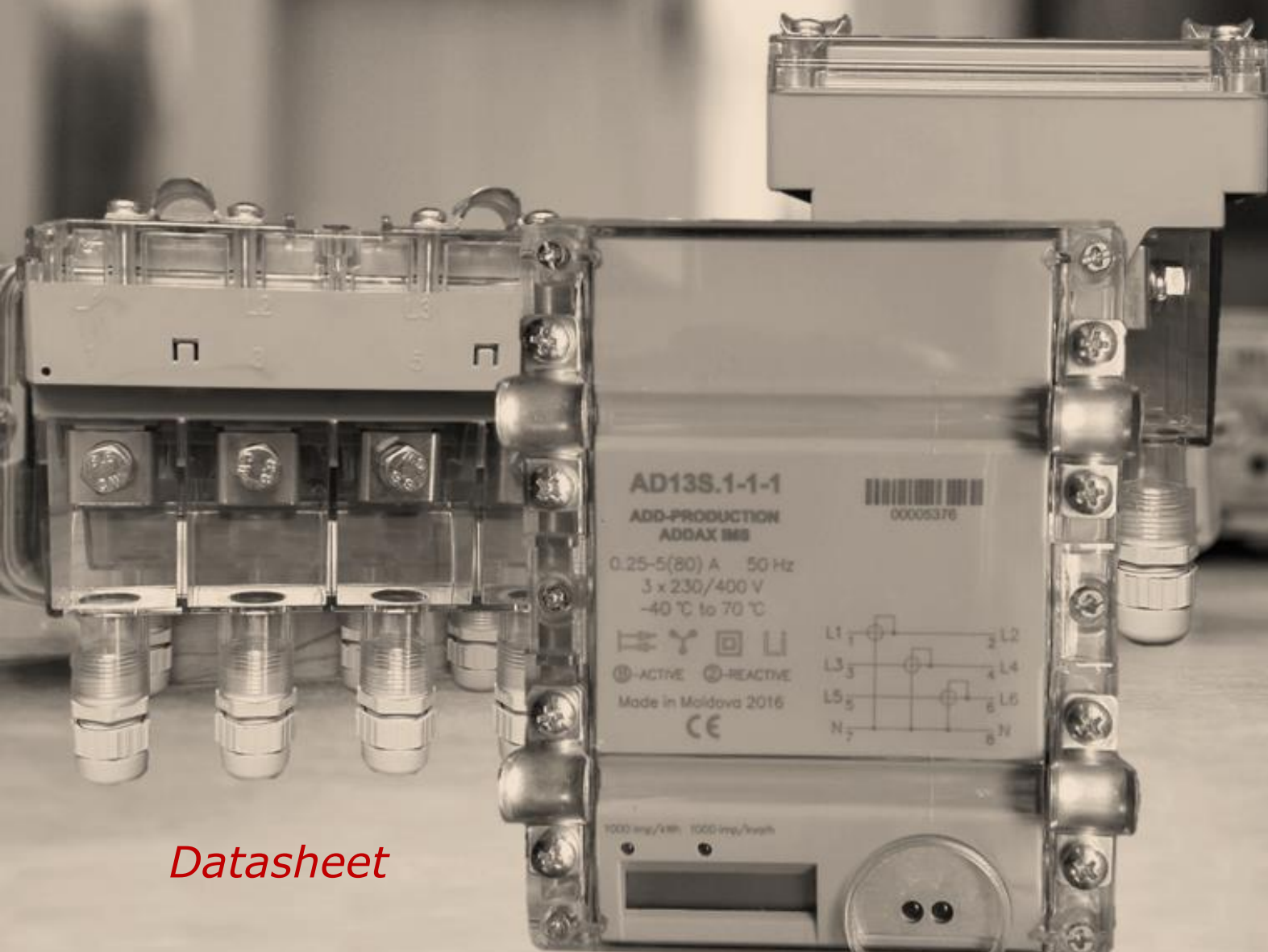


SMART POLE-MOUNTING METERS



Datasheet

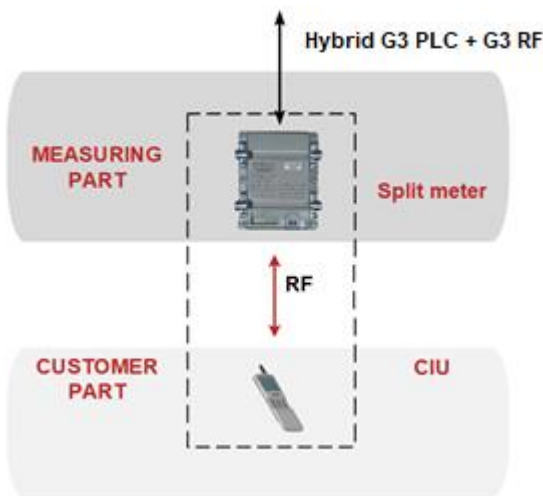
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**THREE PHASE
POLE-MOUNTING ELECTRICITY METER
DESIGNED FOR USE IN AMI/AMR SYSTEM**

OVERALL VIEW



ADDAX SPLIT SOLUTION



KWh KVArh	Active energy (<i>export/import</i>) Reactive energy (<i>4 quadrants</i>)
V A	Measured quantities
T1-T6	Multirate registration
	Built-in clock
	Event Log
	Load profile
I1≠I2	Detection of phase-neutral currents difference
IP65	Protection level
	Reserve power supply
	Standard data model, open protocols, DLMS/COSEM support
	Optical port
	Disconnecting relay
	Fraud detection
	PLC+RF hybrid solution
	RF interface for communication downwards with CIU
888	Data transmission to the Customer Interface Unit (CIU)

DLMS/COSEM SUPPORT

- Standard data model
- Standard communication protocols
- Interoperability

BUILT-IN CLOCK

- Real Time Clock (RTC), accuracy 0,5 s.
- IEC 62052-21 standard compliant
- Local synchronization
- Sleep mode, battery
- Daylight saving time support

MEASURED QUANTITIES

- Active energy, class C, export and import
- Reactive energy, class 2,4 quadrants
- Apparent energy
- Power, Max Demand
 - integration period: 15', 30', 60', 1 day
 - average interval: day, month
- Phase voltage/current, instantaneous value, RMS, neutral current, difference between phase and neutral currents

METERING DATA

- Actual meter readings
- Periodic meter readings: daily, monthly
- Interval meter readings: 5', 10', 15', 20', 30', 60'
- Timestamp

DATA STORAGE

- Non-volatile memory
- Capacity depends on data type and number of parameters and can be expanded for one type of data on the expense of another
- Up to 3 interval profiles and 1 billing profile. For example:
 - *daily profile for 10 parameters is stored for about 258 days;*
 - *monthly profile for 10 parameters - 213 months*

MULTI-RATE METERING

