

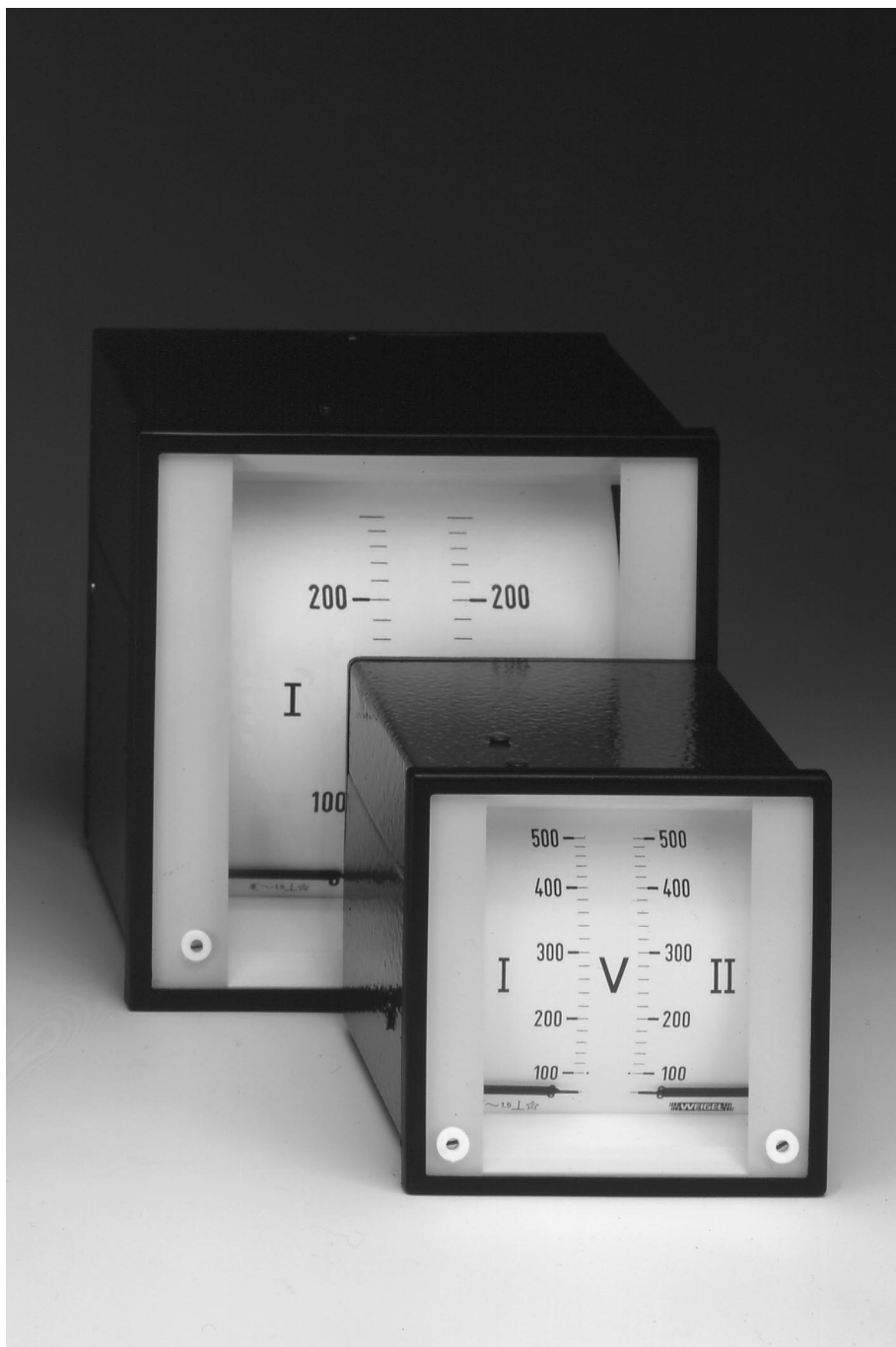


Data Sheet

M – Series
024.D.101.01

Analog Meters with Two Moving – Coil Movements

PQ 96/2S
PQ 144/2S



WEIGEL

Application

The dual moving-coil meters PQ 96/144 /2S (M-series) in pressed steel cases are used for the measurement of DC currents or voltages.

