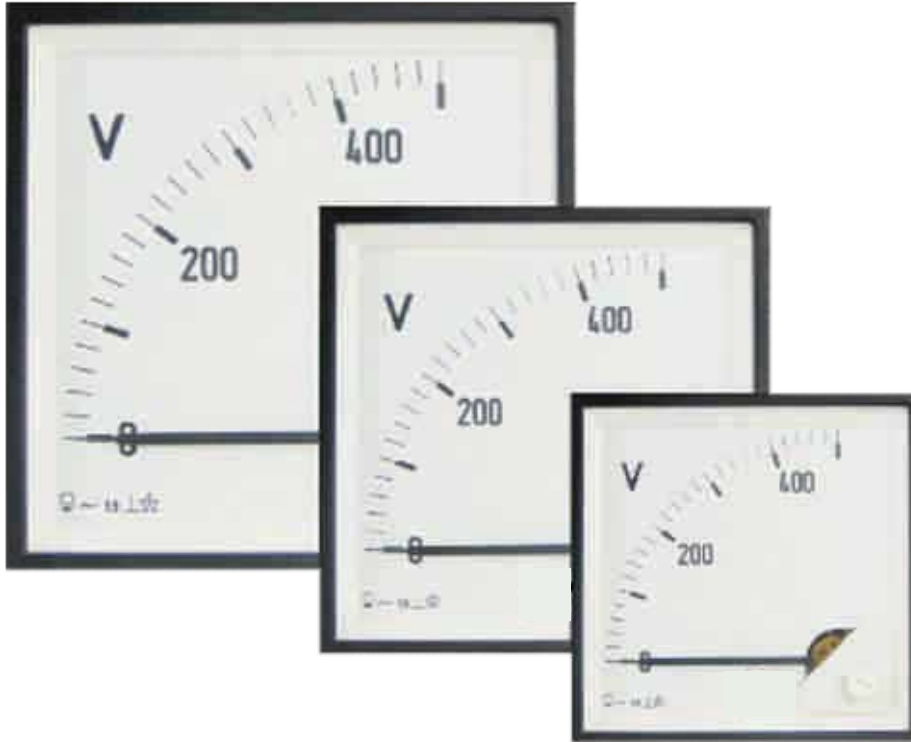




# Technical Data Sheet

## *HSDG Series Meter*



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

### Special Features

- Less VA burden.
- Linear scale.
- Fully range indication.
- Glass filled polycarbonate housing (UL 94-V-0)
- Knife edge pointer.
- Easily replaceable glass and bezel.

## Application

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

## 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.

## Technical Specifications

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
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 measuring instruments and their accessories	IEC51/DINEN60051 DIN 43701
Environmental conditions	VDE / VDI 3540
Front frames for indicating measuring instruments Principle dimensions	DIN 43718
UL Compatibility	UL 94 V-0
Technical conditions of delivery for electrical instruments	DIN 43701
Mechanical strength (Free fall test,vibration test)	IEC 51, VDE 0411, IEC 1010

Scale and Pointer				
Pointer	Knife - edge pointer			
Pointer deflection	0...90°			
Scale characteristics	Linear*1			
Scale division	Coarse - fine			
Scale length	HSDG-48	HSDG-72	HSDG-96	HSDG-144
	41 mm	61mm	97mm	146mm
Scale Interchangeability	Interchangeable*			

## Mechanical Data

Case details	Molded square case suitable for mounting in control/switchgear panels and 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	≤ 1.5 mm

### Terminals

Voltmeters and Ammeters < 6 A Ammeters > 6A	Hexagon studs, M4 screws and wire clamps E3 (DIN 46282) Threaded studs M6 with nuts
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## Electrical Data

Measured Quantity	AC voltage or current
Overload capacity	acc. to IEC 51
Continuously	1.2 times rated voltage /current
Short duration	2 times rated voltage, 5 sec Max 10 times rated current, 5 sec Max
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	HSDG48: 660V, HSDG72/96: 1000V
Proof Voltage	HSDG48: 2kV, HSDG72/96: 3kV
Installation Catagory	600 V CAT III (IEC 1010)
Insulation resistance	> 50 Mohm at 500V D.C

