

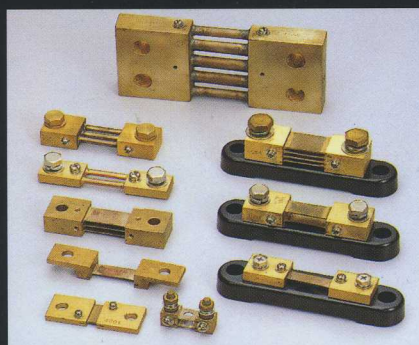
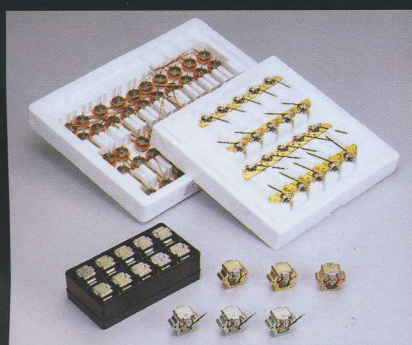
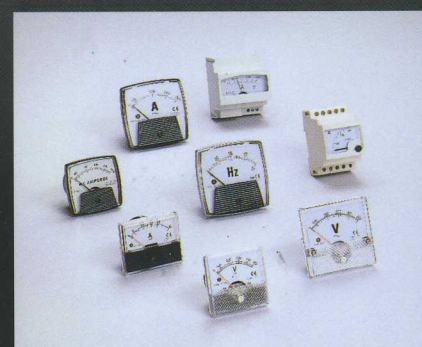
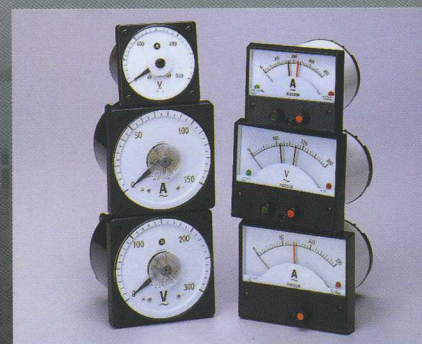
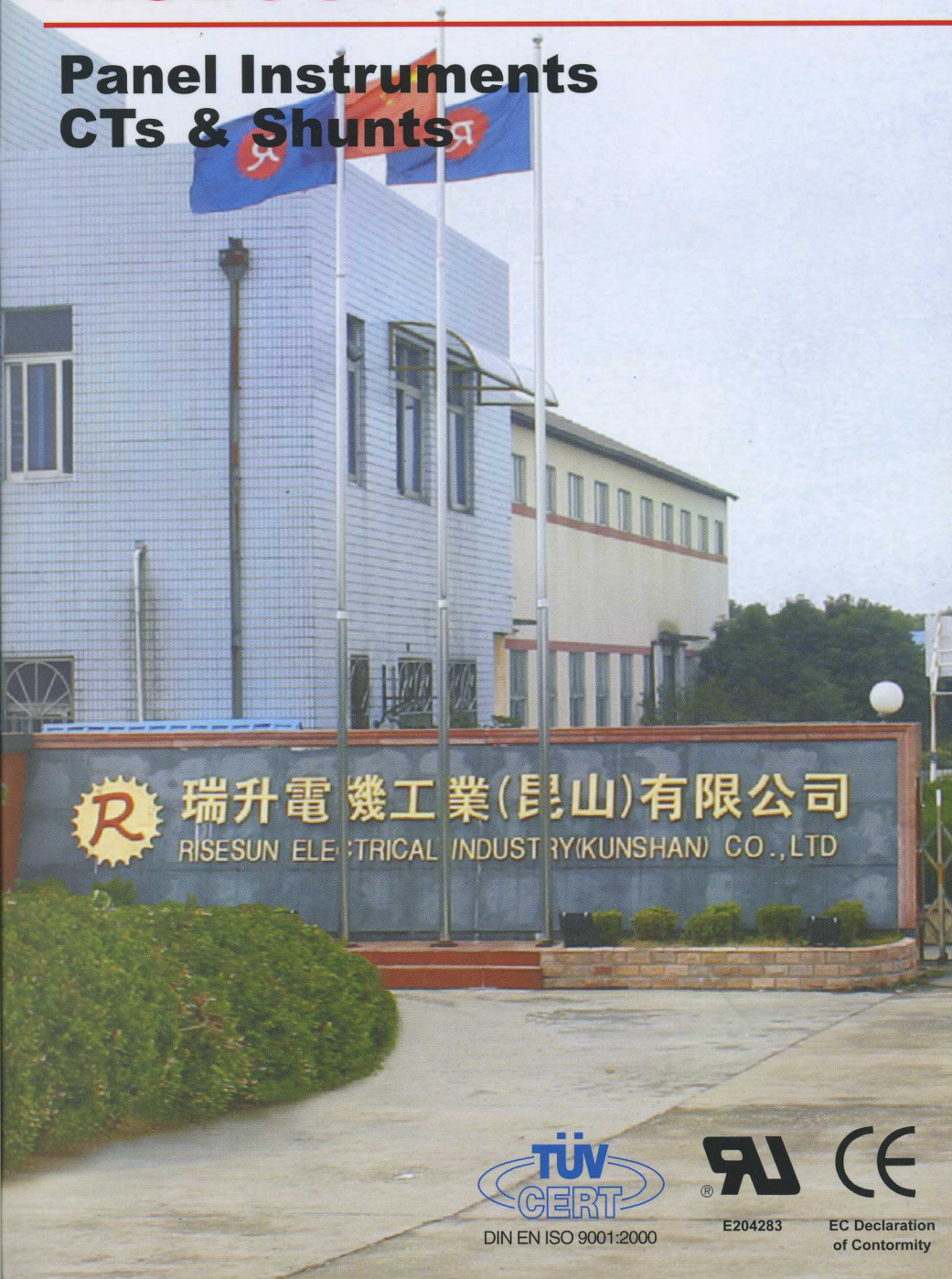


RISESUN

2007

Panel Instruments CTs & Shunts

www.risesun.com.tw



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The Company can modify the specification at any time without having to give notice.

GENERAL FEATURES

Standards

CEI 85, EN 60051, IEC 414, VDE 0410, UNE 21318, DIN 43780, IEC51.

Cases

- ABS & P.C material.
- Protection degree (CEI 70-1, IEC 529) IP 52 for the case.
- Protection degree (CEI 70-1, IEC 529) IP 00 for terminats.

Accuracy class

All the instruments are manufactured in 1,0 1,5 2,5 accuracy class (if no otherwise indicated).

The precision for reduced scale instruments (F2-F3-F5) will be <20%, with stop time <2 sec.

