

# Kamstrup 351C

Electricity meters for large customers, trade and industry



## Transformer-coupled electricity meters for the smart grid

### New design

With the new generation of transformer-coupled electricity meters, a completely new design is introduced. The design includes a new and larger display with far more display readings. For example, you can now follow both consumed and generated energy per phase directly on the display – a feature which supports billing of own generated electricity via wind turbines and solar cell panels.

Above the display, the meter has a freely available module area. Here, the utility or the consumer can install a communication card and wirelessly extract consumption-relevant data for energy services such as web portals, apps or in-home displays.

### More measurements

Kamstrup 351C is equipped with a host of logging and tariff registers. In addition to consumption data, operating information such as load, voltage quality, transformer ratio and time-tariffing is registered in a comprehensive analysis log. The meter generates load profiles of primary or secondary energy in several predefined intervals; it logs voltage quality and detects over-voltage and undervoltage as well as missing neutral faults, and it saves power measurements including apparent power and max power. With Kamstrup 351C, the utility does not only get a precise tool for measuring and billing, but also a strong tool for optimising the distribution and reducing the energy loss.

### Integrated radio communication

Kamstrup 351C has integrated radio communication. This means that transformer-coupled electricity meters can now be included and read in network systems on equal terms as household meters. As radio is integrated, the meter's module area is available for transfer of data to other systems, for example building automation. M-Bus, RS-485, GSM and pulse inputs and outputs are just some of the interfaces which can be connected to the meter.



## Kamstrup 351C

- prepared for the smart grid

Transformer-coupled electricity meters from Kamstrup are electronic meters of the highest quality. The meters can be equipped with a wide range of communication technologies, and the robust design makes them especially suitable for commercial and industrial customers. As standard, all meters can generate load profiles for all 4 quadrants. The registration of voltage quality is also standard, and all meters are equipped with a comprehensive event log. With integrated radio communication, the meters can be included in remote reading systems and supply data for billing and analysis purposes as well as for operation optimisation. The comprehensive tariff features contribute to revenue securing.

### Data security

The event log of 351C detects attempts to cheat or tamper with the consumption registration of the meter by physically opening the meter or through magnetic influence. Attempts are recorded with time and date, and the information can be transferred to the network system. The same feature applies to the detection of magnetic tampering.

### Push alarms

If Kamstrup 351C is included in a reading system, it can send alarms concerning critical events in the installation. If overvoltage or undervoltage, neutral faults, missing phases or voltage failures per phase are detected, the meter can automatically send an alarm through the system and inform the utility of the event. This enables the utility to react fast and minimise the scope of the damages.

### Load control

Load control is an effective tool for controlling the load in the grid and balancing the production in the best possible way. By setting or uploading time tariffs to the meter, Kamstrup 351C supports load control applications.

### Pooling of data

Smooth pooling of data is an essential prerequisite for fully utilising the many new communication technologies. As standard, Kamstrup 351C supports the communication protocol KMP.



**Kamstrup 351C**



# Kamstrup 351C meets the requirements

## Features

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### 4 quadrant measurement

Measurement of active positive, active negative and reactive positive, reactive negative energies.

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### Voltage quality

Measurement of voltage, current and power per phase. Timestamping of power cuts on one or several phases. Registration of overvoltage and undervoltage.

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### Apparent energy

Measurement of apparent energy per phase and in total as well as per phase angle.

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### Real-time clock (RTC)

Measurements and events are always recorded with time stamps.

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### Access registration

Registration of any attempts to tamper with the meter.

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### Communication technology in the form of plug and play modules

Radio (optionally integrated radio communication), GSM, GPRS, M-Bus, Wireless M-Bus and TCP/IP. Modules can easily be retrofitted.

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### External module area

Possibility of adding a secondary, external communication module.

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### Analysis log

Logs up to 16 various registers at the same time from a selection of more than 80 different values.

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### Load profile log

Configurable to the intervals: 5, 15, 30 or 60 minutes.

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### Encryption

Secure data transmission using AES128 encryption key.

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## Technical data

<b>Connection</b>	Indirect connection: 3-phase 3-wire - 3 x 230 V (ARON) 3-phase 4-wire - 3 x 230/400 V
<b>Type test</b>	Active energy: EN 50470-1 (MID) EN 50470-3 (MID) IEC 62052-11 IEC 62053-22
	Reactive energy: IEC 62053-23
<b>Accuracy class</b>	Class 1 (IEC)/Class B (MID) Class 0.5S (IEC)/Class C (MID) Class 2 (IEC) (reactive energy)
<b>Electricity range</b>	0.05 - 5(6)A
<b>Nominal voltage/frequency</b>	3 x 230 VAC (applies only to Aron meters) 3 x 230/400 VAC
<b>Measuring values</b>	A+, A-, R+, R- – current and voltage per phase, load, accumulated energy, RMS current, RMS voltage, apparent energy
<b>Temperature range</b>	Operating temperature -40°C – +70°C – Storage and transport temperatures -40°C – +85°C
<b>Protection class</b>	IP54
<b>Current consumption</b>	Circuit 0.02 VA 0.1 W per phase
<b>Log for voltage quality</b>	Voltage, max and min. voltage, power cut, voltage drop and overvoltage
<b>Data logging</b>	In intervals of 5, 15, 30 or 60 min.
<b>Log for events, tamper, magnetic influence and transformer ratio</b>	Status event log 200 loggings RTC event log 200 loggings Current quality log 200 loggings Transformer ratio 10 loggings Neutral faults log 45 loggings
<b>Time-tariffed measurement</b>	Up to 8 tariffs
<b>Measuring principle</b>	Single-phased current measurement via current transformer Single-phased voltage measurements
<b>Standards</b>	Terminal in accordance with DIN 43857 S0 pulse output in accordance with DIN 43864 Optical reading in accordance with EN R 62056-21 OBIS identification codes in accordance with IEC R 62056-61