



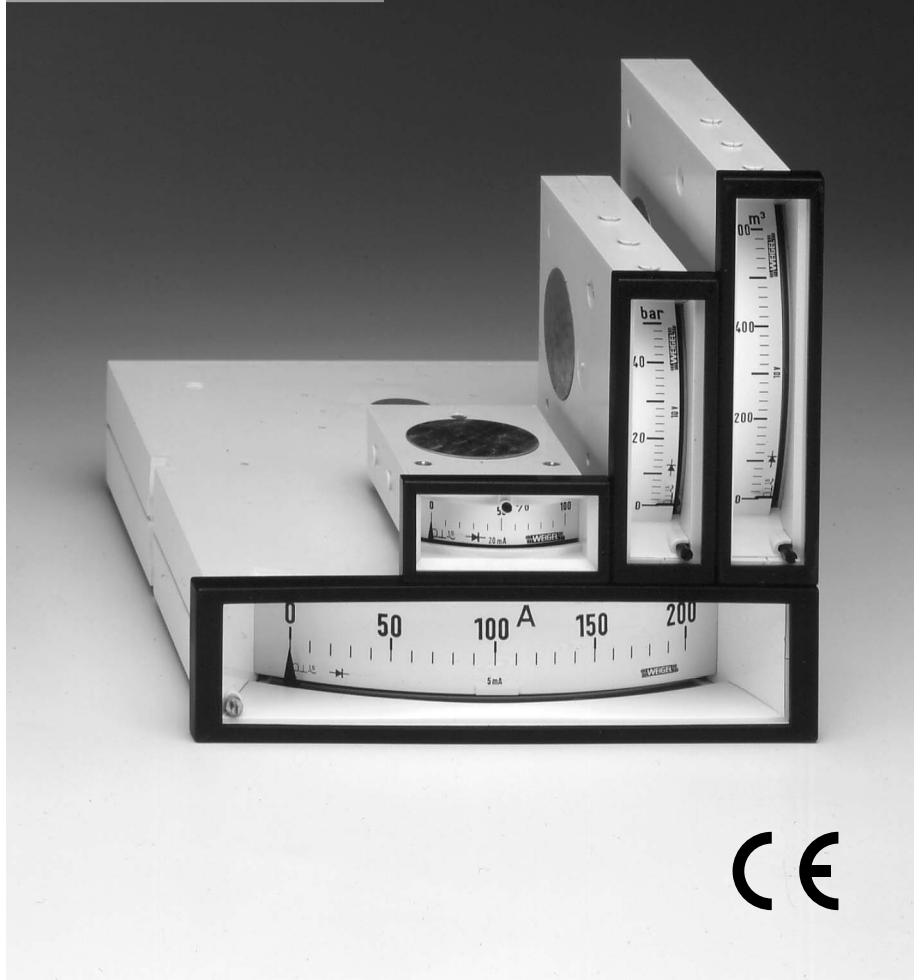
**Analog Meters
Slim Edgewise with
Moving-Coil Movement
and Rectifier**

**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. continuously 5 s max.)	to DIN EN 60 051 - 1) 1.2 times rated voltage / current 2 times rated voltage 10 times rated current
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 >5V	operating voltage			
	MG 48x24	MG 72x24	MG 96x24 K	G 144x36

6 V ¹⁾	300 V	600 V	300 V	300 V
10 V ¹⁾	300 V	600 V	300 V	300 V
15 V ¹⁾	300 V	600 V	300 V	300 V
25 V ¹⁾	300 V	600 V	300 V	300 V
40 V ¹⁾	300 V	600 V	300 V	300 V
60 V ¹⁾	300 V	600 V	300 V	300 V
100 V ¹⁾	300 V	600 V	300 V	300 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