\*scale are nonlinear & not interchangeable for ammeters > 750 mA

## Reference Conditions

Accuracy class	1.5 according to IEC 51/DINEN 60051
Ambient temperature	23°C ± 2°C
Position of use	Nominal position ±1°
Input	Rated value of measured quantity
Other Conditions	IEC 51/DIN EN 60051

## Nominal Range of use

Ambient Temperature	10...37 °C
Position of use	Vertical ± 5°
External Magnetic Field	At 0.4 kA/m, less than 6% of fiducial value (not as a percentage class index)

## Environmental Conditions

Climatic Suitability	Climate category II as per IEC-60051 (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	15 g. for pulse duration 11ms
Vibration resistance	10-55-10Hz for ampli. 0.15mm (1.5g at50Hz)
Pollution degree	Stackable in a single cutout

## Standard Measuring Ranges

A.C. Voltage		A.C. Current	
Rated Value	Approx Voltage drop	Rated Value	Sensitivity (+10%)
100 uA	1.3V	6 V	900 ohm/ V
150 uA	2.4V	10 V	900 ohm/ V
250 uA	2.4V	15 V	900 ohm/ V
400uA	2.4V	25 V	900 ohm/ V
600 uA	2.4V	40 V	900 ohm/ V
1 mA	2.4V	60 V	900 ohm/ V
1.5 mA	1.4V	100 V	900 ohm/ V
2.5 mA	1.4V	150 V	900 ohm/ V
4 mA	1.4V	250 V	900 ohm/ V
6 mA	1.4V	400 V	900 ohm/ V
10 mA	1.4V	500 V	900 ohm/ V
15 mA	1.7V	600 V	900 ohm/ V
25 mA	1.7V		
40 mA	1.7V		
60 mA	1.7V		
100 mA	1.7V		
150 mA	1.33V		
250 mA	0.80V		
400 mA	0.50V		
600 mA	0.33V		
750 mA	0.27V		
1A*	0.20V		
1.5A*	0.14V		
2.5A*	0.80V		
4A*	0.50V		
6A*	0.03V		
10A*	0.02V		

## Options

### Case

Front Facia	Antiglare glass
Color of bezel	Red, yellow, blue, white
Red index pointer	Front adjustable on site
position of use	on request 15° ... 160°

### 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
Over range (Voltmeters)	Two, three and five times over range
Over range (Ammeters)	Six times over range

## Accessories

### Safety Terminal Protection

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

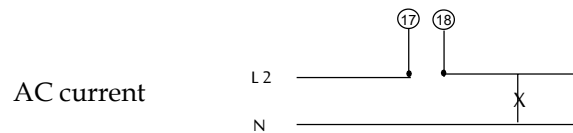
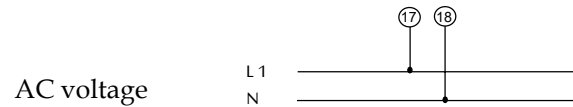
### Safety Precautions

- 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.

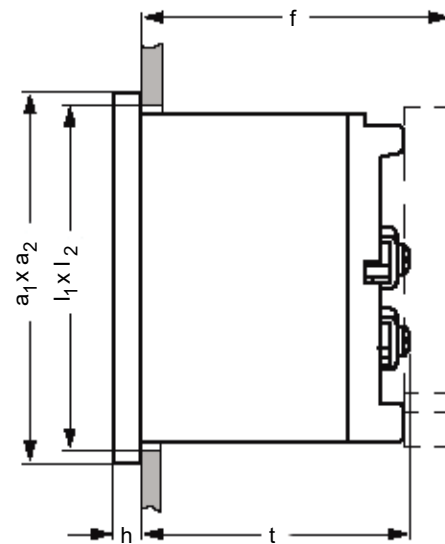
## Others

Increased sensitivity Adjustment of Resistance (Sensitivity)	4 k ohm/V for voltmeters 1...600V Within $\pm 1\%$ at 23°C
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## Electrical Connections



