

Panel Board Meter

- PANEL BOARD METER
- PANEL BOARD METER [DIN TYPE]
- PANEL BOARD AMPEREMETER
- PANEL BOARD VOLTMETER
- PANEL BOARD WATTMETER
- PANEL BOARD VAR METER
- PANEL BOARD FACTOR METER [COS ϕ]
- PANEL BOARD FREQUENCY METER
- PANEL BOARD MAXIMUM DEMAND METER
- DIGITAL PANEL METER



PANEL BOARD METER



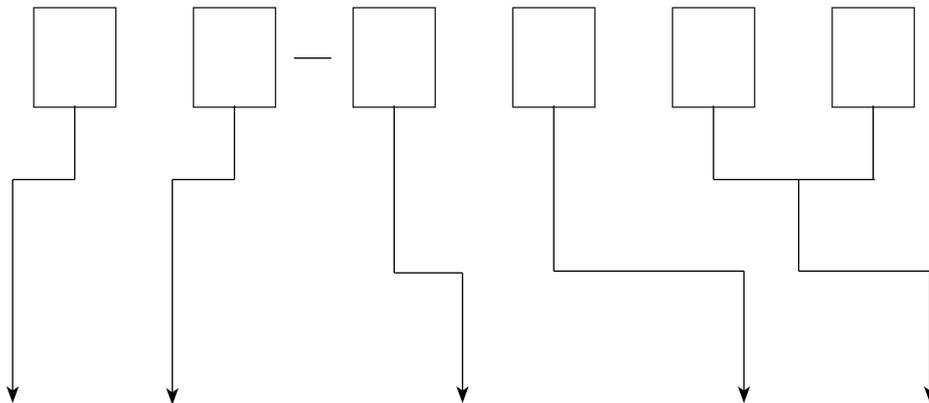
Characteristics

KS C 1303

- High reliability for surrounding environments
- Suitable designation to be installed on the panel.
- It in pivot type, and the size of wide angle type is 80×80mm, 110×110mm and the size of square type is 80×80mm, 100×84mm
- No influence for magnetic force of outstanding.
- This meter in manufactured specially the front cover to increase effect of the wide angle and if in very easy to find out indicating and locating of the needle due to manufacturing specially the top of cover
- As assembling the case with incerting some bolts, if in longer life than the other meter



Ordering procedure



| | |
|------------------------|----------------|
| W (Wide Angle Type) | 8:80mm×80mm |
| | 11:110mm×110mm |
| S (Square type) | 8:80mm×80mm |
| | 10:100mm×84mm |
| | *7:72mm×72mm |
| | *4:48mm×48mm |

DIN SIZE

A: Ampere
 V: Volt
 W: Watt
 P: Power Factor($\cos\phi$)
 F: Frequency (Hz)
 R: Reactive power (var)

A: AC
 D: DC
 1: 1P 2W
 2: 1P 3W
 3: 3P 3W
 4: 3P 4W

U: Unbalance
 B: Balance
 T: Transducer (INT type)

PANEL BOARD METER



| equipment | Type division | W8/S8 Type | | | W8/S8 Type | | |
|-----------|--------------------------|---------------------------|---|--|--------------------------------|---|--|
| | | Model | Operating method | Class | Model | Operating method | Class |
| DC | Amperemeter & Voltmeters | W8-AD W8-VD | Moving Coil type  | 1.0% 1.5% | W11-AD W11-VD | Moving Coil Type  | 1.0% or 1.5% |
| | | S8-AD S8-VD | | 2.5% | S10-AD S4,7-AD,VD S10-VD | | 1.5% |
| | | W8-AA W8-VA | | Rectifier Type  | 1.0% 1.5% | | W11-AA W11-VA |
| AC | Amperemeter & Voltmeters | S8-AA | Moving Iron Type  | 2.5% | S4,7-AA S10-AA | Moving Iron Type  | 1.5% |
| | | S8-VA | Rectifier Type  | 2.5% | S4-VA S7-VA S10-VA | Rectifier Type  | 1.5% |
| | | Watt Meters(W) | W8-W S8-W | Transducer Type  | 1.0%1.5% 2.5% | W11-W S10-W | Transducer Type  |
| AC | Var Meters(var) | W8-R S8-R | Transducer Type  | 1.5% 2.5% | W11-R S10-R | Transducer Type  | 1.0%1.5% 1.5% |
| | | Power Facto (cosφ) Meters | W8-P S8-P | Transducer Type  | 5.0% | W11-P S10-P | Transducer Type  |
| AC | Frequency Meters | W8-F S8-F | Transducer Type  | 1.0% | W11-F S10-F | Transducer Type  | 1.0% |

 EXT Transducer Type /  INT Transducer Type

Standard specification

| Scale | Type | W8/S8 Type | W11/S10 Type |
|-----------------------|------|--|--------------|
| Scale Length(mm) | | 122/68 | 176/80 |
| Number of Division | | 24 ~ 52 | |
| Angle of Deflection | | 250° / 90° | |
| material : Case/Cover | | ABS Resin/Poly carbonate Resin | |
| colour : Case | | Munsell n1,5 (black), Munsell 7,5(blue-gray) | |
| Name Plate | | White | |
| Position of Use | | Vertical(⊥) | |
| Standard Pointer | | "W" Type Standard "S" Type Standard | |
| Ambient Temperature | | 0 °C ~ 40 °C | |

• Full scale formats of "W" type

| | | | | | | | | | | | | | | | | | | | | | |
|------------|----|-----|-----|-----|-----|----|-----|-----|----|-----|----|-----|-----|----|----|-----|------|----|----|------|-----|
| Full Scale | 1 | 1.2 | 1.3 | 1.4 | 1.5 | 2 | 2.4 | 2.5 | 3 | 3.8 | 4 | 4.5 | 4.8 | 5 | 6 | 5.2 | 7.5 | 8 | 9 | 31.2 | 1.6 |
| Divisions | 50 | 24 | 26 | 28 | 30 | 40 | 48 | 50 | 30 | 38 | 40 | 45 | 48 | 50 | 30 | 52 | 37.5 | 40 | 45 | 31.2 | 32 |

※ Actual full scale in the value of 10n times of table value.

• Full scale formats of "S" type

| | | | | | | | | | | | | | | | | | |
|------------|----|-----|-----|----|-----|-----|----|----|------|----|----|----|------|--------|----|------|------|
| Full Scale | 1 | 1.2 | 1.5 | 2 | 2.4 | 2.5 | 3 | 4 | 4.5 | 5 | 6 | 7 | 7.5 | *1 7.5 | 8 | *2 8 | *3 9 |
| Divisions | 20 | 24 | 30 | 20 | 24 | 25 | 30 | 20 | 22.5 | 25 | 30 | 35 | 37.5 | 15 | 40 | 16 | 45 |

※ Actual full scale in the value of 10n times of table value.

※ Remark ※ 1,2 in applicated for S8 type

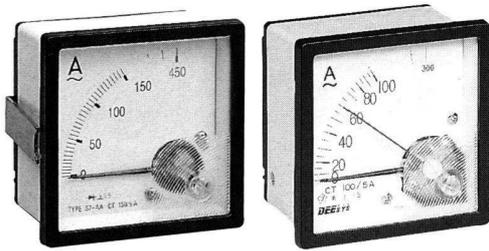
※ Remark ※ 3 is applicated only for type S10

• U The standard scale of power factor meter (cosφ)

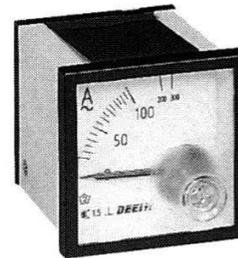
• U The standard scale of frequency meter(Hz) is indicated 45~55 and 55~65.

PANEL BOARD METER(DIN TYPE)

S7 type



S4 type



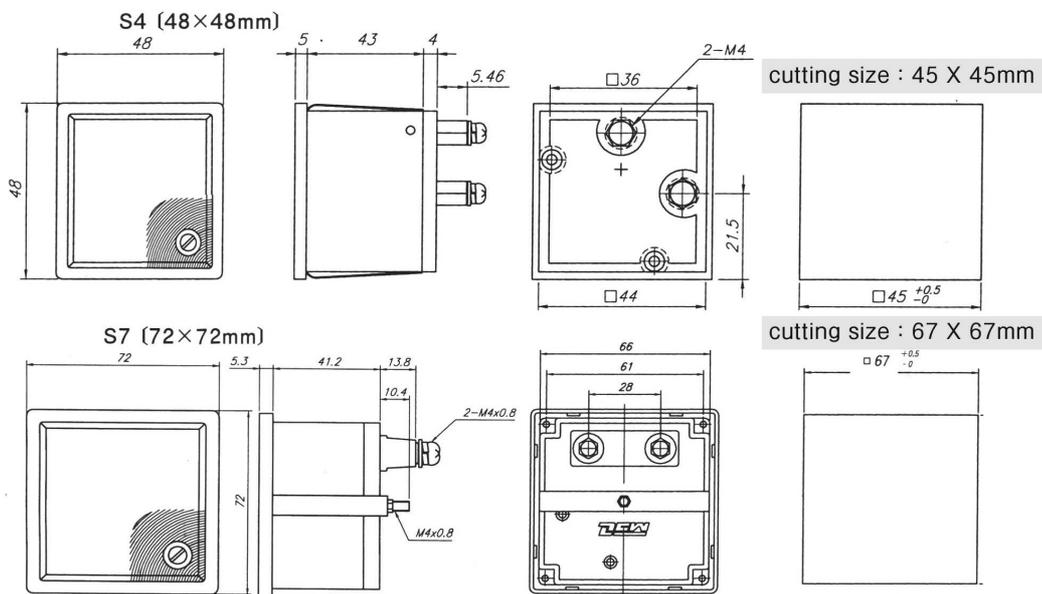
Specification

| Type | Size | Rating | Freq(Hz) | Principle | Class | Weight(Kg) |
|-------|---------|---------------|----------|-------------|-------|------------|
| S4-AA | 48X48mm | AC 5A | 50/60 | Moving Iron | 1.5 | 0.15 |
| S4-VA | | AC 150,300V | 50/60 | Rectifier | | 0.15 |
| S4-AD | | DC50mV,1mA | - | Moving Coil | | 0.15 |
| S7-AA | 72X72mm | AC 5A | 50/60 | Moving Iron | | 0.22 |
| S7-VA | | AC150,300V | 50/60 | Rectifier | | 0.18 |
| S7-AD | | DC50mV, 1mA | - | Moving Coil | | 0.18 |
| S7-F | | 45~55,55~65Hz | - | Transducer | 0.3 | |

