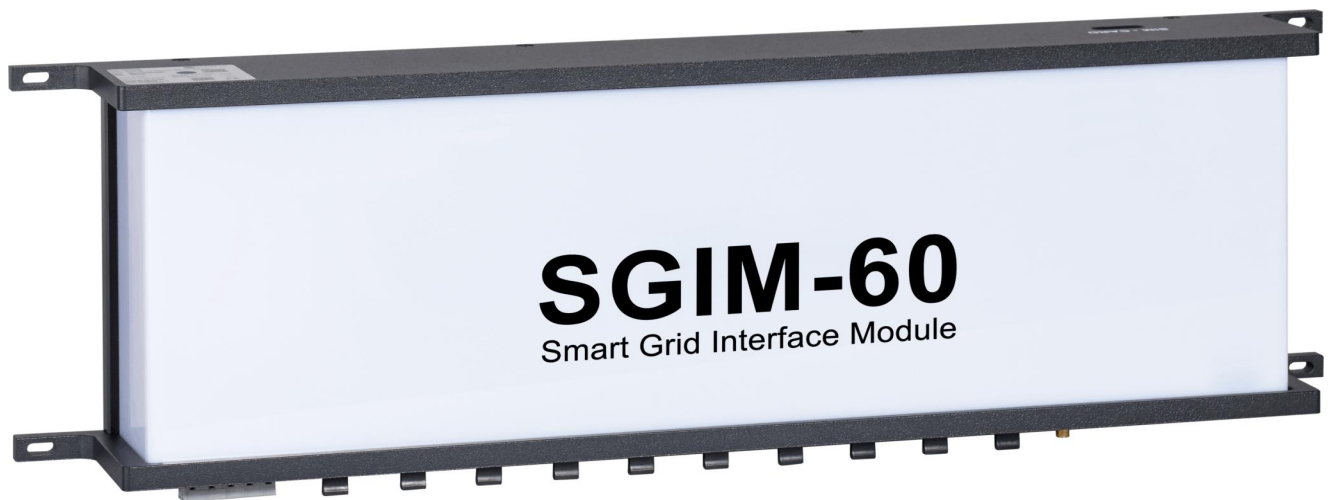


SGIM-60

Smart grid interface module for the digitalization of local substations and the distribution grid



The Smart Grid Interface Module SGIM-60 is an easy-to-install measurement system for digitizing local substations and cable distribution cabinets in intelligent distribution networks. It enables cost-effective and interruption-free installation in a free mounting space of just 550 mm in length, 170 mm in width, and 75 mm in height, allowing for the setup of a monitoring system at critical points and nodes in the distribution network.

With the SGIM, all voltages and additional power quality information as well as the frequency can be directly recorded and transmitted to control centres via remote control or substation protocols in accordance with DIN EN 60870-5-101/-103/-104 or DIN EN 61850. Additionally, for fast and direct access to the SGIM's measurement data without connection to a control system, an internet portal and an SGMI app are available. The wide range of IoT protocols can also be used for integration into Smart Grid applications.

The SGIM is a modular system that can optionally be expanded to measure currents, power, and energy from up to 10 feeders using Rogowski coils or current transformers from NH fuse switch disconnector strips.

Advantages and special features

- Easy installation via integrated magnetic holder or screw mounting
- Interruption-free installation
- Low height of 75 mm for convenient use in door-mounted setups
- Measurement of voltage, frequency, and additional power quality parameters

- Integrated measurement of currents, power, and energy from 10 feeders using flexible current transformers (Rogowski coils) or integrated 333 mV current transformers in NH fuse switch strips. Switching between them is easily done via firmware parameters. Three or four currents can be measured.
- Modular expansion for status detection and load switching
- Integrated monitoring of temperature and humidity inside the control cabinet
- Communication via Ethernet (RJ45/fibre-optic), MODBUS, LoRaWAN, and UMTS/LTE



Technical Data Smart Grid Interface Module SGIM-60

General

Supply voltage:	100 VACmin .. 240 VACmax 47 Hz .. 63 Hz
Power consumption:	max. 17 VA
Housing:	Aluminum / Plastic
Dimensions:	550 mm (W) x 170 mm (H) x 75 mm (D)
Weight:	3.1 kg
Operating temperature:	-5°C .. +55°C nominal -20°C .. +70°C derating
Relative humidity:	0 % .. 90 % no condensation

Protection

Insulation protection:	EN 61010-1
Environmental protection:	IP 21
Overvoltage category:	CAT IV TN-C network CAT III TN-C-S / TN-S / TT Netz

