

# Selector Switch Meter With Moving Iron Movement

EQ SWT 72

EQ SWT 96

## Data Sheet

Analogue Meter With  
Built In Selector Switch  
With Moving-Iron  
Movement



## Application

The moving iron, panel meters, DE 48/72/96 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.

Moving iron meters indicate rms-values practically independent of waveform even of high harmonics. Error of indication may occur for extreme waveforms (e.g. phase gating controls) & for frequencies above 100KHz.

These meters offer several advantages in switchboards and Generating Set Panels. Number of meters can be mounted in a Panel cut out (Mosaic mounting). For CT operated ammeters, dials can be fitted based on Front window glass and bezel can be easily replaced.

## Features

- 3 ph 3 wire & 4 wire voltage & current measurement possible.
- Near Linear scale.
- Knife edge pointer.
- Glass filled polycarbonate housing(UL 94 V-0).

## Movement

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

## Mechanical Data

Case details	Moulded square case suitable for mounting in Control / Switchgear panels, Machinery consoles.
Case material	10% Glass filled 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	Swivel Screw
Mounting	Stackable in a single cutout
Panel thickness	≤ 25 mm
Terminals ammeters	Hexagonal studs, M4 screws and wire clamps E3

## Electrical Data

Measured quantity	AC voltage or current
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### Power consumption(Approx)

Voltmeters	< 4.5VA
Ammeters	< 0.5VA

### Overload capacity (acc to IS : 1248/ IEC 51)

Continuously	1.2 times rated voltage / current
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### Short duration

Voltmeters	2 times for 0.5 sec : 9 overloads 2 times for 5 sec : 1 overloads
Ammeters	10 times for 0.5 sec : 9 10 times for 5 sec : 1 overload
Enclosures code (IEC 529)	IP 52 case IP 00 for terminals without back cover overloads IP 20 for terminals with back cover

Insulation class	Group A according to VDE 0110
Rated insulation voltage	SWT 72/96 : 1KV
Proof voltage	SWT 72/96 : 3KV
Installation category	SWT 72/96 : 600V CAT III
Insulation resistance	> 50 Mohm at 500 V DC

## Standard Measuring Ranges

A.C. Voltage	A.C. Current
120	1A
150	5A
300	
500	
600	

Non-Standard ranges available on request.

For Single phase system there will be 4 switch positions as- OFF L1 L2 L3

For 3 phase 3 wire system, 4 switch positions are as- OFF L1-L2 L2-L3 L3-L1

For 3 phase 4 wire system, 6 switch positions are as- L1-L3 L2-L3 L1-L2 L1-N L2-N L3-N

## Scale and Pointer

Pointer	Knife - edge pointer
Pointer deflection	0 ... 90°
Scale characteristics	Near Linear above 10% of nominal full Scale value
Scale length	SWT 72 SWT 96 54 mm 97 mm
Over range	
Ammeters	2 times nominal current
Voltmeters	1.2 times nominal voltage
Scale Interchangeability	Scales are interchangeable.
Scale Division	Coarse - fine

## Reference Condition

Accuracy class	1.5 according to IS : 1248 (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 %
Frequency	45...65HZ
Other Conditions	IS : 1248 (IEC 51/ DIN EN 60051)

## Nominal Range of Use

Ambient Temperature	0...50° C
Position of use	Vertical ± 5°
Frequency	15 ... 100 Hz (voltage) 15 ... 400 Hz (current)
External magnetic field	At 0.4 kA/m

## Environmental Conditions

Climatic suitability	Climate category II 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, non-condensing
Shock resistance	15g <sub>n</sub> for pulse duration 11 ms
Vibration resistance	10-55-10Hz for ampli. 0.15mm (1.5 g at 50Hz)
Pollution degree	2

## Applicable Standards

Nominal case and cutout dimensions for indicating Electrical instruments	IS 2419 DIN IEC 61554
Scale and pointer for electrical measuring instruments	IS 1248 DIN 43802
Connections and Terminal markings for panel meters	IS 1248 DIN 43807
Terminal bolts / leads.	DIN 46200/46282
Clamp straps for connections	DIN 46282
Safety requirements and protective measures for Electrical indicating.	IS 9249 DIN 40050

instruments and their accessories. ,	VDE 0110
	VDE 0410
	IEC 529 , IEC 1010
Performance specifications for direct acting indicating analogue electrical measuring instruments and their accessories	IS 1248 IEC 51/DIN EN 60051 DIN 43701
Environmental conditions	IS 1248 IS: 9000 VDE / VDI 3540 DIN 43718
Front frames for indicating measuring instruments Principle dimensions	
UL Combustibility Class	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 Marking.

