**ps||systec**

SMARTenergy gateway
Wireless transmission of energy data

The SMARTenergy gateway is designed for industrial environments and serves as the central energy node in the distribution cabinet. It transmits all energy data wirelessly from the cabinet. Together with other distribution cabinets and SMARTenergy gateways, it automatically configures a wireless mesh system throughout the building – no further configuration required!

The SMARTenergy gateway offers connections for 3 current transformer sensors, allows the extension of measurement points with SMARTenergy sensors, and includes a wireless interface for additional wireless beacons such as temperature/humidity and presence sensors. Further interfaces, such as MBus, Modbus, S0, D0, enable the integration of existing meters into the wireless transmission system.

The autodetect function of the SMARTenergy gateway ensures that all wired and wireless sensors are automatically recognized.
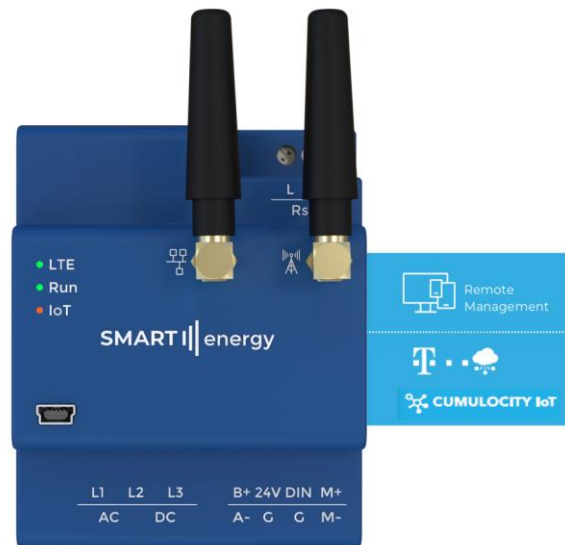
Key features

- Collection of energy data and wireless transmission from the distribution cabinet
- 3 x current transformer connections, pluggable via RJ10
- (Types: 20A, 50A, 100A, 250A, 400A, and 800A Rogowski coil 80mm/240mm)
- Energy consumption in kWh, active power, and load profiles in 15-minute intervals
- Connection of wireless temperature/humidity/presence sensors
- Autodetect function for sensors
- Connection for up to 8 SMARTenergy sensors
- Additional interfaces (MBus, Modbus, D0, S0)
- DIN rail mounting
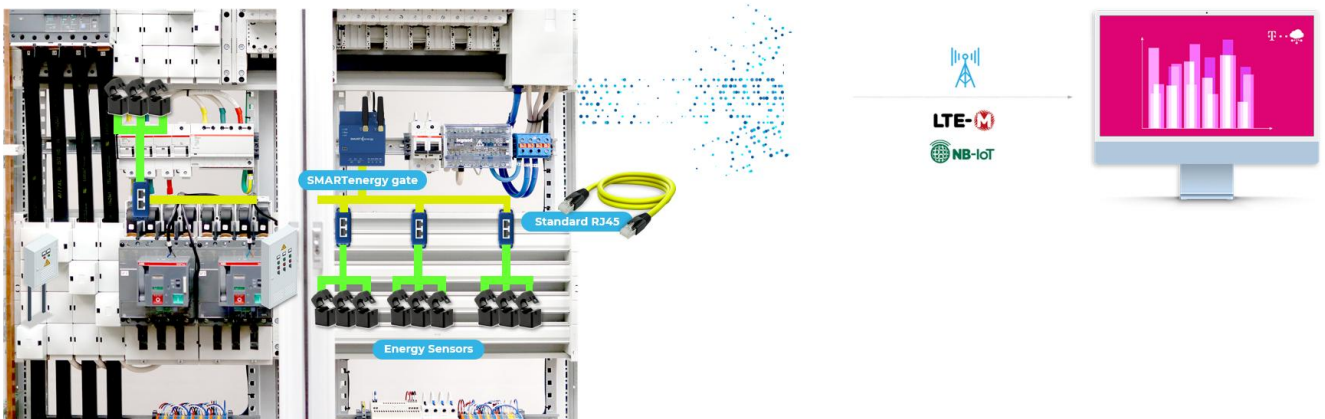
WIRELESS COMMUNICATION

NBIOT / LTEM	B1 B2 B3 B4 B5 B8 B12 B13 B18 B19 B20 B25 B28 B66 B71 B85 B103
2G	B2 B3 B5 B8
Regions	WorldWide

LOCATION SERVICES

Cell Location	Location service is based on cell location. Note: Does not work with NBIOT.

