

PM 203



Multifunctional solid-state
panel power meters

Contents

Brief description	3
Measuring inputs	3
Continuous thermal ratings of inputs	3
Short-time thermal rating of inputs	3
Measuring ranges	3
Pulse value outputs	4
Limit value outputs	4
RS-485 interface	5
Power supply	6
Environmental conditions	6
Electrical connections	7
Single phase AC system	8
3 wire 3 phase	9
4 wire 3 phase	10
Dimensional drawings	12

Brief description

The PM 203 are panel mounting instruments for monitoring AC systems with dimensions 96 x 96 mm. The following measurements are acquired: voltages, currents, frequency, and phase angles in single phase or 3 phase systems. From these, the active power, reactive power, apparent power, active energy, reactive energy, and the power factor and the neutral current can be calculated. With the use of voltage and current transformers, the instrument can be used for measurements in medium and high voltage systems. The transformation ratios are configurable for the direct display of all measurements. The PM 203 instrument is used as a display with two S0 pulse or limit value outputs.

Measuring inputs

Nominal frequency: 50, 60 Hz
 Nominal input voltage: Phase-phase: 500 V
 Phase - N: 290 V
 Nominal input current: 5 A or 1 A

Continuous thermal ratings of inputs

10 A at 346 V single phase AC system
 10 A at 600 V 3 phase system

Short-time thermal rating of inputs

Input variable	Number of inputs	Duration of overload	Interval between two overloads
577 V LN	10	1 s	10 s
100 A	10	1 s	100 s
100 A	5	3 s	5 min

Measuring ranges

U, I, S: $\leq \pm 0.5\%$ of nominal value
 P, Q: $\leq \pm 0.5\%$ of nominal value
 F: 45 to 65 Hz
 $\cos \varphi$: ± 1

