Kamstrup 162
J-generation

kWh meter 5(85)A with and without breaker

Measurement in 4 quadrants

Load profile in up to 4 quadrants

DLMS/COSEM compliant

Measurement in up to 8 tariffs

Voltage quality measurement

Safe data logging of consumption

Safe data logging of events

Immune to magnetic influence

Tamper detection

Real-time clock (RTC)

EN 62056-21 Mode A

Type approved according to:
Active positive energy
                       EN 50470-1 (MID)
                       EN 50470-3 (MID)

Active negative energy and reactive energy
                       IEC 62052-11
                       IEC 62053-21
                       IEC 62053-23

Application

Kamstrup 162J is a direct connected electricity meter for registration of electric energy. The meter is full electronic without movable parts. Thus, shock and impact during transportation and mounting do not affect energy registration.

Furthermore, measurements are correct, no matter the physical mounting direction.

The shunt measuring principle gives good linearity, a considerable dynamic range, and ensures that the meter is not influenced by magnetism.

The easily readable display scrolls automatically between readings, or readings can be changed manually by the consumer activating the push button. The required display readings as well as their order are configurable.

In addition to being read from the display, data can be collected via the optical output or from the module area by means of a suitable communication module. The unique module area permits external changing of tariffs, pulse input and output, and configuration as well as connection of AMR and AMM modules.

Kamstrup 162J has DLMS/COSEM as standard. DLMS/COSEM is an open standardized protocol, which can be accessed by both the optical eye as well as a suitable communication module placed in the module area. This ensure that Kamstrup 162J is interchangeable with DLMS/COSEM compliant meter types from other producers.

From the factory, the meter can be configured to measure both imported and exported energy. The energy registration is saved in the integral data logger, which ensures good data history with its depth of 36.

As standard, all 162J meter types offer real time load profile generation for all 4 quadrants. The load profile provides detailed information about consumed or produced energy.

Kamstrup 162J offers smart disconnect functionality as well as prepayment as standard. Smart disconnect allows control of the internal relays based on exceeding a current/power limit.

The prepayment functionality uses a countdown register to control the internal breakers.

The meter is configurable and can be supplied from the factory with required functions. A minimum of handling during installation is thus secured.
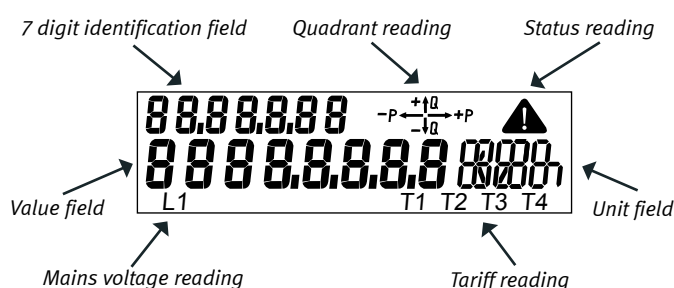
Kamstrup

Functions

Meter types with and without breakers

Meter types without breakers	162B, 162C, 162Jx3, 162Jx6, 162Jx7
Meter types with breakers	162D, 162E, 162JxC, 162JxF, 162JxG

Display

The display is a liquid crystal display that makes it possible to read out the meter's registers. Available registers depend on the configuration.

The display configuration is constructed as 2 independent display lists: One for automatic shift function and one for manual shift function. The display is constructed of segments as shown in the figure.

7 digit identification field   *Quadrant reading*   *Status reading*

Value field

L1   *T1 T2 T3 T4*   *Unit field*

Mains voltage reading   *Tariff reading*

Value field

This field is used for displaying register values.

7 digit identification field

OBIS code identification of the value in the value field.

Quadrant reading

The actual active quadrant is indicated.

Status reading

Indication of critical internal errors and magnetic influence.

Unit field

This field is used for displaying the units of registers in the value field.

Tariff reading

Displays the active tariff if tariffs is chosen.

