ELGAMA ELEKTRONIKA

dlms

From SIMPLE

- Accuracy class 1.0 (B)
- Active energy measurement
- Single-tariff
- Optical communication interface
- Data storage in non-volatile memory

To MULTIFUNCTIONAL

- Accuracy class 1.0 (B) or 0.5s (C)
- Active, reactive energy (in 4-quadrants) and maximum demand measurement
- Multi-tariff
- Optical and electrical communication interfaces
- Internal communication modules
- Load profiles
- Internal relay for user disconnection
- Extended anti-tamper features
- Events logbook
- Internal real-time clock with changeable Li-ion battery or Super-Cap backup
- Relay output

GAMA 300

for residential, commercial and industrial metering

A new meter GAMA 300 has been developed for the very rapidly changing electricity market, adapted to deregulation and customers' growing demands. The electronic electricity meter GAMA 300 operates in three-phase electricity networks and is approved in accordance with IEC 62052-11, IEC 62053-21, IEC 62053-22, IEC 62053-23, EN 50470-1 and EN 50470-3. The electricity meter satisfies the requirements of Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on measuring instruments.
Additionally meter can be equipped with communication modules upon request, allowing easy connection of meters to AMR system directly. The GAMA 300 meter has a changeable (without uninstalling meter from site) Li-ion battery and an internal relay for remote user disconnection.

Measuring

The meter operates in three-phase electricity networks and measures:

- Active energy (bi-directional or unidirectional) or
- Active energy (unidirectional) and Reactive energy (import-export)
- Active energy (bi-directional) and Reactive energy (in 4 quadrants)
- Maximum Demand with date & time in meters with internal clock
- Registration of reactive power, if tan phi exceeds predefined limit
- Contractual power limit registration
- [Optional] Load profiles
- [Optional] Instantaneous values (A, V, kW, kVAr, kVA, cos φ, Hz) of each phase

Tariff module

The GAMA 300 meter can be single-tariff or multi-tariff. The multi-tariff modification of the meter GAMA 300 has an internal real-time clock with Li-ion or/and Super-Cap backup and a complex tariff structure (Time-Of-Use). Active and passive tariffs table is available.

Number of energy tariffs	Up to 4 tariffs
Number of seasons	Up to 12-tariff seasons
Number of week profiles	Up to 12-week profiles
Number of day profiles	Up to 16-day profiles
Special days	Up to 16 permanent and 64 movable days
Number of maximum demand tariffs	Up to 4 tariffs

Data storage

The GAMA 300 meter has non-volatile memory, which allows to store metering data without the influence of power outages. Capacity of stored data:

Total energy	from installation date;
Monthly energy	of last 16 months;
Daily maximum demand values	up to 480 days;
Monthly maximum demand values	of last 16 months;
Events logbook records	up to 100 records for each of 13 independent events
[Optional] load profiles	up to 10 (programmable) channels.

Billing

At the end of the billing period, the billing period reset signal triggers the storage of the current values to the non-volatile memory. The billing period reset may be initiated:

Manually:	by pressing push button
Automatically (programmable):	on decade days; on ½ month; on predefined day; monthly.
Remotely:	by communication interface

Load Profiles

To help utilities and customers to meet deregulated market needs, the meter GAMA 300 can have programmable load profiles up to 16 channels (any of all measured energy, power type and average instantaneous value during the integration period):

Load profile capacity at 30 min. integration period	up to 654 days for 1 channel up to 150 days for 16 channels
Programmable integration period	1, 5, 10, 15, 20, 30 or 60 min.

Communications

The meter has optical communication interface in accordance with IEC62056-21 or DLMS. Optical communication interface allows the user to read data and to program the meter in the field or in the workshop.
GAMA 300 meter can have up to 2 electrical communication interfaces, allowing connection of meters to AMR system through external GSM/GPRS, RF, PSTN and LAN controllers:

- Primary electrical communication interface:
  - 20 mA current loop (IEC 62056-21 or IEC 62056-31 or DLMS)
- [Optional] Auxiliary electrical communication interfaces:
  - 20 mA current loop (IEC 62056-31 or DLMS)
  - RS485 (IEC 62056-31 or DLMS)
  - RS232 (IEC 62056-31 or DLMS)
  - M-bus (protocol M-bus)
- [Optional] The meter can have GSM/GPRS, RF, PLC communication modules, allowing connection of meters to an AMR system.