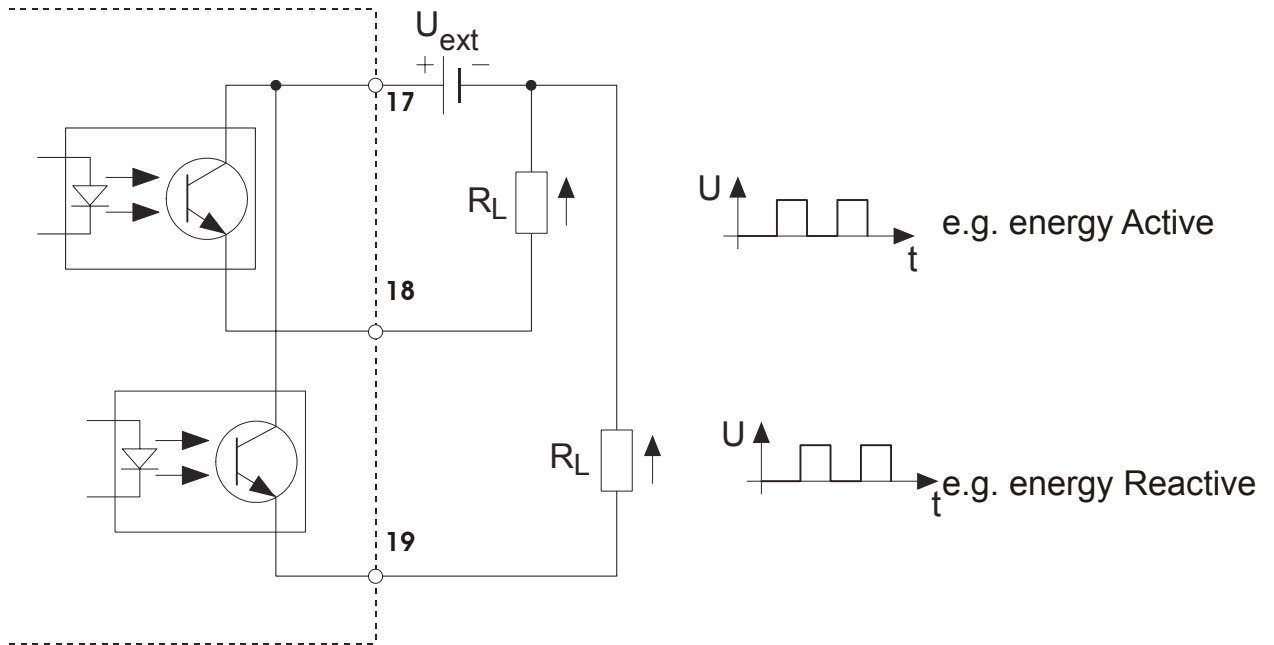
Pulse value outputs

Depending on the function selected, the two digital outputs can be used either as pulse outputs for active and reactive energy.

The outputs are passive, and are galvanically isolated from all the other circuits by opto-couplers.

$U_{\text{ext}} \leq 40 \text{ V DC}$ (OFF: leakage current $\leq 0.1 \text{ mA}$)

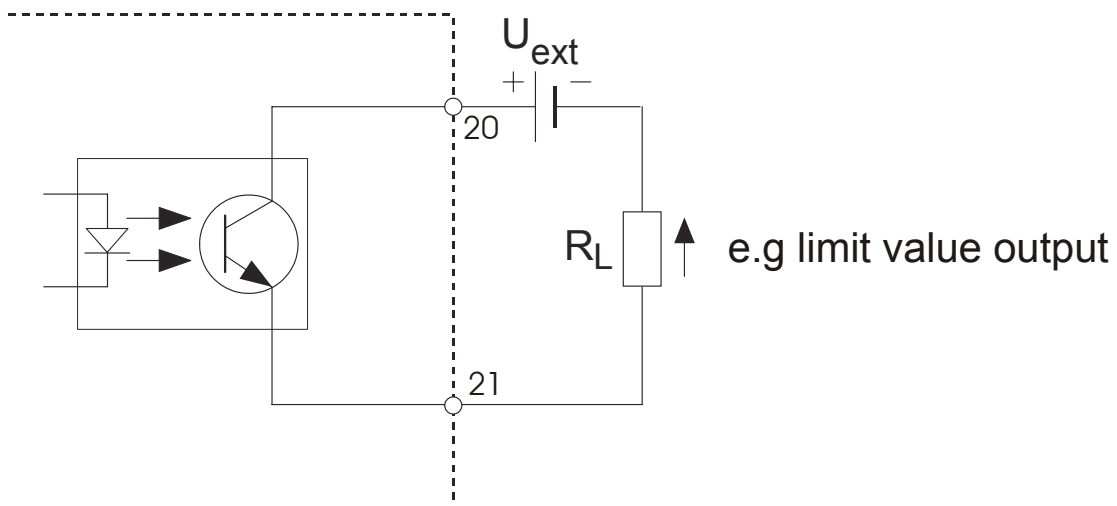
$I_L \leq 100 \text{ mA}$ (ON: terminal voltage $\leq 1.2 \text{ V}$)