Features

- Select the 150~330% over scale meter of rating current due to starting current of motor if it is used in motor circuit.
- Combine the P.T for meter if the voltage of circuit (Measuring voltafe) is over 300V
- It is very easy to install the meter on panel
 - In case of S7 type, it can be installed by □ type band.
 - In case of S4 type, it can be installed easing by pushing on the cut hole with plate spring (SUS)

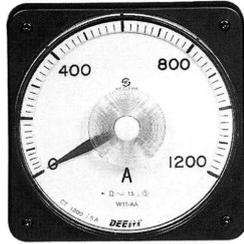
Dimension



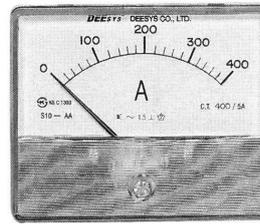
PANEL BOARD AMPEREMETER



"W" type



"S" type



Specification

| Type | Size | Rating | Freq(Hz) | VA | Class | Weight(Kg) |
|--------|-----------|--------|----------|-----------|------------|------------|
| W8-AA | 80X80mm | 5A | 50/60 | 1.5 | 1.0 or 1.5 | 0.40 |
| W8-AD | | 50mV | - | 50mV Drop | | |
| W11-AA | 110X110mm | 5A | 50/60 | 1.5 | 1.0 or 1.5 | 0.52 |
| W11-AD | | 50mV | - | 50mV Drop | | |
| S8-AA | 80X80mm | 5A | 50/60 | 1.5 | 2.5 | 0.25 |
| S8-AD | | 50mV | - | 50mV Drop | | |
| S10-AA | 100X84mm | 5A | 50/60 | 1.5 | 1.5 | 0.27 |
| S10-AD | | 50mV | - | 50mV Drop | | |

Characteristics

AC Amperemeter

1. Combine C,T of rating 2ry current 5A(1A) for meter if current of case it in over 5A
2. Combine P,T & C,T for meter in order to insulate the circuit if voltage of circuit over 500V and current of circuit is below 5A,
3. Select 150~500% over scale meter of rating current due to starting current of motor if it in for motor circuit,

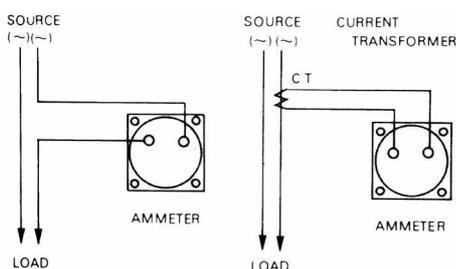
DC Amperemeter

1. In case of below 30A current, the shunt installed in the meter, But in case of over 30A current, the shunt in not installed in the meter, please connect the shunt (50mA) outside,
2. When you connect the shunt, connect the shunt on the minus side.

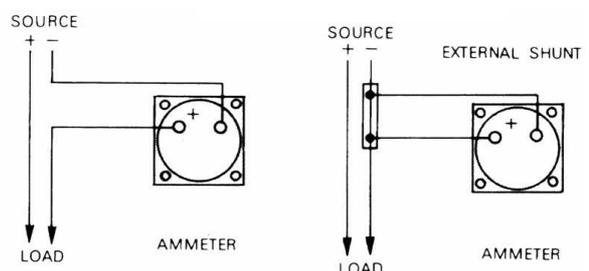


External connection diagram

AC Ammeter



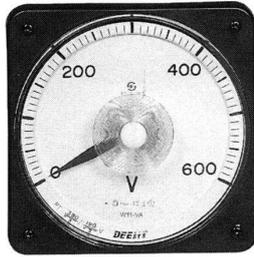
DC Ammeter



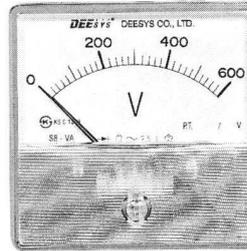
PANEL BOARD VOLTMETER



"W" type



"S" type



Specification

| Type | Size | Rating | Freq(Hz) | VA | Class | Weight(Kg) |
|--------|-----------|-----------|----------|----------|------------|------------|
| W8-VA | 80X80mm | 150, 300V | 50/60 | 0,5 | 1.0 or 1.5 | 0.40 |
| W8-VD | | 150, 300V | - | 1KΩ / V | | |
| W11-VA | 110X110mm | 150, 300V | 50/60 | 0,5 | 1.0 or 1.5 | 0.52 |
| W11-VD | | 150, 300V | - | 1KΩ / V | | |
| S8-VA | 80X80mm | 150, 300V | 50/60 | 5.0(0.5) | 2,5 | 0.25 |
| S8-VD | | 150, 300V | - | 5KΩ / V | | |
| S10-VA | 100X84mm | 150, 300V | 50/60 | 5.0(0.5) | 1,5 | 0.27 |
| S10-VD | | 150, 300V | - | 5KΩ / V | | |

※ VA:AC, VD:DC, W:Wide Angle Types : Square Type

※ The value of () in for rectifier type

Characteristics

AC Meter

1. Combine P.T with 150V meter if input voltage in over AC 300V circuit.
EX) meter scale 0~9000V, input range 0~150V:P.T ratio 6,600/110V

DC Meter

1. Connect the multiplier outside in case of over DC 750V of input voltage.
2. Connect the multiplier on plus side.
3. The current sensitivity of DC voltmeter in 1mA (1KΩ/V)

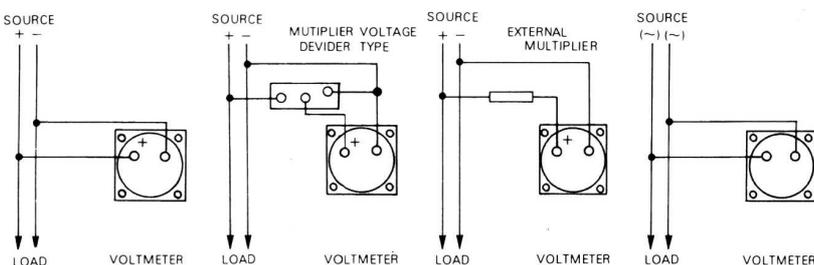
ex) Choose of Meter

ex1) 3P 3W (In case of 6.6KV line)
full scale value (V):9KV
P.T ratio:6.6KV/110V
MAX. input range= $\frac{9KV}{6.6KV/110V} = 150V$

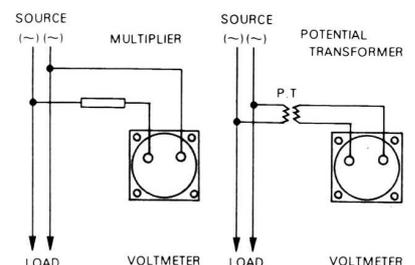
ex) 3P 4W (In case of 22.9KV line)
full scale value (V):31.2KV
P.T ratio:22.9KV/110V
MAX. input range= $\frac{31.2KV}{22.9KV/110V} = 150V$

External connection diagram

DC Voltmeter



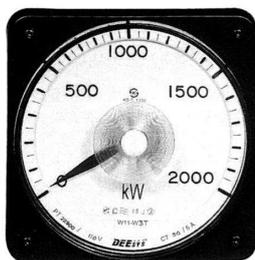
AC Voltmeter



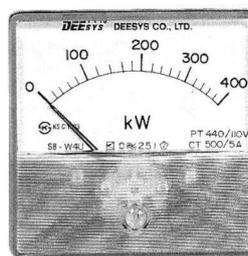
PANEL BOARD WATTMETER



"W" type



"S" type



Specification

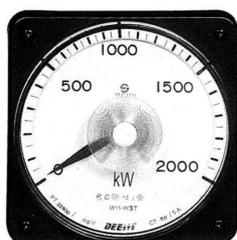
| TYPE | Size | Circuit | Rated | | Va | | Remark | | Hz | Class | Weight (kg) | REF |
|----------|---------------------------|---------|--------------------------------|-----|-----|-----|--------|----|-----|-------|-------------|-------------|
| | | | V | A | V | A | V | A | | | | |
| W8-W1 | (wide angle) 80X80mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.65 | EXT. T/D |
| W8-W2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.75 | |
| W8-W4 | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.75 | |
| W11-W1 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.85 | |
| W11-W2 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.90 | |
| W11-W3 | (wide angle) 110X110mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.70 | EXT. T/D |
| W11-W4 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.85 | |
| W11-W4U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.85 | |
| W11-W1T | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.95 | |
| W11-W2T | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 1.00 | |
| W11-W3T | | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.60 | |
| W11-W4T | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.85 | |
| W11-W4UT | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.85 | INT. T/D | |
| S8-W1 | Square 80X80mm | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.90 | EXT. T/D |
| S8-W2 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.90 | |
| S8-W3 | | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.55 | |
| S8-W4 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.65 | |
| S8-W4U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.65 | |
| S10-W1 | Square 100X84mm | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.75 | EXT. T/D |
| S10-W2 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.85 | |
| S10-W3 | | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.57 | |
| S10-W4 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.67 | |
| S10-W4U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.67 | |
| S10-R4 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.77 | |
| S10-R4U | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.87 | |

※U:Unbalance, T:Int. Transduce, W:Watt

※EXT,T/D:Installation the Transducer outside, INT,T/D:Installation the transducer inside

