

SMARTenergy sensor

Energy sensor for measuring currents from 20A to 800A

The SMARTenergy sensor offers connections for up to 3 current transformer sensors. The transformers are available from 20A to 800A with accuracy class 1. It captures energy consumption in kWh, active power, and load profiles in W.

The sensor stands out for its simplicity: No configuration is necessary. The current clamps are plugged in with the desired size, e.g., 800A. The SMARTenergy sensor does not require L1/L2/L3. It is sufficient to connect the sensors with a network cable to the SMARTenergy gateway in any order.

The SMARTenergy gateway autodetect function automatically recognizes the size and number of split-core transformers and the number of installed SMARTenergy sensors.



Key features

- 3 x current transformers
- Pluggable current transformer connection via RJ10 (Types: 20A, 50A, 100A, 250A, 400A, and 800A)
- Energy consumption in kWh, active power, and load profiles in 15-minute intervals
- Various mounting options (DIN rail, cable ties, magnet)
- Small dimensions: 50mm x 50mm





Specifications

General	Material	PC UL 94 V-0	
	Protection class	IP40, terminal connections: IP20	
	Terminals	RJ10 and RJ45 connectors	
	Overvoltage category	Cat. III (EN 61000-4-5)	
	Pollution degree	2	
	Protection class	Class III (Surge Level 1 (EN 61000-4-5))	
	Mounting	DIN rail or distribution panel mounting	
	Weight	80g	
	Diagnostic LED	RUN Led	
	Identification code	QR code labeled on the device	
Environmental Conditions	Operating temperature	-25 to +55 °C (-13 to +131 °F) (Note: Relative humidity < 90%, non-condensing at 40 °C (104 °F))	
	Storage temperature	-30 to +70 °C (-22 to 158 °F) (Note: Relative humidity < 90%, non-condensing at 40 °C (104 °F))	
Electrical System and Circuits	Controlled electrical installation	Single-phase (2 wires), three-phase without neutral (3 wires), three-phase with neutral (4 wires)	
	Number of monitored circuits	Single-phase systems: up to 3 single-phase loads Three-phase systems: 1x three-phase load The SMARTenergy sensor is an extension to the SMARTenergy gateway. Up to 8 SMARTenergy sensors can be connected to one SMARTenergy gateway.	
Voltage Measurement Input	Voltage Measurement	Voltage is only measured at the SMARTenergy gateway.	
	Current connection	Via PSCTxxx current transformer block over RJ10	
Current Measurement Input	Nominal current (In)	20A 50A 100A 250A 400A 800A	
	Minimum current (Imin)	0.05 In	
	Maximum current (Imax)	1.2 In	
	Overload	Continuous: 1.2 In, for 100ms: 2 In	
	Insertion impedance	<0.2 VA	
	Current measurement accuracy	From 0.05 In to Imax ±(0.5% rdg)	
	Active power measurement accuracy (PF=1)	From 0.05 In to Imax ±(2.5% rdg)	
	Measurement method	Digital sampling (active power: multiplication of sampled instantaneous current and voltage values and averaging in the MCU)	
	Available Measurements	Sampling	40,000 samples per second @50Hz
		Energy	Digital calculation as an integral of power over time
Active power		Total load, average over the set interval, maximum in the set interval (in next FW version 1.03)	
Power Supply		Via RJ45 cable (24VDC)	

	Consumption	<1W
Dimensions	70 x 70 x 50 mm	
Approval	CE	
Conformity	EMC (Electromagnetic compatibility) DIN EN 61000-6-2 DIN EN 61000-6-3 DIN EN 61326-1 - 2018-09 Electrical safety DIN EN 61010-1:2020-03;VDE 0411-1:2020-03	
Warranty	2 years	