Overloads

All amperometric circuits support an overload of 1,2 In continuous and 10 In during 5 seconds. All voltmetric circuits support an overload of 1,2 Vn continuous and 2 Vn during 5 seconds.

Working voltage: 650V

Test voltage: 2000V-50Hz/60Hz, for 1 minute.

Insulation

Insulation reference voltage 0,6 KV.

Working temperature

20 ° C ($\pm 10^{\circ}$ C): working range between -25 ° C and + 55 ° C.

Vibrations

± 0.25 mm amplitude at 50 Hz/60Hz (CEI 50-6, IEC 68-2-6).

Humidity

Ambient relative humidity 85% without condensing, with 35 ° C temperature for max. 60 days per year. Yearly average humidity must be not higher than 65% (DIN 40040).

Tropical version

95% relative humidity, for a maximum of 30 days per year.

Mounting position

The normal execution of our instruments is for vertical mounting. If other mounting positions are known in advance, please indicate the angle of inclination when ordering.










Scales

The full scale deflections correspond to DIN 43701.

The scale divisions correspond to DIN 43802.

See examples in the following pages.

SIGNS FOR IDENTIFICATION OF THE INSTRUMENT TECHNICAL CHARACTERISTICS

| SIGN | DESCRIPTION |
|---|--|
|  | Electronic device in a measure circuit |
|  | Rectifier (instrument with A.C. input). |
|  | Shunt |
|  | Additional resistor |
|  | Zero setting device (of the field measure amplitude) |
|  | General accessories |
|  | Ground terminal |
|  | Positive terminal |
|  | Negative terminal |
| 1.0 1.5 2.5 | Class index (for ex. 1) except when the conventional value corresponds to the scale length or to the indicated value or to measure range |

SPECIAL EXECUTION

General features:

Tropical version
Red stroke at any point on the scale
Red stripe on the scale
Additional lettering
Anti-reflection glass
Internal illumination (when possible)
Test voltage higher than 2000V
Knife edge pointer and scale with mirror reading
Red pointer adjustable from the exterior
Scale for other ranges
Scale with double numbering
Scale with double sets of numbering divisions.

Moving Iron voltmeters and ammeters

Calibration for other ranges
Range for voltmeters differing from standard series
Range for ammeters differing from standard series
Ammeters with 2 In-3 In -5 In overload capacity
Two range voltmeters (3 terminals)
Two range ammeters (3 terminals) (max 10 A)
Calibration for A.C. and D.C. (max 50 A)
Separate resistance for 1000 V and 1500 V
Accuracy class 1 (only 50-60 Hz)

Moving coil instruments

Scale with zero point in the middle or displaced
Range differing from standard series
Two/three /four range voltmeters
Two range ammeters (3 terminals)
Adjustment to other internal resistance for ammeters
Internal resistance for voltmeters from 1 to 600 V:
1000 Ω /V, 4000 Ω /V, 10000 Ω /V, 20000 Ω /V
Separate resistorbox for 1000 V and 1500V
Suppressed zero
Accuracy class 1
Potentiometer adjustable from the exterior ($\pm 20\%$ FSD)

Wattmeters

Scale with zero point in the middle or displaced
Nominal current 5 A (per element)
Double -triple voltage
Double current











Power factor meters

Non-standard voltage

Reed frequency meters

Non-standard voltage
Double voltage (when possible)

SIGNS FOR IDENTIFICATION OF THE INSTRUMENT TECHNICAL CHARACTERISTICS

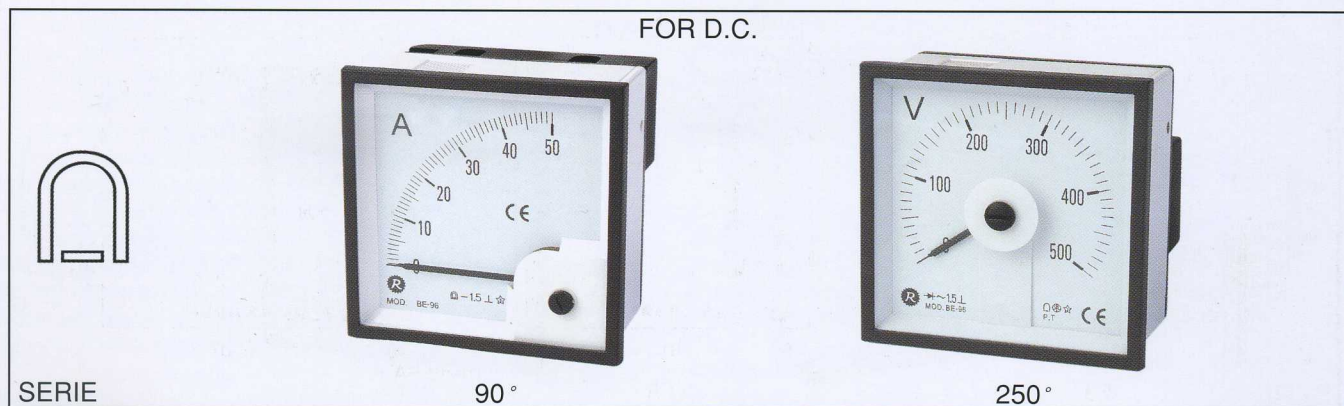
| SIGN | DESCRIPTION |
|---|---|
|  | <i>D.C. circuit and/or measure mark which corresponds to D.C.</i> |
|  | <i>A.C. circuit and/or measure mark which corresponds to A.C.</i> |
|  | <i>D.C. and/or A.C. circuit and/or measure mark which corresponds to D.C. and to A.C.</i> |
|  | <i>Testing voltage higher than 500 V (for example 2kV)</i> |
|  | <i>Instrument to be used with vertical scale</i> |
|  | <i>Instrument to be used with scale inclined compared to the horizontal (for example 60°)-on request</i> |
|  | <i>Moving coil for D.C. instruments</i> |
|  | <i>moving Iron instrument for A.C. instruments</i> |
|  | <i>Bimetal instrument</i> |
|  | <i>Vibrating reeds instrument</i> |

