



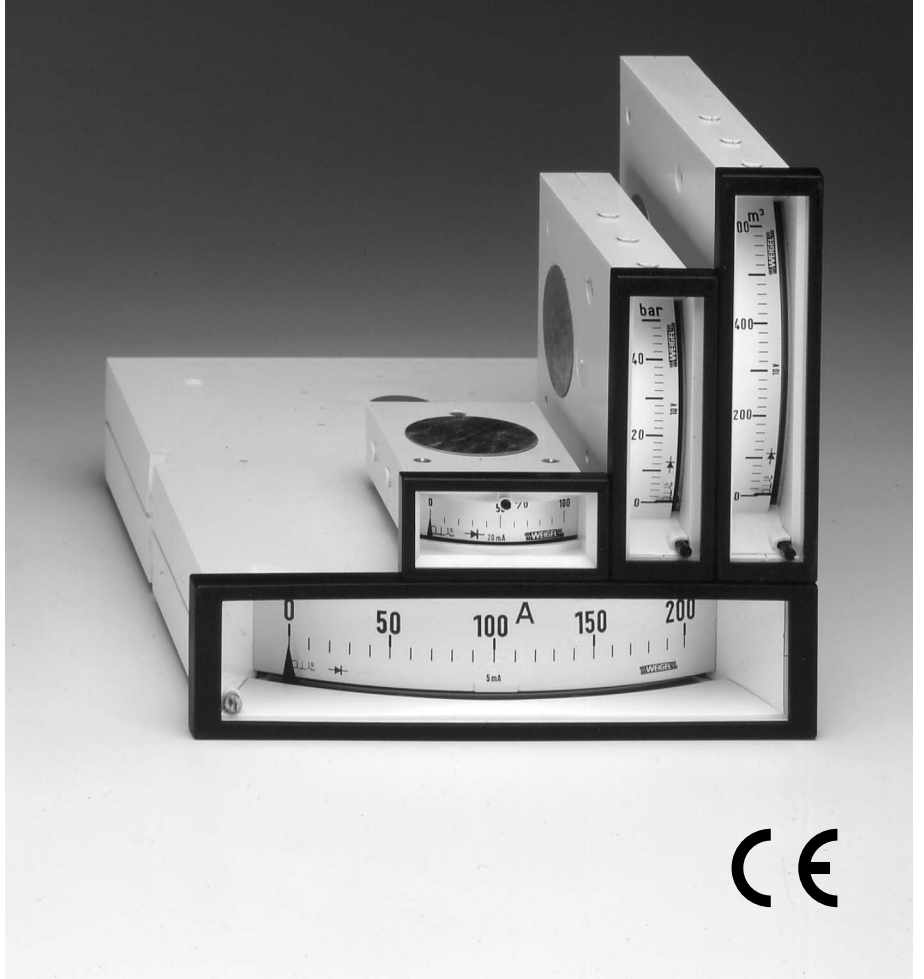
**Analog Meters
Slim Edgewise with
Moving-Coil Movement
and Rectifier**

**MG 48x24
MG 72x24
MG 96x24 K
G 144x36**



MG 96x24 K

with Slide-In-Dial



Application

The edgewise moving-coil panel meters **MG 48x24**, **MG 72x24**, **MG 96x24 K** and **G 144x36** with a slim-line dial are used for measurement of **sinusoidal AC currents or 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.

The instruments are suitable to be mounted in switchboards, control panels, machine tool consoles and mosaic panels (except G 144x36).

With MG 96x24 K **the front panel, the front window and the dial** as well as the **dial illumination** (optional) can be exchanged easily. On the rear side a cable grip for the connecting leads is integrated.

Movements

Self-shielding moving-coil movements with swivel coil, 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 panels, machine tool consoles or mosaic panels (except G 144x36), stackable			
material of case	thermoplastics			
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			
panel thickness	1 ... 25 mm			
terminals	connector blades 6.3 x 0.8 or connector blades 2.8 x 0.8 (MG 96x24 K)			
dimensions (in mm)	MG 48x24	MG 72x24	MG 96x24K	G 144x36
bezel	48 x 24	72 x 24	96 x 24	144 x 36
case	43 x 17	66 x 17	92 x 18	137 x 32
depth	75	98	108	173
panel cutout	45 ^{+0.6} x 22.2 ^{+0.3}	68 ^{+0.7} x 22.2 ^{+0.3}	92 ^{+0.8} x 22.2 ^{+0.3}	138 ^{+1.0} x 33 ^{+0.6}
weight approx.	0.08 kg	0.1 kg	0.12 kg	0.5 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.	voltmeters 2 times rated voltage			
	ammeters 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			

for other ratings refer to "Options"

Measuring Ranges

For mains use

AC current

100 μ A, 150 μ A, 250 μ A, 400 μ A, 600 μ A, 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)

with separate miniature current transformer 50 Hz, 10 mA sec.

