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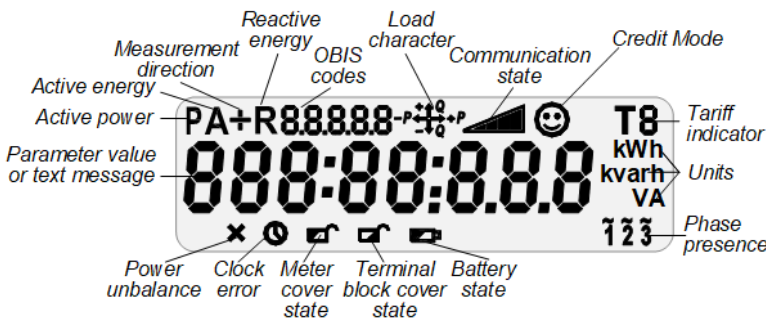
## AD13A.3-14-1

### MULTI-FUNCTION & MULTI-TARIFF THREE-PHASE ELECTRONIC METERS DESIGNED FOR USE IN AMI/AMR SYSTEM

#### OVERALL VIEW



#### DISPLAY INDICATIONS



kWh kVArh VA	Active energy ( <i>export/import</i> ) Reactive energy ( <i>4 quadrants</i> ) Apparent energy
V A	Measured quantities
THD	Calculation of total harmonic distortion factor
T1-T6	Multirate registration
	Built-in clock
	Event Log
	Load profile
IP54	Protection level
	Backup power supply
	Standard data model, open protocols
	Optical port
	Relay for external contactors
	Sensor of meter cover opening
	Sensor of terminal block cover opening
	Magnetic field sensor
PLC	PLC universal platform
	Authentication & Encryption

**DLMS/COSEM SUPPORT**

- Standard data model
- Standard communication protocols
- Interoperability

**BUILT-IN CLOCK**

- Real Time Clock, accuracy 0.5 s.
- IEC 62052-21 standard compliant
- External synchronization
- Sleep mode, battery
- Daylight saving time support

**MEASURED QUANTITIES**

- Active energy, class C (0,5), export/import
- Reactive energy, class 2, 4 quadrants
- Apparent energy
- Power, Max Demand
  - ✓integration period: 15', 30', 60', day
  - ✓average interval: day, month
- Phase voltage/current, instantaneous value, RMS

**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
- Storage 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:
  - ✓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

**MULTI-RATE METERING**

- Up to 6 tariff registers
- 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

**TEST OUTPUTS**

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

**EVENTS & ALARMS HANDLING**

- Continuous control of current state of meter functional nodes and alarms/events, timestamps
- Standard set of events processing including: registration in the special logs and registers, event report sending, states displaying, load switching off on special cases
- Different types of event logs

**BUILT-IN DISPLAY**

- LCD, 8 digits, configurable decimal place (up to 3 digits)
- Special symbols, data identification according to IEC 62056-61 (OBIS)
- Metering data and specified messages displaying
- Service/client lists of parameters
- Manual/automatic modes of scrolling
- Display self-testing
- Configurable backlight mode
- Sleep mode

**POWER LOAD CONTROL**

- Built-in extra relay (5 A), to control external contactors of consumer's appliances
- Control modes:
  - ✓remote (by command)
  - ✓local (by schedule)
- Events registering

**ENERGY 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
- Events registering

**FRAUD & THEFT PROTECTION**

- Continuous monitoring, including sleep mode time
- Fraud types under control:
  - ✓meter/terminal block cover opening
  - ✓strong external magnetic field
- Hall sensor for magnetic field detection
- 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:
  - ✓Data concentrator request (via communication channel)
  - ✓Hand Held Unit request (via optical port)

**INFORMATION SECURITY**

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

**THRESHOLDS MANAGEMENT**

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

**POWER LINE COMMUNICATION (PLC)**

- Built-in PLC modem
- G3-PLC (ITU-T G.9903) / PRIME (ITU-T G.9904, PRIME specifications v.1.3.6 and v.1.4) standard compliant;
- PLC features:
  - ✓CENELEC A Band
  - ✓FCC band
  - ✓EMC standards compliance
  - ✓Auto-discovery
  - ✓Repeating
- The channel selection is automatically done during network setup and dynamically adjusted based on the media status