AMMETERS-VOLTMETERS



| AMMETERS | | | | | | | | | | | | | | | | |
|----------|---------|----|------------|----|------------------------------------|----|------------|----|---------|----|------------|----|-----------|----|------------|----|
| Type | BE-48 | | | | BE-72 | | | | BE-96 | | | | BE-144 | | | |
| Size | 48×48mm | | | | 72×72mm | | | | 96×96mm | | | | 144×144mm | | | |
| | DIRECT | | CT /1A-/5A | | DIRECT | | CT /1A-/5A | | DIRECT | | CT /1A-/5A | | DIRECT | | CT /1A-/5A | |
| | F1 | F2 | F1 | F2 | F1 | F2 | F1 | F2 | F1 | F2 | F1 | F2 | F1 | F2 | F1 | F2 |
| 1A | | | | | ● | ○ | ● | | | | ● | ○ | ● | | | |
| 5A | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● | ● | ● |
| 10A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ○ | ● | ● | ● | ● | ● | ● |
| 15A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 20A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 25A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 30A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 40A | ● | ● | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 50A | | | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 60A | | | ● | ● | ● | ● | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 75A | | | ● | ● | | | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 100A | | | ● | ● | | | ● | ○ | ● | ● | ● | ○ | ● | ● | ● | ● |
| 120A | | | ● | ● | | | ● | ○ | | | | | ● | ● | ● | ● |
| 150A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 200A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 250A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 300A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 400A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 500A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 600A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 800A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 1000A | | | ● | ● | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 1200A | | | | | | | ● | ○ | ● | | ● | ○ | ● | | | |
| 1250A | | | | | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 1500A | | | | | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 2000A | | | | | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 2500A | | | | | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| 3000A | | | | | | | ● | ○ | ● | | ● | ○ | ● | ● | ● | ● |
| VOLTMERS | | | | | | | | | | | | | | | | |
| Type | BE-48 | | | | BE-72 | | | | BE-96 | | | | BE-144 | | | |
| 100V | ● | | | | ● | ○ | | | ● | ○ | | | ● | | | |
| 300V | ● | | | | ● | ○ | | | ● | ○ | | | ● | | | |
| 500V | ● | | | | ● | ○ | | | ● | ○ | | | ● | | | |
| 600V | | | | | ● | ○ | | | ● | ○ | | | ● | | | |
| ● | 90° | | | | 1. extractable scale | | | | | | | | | | | |
| ○ | 250° | | | | 1. extractable scale 2. fixedscale | | | | | | | | | | | |

AMMETERS-VOLTMETERS

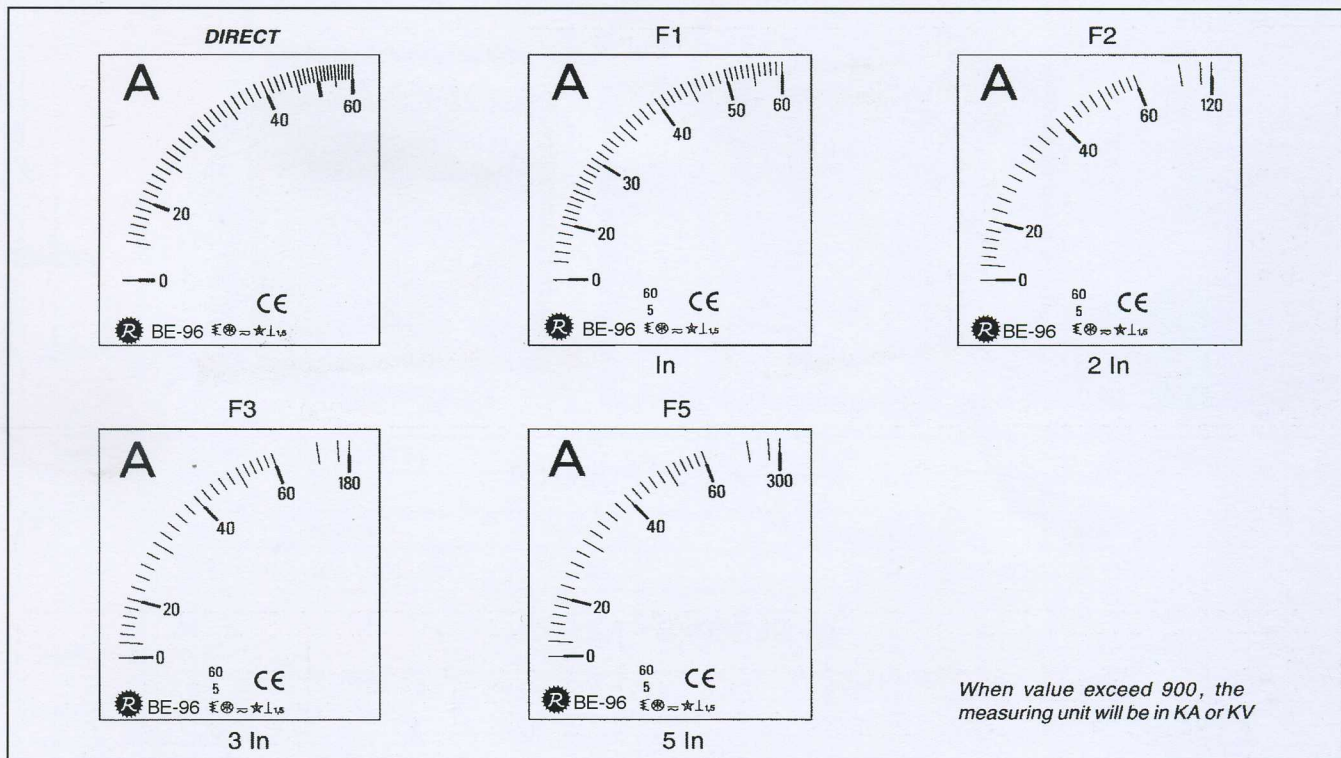


| AMMETERS | | | | | | | | |
|----------|-------------|-------------------------|-------------|--------------------------|-------------|--------------------------|-------------|--------------------------|
| Type | BE-48 | | BE-72 | | BE-96 | | BE-144 | |
| Size | 48×48mm | | 72×72mm | | 96×96mm | | 144×144mm | |
| | 50,60,75 mV | 0 central 50,60,75mV | 50,60,75 mV | 0 central 50,60,75 mV | 50,60,75 mV | 0 central 50,60,75 mV | 50,60,75 mV | 0 central 50,60,75 mV |
| 10A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 15A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 20A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 25A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 30A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 40A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 50A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 60A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 80A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 100A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 150A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 200A | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 300A~ | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |

| VOLTMETERS | | | | | | | | |
|------------|---------|-----------|---------|-----------|---------|-----------|-----------|-----------|
| Type | BE-48 | | BE-72 | | BE-96 | | BE-144 | |
| Size | 48×48mm | | 72×72mm | | 96×96mm | | 144×144mm | |
| DIRECT | | 0 central | | 0 central | | 0 central | | 0 central |
| 60mV | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 10V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 20V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 40V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 100V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 150V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 200V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 300V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 400V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |
| 500V | ● | ● | ●○ | ●○ | ●○ | ●○ | ● | ● |

