

Kamstrup 162

kWh meter 5-65 A

Easily readable display

Safe data logging of consumption

Modular space for future updating

Optical and serial reading

Large degree of accuracy

Configurable processor

Type approved according to IEC 61036



Application

Kamstrup 162 is a single-phase direct meter for domestic customers and is approved for billing of single-phased installations.

At the same time Kamstrup 162 meets the increasing demands on larger flexibility, accuracy and improved customer information. The easy-to-read display shows the accumulated consumption. By pressing the button current power, peak power etc. are displayed.

The future-proof construction with extension facilities and low internal current consumption ensures economical and stable operation.

The meter's full-current measuring circuit measures via shunt, obtaining a very large and accurate dynamic measurement range. The meter has a low starting current and is linear throughout the entire 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 bench. The measuring circuit is furnished with a separate stabilizing current supply.

The display functions and the meter's pulse inputs and outputs optional can be configured as required, without influencing the verified measurement.

The meter is developed and produced in Denmark and has a type approval according to IEC 61036 and is verified according to IEC 61358 as class 2.



Kamstrup

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Application (continued)

DISPLAY

The electricity meter is equipped with a liquid crystal display with 8 numerical digits as well as 3 alphanumeric 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 alphanumeric characters. Furthermore, the symbol "L1" at the bottom left of the display always indicates whether the phase is connected.

If consumption is registered on the electricity meter the yellow LED blinks with 1,000 pulses per kWh consumed.

Furthermore, in the top left corner of the display a small square indicates the consumption with a higher resolution compared to the yellow LED.

When the arrow key is activated it is possible to step through several display readings and functions, if these possibilities have been selected during configuration of the meter. The display changes when the button is released.

- **Accumulated energy**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
Exponentially average of instantaneous effect
- **Hour counter**HRS
Accumulated operating hours
- **Trip recorder, two decimals**kWh
Is reset by pressing the button for 6 sec.
- **Peak power**WP
The month's highest quarterly power
- **Meter number**NUM
Displays 8 digits
- **Pulse input**m³/-/kWh/l
Shows accumulated input pulses
- **Customer data**
The customer data programmed into the meter
- **Display test**
Activates all segments of the display
- **Call**Call
By pressing the button for 6 seconds a forced call of the meter's modem module is made.

Two minutes after the last activation of the push-button, the display automatically switches to accumulated electric energy in kWh.

* The measuring unit is shifting between T and kWh.

CALCULATION

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

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 (EEPROM) is updated whenever the meter's kWh register is changed.

Also customer number, hourly W-peak, hour counter and pulse input register are stored.

In addition, after each 730 hour period the monthly values for the kWh register and the values for the last 36 months are stored.

OPTICAL READING

On the front of the electricity meter to the left an optical infrared sender/receiver according to IEC 61107 is placed, which can be used to read data or configure e.g. display set-up and pulse figures.

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

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

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 program.

The electricity meter can be retrofitted with a plug-in module without reverification.

PLUG-IN MODULES

The modular space communicates with the electricity meter's microprocessor via an internal data bus, which provides innumerable functional possibilities, e.g. pulse output, telephone modem, SO-power supply modules, extra pulse inputs and data communication e.g. radio and DTMF-modem.

Approved measuring data

APPROVAL	STANDARD	VARIOUS	STANDARD
Meter	IEC 61036, 2 nd edition	Verification	IEC 61358
Accuracy class	Class 2	Optical reading	IEC 61107
Measuring class	Basic current 5 A Max. current 65 A		

Technical data

Measuring principle	Single phase current measurement via shunt	Relative humidity	≤ 95% not condensing
Voltage range	U_n 230 VAC ±10%	Weight	Approx. 460 g
Current range	I_b 5 A I_{max} 65 A	Materials	Cover: transparent polycarbonate Bracket: glass reinforced polycarbonate
Frequency	f_n 50 Hz ± 2%	Memory	EEPROM
Power factor	Cos φ 0.5 inductive Cos φ 0.8 capacitive	Data storage	> 10 years without power supply
Power consumption, voltage circuit	≤ 0.2 VA, 0.15 W	Display	1 + 7 + 3 digits, 7 mm kWh: 7 digits
Power consumption, current circuit at I_b	≤ 0.01 VA	Optical readout head	IEC 61107 mode A, 300 baud
Application	Indoors or in suitable outdoor cabinet	Meter constant	1000 imp/kWh
Operating temperature	-40°C - +63°C	Measuring circuit ($L_1 + N$)	V-shaped elevating terminals 4 mm ² - 25 mm ² (Pz 2) Torque: 2.5 - 3 Nm
Storage temperature	-40°C - +70°C		
Protective class	IP51		
Protection class	II		

