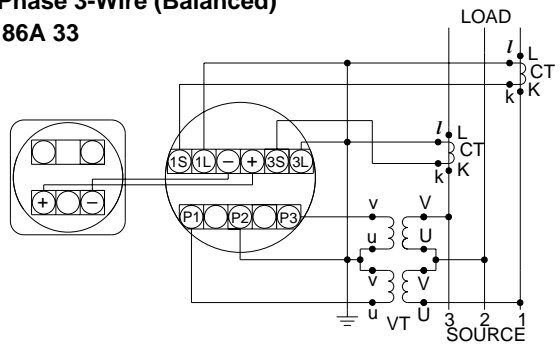
**3-Phase 4-Wire (Unbalanced)**  
**2106A 36**



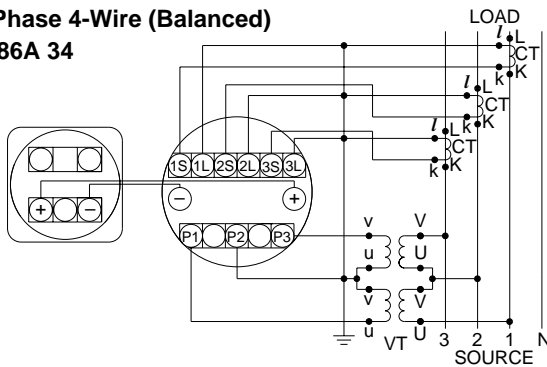
**Single-Phase 2-Wire**  
**2186A 31**



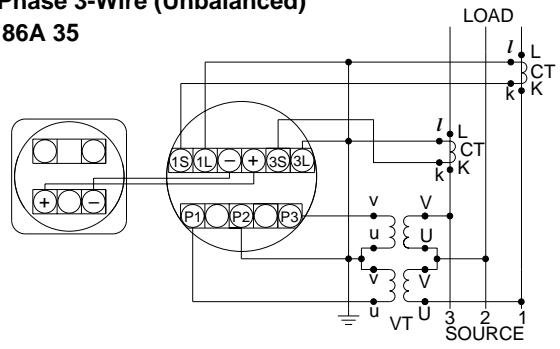
**3-Phase 3-Wire (Balanced)**  
**2186A 33**



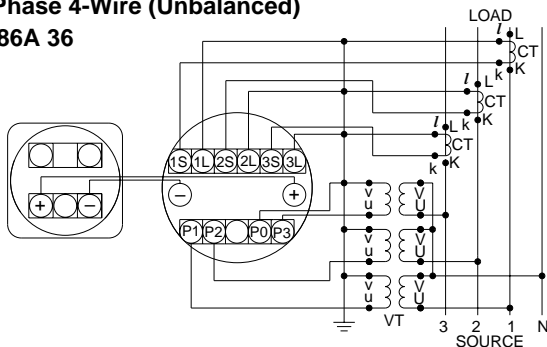
**3-Phase 4-Wire (Balanced)**  
**2186A 34**



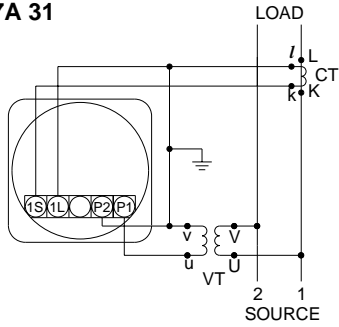
**3-Phase 3-Wire (Unbalanced)**  
**2186A 35**



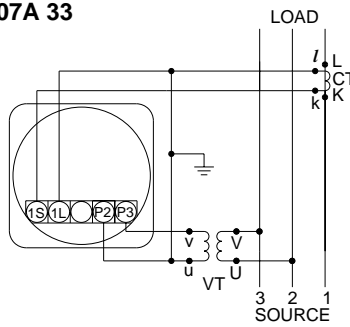
**3-Phase 4-Wire (Unbalanced)**  
**2186A 36**



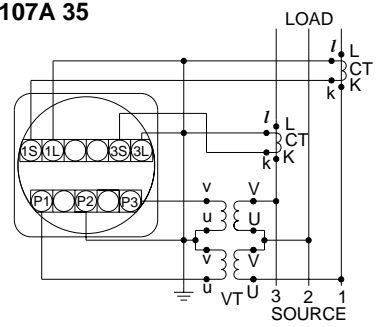
**Single-Phase 2-Wire**  
2107A 31



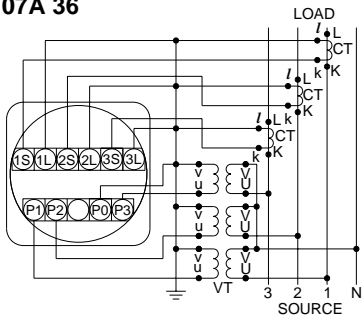
**3-Phase 3-Wire (Balanced)**  
2107A 33



