

DGL 48
DGL 72
DGL 96
DGL 144

Data Sheet

Analogue Meters with
Moving Coil Movement
And Rectifier 240° Scale



Application

The moving coil, rectifier panel meters, DGL 48/72/96,144 housed in moulded polycarbonate cases are suitable for the measurement of AC currents and voltages.

Moving coil rectifier instruments measure average values & are calibrated to indicate RMS values, assuming a sinusoidal waveform for frequencies from 40 to 10000 Hz (AC current - 40 to 1000 Hz and AC voltage - 40 to 10000 Hz)

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 spring loaded sapphire jewels. Movement is properly shielded & critically damped by eddy currents induced in coil former.

Features

- Better resolution.
- Linear scale.
- Less VA burden.
- 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.	IS 2419
Scale and pointer for electrical measuring instruments.	DIN IEC 61554
Connections and Terminal markings for panel meters	IS 1248
Terminal bolts / leads	DIN 43802
Clamp straps for connections.	IS 1248
Safety requirements and protective measures for Electrical indicating instruments and their accessories.	DIN 43807
	DIN 46200/46282
	DIN 46282
	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
Environmental conditions	IEC 51/DIN EN 60051
	DIN 43701
	IS 1248
	IS: 9000
	VDE / VDI 3540
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 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 ... 240°
Scale characteristics	Linear
Scale division	Coarse - fine
Scale length	DGL48 DGL72 DGL96 DGL144
	70mm 106mm 142mm 230mm
Scale Interchangeability	Interchangeable

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

Terminals

Voltmeters and ammeters < 10A	Hexagon studs, M4 screws and wire clamps E3 (DIN 46282)
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Electrical Data

Measured quantity	AC voltage or current
Overload capacity	(acc. to IS: 1248 / IEC 51)
Continuously	1.2 times rated voltage / current
Short duration	2 times, 5 Sec max:1 overload
	10 times, 0.5 Sec max:9 overload
Enclosures code	IP 52 case
IEC 529)	IP 00 for terminals without backcover
	IP 20 for terminals with backcover
Insulation class	Group A according to VDE 0110
Rated insulation voltage	660 V
Proof voltage testing	2 kV
Installation category	300 VCAT III
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	IS : 1248 (IEC 51/ DIN EN 60051)
Position of use	Vertical ± 5°
Frequency	40.5...71.5 Hz
External magnetic field	At 0.4 kA/m

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, 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.
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Special markings Division dials	Numbering /Lettering. Basic divisions without numbering.
Colour markings/bands	Red or green.
Other	
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

Dimensions (in mm)	DGL48	DGL72	DGL96	DGL144	
Bezel	a	48	72	96	144
Case	b	43.5	66	90	136
Depth	c*	53	53	53	53
	d	44.5	67.5	91.5	137.5
	e	5.5	5.5	5.5	5.5
Cutout Size		45 ^{+0.6}	68 ^{+0.7}	92 ^{+0.8}	138 ^{+0.1}
Weight (approx.)		0.13 kg.	0.25 kg.	0.30 kg.	0.43 kg.
Depth with Back cover	f **	64	64	64	64

Standard Measuring Ranges

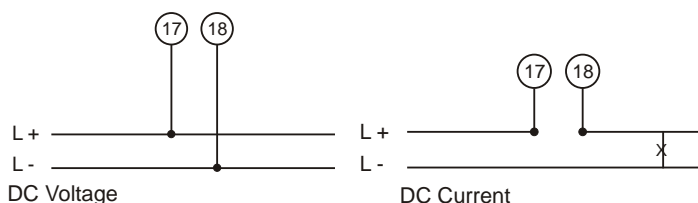
A. C. Current		A. C. Voltage	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity (+ 10%)
100 mA	1.8 V	6 V	900 ohm/ V
1 A	75 mV	10 V	900 ohm/ V
5 A	75 mV	15 V	900 ohm/ V
10 A	75 mV	25 V	900 ohm/ V
		30 V	900 ohm/ V
		40 V	900 ohm/ V
		60 V	900 ohm/ V
		100 V	900 ohm/ V
		150 V	900 ohm/ V
		250 V	900 ohm/ V
		300 V	900 ohm/ V
		400 V	900 ohm/ V
		500 V	900 ohm/ V
		600 V	900 ohm/ V

Accessories

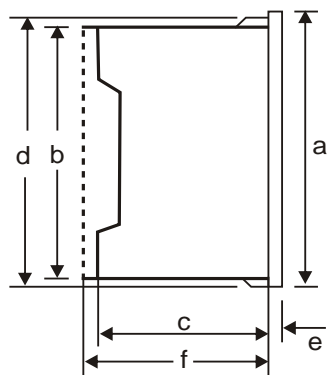
Safety Terminal protection

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

Connections



Dimensions



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.

Ordering Information

Type	DGL	Moving-coil with rectifier panel meter 240° scale
Front	Dimension	
	48	48mm x 48mm
	72	72mm x 72mm
	96	96mm x 96mm
	144	144mm x 144mm
Measuring Ranges		Refer to table inside
Front facia		Normal glass ¹ Antiglare glass ³ Polycarbonate glass ³
Colour of Bezel		Black ¹ Red, Blue, Yellow, White ³
Position of use		Vertical ¹ on request 0...180° ³
Terminal Protection		Full sized polycarbonate back cover
zero position		Centre ¹ , Off-set zero ³
Increased sensitivity		4 kohm/V for voltmeters 15...150 V ³ 10 kohm/V for voltmeters 15...150 V ³
Adjustment Resistance (Sensitivity)		Within $\pm 1\%$ 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
Logo		RISHABH ¹

¹ Standard

³ Please clearly add the desired specifications while ordering

Ordering example

DGL 72 measuring range 0..500 V, red mark at 415 V.

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



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