※The specification of rating current 1A is based on ordering

U EXT. Watt meter



UEXT. T/D



Standard full scale table(Watt meters)

| Phase Wire | 1P2W | | 1P3W | | 3P3W | | | | | | 3P4W | | | | |
|-------------------|-------|-------|-------|----------|----------|-----------|-----------|------------|------------|------------|---------------|----------------------------|-----------------|------------------------------|------------------------------|
| P.T.ratio(V) | 110 | 110 | 220 | 380 /110 | 440 /110 | 3300 /110 | 6600 /110 | 22000 /110 | 22900 /110 | 154KV /110 | $208\sqrt{3}$ | $380\sqrt{3} /190\sqrt{3}$ | $380 /\sqrt{3}$ | $11400\sqrt{3} /190\sqrt{3}$ | $22900\sqrt{3} /190\sqrt{3}$ |
| Calibrating watts | 0,6kW | 1,0kW | 2,0kW | 1,158kW | 1,0kW | 1,0kW | 1,0kW | 1,0kW | 0,961kW | 1,0kW | 2,0kW | 2,0kW | 4,0kW | 1,666kW | 1,666kW |
| C.T.ratio | | | | | | | | | | | | | | | |
| 5/5 | 0,6 | 1 | 2 | 4 | 4 | 30 | 60 | 200 | 200 | 1400 | 2 | 4 | 4 | 100 | 200 |
| 10/5 | 1,2 | 2 | 4 | 8 | 8 | 60 | 120 | 400 | 400 | 2800 | 4 | 8 | 8 | 200 | 400 |
| 15/5 | 1,8 | 3 | 6 | 12 | 12 | 90 | 180 | 600 | 600 | 4200 | 6 | 12 | 12 | 300 | 600 |
| 20/5 | 2,4 | 4 | 8 | 16 | 16 | 120 | 240 | 800 | 800 | 5600 | 8 | 16 | 16 | 400 | 800 |
| 25/5 | 3,0 | 5 | 10 | 20 | 20 | 150 | 300 | 1000 | 1000 | 7000 | 10 | 20 | 20 | 500 | 1000 |
| 30/5 | 3,6 | 6 | 12 | 24 | 24 | 180 | 360 | 1200 | 1200 | 8400 | 12 | 24 | 24 | 600 | 1200 |
| 40/5 | 4,8 | 8 | 16 | 32 | 32 | 240 | 480 | 1600 | 1600 | 11,2Mw | 16 | 32 | 32 | 800 | 1600 |
| 50/5 | 6,0 | 10 | 20 | 40 | 40 | 300 | 600 | 2000 | 2000 | 14,0 | 20 | 40 | 40 | 1000 | 2000 |
| 60/5 | 7,2 | 12 | 24 | 48 | 48 | 360 | 720 | 2400 | 2400 | 16,8 | 24 | 48 | 48 | 1200 | 2400 |
| 75/5 | 9,0 | 15 | 30 | 60 | 60 | 450 | 900 | 3000 | 3000 | 21,0 | 30 | 60 | 60 | 1500 | 3000 |
| 80/5 | 9,6 | 16 | 32 | 64 | 64 | 480 | 960 | 3200 | 3200 | 22,4 | 32 | 64 | 64 | 1600 | 3200 |
| 100/5 | 12,0 | 20 | 40 | 80 | 80 | 600 | 1200 | 4000 | 4000 | 28,0 | 40 | 80 | 80 | 2000 | 4000 |
| 120/5 | 14,4 | 24 | 48 | 96 | 96 | 720 | 1440 | 4800 | 4800 | 33,6 | 48 | 96 | 96 | 2400 | 4800 |
| 150/5 | 18,0 | 30 | 60 | 120 | 120 | 900 | 1800 | 6000 | 6000 | 42,0 | 60 | 120 | 120 | 3000 | 6000 |
| 200/5 | 24,0 | 40 | 80 | 160 | 160 | 1200 | 2400 | 8000 | 8000 | 56,0 | 80 | 160 | 160 | 4000 | 8000 |
| 250/5 | 30,0 | 50 | 100 | 200 | 200 | 1500 | 3000 | 10Mw | 10Mw | 70,0 | 100 | 200 | 200 | 5000 | 10Mw |
| 300/5 | 36,0 | 60 | 120 | 240 | 240 | 1800 | 3600 | 12 | 12 | 84,0 | 120 | 240 | 240 | 6000 | 12 |
| 400/5 | 48,0 | 80 | 160 | 320 | 320 | 2400 | 4800 | 16 | 16 | 112,0 | 160 | 320 | 320 | 8000 | 16 |
| 500/5 | 60,0 | 100 | 200 | 400 | 400 | 3000 | 6000 | 20 | 20 | 140 | 200 | 400 | 400 | 10Mw | 20 |
| 600/5 | 72,0 | 120 | 240 | 480 | 480 | 3600 | 7200 | 24 | 24 | 168 | 240 | 480 | 480 | 12 | 24 |
| 750/5 | 90,0 | 150 | 300 | 600 | 600 | 4500 | 9000 | 30 | 30 | 210 | 300 | 600 | 600 | 15 | 30 |
| 800/5 | 96,0 | 160 | 320 | 640 | 640 | 4800 | 9600 | 32 | 32 | 224 | 320 | 640 | 640 | 16 | 32 |
| 1000/5 | 120,0 | 200 | 400 | 800 | 800 | 6000 | 12Mw | 40 | 40 | 280 | 400 | 800 | 800 | 20 | 40 |
| 1200/5 | 144,0 | 240 | 480 | 960 | 960 | 7200 | 14,4 | 48 | 48 | 336 | 480 | 960 | 960 | 24 | 48 |
| 1500/5 | 180,0 | 300 | 600 | 1200 | 1200 | 9000 | 18,0 | 60 | 60 | 420 | 600 | 1200 | 1200 | 30 | 60 |
| 2000/5 | 240,0 | 400 | 800 | 1600 | 1600 | 12Mw | 24,0 | 80 | 80 | 560 | 800 | 1600 | 1600 | 40 | 80 |
| 2500/5 | 300,0 | 500 | 1000 | 2000 | 2000 | 15 | 30,0 | 100 | 100 | 700 | 1000 | 2000 | 2000 | 50 | 100 |

Characteristics

1. Combine AC 110V P.T & AC 5A CT in case of over rating value.
2. Allowance of operating voltage is $\pm 10\%$ of rating voltage.
3. For max scale, refer to the above Standard Full Scale Table.

4. Watt Meter Transducer is internal type and external type.
5. In case of 3ϕ 4W voltage in phase voltage($V_L / \sqrt{3}$)

6. Calibrating Watt = $\frac{\text{MAX, scale value}}{\text{PT ratio} \times \text{CT ratio}}$

ex) 3P 3W

full scale wattmeter : 600KW
P.T ratio : 3300V/110V
C.T ratio : 100A/5A

$$\text{calibrating watts} = \frac{600\text{Kvar}}{(3300/110) \times (100/5)} = 1,0\text{Kvar}$$

ex1) 3P 4W

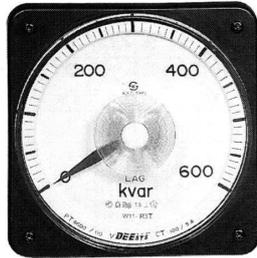
full scale wattmeter : 2000KW
P.T ratio : $\frac{22900\text{V}}{\sqrt{3}} / \frac{190\text{V}}{\sqrt{3}}$
C.T ratio : 50A/5A

$$\text{calibrating watts} = \frac{2000\text{KW}}{(\frac{22900\text{V}}{\sqrt{3}} / \frac{190\text{V}}{\sqrt{3}}) \times (50\text{A}/5\text{A})} = 1,666\text{KW}$$

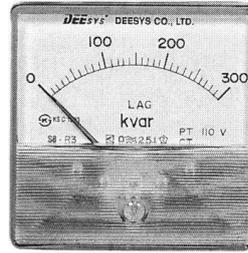
PANEL BOARD VAR METER



"W" type



"S" type



Specification

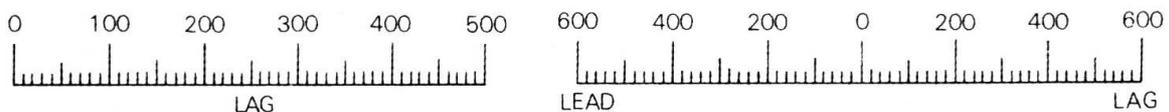
| TYPE | Size | Circuit | Rated | | Va | | Remark | | Hz | Class | Weight (kg) | REF |
|----------|--------------------------|--------------------------------|--------------------------------|-----|-----|-----|--------|----|-----|---------|-------------|-------------|
| | | | V | A | V | A | V | A | | | | |
| W8-R1 | 80X80mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.65 | EXT. T/D |
| W8-R2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.75 | |
| W8-R3 | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.75 | |
| W8-R4 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.85 | |
| W8-R4U | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.0/1.5 | 0.90 | |
| W11-R1 | 110X110mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.70 | EXT. T/D |
| W11-R2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.85 | |
| W11-R3 | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.85 | |
| W11-R4 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.95 | INT. T/D |
| W11-R4U | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.0/1.5 | 1.00 | |
| W11-R1T | | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.60 | |
| W11-R2T | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.0/1.5 | 0.85 | INT. T/D |
| W11-R3T | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.85 | |
| W11-R4T | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.0/1.5 | 0.90 | |
| W11-R4UT | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.90 | | |
| S8-R1 | 80X80mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 2.5 | 0.55 | EXT. T/D |
| S8-R2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 2.5 | 0.65 | |
| S8-R3 | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 2.5 | 0.65 | |
| S8-R4 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 2.5 | 0.75 | |
| S8-R4U | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 2.5 | 0.85 | |
| S10-R1 | (wide angle) 100X84mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.57 | EXT. T/D |
| S10-R2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | - | 60 | 1.5 | 0.67 | |
| S10-R3 | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.67 | |
| S10-R4 | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | U | 60 | 1.5 | 0.77 | |
| S10-R4U | | 3P4W | $190/\sqrt{3}, 3,380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | U | 60 | 1.5 | 0.87 | |

※ U:Unbalance, T:Int. Transduce, R:VAR

※EXT.T/D:Installation the Transducer outside, INT.T/D:Installation the transducer inside

※ The specification of rating current 1A is based on order

• example scale



※ The standard scale in lag scale

※ set the var meter to lead in left side and to lag in right side from point if the var meter in used for the power factor