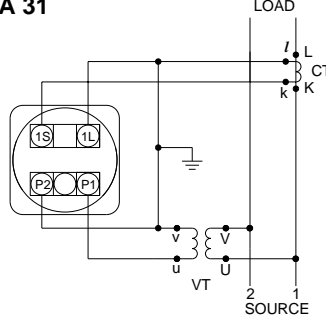
**3-Phase 3-Wire (Unbalanced)**  
2107A 35



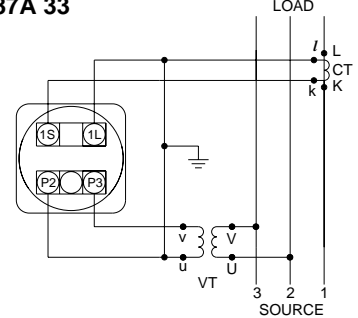
**3-Phase 4-Wire (Unbalanced)**  
2107A 36



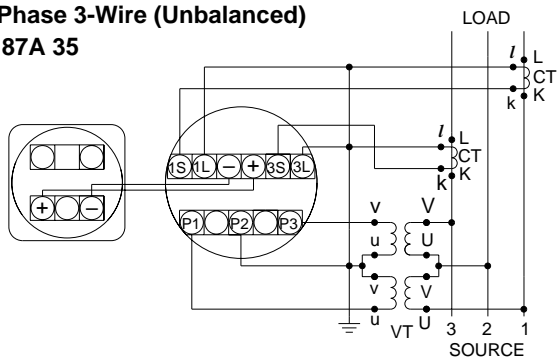
**Single-Phase 2-Wire**  
2187A 31



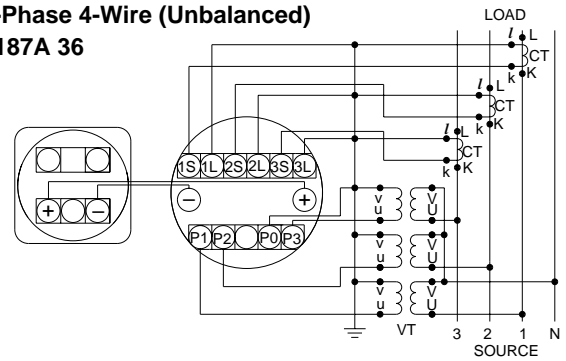
**3-Phase 3-Wire (Balanced)**  
2187A 33



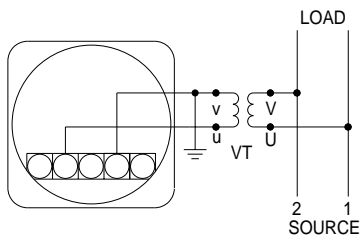
**3-Phase 3-Wire (Unbalanced)**  
2187A 35



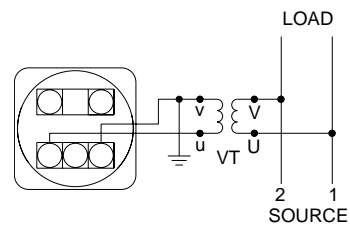
**3-Phase 4-Wire (Unbalanced)**  
2187A 36