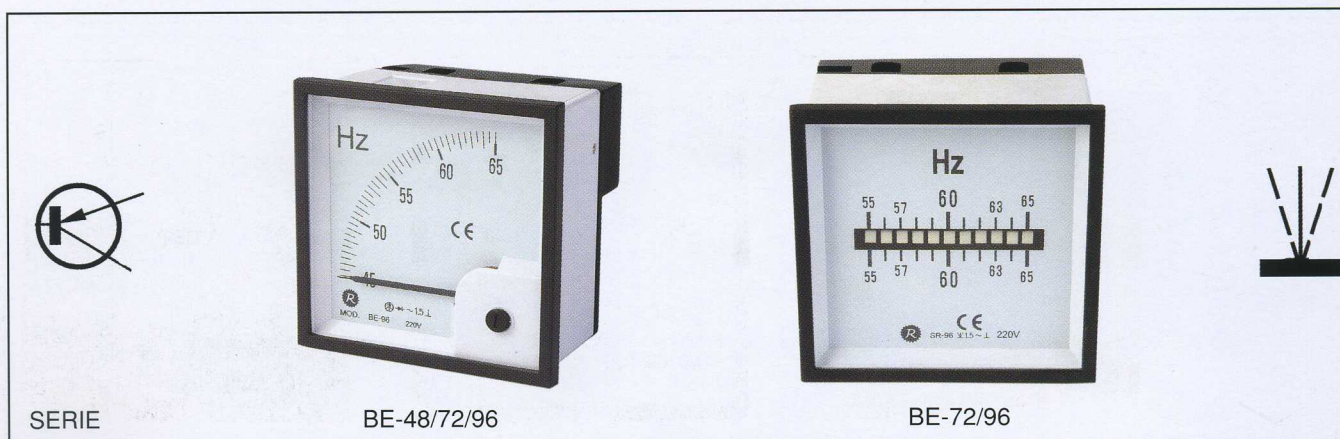
| | | |
|---|------|------------------------------------|
| ● | 90° | 1. extractable scale |
| ○ | 250° | 1. extractable scale 2. fixedscale |

DRAWING OF SCALES



| F1(A) | F2(A) | F3(A) | DIRECT | |
|-------|-----------|-----------|--------|---------|
| 1 | 1/2 | 1/3 | 1 | 1/2 |
| 5 | 5/10 | 5/15 | 5 | 5/10 |
| 10 | 10/20 | 10/30 | 10 | 10/20 |
| 15 | 15/30 | 15/45 | 15 | 15/30 |
| 20 | 20/40 | 20/60 | 20 | 20/40 |
| 25 | 25/50 | 25/75 | 25 | 25/50 |
| 30 | 30/60 | 30/90 | 30 | 30/60 |
| 40 | 40/80 | 40/120 | 40 | 40/80 |
| 50 | 50/100 | 50/150 | 50 | 50/100 |
| 60 | 60/120 | 60/180 | 60 | 60/120 |
| 80 | 80/160 | 80/240 | 80 | 80/160 |
| 100 | 100/200 | 100/300 | 100 | 100/200 |
| 120 | 120/240 | 120/360 | | |
| 150 | 150/300 | 150/450 | | |
| 200 | 200/400 | 200/600 | | |
| 250 | 250/500 | 250/750 | | |
| 300 | 300/600 | 300/900 | | |
| 400 | 400/800 | 400/1200 | | |
| 500 | 500/1000 | 500/1500 | | |
| 600 | 600/1200 | 600/1800 | | |
| 800 | 800/1600 | 800/2400 | | |
| 1000 | 1000/2000 | 1000/3000 | | |
| 1250 | 1250/2500 | 1250/3750 | | |
| 1500 | 1500/3000 | 1500/4500 | | |
| 2000 | 2000/4000 | 2000/6000 | | |
| 2500 | 2500/5000 | 2500/7500 | | |
| 3000 | 3000/6000 | 3000/9000 | | |

REEDS FREQUENCY METERS-BY POINTER



IF SERIES BY POINTER

| Type | Frequency Hz | Range | Voltage |
|----------------|--------------|-------|---------------------------|
| BE48/72/96/144 | 50/60 | 45~65 | 110v-220v-380v $\pm 15\%$ |

IF SERIES BY REEDS

| | | | |
|-------|----------|-------------------|-----------------|
| BE-72 | 7 reeds | 1 cycle each reed | 47~53Hz 57~63Hz |
| BE-96 | 11 reeds | 1 cycle each reed | 45~55Hz 55~65Hz |

MAXIMUM DEMAND, BIMETALLIC PANEL METER

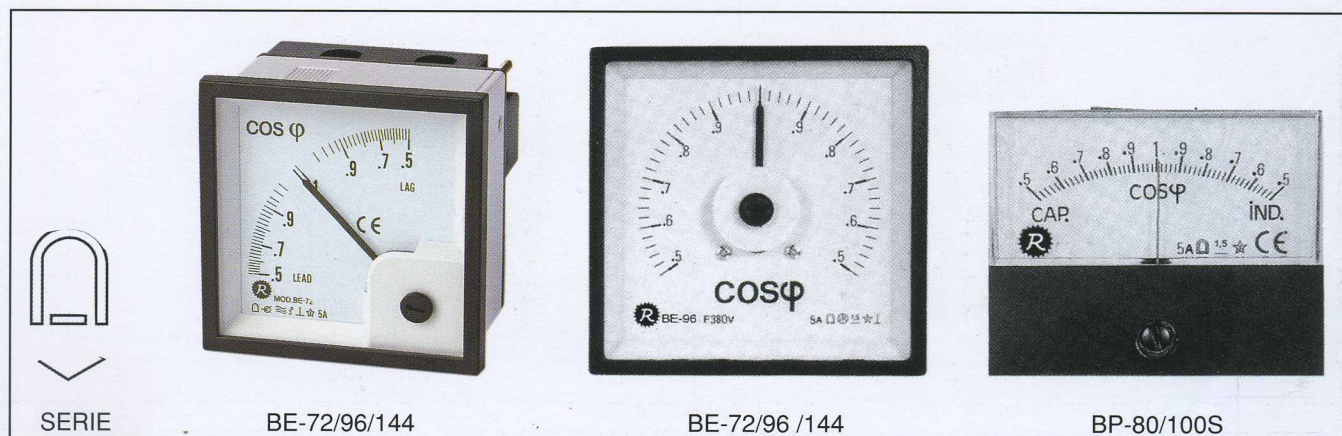


Bimetallic (Maximum Demand) Panel Meter are designed for testing thermal load If transformers, cables, electrical machines, etc. They can indicate average rms current value in a setting period of 15 minutes.

