



Analog Meters Edgewise with Moving-Coil Movement and Rectifier

G 48 PrS
G 72 PrS
G 96 PrS
G 144 PrS



Application

The edgewise moving-coil rectifier instruments **G 48/72/96/144 PrS** with a curved dial are used for the measurement of sinusoidal AC currents and voltages.

Moving-coil rectifier instruments measure average values and are scaled to indicate r.m.s., assuming a sinusoidal wave form.

The moving-coil movement is manufactured to newest findings and distinguishes in a small power consumption, a high accuracy and a very good damping.

These instruments are suitable to be mounted in switchboards, control panels, machine tool consoles and mosaic panels.

Movements

Self-shielding moving-coil movements with core-type magnet (P 72/96/144 PrS) resp. swivel coil (P 48 PrS), pivot suspended. Series-connected rectifier incorporated. Spring loaded jewel bearings for vibration and shock resistance.

Mechanical Data

case details	edgewise case suitable to be mounted in control / switchgear panels, machine tool consoles or mosaic panels, stackable			
material of case	pressed steel (G 72/96 PrS) thermoplastics (G 48/144 PrS)			
material of window	glass ▶			
colour of bezel	black (similar to RAL 9005) ▶			
position of use	vertical $\pm 5^\circ$ ▶			
panel fixing	screw clamps			
mounting	stackable next to each other (except G 144 PrS)			
terminals				
voltmeters and ammeters ≤ 3 A	hexagon studs, M3 screws and wire clamps C6 (G 72/96 PrS), connector blades 6.3 x 0.8 (G 48/144 PrS)			
ammeters >3 A	hexagon studs, M5 screws and wire clamps C10			
voltmeters 60 ... 150, 600 V (G 72/96 PrS)	connector blades 6.3 x 0.8 for protective wire			
dimensions (in mm)	G 48 PrS	G 72 PrS	G 96 PrS	G 144 PrS
bezel	48 x 24	72 x 36	96 x 48	144 x 72
case	43 x 17	66 x 32	91 x 43	137 x 67
depth	75	94	107	192
panel cutout	45 ^{+0.6} x 22.2 ^{+0.3}	68 ^{+0.7} x 33 ^{+0.6}	92 ^{+0.8} x 45 ^{+0.6}	138 ^{+1.0} x 68 ^{+0.7}
panel thickness	1 ... 25	1 ... 25	1 ... 12	≤ 40
weight approx.	0.08 kg	0.2 kg	0.45 kg	0.6 kg

Electrical Data

measuring unit	AC voltage or AC current
frequency range	40 Hz ... 50 Hz ... 10 kHz
overload capacity (acc. to DIN EN 60 051 - 1)	
continuously	1.2 times rated voltage / current
5 s max.	2 times rated voltage, 10 times rated current
measurement category	CAT III
operating voltage	refer to Measuring Ranges
pollution level	2

enclosure code	IP 52 case front side ▶ IP 00 for terminals without protection against accidental contact IP 20 for terminals protected against accidental contact
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Measuring Ranges

For mains use

AC current

100 μA, 150 μA, 250 μA, 400 μA, 600 μA, 1 mA, 1.5 mA, 2.5 mA, 4 mA, 6 mA, 10 mA, 15 mA, 25 mA, 40 mA, 60 mA, 100 mA, 150 mA, 250 mA, 400 mA, 600 mA	(voltage drop approx. 1.5 V)
1 A, 1.5 A, 2.5 A ¹⁾	(voltage drop approx. 0.2 V)
4 A, 5 A, 6 A, 10 A, 15 A, 25 A ¹⁾	(voltage drop approx. 0.3 V)

▶
for use on current transformer (scale without overload range)
N/1 A ¹⁾ (voltage drop approx. 0.2 V)
N/5 A ¹⁾ (voltage drop approx. 0.3 V)

¹⁾ separate (G 48/72/96 PrS) resp. built-in (G 144 PrS) miniature current transformer 50 Hz, 10 mA sec. inclusive
operating voltage G 48 PrS G 72 PrS G 96 PrS G 144 PrS
300 V 300 V 300 V 600 V

AC voltage >5 V

	operating voltage			
	G 48 PrS	G 72 PrS	G 96 PrS	G 144 PrS
6 V ²⁾	50 V	50 V	50 V	100 V
10 V ²⁾	50 V	50 V	50 V	100 V
15 V ²⁾	50 V	50 V	50 V	100 V
25 V ²⁾	50 V	50 V	50 V	100 V
40 V ²⁾	50 V	50 V	50 V	100 V
60 V ²⁾	300 V	100 V	100 V	100 V
100 V ²⁾	300 V	100 V	100 V	100 V
150 V ²⁾	300 V	100 V	100 V	100 V
250 V ²⁾	300 V	300 V	300 V	600 V
400 V ²⁾	300 V	300 V	300 V	600 V
500 V ²⁾	300 V	300 V	300 V	600 V
600 V ²⁾	600 V	600 V	600 V	600 V

