ADDAX

ADVANCED SERIES METERS

BASED ON UP-TO DATE ADDAX TECHNOLOGY FOR SMART METERING

Datasheet

add new tech to your business!

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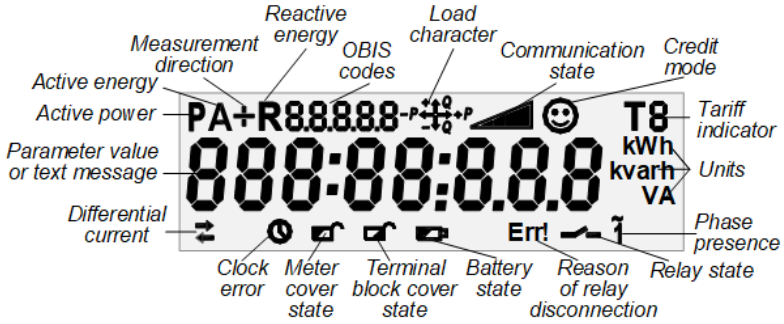
AD11A.1/AD11A.2/AD11A.8

DIRECT CONNECTED MULTI-FUNCTION & MULTI-TARIFF SINGLE-PHASE ELECTRONIC METER DESIGNED FOR USE IN AMI/AMR SYSTEM

OVERALL VIEW

DISPLAY INDICATIONS



KWh Kvarh VAh	Active energy *(export/import)* Reactive energy *(4 quadrants)* Apparent energy
V A	True RMS voltage True RMS current
	Power quality indices
	Built-in real time clock
	Event Log
	Profiles
IP54	Protection level
	Backup power supply
	Standard data model, open protocols
	Optical port
	Basic and extra relay
	Sensor of meter cover opening
	Sensor of terminal block cover opening
	Magnetic field sensor
	Interfaces for local and remote communications
	Authentication & Encryption

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FUNCTIONALITY

DLMS/COSEM SUPPORT
- Standard data model
- Standard communication protocols
- Interoperability.

MEASURED QUANTITIES
- 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 DATA
- Actual meter readings
- Periodic (billing) meter readings: Day, week, decade, month
- Interval meter readings: 15', 30', 60'
- Timestamp.

MULTI-RATE METERING
- Up to 6 tariff registers, flexible adjustment of tariff intervals
- Up to 12 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.

CALENDAR
- Up to 12 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;
- Capacity depends on data type and number of parameters;
- Up to 3 interval profiles and 1 billing profile. For example:
  - *15 minutes interval profile*: 6 parameters for about 63 days
  - *hourly interval profile:* 6 parameters for about 13 days
  - *monthly billing profile:* 6 parameters for about 110 months
- Voltage&current profile for 10-min RMS phase voltage/current based parameters – 15 days
- Power quality profile, for example for week measuring period – 6 weeks
- Asynchronous profile, last entries.
- Based on FIFO mechanism.

METER PARAMETERIZATION
- Remote (via communication channel) or local (via optical port)
- Access rights assignment from HES

Events registering.

EVENTS & 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.

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
- Events registering.

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
- Events registering.

FRAUD & THEFT PROTECTION
- Continuous monitoring, including sleep mode time
- Fraud types under control:
  - meter cover opening
  - terminal block cover opening
  - inadmissible differential current
  - reverse meter connection;
  - detection of strong external magnetic field
- Reed switch for magnetic field detection
- Events registering.

INFORMATION SECURITY
- Communication encryption (AES-GCM-128 security suite)
- Data access according to access rights stated
- Firmware protection
- Events registering.

METER SELF-CONTROL
- Built-in test for continuous self-control
- Quick response on severe error
- Events registering.

DATA TRANSMISSION
- Data transmission on demand or by schedule
- Request types:
  - Remote HES request (via communication channel)
  - Local Hand Held Unit request (via optical port).

SOFTWARE UPGRADE
- Remote (via communication channel) or local (via optical port)
- Image Block Transfer Mechanism is used.

POWER LOAD CONTROL
- Basic relay (80-100 A)
- Control modes:
  - remote (by command)
  - local (by schedule)
  - manual - by push button
- Basic relay status displayed on the meter LCD
- Up to 2 extra relay (5 A) to control external contactors of consumer's appliances
- Events registering.

