

Kamstrup 382

kWh meter 5-100 A

1 or 2 tariffs

Easily readable display

Safe data logging of consumption

Module space for future updating

Optical and serial communication

Galvanically separated construction

Type approved according to IEC 61036

IEC 62053-21

IEC 62052-11



Application

Kamstrup 382 is a one, two or three-phase direct meter for domestic customers. It can register the consumption in one or two tariffs. Growing demands for flexibility, accurate metering and improved customer information are also fulfilled. The easy-to-read display shows accumulated consumption. When the button is pushed current power, peak power etc. are displayed.

Kamstrup 382 fits in standard switch cabinets and has DIN-standard terminals. With a large dynamic range and configurable processor, Kamstrup 382 is suited to numerous applications.

Having no moving parts the meter does not wear, nor is it sensitive to impacts or mounting. The meter has been designed with extension facilities, and a low internal power consumption, ensuring economical and stable operation.

The meter's full-current measuring circuit measures the

three phases individually via shunts, obtaining a very large and accurate dynamic power range. The meter, which maintains the same measuring quality whether it measures on one, two or three phases, has a low starting current and is linear throughout the whole measuring range.

Due to high resolution, long-term stability and accuracy, together with direct current and voltage measurement through instrument transformer, verification and random sample control are quickly carried out in all available verification rigs.

The processor also controls pulse inputs and outputs as well as external communication and communication with the meter's module area. Display functions and the meter's pulse inputs and outputs can be configured as required, without influencing the verified measurement.



Kamstrup

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Application (cont.)

DISPLAY

Kamstrup 382 is equipped with a liquid crystal display with 8 numerical digits as well as 3 alphanumerical characters. During normal operation the accumulated value for consumed electric energy is displayed with 7 digits and the corresponding measuring unit kWh by the 3 alphanumerical characters.

Usually, the display shows the accumulated electric energy in kWh. Furthermore, "L1", "L2" and "L3" at the bottom of the display, always show whether the phases are connected.

If 2 tariff functions are used T1 or T2 indicates the active tariff. See display on page 6.

The yellow S0 diode in the middle of the front plate is the meter constant which is 1000 imp/kWh.

Furthermore, three small squares in the top left corner of the display show the consumption of the individual phases with a higher resolution.

Activating the arrow key you can step through several display indications and functions, if these possibilities have been selected during the configuration of the meter. The display changes when the button is released.

- **Accumulated energy, total**kWh
Always displayed
- **Tariff1*, accumulated energy**kWh/T1
Displayed in two-tariff meter type
- **Tariff2*, accumulated energy**kWh/T2
Displayed in two-tariff meter type
- **Actual power**W
Average instantaneous power
- **Hour counter**hrs
Accumulated operating hours
- **Trip recorder, two decimals**kWh
Can be reset by 6 seconds' activation
- **Peak power**WP
The month's highest 15-minute power measurement
- **Meter number**NUM
The meter's programmed customer number
- **Pulse input**m³/-/kWh/l
Shows accumulated input pulses
- **Customer data**
Can display 8 digits, customer specific
- **Display test**
Lights all segments of the display
- **Call**Call
By pressing the button for 6 seconds a compulsory call to the meter's modem is provoked.

Two minutes after the last activation of the pushbutton, the display will automatically switch to accumulated electric energy in kWh.

CALCULATION

A measuring circuit from each phase sends pulses to the microprocessor, which accumulates the pulses in an energy register. When 1 Wh has been counted, an S0 pulse is sent and register 2 is increased by one. Having accumulated 1,000 pulses in register 2, the EEPROM and the display are increased by one.

The average power during the period is calculated every 15 minutes. The highest W peak value of the month is stored in the EEPROM. The value is reset at the end of the month.

PERMANENT MEMORY

The meter's data memory is updated every time the meter's kWh register is changed. All changes are safely stored in the voltage independent EEPROM.

The following register values are stored hourly: kWh (total), peak power, pulse input and hour counter.

Following each 730 hour period, the same values are stored as monthly values. Values for the last 36 months are stored.

OPTICAL READING

An optical infrared sender and receiver according to IEC 61107 is placed on the front of the electricity meter to the left. A standard optical readout head with a permanent magnet according to IEC 61107 is to be used to read data or to configure e.g. display set-up and pulse figure.

The meter's display indications and pulse set-up can be configured. For this purpose a special program is needed, and a 6-digit password code must be entered.

It is not possible to change the meter's legal data without breaking the verification seal and modifying the main print.