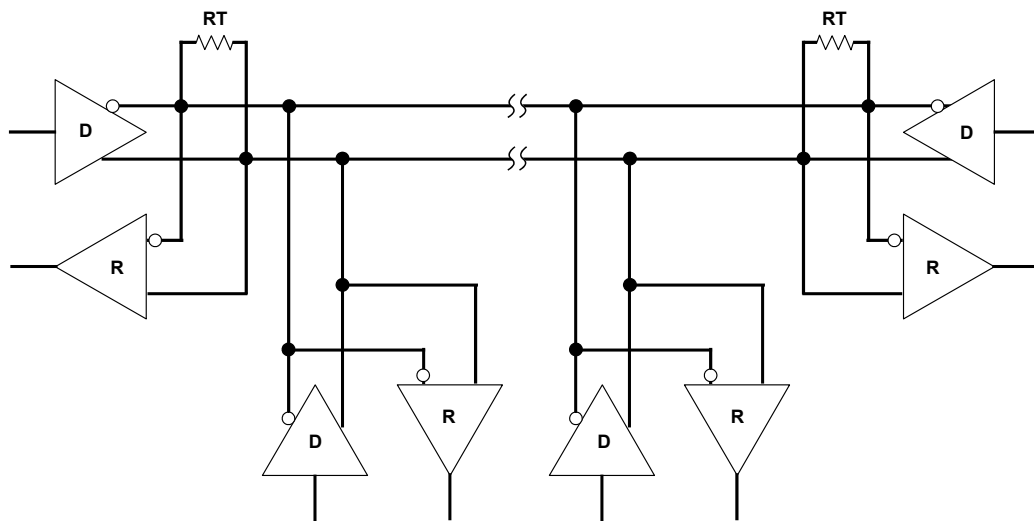
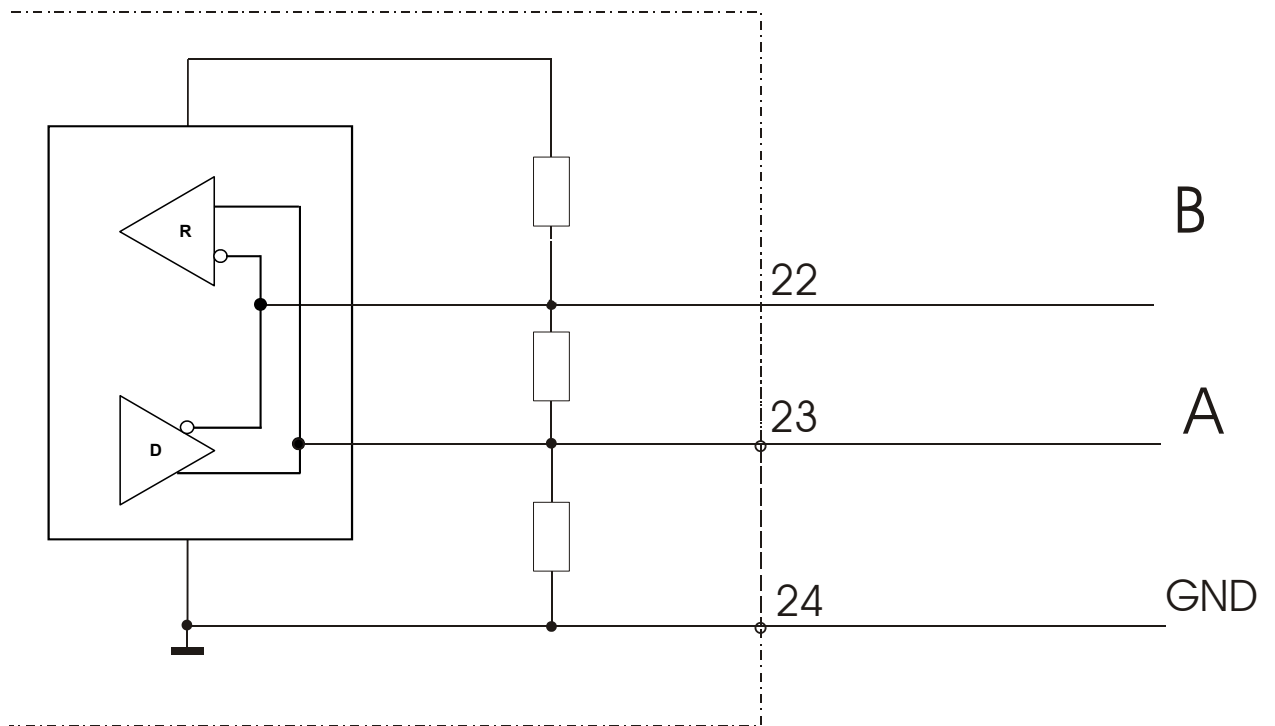
Limit value outputs

Any measured value can be allocated to the limit values.

They are suitable to drive tariff devices (DIN 43 864) or 24 V-relays.



RS-485 interface



Typical RS-485 Network

In order to cater for true multipoint communications, the all the requirements of RS-422 but also allows for up to 32 drivers and 32 receivers to be connected to a single bus.

