## Profile Range

**M Series**

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<td>with Moving-Coil Movement Slim Edgewise Types</td>
</tr>
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<td>PRE</td>
<td>Rectangular Format Instruments</td>
</tr>
</tbody>
</table>
General Data

Analog Panel Meters for Process Control Applications

Application

reliable instrumentation technology for standard applications

for mounting in

switchboards
machine tools
mosaic grid panels

for measuring

DC current or DC voltage,
AC current or AC voltage,
standard signals,
potentiometric position,
tap position,
temperature

Technical Data

scaling

horizontal dial, optionally vertical dial,
lettering and
custom logo possible to special order

pointer

bar/knife-edge pointer

case details

complying with DIN IEC 61 554
rectangular or square formats
stackable
to fit in mosaic grid panels (. 144x36 limited)

material of case

pressed steel (.Q 72/96/144, . 72/96 PrS)
thermoplastics, flame retardant (. Q 48, . 48/144 PrS, M, x24, . 144x36)

material of window

glass or optionally non-glaring glass

colour of bezel

black or optionally gray

position of use

vertical, optionally horizontal

or to be specified between 15 to 165°

panel fixing

screw clamps

enclosure code

IP 52 or as an option
IP 54 splash-water protected front

terminal safety

protective sleeves or

protection full sized rear cover option

marine application

optional (non-certified)

dimensions (in mm)

square meters .Q 48 .Q 72 .Q 96 .Q 144
bezel 48 72 96 144
case 45 66.5 90.5 137
panel cutout 45.2+0.3 68.3+0.4 92+0.8 138+1
panel thickness 1 ... 15 1 ... 15 1 ... 15 1 ... 15

edgewise meters . 48 PrS . 72 PrS . 96 PrS . 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
panel cutout 45+0.6 68+0.7 92+0.8 138+1.0
panel thickness x 22.2+0.3 x 33+0.6 x 45+0.6 x 68+0.7

panel thickness 1 ... 25 1 ... 25 1 ... 25 1 ... 25

slim edgewise meters M. 48x24 M. 72x24 M. 96x24 . 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
panel cutout 45+0.6 69+0.7 92+0.8 138+1.0
panel thickness x 22.2+0.3 x 22.2+0.3 x 22.2+0.3 x 33+0.6
panel thickness 1 ... 25 1 ... 25 1 ... 25 1 ... 25

Short Form Data

Analog Panel Meters with Moving - Coil Movement

Profile Types

P 48 PrS
P 72 PrS
P 96 PrS
P 144 PrS

Functional Principle

pivot and jewel moving-coil movement,
swivel-coil system (P 48 PrS)
core-magnet system (P 72/96/144 PrS)

Measuring Ranges

DC current 0 ... 50 μA up to
0 ... 60 A (P 144 PrS) / 0 ... 40 A (P 96 PrS) / 0 ... 25 A (P 72 PrS) / 0 ... 1 A (P 48 PrS)

DC voltage 0 ... 40 mV (P 72/96/144 PrS) / 0 ... 60 mV (P48 PrS)
up to 0 ... 600 V

for use on

4 ... 20 mA (P 48 PrS)

(transducer)

0/4 ... 20 mA (P 72/96/144 PrS)

(electrically suppressed zero, with zero adjustment)

for use with external shunt

0 ... 60 mV or 0 ... 150 mV

(scaling to DIN series)

accuracy class 1.5 or optionally class 1.0

Others

mounting depth 75 mm 94 mm 107 mm 192 mm
weight approx. 0.08 kg 0.2 kg 0.45 kg 0.6 kg

additional options

special measuring ranges, range adjustment, 2nd measuring range,
2nd scale division, increased sensitivity, calibration to a firm internal
resistance value or a higher lead resistance, off-set zero, expanded
scale and others

additional data refer to Data Sheet No. 010.D.201.##

additional meters with moving-coil movement refer to Data Sheet No. 010.D.101.##

P 48 PrS P 72 PrS P 96 PrS P 144 PrS

PSQ 48, PQ 72/96/144 RS (M-Series)

