

Modular meters

ST310



Three-phase modular smart electricity meter for industrial and commercial consumers with plug-in communication and switching modules



ST310 is three-phase, MID-certified, modular smart meter designed for the measurement of active and reactive energy of commercial consumers, with direct or transformer grid connection (CT or CT/VT). AMI system integration is enabled by connecting optional plug-in communication module (CMxYS - PLC or GPRS/3G/LTE communication) and switching module (SD30S). Both plug-in modules are mounted under protective terminal cover.

Direct grid connection version of ST310 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

- Measurement of electrical values
- Integrated Real-time clock with DST
- Flexible tariff policy
- Maximum demand
- RS485 port
- Optical port
- MID certificate
- DLMS/COSEM
- Fraud detection
- No-power reading and parametrization
- Billing profile / profiles
- Load profiles
- Power limit
- Code red
- Event logs
- Measurement of energy quality
- Firmware update
- Functional inputs / outputs
- M-Bus port / Wireless M-Bus for G, W, H meters readout
- In-home customer display
- Data security

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 – Index classes A, B, and C, reactive energy measurement (optional) - Class 1, 2 or 3, measurement of voltages and currents per phases, measurement of frequency and power factor, calculation of neutral phase current

Maximum demand

- Programmable maximum demand integration period is generated by internal clock (typically 1, 5, 10, 15, 30 or 60 minutes)

Multi-rate registration and TOU

- Programmable tariff structure (up to 4 tariffs)
- Multiple seasons, weekly programs, day types and holidays
- Up to 9 daily changeovers

Internal Real-time clock with DST

- In accordance with IEC 62054-21
- Automatic DST (Daylight Saving Time) switching
- 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) for direct and CT connection; 4000 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
- Communication protocol DLMS (IEC 62056-46)

Electrical port (physical layer)

- Port A (for communication with AMI Center): RS 485 (active)
- Port B (for communication with the switching module and other energy meters)
- Wired M-bus master (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 impulse output
- 1 SO input
- 1 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 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

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 mm²
- For current up to 120 A: for all types of conductors up to 35 mm²

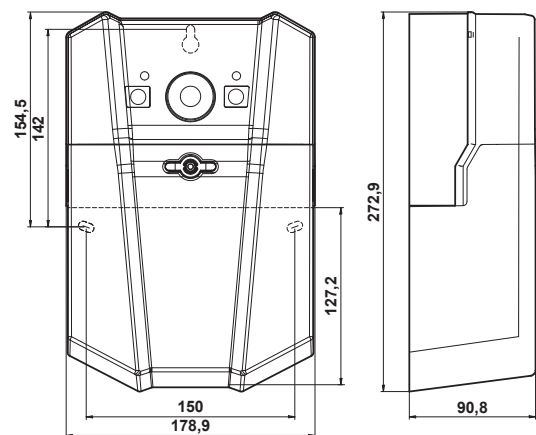
Compact meter case

- High quality, transparent, reinforced, self-extinguishing polycarbonate case
- IP54 protection against water and dust (in accordance with IEC 60529)

Meter quality

- High accuracy and long term stability of metering elements. No recalibration required during meter lifetime
- High meter reliability
- High immunity to EMC

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 and 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/LTE
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 (mm)	273 x 150 x 91
Weight	0.9 kg



Meter&Control d.o.o. T +381 11 371 36 21
Tršćanska 21 F +381 11 371 36 22
11080 Zemun office@meterandcontrol.com
Srbija www.meterandcontrol.com

Solutions for smart energy management