Mains voltage reading

Indicates whether mains is above cut-off by either flashing or being permanently on for each individual phase. When flashing, voltage is above cut-off, but current is below cut-off.

The automatic shift function (scoll) changes between the selected readings in the required order every 10 secs. Historical data cannot be selected in the automatic shift function. Up to 16 readings can be selected.

Operation of the manual shift function is activated by pushing and releasing the push button. The order is optional, however it is not possible to opt out the legal readings. Up to 30 readings can be selected.

The meter automatically returns from manual shift function to automatic scroll function two min. after the last activation of the push button.

Energy measurement

The meter has shunt as measuring system for current and resistance division for voltage measurement.

Like voltage drop, energy consumption is calculated as an expression of the current compared to the phase voltage and time.

The energy registration is communicated to the meter's legal processor via the meter's internal bus system.

After correction the energy is summed in the main energy register.

Permanent memory

Measured and calculated data is safely stored in the memory (EEPROM). Data is stored by every change in energy register values.

Furthermore, the below mentioned values are stored at the end of a debiting period.

Active energy A+
Active energy A-
Reactive energy R+
Reactive energy R-
Active energy A+ Tariff（T1-T4）
Reactive energy R+ Tariff（T1-T4）
Peak power P+$_{max}$ Tariff 1
Peak power P+$_{max}$ Tariff 1 Hour
Peak power P+$_{max}$ Tariff 1 Date
Peak power P+$_{max}$ Tariff 2
Peak power P+$_{max}$ Tariff 2 Hour
Peak power P+$_{max}$ Tariff 2 Date
Peak power P+$_{max}$
Peak power P+$_{max}$ Date
Peak power P+$_{max}$ Hour
Accumulated peak power P+$_{max\ acc.}$
Date
Hour
Hour counter
Number of debiting periods
Power threshold counter
Pulse input

Optical reading

An optical infrared sender and receiver is placed to the left on the front of the electricity meter.

This optical reading can be used to read data or to configure e.g. display set-up and pulse figure.

By using METERTOOL for kWh meter, the meter's 2-display lists can be configured. Furthermore, the integration period, target date for debiting logger and debiting logging interval can be changed.

Finally, the pulse input on the meter can be scaled, and tariffs can be changed.

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

Functions

Plug-in modules

If needed, Kamstrup 162 can be extended by a plug-in module without subsequent reverification.

The module area communicates with the electricity meter's microprocessor via an internal data bus from the module area.

This provides innumerable functional possibilities such as extra pulse output, tariff modules, power supply modules and data communication via GSM/GPRS, PLC, TCP/IP, radio or other medias.

Kamstrup 162 with radio

This meter type has built-in radio communication on the electricity meter's main circuit board.

This is to optimise the product and eliminates the need for mounting the radio module subsequently.

When the meter's module area is used with another type of communication, the integrated radio communication will be deactivated.

Kamstrup 162 with breaker

This meter type has built-in disconnect function.

This means that is possible to disconnect the mains output from the electricity meter.

The disconnection can be done locally by using the meter's push button, automatically by either the smart disconnect or prepayment function, by METERTOOL for kWh meter or remotely by a connected reading system.

The disconnection must **NOT** be used as a safety switch.

The meter can be re-connected via the same media

as it has been disconnected.

Load profile

Load profile is configurable to 5, 15, 30 or 60 minutes following the integration period.

The number of profiles generated follows the selected energy type of the meter.

Logging depth in days:

Minutes	5	15	30	60
A+	37	110	225	450
A+/A-	26	80	160	320
A+/A-/R+/R-	17	50	100	200

Approved measuring data

The meter is type approved according to the Measurement Instrument Directive (MID) for active positive energy and according to national requirements for other energy sizes where required.

