

2 IN 1 MOVING COIL MOVEMENT METER PQ - 96/144

Two in One
PQ - 96/144

Data Sheet

PQ 96/144 2 in 1 Analogue Meters
With Moving Coil Movement



Application

The moving coil panel meters, 2 in 1 PQ 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.

Features

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

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

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 Clamps

Mounting : Stackable in a single cutout

Panel thickness : 25 mm

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 IS: 1248 / IEC 51)

Continuously : 1.2 times rated voltage / current

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 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 : PQ 96 : 1000V

Proof Voltage : 3KV

Installation category : 600 V CAT III (IEC 1010)

Insulation resistance : > 50 Mohmat 500 V d.c.

Burden :

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

Standard Measuring Ranges

D. C. Current		D. C. Voltage	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity (± 10%)
100 µA	400 mV	40 mV	3.33kohm/V
150 µA	600 mV	50 mV	3.33kohm/V
250 µA	140 mV	60 mV	1 kohm/V
400 µA	540 mV	75 mV	1 kohm/V
500 µA	540 mV	100 mV	1 kohm/V
600 µA	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 external shunt	
20 A	60 mV		
25 A	60 mV		
30 A	60 mV	60 mV	1 kohm/V
For use on transducer	60 mV	75 mV	1 kohm/V
4-20 mA	60 mV	150 mV	1 kohm/V

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

Non-Standard ranges available on request.

Accuracy at Reference Conditions

Accuracy class : 1.5 according to IS: 1248 (IEC 51/ DIN EN 60051)

Reference conditions

Ambient temperature : 23°C ± 2°C
Position of use : Nominal position ± 1°
Input : Rated value of measured quantity
Other conditions : IS : 1248 (IEC 51/ DIN EN 60051)

Nominal range of use

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

Scale and Pointer

Pointer : Knife - edge pointer
Pointer deflection : 0...90°
Scale characteristics : linear
Scale division : Coarse - 1/2
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

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	: 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 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 & their accessories	: IS 1248 IEC 51/DIN EN 60051 DIN 43701
Environmental condition	: IS 1248 IS: 9000 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)	: IS 1248 IS 9000 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.

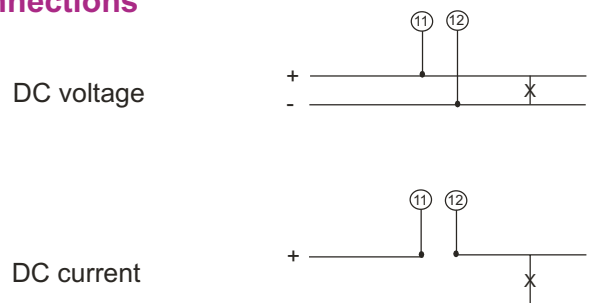
Accessories

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.

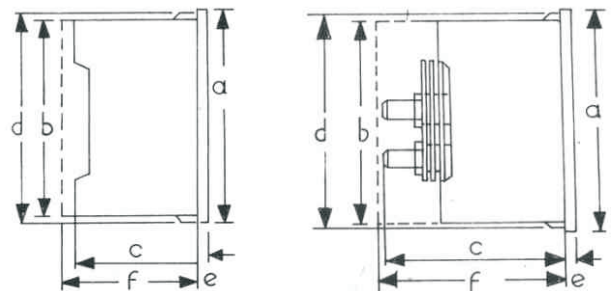
Connections



Dimensions

For Voltmeter & Ammeter < 5A

For Ammeter 5 - 60 A



Dimensions (in mm)

	PQ 96	PQ 144
Bezel a	□ 96	□ 144
Case b	□ 90	□ 136
Depth c*	53	53
d	□ 91.5	□ 137.5
e	5.5	5.5
Cutout size	□ 92 ^{+0.8}	□ 138 ⁺¹
Weight(Approx)	0.2kg	0.4kg
Depth with back cover f**	64	64

* c = 68mm, for I= 6 to 30 A

**f = 70mm, for I= 6 to 30 A

Ordering Information

Type PQ	Moving-coil panel meter	Moving-coil panel meter
Front dimension 96	96 mm x 96 mm	144 mm x 144 mm
Measuring ranges	Refer to table inside	Refer to table inside
Housing color	White ^{*1} , Black ^{*3}	Black ^{*1} , White ^{*3}
Front fascia	Normal glass ^{*1} Antiglare glass ^{*3}	Normal glass ^{*1} Antiglare glass ^{*3}
Colour of bezel	Black ^{*1} Red, Blue, Yellow, White ^{*3}	Black ^{*1} Red, Blue, Yellow, White ^{*3}
Position of use	Vertical ^{*1} on request 0...180° ^{*3}	Vertical ^{*1} on request 0...180° ^{*3}
Terminal protection	Full sized polycarbonate back cover	Full sized polycarbonate back cover
Zero position	Left, ^{*1} Off-set zero ^{*3} Centre ^{*1}	Left, ^{*1} Off-set zero ^{*3} Centre ^{*1}
Increased sensitivity	4 kohm/V for voltmeters 1...600 V ^{*3} 10 kohm /V for voltmeters 15 ...150 V ^{*3}	4 kohm/V for voltmeters 1...600 V ^{*3} 10 kohm /V for voltmeters 15 ...150 V ^{*3}
Adjustment Resistance (Sensitivity)	Within ± 1 % at 23°C ^{*3}	Within ± 1 % at 23°C ^{*3}
Dial	Standard scale same as measuring range ^{*1} , Blank dial with division ^{*3} Additional lettering on request ^{*3} Additional numbering on request ^{*3} Coloured marking red or green ^{*3} Coloured sector red or green ^{*3}	Standard scale same as measuring range ^{*1} , Blank dial with division ^{*3} Additional lettering on request ^{*3} Additional numbering on request ^{*3} Coloured marking red or green ^{*3} Coloured sector red or green ^{*3}
Logo	RISHABH ^{*1} , Others ^{*3}	RISHABH ^{*1} , Others ^{*3}

*1 standard

*3 Please clearly add the desired specifications while ordering

Ordering example

PQ 5A / PQ 500V
PQ 75mV / PQ 10V
PQ 1mA / PQ 1A

Specifications are subject to change without notice (07/10)



Measure



Control



Record



Analyze



Optimize

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