Not for mains use

AC voltage $\leq 5V$	operating voltage			
	MG 48x24	MG 72x24	MG 96x24 K	G 144x36

2.5 V ¹⁾	300 V	600 V	300 V	300 V
4 V ¹⁾	300 V	600 V	300 V	300 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 $\leq 20 V$
scale division	coarse-fine
scale length	MG 48x24 30 mm MG 72x24 52 mm MG 96x24 60 mm G 144x36 95 mm



Analog Meters Slim Edgewise with Moving-Coil Movement and Rectifier

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
 wave form sinusoidal, distortion factor <5%
 others DIN EN 60 051 - 1

influences

ambient temperature 23 °C±2K
 position of use nominal position ±5 °
 frequency 40 Hz ... 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
 relative humidity ≤ 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;
-2	general requirements
-3	designs and dimensions
-4	scale graduation and numbering
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	Safety requirements for electrical measuring, control and laboratory equipment
-1	Part 1: General requirements
-2-030	Part2-030: Particular requirements for testing and measuring circuits
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
 increased sensitivity for voltmeters 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 blade springs on the narrow sides (MG 96 x24 K)

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

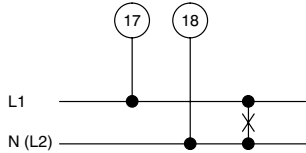
scale arrangement vertical (bottom zero)
 blank dial pencil-marked on initial and end values
 scale division 0 ... 100%,
 and figuring linear, full-scale values acc. to standardized series (1 - 1.2 - 1.5 - 2 - 2.5 - 3 - 4 - 5 - 6 - 7.5 and their decimal multiples e.g. 150 m³/h) or deviating from standard; captions on request
 2nd 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

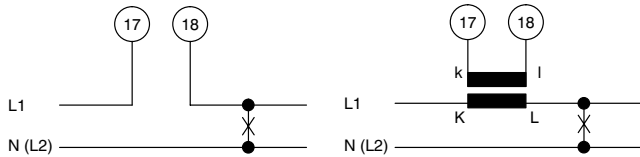
for MG 48x24 internal LED 24 V DC
 for MG 96x24 1 lamp 6 V, 12 V or 24 V
 for G 144x36 2 lamps 6 V, 12 V or 24 V

Connections

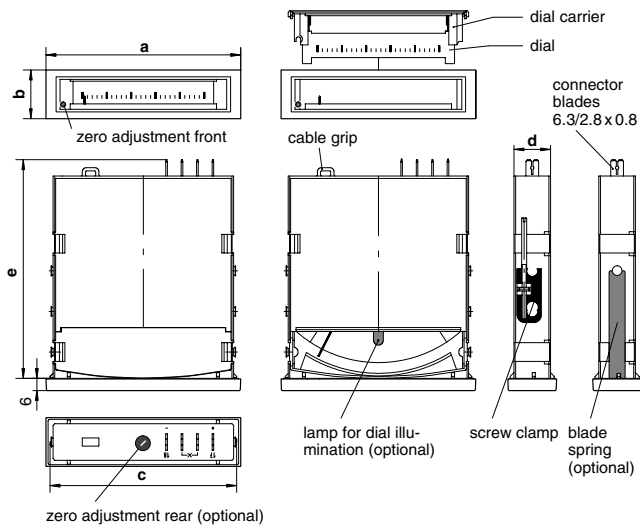
AC voltage



AC current

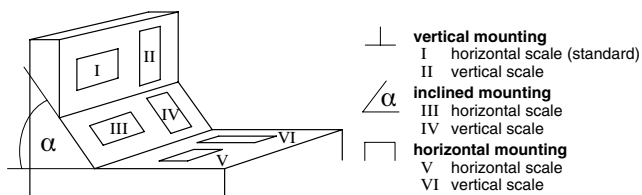


Dimensions



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 72x24 96x24 K 144x36	48 mm x 24 mm 72 mm x 24 mm 96 mm x 24 mm 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⁾
for MG 48x24 internal LED 24 V DC
for MG 96x24 1 lamp 6V, 12V or 24 V
for G 144x36 2 lamps 6V, 12V or 24 V

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 02/16 –