Power supply

DC, AC power 45 to 400 Hz

85 to 253 V AC/DC

Power input: < 4 VA (with interface)

Reference conditions acc. to IEC 688 resp. EN 60 688

Sine 50 - 60 Hz, 15 - 30°C, application group II

Measurement accuracy (related to nominal value)

Current, voltage $\pm 0.2\%$

Power $\pm 0.5\%$

Power factor $\pm 0.5^\circ$ full scale

Energy $\pm 0.5\%$

Frequency ± 0.02 Hz (abs.)

Environmental conditions

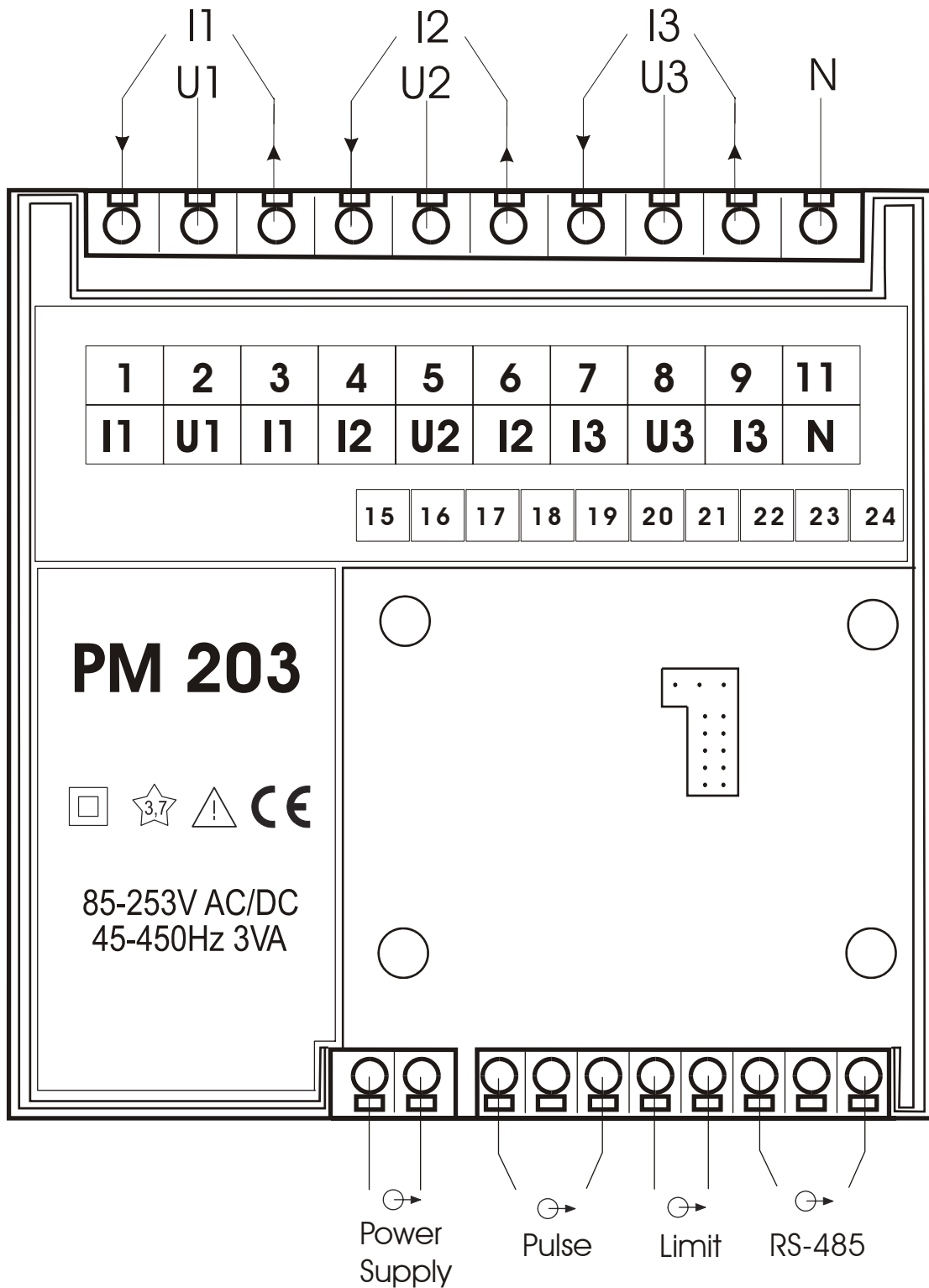
Operating temperature: -10 to +55 °C

Storage temperature: -25 to +70 °C

Relative humidity: < 93%

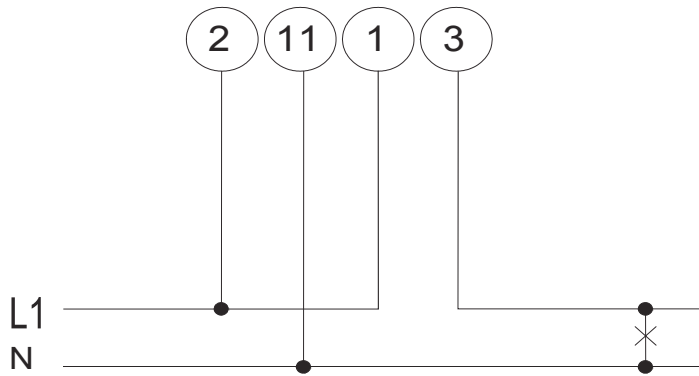
Electrical connections

The electrical connections are identical for the PM 203.