CONNECTIONS

Supply terminal	Cable terminal forks 4 mm (Tx 10)
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Plug-in modules

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

FUNCTIONS

Pulse input

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

Pulse output 2

Pulse duration, 1 imp/Wh	30 ms ±10%
Pulse duration, 1 imp/kWh	60 ms ±10%

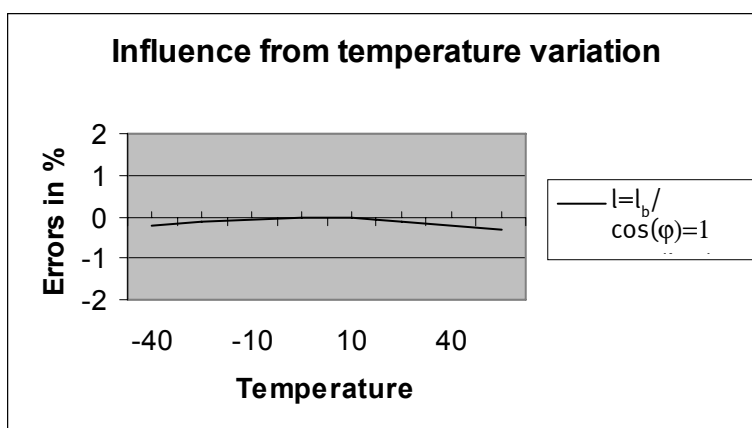
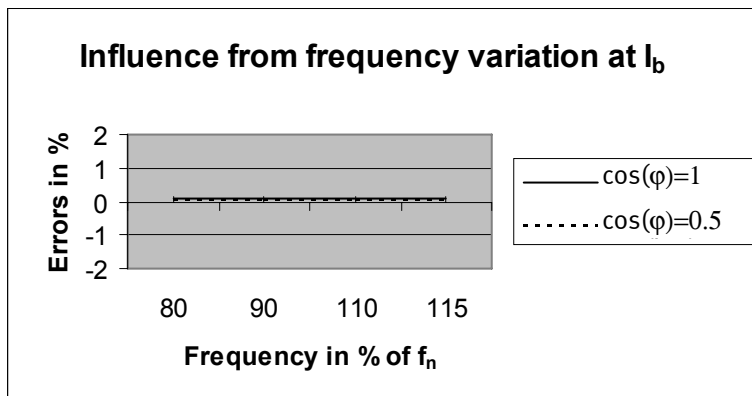
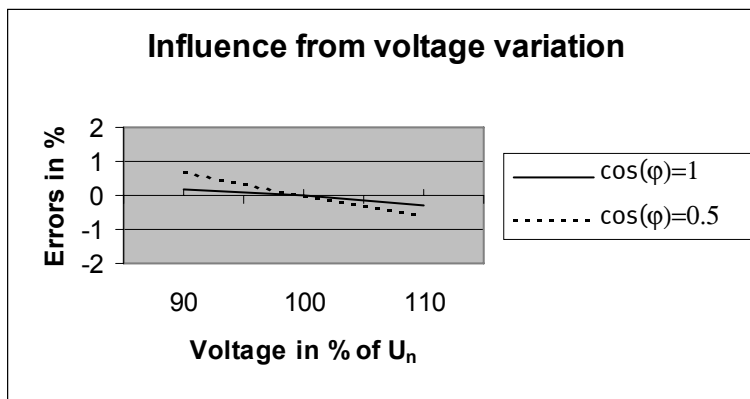
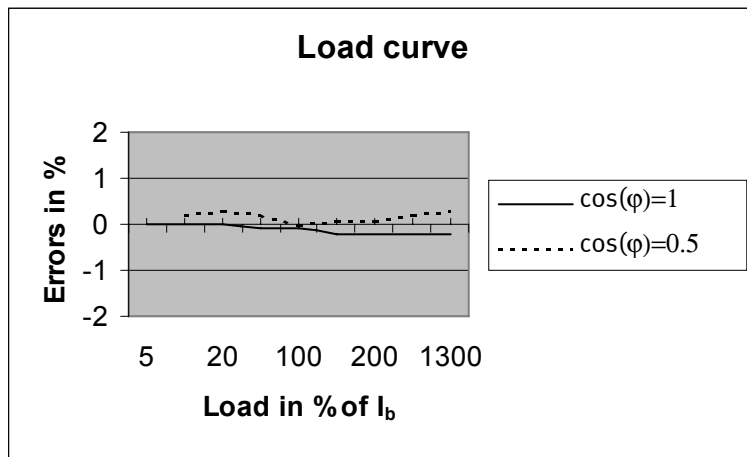
Data output	RS232, open collector 300/1200 baud
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Pulse duration and frequency are configurable via optical and hardwired data communication.