Electrical Installation

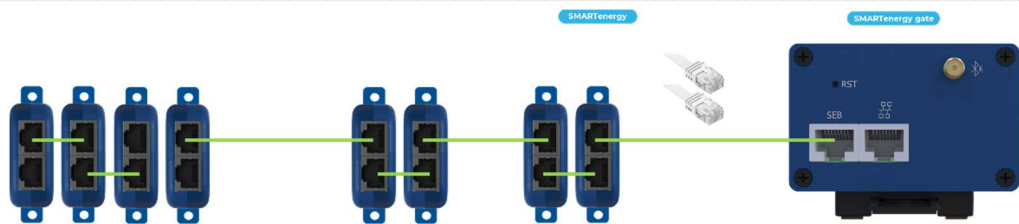


SMARTenergy Connection



The connection of SMARTenergy sensors is done via standard RJ45 network cables (AWG27) to the SEB socket (SMARTenergy bus). Each SMARTenergy sensor has 2 RJ45 sockets for daisy-chaining the signal.

Connection Network



Diagnostic LED

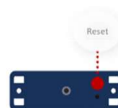


- 10 Hz Communication timeout
- 1 Hz Idle state (wait for address assignment)
- 2 Hz In Assignment Process
- 4sec Off/1sec On HW Fail
- Steady Run

After connecting the SMARTenergy sensor to the SMARTenergy gateway, the control LED should switch to RUN after approximately 60 seconds.

Reset

The kWh can be manually reset to 0 using the RESET button. Hold the button for 5 seconds. The sensor must be connected with the patch cable and have power. The control LED will briefly turn off.



Maximum Distance

Maximum distance between the SMARTenergy gateway and the last SMARTenergy sensor: 20m

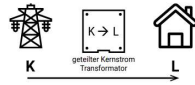
Connection Sensors

- Compatible Sensors
- PSsystem type - Split-core transformer 20A
 - PSsystem type - Split-core transformer 50A
 - PSsystem type - Split-core transformer 100A
 - PSsystem type - Split-core transformer 250A

PSystem type - Split-core transformer 400A
 PSystem type - Split-core transformer 800A
 (Note: No configuration required)

On the underside of the split-core transformer, there is an arrow indicating the direction of energy flow. **This can be ignored.**

Connection Direction



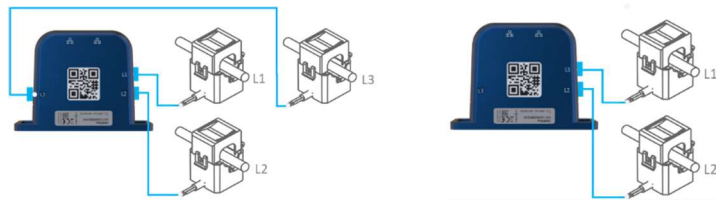
Phase Sequence

When connecting the sensors, ensure the correct **phase sequence** of L1-L2-L3!

Connection Order

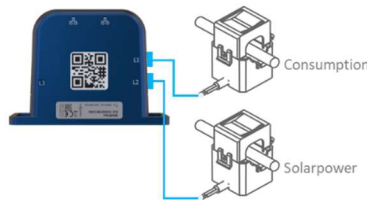
If current is flowing through the conductor during installation, the CTs must first be connected to the box and only then attached to the conductor using the clamp mechanism. Uninstallation must be done in reverse order.

3-phase network
 2-phase network



Wiring Diagram

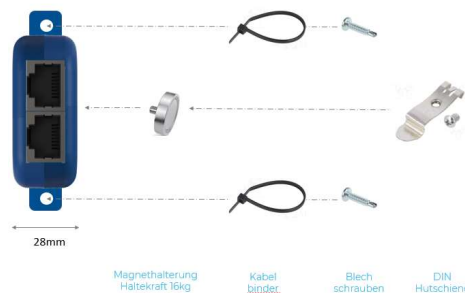
1-phase/solar power



1-phase network
 Differential current



Mechanical Installation



Connection

The following options are available for the mechanical installation of the SMARTenergy:

Mounting Options

- Magnetic mounting
- Cable ties
- Screw mounting
- DIN rail holder



Identification Code

The QR code is affixed on the side.
The QR code contains:

- The serial number
- The serial number of the BLE transmitter, if available
- The use case

General structure

;;PSS06:[MACBLE];[MACSTM];[Messcase]

Example:

Identification Code