Standard full scale table(1/2 var meters)

| Phase Wire | 1P2W | | 1P3W | | 3P3W | | | | | | 3P3W | | | | | |
|--------------------------------|---------|---------|---------|-------------|-------------|--------------|--------------|---------------|---------------|---------------|---------|-----------------|------------|-------------------|-------------------|--|
| P.T.ratio(V) | 110 | 110 | 220 | 380 /110 | 440 /110 | 3300 /110 | 6600 /110 | 22000 /110 | 22900 /110 | 154KV /110 | 208√3 | 380√3 /190√3 | 380 /√3 | 11400√3 /190√3 | 22900√3 /190√3 | |
| Calibrating watts C.T.ratio | 0,3Kvar | 0,5Kvar | 1,0Kvar | 0,579Kvar | 0,5Kvar | 0,5Kvar | 0,5Kvar | 0,5Kvar | 0,480Kvar | 0,5Kvar | 1,0Kvar | 1,0Kvar | 2,0Kvar | 0,833Kvar | 0,833Kvar | |
| 5/5 | 0,3 | 0,5 | 1 | 2 | 2 | 15 | 30 | 100 | 100 | 700 | 1 | 2 | 2 | 20 | 100 | |
| 10/5 | 0,6 | 1 | 2 | 4 | 4 | 30 | 60 | 200 | 200 | 1400 | 2 | 4 | 4 | 100 | 200 | |
| 15/5 | 0,9 | 1,5 | 3 | 6 | 6 | 45 | 90 | 300 | 300 | 2100 | 3 | 6 | 6 | 150 | 300 | |
| 20/5 | 1,2 | 2 | 4 | 8 | 8 | 60 | 120 | 400 | 400 | 2800 | 4 | 8 | 8 | 200 | 400 | |
| 25/5 | 1,5 | 2,5 | 5 | 10 | 10 | 75 | 150 | 500 | 500 | 3500 | 5 | 10 | 10 | 250 | 500 | |
| 30/5 | 1,8 | 3 | 6 | 12 | 12 | 90 | 180 | 600 | 600 | 4200 | 6 | 12 | 12 | 300 | 600 | |
| 40/5 | 2,4 | 4 | 8 | 16 | 16 | 120 | 240 | 800 | 800 | 5600 | 8 | 16 | 16 | 400 | 800 | |
| 50/5 | 3,0 | 5 | 10 | 20 | 20 | 150 | 300 | 1000 | 1000 | 7000 | 10 | 20 | 20 | 500 | 1000 | |
| 60/5 | 3,6 | 6 | 12 | 24 | 24 | 180 | 360 | 1200 | 1200 | 8000 | 12 | 24 | 24 | 600 | 1200 | |
| 75/5 | 4,5 | 7,5 | 15 | 30 | 30 | 225 | 450 | 1500 | 1500 | 10,5Mvar | 15 | 30 | 30 | 750 | 1500 | |
| 80/5 | 4,8 | 8 | 16 | 32 | 32 | 240 | 480 | 1600 | 1600 | 11,2 | 16 | 32 | 32 | 800 | 1600 | |
| 100/5 | 6,0 | 10 | 20 | 40 | 40 | 300 | 600 | 2000 | 2000 | 14,0 | 20 | 40 | 40 | 1000 | 2000 | |
| 120/5 | 7,2 | 12 | 24 | 48 | 48 | 360 | 720 | 2400 | 2400 | 16,3 | 24 | 48 | 48 | 1200 | 2400 | |
| 150/5 | 9,0 | 15 | 30 | 60 | 60 | 450 | 900 | 3000 | 3000 | 21,0 | 30 | 60 | 60 | 1500 | 3000 | |
| 200/5 | 12,0 | 20 | 40 | 80 | 80 | 600 | 1200 | 4000 | 4000 | 28,0 | 40 | 80 | 80 | 2000 | 4000 | |
| 250/5 | 15,0 | 25 | 50 | 100 | 100 | 750 | 1500 | 5000 | 5000 | 35,0 | 50 | 100 | 100 | 2500 | 5000 | |
| 300/5 | 18,0 | 30 | 60 | 120 | 120 | 900 | 1800 | 6000 | 6000 | 42,0 | 60 | 120 | 120 | 3000 | 6000 | |
| 400/5 | 24,0 | 40 | 80 | 160 | 160 | 1200 | 2400 | 8000 | 8000 | 56,0 | 80 | 160 | 160 | 4000 | 8000 | |
| 500/5 | 30,0 | 50 | 100 | 200 | 200 | 1500 | 3000 | 10Mvar | 10Mvar | 70 | 100 | 200 | 200 | 5000 | 10Mvar | |
| 600/5 | 36,0 | 60 | 120 | 240 | 240 | 1800 | 3600 | 12 | 12 | 84 | 120 | 240 | 240 | 6000 | 12 | |
| 750/5 | 45,0 | 75 | 150 | 300 | 300 | 2250 | 4500 | 15 | 15 | 105 | 150 | 300 | 300 | 7500 | 15 | |
| 800/5 | 48,0 | 80 | 160 | 320 | 320 | 2400 | 4800 | 16 | 16 | 112 | 160 | 320 | 320 | 8000 | 16 | |
| 1000/5 | 60,0 | 100 | 200 | 800 | 800 | 3000 | 6000 | 20 | 20 | 140 | 200 | 400 | 400 | 10Mvar | 20 | |
| 1200/5 | 72,0 | 120 | 240 | 480 | 480 | 3600 | 7200 | 24 | 24 | 168 | 240 | 480 | 480 | 12 | 24 | |
| 1500/5 | 90,0 | 150 | 300 | 600 | 600 | 4500 | 9000 | 30 | 30 | 210 | 400 | 600 | 600 | 15 | 30 | |
| 2000/5 | 120,0 | 200 | 400 | 800 | 800 | 6000 | 12Mvar | 40 | 40 | 280 | 400 | 800 | 800 | 20 | 40 | |
| 2500/5 | 150,0 | 250 | 500 | 1000 | 1000 | 7500 | 15 | 50 | 50 | 350 | 500 | 1000 | 1000 | 25 | 50 | |

Characteristics

- Combine AC 110V P,T & AC 5A C,T in case of over rating value.
- Allowance of operating voltage is $\pm 10\%$ of rating voltage.
- For max scale, refer to the above standard full scale table.
- Var meter Transducer is internal type and external type.

ex) 3P 3W

full scale varmeter : 300KW

P,T ratio : 3300V/110V

C,T ratio : 100A/5A

$$\text{calibrating watts} = \frac{300\text{Kvar}}{(3300/110) \times (100/5)} = 0,5\text{Kvar}$$

- In case of 3ϕ 4W, the voltage in phase voltage ($V_t / \sqrt{3}$)
- Select 1/2 or 1/3 or 1/4 value of total load capacity for max scale.

$$7. \text{ Calibrating Watt} = \frac{\text{MAX. scale value}}{\text{PT ratio} \times \text{CT ratio}}$$

ex1) 3P 4W

full scale varmeter : 1000KW

P,T ratio : $\frac{22900\text{V}}{\sqrt{3}} / \frac{190\text{V}}{\sqrt{3}}$

C,T ratio : 50A/5A

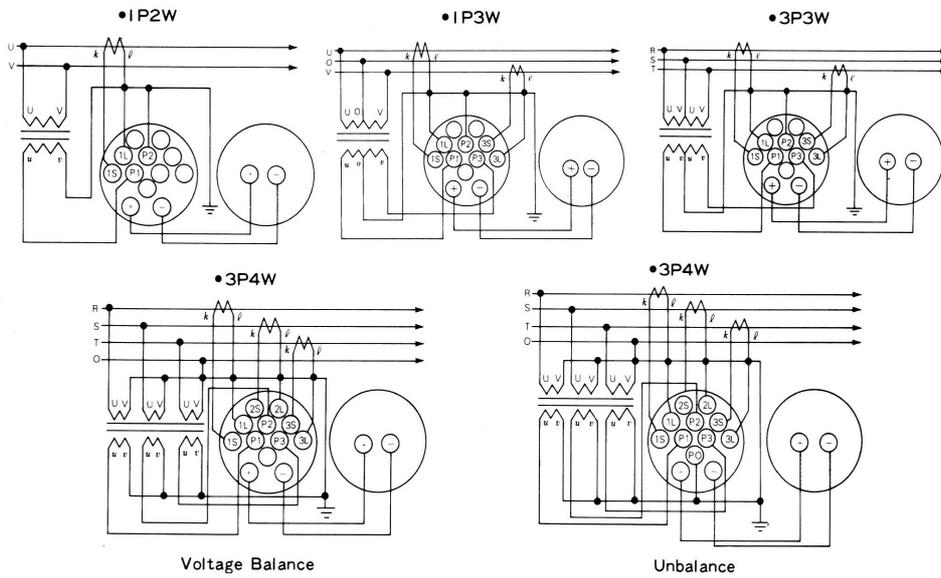
$$\text{calibrating var} = \frac{1000\text{KW}}{\left(\frac{22900\text{V}}{\sqrt{3}} / \frac{190\text{V}}{\sqrt{3}} \right) \times (50\text{A}/5\text{A})} = 0,833\text{KW}$$

WATTMETER, VAR METER

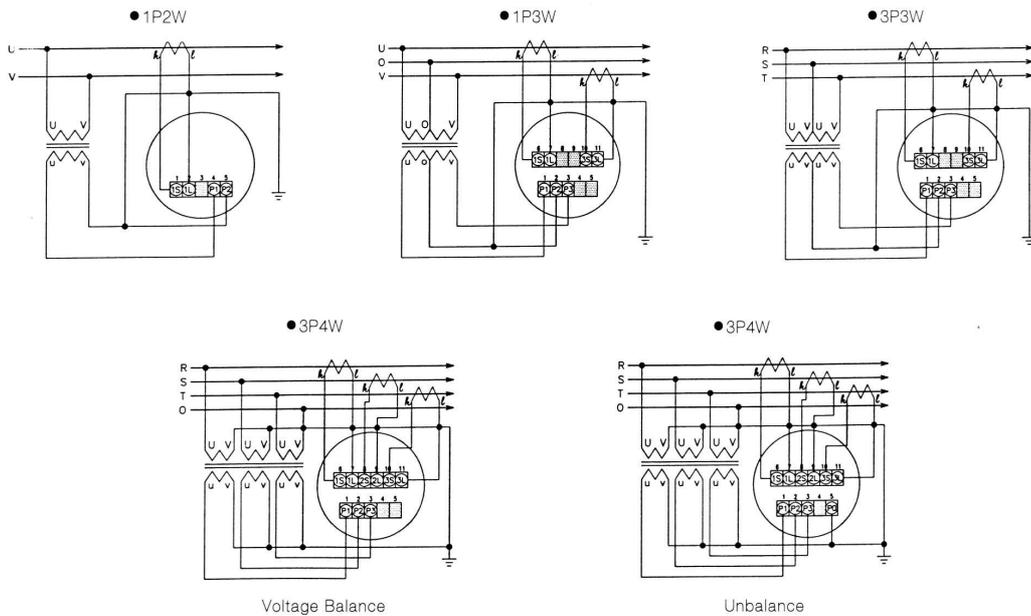


External connection diagram

UEXT. T/D type



UINT. T/D type



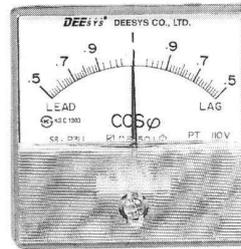
PANEL BOARD POWER FACTOR METER(COS ϕ)



