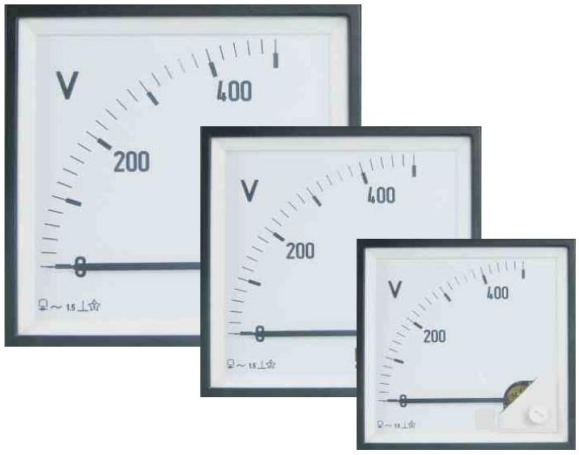
Jewell Analog Meters with Moving Coil Movement and Rectifier 90° Scale

BEST IN CLASS

Application:

The moving coil, rectifier meters, DG 48/72/96/144 housed in molded polycarbonate cases are suitable for the measurement of AC currents and voltages. Moving coil rectifier instruments measure average values and are calibrated to indicate RMS values, assuming a sinusoidal waveform for frequencies from 40 to 10000 Hz (AC current for frequency range of 40 to 1000 Hz and AC voltage for frequency range of 40 to 1000 Hz. 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 & dial can easily be replaced.



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

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.

Applicable Standards:

Nominal case and cutout dimension for indicating electrical instruments	IS 2419 DIN IEC 61554
Scale and pointer for electrical measuring instruments	IS 1248
Connections and terminal markings for panel meters DIN 43807	IS 1248
Terminal bolts/leads	DIN 46200/46282
Clamp straps for connections	DIN 46282
Safety requirements and protective measures for electrical indicating instruments and their accessories	VDE 0110 VDE 0410 IEC 529 IEC 1010
Performance specifications for direct acting indicating analog electrical measuring instruments and their accessories	IS 1248 IEC51/DIN EN 60051 DIN 43701
Environmental Conditions	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, IEC 51 IS 9000 VDE 0411 IEC 1010

Jewell Analog Meters with Moving Coil Movement and Rectifier 90° Scale

BEST IN CLASS

Scale and Pointer:

Pointer	Knife-edge pointer			
Pointer Deflection	0….90°			
Scale Characteristics	linear*1			
Scale Division	Coarse-fine			
Scale Length	DG48 41 mm	DG72 61 mm	DG96 97 mm	DG144 146 mm
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	≤ 1.5 mm

Terminals

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

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 rated voltage, 5 sec max.
	10 times rated current, 5 sec max.
Enclosure Code	IP 52 case
(IEC 529)	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	DG48: 660V DG72/96: 1000 V
Proof Voltage	DG48: 2kV DG72/96: 3kV
Installation Category	600 V CAT III (IEC 1010)
Insulation Resistance	>50 Mohm at 500V d.c.
*Scale are nonlinear & not interchangeable for ammeters > 750 mA	

Accuracy at Reference Conditions:

Accuracy Class	1.5 according to IS 1248 (IEC51/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	10…37°C
Position of Use	Vertical + 5°
External Magnetic Field	At 0.4 kA/m, less than 6% fiducial value (not as a % class index)

Environmental Conditions:

Climatic Suitability	Climatic 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	15gn for pulse duration 11 ms
Vibration Resistance	10-50-10 Hz for ampli. 0.15mm (1.5g at 50 Hz)

Standard Measuring Ranges:

A. C. current		A. C. Voltage	
Rated Value	Approx Voltage drop	Rated value	Sensitivity (+10%)
100 uA	1.3 V	6 V	900 ohm/ V
150 uA	2.4 V	10 V	900 ohm/ V
250 uA	2.4 V	15 V	900 ohm/ V
400 uA	2.4 V	25 V	900 ohm/ V
600 uA	2.4 V	40 V	900 ohm/ V
1 mA	2.4 V	60 V	900 ohm/ V
1.5 mA	1.4 V	100 V	900 ohm/ V
2.5 mA	1.4 V	150 V	900 ohm/ V
4 mA	1.4 V	250 V	900 ohm/ V
6 mA	1.4 V	400 V	900 ohm/ V
10 mA	1.4 V	500 V	900 ohm/ V
15 mA	1.7 V	600 V	900 ohm/ V
25 mA	1.7 V		
40 mA	1.7 V		
60 mA	1.7 V		
100 mA	1.7 V		
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 Fascia	Antiglare glass
Color of Bezel	Red, Yellow, Blue, White
Red Index Pointer	Front adjustable on site
Position of Use	On request 15°C….165°C

Dial

Blank Dial	With initial and end values marked
Special Markings	Numbering/Lettering
Division Dials	Basic divisions without numbering
Color markings/band	Red or Green

Accessories:

Safety Terminal Protection:

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

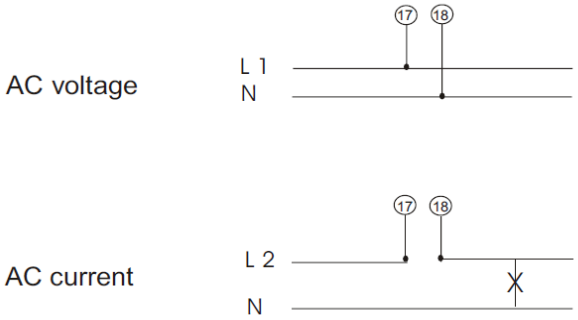
Safety Precautions:

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 into place after the 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.

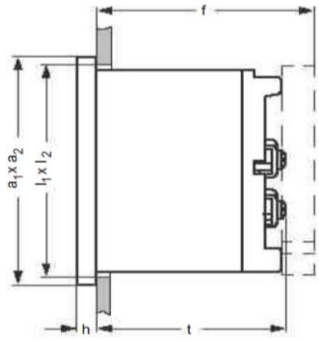
Others:

Increased Sensitivity	4 k ohm/V for voltmeters 1….600V
Adjustment of Resistance (Sensitivity)	Within ± 1% at 23°C

Connections:



Dimensions:



Dimension Chart:

Front in mm	Nominal Dimensions, mm		Cutout, mm	Installation Depth Including Terminal (t), mm	Installation Depth Incl. Full Cover (f), mm
	a_1 x a_2	h	l_1 x l_2		
48 x 48	48 x 48	5.5	$45^{+0.6}$ x $45^{+0.6}$	54	62.5
72 x 72	72 x 72	5.5	$68^{+0.7}$ x $68^{+0.7}$	54	62.5
96 x 96	96 x 96	5.5	$92^{+0.8}$ x $92^{+0.8}$	54	62.5
144 x 144	144 x 144	5.5	138^{+1} x 138^{+1}	54	62.5

Ordering Information:

Type DG	Moving-coil with rectifier panel meter
Front Dimension	48---- 48mm x 48mm 72 --- 72mm x 72 mm 96 --- 96 mm x 96 mm 144 --144mm x 144 mm
Measuring Ranges	Refer to table inside
Front Fascia	Normal Glass*1 Antiglare Glass*3
Color of Bezel	Black*1 Red, Blue, Yellow, White*3
Position of Use	Vertical On request 0…180°·3
Terminal Protection Zero Position Increased Sensitivity	Full sized polycarbonate back cover Centre*1, off-set zero*3 4 kohm/V for voltmeters 1…600V*3
Adjustment Resistance (Sensitivity)	Within ±1% at 23°C*3
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 when ordering

Ordering Example:

DG 72 measuring range 0…100mA, dial with 0…100 degree C, red mark at 37 degree C.

Specifications are subject to change without notice (01/14)