Measurement

Measuring Quantity	Range	Resolution	Accuracy
Voltage	0V .. 300V	10mV	0.5%
Current fuse switch CTs	1mA .. 1A	1mA	0.5%
flexible CTs	10mA .. 15kA	10mA	1.0%
Reactive/ fuse switch CTs			0.5%
power/energy flexible CTs			1.0%
Active/ fuse switch CTs			1.0%
power/energy flexible CTs			0.2%
Frequency	45Hz .. 65Hz	0.01Hz	0.5%
Power Quality (Option)	Definition	Accuracy	
Voltage	U1, U2, U3, UN	0.1%	
Voltage dips	URMS ½		
Voltage swells	URMS ½		
Voltage interruptions	URMS ½		
Harmonics	2nd .. 64th		
Interharmonics	1-2nd .. 63-64th		
Signal voltages	f _s < 3kHz		
Flicker	P _{st} P _{lt}		
Symmetry	u ₀ u ₁ u ₂		
Current fuse switch CTs	I1, I2, I3, IN, IPE	0.5%	
Flexible CTs		1.0%	
Harmonics	2nd .. 64th		
Interharmonics	1-2nd .. 63-64th		
Standards EN IEC 61000-4-30	■	Class A	
EN IEC 62586	■	Class A	
EN 50160	■		
Environmental Parameters	Range	Resolution	Accuracy
Temperature	-40°C .. +125°C	0.1°C	0.2°C
Humidity	0% .. 100%	0.1%	2.0%

Communication

Interfaces	Specification
RS 232	300 .. 115200 Baud
RS 485	300 .. 115200 Baud
Ethernet	electrical 10/100BaseT fibre-optical 2 x 100BaseLX10 SC Duplex single-mode
Bluetooth	4.0
Radio	LTE Mini SIM – SMA antenna LoRaWAN 868MHz – RF 2-10km – Class A 1.0.1

The SGIM-60 includes both the communication and remote-control components, as well as measurement modules, in a compact unit with an installation height of 75 mm. It contains all necessary control, communication, and measurement functions to provide measurement data either to a cloud-based data management system or via control system and switchgear protocols (DIN EN 60870-5-104, DIN EN 61850, DNP 3.0) or industrial protocols (OPC/UA).

The device includes a local web server for visualizing the recorded data and for configuring drivers and communication protocols.

In addition to the power supply and CPU, further functions are already integrated. Ten measurement channels allow for 3- or 4-phase measurement and monitoring of up to ten low-voltage connections, and can be parameterized for use with Rogowski coils or low-signal current transformers.

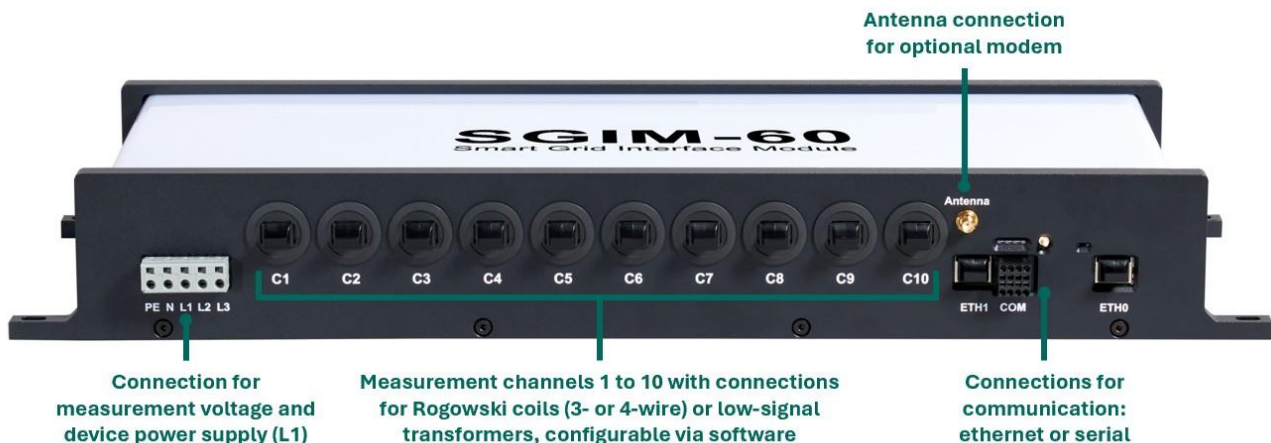
There is also a slot available for universal function modules (e.g., wireless or fibre-optic Ethernet communication), as well as a status query and switching module (I/O module).

Modules

Name	Functions
CPU module (Standard)	Ethernet interface 0 (RJ45) Ethernet interface 1 (RJ45) Serial interface (RS232, RS485) Bluetooth Humidity/Temperature sensor SD memory card
Fibre-optical Ethernet module (Option)	Ethernet interface (RJ45) Ethernet interface (SC Duplex)
Radio module (Option)	UMTS / LTE / LoRaWAN SMA antenna socket Mini SIM-slot
Measurement module (option) fuse-switch CTs	Measurement via 333 mV low-signal current transformers of the NH fuse switch disconnector strip Voltage measurement: 3-phase Current measurement: 3-phase, 4-phase L1, L2, L3, N, PE
Measurement module (option) flexible CTs	Current range 0 – 15.000A 3-phase voltage measurement 3-phase current measurement 2 secondary circuits or L1, L2, L3, N, PE
Power quality module (option) fuse-switch CTs or flexible CTs	Voltage measurement U1, U2, U3, UN Current measurement I1, I2, I3, IN, IPE
I/O module (Option)	8 digital inputs 2 digital outputs 2 potential-free relays 1 change-over contact

SCADA / Substation Communication Protocols

DIN EN 60870-5-104
DIN EN 61850



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