"W" type



"S" type



Specification

| TYPE | Size | Circuit | Rated | | Va | | Remark | Hz | Weight | REF(kg) |
|----------|-----------|------------------------------|------------------------------|-----|-----|-----|--------|------|--------|-------------|
| | | | V | A | V | A | | | | |
| W8-P1 | 80X80mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | 60 | 0.65 | EXT, T/D |
| W8-P2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | 60 | 0.75 | |
| W8-P3B | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | 60 | 0.75 | |
| W8-P3U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | U | 60 | 0.85 | |
| W8-P4B | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | 60 | 0.90 | |
| W8-P4U | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | 60 | 0.90 | |
| W11-P1 | 110X110mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | 60 | 0.70 | EXT, T/D |
| W11-P2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | 60 | 0.85 | |
| W11-P3B | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | 60 | 0.85 | |
| W11-P3U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | U | 60 | 0.95 | |
| W11-P4B | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | 60 | 1.00 | |
| W11-P4U | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | 60 | 1.00 | |
| W11-P1T | | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | 60 | 0.60 | |
| W11-P2T | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | 60 | 0.85 | |
| W11-P3BT | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | 60 | 0.85 | |
| W11-P3UT | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | U | 60 | 0.90 | |
| W11-P4BT | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | 60 | 0.90 | | |
| W11-P4UT | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | 60 | 0.90 | | |
| S8-P1 | 80X80mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | 60 | 0.55 | EXT, T/D |
| S8-P2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | 60 | 0.65 | |
| S8-P3B | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | 60 | 0.75 | |
| S8-P3U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | U | 60 | 0.85 | |
| S8-P4B | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | 60 | 0.85 | |
| S8-P4U | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | 60 | 0.57 | |
| S10-P1 | 110X110mm | 1P2W | 110,220 | 5 | 0.5 | 0.5 | - | 60 | 0.67 | EXT, T/D |
| S10-P2 | | 1P3W | 110 | 5 | 0.5 | 0.5 | - | 60 | 0.67 | |
| S10-P3B | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | B | 60 | 0.77 | |
| S10-P3U | | 3P3W | 110,220 | 5 | 0.5 | 0.5 | U | 60 | 0.87 | |
| S10-P4B | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | B | 60 | 0.87 | |
| S10-P4U | | 3P4W | $190/\sqrt{3}, 380/\sqrt{3}$ | 5 | 0.5 | 0.5 | U | 60 | 0.87 | |

※ U:Unbalance, T:Int. Transduce, P:Power Factor. ※ EXT,T/D:External Transducer, INT,T/D:Internal Transducer

※ Order made is rating current 1A of meter

PANEL BOARD POWER FACTOR METER(COS ϕ)

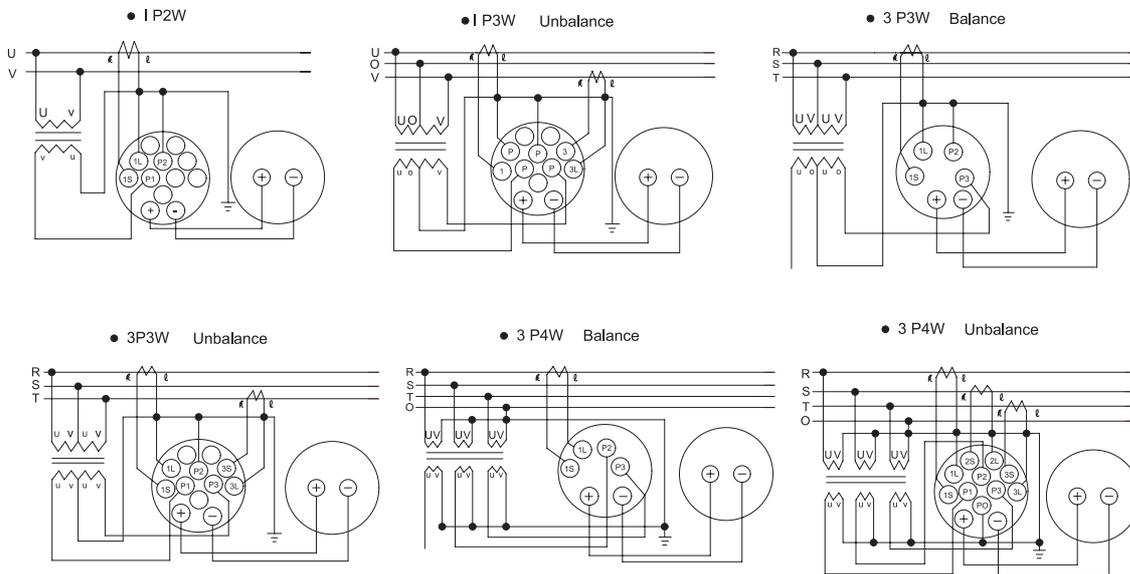


Feature

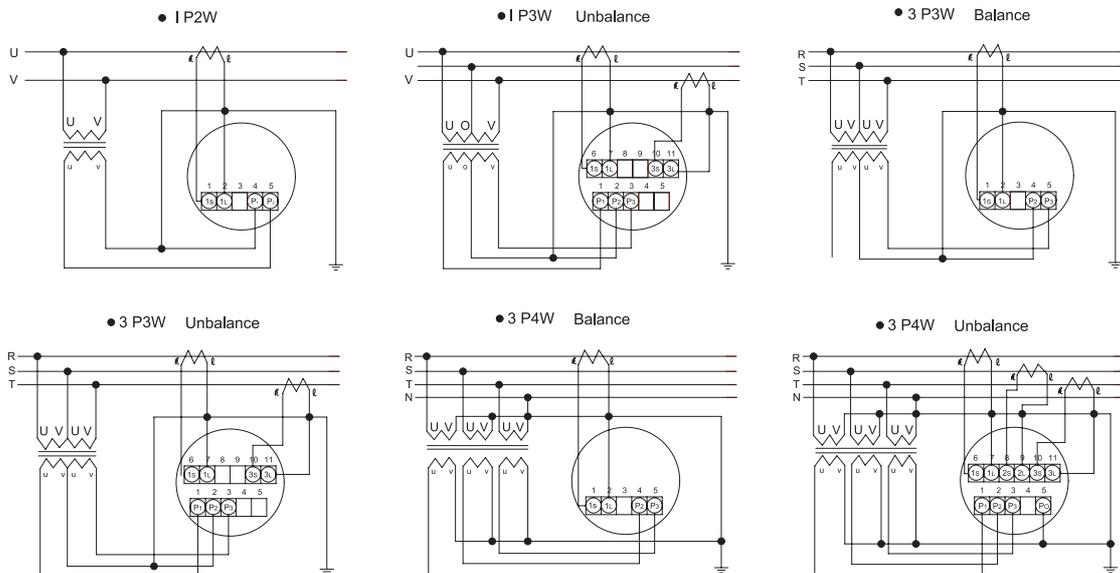
1. Combine AC 110v, PT & AC 5A C.T in case of over rating value
2. Allowance of operating voltage is $\pm 10\%$ of rating voltage.
3. Power Factor meter, Transducer can be classified 2type (internal and external) and it can be classified 2 type (Balance and unbalance)
4. In case of 3ϕ 4W, voltage is phase voltage ($V/\sqrt{3}$)
5. On over 1/3 value of rating current, it is certified the error correctly because it is not expected normal indication of power factor in case of 10% load of rating 2ry current 5A.
6. The standard scale of power factor meter is Lead $0.5\sim 1.0\sim 0.5$ lag

External connection diagram

UEXT. T/D type



UINT. T/D type



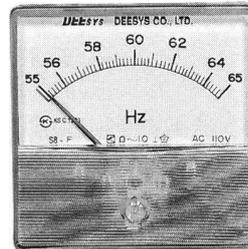
PANEL BOARD FREQUENCY METER



"W" type



"S" type



Specification

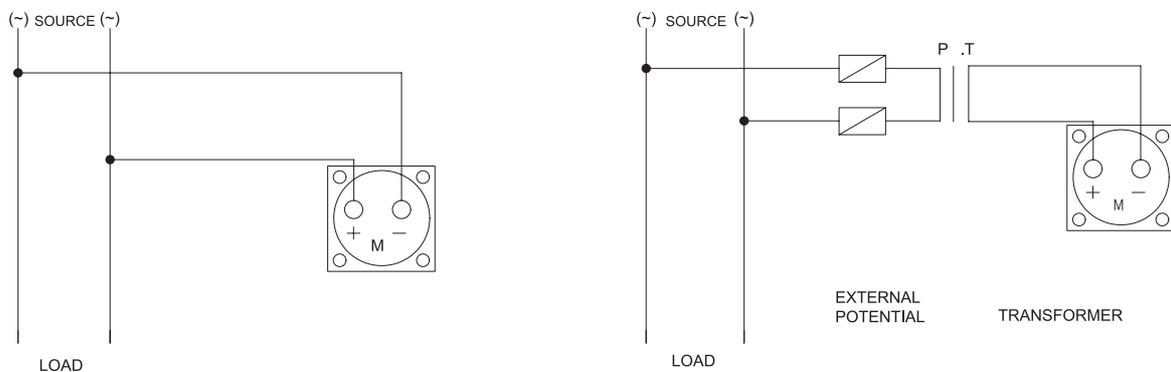
| Type | Size | Rated Voltage (V) | VA | Class | Weight(Kg) |
|-------|-----------|-------------------|-----|-------|------------|
| W8-F | 80X80mm | 110,220 | 2.0 | 1.0 | 0.33 |
| W11-F | 110X110mm | | | 1.0 | 0.45 |
| S8-F | 80X80mm | | | 1.0 | 0.10 |
| S10-F | 100X84mm | | | 1.0 | 0.20 |

※ F : Frequency

Characteristics

1. Standard full scale of frequency meter in 2 types : 45HZ~55HZ and 55HZ~65HZ
2. Combine P,T in outside in case of over the rating voltage.
3. Allowance of operating voltage in 80~120V for AC 110V and 160~240V for AC 220V
4. Pointer of power factor meter in needle type.

External connection diagram



PANEL BOARD MAXIMUM DEMAND METER(V₀)



Feature

The V₀ meter is an electronic type for demand V₀, which is displayed by 3 digit FND window on the lower part of the meter with a mechanical type indicator for real time V₀ value. Comparing with mechanical type, the Electronic V₀ meter has no slip error against inertia moment of indicating needle set.

Application

The V₀ meter is applied for detecting zero sequence voltage on the distribution line which has small ground current. As soon as one phase is grounded by fault, zero phase sequence voltage is generated. For this purpose, the meter would be connected with an Open-Delta circuit of 3 phase PT secondary.

Description

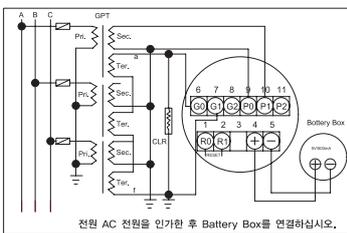
1. To connect a meter as shown below
2. To connect the meter with an external rechargeable battery
3. To energize source PT
4. The wide range analog indicator will indicate real time V₀ voltage. If any on the line, the indicating value will move according to real time line situation,
5. The demand value on the Display with 3 digit FND located lower part of the front plate of the meter, is shown a fixed

6. The Display is erased by pressing the reset button on the right side of the Display.
7. Demand display is designed to be indicated to be indicated for higher than 10V₀.