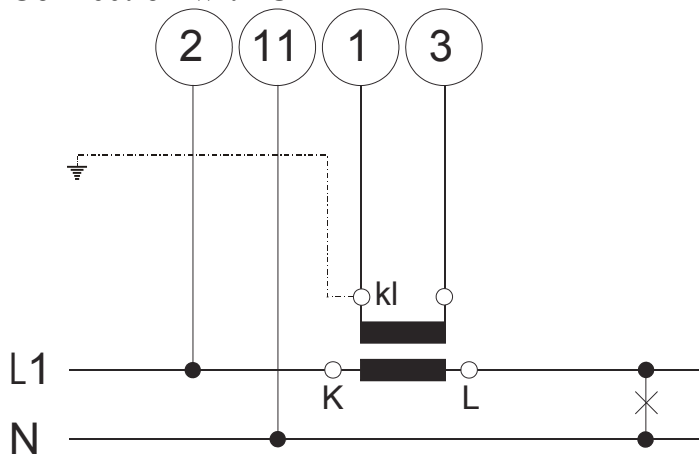


Single phase AC system

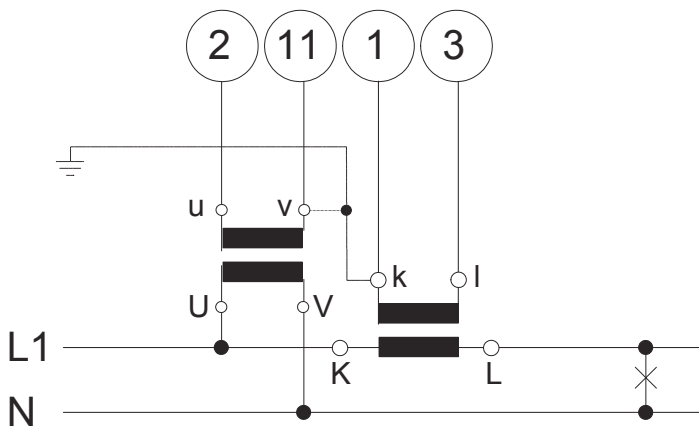
Direct connection



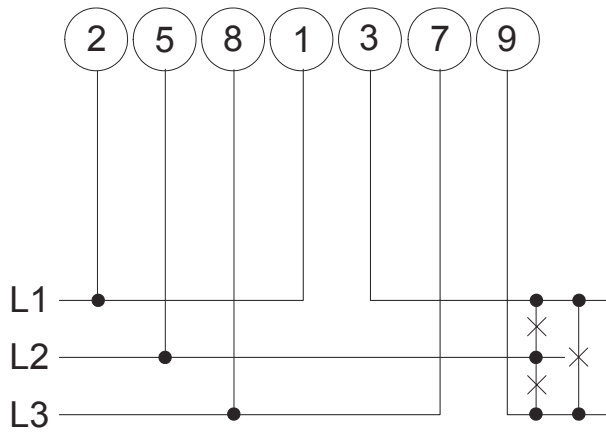
Connection with CT



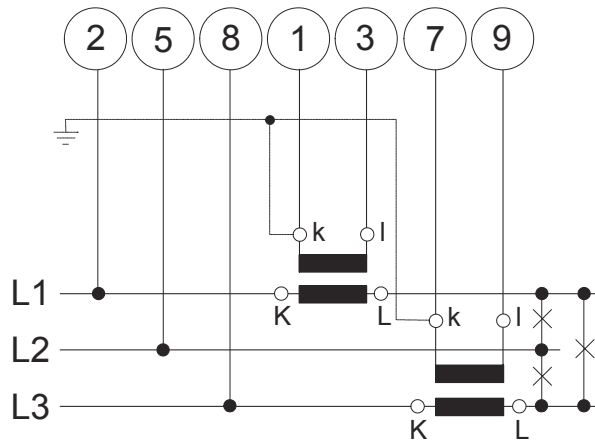
Connection with CT & PT



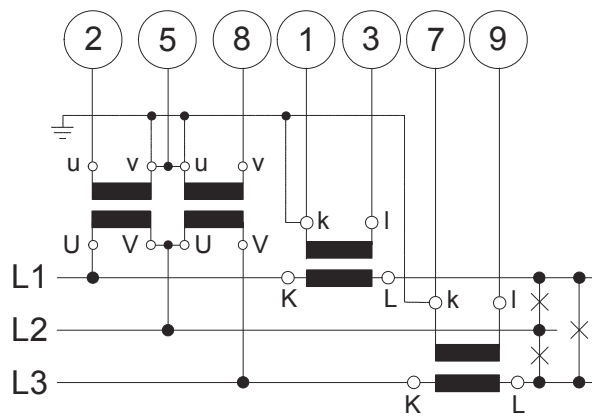
3 wire 3 phase
Direct connection



Connection with CT

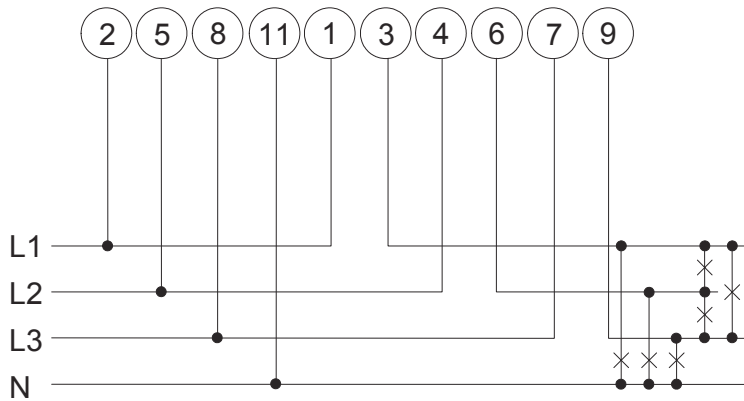


Connection with CT & PT

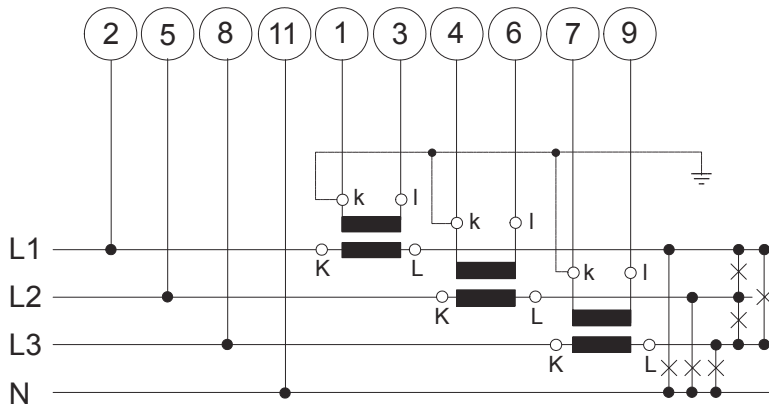


4 wire 3 phase

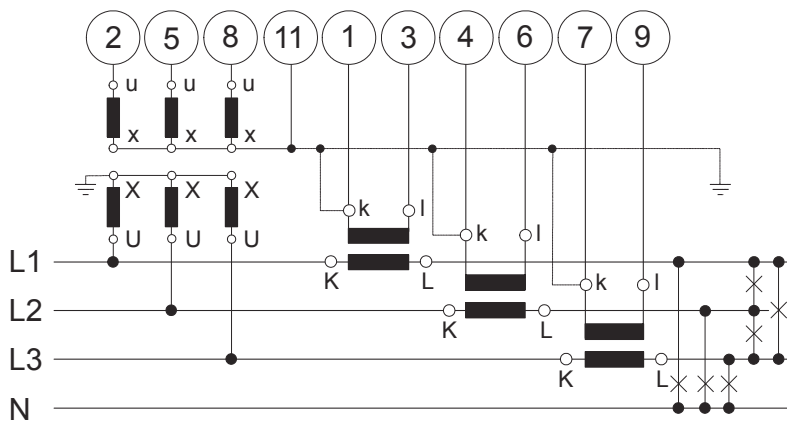
Direct connection



Connection with CT



Connection with CT & PT



Available measurement data	Units display
Phase voltages U1, U2, U3	V
Maximum value U1max., U2max., U3max	V
Minimum value U1min., U2min., U3min	V
