

## DGL 48 | 72 | 96 | 144

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 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 conditions	IS 1248 IS: 9000 VDE / VDI 3540 DIN 43718
Front frames for indicating measuring instruments principle dimensions.	
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 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 (acc. to IS: 1248 / IEC 51)
Overload capacity	1.2 times rated voltage / current
Continuously	2 times, 5 Sec max:1 overload
Short duration	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
	Group A according to VDE 0110
	660 V
	2 kV
	300 VCAT III
	> 50 Mohm at 500 V d.c.
Insulation class	
Rated insulation voltage	
Proof voltage testing	
Installation category	
Insulation resistance	

## 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°
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.
<b>Other</b>	
Increased sensitivity	4kohm/V for voltmeters 1...600V 10 kohm/V for Voltmeters 15..150V
Adjustment of Resistance (Sensitivity)	Within ± 1% at 23°C

Dimensions (in mm)	<b>DGL48</b>	<b>DGL72</b>	<b>DGL96</b>	<b>DGL144</b>
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 <sup>+0.6</sup>	□68 <sup>+0.7</sup>	□92 <sup>+0.8</sup>	□138 <sup>+0.1</sup>
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

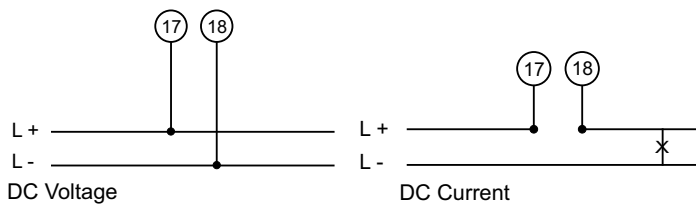
A. C. Current		A. C. Voltage	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity (+ 10%)
100 mA	1.8 V	6 V	900 ohm/ V
1 A	75 mV	10 V	900 ohm/ V
5 A	75 mV	15 V	900 ohm/ V
10 A	75 mV	25 V	900 ohm/ V
		30 V	900 ohm/ V
		40 V	900 ohm/ V
		60 V	900 ohm/ V
		100 V	900 ohm/ V
		150 V	900 ohm/ V
		250 V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

### Accessories

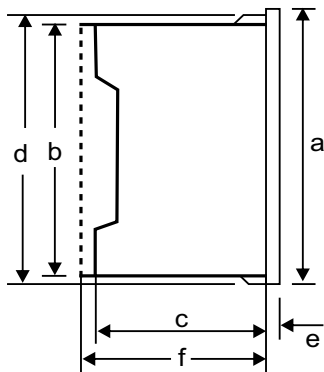
#### Safety Terminal protection

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

### Connections



### Dimensions



## ZIEGLER INSTRUMENTS

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### 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 72 96 144	48mm x 48mm 72mm x 72mm 96mm x 96mm 144mm x 144mm
Measuring Ranges	Refer to table inside	
Front facia	Normal glass <sup>1</sup> Antiglare glass <sup>3</sup> Polycarbonate glass <sup>3</sup>	
Colour of Bezel	Black <sup>1</sup> Red, Blue, Yellow, White <sup>3</sup>	
Position of use	Vertical <sup>1</sup> on request 0...180° <sup>3</sup>	
Terminal Protection	Full sized polycarbonate back cover	
zero position	Centre <sup>1</sup> , Off-set zero <sup>3</sup>	
Increased sensitivity	4 kohm/V for voltmeters 15...150 V <sup>3</sup> 10 kohm/V for voltmeters 15...150 V <sup>3</sup>	
Adjustment Resistance (Sensitivity)	Within ± 1 % at 23°C <sup>3</sup>	
Dial	Standard scale same as measuring range <sup>3</sup> Blank dial with division <sup>3</sup> Additional lettering on request <sup>3</sup> Additional numbering on request <sup>3</sup> Coloured marking red or green <sup>3</sup> Coloured sector red or green <sup>3</sup>	
Logo	ZIEGLER <sup>1</sup>	

<sup>1</sup>Standard

<sup>3</sup>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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Redefine Innovative Metering