Application

The square moving–coil instruments PQ 48/2 (M series) having two meter movements are used for process control measurement of DC currents and/or DC voltages. They are scaled to determine control deviations and regulating link positions in control systems.

The instruments are suitable to be mounted in switchboards, control panels, machine tool consoles or mosaic grid panels.

Movements


Mechanical Data

case details square case suitable to be mounted in control / switchgear panels or mosaic grid panels, stackable
material of case thermoplastics, flame retardant
colour of bezel black (similar to RAL 9005) ♦
position of use any position permissible
panel fixing screw clamps ♦
panel thickness 1 ... 40 mm
mounting stackable next to each other
terminals connector blades 6.3 x 0.8

Dimensions

bezel □ 48 mm
case □ 41 mm
depth 72 mm
panel cutout □ 45,0+0.6 mm
weight approx. 0.09 kg

Electrical Data

measuring unit DC voltages or DC currents
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

Pollution category O

Environmental conditions

ambient temperature 23°C
influences DIN EN 60 051 - 1

Accuracy at Reference Conditions

Accuracy class 1.5 according to DIN EN 60 051 - 1

For mains use

Movement I (outer)

control deviation internal resistance¹) pointer deflection scale ♦
–20 ... 0 ... +20 mA 6 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 6 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 13 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 2 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 2 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 13 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 50 kΩ ±22.5° –20 ... 0 ... +20
–20 ... 0 ... +20 mA 50 kΩ ±22.5° –20 ... 0 ... +20
–50 ... 0 ... +50 mA 2 kΩ ±22.5° –10 ... 0 ... +10
–50 ... 0 ... +50 mA 2 kΩ ±22.5° –10 ... 0 ... +10
–50 ... 0 ... +50 mA 2 kΩ ±22.5° –10 ... 0 ... +10
–50 ... 0 ... +50 mA 325 Ω ±22.5° –10 ... 0 ... +10
–50 ... 0 ... +50 mA 325 Ω ±22.5° –10 ... 0 ... +10
–50 ... 0 ... +50 mA 325 Ω ±22.5° –10 ... 0 ... +10

regulating link position internal resistance¹) pointer deflection scale ♦
0 ... 600 µA 325 Ω 90° 0 ... 100%
0 ... 20 mA 3 Ω 90° 0 ... 100%
0 ... 10 V 100 kΩ 90° 0 ... 100%

Movement II (inner)

regulating link position internal resistance¹) pointer deflection scale ♦
0 ... 600 µA 325 Ω 90° 0 ... 100%
0 ... 20 mA 3 Ω 90° 0 ... 100%
0 ... 10 V 100 kΩ 90° 0 ... 100%

Not for mains use

Movement I and II

0 ... 3 V 30 kΩ 90° 0 ... 100%

¹) the resistance values are limited to a tolerance of ±20%
**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; designs and dimensions
- **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
- **DIN EN 60 529**: Enclosure codes by housings (IP-code)
- **DIN EN 61 010**: Safety requirements for electrical measuring, control and laboratory equipment
- **DIN EN 61 326-1**: Electrical equipment for measurement, control and laboratory use – EMC requirements
- **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**: deviating from ranges as specified in table
- **zero position**: suppressed for range 4 ... 20 mA
- **mechanically suppressed zero**
- **case**: non-glaring glass
- **window**: non-glaring glass
- **colour of bezel**: gray (similar to RAL 7037)
- **panel fixing**: plate springs
- **performance**
  - increased mechanical loads: shock 30 g, 11 ms
  - vibration resistance: vibration 5 g, 5 ... 55 Hz
  - 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
- **dial**
  - blank dial: pencil marked initial and end values
  - scale division: 0 ... 100%, linear, full–scale values acc. to standardized series (1 – 1.5 – 2.5 – 4 – 6 and any decimal multiple of these numbers e.g. 150 m3/h) or deviating from standard series, captions optional
  - additional lettering: to be specified e.g. "generator"
  - additional figuring: to be specified
  - coloured marks: red, green or blue for important scale values
  - coloured sector: red, green or blue within scale division
  - logo on the dial: none or to be specified

**Connections**

- **movement I**
- **movement II**

**Dimensions**

(scaled in mm)
Ordering Information

<table>
<thead>
<tr>
<th>type</th>
<th>PQ</th>
<th>moving–coil instrument for DC voltage and/or DC current</th>
</tr>
</thead>
<tbody>
<tr>
<td>front dimension</td>
<td>48</td>
<td>48 mm x 48 mm</td>
</tr>
<tr>
<td>type identification</td>
<td>/2</td>
<td>2 movements</td>
</tr>
<tr>
<td>measuring ranges</td>
<td>refer to preceding table</td>
<td></td>
</tr>
<tr>
<td>“live zero”</td>
<td>movement I, II</td>
<td>4 ... 20 mA mechan. suppressed zero 1)</td>
</tr>
<tr>
<td>special measuring range</td>
<td>on special order 2)</td>
<td></td>
</tr>
<tr>
<td>zero position</td>
<td>movement I, II left hand zero position 1) centre or off-set zero position 2)</td>
<td></td>
</tr>
<tr>
<td>window</td>
<td>glass 1) non–glaring glass</td>
<td></td>
</tr>
<tr>
<td>colour of bezel</td>
<td>black (similar to RAL 9005) 1) gray (similar to RAL 7037)</td>
<td></td>
</tr>
<tr>
<td>panel fixing</td>
<td>screw clamps 1) plate springs</td>
<td></td>
</tr>
<tr>
<td>mechanical loads</td>
<td>shock 15 g, vibration 2.5 g 1) shock 30 g, vibration 5 g</td>
<td></td>
</tr>
<tr>
<td>climatic suitability</td>
<td>class 2, –25 ... +40°C 1) class 3, –10 ... +55°C</td>
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</tr>
<tr>
<td>marine application</td>
<td>none 1) non–certified</td>
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<tr>
<td>enclosure code</td>
<td>IP 52 1) IP 54 splash–water protected front</td>
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<tr>
<td>terminal safety protection</td>
<td>none 1) protective sleeves</td>
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<tr>
<td>dial</td>
<td>refer to table inside 1) blank dial scale division and figuring 0 ... 100% linear acc. to standardized series linear deviating from standard 2) additional lettering to be specified 2) additional figuring to be specified 2) coloured marks red, green or blue 2) coloured sector red, green or blue 2)</td>
<td></td>
</tr>
<tr>
<td>logo</td>
<td>WEIGEL 1) none OEM logo 2)</td>
<td></td>
</tr>
</tbody>
</table>

1) Standard
2) Please clearly add the desired specifications.

ordering example
PQ 48 /2, measuring range movement I: –20 ... 0 ...+20 µA, internal resistance 13 kΩ, scale –20 ... 0 ...+20, movement II: 4 ... 20 mA, scale 0 ... 100 %, panel fixing by plate springs, no logo on the dial

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– specifications subject to change without notice; date of issue 12/15 –