MODULES

Datalogger/Timeswitch	Logging of 5, 15, 30 and 60 min. values
Radio	Collection of consumption data based on radio communication
V.22 Modem	Supports Caller ID and the telemetry function
S0 Pulse module	S0 pulses according to DIN 43864
S0 Supply module	Transmits pulses and, if required, 24 V supply voltage via a two wire
Data/pulse	Pulse input, pulse output 2 and serial communication (RS232)
Telephone modem	Remote reading via analog telephone line
M-Bus	Remote reading via M-Bus system. (EN1434-3)
RCR	Ripple Control Receiver
Current Loop	Tariff control of 2 tariffs, CS and 230 V

Typical accuracy charts



Ordering details

Type number

686-

Number of phases

1 x 230 V meter1

Current range

5 - 65 A6

Accuracy class

Class 22

Modules

No moduleO
 Datalogger/TimeswitchK
 SO Supply moduleS
 SO Pulse moduleU
 Data/pulse module, relay outputR
 RadioB
 Telephone modem moduleT
 M-Bus moduleM
 RCR module, Ripple Control ReceiverE
 V.22 ModemH
 Tariff module, 2 tariffs, 230 VW
 Tariff module, 2 tariffs, 230 V, Current LoopF

Configuration

ConfiguredK

Choice of label

LIT 49
 GB 50
 CH-I 59