▶
for use on voltage transformer (scale without overload range)
N/100 V ²⁾ 300 V 100 V 100 V 100 V
N/110 V ²⁾ 300 V 100 V 100 V 100 V

Not for mains use

	operating voltage			
	G 48 PrS	G 72 PrS	G 96 PrS	G 144 PrS
1.5 V ²⁾	50 V	50 V	50 V	100 V
2.5 V ²⁾	50 V	50 V	50 V	100 V
4 V ²⁾	50 V	50 V	50 V	100 V

▶
²⁾ Sensitivity 900 Ω /V ▶
The resistance values are limited to a tolerance of $\pm 20\%$ ▶

Scaling

pointer	bar / knife-edge pointer			
response time	1 s for full-scale deflection			
scale arrangement	horizontal (left-hand zero) ▶			
scale characteristics	practically linear for voltages >20 V initial scale compressed for voltages ≤ 20 V			
scale division	coarse-fine			
scale length	G 48 PrS	G 72 PrS	G 96 PrS	G 144 PrS
	30 mm	45 mm	67 mm	92 mm

▶ also refer to "Options"



Analog Meters Edgewise with Moving-Coil Movement and Rectifier

Accuracy at Reference Conditions

accuracy class 1.5 \blacklozenge according to DIN EN 60 051 - 1

reference conditions

ambient temperature 23 °C
position of use nominal position $\pm 1^\circ$
input rated measuring value
frequency 50 \pm 2 Hz
wave form sinusoidal, distortion factor < 5%
others DIN EN 60 051 - 1

influences

ambient temperature 23 °C \pm 2K
position of use nominal position $\pm 5^\circ$
frequency 40 ... 45 ... 60 Hz ... 10 kHz
stray magnetic field 0.5 mT

Environmental

climatic suitability climatic class 2 \blacklozenge
according to VDE/VDI 3540 sheet 2
operating temperature range -25 ... +40 °C \blacklozenge
storage temperature range -25 ... +65 °C
relative humidity \leq 75% annual average, non-condensing
shock resistance 15 g, 11 ms
vibration resistance 2.5 g, 5 ... 55 Hz

Rules and Standards

DIN 43 718 Measurement and control; front-frames and frontpanels of measurement and control equipment; principal dimensions
DIN 43 802 Line scales and pointers for indicating electrical measuring instruments; general requirements
DIN 16 257 Nominal positions and position symbols used for measuring instruments
DIN EN 60 051 Direct acting indicating analogue electrical measuring instruments and their accessories
-1 Part 1: Definitions and general requirements common to all parts
-2 Part 2: Special requirements for ammeters and voltmeters
-9 Part 9: Recommended test methods
DIN EN 60 529 Enclosure codes by housings (IP - code)
DIN EN 61 010 - 1 Safety requirements for electrical measuring, control and laboratory equipment
Part 1: General requirements
DIN EN 61 326 - 1 Electrical equipment for measurement, control and laboratory use – EMC requirements
Part 1: General requirements
(IEC 61 000 - 4 - 3 evaluation criterion B)
DIN IEC 61 554 Panel mounted equipment –
Electrical measuring instruments –
Dimensions for panel mounting
VDE/VDI 3540 sheet 2 reliability of measuring and control equipment (classification of climates)

Options

measuring range

special measuring range deviating from standard
measuring range adjustment adjustment potentiometer installed in voltmeters, adjustment range approx. $\pm 10\%$ or $\pm 20 \dots 50\%$ (except G 48/72 PrS)
2nd measuring range with 3rd terminal for voltmeters, 2nd figuring and 1 or 2 scale divisions (except G 48/72 PrS)
additional measuring ranges on request
accuracy class 1.0 with fine scale division (as far as possible)
adjustment of resistance to $\pm 1\%$ at 23 °C
increased sensitivity to 2 k Ω /V, 5 k Ω /V, 10 k Ω /V or 20 k Ω /V for voltmeters ≥ 1 V (as far as possible)

case

window non-glaring glass
colour of bezel gray (similar to RAL 7037)
position of use horizontal or on request 15...165°

performance

climatic suitability limited use in the tropics climatic class 3 according to VDE/VDI 3540 sheet 2
with operating temperature range -10 ... +55 °C
marine application non-certified
enclosure code IP 54 splash-water protected front (without zero adjustment)