SENSORS

Layout	External connections	
	Sensor Inputs	a) PSsystec current clamp L1/ L2/ L3 for AC measurement (ensure correct phase sequence!) (20/ 50/ 100/ 250/ 400/ 800A) b) Modbus RTU, B+/ A- c) Power supply for external devices: 24V/G (max. 50mA – without connected SMARTenergy sensors) d) Digital input DIN/G e) M-Bus, M+/ M- SMARTenergy sensors for AC or DC measurement extensions (max. 8 sensors)
General	Material	ABS enclosure
	Protection class	IP40, Anschlussklemmen: IP20
	Terminals	Removable type, maximum cross-section: 15 mm², tightening torque: 0.2/0.25 Nm
	Overvoltage category	Cat. III (EN 61000-4-5)
	Pollution degree	2
	Protection class	Class II (61010-1) double insulation, test voltage: 42 kV AC 1 min. + impedance limitation
	Mounting	DIN rail
	Weight	195g without antenna
	Diagnostic LED	RUN Led, IoT LED, LTE LED

|	Identification code	QR code 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 system	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
Voltage measurement input	Voltage measurement input	Direct or via VT
	Nominal voltage L1-N (from Un min. to Un max.)	100Vac to 240Vac Note: L1 must be used for voltage measurement
	Voltage tolerance	-10%, +10%
	Overload	Continuous: 1.1 Un max.
	Frequency	47 to 63 Hz
	Voltage measurement accuracy (phase to neutral)	From (Un min. -10%) to (Un max. +10%) ±(2% rdg)
Current Measurement Input	Current connection	Via PSCTxxx current clamp over RJ10
	Nominal current (In)	20A 50A 100A 250A 400A 800A 680A (Rogowski Coil)
	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)
Available Measurements **Klappwandler**	Measurement method	Digital sampling (active power: multiplication of sampled instantaneous current and voltage values and averaging in the MCU)
	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 firmware version 1.03)
Bus Interfaces	Modbus	**Modbus Master**: Up to 20 slaves (Modbus Slaves) **Configurable baud rate/Parity/Stop Bit** via the cloud Projektierung der Modbus **Projecting Modbus address and registers per Modbus slave** is configured in the cloud platform
	M-Bus	**Mbus Master**: Up to 20 slaves, secondary address search Note: All connected MBus slaves must be set to 9600 baud, primary address assignment is not required

		Pulse interface: Max. 1kHz, for pulse sensor connection
	Impuls	Pulse interface (max. 1 kHz) for connecting pulse sensors
Power Supply	**Self-powered** between L1 and N	
Power consumption	5W	
Wireless BLE Sensors	Temperature/humidity	PSsystec temperature/humidity beacon: T: -30 to 60°C with a typical accuracy of ±0.3°C and long-term drift of < 0.02°C per year H: 0 to 100% with a typical accuracy of ±3.0 and long-term drift of <0.25 per year
	Presence	PSsystec PIR Sensor: Sensor type: Motion, Pyroelectric, PIR (Passive Infrared), Sensing Range 7m
	Interface	BLE 2.4Ghz interface.
BLE Interface	Bluetooth	v5.0 (Bluetooth low energy)
	Range	Max. 1400m
	Output power	8 dBm
	Sensitivity	–94 dBm (1 Mbit/s)
	Function	Scanning/Advertising/Open Mesh/Repeater
Radio Energy Network	Protocol	Mesh network (TinyMesh)
	Frequency	868MHz ~ 870MHz
	Data rate	100Kbps
	Power output	10dbm
	Sensitivity	-110dBm
	TN	Max. 100 participants
Dimensions	72 x 85 x 60 mm (size of an FI circuit breaker)	
SIM Card	4FF	
Approval and Compliance	C E	
Conformity	2014/53/EU (Radio Equipment Directive) Radio EN301511 v12.5.1 EN301908 v13.1.1 EMC (Electromagnetic compatibility) EN 301489-1 v2.2.0 main part EN 301489-52 v1.1.0 EN 301489-17 v3.1.1 for Bluetooth low energy 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 Cybersecurity EN 18031:2024	
Warranty	1 year	

## ELECTRICAL INSTALLATION

Connection	a) Connect the power supply to terminal L1 and N. Ensure that L1 is used from the sub-distribution or main distribution. This reference voltage is then used for all SMART sensors connected via RJ45 to the hub. b) Mount the LTE antenna and optionally the energy network antenna. Ensure correct assignment of the 868MHz and LTE antennas.
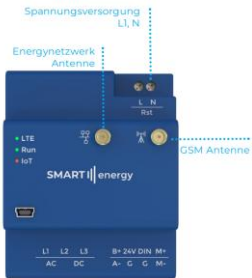
Mounting	DIN rail mounting

