Technical Data Sheet

# *Sigma Series DE Meter*




The moving iron panel meters, DE 48/72/96/144 are housed in a moulded polycarbonate cases which are suitable for the measurement of AC currents for frequency range of 15...400Hz and voltages in the frequency range of 15...100Hz.

## Special Features

- Scale interchangeability
- Near linear scale
- Glass filled polycarbonate housing (UL 94 V-0)
- Knife edge pointer
- Easily replace able glass and bezel

## Application

The moving iron panel meters, DE 48/72/96/144 housed in moulded polycarbonate cases are suitable for the measurement of AC currents for frequency range of 15...400Hz and voltages in the frequency range of 15...100Hz.

## Movement

Moving iron movement has pivots of very high hardness.Movement suspended between spring loaded saphire jewel and silicon jewel.Movement is critically damped by use of silicon oil.

## Technical Specifications

### Applicable Standards

| | |
|---|---|
| **Nominal case and cutout dimensions for indicating Electrical instruments** | DIN IEC 61554 |
| **Scale and pointer for electrical measuring instruments** | DIN 43802 |
| **Connections and Terminal markings** | DIN 43807 |
| **Terminal bolts/leads** | DIN 46200/46282 |
| **Safety requirements and protective measures for Electrical indicating. instruments and their accessories** | DIN 40050, VDE 0110, VDE 0410 IEC 529, IEC 1010 |
| **Performance specifications for direct acting indicating analogue electrical measuring instruments and their accessories** | IEC51/DINEN60051 DIN 43701 |
| **Environmental conditions** | VDE / VDI 3540 |
| **Front frames for indicating measuring instruments Principle dimensions** | DIN 43718 |
| **ULCombustibility** | UL 94 V-0 |

**Comply with following European directives**

2004 / 108 / EC (EMC directive ), 2006 / 95/EC ( low voltage directive ) & amendment 93/68/EEC, For CE Marking.

### Scale and Pointer

| | | | | |
|---|---|---|---|---|
| **Pointer** | Knife - edge pointer | | | |
| **Pointer deflection** | 0...90 | | | |
| **Scale characteristics** | Near Linear above 10% of nominal full Scale value | | | |
| **Scale division** | Coarse - fine | | | |
| **Scale length** | DE 48 | DE72 | DE 96 | DE144 |
| | 41 mm | 63mm | 97mm | 146mm |

### Over Range

| | |
|---|---|
| **Ammeters** | 2 times nominal current |
| **Voltmeters** | 1.2 times nominal voltage |
| **Scale Interchangeability** | Interchangeable |
| **nd drip proof as** | per UL 94 V-0 |

## Mechanical Data

| | |
|---|---|
| Case details | Moulded square case suitable for mounting in Control / switchgear panels Machinery consoles. |
| Case material | Polycarbonate , flame retardant and drip proof as per UL 94 V-0. |
| Front facia | Glass |
| Colour of bezel | Black |
| Position of use | Vertical |
| Panel fixing | Mounting Clamp |
| Mounting | Stackable in a single cutout |
| Panel thickness | ≤ 25 mm |

### Terminals

| | |
|---|---|
| Voltmeters and Ammeters < 30 A | Hexagon studs, M4 screws and wire clamps E3 |
| Ammeters < 30 A | Threaded studs M6 with Nuts |
| Ammeters < 60A | Threaded Studs M8 with Nuts |

# Electrical Data

| | |
|---|---|
| **Measured Quantity Power Consumption** | AC Voltage or current |
| **Voltmeters** | < 4.5 VA |
| **Ammeters < 15A** | < 0.5 VA |
| **Ammeters > 15A** | < 0.8 VA |
| **Continuous Overload Capacity** | I(acc. to IEC 51)<br>1.2 times rated voltage / current. |

## Short Duration

| | |
|---|---|
| **Voltameters** | 2 times for 0.5 sec : 9 overloads<br>2 times 5 sec : 1 overloads |
| **Ammeters** | 10 times for 0.5 sec : 9 overloads<br>10 times for 5 sec : 1 overload |
| **Enclosure code (IEC 529)** | IP 52 case<br>IP 00 for terminals without back cover<br>IP 20 for terminals with back cover |
| **Insulation class** | Group A according to VDE 0110 |
| **Rated insulation** | DE 48 : 660V DE 72/96 : 1KV |
| **Proof voltage** | DE 48 : 2KV DE 72/96 : 3KV |
| **Installation category** | > 50 Mohm at 500 V DC |