Specification

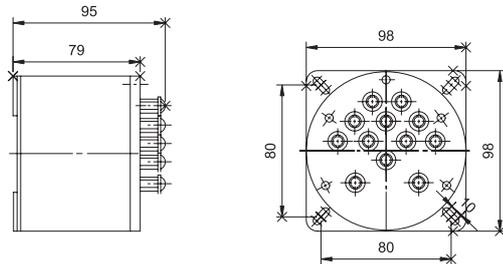
| Item | Model | Rating(A) | Full Scale | Accuracy(%) | Aux.Power(AC) | Freq.(Hz) | Burden(VA) | Weight(Kg) |
|----------------------|---------|-----------|------------|--------------------------------------|---------------|-----------|------------|------------|
| V ₀ Meter | W11 DVA | 110/190 | 150/259 | Pointer:1.5 at FS Digit:3.0 at FS | 110V/220V | 60 | 0.5 | 1.0 |

External connection diagram

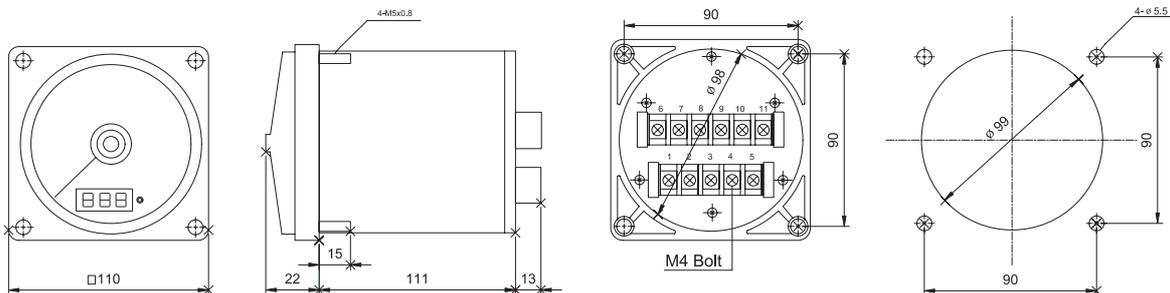


G₀ G₁ : AC 110V
 G₀ G₂ : AC 190V
 P₀ P₁ : AC 110V
 P₀ P₂ : AC 190V

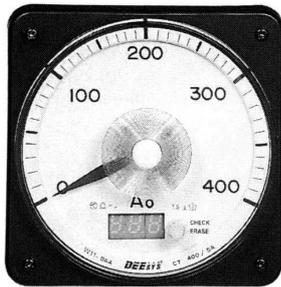
Dimension for External Power supply Box



Dimension for Meter



PANEL BOARD MAXIMUM DEMAND METER(A₀)



Feature

The Ao meter is an electronic type for demand Ao, which is displayed by a 3-digit FND window on the lower part of the meter with a mechanical type indicator for real-time Ao value. Comparing with a mechanical type, the Electronic Ao meter has no slip error against the inertia moment of the indicating needle set.

Application

The Io meter is applied for detecting zero sequence current on the distribution live which is grounded solidly or with resistance. As soon as one phase is grounded by fault, zero phase sequence current is generated. For this purpose, the meter would be connected with a ZCT or neutral line of a 3 CT connection.

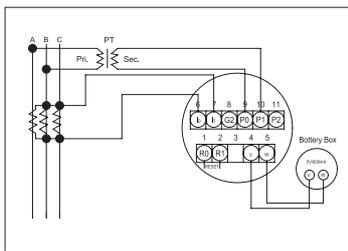
Description

- To connect a meter as shown below.
- To connect the meter with an external rechargeable battery.
- To be flow unbalanced current at the relay terminal as per the below diagram.
- The wide range analog indicator will indicate real-time Io current. The indicating value will move according to real-time unbalanced line current.
- The demand value on the display with 3-digit FND located on the lower part of the front plate of the meter, shows a fixed peak value. The value is stored in an EEPROM in the meter. Whenever a new peak value is generated, the value is renewed instead of the old data.
- The display is erased by pressing the reset button on the right side of the display.

Specification

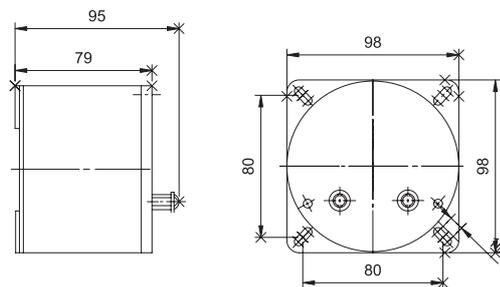
| Item | Model | Rating(A) | Full Scall(A) | Accuracy(%) | Aux.Power(AC/DC) | Freq.(Hz) | Burden(VA) | Weight(Kg) |
|----------|---------|-----------|---------------|--------------------------------------|------------------|-----------|------------|------------|
| Ao Meter | W11 DAA | 1 or 5 | 1 or 5 | Pointer:1.5 at FS Digit:3.0 at FS | 110V | 60 | 0.5 | 1.0 |

External connection diagram

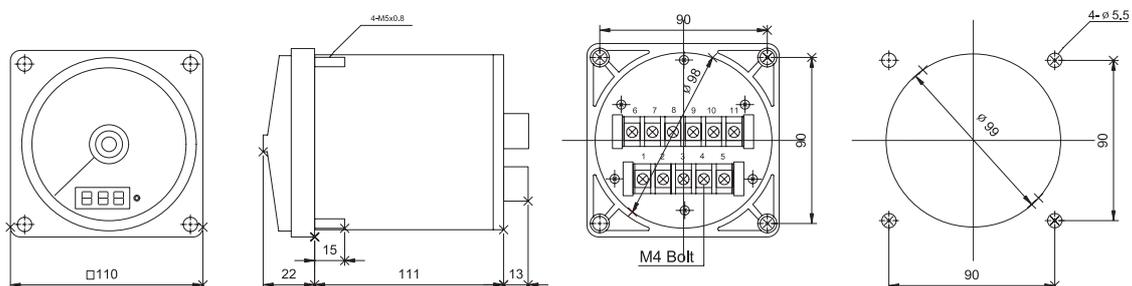


P₀ P₁ : AC 110V
P₀ P₂ : AC 190V

Dimension for External Power supply Box



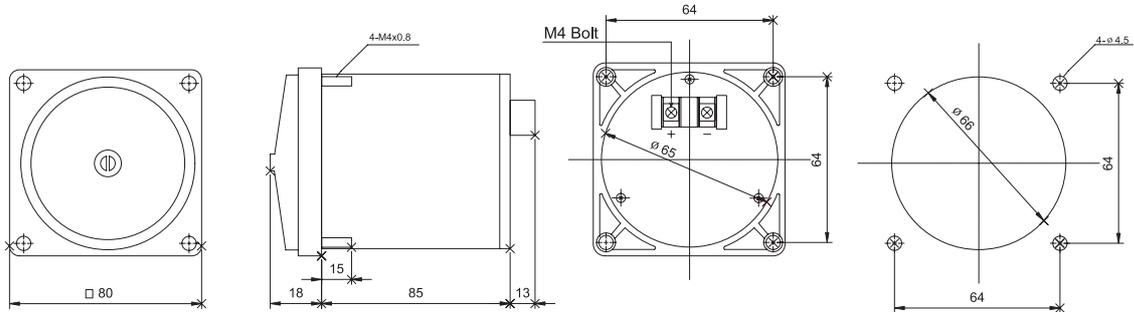
Dimension for Meter



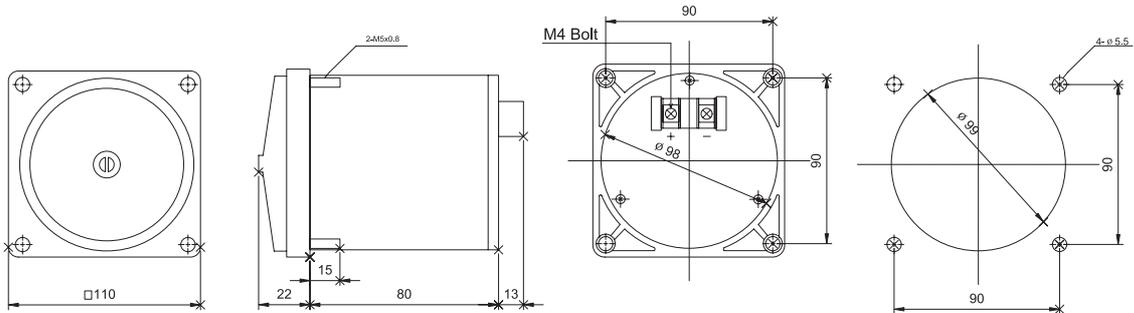
DIMENSION

Dimension

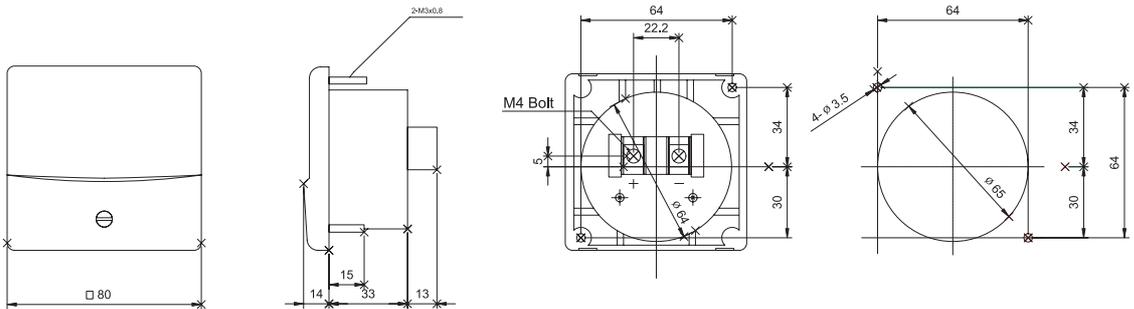
UWide angle type (80 x 80mm)



