



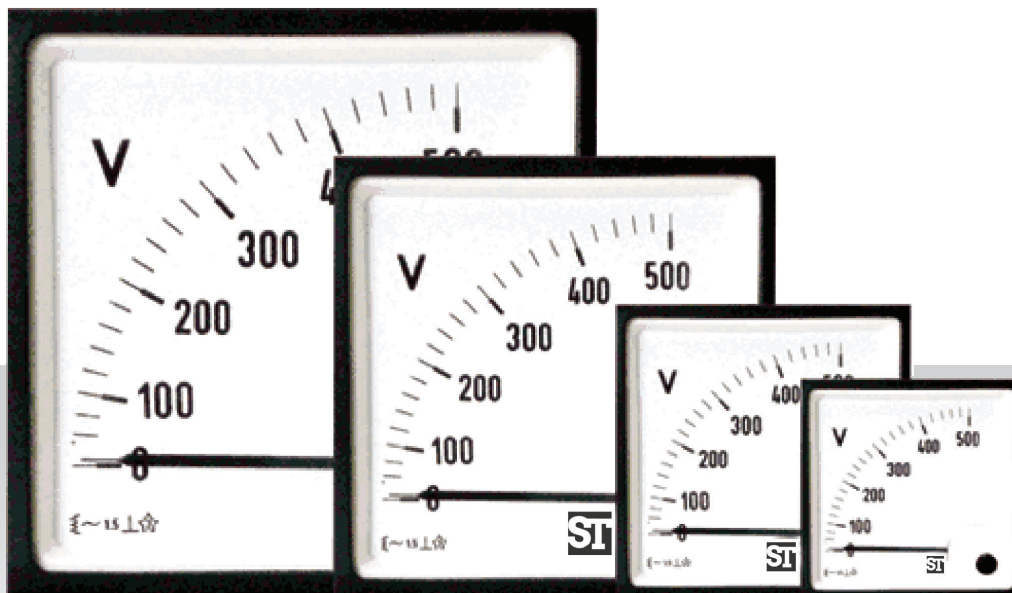
**sifam tinsley**  
PRECISION INSTRUMENTATION

ANALOGUE PANEL METERS  
[www.sifamtinsley.co.uk](http://www.sifamtinsley.co.uk)



## DATASHEET

Issue 1



Multifunction Meters

Transducers & Isolators

Temperature Controllers

Converters & Recorders

Digital Panel Meters

Current Transformers

kWh Energy Meters

Analogue Panel Meters

Shunts

Digital Multimeters

Digital Multimeters

Protection Relays

Synchroscope Series

Power Supplies

Test & Measurement

MOVING IRON AC PANEL METERS (90 Degree)  
DE SERIES, 48, 72, 96 and 144 mm  
AC AMMETERS and VOLTMETERS



**SUBJECT TO CHANGE WITHOUT NOTICE**

This datasheet superseded all previous versions – please keep for future reference

#### Features

- Scale interchangeability
- Near linear scale
- Glass filled polycarbonate housing (UL 94 V-0)
- Knife edge pointer
- Easily replaceable glass and bezel
- Optional Class 1 accuracy
- Terminal covers supplied as standard

## MOVING IRON AC AMMETERS AND VOLTMETERS



#### 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.

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 CT ratio. Glass and bezel can be easily replaced.

#### Movement

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

### Applicable Standards

Nominal case and cutout dimensions for IS 2419

Nominal case and cutout dimensions for indicating Electrical instruments	IS 1248 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
Safety requirements and protective measures for Electrical indicating instruments and their accessories	IS 9249 DIN 40050 VDE 0110 VDE 0410 IEC 529, IEC 1010
Performance specifications for direct acting indicating analogue electrical measuring instruments and their accessories	IS 1248 IEC51/DINEN60051 DIN 43701
Environmental conditions	IS 1248 IS : 9000 VDE / VDI 3540
Front frames for indicating measuring instruments Principle dimensions ULCombustibility Class	DIN 43718  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...900
Scale characteristics	Near Linear above 10% of nominal full Scale value
Scale division	Coarse - fine
Scale length	DE48 DE72 DE96 DE144 41 mm 63mm 97mm 146mm
<b>Over Range</b>	
Ammeters	2 times nominal current
Voltmeters	1.2 times nominal voltage
Scale Interchangeability	Interchangeable
and 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
<b>Terminals</b>	
Voltmeters and	Hexagon studs, M4 screws and
Ammeters < 30A	wire clamps E3
Ammeters > 30A	Threaded studs M6 with Nuts
Ammeters > 60A	Threaded Studs M8 with Nuts

### Electrical Data

Measured quantity	AC voltage or current
<b>Power consumption</b>	
Voltmeters	< 4.5VA
Ammeters	< 15A < 0.5VA
Ammeters > 15A	< 0.8 VA
Overload capacity	(acc. to IS: 1248 / IEC 51)
Continuously	1.2 times rated voltage /current
<b>Short duration</b>	
Voltmeters	2 times for 0.5 sec : 9 overloads 2 times for 5 sec : 1 overload
Ammeters	10 times for 0.5 sec : 9 overloads 10 times for 5 sec : 1 overload
Enclosure code (IEC 529)	IP 52 case IP 00 for terminals without back cover 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	1.5 according to IS : 1248 (IEC 51/ DIN EN 60051)
Ambient temperature	23 C0 ± 2 C0
Position of use	Nominal position ±10
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 0C
Position of use	Vertical ± 50
Frequency	45 ... 65Hz
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, noncondensing
Shock resistance	15g for pulse duration 11 ms n
Vibration resistance	10-55-10Hz for ampli. 0.15mm (1.5 g at 50Hz)
Pollution degree	2

### Standard Measuring Ranges

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

Non-Standard ranges available on request.

