

# Modular meters

## ST300



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



ST300 is three-phase modular smart meter designed for the measurement of active and reactive energy of commercial and industrial consumers, with direct or transformer grid connection. ST300 can also be used in single-phase networks. AMI system integration is enabled by connecting optional plug-

in communication module (PLC or GPRS/3G/LTE) and switching module. Both plug-in modules are mounted under protective terminal cover.

ST300 is compliant with all relevant standards and regulations.

### Key features

- Measurement of electrical values
- Integrated Real-time clock with DST
- Flexible tariff policy
- Maximum demand
- RS485 port
- Optical port
- 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
- Data security

**Measurements**

- Measurement of power and energy in both directions and absolute values (A+, A-, |A|, R+, R-, optionally R1, R2, R3, R4)
- Active energy measurement – Index classes 0,2s, 0,5s or 1, reactive energy measurement - Class 2 or 3
- Measurement of voltages and currents by phases, frequency and power factor

- 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/COSEM (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) compliant with EN 13757-2

**Inputs and outputs (optional)**

- 2 control inputs for tariff control
- 2 tariff outputs (100 mA)
- 2 pulse outputs
- 1 control output with bi-stable relay (6 A)

**Communication protocol**

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

**Billing profiles**

- Billing profiles (registered energy and maximum demand values by tariffs) are generated and stored for the last 18 billing intervals

**Load profiles**

- 4 load profiles with 7 channels each
- Independent, programmable registry intervals (5-60minutesm 1-24 hours)
- Sufficient memory (4 320 registries, i.e. 15-minute average load profile (1 channel) is stored for 45 days)

**Log books**

- Standard log book with up to 200 logs and states
- Quality event log book
- Fraud detection log book
- Disconnect control log book

**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 (optional)**

- Power or current limiting of electricity consumers by defining the limit value of power or current in the dedicated meter register
- Dedicated log book (10 switching module disconnections / connections)

**Code Red (optional)**

- 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

**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<sup>2</sup>
- For current up to 120 A: for all types of conductors up to 35 mm<sup>2</sup>

**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

**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 10 daily changeovers

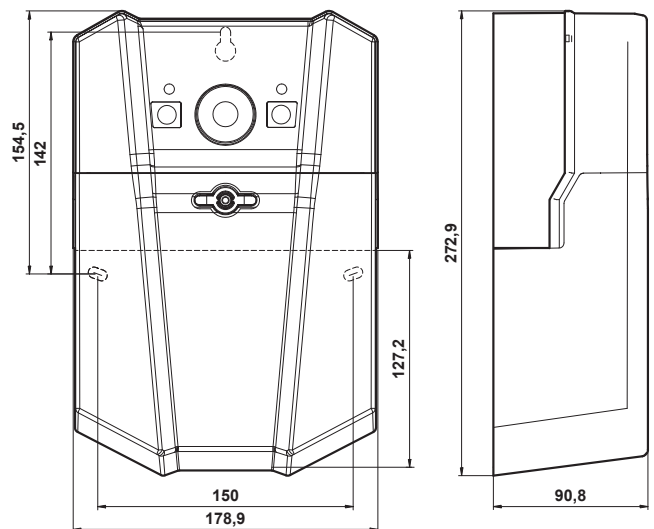
**Internal Real-time clock with DST**

- 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

Accuracy class	
active energy	0,2s, 0,5s or 1
reactive energy	2 or 3
Nominal and maximum current	
direct connection	5 (60) A, 5 (120) A
transformer connection	1 (6) A, 5 (6) A
Minimum current I <sub>min</sub>	0,05 I <sub>n</sub>
Nominal voltage, U <sub>n</sub>	3x230/400 V, 3x400 V, 3x57,7/100 V, 3x100V, 230 V
Voltage range	0,8 U <sub>n</sub> - 1,15 U <sub>n</sub>
Frequency	50 Hz
Ports and protocols	
optical port	IEC 62056-21 (physical layer) IEC 62056-46 (DLMS) communication protocol
electrical port A	RS485 IEC 62056-46 (DLMS) communication protocol
electrical port B	wired M-Bus master (EN 13757-2) EN 13757-3 communication protocol
Comm. module (optional)	PLC, GPRS/3G/LTE
Switching module (optional)	3x230 V (3x90 A; 3x120 A), IEC 62055-31, UC2/UC3
Self-consumption	< 2 W
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	-40 °C - +80 °C
IP protection	IP54, according to IEC 60529
Dimensions (mm)	273 x 177 x 91
Weight	0,9 kg



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