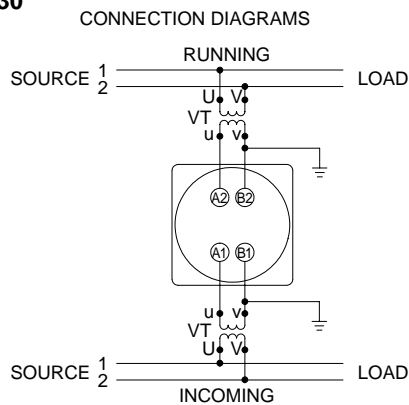
2108A 30



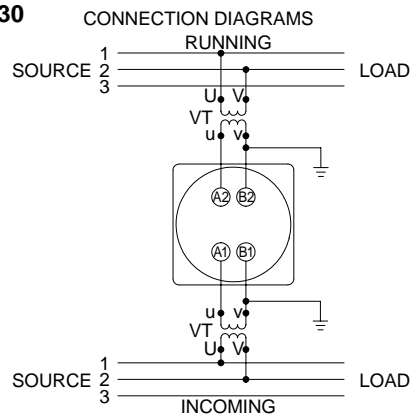
2188A 30



**Single-Phase**  
2109A 30



**3-Phase**  
2109A 30



# ACCESSORIES

## EXTERNAL SHUNT 2215, 2216, 2217

Model	Rating
2215	01 1 A
	02 1.5 A
	03 2 A
	04 3 A
	05 5 A
	06 7.5 A
	07 10 A
	08 15 A
	09 20 A
	10 30 A
	11 50 A
	12 75 A
	13 100 A
	14 150 A
	15 200 A
	16 300 A
2216	01 500 A
	02 750 A
	03 1000 A
2217	01 1500 A
	02 2000 A
	03 3000 A
	04 5000 A

Class: Class 0.2 of rated value  
Rated voltage drop: 50 mV

## EXTERNAL MULTIPLIER 2224, 2225, 2226, 2228

Model	Rating	Current Consumption
2224	01 50 V	1 mA
	02 75 V	
	03 100 V	
	04 150 V	
	05 300 V	
	06 500 V	
	07 750 V	
2225	00 1 kV	
2226	01 1.5 kV	
	02 2 kV	
	03 3 kV	
2228	01 5 kV	
	02 7.5 kV	

Accuracy:  $\pm 0.5\%$  of rated value  
Measuring method: 2224...2 terminal type  
2225, 2226, 2228...3 terminal type

## EXTERNAL CT 2255

Model	Primary	Secondary
2255	01 10 A	5 A (15 VA max.)
	02 15 A	
	03 20 A	
	04 30 A	
	05 50 A	
	06 75 A	
	07 100 A	
	08 150 A	
	09 200 A	
	10 250 A	
	11 300 A	
	12 500 A	

Class: Equivalent to JIS C1731 Class 1.0  
Structure: Epoxy mold type  
Dielectric Strength: less than 3450V

## EXTERNAL VT

Model	2267	2268
Rated Burden	15 VA	50 VA
Primary	Secondary	—
220 V	110 V	2267 01 —
440 V		2267 02 —
1100 V		2267 03 —
2200 V		2267 04 —
3300 V		2267 05 2268 01
6600 V	—	2268 02

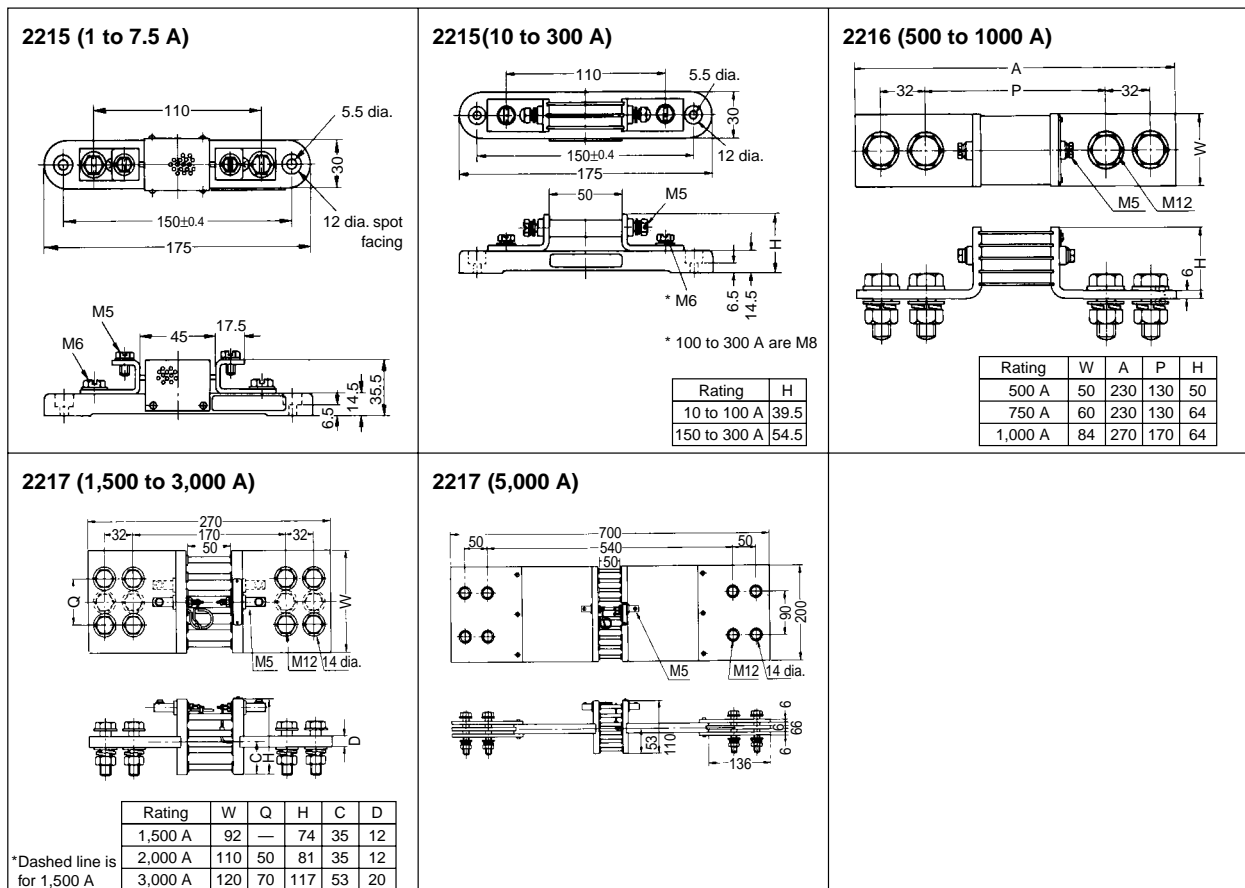
Class: Equivalent to JIS C1731 Class 1.0  
Structure: Epoxy mold type