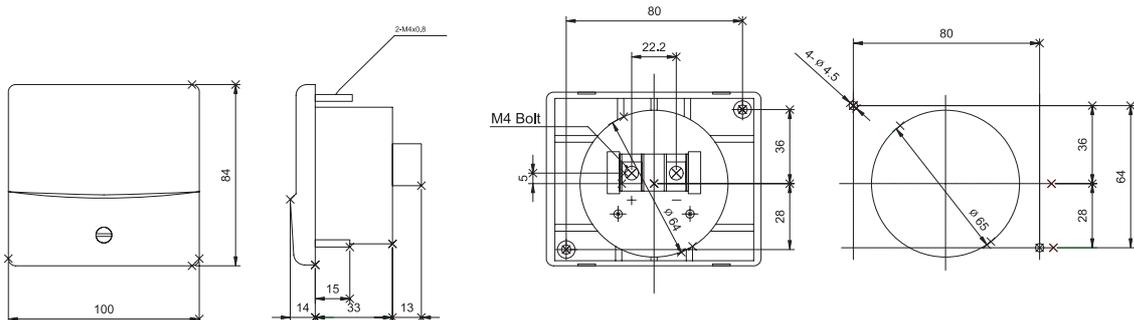
UWide angle type (110 x 110mm)



USquare type (80 x 80mm)

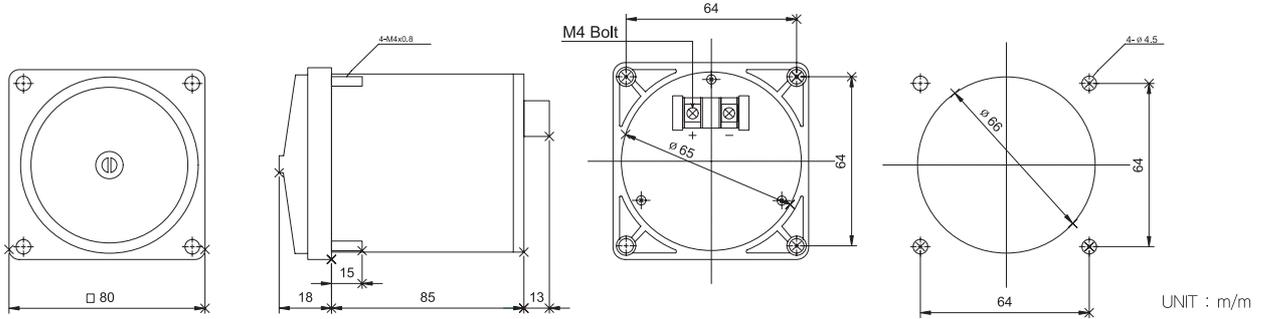


USquare type (100 x 84mm)

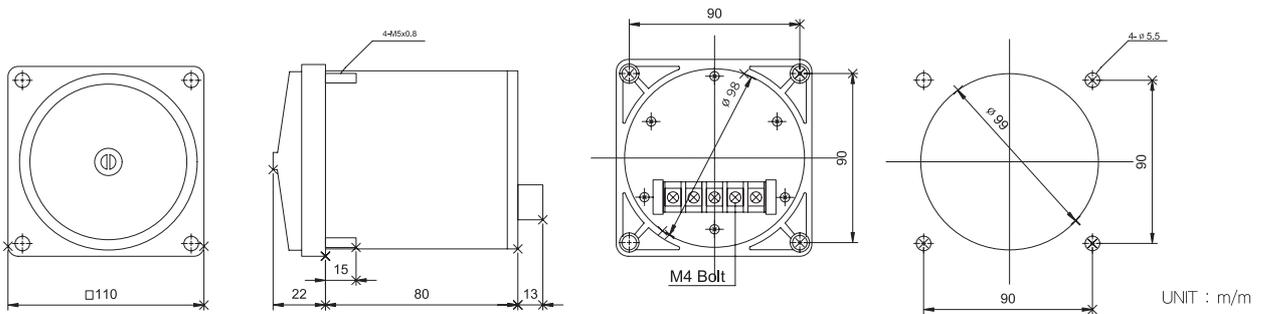


Dimension

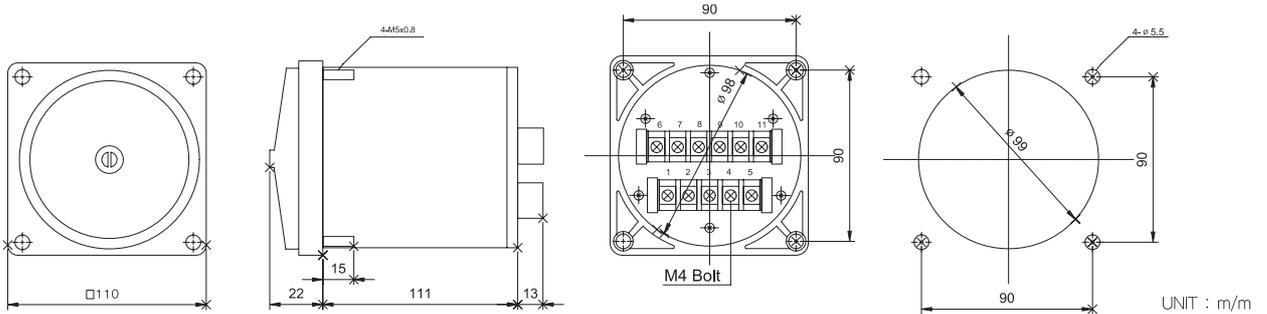
UINT. T/D (watt,var, unbalance type P.F meter, Demand meter)



UINT. T/D (balance type P.F meter)

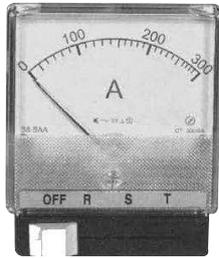


UW11 type meter relay(110X110m)

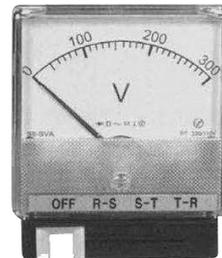


3 PHASE SEQUENCE AMPERE METER & 3 PHASE SEQUENCE VOLT METER

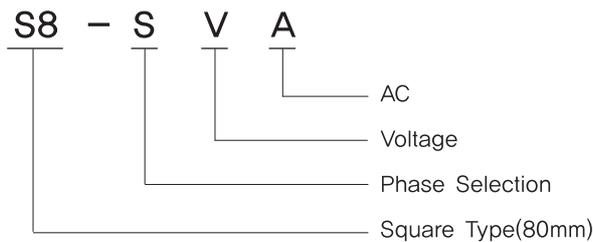
3 phase sequence Ampere Meter



3 phase sequence Volt Meter



Model

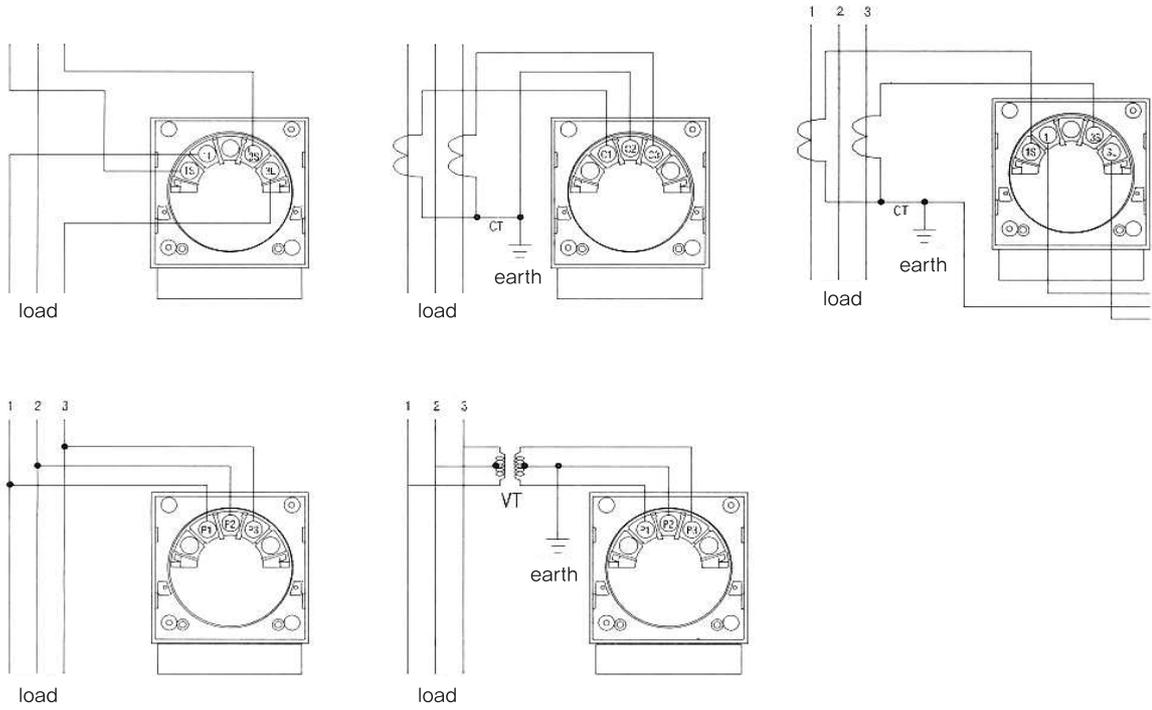


Specification

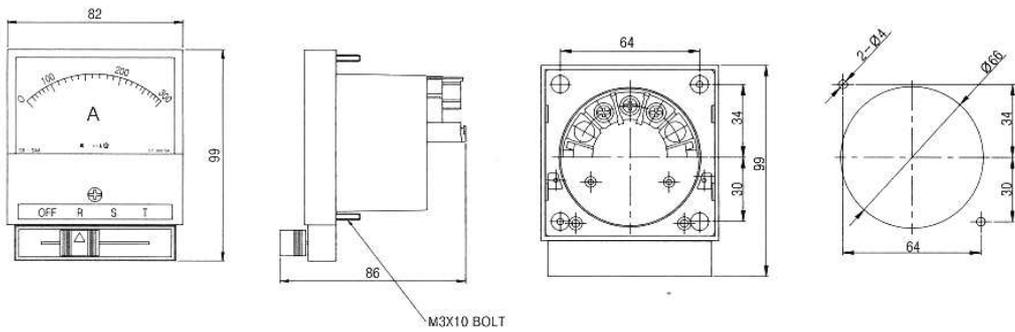
| Part Name | 3Phase Selection type Panel Board Meter (V, A) | |
|-----------------------|--|------------------|
| Item | Volt Meter(V) | Ampere Meter(A) |
| Type | S8-SVA | S8-SAA |
| Accuracy | ±2.5% | ±2.5% |
| Rating | AC 150V, 300V | AC 5A or 1A |
| Input berden | 0.5VA | 1.5VA |
| Frequency | AC 50/60 Hz | |
| Operating Type | Rectifier | Moving Iron type |
| Switch Durability | Operated 10,000 times. | |
| Insulation resistance | at 500V >100MΩ | |
| Dielectric withstand | between all terminals and case earthed, AC 2000V/MIN | |
| Material | Cover : Poly Cabonate, Case : ABS | |
| Weight | 0.3kg | |