# Reference Conditions

| | |
|---|---|
| **Accuracy class** | 0.5 according to IS : IEC 51/DIN EN 60051) |
| **Ambient temperature** | 23 C ± 2°C |
| **Position of use** | Nominal position ±1° |
| **Input Waveform** | Rated value of measured quantity sine wave, distortion factor ≤ 5% |
| **Freequency** | 65HZ |
| **Other Conditions** | IEC 51/DIN EN 60051 |

# Nominal Range of use

| | |
|---|---|
| **Ambient Temperature** | 0 ...50 °C |
| **Position of use** | Vertical ± 5° |
| **Frequency** | 45 ...65Hz |
| **External Magnetic Field** | At 0.4 kA/m |

# Environmental Conditions

| | |
|---|---|
| Climatic Suitability | Climate category \|\| as per IS : 1248, IEC 60051(climatic class 3 according to VDE/VDI 3540) |
| Operating Temperature | - 10... + 55 C |
| Storage temperature | - 25...+65 C |
| Relative humidity | ≤ 75% annual average, noncondensing |
| Shock resistance | 15 g. for pulse duration 11ms |
| Vibration resistance | 10-55-10Hz for ampli. 0.15mm (1.5g at50Hz) |
| Pollution degree | Stackable in a single cutout |

# Environmental Conditions

| A.C. Voltage | A.C. Current |
|---|---|
| 6V | 100mA |
| 10v | 150mA |
| 15v | 250mA |
| 25v | 400mA |
| 40v | 600mA |
| 60v | 1A |
| 100v | 1.5A |
| 120v | 2.5A |
| 132v | 4A |
| 150v | 5A |
| 250v | 6A |
| 400v | 10A |
| 500v | 15A |
| 600v | 20A |
| 1000v | 25A |
| for use with PT | 40A |
| .../100 V s econdary | 50A (except DE 48) |
| .../110 V secondary | 60A (except DE 48) |
| | 100A (except DE 48) |
| | For use with CT |
| | .../1A secondary |
| | .../5A secondary |

# Options

| Case | |
|---|---|
| Front Facia | Antiglare glass |
| Color of bezel | Red, yellow, blue, white |
| Red index pointer | Front adjustable on site |
| Position of use | on request 15°...180° |

| Dial | |
|---|---|
| Blank dial | With initial and end values marked |
| Special markings | Numbering/Lettering |
| Division dials | Basic divisions without numbering |
| Color markings/bands | Red or green |
| Over range | Two, three and five times over range |
| (Ammeters) | Six times over range |

## Accessories

**Safety Terminal Protection**

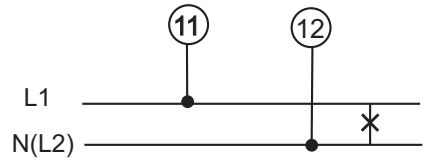
Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers) acc.to IS 9249, VDE 0410.

**Safety Precautions**

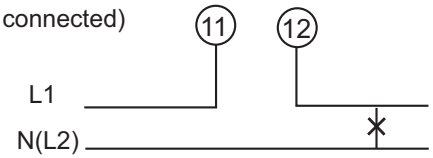
1) Instruments with damaged bezel or glasses must be disconnected from the mains.
2) Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing. If non - insulated connector wires are used.
3) The back cover must be snapped into place after connector wires have been clamped for protection against accidental contact.
4) Bezel, Scale and Glass may only be replaced under voltage free conditions.
5) Instruments to be used in grounded panel.

