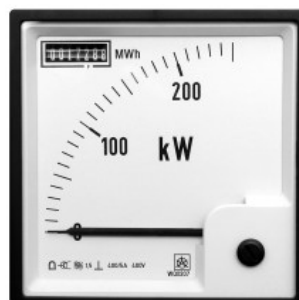


Energy Meter

WQ0217 WQ1217

Energy Meter with analogue pointer

WQ0207 WQ2207



PROPERTIES

- Energy meter
- 7 digits electromechanical register
- Up to 2 registers
- Momentary power or power factor display (WQ0207 –90° and WQ2207 –240° only)
- Standard 96 X 96 DIN case
- Exchangeable scale
- Accuracy class EN 62053-21 class 1
- Frequency range from 16 Hz to 400 Hz
- Up to 2 pulse outputs (option)
- AC or Universal (option) power supply
- Automatic range of nominal current (max. 12.5A) and voltage (option)
- Protective cover for terminal

DESCRIPTION

The meter is intended for energy measuring in single-phase or three-phase electrical power network. The meter measures according to the principle of fast sampling of voltage and current signals. A built-in microprocessor calculates energy, power and power factor from the measured signals.

USE

The meter is intended for monitoring and measuring electrical quantities of three-phase electric-energy distribution system. Meter records energy in all four quadrants. Up to 2 pulse outputs are available for measurements control.

COMPLIANCE WITH STANDARDS:

Standard SIST EN	Description
61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use
60529	Degrees of protection provided by enclosures (IP code)
60051-1	Direct acting indicating analogue electrical measuring instruments and their accessories
61326-1	Electrical equipment for measurement, control and laboratory use - EMC requirements
62052-11*	Electricity metering equipment – General requirements, tests and test conditions
62053-21*	Electricity metering equipment (a.c.) Particular requirements
62053-31*	Electricity metering equipment (a.c.) Particular requirements

* – Partial compliance

DESCRIPTION OF PROPERTIES

MEASURANDS

- Measurements of energy in all 4 quadrants
- Measurements of momentary active, reactive power and power factor (only WQ0207 and WQ2207)

ELECTROMECHANICAL REGISTER

The meter is available with one or with two (WQ1217 only) electromechanical registers. Registers have 7 digits.

ANALOGUE POINTER

Two types of pointers are available. WQ0207 have 90° analogue pointer. WQ2207 have 240° analogue pointer. Pointer can show momentary active or reactive power or power factor.

OUTPUT MODULES

The meter is available without or with two pulse output modules. Modules have three terminals.

SUPPLY

Power supply connection of the meters is adaptive. Standard AC power supply enables connection of the meter to AC voltage (57.7 & 63.5 / 100 & 110 / 230 / 400).

Option is a universal power supply which enables connection of the meter to DC (20–300 V) or AC voltage (48–276 V / 50 Hz).

TECHNICAL DATA

EU DIRECTIVES:

Decree on electrical equipment designed for use within certain voltage limits **URLRS 53/00**

(Directive **2006/95/EC** on low voltage):

SIST EN 61010-1: 2002

Safety requirements for electrical equipment for measurement, control and laboratory use, part 1: General requirements

Decree on electromagnetic compatibility (EMC)

URLRS 61/00

(Directive **2004/108/EC** on electromagnetic compatibility):

SIST EN 61326-1: 2007

SAFETY:

- Protection class: **II**
600 V rms, installation category **II**
300 V rms, installation category **III**
pollution degree 2
in compliance with **SIST EN 61010-1: 2002**
- Enclosure material: **PC/ABS**
Incombustibility-self-extinguishability,
complying with **UL 94 V-0**
- Enclosure protection: **IP 52** (IP 00 for terminals)
in compliance with **SIST EN 60529: 1997**
- Cutting for installation: **92^{+0,8} mm**
- Converter mass: **max. 600 g**

AMBIENT CONDITIONS:

- Temperature range of operation: **-10 to +55°C**
- Storage temperature range: **-40 to +70°C**
- Average annual humidity: **≤ 75% r.h.**