Outputs / Inputs

- Up to 4 electric pulse outputs (S0)
- Up to 2 LED test outputs
- [Optional] Internal latching relay for user disconnection on demand management
- Clock synchronization input
- [Optional] Relay output, normally open contacts are connected:
  - When specified energy tariff is valid;
  - For two programmed periods during the 24-hour interval (periods are set in 15 minutes step).

Security features

Hardware protection allows only authorized persons to access the meter:

- Two seals on main cover;
- Two seals on terminal cover;
- Improved resistance to permanent magnetic field;
- [Optional] Optical communication interface sealing.

Software protection allows only authorized persons to program the meter with software for meter programming and data reading:

- Meter programming feature is password protected; if incorrect password is entered four times a day, the communication interfaces will be locked for 24 hours. During that period communication is impossible.

The meter with internal clock has Events logbook registering the following events:

- Power outage log
- Change in number of phases log
- Power over-limit log
- Reverse current flow log
- Influence of magnetic field log
- Opening of meter cover log
- Opening of terminal cover log
- Clock setting log
- Parameter change log
- Internal error log

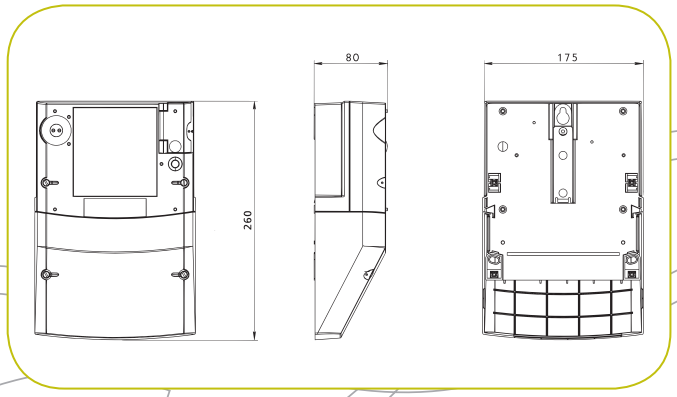
Power Quality Monitoring (Optional)

Over-voltage	up to last 100 events with date & time
Under-voltage	up to last 100 events with date & time
Over-current	up to last 100 events with date & time

Display

The GAMA 300 meter is equipped with LCD (Liquid crystal display). LCD contains 8 digits with programmable decimal point: 8-5 for whole numbers and 0-3 digits for decimal numbers. LCD displays majority of data accumulated in meter and parameterization constants. Features:

- Cyclic (automatic) and static (manual) data scroll;
- Data indication on LCD during power outages;
- Reverse current flow indication;
- Energy direction, load quadrant, phase sequence indicator;
- Li-ion battery (Super-Cap) status indication;
- Menu control by pushbutton or [optional] light signals.
- OBIS codes;
- [Optional] terminal cover openings.



Technical specifications

Ratings

System	Three-phase 4-wire or 3-wire
Accuracy class:	
• For active energy	class 1.0 (IEC 62053-21), class B (EN 50470-3)
• For active energy, CT only	class 0.5s (IEC 62053-22), class C (EN50470-3)
• For reactive energy	class 2.0 (IEC 62053-23)
Reference voltage, V:	
• 4-wire networks	3x220/380; 3x230/400; 3x240/415; 3x57.7/100; 3x63.5/110; 3x69.2/120; 3x120/208; 3x127/220
• Multirange	3x57.7/100...230/400
• 3-wire networks	3x100; 3x110; 3x120; 3x220; 3x230
Reference (maximum) current, A:	
• Directly connected	5(60); 5(80); 5(100); 5(120); 10(60); 10(80); 10(100);
• CT operated	1(1.25); 1(6); 5(6.25); 5(10);
Current threshold	0.4% I_b (0.1% I_n if CT operated)
Reference Frequency, Hz	50 or 60
Meter constant, imp/kWh, imp/kVArh	1...19999 (direct), 1...60000 (CT operated)
Power consumption per phase:	
• In voltage circuit	< 0.5W < 1.0 VA
• In current circuit	< 0.05 VA (< 0.5 VA if CT operated)
Temperature ranges:	
• Meter operating	-40°C to +70°C
• Meter storage	-40°C to +70°C

Internal real-time clock

Accuracy	< 0.5 s/24h (T = 23°C)
Backup power supply of the clock	Li-ion battery and/or Super-Cap
Li-ion battery	Changeable on operating meter
Operation duration using only backup:	
• Li-ion battery	> 10 years
• Super-Cap	up to 7 days

Case & Dimensions

Case	UV stabilized polycarbonate
Insulation	Protective class II
Dimensions, mm	260 x 175 x 80
Protection class	IP51

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