IF SERIES BY POINTER

| BIMETALLIC (MAXIMUM DEMAND) AMMETES | | |
|-------------------------------------|------------|---|
| Type | DELAY TIME | ON C.T. RATIO / 5A |
| BE-96 | 15 minutes | 10A, 15A, 25A, 40A, 60A, 100A, 150A, 250A, 400A, 600A, 1000A~ |

POWER FACTOR METER (Cos ϕ METERS)



| Cos ϕ METERS | | | | | | |
|--|-------|-------|---------|-------|-------|--------|
| | Scale | Type | | | | |
| | | BP-80 | BP-100S | BE-72 | BE-96 | BE-144 |
| Single phase | 90° | • | • | • | • | • |
| | 250° | | | • | • | |
| Three phase unbalanced (ARON) 3 wires | 90° | • | • | • | • | • |
| | 250° | | | • | • | |
| Three phase unbalanced (RIGHI) 4 wires | 90° | • | • | • | • | • |
| | | | | | | |

| | | |
|------------------------------|-----------------------------|------------------------------|
| Full scale instrument value: | 10 - 0 - 10 mA | per cos ϕ 0.5 ÷ 1 ÷ 0.5 |
| Nominal current: | 1 1A 5 5A (to be specified) | |
| Nominal voltage: | 0-450V | |
| Auxiliary voltage: | A 110V B 220V F 380V G 440V | c.c./ A.C. |
| | C 24V D 48V E 110V | c.c./ D.C. |

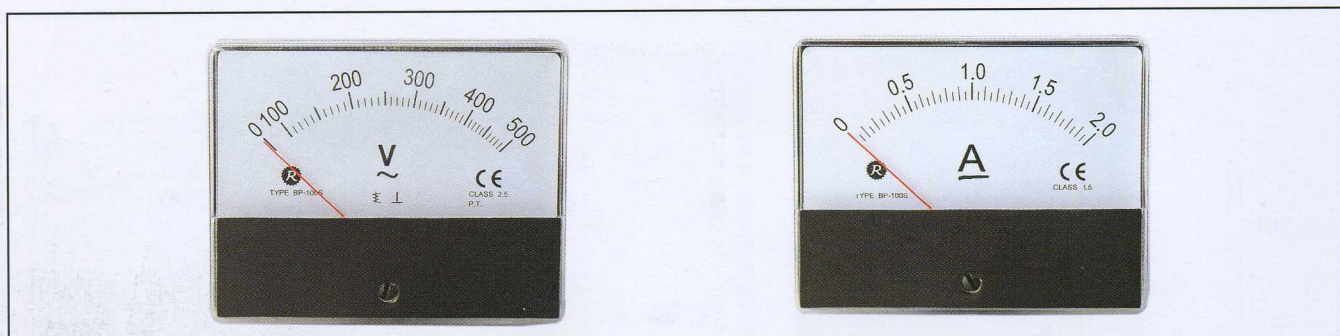
GENERAL FEATURES

The phasemeters are composed by a reading instrument and a static transducer accessory galvanically insulated S3PD series, to be placed between the line and the instrument.

For further technical details please see our catalogue for transducers.

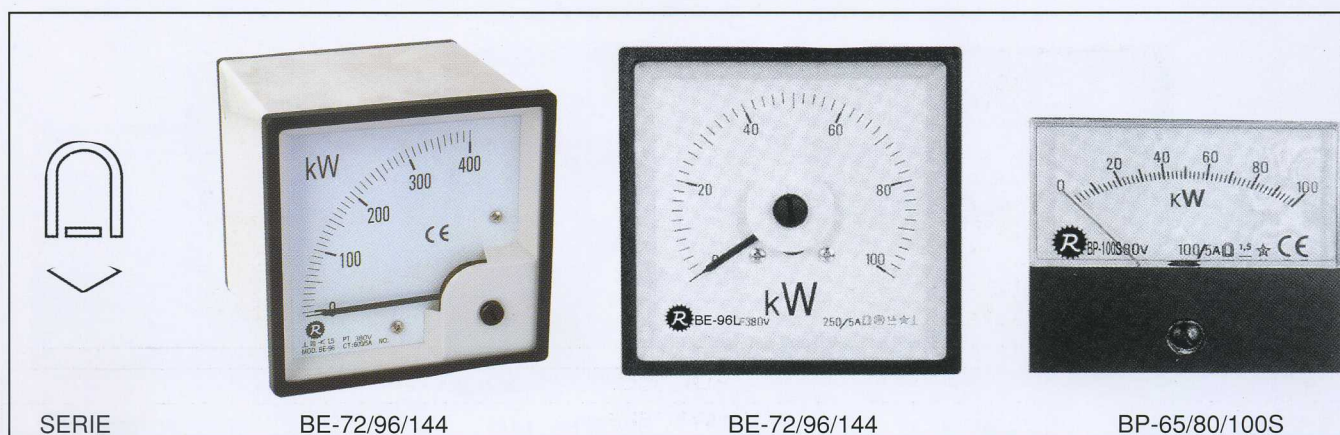
The transducer is foreseen with auxiliary power supply, so it can work with voltage from zero to the max. value, and the output signal will change proportionally to changing of the current and of the voltage.