# Electrical Connections

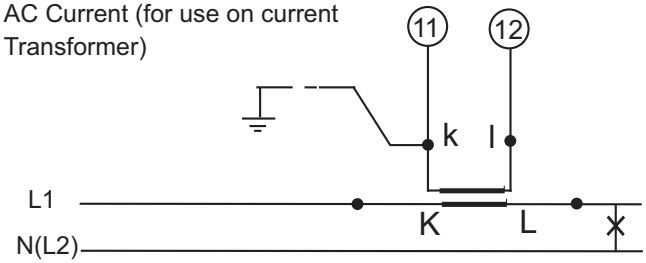
AC Voltage (Direct connected)



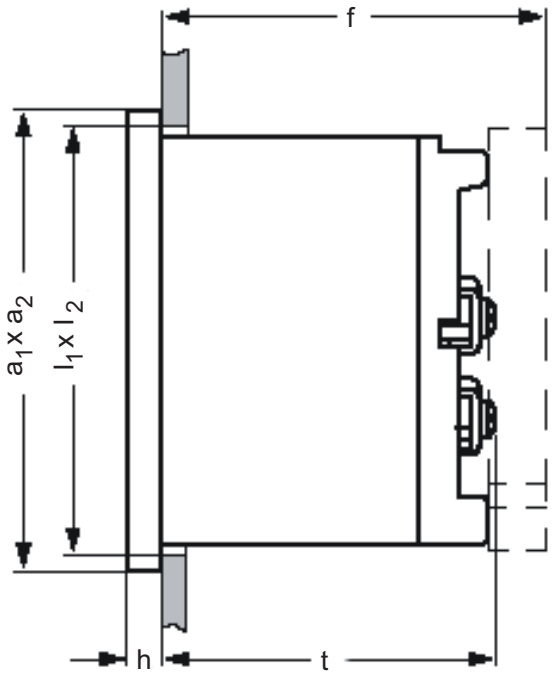

AC Current (Direct connected)




AC Current (for use on current Transformer)




# Dimensions



| Front in mm | Nominal Dimensions, mm | | Cutout, mm | Installation Depth Including Terminal (t), mm | | | Installation Depth Incl. Full back Cover (f), mm | |
|---|---|---|---|---|---|---|---|---|
| | $a_1$ x $a_2$ | h | $l_1$ x $l_2$ | < 30A (M4) | 30...60A(M6) | 100A (M8) | < 30A | 30...100A |
| 48 x 48 | 48 x 48 | 5.5 | $45^{+0.6}$ x $45^{+0.6}$ | 54 | 72 | - | 62.5 | 75(upto 60A) |
| 72 x 72 | 72 x 72 | 5.5 | $68^{+0.7}$ x $68^{+0.7}$ | 54 | 62 | 66 | 62.5 | 70 |
| 96 x 96 | 96 x 96 | 5.5 | $92^{+0.8}$ x $92^{+0.8}$ | 54 | 62 | 66 | 62.5 | 70 |

# Ordering Information*

Size: 48 x 48 Ammeter

| Part No. | Description | Class |
|---|---|---|
| EQ44-I1112N1CAW0ST | 5A, Scale 0-5A | CL-1 |
| EQ44-I1312N1CAW0ST | 10A, Scale 0-10A | CL-1 |
| EQ44-I1412N1CAW0ST | 15A, scale 0-15A | CL-1 |
| EQ44-I1512N1CAW0ST | 20A, Scale 0-20A | CL-1 |
| EQ44-I1612N1CAW0ST | 25A, Scale 0-25A | CL-1 |
| EQ44-I1812N1CAW0ST | 40A, Scale 0-40A | CL-1 |
| EQ44-I2012N1CAW0ST | 60A, Scale 0-60A | CL-1 |

Size: 72 x 72 Ammeter

| Part No. | Description | Class |
|---|---|---|
| EQ74-I11X2N1CAW0ST | 5A, Scale 0-5A | CL-1 |
| EQ74-I13X2N1CAW0ST | 10A, Scale 0-10A | CL-1 |
| EQ74-I14X2N1CAW0ST | 15A, scale 0-15A | CL-1 |
| EQ74-I15X2N1CAW0ST | 20A, Scale 0-20A | CL-1 |
| EQ74-I16X2N1CAW0ST | 25A, Scale 0-25A | CL-1 |
| EQ74-I18X2N1CAW0ST | 40A, Scale 0-40A | CL-1 |
| EQ74-I20X2N1CAW0ST | 60A, Scale 0-60A | CL-1 |