refer to Data Sheet No. 010.D.101.##
**Short Form Data**

**Analog Panel Meters with Moving - Coil Movement**

**Slim Edgewise Types**

**MP 48x24**

**MP 72x24**

**MP 96x24**

**P 144x36**

**Functional Principle**

pivot and jewel moving-coil movement; swivel-coil system

**Measuring Ranges**

DC current

0 ... 100 μA up to 0 ... 1 A

DC voltage

0 ... 60 mV up to 0 ... 600 V

for use on transducer

4 ... 20 mA (MP 48x24)

(mechanically suppressed zero, no zero adjustment)

0/4 ... 20 mA (MP 72x24/96x24, P 144x36)

(electrically suppressed zero, with zero adjustment)

for use with external shunt

0 ... 60 mV or 0 ... 150 mV

(scaling to DIN series)

Others

accuracy class 1.5 acc. to DIN EN 60 051-1

**Mounting Depth**

MP 48x24 MP 72x24 MP 96x24 K P 144x36

75 mm 98 mm 118 mm 173 mm

weight approx.

0.08 kg 0.1 kg 0.12 kg 0.5 kg

additional options

special measuring ranges, increased sensitivity, calibration to a firm internal resistance value or a higher lead resistance, offset zero, expanded scale and others

**additional data**

refer to Data Sheet No. 010.D.301.##

**additional meters**

with moving-coil movement

**additional data**

refer to Data Sheet No. 015.D.201.##

**additional meters**

with moving-coil rectifier movement

**profile Types**

**G 48 PrS**

**G 72 PrS**

**G 96 PrS**

**G 144 PrS**

**Functional Principle**

pivot and jewel moving-coil movement; swivel-coil system (G 48 PrS), core-magnet system (G 72/96/144 PrS)

**Measuring Ranges**

AC current

0 ... 100 μA up to 0 ... 25 A

AC voltage

0 ... 1.5 V up to 0 ... 600 V

for use on transducer

VT 0 ... N/100 V or 0 ... N/110 V

CT 0 ... N/1 A or 0 ... N/5 A

(scaling to DIN series; no overload range)

frequency range 40 Hz ... 10 kHz

accuracy class 1.5 or optionally class 1.0

**Others**

same as P 48/72/96/144 PrS

**additional data**

refer to Data Sheet No. 015.D.101.##

**additional meters**

with moving-coil rectifier movement

**additional data**

refer to Data Sheet No. 010.D.101.##

**additional meters**

with moving-coil rectifier movement
Short Form Data
Analog Panel Meters
with Moving - Coil
Rectifier Movement
Slim Edgewise Types

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

Functional Principle
pivot and jewel moving-coil movement;
series-connected rectifier incorporated, swivel-coil system
MG 96x24 K with slide-in-dial

Measuring Ranges

<table>
<thead>
<tr>
<th>Measured value</th>
<th>AC current</th>
<th>AC voltage</th>
<th>for use on current</th>
<th>transformer</th>
<th>frequency range</th>
<th>accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 100 µA</td>
<td>0 ... 100 µA up to 0 ... 25 A</td>
<td>0 ... 1.5 V up to 0 ... 600 V</td>
<td>0 ... N/1 A or 0 ... N/5 A</td>
<td>(scaling to DIN series; no overload range)</td>
<td>0 Hz ... 50 Hz ... 10 kHz</td>
<td>class 1.5 acc. to DIN EN 60 051-1</td>
</tr>
</tbody>
</table>

Others

<table>
<thead>
<tr>
<th>Measured value</th>
<th>Mounting depth</th>
<th>Weight approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 600 µA</td>
<td>75 mm</td>
<td>0.08 kg</td>
</tr>
<tr>
<td>0 ... 20 mA</td>
<td>98 mm</td>
<td>0.1 kg</td>
</tr>
<tr>
<td>0 ... 3 V</td>
<td>118 mm</td>
<td>0.12 kg</td>
</tr>
<tr>
<td>0 ... 10 V</td>
<td>173 mm</td>
<td>0.5 kg</td>
</tr>
</tbody>
</table>