Kamstrup's reading head, type no. 66-99-102 with 9-pole D-sub plug can be used with a standard PC with Kamstrup's reading and configuration program or similar

S0 PULSE OUTPUT

Parallel to the S0 diode, galvanically separated S0 pulses are emitted.

1,000 pulses per kWh with a nominal pulse time of 30 ms are emitted.

If needed, the electricity meter can be extended by a plug-in module without subsequent reverification.

PLUG-IN MODULES

The module area communicates with the electricity meter's microprocessor via an internal data bus, which provides innumerable functional possibilities, e.g. tariff, extra pulse output, power supply modules, data communication via telephone modem or radio or utilization of the extra pulse input.

* The measuring unit is shifting between T and kWh.

Approved measuring data

APPROVAL	NORM	OTHERS	NORM
Meter	IEC 62052-11, IEC 62053-21	Verification	IEC 61358
Accuracy class	Class 2 or class 1	Terminal box	DIN 43 857
Measuring range	Basic current 5 A or 10 A Max. current 100 A, 80 A or 60 A	SO pulse Optical reading	DIN 43 864 IEC 61107

Technical data

Measuring principle	Single-phase current measurements via shunt	Materials	Cover: transparent polycarbonate Bracket: glass reinforced polycarbonate
Voltage range	U_n 1 x 230 VAC $\pm 10\%$ 2 x 230/400 VAC $\pm 10\%$ 3 x 230/400 VAC $\pm 10\%$ 3 x 230 VAC $\pm 10\%$	Memory	EEPROM
Current range	I_b 5 A/10 A I_{max} 100 A/80 A/60 A	Data storage	> 10 years without voltage
Frequency	f_n 50 Hz $\pm 2\%$	Display	1+7+3 digits, digit height 7 mm kWh: 7 digits
Power factor	$\cos \varphi$ 0.5 inductive	Optical readout head	IEC 61107 mode A, 300 baud
Power consumption, voltage circuit	≤ 0.2 VA, 0.15 W	SO pulse diode	1000 imp/kWh Pulse duration 30 ms. $\pm 10\%$
Power consumption, current circuit at I_b	≤ 0.01 VA	SO pulse output	1000 imp/kWh Pulse duration 30 ms. $\pm 10\%$
Application	Indoors or in suitable outdoor cabinet	CONNECTIONS	
Impulse voltage test	12 kV	Measuring circuit	V-shape elevating
Operating temperature	-40°C - +63°C	$L_1, L_2, L_3 + N$ (Torque 2.5 - 3 Nm)	4 mm ² - 25 mm ² (Pz 2) 4 mm ² - 35 mm ² (Pz 2) 685 312
Storage temperature	-40°C - +70°C	Supply terminal	Cable terminal forks 4 mm (Tx 10)
Protective class	IP 51	SO pulse output	Connection terminals 0.15 mm ² - 2.5 mm ²
Protection class II		Data/pulse connections	Connection terminals 0.15 mm ² - 1 mm ²
Relative humidity	$\leq 95\%$ not condensing		
Weight	Approx. 850 g		

Connection modules

The meter can be supplied or retrofitted with the following inputs and outputs from the main print via connection modules, without reverification.

IN/OUT FUNCTIONS

Pulse input

Contact input	
Normal (≤ 0.5 Hz)	Pulse duration >1 s.
Quick (≤ 16 Hz)	Pulse duration ≥ 30 ms.

