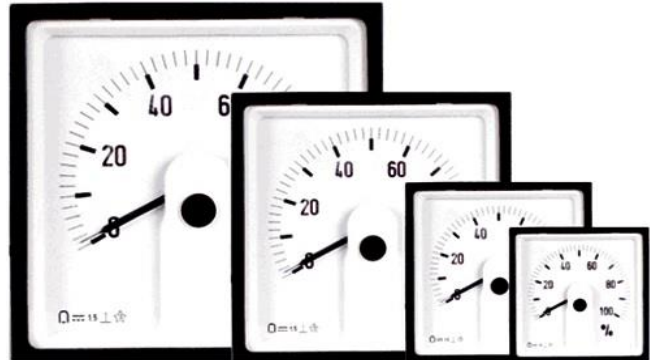


Application:

The moving coil panel meters, DSL 48/72/96/144 housed in molded polycarbonate cases are suitable for the measurement of DC currents and voltages. These instruments offer several advantages in switchboards and generating set panels. A number of meters can be mounted in a panel cut out (mosaic mounting). Front glass, bezel, and dial can be easily replaced.



Movement:

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

Features:

- Better Resolution
- Linear Scale
- Glass filled polycarbonate housing (UL 94-V-0)
- Knife Edge Pointer
- Easily replaceable glass and bezel

Applicable Standards:

Nominal case and cutout dimensions for indicating measuring instruments.

Scale and pointer for electrical measuring instruments.

Connections and terminal markings for panel meters.

Terminal bolts/leads.

Clamp straps for connections.

Safety requirements and protective measures for electrical indicating instruments and their accessories.

Performance specifications for direct acting indicating analog electrical measuring instruments and their accessories.

Environmental conditions

IS 2419 DIN IEC 61554

IS 1248 DIN 43802

IS 1248 DIN 43807

DIN 46200/46282

DIN 46282

IS 9249 DIN 40050 VDE 0110

VDE 0410 IEC 529, IEC 1010

IS 1248 IEC 51/DIN EN 60051

DIN 43701

IS 1248 IS: 9000

VDE/VDI 3540

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Applicable Standards Cont.:

Front frames for indicating measuring instruments principle dimensions.

DIN 43718

UL Combustibility class.

UL 94 V-O

Technical conditions of delivery for electrical instruments.

DIN 43701

Mechanical strength (free fall test, vibration test)

IS 1248 IS 9000 VDE 0411

IEC 1010

Comply with the following European directives: 2004/108/EC (EMC directive), 2006/95/EC (low voltage directive) and amendment 93/68/EEC, For CE marking.

Scale and Pointer:

Pointer	Knife-edge pointer			
Pointer Deflection	0...240°			
Scale Characteristics	Linear			
Scale Division	Coarse - Fine			
Scale Length	DSL48	DSL72	DSL96	DSL144
	70mm	106mm	142mm	230mm
Scale Interchangeability	Interchangeable			

Mechanical Data:

Case Details	Molded 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
Color 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 < 5A	Hexagon studs, M4 screws and wire clamps E3
Ammeters 5A	Threaded studs M6 with nuts
Ammeters > 60A	Threaded studs M8 with nuts

Electrical Data:

Measured Quantity	DC Voltage or Current
Overload Capacity	(acc. To IS: 1248/IEC 51)
Continuously Short Duration	1.2 times rated voltage/current
Ammeters	10 times, 5 sec: 1 overload 10 times, 0.5 sec: 9 overload
Voltmeters	2 times for 5 sec: 1 overload 2 times for 0.5 sec: 9 overloads
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 Voltage	1000 V
Proof Voltage Testing	3 kV
Installation Category	600 VCAT III (IEC 1010)
Insulation Resistance	> 50 Mohm at 500 V d.c.

Accuracy at Reference Conditions:

Accuracy Class	1.5 according to IS: 1248 (IEC 51/DIN EN 60051)
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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	0.5 mT

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. 11 ms
Vibration Resistance	10-55-10 Hz/0.15 mm 1.5 g at about 50 Hz

Options:

Case

Front Fascia	Antiglare Glass
Color 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
Color Markings/Bands	Red or Green

Other

Zero Position	Center zero or off-set zero
Increased Sensitivity	4kohm/V for voltmeters 1...600V 10kohm/V for voltmeters 15...150V
Adjustment of Resistance (Sensitivity)	Within ± 1% at 23°C

Standard Measuring Ranges:

D. C. Current		D. C. Voltage	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity (+ 10%)
50 μ A ^{*4}	540 mV	60 mV ^{*7}	200 ohm/V
60 μ A ^{*4}	540 mV	75 mV ^{*7}	200 ohm/V
75 mA	540 mV	100 mV ^{*7}	200 ohm/V
100 μ A ^{*7}	970 mV	150 mV ^{*7}	200 ohm/V
150 μ A	970 mV	250 mV ^{*7}	200 ohm/V
250 μ A	810 mV	400 mV ^{*7}	1 kohm/V
400 μ A	900 mV	600 mV ^{*7}	1 kohm/V
600 μ A	900 mV	750 mV ^{*7}	1 kohm/V
1 mA ^{*7}	500 mV	1 V ^{*7}	1 kohm/V
1.5 mA	500 mV	1.5 V ^{*7}	1 kohm/V
2.5 mA	500 mV	2.5 V ^{*7}	1 kohm/V
4 mA	500 mV	4 V ^{*7}	1 kohm/V
5 mA ^{*7}	40 mV	6 V ^{*7}	1 kohm/V
6 mA	40 mV	10 V ^{*7}	1 kohm/V
10 mA	75 mV	15 V ^{*7}	1 kohm/V
15 mA	60 mV	25 V ^{*7}	1 kohm/V
20 mA	60 mV	30 V ^{*7}	1 kohm/V
25 mA	60 mV	40 V ^{*7}	1 kohm/V
40 mA	60 mV	60 V ^{*7}	1 kohm/V
60 mA	60 mV	100 V ^{*7}	1 kohm/V
100 mA	60 mV	150 V ^{*7}	1 kohm/V
150 mA	60 mV	200 V ^{*7}	1 kohm/V
200 mA	60 mV	250 V ^{*7}	1 kohm/V
250 mA	60 mV	300 V ^{*7}	1 kohm/V
300 mA	60 mV	400 V ^{*7}	1 kohm/V
400 mA	60 mV	500 V ^{*7}	1 kohm/V
500 mA	60 mV	600 V ^{*7}	1 kohm/V
600 mA	60 mV		
750 mA	60 mV		
1 A	60 mV		
1.5 A	60 mV		
2.5 A	60 mV		
4 A	60 mV		
5 A	60 mV	For use on external shunt	200 ohm/V
6 A	60 mV		200 ohm/V
10 A	60 mV		200 ohm/V
15 A	60 mV	50 mV ^{*6}	200 ohm/V
20 A	60 mV	60 mV ^{*6}	
25 A	60 mV	75 mV ^{*6}	
30 A	60 mV	150 mV ^{*6}	
40 A ^{*5}	60 mV		
60 A ^{*5}	60 mV		
100 A ^{*5}	60 mV		

*4 Accuracy Class 2.5

*5 Not applicable for DSL 72

*6 Total lead resistance of 0.035 ohm is considered for mV ranges while calibrated.

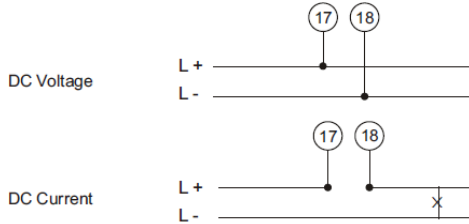
*7 Applicable for DSL 48

Accessories:

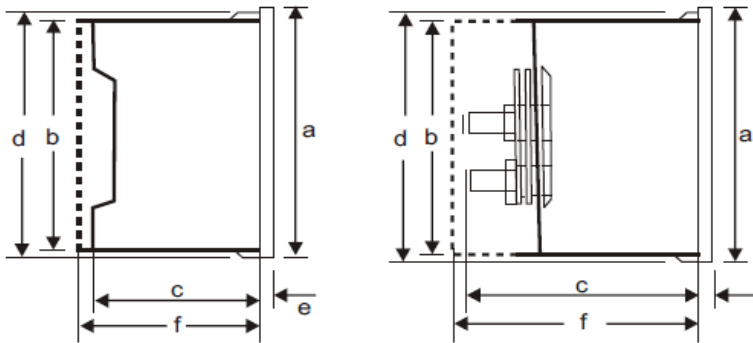
Safety Terminal Protection

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

Connections:



Dimensions:



Dimensions in mm		DSL48	DSL72	DSL96
Bezel	a	48	72	96
Case	b	43.5	66	90
Depth	c*	53	53	53
	d	44.5	67.5	91.5
	e	5.5	5.5	5.5
Cutout Size		45 ^{+0.6}	68 ^{+0.7}	92 ^{+0.8}
Weight (approx.)		0.13 kg	0.25 kg	0.30 kg
Depth with back cover	f**	64	64	64
*c = 68 mm, for I= 5 to 60A *c = 78 mm, for I> 60A **f = 70 mm, for I= 5 to 60A				

Safety Precautions:

- 1) Instruments with damaged bezel or glass 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 in to place after connector wires have been clamped for protection against accidental contact.

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Safety Precautions Cont.:

- 4) Bezel, Scale and Glass may only be replaced under voltage free conditions.
- 5) Instruments are to be used in a grounded panel.

Ordering Information:

Type DSL	Moving coil panel meter 240° scale
Front Dimension	
48	48mm x 48mm
96	96mm x 96mm
72	72mm x 72mm
144	144mm x 144mm
Measuring Ranges	Refer to table inside
Front Fascia	Normal Glass * ¹ Antiglare Glass * ³ Polycarbonate Glass * ³
Color of Bezel	Black Red, Blue, Yellow, White * ³
Position of Use	Vertical * ¹ On request 0...180° * ³
Terminal Protection	Full sized polycarbonate back cover
Zero Position	Center * ¹ , Off-set zero * ³
Increased Sensitivity	4 kohm/V for voltmeters 15...150 V* ³
Adjustment	
Resistance	Within ±1% at 23°C* ³
Sensitivity	
Dial	Standard scale same as measuring range * ¹ Black dial with division * ³ Additional lettering on request * ³ Additional numbering on request * ³ Colored marking red or green * ³ Colored sector red or green * ³
Logo	Jewell

*¹ Standard

*³ Please clearly add the desired specifications while ordering.

Ordering Example

DSL 72 measuring range 0...20 mA, dial with 0...100°C, red mark at 37°C

Specifications are subject to change without notice (01/2014)

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