BUILT-IN CLOCK
- Real Time Clock (RTC), accuracy 0,5 s. per day
- IEC 62052-21 standard compliant
- External synchronization.

BUILT-IN DISPLAY
- LCD, 8 digits, configurable decimal place (up to 3 digits)
- Special symbols, data identification according to IEC 62056-61 (OBIS)
- Service and client lists of parameters to be displayed
- Manual and automatic modes of screens scrolling
- Display self-testing
- Configurable backlight mode.

TEST OUTPUTS
- Outputs: 2 optical outputs (LEDs), optical port
- Parameters under control: active energy, reactive energy.

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FUNCTIONALITY

BACKUP POWER SUPPLY
- Supports clock/meter operation when the power is off
- Supercapacitor/Battery
- Battery lifetime - not less than 15 years.

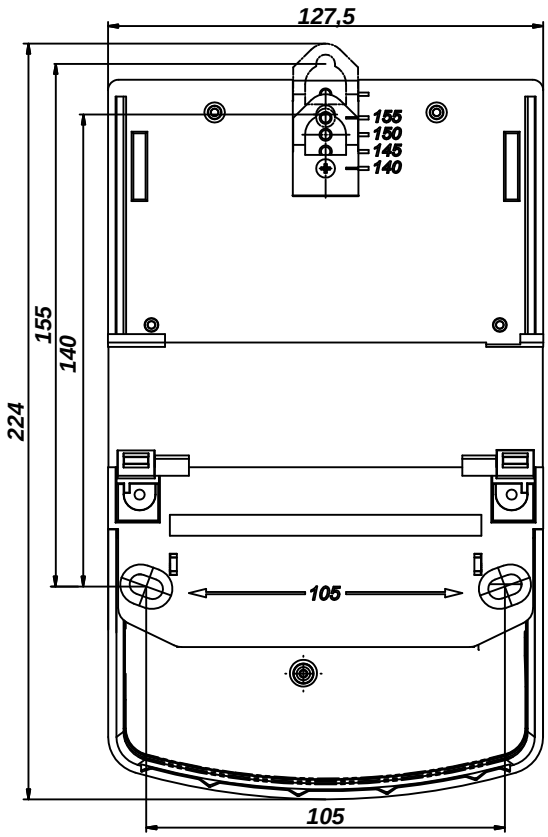
PUSH BUTTON
Used for different purposes:
- To manually disconnect/reconnect the customer's load
- To scroll the meter screens
- To view on data LCD when the power is off.

POWER LINE COMMUNICATION (PLC)
- Built-in OFDM PLC modem
- ITU-T G.9904 (PRIME), ITU-T G.9903 (G3-PLC) standards compliant
- PLC features:
  - CENELEC A Band and FCC Band
  - EMC standards compliance
  - Auto-discovery
  - Repeating.

OPTIONAL INTERFACES FOR LOCAL OR REMOTE COMMUNICATION
- **RF Communication:**
  - Built-in RF modem with internal antenna
  - Provides communication channel between the meter and HES as a part of hybrid PLC+RF solution
  - Modulation: FSK
  - G3-PLC compliant MAC layer
  - Upper layers: 6LoWPAN, IPv6, UDP, DLMS
  - Carrier frequency: MHz subrange.
- **RS-485 interface:**
  - Meets EIA/TIA-485A standard;
  - Baud rate - up to 38400 bps;
  - Provides communication with with external devices
  - Serves as a link between the meter and the extension communication module
  - Placed under the meter terminal block cover.

OPTICAL PORT
- IEC 62056-21 standard compliant
- Data transmission rate – up to 115200 bps
- Access rights determined by security features on access levels
- Password protected
- Possibility to block logging after a number of failed login attempts
- Intended for direct data exchange, meter parameterization and firmware upgrade.