The panel meters comprise two electrically independent moving-coil movements for simultaneously measuring two DC currents or voltages.

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

Movements

Self-shielding moving-coil movements with a core-type magnet, pivot suspended. Spring loaded jewel bearings for vibration and shock resistance.

Mechanical Data

case details	square case suitable to be mounted in control / switchgear panels, machine tools or mosaic grid panels, stackable	
material of case	pressed steel	
material of window	glass ▶	
colour of bezel	black (similar to RAL 9005) ▶	
position of use	vertical $\pm 5^\circ$ ▶	
mounting	stackable next to each other	
terminals	hexagon studs, M3x6 screws and wire clamps	
dimensions	PQ 96 /2S	PQ 144 /2S
bezel	□ 96 mm	□ 144 mm
case	□ 90 mm	□ 137 mm
depth	115 mm	121 mm
panel cutout	□ 92 ^{+0.8} mm	□ 138 ⁺¹ mm
panel thickness	1...15 mm	1...40 mm
panel fixing	4 pieces WEIGEL screw clamps	2 pieces type B screw clamps acc. to DIN 43 835
weight approx.	1.0 kg	1.3 kg

Electrical Data

measuring unit	2 DC voltages or currents
overload capacity (acc. to DIN EN 60 051) continuously	1.2 times rated voltage / current
5 s max.	
voltmeters	2 times rated voltage
ammeters	10 times rated current
protection class	I
enclosure code	IP 52 case ▶ IP 00 for terminals without protection against accidental contact IP 20 for terminals protected against accidental contact
insulation class	group A according to VDE 0110
rated insulation voltage	660 V
dielectric test	2 kV ▶ based on 50 Hz, 1 min acc. to DIN 57 410

▶ also refer to "Options"

Measuring Ranges

DC current internal resistance*) / voltage drop approx.

2x 0 ... 1 mA	48 Ω
2x 0 ... 5 mA	60 mV
2x 0 ... 10 mA	60 mV
2x 0 ... 20 mA	60 mV

DC voltage sensitivity*)

2x 0 ... 1 V	1000 Ω/V
2x 0 ... 10 V	1000 Ω/V
2x 0 ... 100 V	1000 Ω/V
2x 0 ... 250 V	1000 Ω/V
2x 0 ... 400 V	1000 Ω/V

for use with external shunt sensitivity*)

2x 0 ... 60 mV	1000 Ω/V
2x 0 ... 150 mV	1000 Ω/V

a total lead resistance of 0.05 Ω is considered in the calibration of the indicator for connecting leads 1 m, 2 x 0.75 mm² ▶

for use on transducer ("live zero")

2x0/4 ... 20 mA electrically suppressed zero, with zero adjustment, voltage drop approx. 900 mV

*) the resistance values are limited to a tolerance of $\pm 20\%$

Scaling

pointer	bar / knife-edge pointer	
response time	1 s for full-scale deflection	
scale arrangement	vertical (bottom zero)	
scale characteristics	linear	
scale division	coarse-fine	
scale length	PQ 96 /2S 67 mm	PQ 144 /2S 92 mm

Accuracy at Reference Conditions

accuracy class 1.5 according to DIN EN 60 051

reference conditions

ambient temperature	23°C \pm 1K
position of use	nominal position $\pm 1^\circ$
input	rated measuring value
others	DIN EN 60 051

influences

ambient temperature	-25°C ... +23°C ... +40°C
position of use	nominal position $\pm 5^\circ$
stray magnetic field	0.5 mT