1 A, 1.5 A, 2.5 A (voltage drop approx. 0.2 V)

4 A, 5 A, 6 A, 10 A, 15 A, 25 A (voltage drop approx. 0.3 V)

for use on current transformer (scale without overload range)

separate miniature current transformer 50 Hz, 10 mA sec. inclusive

N/1 A (voltage drop approx. 0.2 V)

N/5 A (voltage drop approx. 0.3 V)

operating voltage	MG 48x24	MG 72x24	MG 96x24 K	G 144x36
	300 V	600 V	300 V	300 V

AC voltage	operating voltage			
>5V	MG 48x24	MG 72x24	MG 96x24 K	G 144x36

6 V	¹⁾	50 V	100 V	300 V	100 V
10 V	¹⁾	50 V	100 V	300 V	100 V
15 V	¹⁾	50 V	100 V	300 V	100 V
25 V	¹⁾	50 V	100 V	300 V	100 V
40 V	¹⁾	50 V	100 V	300 V	100 V
60 V	¹⁾	300 V	100 V	300 V	100 V
100 V	¹⁾	300 V	100 V	300 V	100 V
150 V	¹⁾	300 V	600 V	300 V	300 V
250 V	¹⁾	300 V	600 V	300 V	300 V
400 V	¹⁾	300 V	600 V	300 V	300 V
500 V	¹⁾	300 V	600 V	300 V	300 V
600 V	¹⁾	–	600 V	600 V	600 V

(600 V in MG 48x24 on request)

Not for mains use

AC voltage	operating voltage			
≤5V	MG 48x24	MG 72x24	MG 96x24 K	G 144x36

2.5 V	¹⁾	50 V	100 V	300 V	100 V
4 V	¹⁾	50 V	100 V	300 V	100 V

¹⁾ Sensitivity 900 Ω /V

The resistance values are limited to a tolerance of $\pm 20\%$

Scaling

pointer	bar pointer
zero adjustment	front accessible
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	MG 48x24 MG 72x24 MG 96x24 K G 144x36
	30 mm 52 mm 60 mm 95 mm

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 $\pm 1^\circ$
input	rated measuring value
frequency	50 \pm 2 Hz
wave form	sinusoidal, distortion factor <5%
others	DIN EN 60 051 - 1



Analog Meters Slim Edgewise with Moving-Coil Movement and Rectifier

influences

ambient temperature	23 °C ± 2K
position of use	nominal position ± 5°
frequency	40 Hz ... <u>45 ... 60 Hz</u> ... 10 kHz
stray magnetic field	0.5 mT

Environmental

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

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
internal resistance	adjustment to ± 1% at 23 °C for voltmeters
increased sensitivity	to 2 kΩ/V, 5 kΩ/V, 10 kΩ/V or 20 kΩ/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°

mounting
(MG 96 x24 K)

blade springs on the narrow sides

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
increased mechanical loads	shock 30 g, 11 ms vibration 5 g, 5 ... 55 Hz
marine application	non-certified
enclosure code	IP 54 splash-water protected front (without zero adjustment or with zero adjustment rear accessible for MG 96x24 K)

terminal protection against accidental contact

protective sleeves B6 for connector blades 6.3 x 0.8
protective sleeves 110 for connector blades 2.8 x 0.8

dial

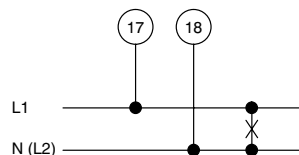
scale arrangement	vertical (bottom zero)
blank dial	pencil-marked on initial and end values
scale division and figuring	0 ... 100%, linear, full-scale values acc. to standardized series (1 - 1.2 - 1.5 - 2 - 2.5 - 3 - 4 - 5 - 6 - 7.5 and their decimal multiples e.g. 150 m³/h) or deviating from standard; captions on request
2 nd scale division	including figuring (on request)
coloured scale (MG 96x24 K only)	scale in black; pointer, scale division and lettering yellow or white
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 rear accessible
zero adjustment (MG 96x24 K only)	
expanded scale	expanded initial scale division by means of electronic circuits up to approx. 5% of full-scale value in centre of scale for MG 72x24 / 96x24 K, P 144x36

dial illumination

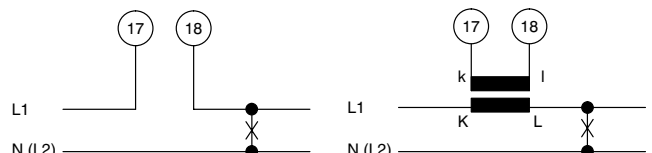
(MG 96x24 K only) by 1 lamp 6 V, 12 V or 24 V
(G 144x36 only) by 2 lamps 6 V, 12 V or 24 V
dial translucent