PANEL AMMETERS AND VOLTMETERS



| FOR A.C. | | | | | | | | | | | | |
|------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|
| AMMETERS | | | | | | | | | | | | |
| Type | BP-50S | | BP-60 | | BP-65 | | BP-670 | | BP-80 | | BP-100S | |
| Size | 50×50 | | 60×60 | | 65×65 | | 70×60 | | 80×80 | | 100×80 | |
| (A) | direct | from C.T. | direct | from C.T. | direct | from C.T. | direct | from C.T. | direct | from C.T. | direct | from C.T. |
| | | 5A | | 5A | | 5A | | 5A | | 5A | | 5A |
| 5 | • | | • | | • | | • | | • | | • | |
| 10 | • | • | • | • | • | • | • | • | • | • | • | • |
| 20 | • | • | • | • | • | • | • | • | • | • | • | • |
| 40 | | • | | • | | • | | • | | • | | • |
| 60 | | • | | • | | • | | • | | • | | • |
| 100 | | • | | • | | • | | • | | • | | • |
| 200 | | • | | • | | • | | • | | • | | • |
| 300 | | • | | • | | • | | • | | • | | • |
| 500~ | | • | | • | | • | | • | | • | | • |
| VOLTMETERS | | | | | | | | | | | | |
| Type | BP-50S | | BP-60 | | BP-65 | | BP-670 | | BP-80 | | BP-100S | |
| Size | 50×50 | | 60×60 | | 65×65 | | 70×60 | | 80×80 | | 100×80 | |
| 300V | • | | • | | • | | • | | • | | • | |
| 500V | • | | • | | • | | • | | • | | • | |
| FOR D.C. | | | | | | | | | | | | |
| AMMETERS | | | | | | | | | | | | |
| Type | BP-50S | | BP-60 | | BP-65 | | BP-670 | | BP-80 | | BP-100 | |
| Size | 50×50 | | 60×60 | | 65×65 | | 70×60 | | 80×80 | | 100×80 | |
| (A) | 50,60,75mV | 1A | 50,60,75mV | 1A | 50,60,75mV | 1A | 50,60,75mV | 1A | 50,60,75mV | 1A | 50,60,75mV | 1A |
| 10 | • | • | • | • | • | • | • | • | • | • | • | • |
| 20 | • | • | • | • | • | • | • | • | • | • | • | • |
| 30 | • | • | • | • | • | • | • | • | • | • | • | • |
| 40 | • | • | • | • | • | • | • | • | • | • | • | • |
| 60 | • | • | • | • | • | • | • | • | • | • | • | • |
| 100 ~ | • | • | • | • | • | • | • | • | • | • | • | • |
| VOLTMETERS | | | | | | | | | | | | |
| Type | BP-50S | | BP-60 | | BP-65 | | BP-670 | | BP-80 | | BP-100S | |
| Size | 50×50 | | 60×60 | | 65×65 | | 70×60 | | 80×80 | | 100×80 | |
| 40V | • | | • | | • | | • | | • | | • | |
| 60V | • | | • | | • | | • | | • | | • | |
| 100V | • | | • | | • | | • | | • | | • | |
| 200V | • | | • | | • | | • | | • | | • | |
| 300V | • | | • | | • | | • | | • | | • | |
| 500V | • | | • | | • | | • | | • | | • | |

WATTMETERS (active power)



| WATTMETERS | | | | | | | |
|--|-------|-------|-------|---------|-------|-------|--------|
| | Scale | Type | | | | | |
| | | BP-65 | BP-80 | BP-100S | BE-72 | BE-96 | BE-144 |
| Single phase | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |
| Three phase unbalanced (ARON) 3 wires | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |
| Three phase unbalanced (RIGHI) 4 wires | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |

| | | | | | |
|--|-------------------------------|---|-------------------------------|-------------------------------|-----------|
| Full scale instrument value: | 10mA | | | | |
| Nominal current: | <input type="checkbox"/> 1A | <input type="checkbox"/> 5A (to be specified) | | | |
| Nominal voltage: | 0-450V | | | | |
| Auxiliary voltage: | <input type="checkbox"/> 110V | <input type="checkbox"/> 220V | <input type="checkbox"/> 380V | <input type="checkbox"/> 440V | c.c./A.C. |
| | <input type="checkbox"/> 24V | <input type="checkbox"/> 48V | <input type="checkbox"/> 110V | | c.c./D.C. |
| The full scale value must be >20% of the nominal power | | | | | |

GENERAL FEATURES

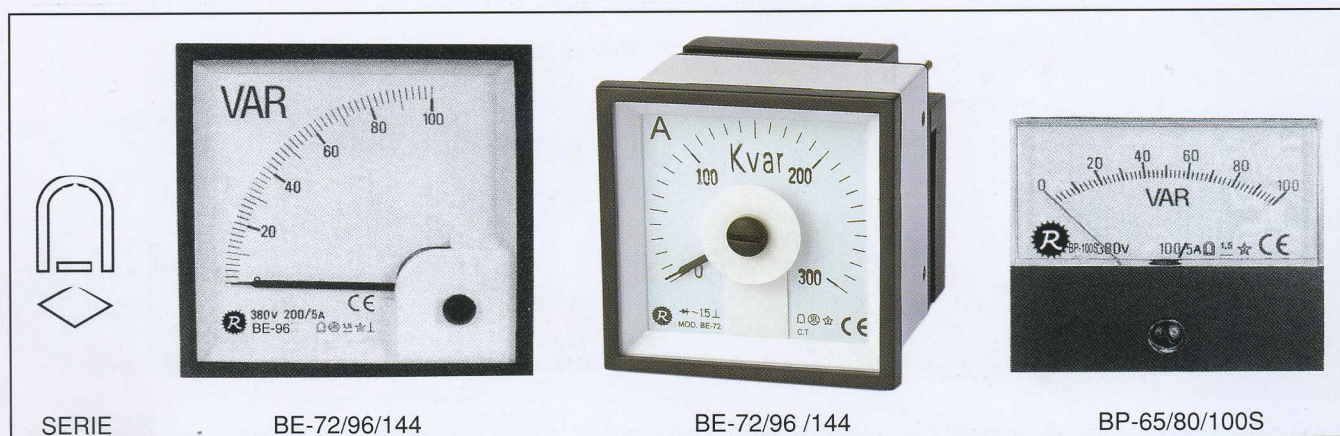
The wattmeters are composed by a reading instrument and a static transducer accessory galvanically insulated S3WD series, to be placed between the line and the instrument.

For further technical details please see our catalogue for transducers.

For reading of active and reactive power it is possible to use a single converter S3WD series.

The transducer is foreseen with auxiliary power supply, so it can work with voltage from zero to the max. value, and the output signal will change proportionally to changing of the current and of the voltage.

VARMETERS (reactive power)



| VARMETERS | | | | | | | |
|--|-------|-------|-------|---------|-------|-------|--------|
| | Scale | Type | | | | | |
| | | BP-65 | BP-80 | BP-100S | BE-72 | BE-96 | BE-144 |
| Single phase | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |
| Three phase unbalanced (ARON) 3 wires | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |
| Three phase unbalanced (RIGHI) 4 wires | 90° | ● | ● | ● | ● | ● | ● |
| | 250° | | | | ● | ● | |

| | | | | | |
|--|-------------------------------|--|-------------------------------|-------------------------------|-----------|
| Full scale instrument value: | 10mA | | | | |
| Nominal current: | <input type="checkbox"/> 1A | <input checked="" type="checkbox"/> 5A (to be specified) | | | |
| Nominal voltage: | 0-450V | | | | |
| Auxiliary voltage: | <input type="checkbox"/> 110V | <input type="checkbox"/> 220V | <input type="checkbox"/> 380V | <input type="checkbox"/> 440V | c.c./A.C. |
| | <input type="checkbox"/> 24V | <input type="checkbox"/> 48V | <input type="checkbox"/> 110V | | c.c./D.C. |
| The full scale value must be >20% of the nominal power | | | | | |