## Options

### Case

Front facia	Antiglare glass
Colour of bezel	Red, Yellow ,Blue, White
Red index pointer	Front adjustable on site
Position of use	On request 0° ...180°

### Dial

Blank dial	With initial and end values marked.
Special markings	Numbering / Lettering.
Division markings	Basic divisions without numbering.
Colour markings/bands	Red or green
Over range (Ammeters)	Two times over range Six times over range)

## Safety Terminal Protection

Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers)

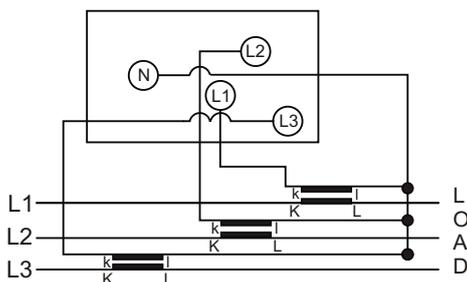
## Safety Precautions

- Instruments with damaged bezels or window glasses must be disconnected from mains.
- Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing, if non - insulated connector wires are used.
- The back cover must be snapped into place after the connector wires have been clamped for protection against accidental contact.
- Bezels and window glasses should be replaced under Voltage - free conditions
- Instruments to be used in grounded panel.

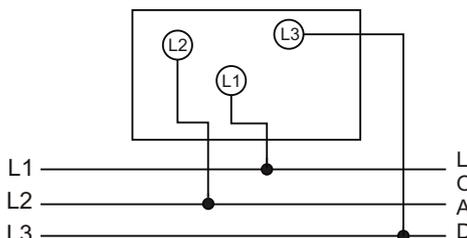
### Specifications are subject to change without notice(06/09)

Front in mm	Nominal Dimensions, mm		Cutout, mm $l_1 \times l_2$	Installation Depth Including Terminal (t), mm	Installation Depth Incl. Full back Cover (f), mm
	$a_1 \times a_2$	h			
72 x 72	72 x 72	5.5	$68^{+0.7} \times 68^{+0.7}$	53	64
96 x 96	96 x 96	5.5	$92^{+0.8} \times 92^{+0.8}$	53	64

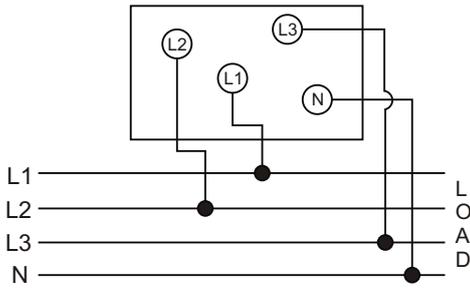
### AC Ammeters With Selector Switch



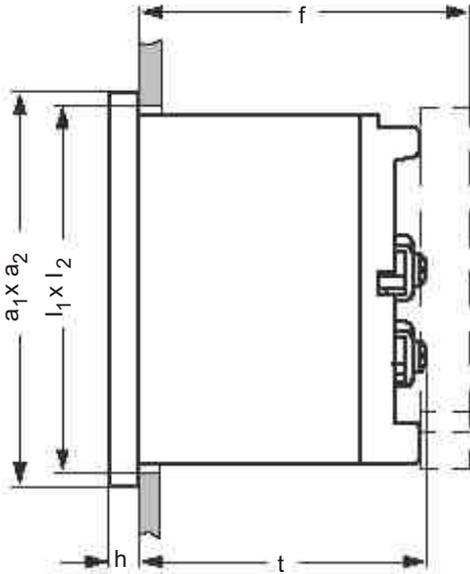
### AC Voltmeters 3 Phase 3 Wire



## AC Voltmeters 3 Phase 4 Wire



## Dimensions



## Ordering Information

Type EQ	Moving-iron panel meter
Front Dimension	72mm x 72mm 96mm x 96mm
Over rango (ammeters)	over range <sup>3</sup> 2 times nominal current <sup>1</sup> 6 times nominal current <sup>3</sup>
Measuring Ranges	Refer to table inside
Terminal Protection	Full sized polycarbonate back cover
Panel Fixing	Swivel Screw
Red Index Pointer	None <sup>1</sup>
Front facia	Normal glass <sup>1</sup> Antiglare glass <sup>3</sup>
Colour of Bezel	Black <sup>1</sup> Red, Blue, Yellow, White <sup>3</sup>
Position of use	Vertical <sup>1</sup> on request 0....180° <sup>3</sup>
Dial	Standard scale same as measuring range <sup>1</sup> Blank dial with division <sup>3</sup> Additional lettering on request <sup>3</sup> Additional numbering on request <sup>3</sup> Coloured marking red or green <sup>3</sup> Coloured sector red or green <sup>3</sup>
Logo	RISHABH <sup>1</sup> , for Indian sales C.G. *1, for export through Crompton Greaves I.D. Others <sup>3</sup>

<sup>1</sup> Standard

<sup>3</sup> Please clearly add the desired specifications while ordering

## Ordering example

EQ SWT 72 Measuring range 150 V, dial 0 - 100%

**Specifications are subject to change without notice(04/10)**



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