## OTHER

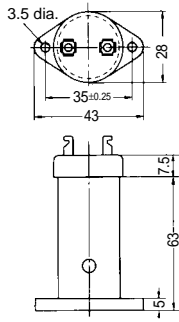
Shunt lead: 219930-24

## DIMENSIONS FOR ACCESSORIES

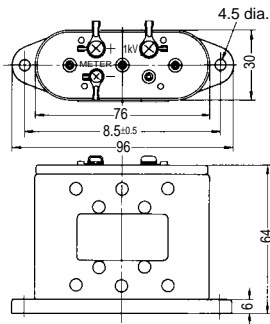
(unit: mm)



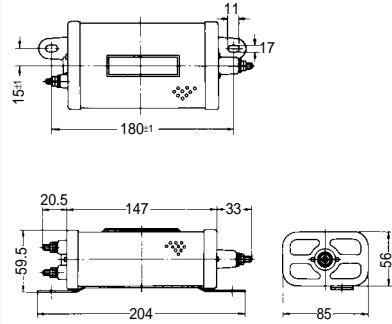
**2224 (50 to 750 V)**



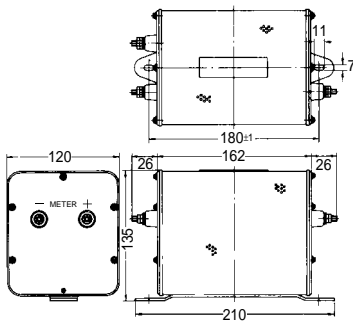
**2225 (1 kV)**



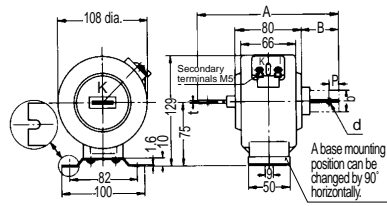
**2226 (1.5, 2, 3 kV)**



**2228 (5, 7.5 kV)**

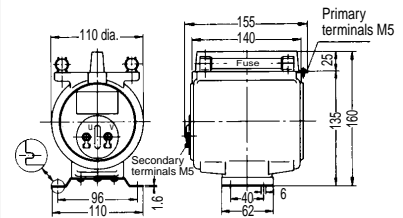


**2255 (10 to 500 A/5 A)**

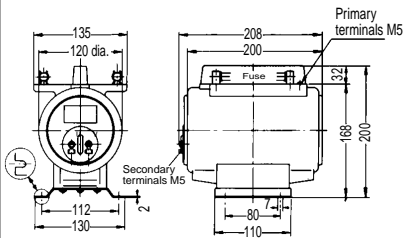


Rating	A	B	P	b	d	t
10 to 150 A	170	45	12	25	7	4
200, 250 A	180	50	15	25	9	4
300, 500 A	200	60	20	40	11	5

**2267 (220 to 3300 V/110 V)**



**2268 (3.3 to 6.6 kV/110 V)**











**YOKOGAWA** 

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