Pulse output 2

Pulse time, 1 imp/Wh	30 ms $\pm 10\%$
Pulse time, 1 imp/kWh	60 ms $\pm 10\%$

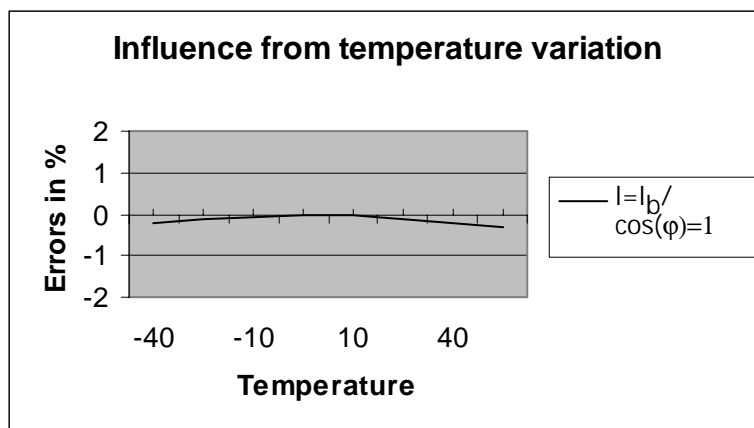
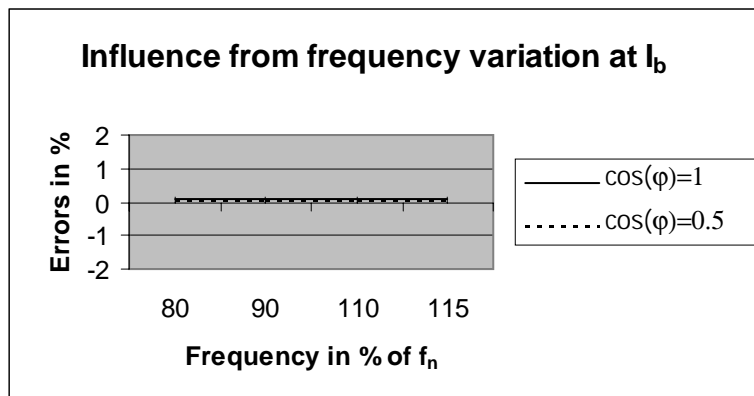
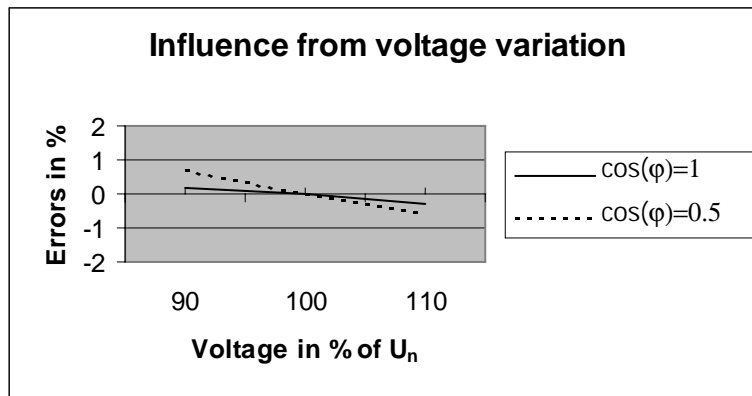
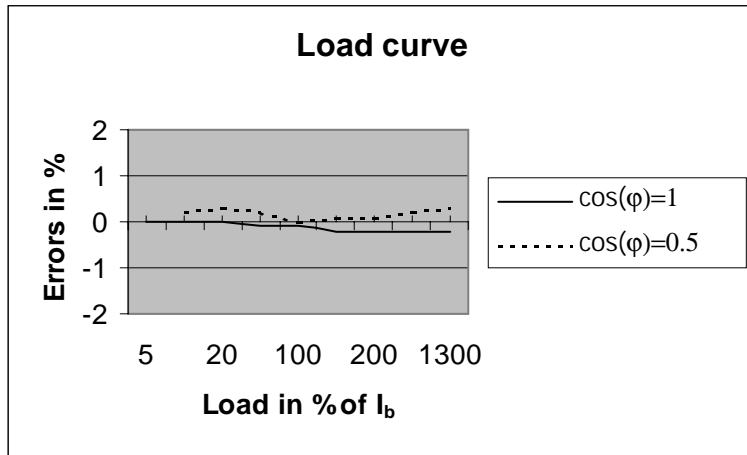
Data output	RS232, open collector 300/1200 baud
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Pulse times and frequency are configurable via optical and hardwired data communication.

MODULES

Datalogger/Timeswitch	Load profiles (5, 15, 30 or 60 min.) and Timeswitch for tariffs
SO supply	Sends pulses and optionally 24 V supply voltage via a two wire.
Radio	Remote reading via handheld unit, based on radio
V.22 modem	Supports caller identification
Data/pulse	Pulse input, pulse output 2 and serial communication.
Telephone modem	Remote reading via analog telephone line.
M-Bus	Remote reading via M-Bus system. EN 1434-3
RCR	Ripple Control Receiver
Current Loop	Tariff control of 2 tariffs, CS and 230 V
GSM3i	Supports SMS reading

Typical accuracy charts



Ordering details

Type number 685-

Number of phases

1-phase meter 1
 2-phase meter 2
 3-phase meter 3

Current range

5 - 100 A (35 mm² terminals) 1
 10 - 60 A 6
 5 - 80 A 8
 5 - 100 A (25 mm² terminals) 9