Connections

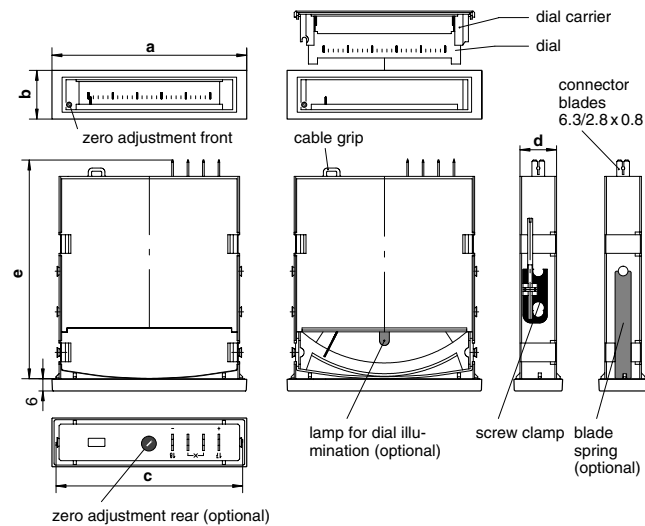
AC voltage



AC current

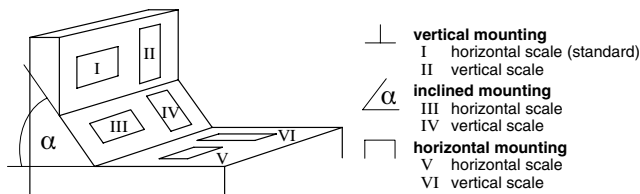


Dimensions



dimensions (in mm)	MG 48x24	MG 72x24	MG 96x24 K	G 144x36
a	48	72	96	144
b	24	24	24	36
c	43	66	92	137
d	17	17	18	32
e	75	98	108	173

scales and position of use



Ordering Information

type (M)G	slim edgewise moving-coil panel meter for AC voltage or current
front dimensions	
48x24	48 mm x 24 mm
72x24	72 mm x 24 mm
96x24 K	96 mm x 24 mm
144x36	144 mm x 36 mm
measuring ranges	refer to preceding table
special measuring range	on request ²⁾
adjustment	internal resistance $\pm 20\%$ ¹⁾ internal resistance $\pm 1\%$ at 23°C
sensitivity voltmeters	900 Ω/V ¹⁾ 2 k Ω/V 5 k Ω/V 10 k Ω/V 20 k Ω/V 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⁾
mounting	screw clamps ¹⁾ spring blades
climatic suitability	class 2, -25 ... +40°C ¹⁾ class 3, -10 ... +55°C
mechanical loads	shock 15 g, vibration 2.5 g ¹⁾ shock 30 g, vibration 5 g
marine application	none ¹⁾ non-certified
enclosure code	IP 52 ¹⁾ IP 54 splash-water protected front
terminal protection	none ¹⁾ protective sleeves B6 (for 6.3 x 0.8) protective sleeves 110 (for 2.8 x 0.8)
scale arrangement	horizontal ¹⁾ vertical
dial	scale division & measuring range alike ¹⁾ blank dial scale division and figuring 0 ... 100% deviating from standard ²⁾ 2 scale divisions on request ²⁾ yellow on black dial ³⁾ white on black dial ³⁾ 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	left-hand or bottom zero mechanically suppressed zero ²⁾
zero adjustment	front accessible ¹⁾ rear accessible ³⁾
expanded scale (not for MG 48x24)	none ¹⁾ up to approx. 5% of full-scale value in center scale electronically ²⁾
dial illumination	none ¹⁾ with 1 or 2 lamps 6, 12 or 24 V ²⁾ only MP 96x24 K with 1 lamp only P 144x36 with 2 lamps

¹⁾ Standard

²⁾ Please clearly add the desired specifications.

³⁾ MG 96x24 K only

ordering example

MG 72x24, measuring range 0 ... 250 V, horizontal scale, vertical mounting, window non-glaring glass, WEIGEL logo

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– specifications subject to change without notice; date of issue 02/11 –

