Modular meters

ST310

Three-phase modular meter with plug-in communication and switching modules

ST310 is three-phase, MID-certified, modular smart meter designed for the measurement of electrical energy of residential, commercial and industrial consumers, with direct or transformer grid connection (CT or CT/VT). AMI system integration is enabled by connecting plug-in communication module (CMxyS - PLC or GPRS/3G communication) and switching module (SD30S). Replaceable communication module offers seamless communication options and allows easy future upgrade of communication technology by simple modem replacement without need for removal of metrology seals. Both plug-in modules are mounted under the terminal cover. ST310 version for direct grid connection is equipped with Port B for connection of the switching module and realization of load management functionality. Port B is realized in accordance with M-Bus standard. ST310 is available in versions without communication and/or switching modules. All ST310 functions are compliant with the following standards and regulations: IEC 62052-11, IEC 62053-21/22/23, EN 50470-1/3 (MID), M-Bus and DLMS/COSEM.

Key features

- MID certificate
- Measurement of electrical values
- Integrated Real-time clock with DST
- Flexible tariff policy with up to 4 tariffs
- 230 V/50 Hz or 110 V/60 Hz supported
- Billing profile + 4 configurable load profiles up to 10 channels each
- Maximum demand
- RS485 port
- Optical port
- DLMS/COSEM
- Fraud detection
- No-power reading and parametrization
- Power limit
- Code red
- Event logs
- Measurement of energy quality
- Measurement of power generation electrical values
- Firmware update
- Functional inputs/outputs
- Data security

Technical data ST310

Measurements
- Measurement of power and energy in both directions and absolute values (A+, A-, |A|, R+, R-, R1, R2, R3, R4, S+, S-).
- Active energy measurement – class 0.2s, 0.5S or 1; reactive energy measurement (optional) - class 1, 2 or 3
- Measurement of voltage and current per phase, frequency and power factor

Maximum demand
- Programmable maximum demand integration period is generated by internal clock (typically 5, 10, 15, 30 or 60 minutes)

Multi-rate registration and TOU
- Programmable tariff structure (up to 4 tariffs)
- Up to 4 seasons and 4 weekly changeovers
- Up to 9 day types and 32 holidays
- Up to 9 daily changeovers

Internal Real-time clock with DST
- In accordance with IEC 62054-21
- Automatic DST switching (optional)
- Battery backup supply, optionally super-capacitor

Visual communication with meter
- LCD and display modes according to VDEW specifications
- Programmable selection of data and display sequence
- LED: 1000 imp/kWh/kvarh; 10 000 imp/kWh/kvarh for direct and CT connection; 40 000 imp/kWh (kvarh) for VT connection
- 2 push buttons on the meter cover
- OBIS data ID code: IEC62056-61

Optical port
- Physical layer according to IEC 62056-21
- DLMS communication protocol

Electrical ports (physical layer)
- Port A: RS 485 for communication with AMI Center (active)
- Port B: M-Bus master for communication with the switching module and other energy meters compliant with EN 13757-2

Wired M-Bus port (Port B)
- Physical layer according to EN 13757-2
- Communication protocol EN 13757-3
- Billing and service data can be periodically sent to the customer collecting devices (HAN communication) via wired M-Bus

Inputs and outputs
- 2 control inputs for tariff control
- 1 pulse output
- 1 S0 input
- 1 (optionally 2) control output with bi-stable relay (5 A)

Communication protocol
- Optical port and port A: DLMS (IEC 62056-46)
- Port B: M-Bus (EN 13757-3)

Billing profiles
- Billing profile 1: recording billing data at the end of the programmable billing period with automatic reset of maximum demand
- Billing profile 2: recording billing data in case of fraud detection without reset of maximum demand
- Both profiles are programmable with up to 32 channels for billing values

Load profiles
- 4 load profiles (10 channels each) plus additional 4 M-Bus profiles for registration of billing data from other types of measuring devices (multi-utility)
- Programmable and independent registration periods (5 to 60 minutes, 1 to 24 hours)

Log books
- Standard log book
- Fraud detection log book
- Disconnector control log book
- M-Bus log book
- Quality event log book
- Long power interruption log
- 4 M-Bus event logs which contain recorded events from other types of measuring devices connected to M-Bus port