Approval	Norm
Type test according to	
– Active positive energy	EN 50470-1
	EN 50470-3
– Reactive energy as well as active negative energy	IEC 62052-11
	IEC 62053-21
	IEC 62053-23

Approval	Norm
Terminal according to	DIN 43857
Optical reading according to	DLMS/COSEM and EN 62056-21 Mode A
OBIS codes according to	IEC 62056-61

Technical data

Measuring principle
– Current   Current measurement by current shunt
– Voltage   Voltage measurement by voltage divider

Nominal voltage Un   230 V ± 10%

Current Ib(Imax)

162 without breaker	162 with breaker
5(85)A	5(85)A

Class   A
                            B

Nominal frequency fn   50/60 Hz ± 2%

Phase displacement   Unlimited

Operating temperature -40°C - +70°C

Storage temperature   -40°C - + 85°C

Protective class   IP52

Protection class   II

Relative humidity   < 75% year's average at 21°C
                          < 95% less than 30 days/year, at 25°C

Weight

162 without breaker	162 with breaker
Approx. 450 g	Approx. 750 g

Application area   Indoors or outdoors in suitable meter cabinet

Internal consumption

162BC	
Current circuit	0.01 VA
Voltage circuit	0.5 VA, 0.1 W

162J without breaker	
Current circuit	0.01 VA
Voltage circuit	0.5 VA, 0.2 W

162DEJ with breaker	
Current circuit	0.01 VA
Voltage circuit	0.7 VA, 0.45 W

Material
– Cover   Transparent polycarbonate
– Base   Glass reinforced polycarbonate

Data storage   EEPROM
                         > 10 years without voltage

Display   LCD, 7 mm-digit height
                         (Value and unit fields)
                         LCD, 5 mm-digit height
                         (Identification readings)
                         LCD, 3 mm-digit height
                         (voltage and tariff readings)

Meter constant   1000 imp./kWh,
                         1000 imp./kvarh

Real-time Clock (RTC)

Accuracy   Typical 5 ppm at 23°C

Real-time clock backup
– Supercap life   > 10 years at normal operation

Supercap operating hours A week fully charged

S0 pulse diode   1000 imp./kWh
                         Pulse duration 30 ms ±10%

Short circuit level   4500 A²t

Connection modules

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

S0 Supply | Sends 24 V via a two wire and pulses, by pulling down the supply at 0 V at each pulse.

Data/pulse | Serial RS232 communication, open collector, 300/1200 baud. Maximum load (current)

Pulse value Imp/kWh, Imp/kvar	Pulse width/Pulse pause	
	30 msecs.	**80 msecs.**
1	105A	105A
10	105A	105A
100	105A	105A
1000	86A	32A
10000	8.6A	3.2A

M-Bus | Remote reading via M-Bus system

2 tariffs | Tariff control via external 230 VAC

Current Loop | Tariff control of 2 or 4 tariffs, CS and 230 VAC

PLC | Remote reading via power line communication

TCP/IP | Remote reading via TCP/IP communication

GSM/GPRS | Remote reading via GSM/GPRS communication. Supports SMS reading

Radio | Remote reading via radio communication
Built-in in 162C, 162E, 162Jx6, 162Jx7, 162JxF, 162JxG

S0 Pulse module | S0 pulses according to DIN 43864

Connections

Main terminals | Elevating connections

Size	For use with connector type:		
	Multi core	**7-core**	**Massive/cable end-sleeve**
Brass terminal 35 mm²	≥ 10 mm²	≥ 10 mm²	≥ 4 mm²
Steel terminal 35 mm²	≥ 6 mm²	≥ 6 mm²	≥ 1.5 mm²
Steel terminal 25mm²	≥ 6 mm²	≥ 6 mm²	≥ 1.5 mm²