SMARTenergy Connection	

max. 20 Meter
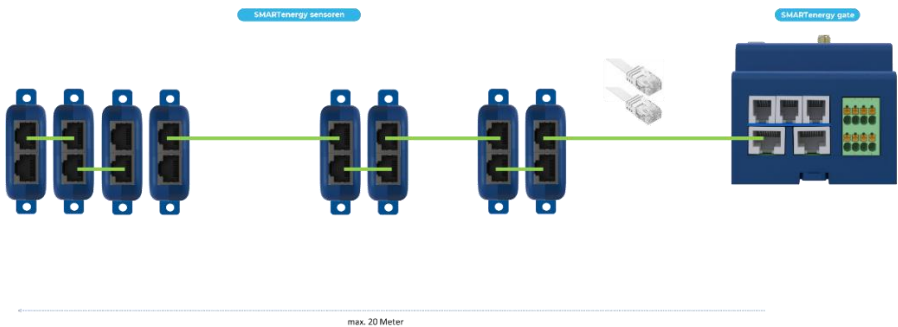
The connection of SMARTsens energy sensors is done via standard RJ45 network cables (AWG27). Up to 8 SMARTsens energy sensors can be connected to the SEB terminal block. The maximum distance between the SMARTenergy gateway and the last SMARTsens energysensor is 20m.

LED Diagnostics	

Run

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

IoT

10 Hz	Sending
Steady	Device is active in the Network

LTE

10 Hz	LTE Network found
Steady	Not LTE network found

The IoT LED must remain constantly on. When it is transmitting, it flashes at a 10Hz rhythm. If the LED is not constantly on, no additional participants are found in the network. The Run LED indicates whether connected sensors are detected, which could be a SMARTenergy sensor or MBus/Modbus participants. The LTE LED blinks to indicate the availability of an LTE network. If it remains ON continuously (for at least 30 minutes), an external antenna must be used.

Reset	

By pressing the RESET button (RST), the kWh can be manually reset to 0. This applies only to the split-core transformers/Rogowski coils connected to the SMARTenergy gateway. To reset, hold the button for 5 seconds. The sensor must be connected with the patch cable and have power.

**Connection Current Transformers**

Compatible Sensors:

PSsystec type - Split-core transformer 20A

PSsystec type - Split-core transformer 50A

PSsystec type - Split-core transformer 100A

PSsystec type - Split-core transformer 250A

PSsystec type - Split-core transformer 400A

PSsystec type - Split-core transformer 800A

PSsystec type - Rogowski Coil 80/240

Connection Direction
On the underside of the split-core transformer, you will see an arrow indicating the direction of the energy flow. **This can be ignored**!
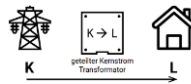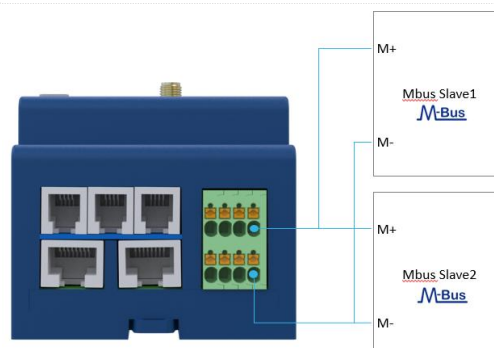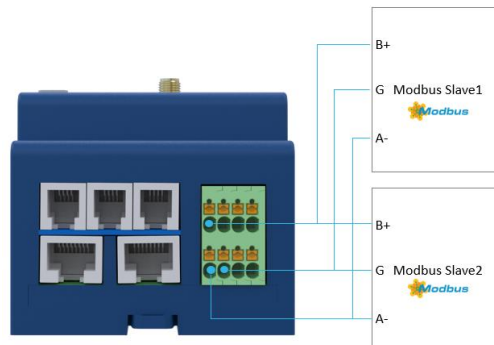
Phase Sequence
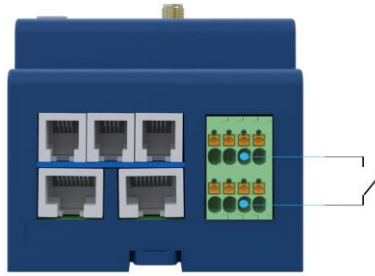When connecting the sensors, ensure the correct **phase sequence** of L1-L2-L3!

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.

Wiring Diagram Interfaces

Pulse

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]

Identification Code

Example:

The information and instructions contained in this datasheet have been compiled with the greatest possible care. However, we accept no liability for any errors, inaccuracies, or omissions in the datasheet. Use of this datasheet is at your own risk.