Energy quality measurement
- Maximum and minimum voltage registration
- Voltage variation registration
- Maximum current registration
- Outage registration (short outage – Event counter, long outage – Long power interruption log)
- Under-voltage and over-voltage measurement and registration in Quality Event log book

Fraud detection
- Detection of meter cover opening / closing
- Detection of terminal block cover opening/losing
- Detection of wrong authorization for meter parameterization
- Detection of strong magnetic field
- Detection of neutral conductor interruption
- Recording of events in the Fraud event log book

Power limiting
- Power or current limiting of electricity consumers by defining the limit value of power or current in the dedicated meter register
- Programmable Tolerance time and Penalty time (can be set in the meter
- Disconnector control log book recording switch on/switch of events

Code Red
- Enables synchronous power limiting of groups (large number) of users in case of irregular situation on distribution network (e.g. lack of power)

Firmware update
- Enabled locally or remotely with no impact on accuracy, parameter configuration or billing data

Multi-utility readings
- Collecting billing data from G, W, H meters
- Connection over wired M-Bus port, optionally wireless M-Bus extension which can be connected to the wired M-Bus port

Support for customer display
- Display of data from the meter on the In-home display (optional)

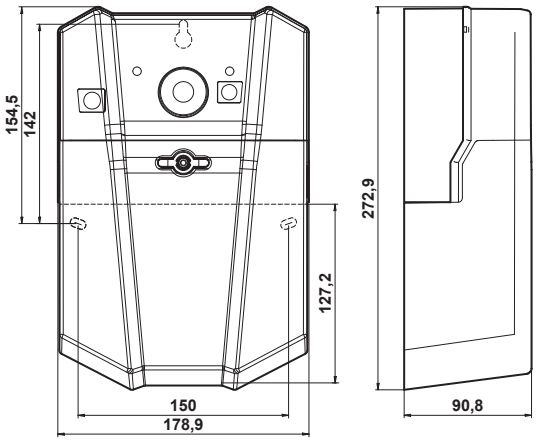
Data protection
- Local parameterization is protected by multi-level passwords and push button positioned under terminal block cover

No-power reading
- Local reading via display or optical port
- Integrated battery supply
- No-power reading is automatically switched off after 20 seconds of inactivity. In the battery mode, a user enters reading and parameterization of the meter by long press of the right button

Current terminal block
- For current up to 60 A: for all types of conductors up to 16 mm^2
- For current up to 120 A: for all types of conductors up to 35 mm^2

Compact meter case
- Dimensions and mounting points in accordance with DIN 43857
- High quality, transparent, reinforced, self-extinguishing polycarbonate case
- IP54 protection against water and dust (in accordance with IEC 60529)

Accuracy class	
active energy	1 or 2 (A or B) (direct connection) 0.5S or 1 (C or B) (CT connection) 0.5S (C) (CT/VT connection)
reactive energy	1, 2 or 3 for all types of connection
Nominal/maximum current	direct connection: 5 A/120 A (EN50470-1) CT: 5A/6 A (EN50470-1) CT/VT: 1 A/6 A (EN50470-1)
Minimum current I_{min}	direct connection: 0.25 A CT: 0.05 A VT: 0.01 A
Nominal voltage, U_n	Direct connection: 3x(110-230)/(190-400) V CT connection: 3 x 230/400 V CT/VT connection: 3 x 58/100 V Aron connection: 3 x 100 V
Voltage range:	80% – 115% U_n
Frequency	50 Hz
Ports and protocols	
optical port	IEC 62056-21, IEC62056-46 (DLMS) protocol
electrical port	wired M-Bus master (EN 13757-2), EN 13757-3
RS485	DLMS/COSEM
Comm. module (optional)	PLC, GPRS/3G
Switching module (optional)	3x230 V (3x90 A; 3x120 A), IEC 62055-31, UC2/UC3
Self-consumption	IEC 62053-21/23/61
Insulation voltage	4 kV, 50 Hz, 1 min
Shock voltage	6 kV, 1.2/50 µs
Operational temperature range	-40 °C - +70 °C
Storage temperature range	-40 °C - +80 °C
IP protection	IP54, according to IEC 60529
Dimensions	273 x 150 x 91 mm
Weight	0.9 kg



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