- Up to 6 tariff registers
- Up to 12 changeovers per day
- Tariff indicator is transmitted to paired CIU and to an external system
- Active and passive tariff plans, configurable activation time of the passive tariff plan

TEST OUTPUTS

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

LOAD CONTROL

- Built-in relay (80 A)
- Not less than 100 000 switchings on/off
- Continuous relay state control
- Relay status displaying
- Events registering

EVENTS HANDLING

- Continuous control for fraud and tamper events
- Standard set of events processing including: registration in the special log, states displaying,
- load switching off on special cases
- Timestamps
- up to 10 different logs depending on the event type, each of which about 200 events in average

BUILT-IN DISPLAY

- Built-in display to present metering data and service information
- LCD, 8 digits, configurable decimal place
- Special symbols, data identification according to IEC 62056-61 (OBIS)
- Service/client lists of parameters
- Display self-testing
- Low credit alert.

ELECTRICAL ENERGY QUALITY CONTROL

- Quality indexes:
 - average voltage
 - voltage sags and swells; minimum and maximum voltage values
 - outages
 - network frequency
 - angles between phases

THRESHOLDS MANAGEMENT

- Possibility to configure parameters thresholds
- Possibility to disconnect consumer from the network, when a threshold is crossed
- Events registering

FRAUD & THEFT PROTECTION

- Mounting in out-of-reach place;
- Continuous monitoring, including sleep mode time
- Fraud types under control:
 - Detection of inadmissible phase-neutral currents difference;
 - Reverse current detection;
 - Protective seals.
- Events registering

METER SELF-CONTROL

- Built-in test for continuous self-control
- Quick response on severe error
- Events registering

SOFTWARE UPGRADE

- Remote (via communication channel) or local (via optical port)
- Events registering