Screws | PZ 2 and straight slot
Torque 2.5 – 3 Nm

Voltage outputs

Size | 0.25 – 1.5 mm², 5 mm
Cable terminal forks

Screws | TORX Tx 10
Torque 1Nm

Ordering details

	686-	X_1	X_2	X_3	X_4	X_5	X_6	X_7	$X_8X_9X_{10}$
X_1 Phases									
1x230 V		1							
X_2 Current									
0.25-5(65)A			4						
0.5-10(60)A			6						
0.5-10(85)A			7						
0.25-5(85)A			8						
X_3 Class									
Class A				A					
Class B				B					
X_4 Generation									
Basis					B				
Communication					C				
Disconnect					D				
Comm + Disconnect					E				
DLMS and load profile					J				
X_5 Energy type									
A+						1			
A+/A-						2			
A+/R+						3			
A+/A-/R+/R-						4			
A+/R_1						5			
X_6 HW option									
RTC (Supercap)							3		
RF S incl. RTC							6		
RF K incl. RTC							7		
Breaker, supercap							C		
Breaker, RF Senea, supercap							F		
Breaker, RF Kamstrup, supercap							G		
X_7 Tariff configurable									
No tariff								1	
2-tariff								2	
Configurable								3	
4-tariff								4	
$X_8X_9X_{10}$ Country code									
DK									010
RUS									025
ES									031
NO									040
LV									045
LIT									049
GB									050
A									055
CH-I									059
EST									061
CH-D									063
PL									064
CH-F									065
ISL									067
DE									070
NL									080
FIN									084
SE									090

Configuration 1 (A-B-CCC-DD-E)

		A	B	C	C	C	D	D	E		
										A	Decimals displayed (locked)
A Decimals in display										**B**	LED configuration (locked)
7.0		1								**CCC**	Module
6.1		2								**DD**	Input/output configuration
B LED configuration										**E**	Integration period
LED switched off without consumption			1								
LED switched on without consumption			2								
CCC Module											
No module, OK				0	0	0					
S0 supply module, SK				0	0	1					
Data/pulse module, RK				0	0	3					
M-Bus module, MK				0	0	5					
Tariff module, 4 tariff, 230 V, WK				0	0	8					
Tariff module, 4 tariff, 230 V, CS, PK				0	1	8					
S0 Pulse module				0	2	1					
PLC module, router, ext. RTC				0	3	9					
IP101i, TCP/IP module				0	4	0					
Radio module, high power				0	4	3					
GSM6i, GSM6i/RF, GSM7i				0	5	3					
S input/output				0	5	5					
DD Input/output configuration											
Contact Kamstrup							X	X			
E integration period											
5 min.									1		
15 min.									2		
30 min.									3		
60 min.									4		

Configuration 2 (FFF-GG-HH-I)

		G	G	H	H	I

GG Target date

	GG
External controlled	00
1.	01
2.	02
3.	03
4.	04
5.	05
6.	06
7.	07
8.	08
9.	09
10.	10
11.	11
12.	12
13.	13
14.	14
15.	15
16.	16
17.	17
18.	18
19.	19
20.	20
21.	21
22.	22
23.	23
24.	24
25.	25
26.	26
27.	27
28.	28

HH Debiting logging interval

	HH
None (external controlled)	00
Monthly	01
Every second month, January	02
Every second month, February	03
Every third month, January	04
Every third month, February	05
Every third month, March	06
Half-yearly, January	07
Half-yearly, February	08
Half-yearly, March	09
Half-yearly, April	10
Half-yearly, May	11
Half-yearly, June	12
Yearly, January	13
Yearly, February	14
Yearly, March	15
Yearly, April	16
Yearly, May	17
Yearly, June	18
Yearly, July	19
Yearly, August	20
Yearly, September	21
Yearly, October	22
Yearly, November	23
Yearly, December	24

I Various

	I
30ms, pulses	1
80ms, pulses	3

FFF	Display configuration – Contact Kamstrup for further information.
GG	Target date
HH	Debiting logging interval
I	Various

Configuration 3 (JJ-K-LL-M-NN)

