

Power meters

Application

Power meters are used for measuring active and reactive power in case of alternating current and three-phase current or the active power for direct current. Sinusoidal and non-sinusoidal quantities may be measured. The frequency range amounts to 40-100 Hz, in case of special types 40-400 Hz. Power meters show the import active power for standard types, or the import and export active power if the zero point is offset, i.e. in case of bidirectional energy directions.

Measuring systems and electronics

- Core magnet moving-coil measuring systems
- Integrated analog multiplier
- Linear scale characteristics
- Independent of waveform
- Independent of external fields

Design

Power meters are manufactured according to DIN 60 051 as well as according to the other relevant VDE and DIN regulations. The accuracy amounts to 1.5 % referred to the full scale.

The energy consumption lies at around 0.6 VA in the current path or at around 2 VA or 0.05 VA in the voltage path if a separate auxiliary voltage is used.

The full scale values should be adapted to the standard series 1 / 1.2 / 1.5 / 2 / 2.5 / 3 / 4 / 5 / 6 / 7.5 / 8 or a decadic multiple of these values. In case of reactive power meters for alternating current and four-wire three-phase current, the frequency range is restricted to a fixed value, normally 50 Hz. The auxiliary voltage for the supply of the electronics is gained from the measuring voltage.

If the measuring voltage fluctuates by more than ± 20 % of the rated voltage, a separate auxiliary voltage is required. In case of size 96, the electronic is installed in the housing (housing depth 57 mm). For all other sizes and models, a separate measuring transducer must be used. The output to the connection of the panel meter amounts to 0-20 mA. Further technical data of the measuring transducers are specified in the relevant data sheets (from page 24). The inputs are resistant to a permanent 1.2-fold overload, the current path withstands a temporary max. 20-fold overload. For the rest, DIN EN 60 051 applies. The electrical connection is done using clamping screws max. 4 mm².

Measuring ranges

The full scale value may be selected between the 0.5-fold and the 1.5-fold rated value of the apparent power.

Apparent power with alternating current $S = U \times I$
 with three-phase current $S = U \times I \times \sqrt{3}$
 (U = external conductor voltage)

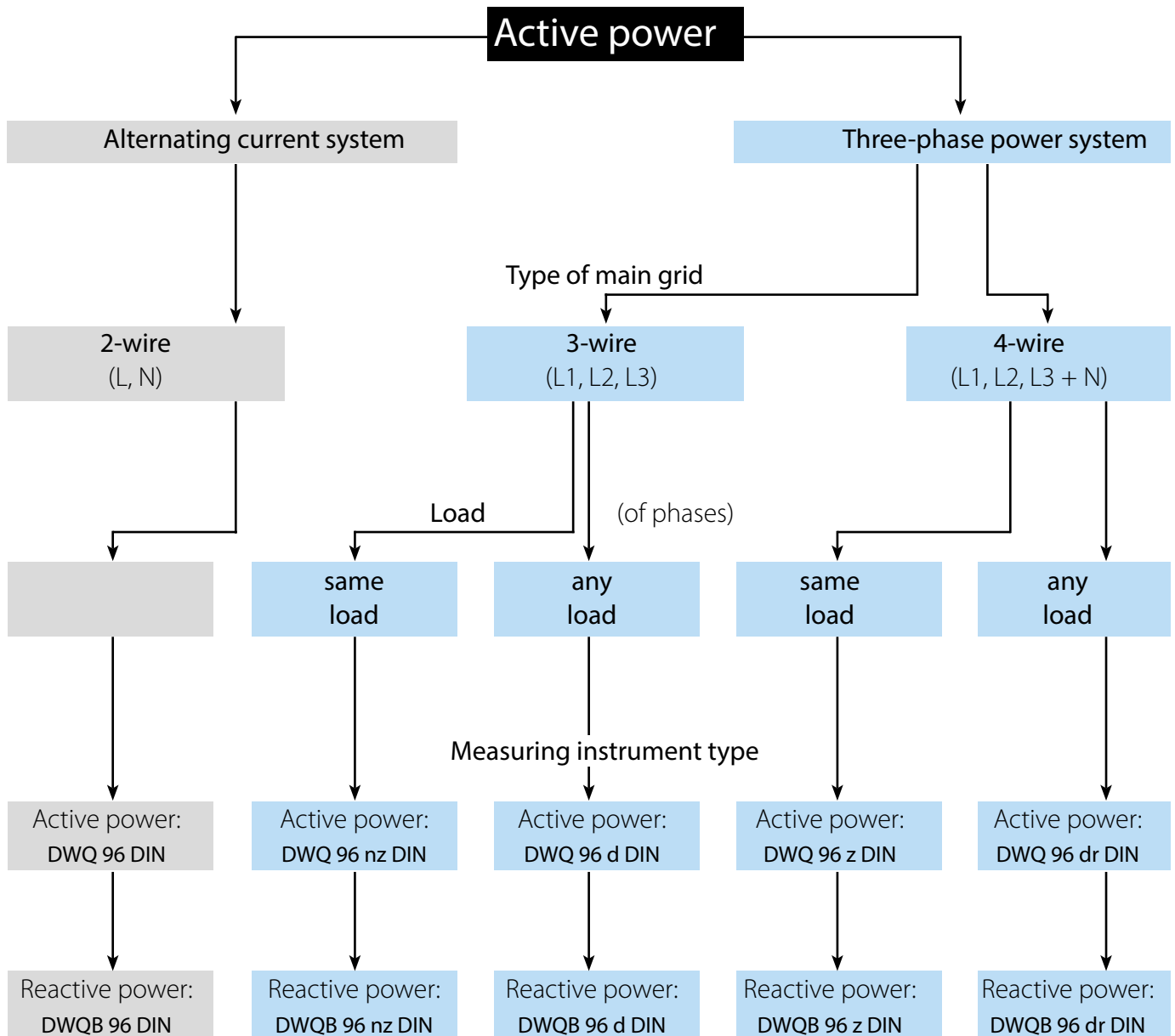
Special versions

Measuring range	Zero point at any position of scale (bidirectional energy direction)	€ 30.50
	Increased accuracy 1%	€ 22.70
Special calibration with active power	Fixed value between 100 Hz and 400 Hz	€ 22.70
	range between 40 Hz and 400 Hz	€ 42.40
	range between 40 Hz and 1000 Hz	€ 63.00
	with reactive power	€ 31.00
	Fixed value between 40 Hz and 400 Hz except for 50 Hz (standard)	€ 31.00
Auxiliary voltage	Separate auxiliary voltage 230 V or 110 V ± 20 % 45-65 Hz 2 VA	€ 22.20

from 1. April 2018
 plus 3.8 %
 surcharge

Power meters

Power meters - Finding the right type



In case of these types (DWQ 96 ... DIN), electronics are installed in general (installation depth 57 mm).

In connection with our power meter transducers (from page 24), all measuring instruments may be used for indicating the power.

Short legend

DWQ	power meter for active power
B	for reactive power
96	Front frame 96 x 96 mm
...	without abbreviation, alternating current
z	accessible neutral wire, four-wire three-phase current of same load
nz	non-accessible neutral wire, three-wire three-phase current of same load
d	double power measuring transducer, three-wire three-phase current of any load
dr	triple power measuring transducer, four-wire three-phase current of any load
DIN	Build-in housing