Delta voltages U12, U23, U31	V Δ
Maximum values U12max., U23max., U31max	V Δ
Minimum values U12min., U23min., U31min	V Δ
Phase current I1, I2, I3	A
Maximum values I1max., I2max., I3max	A
Average values I1avg, I2avg, I3avg (bimetal)	A
Max. average values I1avgmax., I2avgmax., I3avgmax	A
Neutral current IN	Kw
Active powers P1, P2, P3	Kw
Maximum values P1max., P2max., P3max	Kw
Active power system P	Kw Σ
Maximum value Pmax	VAr Σ
Reactive power Q1, Q2, Q3	VAr
Maximum values Q1max., Q2max., Q3max	VAr
Reactive power system Q	VAr Σ
Maximum value Qmax	VA Σ
Apparent power S1, S2, S3	VA
Maximum values S1max., S2max., S3max	VA
Apparent power system S	VA
Maximum value Smax	VA Σ
Power factor PF1 $\cos\varphi$	Φ
Power factor PF2, $\cos\varphi$	Φ
Power factor PF3, $\cos\varphi$	Φ
Power factor system PF, $\cos\varphi$	φ Σ
Minimum value power factor inductive	φ Σ
Minimum value power factor capacitive	φ Σ
Frequency, F	Hz
Active energy incoming EP high tariff	kWh Σ
Active energy incoming EP low tariff*)	kWh Σ
Active energy outgoing EP high tariff	kWh Σ
Active energy outgoing EP low tariff*)	kWh Σ
Reactive energy inductive EQ high tariff	kVarh Σ
Reactive energy inductive EQ low tariff*)	kVarh Σ
Reactive energy capacitive EQ high tariff	kVarh Σ
Reactive energy capacitive EQ low tariff *)	kVarh Σ
5 active power intervals Pint0, Pint1,...	kW Σ
5 reactive power intervals Qint0, Qint1,...	VAr Σ
5 apparent power intervals Sint0, Sint1,...	VA Σ

Dimensional drawings