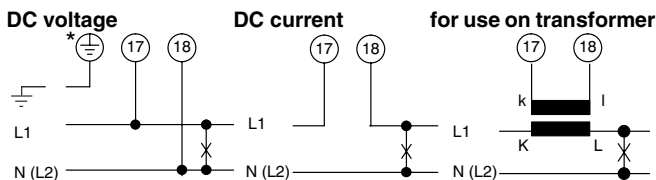
accessories

terminal protection against accidental contact protective sleeves B6 for G 48 PrS
SW6, SW10 (ammeters >3A) for G 72/96 PrS

dial

scale arrangement vertical (bottom zero)
blank dial pencil-marked on initial and end values
scale division and figuring 0 ... 100%,
linear, full-scale values acc. to standardized series (1 - 1.2 - 1.5 - 2 - 2.5 - 3 - 4 - 5 - 6 - 7.5 and their decimal multiples e.g. 150 m³/h) or deviating from standard;
special calibration from customer's non-linear graph or chart;
scaling of voltmeters in ohms;
captions on request
2nd scale division linear including figuring,
non-linear including figuring
additional lettering on request e.g. "generator"
additional figuring on request
coloured marks red, green or blue for important scale values
coloured segment red, green or blue within scale division
logo on the dial none or on request
zero position mechanically suppressed zero, no zero adjustment, max. 40% of full-scale value
for ammeters $\geq 100 \mu$ A, voltmeters ≥ 1.5 V
electrically suppressed zero for voltmeters ≥ 6 V
expanded scale for G 72/96/144 PrS expanded initial scale division by means of electronic circuits up to approx. 5% of full-scale value in centre of scale

Connections



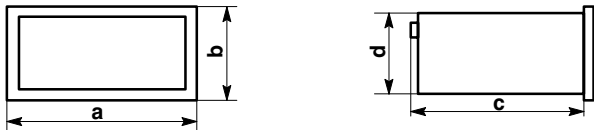
* G 72/96 PrS voltmeters 60 ... 150, 600 V

Dimensions

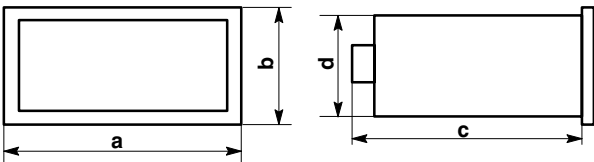
G 48 PrS



G 72/96 PrS

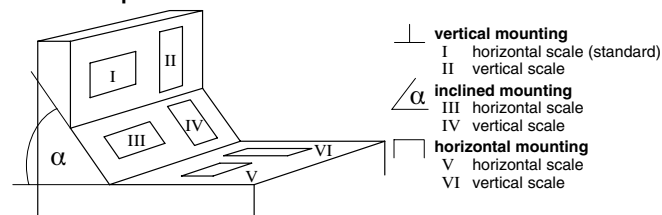


G 144 PrS



dimensions (in mm)	G 48 PrS	G 72 PrS	G 96 PrS	G 144 PrS
a	48	72	96	144
b	24	36	48	72
c	75	94	107	192
d	17	32	43	67

scales and position of use



Ordering Information

type	edgewise-type moving-coil rectifier instrument
G	
front dimensions	
48 PrS	48 mm x 24 mm
72 PrS	72 mm x 36 mm
96 PrS	96 mm x 48 mm
144 PrS	144 mm x 72 mm

measuring ranges	refer to preceding table
special measuring range	on request ²⁾
measuring range adjustment	none ¹⁾ voltage $\pm 10\%$ voltage $\pm 20 \dots 50\%$
2nd measuring range	none ¹⁾ 1 scale division, 2 nd figuring 2 scale divisions, 2 figurings
accuracy class	1.5 ¹⁾ 1.0 with fine scale division ³⁾
adjustments	none ¹⁾ internal resistance $\pm 1\%$ at 23 °C
sensitivity, voltmeters	900 Ω/V ¹⁾ increased to approx. 2 k Ω/V increased to approx. 5 k Ω/V increased to approx. 10 k Ω/V increased to approx. 20 k Ω/V ³⁾
window	glass ¹⁾ non-glaring glass
colour of bezel	black (similar to RAL 9005) ¹⁾ gray (similar to RAL 7037)
position of use	vertical ¹⁾ horizontal on request 15 ... 165° ²⁾
climatic suitability	class 2, -25 ... +40 °C ¹⁾ class 3, -10 ... +55 °C
marine application	none ¹⁾ non-certified
enclosure code	IP 52 ¹⁾ IP 54 splash-water protected front
terminal protection	none ¹⁾ protective sleeves B6, SW6 resp. SW10
scale arrangement	horizontal ¹⁾ vertical
dial	scale division & measuring range alike ¹⁾ blank dial scale division and figuring 0 ... 100% acc. to standardized series ²⁾ deviating from standard ²⁾ calibration fr. non-linear graph or chart ²⁾ scaling in ohms for voltmeters ²⁾ 2 scale divisions ²⁾ additional lettering on request ²⁾ additional figuring on request ²⁾ coloured marks red, green or blue ²⁾ coloured sector red, green or blue ²⁾
logo	WEIGEL ¹⁾ none OEM logo ²⁾
zero position	electrically suppressed zero ²⁾ mechanically suppressed zero ²⁾
expanded scale	none ¹⁾ electrically up to approx. 5% full-scale value ⁴⁾

¹⁾ Standard

²⁾ Please clearly add the desired specifications.

³⁾ as far as possible

⁴⁾ G 72/96/144 PrS only

ordering example

G 72 PrS, measuring range 0 ... 25 mA, horizontal scale 0 ... 100%, vertical mounting, window non-glaring glass, WEIGEL logo

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