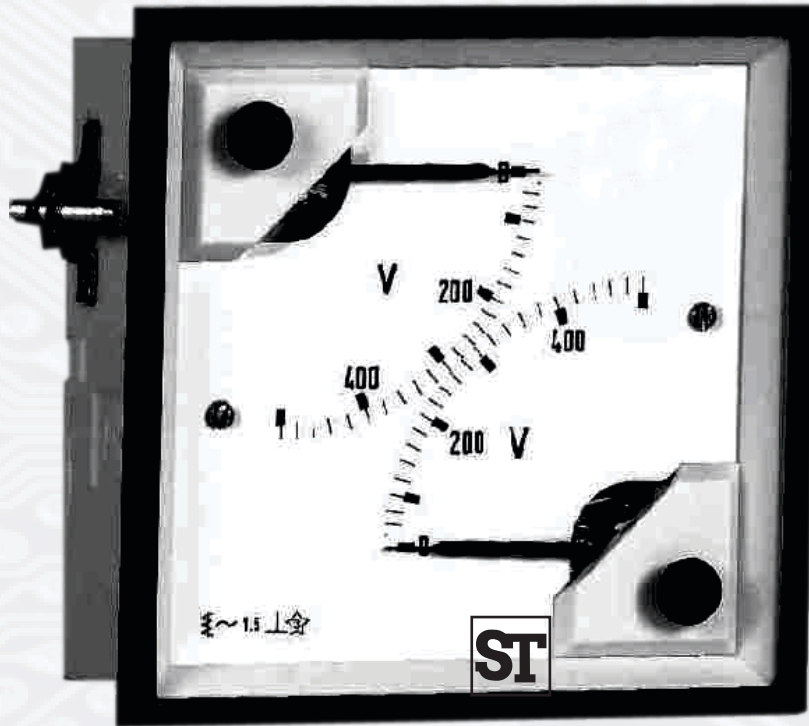




Technical Data Sheet

DS 2 in1



DS 2 in 1 The moving iron panel meters, 2-in-1 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.

Special Features

- Two different meters in one case.
- Linear scale.
- Glass filled polycarbonate housing(UL 94 V-0).
- Knife edge pointer
- Easily replacable glass & bezel.

Application

DS 2 in 1 The moving coil panel meters, 2 in 1 DS housed in moulded polycarbonate cases are suitable for the measurement of DC currents and voltages. These instruments offer several advantages in switchboards and Generating Set Panels. Number of meters can be mounted in a Panel Cut out (Mosaic mounting). Front glass, Bezel & Dial can be easily replaced.

Movement

Moving coil movement has pivots of very high hardness. Movement is suspended between two spring loaded sapphire jewels. Movement is properly shielded & critically damped by eddy currents induced in coil former.

Specifications

Accuracy at Reference Conditions

Accuracy class	1.5 according to (IEC 51/ DIN EN 60051)
----------------	---

Terminals

Voltmeters and ammeters < 5A	Hexagon studs, M4 screws and wire clamps E3
Ammeters ≥ 5A	Threaded studs M6 with nuts

Electrical Data

Measured quantity	DC voltage or current
Overload capacity	acc. to IEC 51
Continuously	1.2 times rated voltage / current
Short duration	2 times for 0.5 sec : 9 overloads
Voltmeters	2 times for 5 sec : 1 overloads
Ammeters	10 times for 0.5 sec : 9 overloads 10 times for 5 sec : 1 overload
Enclosure code (IEC 529)	IP 52 case cover IP 00 for terminals without back IP 20 for terminals with back cover
Insulation class	Group A according to VDE 0110
Rated insulation voltage	DS 96 : 1000V
Proof Voltage	3KV
Installation category	600V CAT III (IEC 1010)
Insulation resistance	> 50 Mohm at 500 V d.c.

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 fascia	Glass
Colour of bezel	Black
Position of use	Vertical
Panel fixing	Mounting Clamps
Mounting	Stackable in a single cutout
Panel thickness	25 mm

Burden

Connection to shunt	Power Consumption : 6 mA Lead resistance : 0.06	± 10%
1A ... 40 A	Voltage drop : 60 mV	± 10%
≥ 1V	1000 /V	± 5%

Reference conditions

Ambient temperature	23 C ± 2° C
Position of use	Nominal position ± 2° C
Input	Rated value of measured quantity
Other conditions	IEC 51/ DIN EN 60051

Nominal range of use

Ambient temperature	0...50° C
Position of use	Vertical ± 5° C
External magnetic field	At 0.4KA/m

Scale and Pointer

Pointer	Knife - edge pointer
Pointer deflection	0...90°
Scale characteristics	linear
Scale division	Coarse - fine
Scale length	54mm

Environmental Conditions

Climatic suitability	Climate category II as per IS : 1248 (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 _n for pulse duration 11 ms
Vibration resistance	10-55-10Hz for ampli. 0.15mm (1.5 g at 50Hz)
Pollution degree	2