GENERAL FEATURES

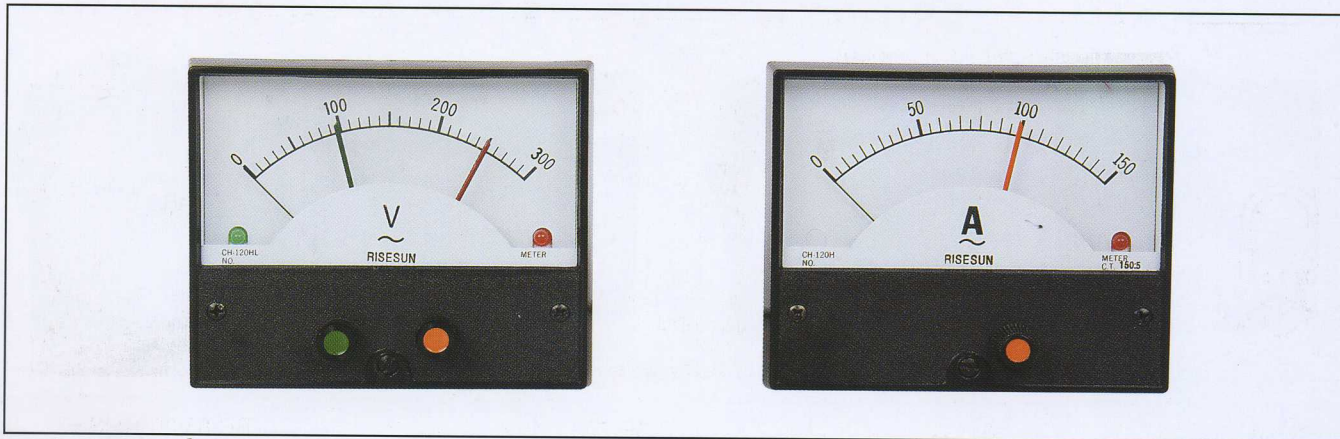
The varmeters are composed by a reading instrument and a static transducer accessory galvanically insulated S3VD series, to be placed between the line and the instrument.

For further technical details please see our catalogue for transducers.

For reading of active and reactive power it is possible to use a single converter S3VD series.

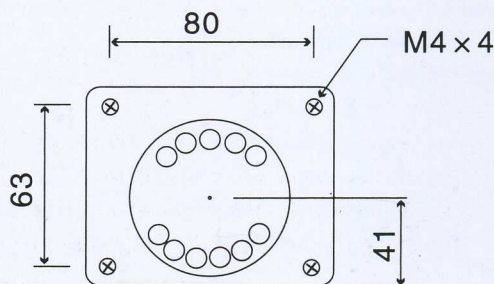
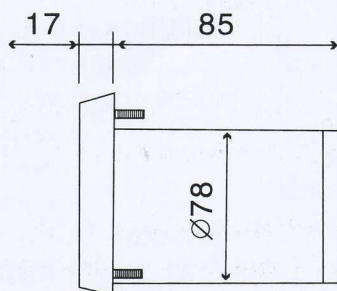
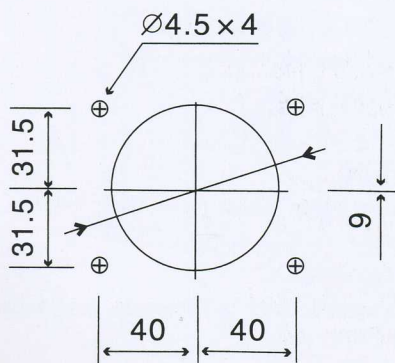
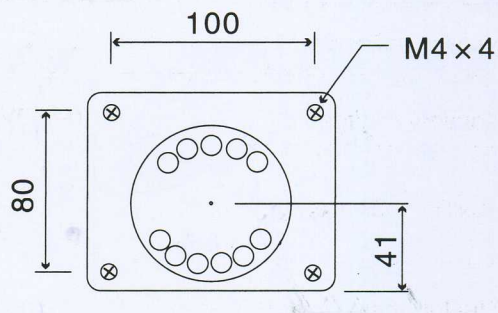
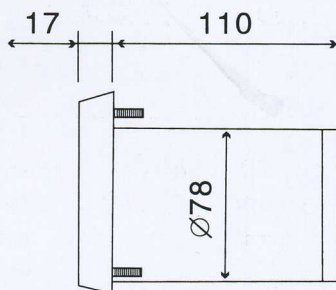
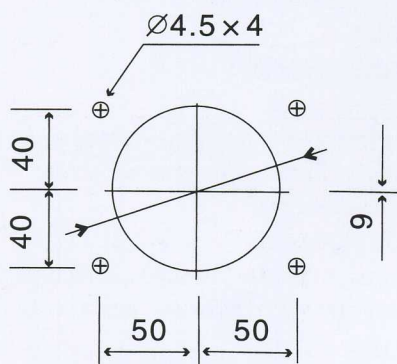
The transducer is foreseen with auxiliary power supply, so it can work with voltage from zero to the max. value, and the output signal will change proportionally to changing of the current and of the voltage.

ANALOG METER RELAY



| | CONTACTS |
|----------|---|
| HRC 120 | Both high and low contacts standard |
| DSC 06 | |
| DUC 144 | One high or one low or one high and one low or two high |
| EDEC 96 | |
| IDEC 144 | Both high and low culputs Pluos in relay optional |

| MOEDL | A | B | PANEL CUTOUT |
|---------|-----|-----|--------------|
| DSC 96 | 96 | 79 | 92x92± 1 |
| DLC 144 | 144 | 148 | 138x138± 1 |

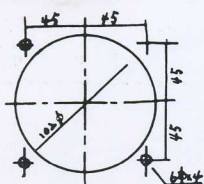
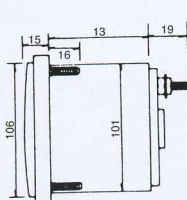
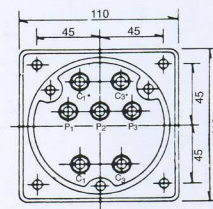
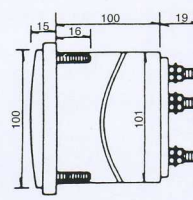
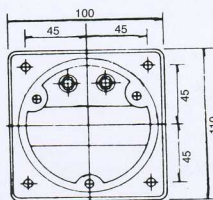


LONG SCALE INSTRUMENT

LS-110A/V

LS-110 KW

LS-110 COS ϕ

LS-110 Hz

PANEL CUT-OUT

GENERAL DIMENSION

DIMENSION FOR LS-110 KW

mm

MEASURING RANGES:

LS-110A/V:

Moving Coil Type

| DC μ A | DC mA | DC A | DC V |
|------------|-------|------|------|
| 500 | 1 | 1 | 30 |
| | 2 | 1.5 | 50 |
| | 5 | 2 | 100 |
| | 10 | 3 | 150 |
| | 20 | 5 | 300 |
| | 50 | 10 | |
| | 100 | 15 | |
| | 200 | 20 | |
| | 500 | 30 | |

Rectifier Type:

| AC A | AC V |
|------|------|
| 1 | 150 |
| 5 | 300 |
| | 500 |
| | 600 |

- For ranges higher than 30A DC, use external shunt with a 50mV DC ammeter.
- For ranges higher than 300v DC, use external Multiplier with a 1 mA Voltmeter.
- For ranges higher than 5A AC, use external Current Transformer with a 5A AC Ammeter.
- For ranges higher than 600V AC, use external Potential Transformer with a 150V AC Voltmeter.