METER FIXING ELEMENTS AND DIMENSIONS



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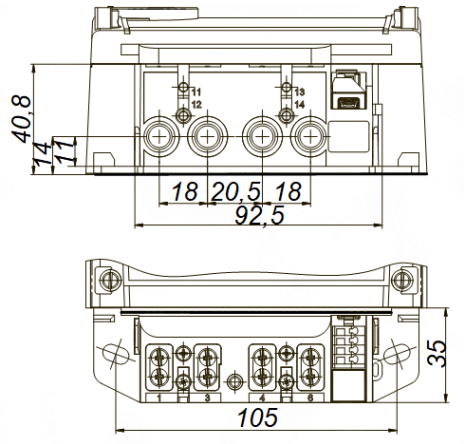
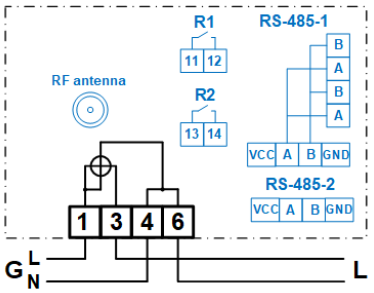
TECHINCAL SPECIFICATIONS

Accuracy class: - **Active energy** - **Reactive energy**	 B (1) 2
Reference current, Iref (depending on the meter model)	5/10 A
Maximum current, Imax (depending on the meter model)	60/80/100 A
Minimum current: - **Active energy** - **Reactive energy**	 0.05 Iref 0.05 Iref
Starting current: - **Active energy** - **Reactive energy**	 0.004 Iref 0.005 Iref
Reference voltage, Un (depending on the meter model)	1×120/208 V; 1×230/400 V;
Voltage range	0.7 Un ... 1.2 Un
Reference frequency	50 Hz (± 2 %)
Meter constant: - **Active energy** - **Reactive energy**	 500/1 000 imp/kWh 500/1 000 imp/kvarh
Temperature range	-40°C … +70°C
Internal clock	quartz crystal 32 kHz
Clock accuracy (at 25°C) (IEC 62052-21)	≤0.5 s /24 h
Communication interfaces bit rates (with coding, on physical layer)	up to 21-64 kbps (PRIME) 20-46 kbps (G3-PLC)
Inherent consumption of current circuit, not more (IEC 62053-61)	1 VA
Inherent consumption of voltage circuit, active/total, per phase, not more than (IEC 62053-61)	2 W / 10 VA
Insulation strength (IEC 61010-1-90)	4 kV, 50 Hz, 1 min
Shock voltage (IEC 60060-1)	8 kV, 1.2/50 μs
Electrostatic discharge (IEC 61000-4-2)	15 kV
High frequency radiant field (IEC 61000-4-3)	≥ 30 V/m
High frequency interferences (IEC 61000-4-4)	4 kV
Surge immunity test (IEC 61000-4-5)	6 kV
IP rating	IP54
Mechanical class	M1
Electromagnetic class	E2
Mean total lifetime, not less	20 years
MTBF, less than, per year	0.5 %
Dimensions	127.5 x 213,5 x 62 mm

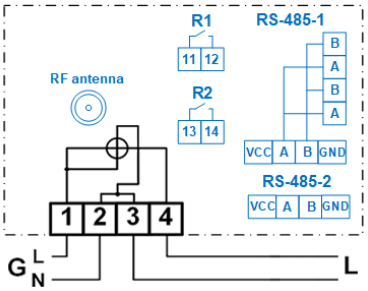
TERMINAL BLOCK DIMENSIONS



CONNECTION DIAGRAM



IEC



ANSI

DESIGN FEATURES

DESIGN
- Compliance to DIN 43857 standard specifications

HOUSING
- Light-tone non-flammable polycarbonate

MOUNTING
- By 3 fixing points or on DIN rail (35 mm)

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SELECTION GUIDE

Parameters		AD11A.1											AD11A.2	AD11A.8
		7-1	8-1	9-1	10-1	11-1	12-1	13-1	14-1	15-1	16-1	17-1	3-1	10-1
Unom, V	1×230	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	1×120													✓
Inom, A	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Imax, A	60													
	80	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
	100												✓	
Fnom, Hz	50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	60													✓
Basic relay, A	80		✓	✓	✓	✓	✓	✓	✓		✓	✓		
	100	✓								✓			✓	✓
Additional relay		⊞	⊞	⊞	⊞	⊞	⊞	⊞	⊞	⊞	□	⊞	□	⊞
Power backup	Battery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Supercap.		✓	✓										
Main comm. channel	PRIME, G3-PLC	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓
	Hybrid PLC-RF				✓							✓		
Extension comm. port		⊞	RS-485	RS-485-1 RS-485-2	RS-485	⊞	⊞	RS-485	RS-485	⊞	RS-485	RS-485	RS-485-1 RS-485-2	RS-485

□ – replaceable battery

⊞ – negotiable option, up to 2 additional relays

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