

# OMNIPOWER® Residential smart meter

**kamstrup**

## The intelligent smart grid component

- Stable precision and reliability
- Cost-effective investment
- Open communication and interoperability
- Safety and data protection



# The intelligent meter with high precision

One of the most important components for establishing an intelligent smart grid system is the smart meter. It does much more than measure energy consumption. It is a key element assuring utilities the possibility of exploiting the full potential of the smart grid.

## Voltage quality registration

OMNIPOWER® has implemented voltage quality measurements based on the European standard EN 50160 specifying: "Voltage characteristics of electricity supplied by public electricity networks" and helps the utilities to fulfill their obligations concerning energy, power and voltage quality measurements. With a multitude of loggers and tariff registers, OMNIPOWER® provides information on loads, time-of-use and voltage quality. Load profiles can be generated in various configurable time intervals. This detailed information optimizes load planning and management.

## Cost-effective investment

The OMNIPOWER® meters constitute a cost-saving device minimizing the need for manual technical intervention and allowing for upload of software to the meters over-the-air.

## Open communication and interoperability

Seamless integration and flexibility are key factors in exploiting the full potential of the fast developing and diversified communication technologies. OMNIPOWER® provides the DLMS/COSEM data collection protocol as system integration interface. This assures a standardized interface between the electricity meter and any data collection system supporting these common specifications.

## Safety comes first

As a high-end smart meter, OMNIPOWER® takes all security and privacy aspects into consideration providing the highest safety level, protecting revenue and assuring accurate and reliable metering data for exact billing and documentation purposes.

OMNIPOWER® holds comprehensive event and data loggers with anti-fraud and security features that enable the utility to immediately discover tamper and attempts to physically access the meter.

## Energy and power measurements

- Net-power and energy register (own production)
- Power and energy per phase
- Apparent power and energy – kVA and kVAh
- Power factor
- Mean and peak power values




## Voltage quality measurements

- Frequency accuracy
- Supply voltage variations
- Rapid supply voltage variation (sags and swells)
- Supply voltage dropout and unbalance
- Total harmonic distortion (THD)

# OMNIPOWER® meets the requirements

Features	OMNIPOWER® single-phase	OMNIPOWER® three-phase	OMNIPOWER® DIN rail meter
<p><b>4-quadrant metering</b> Active positive and active negative as well as reactive positive and negative energy.</p>	■	■	■
<p><b>Voltage quality</b> Voltage, current and power per phase. Time stamp on power failures on one or more phases. Registration in configurable levels - overvoltage and undervoltages. Detection of sags and swells, THD and supply voltage unbalance.</p>	■	■	■
<p><b>Disconnection</b> Smart disconnect enables on-demand disconnect of consumers as well as handling of load limitation functionality.</p>	■	■	■
<p><b>Real-time clock (RTC)</b> Timestamping of measurements and events provided by a real-time clock.</p>	■	■	■
<p><b>Magnetic immunity</b> The meter is immune to external magnetic influences.</p>	■	■	■
<p><b>Tamper</b> Detection and registration of attempts to manipulate the meter installation.</p>	■	■	■
<p><b>Communication technology via modules</b> Radio (optional integrated radio communication), GSM, GPRS, M-Bus and RS-485. Modules can be fitted from factory and retrofitted.</p>		Radio (optional integrated), GSM, GPRS, M-Bus, RS-485, MUC	Integrated radio, GSM, MUC
<p><b>Consumer Communication Channel module slot</b> Open slot for communication module for wireless communication with smart home equipment.</p>	■	■	■
<p><b>Analysis log</b> Logs up to 24 different registers at a time from a selection of more than 80 different values, e.g. power, current or voltage per phase. In intervals of 5, 10, 15, 30 or 60 minutes.</p>	■	■	■
<p><b>Load profile log</b> Configurable in the following intervals: 15, 30 or 60 minutes.</p>	■	■	■
<p><b>Smart metering-based prepayment</b> Prepayment function possible. The integrated breaker disconnects the supply when the acquired kWh are used.</p>	■	■	■
<p><b>Encryption</b> AES 128 encryption securing the meter data transmission.</p>	■	■	■
<p><b>Standard communication protocol</b> Integrated DLMS/COSEM</p>	■	■	■

## OMNIPOWER® at a glance

Meter type	OMNIPOWER® single-phase	OMNIPOWER® three-phase	OMNIPOWER® DIN rail meter
			
<b>Connection</b>	Direct one-phase, 2-wire	Direct three-phase, 4-wire three-phase, 3-wire	Direct three-phase, 4-wire
<b>Type tests</b>	Active energy: EN 50470-1 (MID), EN 50470-3 (MID), IEC 62052-11, IEC 62053-21 Reactive energy: IEC 62053-23		
<b>Accuracy class</b>	Active energy: MID: Class A, Class B IEC: Class 2, Class 1 Reactive energy: IEC: Class 3, Class 2		
<b>Current range</b>	5(65)A, 10(60)A, 5(80)A, 10(80)A, 5(100)A		5(63)A
<b>Ref. voltage/frequency</b>	230 V – 50 or 60 Hz	1, 2, 3 x 230/400 V – 50 or 60 Hz	
<b>Measurement values</b>	A+, A-, R+, R-, active, reactive and apparent power – total and per phase. Mean and peak power. RMS voltage and RMS current per phase, frequency, power factor and total harmonic distortion.		
<b>Temperature range</b>	Operation: -40 °C to +70 °C – Storage and transport: -40 °C to +85 °C		
<b>Protection class</b>	IP54		IP51
<b>Power consumption *)</b>	Current circuit 0.01 VA Without breaker: 0.2 W With breaker: 0.2 W	Current circuit 0.01 VA Without breaker: 0.1 W With breaker: 0.1 W	
<b>Voltage quality log</b>	Overvoltage and undervoltage, power outage, up to 400 loggings. Detection of sags and swells, measuring of THD and supply voltage unbalance.		
<b>Log for events, tamper and magnetic disturbance</b>	Status event logger with 200 loggings RTC event logger with 200 loggings		
<b>Time-of-use metering</b>	Up to 8 tariffs		
<b>Measurement principle</b>	Current measurement via shunt	Current measurement via shunt per phase	
<b>Standards</b>	OBIS codes according to IEC 62056-61  S0 pulse output according to DIN 43864	OBIS codes according to IEC 62056-61  S0 pulse output according to DIN 43864  Terminals according to DIN 43857	OBIS codes according to IEC 62056-61  Terminals according to DIN 43857

\* Measured by notified body during type test. Measured at phase L1.