kwhiq
energy information technology



Installation Manual

IQ0304100d1

- Direct connected Three Phase DIN rail Meter
- 100 Amp MODbus meter
- MID certified
- Designed for submetering of electrical loads like EV-chargers, PV-Inverters with high Amps

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Amendment

Version	Date	Remark
1.0	06/03/2023	Draft
1.1	09/03/2023	
1.1	07/01/2024	Parity set to even as default
1.1	07/16/2024	Passcode changed

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MID Certificate

EU Type Examination Certificate Number: **0120/SGS0611**

KWHIQ B.V

Burgemeester Burgerslaan 40
5245 NH Rosmalen
The Netherlands

Instrument Identification:
IQ0304100d1

Polyphase, Directe Connected, Active Import/Export (kWh), DIN Rail, Electricity Meter

Instrument Traceable Number
0120/SGS0611

has been assessed and certified as meeting the requirements of

EU Directive 2014/32/EU

on Measuring Instruments Annex II, Module B

It is certified that the manufacturer's technical design and specimen for the above instrument has been examined and, based on the evidence submitted, it is considered that the instrument conforms to the requirements of Annex V of EU Directive 2014/32/EU

This certificate must be used in conjunction with a certificate covering the product verification as required in Annex II, Module D or Annex II, Module F

This certificate is valid from 15th December 2022 until 29 November 2032
Issue 1

Certification is based on report number(s):
SHES220801488301 dated 21st November 2022, EMA310134/1/TR50579 dated 18th November 2022
EMA310134/1
EMA310585/1

Authorised Signature

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DU-CST-ME-002 Rev 5

EU Type Examination Cert.

Guidelines for safety and installation



This installation guide must be consulted in all cases when manipulating parts which are marked with the Caution symbol. The installation and the operation of this device and any maintenance must be carried out by a qualified person in accordance with specific local standards and safety regulations.

Failing to obey the "Guidelines for safety and installation", the guarantee no longer applies.

Safety Instructions

- Case is sealed, do not open the meter. No warranty if case is opened.
- The meter should be installed indoor or in the outdoor electric meter box.
- The meter is intended to be installed in a Mechanical Environment 'M1', with Shock and Vibrations of low significance, as per 2014/32/EU Directive.
- The meter is intended to be installed in Electromagnetic Environment 'E2', as per 2014/32/EU Directive.

Exclusion of liability

We have checked the contents of this publication and every effort has been made to ensure that the descriptions are as accurate as possible. However, deviations from the description cannot be completely ruled out, so that no liability can be accepted for any errors or omissions in the information given. The data in this manual is checked regularly and the necessary corrections will be included in subsequent editions. If you have any suggestions, please let us know.

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For service and technical support information, please contact:

KWHIQ b.v. Burgemeester Burgerslaan 40. 5245 NH Rosmalen, E-mail: support@kwhiq.com, Website: https://kwhiq.com/

Specifications

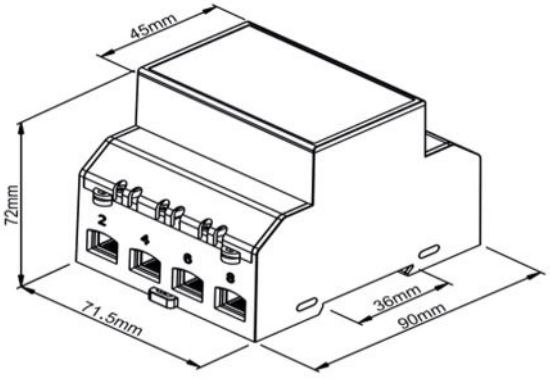
Electrical

Accuracy	Active	Class B
	Reactive	Class 2
Voltage	Rated Voltage	2x230(400)V
	Voltage with standard	440V
	Operation voltage range	80% to 120% Un
	Long-range voltage	58/100V to 240/415V
Current	Rated current	5(100)A
	Starting current	20mA
Frequency	50Hz ± 2%	
Power consumption	Voltage circuit	≤1W
	Current circuit	≤12VA
Pulse constant	1000 imp/kWh(kvarh)	

Environmental

Operating temperature	-40 ° C to 70 ° C	**Storage temperature**	-40 ° C to 70 ° C
Operating humidity	≤75% RH (Max ≤95% RH)	**Case protection**	IP51 Indoor