INPUTS

Input signals	Current	Voltage
Nominal frequency range	50, 60 Hz	
Measuring frequency range	16 –400 Hz	
Nominal value (In, Un)	1 / 5 A	75,120,250,500 V _{L-N}
Maximal value	12.5 A	600 V _{L-N}
Consumption	< 0.1 VA	< 0.1 VA

POWER SUPPLY

Power supply	Universal	AC
Nominal voltage AC	48–276 V	57.7 & 63.5 / 100 & 110 / 230 / 400
Nominal frequency	40–65 Hz	40–65 Hz
Nominal voltage DC	20–300 V	–
Consumption	< 3 VA	< 3 VA

REFERENCE CONDITIONS

- Ambient temperature: **-10 ... 23 ... 55°C**
- Voltage input: **+/- 20% Un**
- Voltage input with voltage autorange: **50 ... 500 V**
- Current input: **0 ... 100 % In**
- Active/reactive power, factor: **cosφ = 1 / sinφ = 1**
- Waveform: **Sinus**

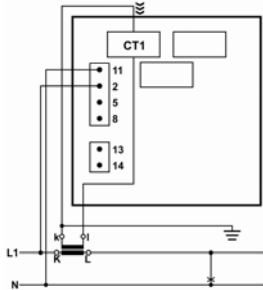
ACCURACY

Measurand	Accuracy
Active, reactive and apparent power	1.5
Power factor (PF)	1.5
Active energy	SIST EN 62053-21 Class 1
Reactive energy	SIST EN 62053-23 Class 2

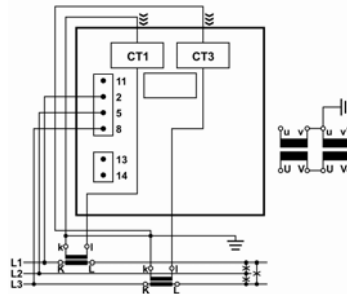
CONNECTION

Voltage inputs can be connected either directly to low-voltage network or via a high-voltage transformer to high-voltage network.

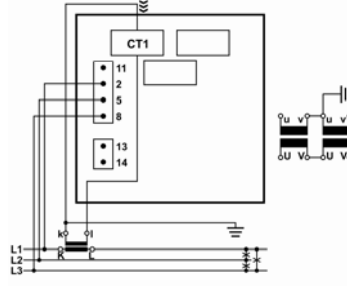
Current inputs shall be connected to network via a corresponding current transformer.