	J	J	K	L	L	M	N	N

JJ Disconnect setup

	JJ
None	00

K Peak power

	K
Peak power standard	0
Peak power for tariff 1	1
Peak power for tariff 2	2

LL GMT

	LL
0 London	00
1 DK, DE, FR, ES	01
2 FIN	02
3	03
4	04
5	05
6	06
7	07
8	08
9	09
10	10
11	11
12	12
-11	13
-10	14
-9	15
-8	16
-7	17
-6	18
-5	19
-4	20
-3	21
-2	22
-1	23

M Available

	M
None	0

NN Unit pulse input

	NN
None	00
kWh	01
m³	02
L	03

Code	Description
JJ	Disconnect setup
K	Peak power
LL	GMT
M	Available
NN	Unit pulse input

Configuration 4 (OOO-PPP-QQ)

	O	O	O	P	P	P	Q	Q

OOO Tariff control table

	OOO
None	000

PPP Summer/normal time table

	PPP
None	000
001 EU	001

QQ Protocol

	QQ
None	00

Code	Description
OOO	Tariff control table/Holiday table/ Table for summer/normal time plan
PPP	Summer/normal time table
QQ	Protocol

Configuration 5 (RRR)

RRR Frequency – transmitting power	R	R	R
None			000
EU 310 RF S			310
EU 311 RF S			311
EU 312 RF S			312
EU 319 RF K			319
SE 320 RF S			320
SE 321 RF S			321
SE 322 RF S			322
SE 328 RF K			328
NO 330 RF S			330
NO 339 RF K			339
DK 340 RF S			340
DK 349 RF K			349

RRR   Frequency – transmitting power

Installation

Connect the meter in accordance with the installation diagram on the meter's verification cover.

1-phase, 2-wire
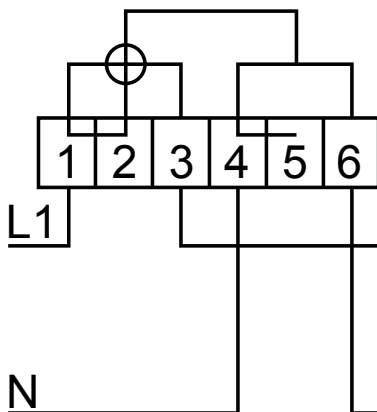
Security and installation guide lines

The meter shall only to be used for measuring electrical energy and shall operate within the specified values only.

The meter must be switched off when working on it. It can be highly dangerous to touch the meter parts when the meter is switched on.

Therefore, the relevant safety fuse must be removed and kept in a place where unauthorised persons cannot insert it.

Current local standards, guidelines, regulations and instructions must be observed. Only authorised personnel are permitted to install electricity meters. Meters for direct connection must be protected against short circuit by a backup fuse in accordance with the maximum current stated on the meter.
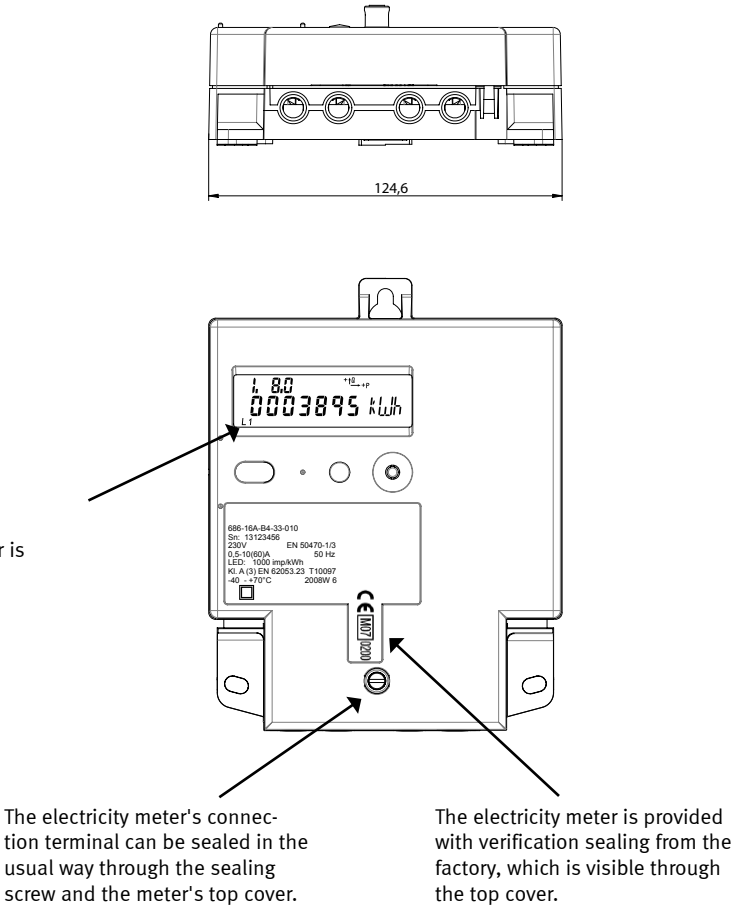
The meter constant LED blinks proportionally to the consumed active energy.

