

Anexa 7

Technical Specifications for smart meters and communication modules

Total			
	1 phase	3 phase direct connection	3 phase TC Connection
Total Meters	29	5	0

TECHINICAL SPECIFICATIONS SMART METERS			
	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
Accuracy class: for Active Energy for Reactive Energy	B 2	B 2	C 2
Reference current	min. 5 A	min. 5 A	min. 5 A
Maximum current, Iref	min. 60 A	min. 80 A	min 5 A
Minimum current	0.05 Iref for active / 0.05 Iref for reactive	0.05 Iref for active / 0.05 Iref for reactive	0.01 Iref for active / 0.02 Iref for reactive
Reference voltage, Un	230 V	3×230/400 V	3×230/400 V
Reference frequency	50 Hz (± 2 %)	50 Hz (± 2 %)	50 Hz (± 2 %)
Inherent consumption (EN 50470-3 , IEC 62053/21-22-23, IEC 62053-61, without communications overhead) of current circuit, not more than of voltage circuit, not more than	1 VA 2 W / 10 VA	1 VA 2 W / 10 VA per phase	1 VA 2 W / 10 VA per phase
Inherent consumption of voltage circuit (IEC 62052-11, IEC 62053/21-22-23, IEC 62053-61, including communication overhead), not more than	5 W / 10 VA	3 W / 10 VA per phase	3 W / 10 VA per phase
Internal clock accuracy (IEC 62052-21)	≤ 0.5 s / 24 h	≤ 0.5 s / 24 h	≤ 0.5 s / 24 h
Insulation strength (IEC 61010-1-90)	4 kV, 50 Hz, 1 min	4 kV, 50 Hz, 1 min	4 kV, 50 Hz, 1 min
Shock voltage (IEC 60060-1)	6 kV, 1.2/50 μs	6 kV, 1.2/50 μs	6 kV, 1.2/50 μs
Electrostatic discharge (IEC 61000-4-2)	15 kV	15 kV	15 kV
High frequency radiant field (IEC 61000-4-3)	≥ 30 V/m	≥ 30 V/m	≥ 30 V/m
High frequency interferences (IEC 6100-4-4)	4 kV	4 kV	4 kV
Surge immunity test (IEC 6100-4-5)	6 kV	6 kV	6 kV
IP rating	IP54	IP54	IP54
Mechanical class	min. M1	min. M1	min. M1
MTL (Mean Total Lifetime)	not less 15 years	not less 15 years	not less 15 years
MTBF (Mean Time Before Fail)	less than / year 0.5%	less than / year 0.5%	less than / year 0.5%
CERTIFICATES	REQUIRED SPECIFICATIONS		

Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three- phase transformer connected
MID certificate	Should be issued by European recognized lab		
PLC certificate	PLC PRIME 1.3.6 and 1.4		
Production certificate	According to MID (mode D)		
ISO	9001		
FUNCTIONAL SPECIFICATIONS - METERING PARAMETERS	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
METERING DATA	- Actual meter readings; - Periodic (billing) meter readings: Day, month; - Interval meter readings: 15', 30', 60'; day - Timestamp.		
MULTI-RATE METERING	- Up to 4 tariff registers, flexible adjustment of tariff intervals; - Min. 4 changeovers per day; - Tariff indicator is displayed on LCD and transmitted to an external system; - Active and passive tariff plans, configurable activation time of the passive tariff plan.		
MEASURED VALUES	- Active energy, class B, export/import; - Reactive energy, class 2, 4 quadrants; - Apparent energy; - Active/reactive power, apparent power; - Phase voltage/current, instantaneous value (True RMS, integration period 1 s); - Voltage angle values relative to the voltage in first phase and phase currents relative to relevant phase voltages.		
METERING CALENDAR	- Up to 4 seasons per year; - Up to 7 daily profiles per week; - Up to 30 special days per year; - Support of movable holidays.		
DATA STORAGE	- Non-volatile memory; - Not less than 3 interval profiles and 1 billing profile. - Storage capacity: - 15 minutes interval profile: not less than 45 days for 6 parameters - Asynchronous profile (spontaneous events), last entries data.		