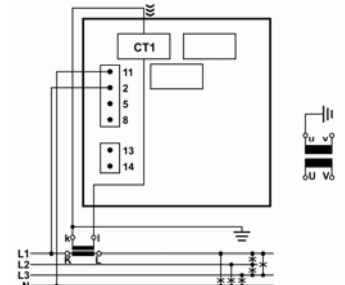
1b - single-wire



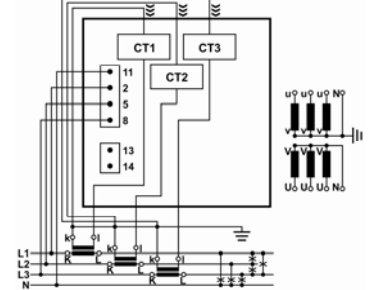
3u - three-wire, unbalanced load



3b - three-wire, balanced load



4b - four-wire, balanced load

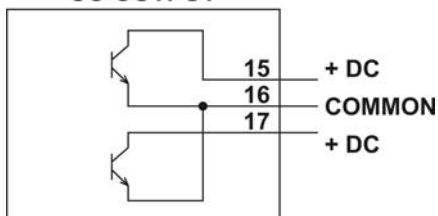


4u - four-wire, unbalanced load

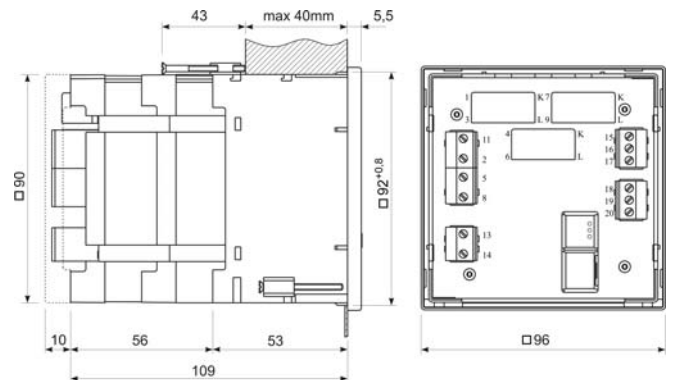
Inputs / Quantities		Terminals	
Measuring inputs:	AC current	IL1	CT1
		IL2	CT2
		IL3	CT3
	AC voltage	UL1	2
		UL2	5
		UL3	8
N		11	
Auxiliary power supply:		+ / AC _L	13
		- / AC _N	14
Output modules	Output	Out -1	15
		C-12	16
		Out -2	17

OUTPUT MODULE CONNECTION

SO OUTPUT



DIMENSIONAL DRAWING



TERMINALS

Connection	Max. conductor cross-sections
Voltage inputs (4)	≤ 2.5 mm ² ; one conductor
Current inputs (3)	≤ Ø 6 mm; one conductor with insulation
Power supply (2)	≤ 2.5 mm ² ; one conductor
Modules (3)	≤ 2.5 mm ² ; one conductor

DATA FOR ORDERING

Energy meter:

The following data shall be stated:

- Type of a meter
- Connection
- VT and CT ratio
- Voltage range
- Type of power supply
- Energy counter parameters
- Pulse output modules
- Scale data
- Special options

ORDERING

When ordering the meter, all required specifications shall be stated in compliance with the ordering code. Special options are available and shall be stated as additional text. Possible options are: different logotype, IP54 protection, nominal frequency, special scale, tropical or ship version, type of glass ...

EXAMPLE OF ORDERING:

The WQ0207 meter is connected directly to phase voltage 230 V_{L-N} and 2000/5 A current transformer. Measuring voltage input has autorange. Power supply is 400Vac. Counter has resolution 1pulse for 10kWh. Analogue pointer has range 0...100kWh.

Ordering code:

WQ0207-4u-230/230V-2000/5A-E400V-AV-1E1p/10kWh-AP0...100kW

Dictionary:

<i>RMS</i>	<i>Root Means Square</i>
<i>PA</i>	<i>Power angle (between current and voltage)</i>
<i>PF</i>	<i>Power factor</i>
<i>AC</i>	<i>Alternating quantity</i>

GENERAL ORDERING CODE

WQ0207-4u-230/230V-2000/5A-E400V-AV1E1p/10kWh-AP0...100kW

Meter type

WQ0217

WQ0207

WQ1217

WQ2207

Connection

1 1phase

3 3 phase 3 wire

4 3 phase 4 wire

b balanced load

u unbalanced load

VT ratio

XXX V / XXX V

CT ratio

XXX A / 5A

XXX A / 1A

Power supply

EDC/AC Universal

E57/63V 57.7 V / 63.5 V AC

E100/110V 100 V / 110 V AC

E230/240V 230 V / 240V AC

E400V 400V AC

Voltage input range (phase to neutral)

AV automatic range 50...500V

63V 57.7 V and 63.5 V

100V 110V

240V 230V and 240 V

Energy counters

C1 module 1

C2 module 2 (WQ1217 only)

I Import energy

E Export energy

L inductive load reactive energy

C capacitive load reactive energy

XXX / Wh (varh) counter rate

Pulse output module (option)

P1 module 1

P2 module 2

I Import energy

E Export energy

L inductive load reactive energy

C capacitive load reactive energy

XXX / Wh (varh) pulse rate

Pointer (scale) data (WQ0207 and WQ2207 only)

A unipolar pointer

AB bipolar pointer

P active power

Q reactive power

PF power factor

XXX...XXX scale start value ... end value



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