Accuracy class

Class 11
 Class 22

Modules

No modules OK
 Datalogger/Timeswitch KK
 SO/pulse supply SK
 Data/pulse module, relay output RK
 Radio BK
 Telephone modem module TK
 M-Bus module MK
 RCR module, Ripple Control Receiver EK
 V.22 modem HK
 Tariff modul, 2 tariffs, 230 V WK
 Tariff modul, 2 tariffs, 230 V, Current Loop FK
 GSM3i YK

Choice of label

TR 35
 LV 45
 LIT 49
 GB 50
 CH-I 59
 EST 61
 CH-D 63
 CH-F 65
 NL std 80
 NL 81

CONFIGURATION

DISPLAY

Fixed choice: Accumulated energy in kWh + optional indications:

1 Tariff 1 and 2	6 Meter number
2 Actual power	7 Pulse input
3 Hour counter	8 Customer data
4 Trip recorder	9 Call
5 Peak power	

Preceding zeroes: Yes/no

Meter number: Serial no./serial number series (max. 8 digits)

Customer data: Max. 8 digits

IN/OUT

Pulse input: Normal/quick
 Pulse constant 0.25 - 1000 imp/unit
 Units None/kWh/l/m³

Pulse output 2: 1 imp/kWh or
 1000/kWh

SPECIAL MOUNTING

Contact plug

Long terminal cover

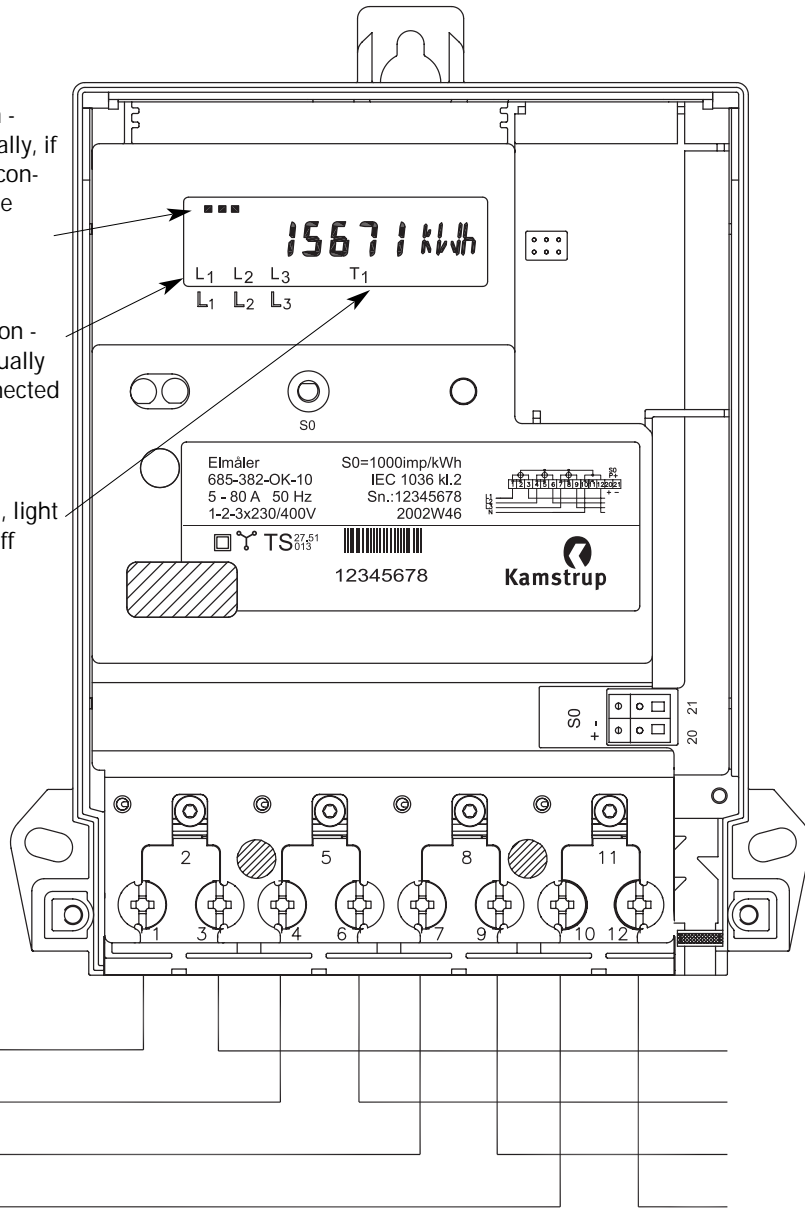
Installation

Only authorized personnel are permitted to install the electricity meter.