Size: 96 x 96 Ammeter

| Part No. | Description | Class |
|---|---|---|
| EQ94-I1112N1CAW0ST | 5A, Scale 0-5A | CL-1 |
| EQ94-I1312N1CAW0ST | 10A, Scale 0-10A | CL-1 |
| EQ94-I1412N1CAW0ST | 15A, scale 0-15A | CL-1 |
| EQ94-I1512N1CAW0ST | 20A, Scale 0-20A | CL-1 |
| EQ94-I1612N1CAW0ST | 25A, Scale 0-25A | CL-1 |
| EQ94-I1812N1CAW0ST | 40A, Scale 0-40A | CL-1 |
| EQ94-I2012N1CAW0ST | 60A, Scale 0-60A | CL-1 |

Size: 48 x 48 Voltmeter

| Part No. | Description | Class |
|---|---|---|
| EQ44-V60X2N1CAW0ST | 120V, Scale 0 -120V | CL-1 |
| EQ44-V61X2N1CAW0ST | 132V, Scale 0 -132V | CL-1 |
| EQ44-V63X2N1CAW0ST | 150V, Scale 0 - 150V | CL-1 |
| EQ44-V65X2N1CAW0ST | 200V, Scale 0 - 200V | CL-1 |
| EQ44-V66X2N1CAW0ST | 230V, Scale 0 - 230V | CL-1 |
| EQ44-V67X2N1CAW0ST | 250V, Scale 0 - 250V | CL-1 |
| EQ44-V68X2N1CAW0ST | 300V, Scale 0- 300V | CL-1 |
| EQ44-V69X2N1CAW0ST | 400V, Scale 0 - 400V | CL-1 |
| EQ44-V70X2N1CAW0ST | 500V, Scale 0 - 500V | CL-1 |
| EQ44-V71X2N1CAW0ST | 600V, Scale 0 - 600V | CL-1 |

Size: 72 x 72 Voltmeter

| Part No. | Description | Class |
|---|---|---|
| EQ74-V60X2N1CAW0ST | 120V, Scale 0 -120V | CL-1 |
| EQ74-V61X2N1CAW0ST | 132V, Scale 0 -132V | CL-1 |
| EQ74-V63X2N1CAW0ST | 150V, Scale 0 - 150V | CL-1 |
| EQ74-V65X2N1CAW0ST | 200V, Scale 0 - 200V | CL-1 |
| EQ74-V66X2N1CAW0ST | 230V, Scale 0 - 230V | CL-1 |
| EQ74-V67X2N1CAW0ST | 250V, Scale 0 - 250V | CL-1 |
| EQ74-V68X2N1CAW0ST | 300V, Scale 0- 300V | CL-1 |
| EQ74-V69X2N1CAW0ST | 400V, Scale 0 - 400V | CL-1 |
| EQ74-V70X2N1CAW0ST | 500V, Scale 0 - 500V | CL-1 |
| EQ74-V71X2N1CAW0ST | 600V, Scale 0 - 600V | CL-1 |

Size: 96 x 96 Voltmeter

| Part No. | Description | Class |
|---|---|---|
| EQ94-V60X2N1CAW0ST | 120V, Scale 0 -120V | CL-1 |
| EQ94-V61X2N1CAW0ST | 132V, Scale 0 -132V | CL-1 |
| EQ94-V63X2N1CAW0ST | 150V, Scale 0 - 150V | CL-1 |
| EQ94-V65X2N1CAW0ST | 200V, Scale 0 - 200V | CL-1 |
| EQ94-V66X2N1CAW0ST | 230V, Scale 0 - 230V | CL-1 |
| EQ94-V67X2N1CAW0ST | 250V, Scale 0 - 250V | CL-1 |
| EQ94-V68X2N1CAW0ST | 300V, Scale 0- 300V | CL-1 |
| EQ94-V69X2N1CAW0ST | 400V, Scale 0 - 400V | CL-1 |
| EQ94-V70X2N1CAW0ST | 500V, Scale 0 - 500V | CL-1 |
| EQ94-V71X2N1CAW0ST | 600V, Scale 0 - 600V | CL-1 |

**For the Size of 144 x 144, please contact our concerned person.**

***Part No. are subject to change without notice, kindly confirm the description (Range) before ordering.**

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