OPERATING MODES	- Normal mode; - Energy saving mode - real time clock, opening sensors, and data displaying are active.		
POWER QUALITY CONTROL	- Quality indexes: ✓ average voltage; ✓ voltage sags and swells; ✓ outages; ✓ network frequency; ✓ THD for voltage/current harmonics; - Remote or local configuring of parameters thresholds and control actions.		
FUNCTIONAL SPECIFICATIONS - MANAGEMENT AND CONTROL PARAMETERS	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
DLMS/COSEM SUPPORT	- IEC 62056 compliant; - Object Identification System compliant; - Standard data models; - Standard communications protocols.		
DATA TRANSMISSION	- On demand; - By Schedule; - Remote HES request; - Local request (via optical port). - Internal interface for transformer connected meters (which is an integrated part of the data concentrator)		
SOFTWARE UPGRADE	- Remote (via communication channel); - Local (via RS-485 or optical port)		
FRAUD AND THEFT PROTECTION	- Non-stop monitoring, including sleep mode time; - Meter cover opening sensor; - Terminal block cover sensor; - Reverse meter connection control; - Strong magnetic field detection; - Events registering in relevant logs;		
BUILT IN CLOCK	- Real-time clock with 0.5 s accuracy per day; - IEC 62052-21 standard compliant; - External synchronization with HES		
EVENTS AND ALARMS HANDLING	- Continuous control of current state of meter functional nodes and alarms/events; - Standard set of events processing including: registration in special logs and registers, event report sending, states displaying; - Different types of event logs; - Asynchronous sending of Event;		

	- Notification can be configured for specific events.		
METER SELF CONTROL	- Built-in test for continuous self-control; - Quick response on severe error		
POWER LOAD CONTROL	- Basic relay (80 A) – for direct connected meters only - Control modes: ✓ remote (by command) ✓ local (by condition) ✓ manual - by push button - Basic relay status displayed on the meter LCD		
METER PARAMETRIZATION	- Remote (via communication channel) or local (via optical port); - Access rights assignment from HES;		
THRESHOLDS MANAGEMENT	- Threshold for active power, active power demand, current/voltage (per phase), differential current (direct connected meters only); - Remote or local configuring of parameters thresholds; - Possibility to disconnect consumer from the network, when a threshold is crossed.		
BACK-UP POWER SUPPLY	- Supports clock/meter operation when the power is off; - Battery, lifetime - not less than 10 years.		
FUNCTIONAL SPECIFICATIONS - SECURITY	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
INFORMATION SECURITY	- Communication encryption (AES-GCM-128 security suite); - Data access according to access rights stated; - Firmware protection.		
FUNCTIONAL SPECIFICATIONS - INTERFACES	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
OPTICAL PORT	- IEC 62056-21 Compliant; - Data rates - up to 19200 bps; - Password protected; - Multiple access levels.		
BUILT-IN DISPLAY	- LCD with min 8 lines;		

	- Configurable decimal places (up to 3 digits); - Manual and automatic scrolling; - Backlight.		
TEST OUTPUTS	- 2 led outputs; - Active and reactive energy;		
PUSH BUTTON	- Scroll meter screens; - View data on LCD, when the power is off.		
RS485 SERIAL INTERFACE	- EIA/TIA-485A standard; - Baud rate - up to 38400 bps		
FUNCTIONAL SPECIFICATIONS - REMOTE COMMUNICATION	REQUIRED SPECIFICATIONS		
Specifications	Smart meters, single-phase	Smart meters, three-phase direct connected	Smart meters, three-phase transformer connected
POWER LINE COMMUNICATION (PLC)	- OFDM PLC Module; - PRIME compliant with specification ITU-T G.9904 - CENELEC and FCC bands - Auto-discovery; - Repeating.		
REMOTE DISCONNECTION	- Bi-stable switching module for local or remote disconnection/reconnection; - Min. 10 000 mechanical disconnections/reconnections under maximum load.		