Specifications

Standard Measuring Ranges			
D. C. Current		D. C. Voltage	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity ($\pm 10\%$)
100 μ A	400 mV	40 mV	3.33kohm/V
150 μ A	600 mV	50 mV	3.33kohm/V
250 μ A	140 mV	60 mV	1 kohm/V
400 μ A	540 mV	75 mV	1 kohm/V
500 μ A	540 mV	100 mV	1 kohm/V
600 μ A	540 mV	150 mV	1 kohm/V
1 mA	37 mV	250 mV	1 kohm/V
1.5 mA	196 mV	400 mV	1 kohm/V
2.5 mA	196 mV	600 mV	1 kohm/V
4 mA	196 mV	1 V	1 kohm/V
5 mA	196 mV	1.5 V	1 kohm/V
6 mA	196 mV	2.5 V	1 kohm/V
10 mA	196 mV	4 V	1 kohm/V
15 mA	11 mV	6 V	1 kohm/V
20 mA	60 mV	10 V	1 kohm/V
25 mA	60 mV	15 V	1 kohm/V
40 mA	60 mV	25 V	1 kohm/V
60 mA	60 mV	30 V	1 kohm/V
100 mA	60 mV	40 V	1 Kohm/V
150 mA	60 mV	50 V	1 kohm/V
250 mA	60 mV	60 V	1 kohm/V
400 mA	60 mV	100 V	1 kohm/V
600 mA	60 mV	150 V	1 kohm/V
1 A	60 mV	200 V	1 kohm/V
1.5 A	60 mV	250 V	1 kohm/V
2.5 A	60 mV	300 V	1 kohm/V
4 A	60 mV	400 V	1 kohm/V
5 A	60 mV	500 V	1 kohm/V
6 A	72 mV	600 V	1 kohm/V
10 A	60 mV	1000 V	1 kohm/V
15 A	60 mV	For use on externalshunt	
20 A	60 mV		
25 A	60 mV	60 mV	1 kohm/V
30 A	60 mV	75 mV	1 kohm/V
For use on transducer		150 mV	1 kohm/V
4-20 mA	60 mV		
Any combination		Ammeter / Ammeter Voltmeter / Voltmeter Ammeter / Voltmeter	
In case of Ammeter / Ammeter 1 meter could be upto 30A but 2nd one will be only upto 1A			

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 dials	Basic divisions without numbering.
Colour markings/bands	Red or green

Others	
Zero position	Centre zero or off-set zero
Increased sensitivity	4kohm/V for voltmeters 1...600V 10 kohm/V for Voltmeters 15..150V
Adjustment of Resistance (Sensitivity)	Within $\pm 1\%$ at 23 °C

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 for panel meters	DIN 43807
Terminal bolts / leads.	DIN 46200/46282
Clamp straps for connections	DIN 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	IEC 51/DIN EN 60051 DIN 43701
measuring instruments & their accessories Environmental condition	VDE / VDI 3540
Front frames for indicating measuring instruments Principle dimensions	DIN 43718
UL Combustibility Class	UL 94 V-0
Technical conditions of delivery for electrical instruments	DIN 43701
Mechanical strength (Free fall test, vibration test)	VDE 0411 IEC 61010
Comply with following European directives	2004 / 108 / EC
(EMC directive), 2006/95/EC (low voltage directive) & amendment 93/68/EEC,For CE Marking.	

Specifications

Safety Precautions

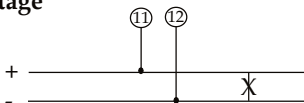
- 1) Instruments with damaged bezel or glasses must be disconnected from the mains.
- 2) Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing. If non - insulated connector wires are used.
- 3) The back cover must be snapped into place after connector wires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

Accessories

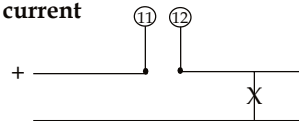
Safety Terminal protection
 Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers)

Connection

DC voltage



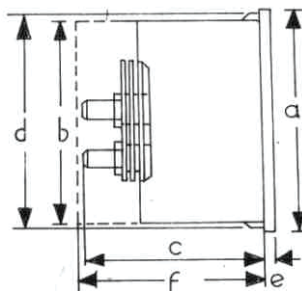
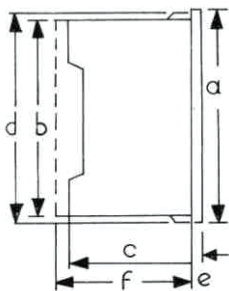
DC current



Dimensions

For Voltmeter & Ammeter < 5A

For Ammeter 5 - 60 A



Dimensions (in mm)	DS 96
Bezel a	96
Case b	90
Depth c*	53
d	91.5
e	5.5
cutout size	92 ^{+0.8}
Weight approx.	0.26 kg
Depth with back cover f**	64
	c = 68mm, for I= 6 to 30 A **f = 70mm, for I= 6 to 30 A

Ordering Information- Only For Representative Products

Part No.	Description	Class
PQ9T-B042JL2ACABST	DS 10A , DS 500V	CL-1
PQ9T-V2B2DL2ACABST	DS 75mV, DS 10V	CL-1
PQ9T-I0203L2ACABST	DS 1mA, DS 4-20mA	CL-1

For more details and product codes, please contact our local office



sifam tinsley
 PRECISION INSTRUMENTATION

Manufactured by:

Sifam Tinsley Instrumentation Inc
 3105 Creekside Village Dr,
 Unit 801, Kennesaw GA 30144

Distributed by:

Veracious Canada Inc
 1101 Britannia Rd E,
 Mississauga, ON L4W 3X1
Contact: +1 416-640-5364
Fax: +1 416-981-3933
E-mail: info@veraciousinc.ca
Web: www.veraciousinc.com