LS-110KW: 110V,220V,380V,500V.1A,5A.

- For any rating other than listed above. use external Current transformer and/or external Potential Transformer with a 110V/5A instrument.

LS-110 COS ϕ : 110V,220V,380V,500V.
1A,5A.

- For any rating other than those listed above. use external Potential Transformer with a 110V/5A instrument.

LS-Hz: 110V,220V,380V,500V.

- For a voltage rating higher than above, use an external Potential Transformer with a 110V instrument.

ACCURACY: LS-110 A/V-Class 1.5

LS-110 KW-Class 1.5

 LS-110 COS ϕ -4° in [phase angle].

LS-110 Hz-Class 1.5

FULL SCALE DEFLECTION: 250°

FULL SCALE LENGTH: 183MM, 7 1/4"

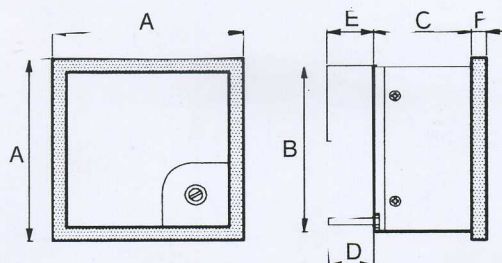
CASE AND COMPOSITION:

Acrylic Resin cover, plastic meter body, bakelite terminal plate.
four stud mounting.

COLOUR: White scale plate, black terminal plate. grey meter body.

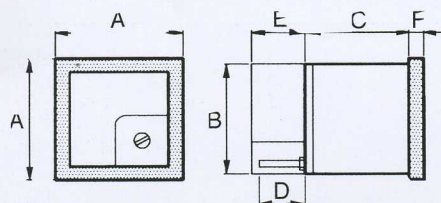
POINTER: Sword type in black colour.

OVERALL DIMENSIONS



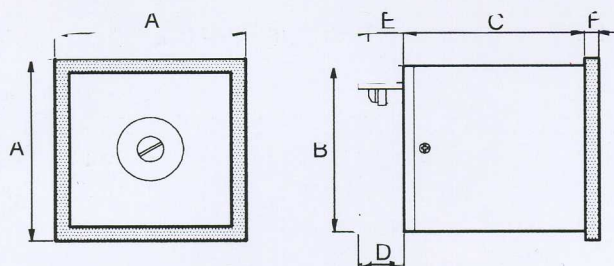
| Size | A | B | C | D | E | F | Hole |
|--------|-----|-----|-----|----|----|-----|---------|
| BE-48 | 48 | 44 | 39 | 17 | 20 | 5.5 | 46×46 |
| BE-144 | 144 | 136 | 144 | 17 | 20 | 7 | 140×140 |

mm



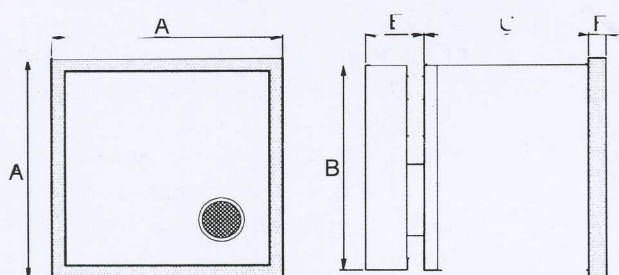
| Size | A | B | C | D | E | F | Hole |
|-------|----|----|------|----|------|-----|-------|
| BE-72 | 72 | 66 | 36.5 | 17 | 17.5 | 5.5 | 68×68 |
| BE-96 | 96 | 90 | 45 | 17 | 17.5 | 6 | 92×92 |

mm



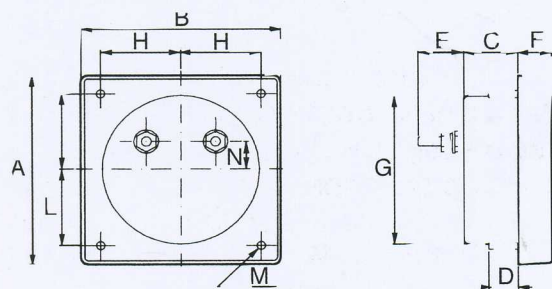
| Size | A | B | C | D | E | F | Hole |
|--------|------|----|----|----|----|-----|-------|
| BE-72 | 73 | 66 | 68 | 17 | 13 | 6.5 | 68×68 |
| BE-96L | 96.5 | 90 | 45 | 17 | 13 | 6 | 92×92 |

mm



| Size | A | B | C | E | F | Hole |
|--------|----|----|----|----|---|-------|
| BE-96B | 96 | 90 | 68 | 24 | 8 | 92×92 |

mm



| Size | A | B | C | D | E | F | G | H | I | L | M | N | For Hole |
|---------|----|-----|------|------|------|------|------|------|------|------|-----|----|----------|
| BP-50s | 50 | 52 | 23.5 | 13.5 | 4.4 | 12.5 | 45 | 19 | 19 | 19 | 3.5 | 15 | 46 |
| BP-60 | 60 | 60 | 24 | 11 | 9.5 | 11 | 52 | 24 | 24 | 24 | 3.5 | 4 | 53 |
| BP-65 | 67 | 67 | 24 | 11 | 10 | 13 | 52.5 | 25.5 | 25.5 | 25.5 | 3.5 | 4 | 53.5 |
| BP-670 | 60 | 70 | 25.5 | 13 | 10 | 11 | 52.5 | 24 | 24 | 24 | 3.5 | 5 | 53 |
| BP-80 | 81 | 81 | 22 | 12 | 18.5 | 13.5 | 63.5 | 32.5 | 32.5 | 32.5 | 3.5 | 12 | 65 |
| BP-100S | 80 | 100 | 25 | 13.5 | 11 | 14 | 64 | 41.5 | 36.5 | 27.5 | 3.5 | 4 | 65 |

mm