 EST 61
 CH-D 63
 PL 64
 CH-F 65
 NL 80
 FIN 84

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

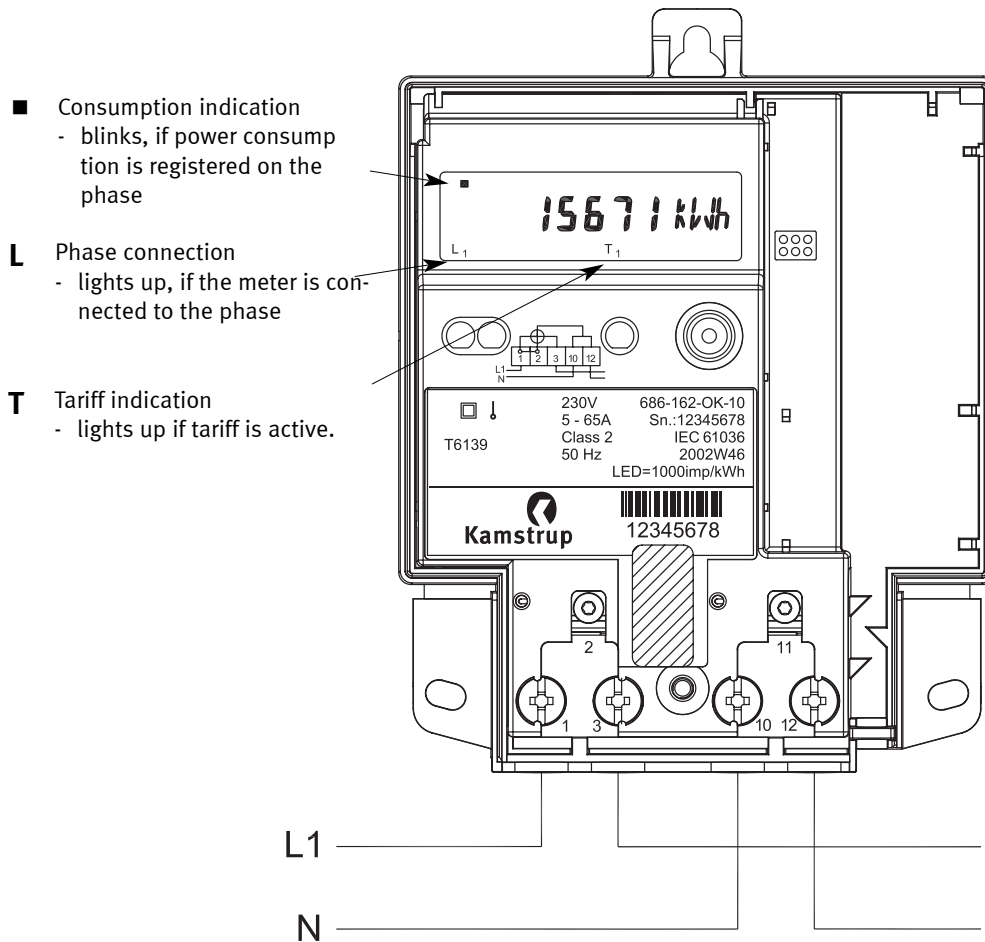
SPECIAL MOUNTING

Contact plug

Long terminal cover

Installation

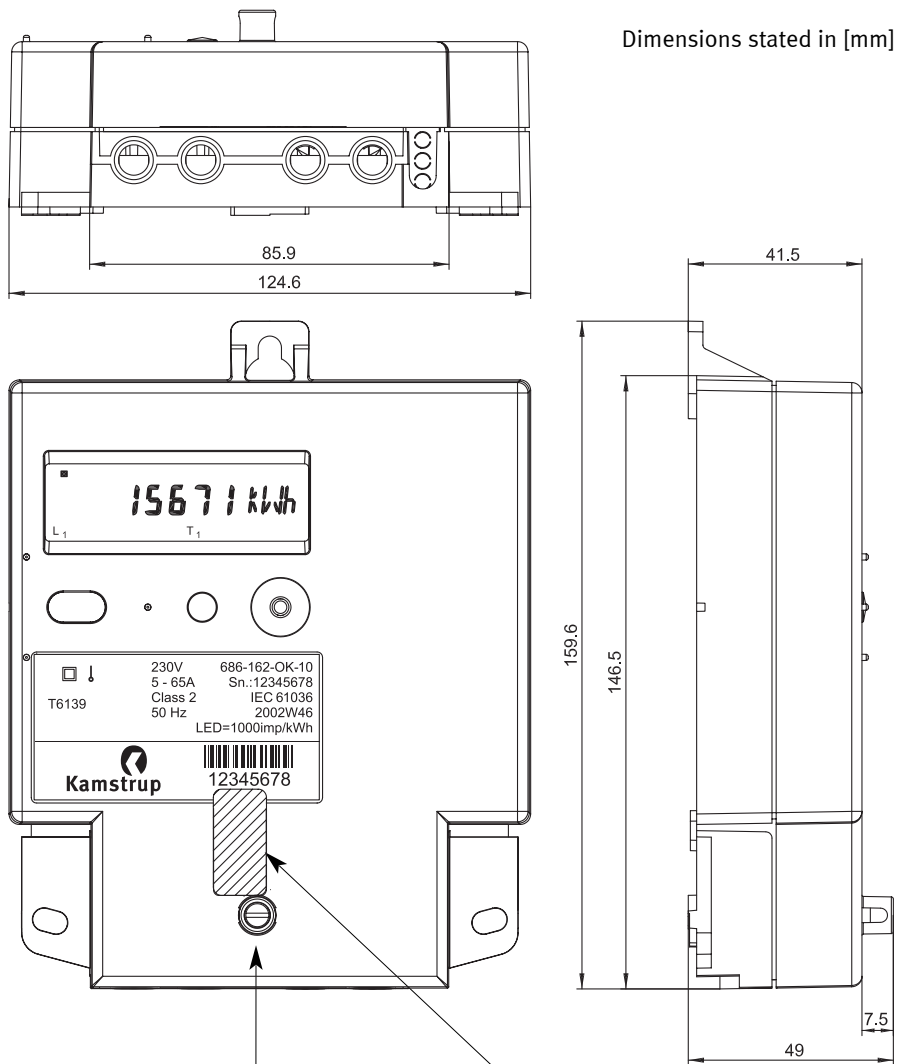
Only authorised personnel is permitted to install the electricity meter.



Warning

Danger! Do not touch connections or inner parts once the voltage supply is connected to the meter.

Sealing



The connection terminals on the electricity meter can be sealed by means of a sealing screw.

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 Pulse module	68 50 021
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 module, Ripple Control Receiver	68 50 012
V.22 modem	68 50 010
Tariff module, 2 tariffs, 230 V	68 50 008
Tariff module, 2 tariffs, 230 V, current loop	S7590 026

GSM modem (dual band)	S7510 003
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SOFTWARE

Configuration software, METERTOOL for 162/382	68 99 540
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VARIOUS

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