Data Sheet

Edgewise Series
015.D.201.07

Analog Meters Edgewise with Moving-Coil Movement and Rectifier

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

CE

WEIGEL

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 72/96/144 PrS) thermoplastics (G 48 PrS)
material of window	glass ◗
colour of bezel	black (similar to RAL 9005) ◗
position of use	vertical ±5° ◗
panel fixing	screw clamps
mounting	stackable next to each other (except G144 PrS)

terminals

voltmeters and ammeters ≤ 3 A
- connector blades 6.3 x 0.8 (G 48 PrS)
- hexagon studs, M3 screws and wire clamps C6 (G 72/96 PrS)
- hexagon studs, M5 screws and wire clamps C10 (G 144 PrS)

ammeters >3 A
- hexagon studs, M5 screws an 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	174
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	1 ... 40
weight approx.	0.08 kg	0.2 kg	0.45 kg	1.0 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 (G 48/72/96 PrS) ◗ IP 50 case front side (G 144 PrS) IP 00 for terminals without protection against accidental contact IP 20 for terminals protected against accidental contact

Measuring Ranges

For mains use

AC current	**G 48/72/96 PrS**	**G 144 PrS**
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		
voltage drop	approx. 1.5 V	approx. 1 V
100 mA, 150 mA, 250 mA, 400 mA, 600 mA		
voltage drop	approx. 1.5 V	[2])
1 A, 1.5 A, 2.5 A	[1])	
voltage drop	approx. 0.2 V	[2])
4 A, 5 A, 6 A, 10 A, 15 A, 25 A	[1])	
voltage drop	approx. 0.3 V	[2])

for use on current transformer (scale without overload range)

N/1 A	[1])	
voltage drop	approx. 0.2 V	[2])
N/5 A	[1])	
voltage drop	approx. 0.3 V	[2])
operating voltage	300 V	150 V

[1]) separate miniature current transformer 50 Hz, 10 mA sec. inclusive

[2]) power consumption approx. 0.15 VA

AC voltage >5V	**G 48/72/96 PrS**	**G 144 PrS**
6 V, 10 V, 15 V, 25 V, 40 V, 60 V, 100 V, 150 V, 250 V, 400 V, 500 V		
sensitivity[3])	900 Ω/V ◗	1000 Ω/V
operating voltage	300 V	600 V
600 V		
sensitivity[3])	900 Ω/V ◗	1000 Ω/V
operating voltage	600 V	600 V

for use on voltage transformer (scale without overload range)

N/100 V, N/110 V		
sensitivity[3])	900 Ω/V ◗	1000 Ω/V
operating voltage	300 V	600 V

Not for mains use

AC voltage ≤5V	**G 48/72/96 PrS**	**G 144 PrS**
1.5 V; 2.5 V; 4 V		
sensitivity[3])	900 Ω/V ◗	1000 Ω/V
operating voltage	300 V	600 V

[3]) The resistance values are limited to a tolerance of ±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	96 mm

◗ also refer to ”Options”

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Accuracy at Reference Conditions

accuracy class	1.5 ◗ according to DIN EN 60 051 - 1
reference conditions	
ambient temperature	23˚C
position of use	nominal position ±1˚
input	rated measuring value
frequency	50±2 Hz (G 48/72/96 PrS) 50±1 Hz (G 144 PrS)
wave form	sinusoidal, distortion factor <5% (G 48/72/96 PrS) distortion factor <1% (G 144 PrS)
others	DIN EN 60 051 - 1
influences	
ambient temperature	23˚C±2K
position of use	nominal position ±5˚
frequency	40 ... 45 ... 60 Hz ... 10 kHz
stray magnetic field	0.5 mT

Environmental

climatic suitability	climatic class 2 ◗ according to VDE/VDI 3540 sheet 2
operating temperature range	–25 ... +40˚C ◗
storage temperature range	–25 ... +65˚C (G 48/72/96 PrS) –25 ... +55˚C (G 144 PrS)
relative humidity	≤ 75% annual average, non–condensing
shock resistance	15 g, 11 ms
vibration resistance	2.5 g, 5 ... 55 Hz (G 48/72/96 PrS) 1.5 g, 5 ... 55 Hz (G 144 PrS)

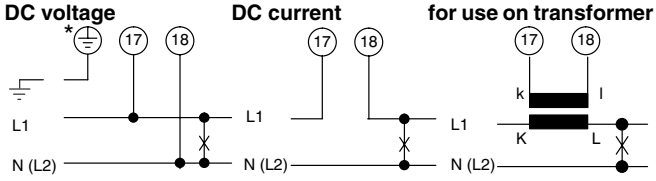
Rules and Standards

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. ±10% or ±20 ... 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 ±1% at 23˚C
increased sensitivity (G 48/72/96 PrS)	to 2 kΩ/V, 5 kΩ/V, 10 kΩ/V or 20 kΩ/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 m^3/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 ≥ 100 µA, voltmeters ≥ 1.5 V electrically suppressed zero for voltmeters ≥ 6 V
expanded scale (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

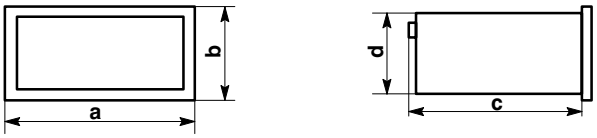


* G 72/96 PrS voltmeters 60 ... 150, 600 V

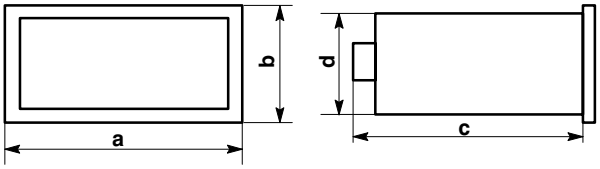
Dimensions

G 48 PrS

G 72/96 PrS

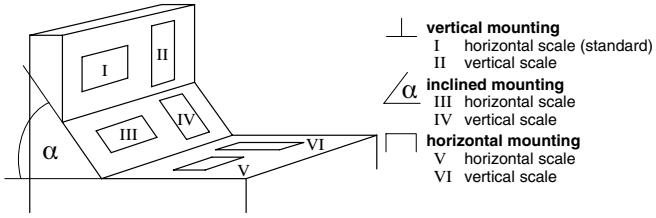


G 144 PrS



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	174
d	17	32	43	67

scales and position of use



Ordering Information

type G	edgewise-type moving-coil rectifier instrument
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 ±10% voltage ±20 ... 50%
2nd measuring range	none [1] 1 scale division, 2nd figuring 2 scale divisions, 2 figurings
accuracy class	1.5 [1] 1.0 with fine scale division [3]
adjustments	none [1] internal resistance ±1% at 23°C
sensitivity, voltmeters	900 Ω/V [1][3] / 1000 Ω/V [1][4] approx. 2 kΩ/V [3] approx. 5 kΩ/V [3] approx. 10 kΩ/V [3] approx. 20 kΩ/V [3] (as far as possible)
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][3] / IP 50 [1][4] 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][5]

[1]) Standard
[2]) Please clearly add the desired specifications.
[3]) G 48/72/96 PrS only
[4]) G 144 PrS only
[5]) G 72/96 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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– specifications subject to change without notice; date of issue 02/16 –