※ S8-VA, S8-AA

Wiring



Dimension



DIGITAL PANEL METER

General Specification



Digital Panel Meter 96X48

Insulation

- Insulation resistance at DC500V 100MΩ
- Withstand voltage 2kV for 1minutes between all terminals
- Lightning impulse voltage 1,2/50μs 4,5kV

Display and Rating

- Display range : 1999 4digit – LED 7 segment
- Digit height : 14,22mm
- Color : Red
- Aux. power : AC 110/220V
- Frequency : 50/60Hz
- Outside dim. : 96 X 48 X 112mm
- Response time : less than 500ms

Standard operating condition

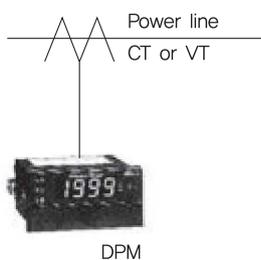
- Temperature 0~50°C
- Humidity 5~85%
- Aux. supply ± 10%
- Power harmonic sine wave 10%

Temperature

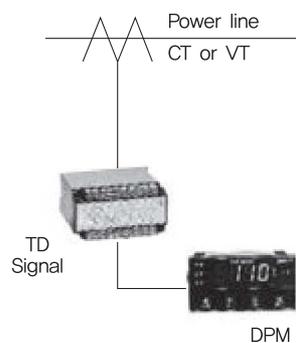
- Operating Temperature 0 ~ 50°C
- Storage Temperature -20 ~ +70°C

Example of application

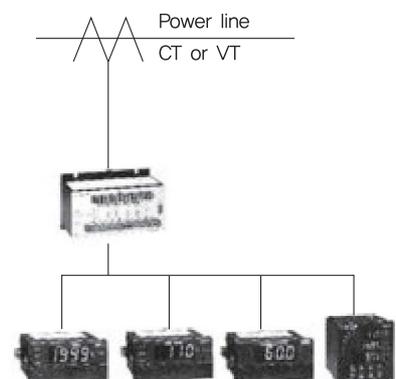
Direct type



With TD type (Analog)



Communication type



DIGITAL PANEL METER [96X48MM]

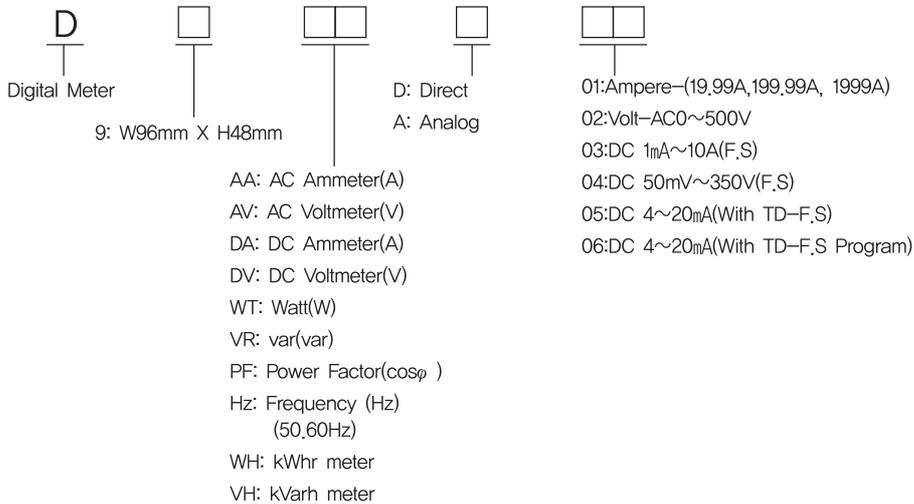
Specification

Commercial type Panel Board Meter 96X48mm – DIN std.

| Part Name | Digital Panel Meter | | |
|------------------------------------|---|--------------------------------------|-----------------------------|
| Front View |  | | |
| Type | AC – A,V | DC – A,V | Hz |
| Connection | CT or VT | Direct, others | VT |
| Input | A: 0.1 ~ 10A V: 1~500V | A: 1mA ~ 10A V: 50mV ~ 350 | AC 50 ~ 300V V40 ~ 70kHz |
| Input burden | Under 0,3 VA | A: 0,2V drop C: Over 10M Ω | Under 0,3 VA |
| Aux. power | Under AC 110/220 \pm 15%, 50/60 Hz 3VA | | |
| Aux. power burden | Under 3VA | | |
| Display resolution | 1,999 / 0,001, 19,99 / 0,01, 199,9 / 0,1, 1999 / 1 step | | |
| Response time | Under 1 sec | | |
| Accuracy | \pm 0,5% + 1digit | | |
| Display range | 1999 4 digit – LED 7 segment | | |
| Display color | Red | | |
| Terminal withstand capability | Current : for 5sec 20 X In Voltage : for 5sec 1,5 X Vn | | |
| Temperature | Operating temperature 0 ~ 50°C RH < 95% Storage temperature -20 ~ +70 °C | | |
| Mounting | Flush mounted type | | |
| Insulation resistance | DC 500V Megger 100M Ω more – between all terminals | | |
| Withstand voltage | 2kV for 1 minute – between all terminals | | |
| Lighting impulse withstand voltage | 1,2 / 50 μ s 4,5kV | | |
| Vibration | Vibration frequency : 163,7Hz Double amplitude : 0,4mm Direction : horizontal, vertical, transverse | | |
| Shock | Shock acceleration : 50G Shock application direction : horizontal, vertical, transverse Shock times : 3 times | | |
| Weight | 350g | | |

DIGITAL PANEL METER [96X48MM]

Ordering code



Digital Panel Meter 96X48mm

AC Ammeter

Ordering Procedure

| Model | Display | Connection | Accuracy | Aux.Power |
|----------|-------------------------------------|---------------|----------------|---------------------|
| D9AA-D01 | 19,99A, 199,9A, 1999A (input 5A) | direct | 0,5% or 1digit | AC110/220V, 50/60Hz |
| D9AA-D05 | 1999, 9999 (4~20mA) | with T/D - FS | 0,5% or 1digit | AC110/220V, 50/60Hz |

AC Voltmeter

Ordering Procedure

| Model | Display | Connection | Accuracy | Aux.Power |
|----------|---|---------------|----------------|---------------------|
| D9AV-D02 | 19,99V, 199,9V, 1999V (input Max 500V) | direct | 0,5% or 1digit | AC110/220V, 50/60Hz |
| D9AV-D05 | 1999, 9999 (4~20mA) | with T/D - FS | 0,5% or 1digit | AC110/220V, 50/60Hz |

DC Ammeter

Odering Procedure

| Model | Display | Connection | Accuracy | Aux.Power |
|----------|--|---------------|----------------|---------------------|
| D9DA-D03 | 19.99A, 199.9A, 1999A (input 1mA~10A) | direct | 0.5% or 1digit | AC110/220V, 50/60Hz |
| D9DA-D05 | 1999, 9999A (4~20mA) | with T/D – FS | 0.5% or 1digit | AC110/220V, 50/60Hz |

AC Voltmeter

Odering Procedure

| Model | Display | Connection | Accuracy | Aux.Power |
|----------|--------------------------------------|---------------|----------------|---------------------|
| D9DV-D04 | 19.99V, 199.9V, 1999V (50mV~350V) | direc | 0.5% or 1digit | AC110/220V, 50/60Hz |
| D9DV-A05 | 1999, 9999 (4~20mA) | with T/D – FS | 0.5% or 1digit | AC110/220V, 50/60Hz |

Watt, var, Power Factor-meter

Odering Procedure

| item | Model | Display | Connection | Accuracy | Aux.Power |
|--------------|----------|---|------------|----------------|-----------------------|
| Watt | D9WT-A05 | 1999, 9999kW (4~20mA) | with T/D | 0.5% or 1digit | AC110/220V 50/60Hz |
| | D9WT-A06 | 0~999.9kW (4~20mA) Program setting | | | |
| Var | D9RT-A05 | 1999, 9999kW (4~20mA) | with T/D | 0.5% or 1digit | AC110/220V 50/60Hz |
| | D9RT-A06 | 0~999.9kW (4~20mA) Program setting | | | |
| PF [cosφ] | D9PF-A05 | 4mA(-0.5)~12mA(1)~20mA(0.5) 4~20mA | with T/D | 0.5% or 1digit | AC110/220V 50/60Hz |
| | D9PF-A06 | 4mA(-0.5)~12mA(1)~20mA(0.5) 4~20mA Program set | | | |

DIGITAL PANEL METER [96X48MM]

Hz meter

Odering Procedure

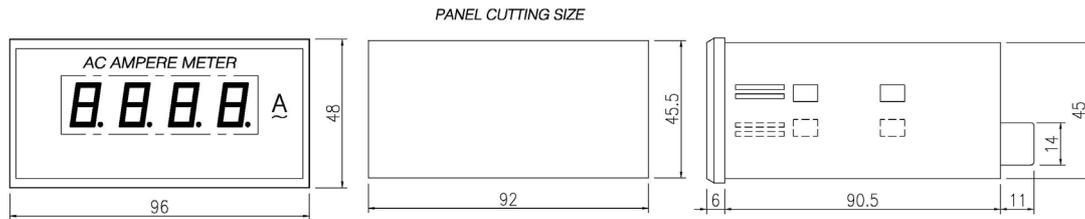
| Model | Display | Connection | Accuracy | Aux.Power |
|----------|--------------------------------------|-------------------|----------------|---------------------|
| D9HZ-D02 | 50Hz:40~60Hz 60Hz:50~70Hz(AC110) | direct (Max 300V) | 0.5% or 1digit | AC110/220V, 50/60Hz |
| D9HZ-D05 | 50Hz:40~60Hz 60Hz:50~70Hz(4~20mA) | with T/D - FS | 0.5% or 1digit | AC110/220V, 50/60Hz |

kWhr, kvarh meter

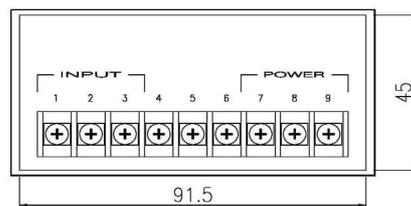
Odering Procedure

| Model | Display | Connection | Aux.Power |
|----------|--------------|------------------------|------------|
| D9WH-A08 | 999999 count | with T/D (dry contact) | AC110/220V |
| D9WH-A08 | 999999 count | with T/D (dry contact) | AC110/220V |

Dimension



Terminal connection



Wiring