## Dimensions



Front in mm	Nominal Dimensions, mm		Cutout, mm $l_1 \times l_2$	Installation Depth Including Terminal (t), mm	Installation Depth Incl. Full Cover (f), mm
	$a_1 \times a_2$	h			
48 x 48	48 x 48	5.5	$45^{+0.6} \times 45^{+0.6}$	54	62.5
72 x 72	72 x 72	5.5	$68^{+0.7} \times 68^{+0.7}$	54	62.5
96 x 96	96 x 96	5.5	$92^{+0.8} \times 92^{+0.8}$	54	62.5

### Ordering Information- Only For Representative Products

Size: 48 x 48 Ammeter HSDG-48

Part No.	Description	Class
VQ44-I18L2N1CAW0ST	10mA, SCALE 0-10A	CL-1
VQ44-I21L2N1CAW0ST	25mA, SCALE 0-10A	CL-1
VQ44-I25L2N1CAW0ST	150mA, SCALE 0-10A	CL-1
VQ44-I27L2N1CAW0ST	400mA, SCALE 0-10A	CL-1
VQ44-I28L2N1CAW0ST	600mA, SCALE 0-10A	CL-1

Size: 48 x 48 Voltmeter HSDG-48

Part No.	Description	Class
VQ44-VOYL2N1CAW0ST	60V, SCALE 0-60V	CL-1
VQ44-VOZAL2N1CAW0ST	100V, SCALE 0-100V	CL-1
VQ44-V1AL2N1CAW0ST	150V, SCALE 0-150V	CL-1
VQ44-V1DL2N1CAW0ST	500V, SCALE 0-500V	CL-1
VQ44-V1GL2N1CAW0ST	600v, SCALE 0-600V	CL-1

Size: 72 x 72 Ammeter HSDG-72

Part No.	Description	Class
VQ74-I29L2N1CAW0ST	1A, SCALE 0-1A	CL-1
VQ74-I33L2N1CAW0ST	5A, SCALE 0-5A	CL-1
VQ74-I35L2N1CAW0ST	10A, SCALE 0-10A	CL-1
VQ74-I37L2N1CAW0ST	20A, SCALE 0-20A	CL-1
VQ74-I38L2N1CAW0ST	25A, SCALE 0-30A	CL-1

Size: 72 x 72 Voltmeter HSDG-72

Part No.	Description	Class
VQ74-VOYL2N1CAW0ST	60V, SCALE 0-60V	CL-1
VQ74-VOZAL2N1CAW0ST	100V, SCALE 0-100V	CL-1
VQ74-V1AL2N1CAW0ST	150V, SCALE 0-150V	CL-1
VQ74-V1DL2N1CAW0ST	500V, SCALE 0-500V	CL-1
VQ74-V1GL2N1CAW0ST	600v, SCALE 0-600V	CL-1

Size: 96 x 96 Ammeter HSDG-96

Part No.	Description	Class
VQ94-I29L2N1CAW0ST	1A, SCALE 0-1A	CL-1
VQ94-I33L2N1CAW0ST	5A, SCALE 0-5A	CL-1
VQ94-I35L2N1CAW0ST	10A, SCALE 0-10A	CL-1
VQ94-I37L2N1CAW0ST	20A, SCALE 0-20A	CL-1
VQ94-I38L2N1CAW0ST	25A, SCALE 0-30A	CL-1

Size: 96 x 96 Voltmeter HSDG-96

Part No.	Description	Class
VQ94-VOYL2N1CAW0ST	60V, SCALE 0-60V	CL-1
VQ94-VOZAL2N1CAW0ST	100V, SCALE 0-100V	CL-1
VQ94-V1AL2N1CAW0ST	150V, SCALE 0-150V	CL-1
VQ94-V1DL2N1CAW0ST	500V, SCALE 0-500V	CL-1
VQ94-V1GL2N1CAW0ST	600V, SCALE 0-600V	CL-1

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