**RS-485 INTERFACE**

- Allows connection of external devices to a single RS-485 bus

**OPTICAL PORT**

- IEC 62056-21 standard compliant
- Data transmission rate 38 400 bps
- Possibility of local data exchange and meter parameterization

**METER PARAMETERIZATION**

- Remote (via communication channel) or local (via optical port)
- Assignment of the access rights from HES
- Events registering

**SOFTWARE UPGRADE**

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

**BACKUP POWER SUPPLY**

- Battery to sustain the meter in sleep mode
- Li battery lifetime - not less than 20 years

## TECHNICAL SPECIFICATIONS

### Accuracy class:

- Active energy	C (0,5)
- Reactive energy	2

### Reference current, Iref

5 A

### Maximum current, I<sub>max</sub>

10 A

### Minimum current

- Active energy	0.01 Iref
- Reactive energy	0.02 Iref

### Starting current:

- Active energy	0.001 Iref
- Reactive energy	0.003 Iref

### Reference voltage, U<sub>n</sub>

3x230/400 V

### Voltage range

0.7 U<sub>n</sub> ... 1.2 U<sub>n</sub>

### Reference frequency

50 Hz (± 2 %)

### Meter constant:

- Active energy	10000 imp/kWh
- Reactive energy	10000 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

### PLC raw data rate (with convolutional coding):

- PRIME v1.3.6, CENELEC A band 3-95 kHz	21.4-64.3 kbps
- PRIME v1.4 for each of 1, 3-8 channel in the band 3 kHz up to 500 kHz	5.4-64.3 kbps
- G3-PLC CENELEC A band (35-90 kHz)	up to 44 kbps
- G3-PLC FCC band (154-487 kHz)	up to 230 kbps

### Inherent consumption of current circuit, not more (IEC 62053-61)

1 VA

### Inherent consumption of voltage circuit, active/total, not more (IEC 62053-61)

2 W / 10 VA

### Insulation strength (IEC 61010-1-90)

4 kV, 50 Hz, 1 min

### Impulse 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

IP54

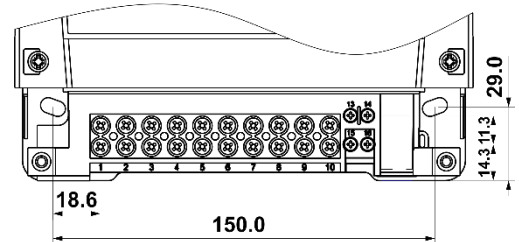
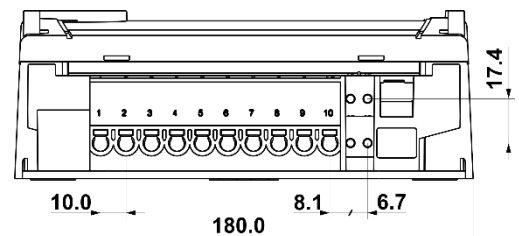
### Mean total lifetime, not less

20 years

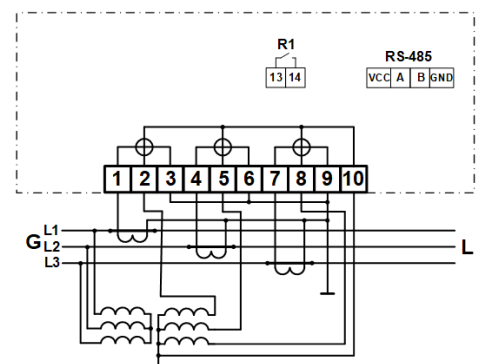
### Dimensions

180 x 280 x 68 mm

## TERMINAL BLOCK



## CONNECTION DIAGRAM (IEC)



## DESIGN FEATURES

### TERMINAL BLOCK

- DIN 43857 standard specifications
- Universal clamping type for terminals of current circuits: D = 8,5 mm

### HOUSING

- Light-tone non-flammable polycarbonate

### MOUNTING

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

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