SECURITY

- AES-GCM-128 security suite encryption
- Data access according to granted rights
- Firmware protection
- Events registering

HYBRID COMMUNICATIONS

- Two channels are supported:
 - Power Line Communication (PLC)
 - Built-in PLC modem
 - G3-PLC, ITU-T G.9903 standard compliant
 - PLC features:
 - CENELEC A Band
 - EMC standards compliance
 - Auto-discovery
 - Repeating
 - G3 RF Communication
 - Built-in RF modem with internal antenna.
 - Modulation: 2-FSK
 - G3-PLC compliant MAC layer
 - Upper layers: 6LoWPAN, IPv6, UDP, DLMS
- The route is built with hop-to-hop selecting between the "best" channel
- The channel selection is automatically done during network setup and dynamically adjusted based on the media status

RF COMMUNICATION

- Data transmission distance: up to 200 m in the open space.
- HAN communication downwards with CIU

DATA TRANSMISSION

- Data transmission on demand or by schedule
- Request types:
 - Data concentrator request (via communication channel)
 - Hand Held Unit request (via optical port)
- Data transmission to customer (CIU) over RF on schedule

OPTICAL PORT

- IEC 62056-21 standard compliant
- Data transmission rate 115200 bps
- Possibility of local data exchange and meter parameterization

PREPAYMENT FUNCTIONALITY

- Pre-payment and post-payment mode support
- STS prepayment standard (IEC62055-41/51).
- Energy measuring and displaying in kWh and cash (*optionally*)
- Functionality to disconnect consumers' load when their credit amount is exhausted
- Consumer low credit notification

METER PARAMETERIZATION

- Locally via optical port and using dedicated smart cards via NFC
- Differentiation of access rights

BACKUP POWER SUPPLY

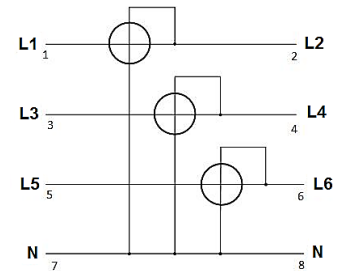
- Replaceable battery for meter backup supply in sleep mode
- Battery lifetime - not less than 20 years



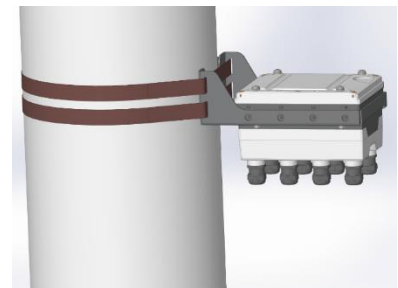
TECHINCAL SPECIFICATIONS

Accuracy class:	
- Active energy	B
- Reactive energy	2
Reference current, Iref	5 A
Maximum current, I_{max}	80 A
Minimum current	0.05 Iref
Starting current:	
- Active energy	0.004 Iref
- Reactive energy	0.005 Iref
Reference voltage, Un	3x230/400 V
Voltage range	0.8 Un ... 1.2 Un
Reference frequency	50 Hz
Meter constant:	
- Active energy	1000 imp/kWh
- Reactive energy	1000 imp/kvarh
Temperature range	-40°C ... +70°C
Clock accuracy (at 25°C) (IEC 62052-21)	≤0.5 s /24 h
Data transmission rate (on physical layer, with coding)	
- G3 RF	38,4 kbps
- OFDM G3-PLC	20-46 kbps
Inherent consumption of current circuit, not more (IEC 62053-61)	0.2 VA
Inherent consumption of voltage circuit, active/total, not more (IEC 62053-61)	2 W / 10 VA (per phase)
Insulation strength (IEC 61010-1-90)	4 kV, 50 Hz, 1 min
Shock voltage (IEC 60060-1)	12 kV, 1.2/50 μs
Electrostatic discharge (IEC 61000-4-2)	15 kV
High frequency radiant field (IEC 61000-4-3)	10 V/m
High frequency interferences (IEC 61000-4-4)	4 kV
Surge immunity test (IEC 61000-4-5)	6 kV
IP rating	IP65
MTBF	96 000 hours
Mean total lifetime, not less	20 years
Dimensions, mm	134x164.8x169.2

CONNECTION DIAGRAM



INSTALLATION



SUPPORT OF OUTDOOR INSTALLATION

Possibility of installation in an unreachable place, e. g. on an electricity pylon

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