### 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 15° ... 180°
Dial	
Blank dial	With initial and end values marked.
Special markings	Numbering / Lettering.
Division dials	Basic divisions without numbering.
Colour 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).

#### Safety Precautions

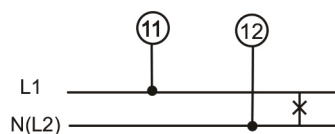
- 1) Instruments with damaged bezel or glasses must be disconnected from the mains.
- 2) Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing. If non - insulated connector wires are used.
- 3) The back cover must be snapped into place after connector wires 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.

### Safety Precautions

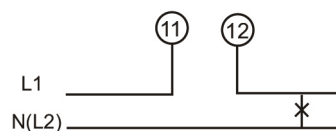
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### Connections

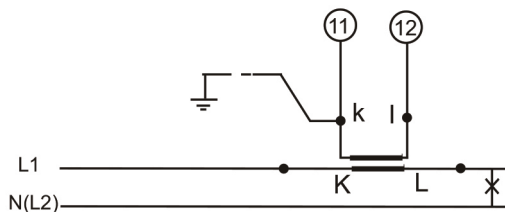
AC Voltage (Direct connected)



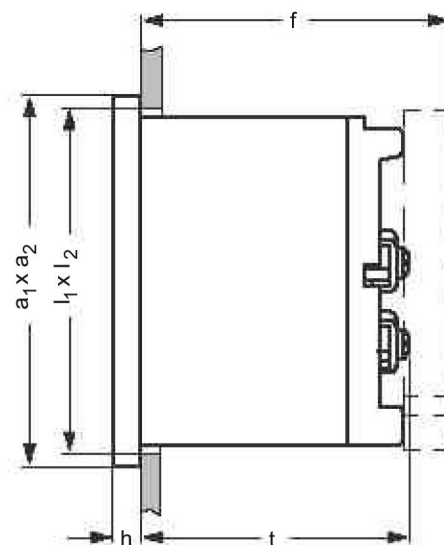
AC Current (Direct connected)



AC Current (for use on current Transformer)



### Dimensions



Ordering Information

Ordering Example	Type (1)	Type (2)	Input..(3)	Suppression (4)	Accuracy (5)	Front Facia (6)	Ingress protection (7)	Cover (8)	Scale/dial Type (9)	Scale/dial Background (10)	
Code	EQ74	I	11	1	2	N	1	C	A	W	0ST
Description	72x72mm	AC Ammeter	5 Amps AC	X1	1.5	Normal glass	IP52	with Back cover	Standard Aluminium	White	Sifam Tinsley

Type (1)		Type (2)		Input.. (3)		Suppression (4)		Accuracy (5)		Front facia (6)		Ingress protection (7)		Cover (8)		Scale/dial Type (9)		Scale/dial Background (10)		0ST
EQ44	48x48mm	I	AC Ammeter	01	100mAmps	1	X1	1	Class - 1.5	N	Normal glass	1	IP 52 case	C	With Back cover	P	Standard Plastic	B	Black background	Sifam Tinsley
EQ74	72x72mm	V	AC Voltmeter	02	150mAmps	2	X2	2	Class - 1.0	A	Antiglare glass	2	IP 54 for term	B	Without Back cover	A	Standard Aluminium	W	White background	
EQ94	96x96mm			03	250mAmps	3	X3			P	Plastic front Facia	3	IP 65 for term			R	Aluminium with Colour mark	X		
EQ14	144x144m			04	400mAmps	5	X5			R	Normal glass with red pointer					D	Aluminium with Dual Scale			
				05	600mAmps	6	X6									I	Illumination dial			
				06	1Amps	X	NA									C	Aluminium with colour bands			
				07	1.2Amps	4	X4									X	Without Dial			
				08	2Amps											B	Blank Scale			
				09	2.5Amps											L	Blank Scale with logo			
				10	4Amps															
				11	5Amps															
				12	6Amps															
				13	10Amps															
				14	15Amps															
				15	20Amps															
				16	25Amps															
				17	30Amps															
				18	40Amps															
				19	50Amps															
				20	60Amps															
				21	1.5Amps															
				22	3Amps															
				23	0.5Amps															
				24	1.25Amps															
				25	1.4Amps															
				26	6.25Amps															
				27	6.5Amps															
				28	7.5Amps															
				29	8Amps															
				30	12Amps															
				31	14Amps															
				32	11Amps															
				33	16Amps															
				34	1.6Amps															
				35	6.3Amps															
				36	13Amps															
				37	32Amps															
				51	6Volts															
				52	10Volts															
				53	15Volts															
				54	25Volts															
				55	40Volts															
				56	50Volts															
				57	60Volts															
				58	75Volts															
				59	100Volts															
				60	120Volts															
				61	132Volts															
				62	132.5Volts															
				63	150Volts															
				64	157.14Volts															
				65	200Volts															
				66	230Volts															
				67	250Volts															
				68	300Volts															
				69	400Volts															
				70	500Volts															
				71	600Volts															
				72	30Volts															
				73	70Volts															
				74	110Volts															
				75	125Volts															
				76	130Volts															
				77	207.8Volts															
				78	285.7Volts															
				79	346Volts															
				80	115.11Volts															
				81	113.6V															
				82	133.3V															
				83	63Amps															
				XX	TBA															

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