Additional options
special measuring ranges, increased sensitivity, calibration to a firm internal resistance value and others

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Short Form Data
Analog Panel Meters
with Dual Moving - Coil
Movement

PQ 48 /2

Functional Principle
2 pivot and jewel moving-coil movements, core-magnet systems

Measuring Ranges

<table>
<thead>
<tr>
<th>Measured value</th>
<th>Internal resistance</th>
<th>Pointer Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>–20 ... 0 ... +20 µA</td>
<td>6 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +20 µA</td>
<td>13 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>13 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +20 µA</td>
<td>50 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +20 µA</td>
<td>50 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>2 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>2 kΩ</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>325 Ω</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>325 Ω</td>
<td>±22.5°</td>
</tr>
<tr>
<td>–20 ... 0 ... +50 µA</td>
<td>325 Ω</td>
<td>±22.5°</td>
</tr>
</tbody>
</table>

Others

<table>
<thead>
<tr>
<th>Measured value</th>
<th>Mounting depth</th>
<th>Weight approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 600 µA</td>
<td>72 mm</td>
<td>0.09 kg</td>
</tr>
</tbody>
</table>

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Additional data
refer to Data Sheet No. 015.D.301.##
VQ 4872/96/144 K (K-Series)
refer to Data Sheet No. 415.D.101.##
GSQ 48, GQ 72/96/144 RS (M-Series)
refer to Data Sheet No. 015.D.101.##
Short Form Data

Analog Panel Meters with Moving - Coil Movement arranged in a Bridge Circuit

PBQ 72
PBQ 96
PBQ 144
PB 72 PrS
PB 96 PrS
PB 144 PrS

Functional Principle

pivot and jewel moving-coil movement, core-magnet system, arranged in a bridge circuit.
(External bridge circuit for PB 72 PrS model).

Measuring Ranges

for RTD (resistance thermometer)

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>–220 ... 0°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>–100 ... 60°C</td>
<td>Pt100, Ni100</td>
</tr>
<tr>
<td>-20 ... +20°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +40°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +60°C</td>
<td>Pt100, Ni100</td>
</tr>
<tr>
<td>0 ... +100°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +150°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +200°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +300°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>0 ... +500°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>+200 ... +400°C</td>
<td>Pt100</td>
</tr>
<tr>
<td>+300 ... +550°C</td>
<td>Pt100</td>
</tr>
</tbody>
</table>

accuracy: class 1.5 acc. to DIN EN 60 051-1

others

auxiliary voltage: DC 24 V, ±10%, approx. 40 mA.
no electrical insulation or optionally
AC 230 V, ±15, ±10%, 48 ... 62 Hz
electrically insulated
(applying only PBQ 96/144, PB 144 PrS)

mounting depth: PBQ 72 60 mm, PBQ 96 62 mm, PBQ 144 60 mm
weight approx.: 0.3 kg, 0.4 kg, 0.7 kg

additional data

refer to Data Sheet No. 018.D.001.##

Short Form Data

Analog Panel Meters with Moving - Coil Movement for use with Thermocouples

PQ 72 RS
PQ 96 RS
PQ 144 RS
P 72 PrS
P 96 PrS
P 144 PrS

Functional Principle

pivot and jewel moving-coil movement, core-magnet system; thermoelectric voltage inputs as of 15 mV