Environmental

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



Analog Meters with Two Moving – Coil Movements

Rules and Standards

DIN 43 700	measuring and control instruments for panel mounting; nominal case and cutout dimensions
DIN 43 701	electrical switchboard instruments
DIN 43 718	bezels and front panels
DIN 43 802	scales and pointers for electrical measuring instruments
DIN 16 257	nominal position of use and position symbols applicable for measuring instruments
DIN 57 410 / VDE 0410	safety requirements for electrically operated measuring, control and laboratory equipment
DIN EN 60 051	direct acting indicating electrical measuring instruments and their accessories
DIN VDE 0110	dimensioning of clearances and creepage distances
DIN VDE 0411	protective measures for electronically operated measuring equipment
DIN 40 050	enclosure codes; protection of electrical equipment against ingress of solid foreign bodies and of water
VDE/VDI 3540 sheet 2	reliability of measuring and control equipment (classification of climates)

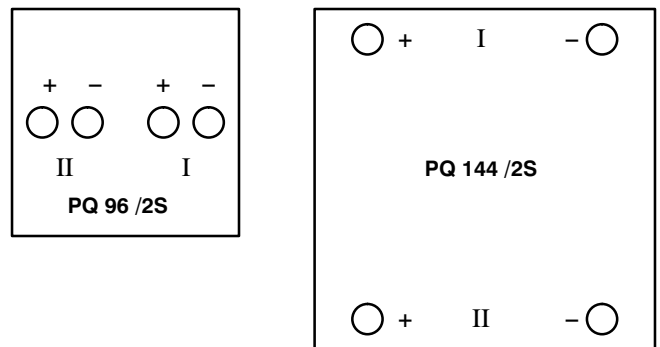
Options

measuring range	
adjustment of internal resistance	to $\pm 1\%$ at 23°C
lead resistance	calibration to $>0.05\Omega$
case	
window	non-glaring glass
colour of bezel	gray (similar to RAL 7037)
position of use	to be specified $15^\circ \dots 165^\circ$
performance	
climatic suitability	limited use in the tropics climatic class 3 according to VDE/VDI 3540
with operating temperature range	$-10 \dots +55^\circ\text{C}$
enclosure code	IP 54 splash-water protected front
dielectric test	3 kV based on 50 Hz, 1 min acc. to DIN 57 410
dial	
blank dial	pencil marked initial and end values
scale division and figuring	deviating from standard; captions on request
additional lettering	to be specified
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
Further options	on request

Accessories

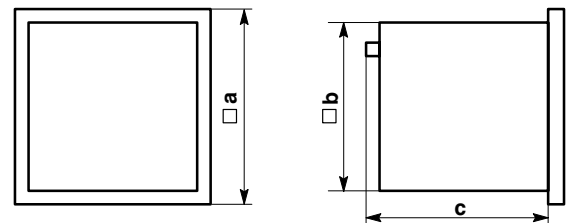
terminal protection against accidental contact	
full-sized rear cover (PQ 96 /2S only), protective sleeves SW6 or rubber nozzles	
terminals	connector blades 6.3 x 0.8

Connections



view from rear side

Dimensions



dimensions (in mm)	PQ 96 /2S	PQ 144 /2S
a	96	144
b	90	137
c	115	121

Ordering Information

type PQ	dual moving-coil panel meter
front dimensions 96 144	96 mm x 96 mm 144 mm x 144 mm
version /2S	two movements
measuring ranges	refer to preceding table
window	glass *) non-glaring glass
colour of bezel	black (similar to RAL 9005) *) gray (similar to RAL 7037)
position of use	vertical *) on request 15 ... 165° **)
climatic suitability	class 2, -25 ... +40°C *) class 3, -10 ... +55°C
marine application	none *) non-certified
enclosure code	IP 52 *) IP 54 splash-water protected front
dielectric test	2 kV *) 3 kV
terminal protection	none *) full-sized rear cover ***) protective sleeves
terminals	screws M3 x 6 and wire clamps *) connector blades 6.3 x 0.8
dial	scale division & measuring range alike *) blank dial deviating from standard **) additional lettering on request **) additional figuring on request **) coloured marks red, green or blue **) coloured sector red, green or blue **)
logo	WEIGEL *) none OEM logo **)

*) standard

**) Please clearly add the desired specifications.

***) PQ 96 /2S only

ordering example

PQ 96 /2S, measuring range 2x 0 ... 100 V,
window non-glaring glass

– specifications subject to change without notice; date of issue 12/98 –

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