- Load indication - Blinks individually, if there is power consumption on the phase

- L Phase connection - light up individually if power is connected to the phase

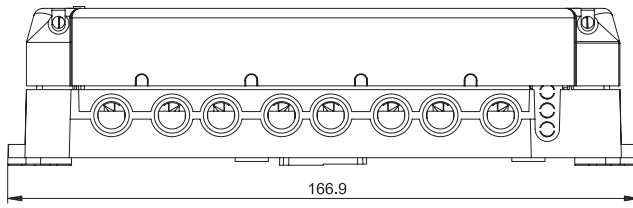
- T Tariff indication, light up at active tariff



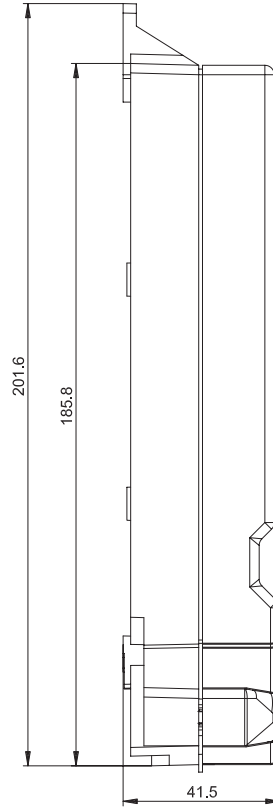
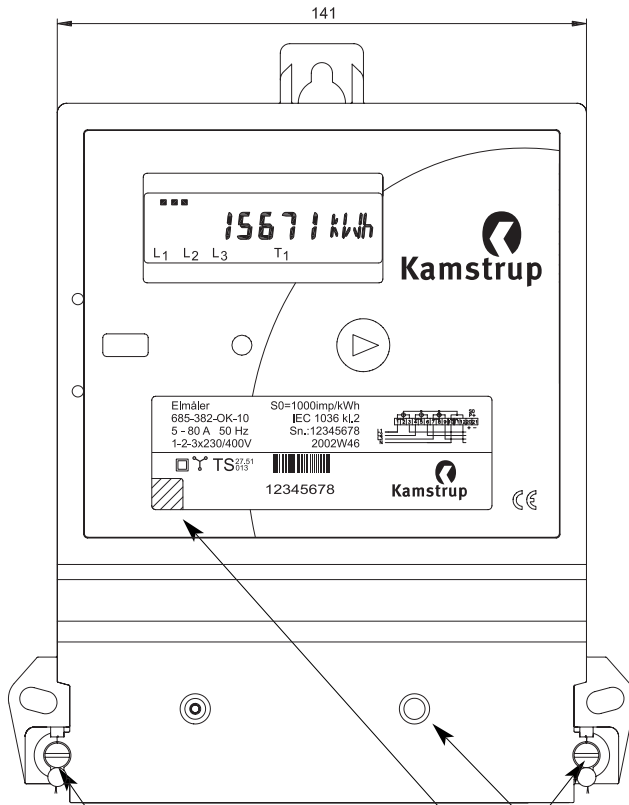
Warning

Do not touch connections or inner parts once the voltage supply has been connected to the meter.

Sealing



Dimensions stated in [mm]



The electricity meter's connection terminals can be sealed in the usual way through the sealing screws and the holes in the meter's top cover.

The electricity meter is provided with a verification sealing from the factory, which is visible through the top cover.

Accessories

MODULES

Datalogger/Timeswitch	S7590 033
Radio module	68 50 015
S0 Supply module	68 50 001
Data/pulse module, relay output	68 50 003
Tariff control module	68 50 006
Telephone modem module	68 50 009
M-Bus module	68 50 005
RCR modul, Ripple Control Receiver	68 50 012
V.22 modem	68 50 010
Tariff module, 4 tariffs, 230 V, data	68 50 007
Tariff module, 2 tariffs, 230 V	68 50 008
Tariff module, 2 tariffs, 230 V, Current Loop	S7590 026
GSM3i (separate module)	S7510 015
GSM3i (module mounted in meter – no SIM card)	S7410 016
GSM modem (dual band)	S7510 003

SOFTWARE

Configurations SW, METERTOOL for 162/382	68 99 540
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ACCESSORIES

Long terminal cover	30 26 226
Optical readout head with 9-pole D-sub plug	66 99 102
Top fitting, metal bow	68 50 101
Contact plugs, 50 pcs.	68 50 102
Cable terminals, 50 pcs.	68 50 103
Safety test probe	68 30 008

Authorized distributor

Please contact Kamstrup A/S
for information about your nearest distributor.