Measuring Ranges

for thermocouples acc. to DIN EN 60 584-1

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 400°C</td>
<td>Fe-CuNi L 22.16 mV</td>
</tr>
<tr>
<td>0 ... 600°C</td>
<td>Fe-CuNi L 33.67 mV</td>
</tr>
<tr>
<td>0 ... 800°C</td>
<td>Fe-CuNi L 46.22 mV</td>
</tr>
<tr>
<td>0 ... 900°C</td>
<td>Fe-CuNi L 53.14 mV</td>
</tr>
<tr>
<td>0 ... 400°C</td>
<td>Fe-CuNi J 21.85 mV</td>
</tr>
<tr>
<td>0 ... 600°C</td>
<td>Fe-CuNi J 33.10 mV</td>
</tr>
<tr>
<td>0 ... 800°C</td>
<td>Fe-CuNi J 45.50 mV</td>
</tr>
<tr>
<td>0 ... 900°C</td>
<td>Fe-CuNi J 51.88 mV</td>
</tr>
<tr>
<td>0 ... 600°C</td>
<td>NiCr-Ni K 24.90 mV</td>
</tr>
<tr>
<td>0 ... 900°C</td>
<td>NiCr-Ni K 37.33 mV</td>
</tr>
<tr>
<td>0 ... 1000°C</td>
<td>NiCr-Ni K 41.27 mV</td>
</tr>
<tr>
<td>0 ... 1200°C</td>
<td>NiCr-Ni K 48.83 mV</td>
</tr>
<tr>
<td>0 ... 1300°C</td>
<td>NiCr-Ni K 52.40 mV</td>
</tr>
<tr>
<td>0 ... 1600°C</td>
<td>Pt10Rh-Pt S 16.77 mV</td>
</tr>
</tbody>
</table>

accuracy: class 1.5 acc. to DIN EN 60 051-1

others

mounting depth: PQ 72 RS 60 mm, PQ 96 RS 62 mm, PQ 144 RS 60 mm
weight approx.: 0.5 kg, 0.6 kg, 0.9 kg

mounting depth: P 72 PrS 94 mm, P 96 PrS 107 mm, P 144 PrS 192 mm
weight approx.: 0.5 kg, 0.7 kg, 1.3 kg

additional data

refer to Data Sheet No. 019.D.001.##
**Short Form Data**

**Analog Panel Meters with Moving - Iron Movement Profile Types**

<table>
<thead>
<tr>
<th>Model</th>
<th>72 PrS</th>
<th>96 PrS</th>
<th>144 PrS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Depth</td>
<td>94 mm</td>
<td>107 mm</td>
<td>192 mm</td>
</tr>
<tr>
<td>Weight approx.</td>
<td>0.28 kg</td>
<td>0.45 kg</td>
<td>1.0 kg</td>
</tr>
</tbody>
</table>

**Measuring Ranges**

**AC current**
- 0 ... 100/200 mA up to 0 ... 25/50 A (W 144 PrS up to 0 ... 15/30 A (*) **))
- for use on CT 0 ... N/1/2 A or 0 ... N/5/10 A (**)

**AC voltage**
- 0 ... 6 V up to 0 ... 600 V
- for use on VT 0 ... 100/120 V or 0 ... 110/132 V (*)

**Frequency range**
- $\frac{162/3}{3} \ldots 100$ Hz or optionally calibrated to a frequency between 100 to 1000 Hz

**Accuracy**
- class 1.5 or optionally class 1.0

**Functional Principle**

pivot and jewel moving-iron movement, silicon oil damped

**Others**

special measuring ranges, suppressed zero, expanded scale and others

**Additional Data**

refer to Data Sheet No. 020.D.201.##

**Additional Meters with Moving - Iron Movements**

EQ 48/72/96/144 K (K-Series)
- refer to Data Sheet No. 420.D.101.##
WSQ 48, WQ 72/96/144 RS (M-Series)
- refer to Data Sheet No. 020.D.101.##

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**Short Form Data**

**Rectangular Format Instruments**

| PRE |

**Functional Principle**

Moving-coil DC movement; also AC rectified

**Others**

data on request

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Weigel Meßgeräte GmbH

Postfach 720 154 • 90241 Nürnberg • Phone: 0911/423 47-0
Erlenstraße 14 • 90441 Nürnberg • Fax: 0911/423 47-39
Sales: Phone: 0911/423 47-94
Internet: http://www.weigel-messgeraete.de
e-mail: vertrieb@weigel-messgeraete.de

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- specifications subject to change without notice; date of issue 06/11 –