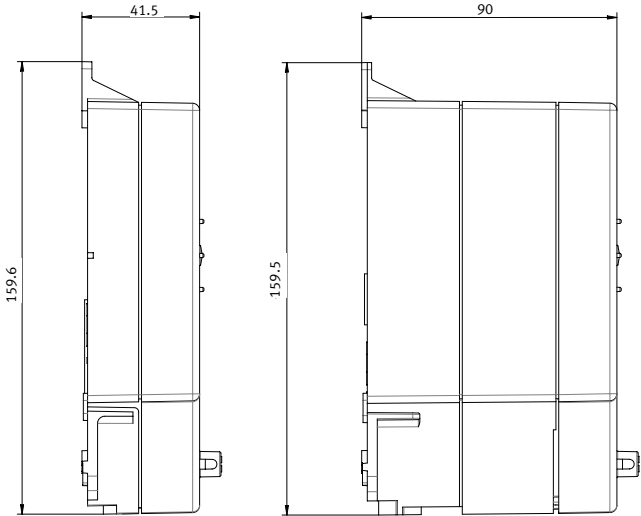Only authorised personnel must break the sealing.

Sealing

124,6

L

Phase connection

– lights up if the meter is
  connected.

686-16A-B4-33-010
Sn: 13123456
230V   EN 50470-1/3
0,5-10(60)A   50 Hz
LED: 1000 imp/kWh
Kl. A (3) EN 62053.23 T10097
-40 - +70°C   2008W 6

The electricity meter's connec-
tion terminal can be sealed in the
usual way through the sealing
screw and the meter's top cover.

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

Kamstrup 162 without breaker   **Kamstrup 162 with breaker**

41.5   90

159.6   159.5

Accessories

Modules

S0 supply module	SK	68 50 001
Data/pulse module, relay output	RK	68 50 003
M-Bus module	MK	68 50 005
Tariff module, 4 tariffs, 230 VAC	WK	68 50 008
Tariff module, 4 tariffs, 230 VAC, current loop	PK	68 50 018
S0 Pulse module		68 50 021
PLC module, router, external RTC	PO	68 50 039
IP101i, TCP/IP module	IK	68 50 040
Radio module, router, high power	QR	68 50 043
GSM6i, GSM6i/RF, GSM7i	QR	68 50 053
S input / output		68 50 055

Software

Configuration SW, METERTOOL for kWh meter	68 99 570

Various

Long terminal cover 60 mm	59 60 150
Optical reading head with 9-pole-t Dsub connector	66 99 102
Optical reading head with USB connector	66 99 099
DIN rail mounting	68 30 007
Extension for the top mounting ring	68 30 010
Top fitting, metal bow	68 50 101
Contact plugs, 50 pcs.	68 50 102
Cable terminals, 50 pcs.	68 50 103