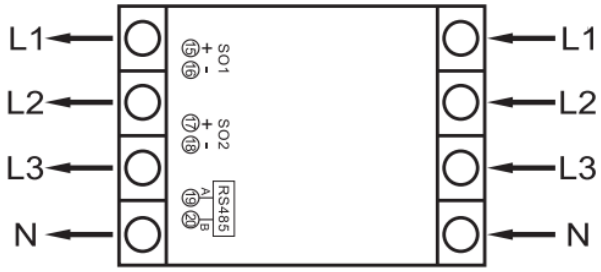
Dimensions

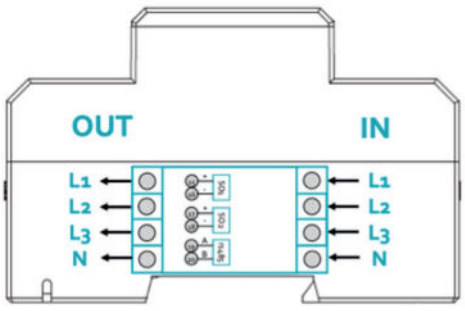


Display format



Wiring diagram

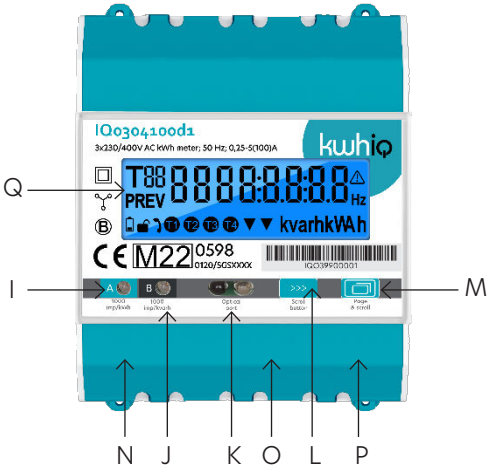




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General description

Front view



I	Impulse indication for active energy
J	Impulse indication for reactive energy
K	Far IR
L	Button for data checking
M	Button for data setting
N	SO1 output for active energy (default)
O	SO2 output for reactive energy (default)
P	RS485 output
Q	LCD screen

Button instruction

Button	Function
 Page setting	Short Press: next page
	Long press: go to setup menu

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LCD display

LCD Scrolling Display Page

20LCD Scrolling Display Page		
Page	Content	Unit
1	Total active energy	kWh
2	Forward active energy	kWh
3	Reverse active energy	kWh
4	Total reactive energy	kWh
5	Forward reactive energy	kvarh
6	Reverse reactive energy	kvarh
7	First quadrant reactive energy	kvarh
8	Second quadrant reactive energy	kvarh
9	Third quadrant reactive energy	kvarh
10	Fourth quadrant reactive energy	kvarh
11	Active maximum demand	kvarh
12	Forward active maximum demand	kvarh
13	Reverse active maximum demand	kvarh
14	Reactive maximum demand	kvarh
15	Forward reactive maximum demand	kvarh
16	Reverse reactive maximum demand	kvarh
17	A phase and N-phase voltage	V
18	B phase and N-phase voltage	V
19	C phase and N-phase voltage	V
20	A Phase and B Phase line voltage	V
21	B Phase and C Phase line voltage	V
22	C Phase and A Phase Line Voltage	V
23	Current of A-phase	I
24	Current of B-phase	I
25	Current of C-phase	I
26	Combined active power	kW
27	A-phase active power	kW
28	B-phase active power	kW
29	C-phase active power	kW
30	Combined reactive power	kvarh
31	A phase reactive power	kvarh
32	C phase reactive power	kvarh
33	Combined Apparent Power	kVA
34	A phase apparent power	kVA
35	B phase apparent power	kVA
36	C phase apparent power	kVA
37	Combined frequency	Hz
38	A phase frequency	Hz
39	B phase frequency	Hz
40	C phase frequency	Hz
41	Combined power factor	Hz
42	A phase power factor	Hz
43	B Phase power factor	Hz
44	C Phase power factor	Hz

Long press the left button for more than 3 seconds to switch the display page:

- Scroll display page
- A-phase energy page
- B-phase energy page
- C-phase energy page
- Information page
- Scroll display page

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LCD Information Display Page

LCD Information Display Page		
Page	Content	Format
1	12-digit serial number of the meter	000000000000
2	Modbus communication address	1-247
3	Baud rate	6 = 9.600 7 = 19.200 8 = 38.400 9 = 115.200
4	Parity	0=None 1=Odd 2=Even (default)
5	Stop bit	1=1 bit (default) 2=2 bit
6	Scrolling time	0-99 seconds
7	Combination code	1-Total=forward 2-Total=reverse 3-Total =forward+reverse (default) 4-Total=forward-reverse
8	Demand type & period	0=Interval 1=Slip Period=1-30 minutes
9	SO output	800, 1.000, 1.600, etc. above 100, divisible by 96.000

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Installation



CAUTION:

- Turn off and if possible lock all sources supplying the energy meter and the equipment that is connected to it before working on it.
- Always use a properly rated voltage sensing device to confirm that power is off.

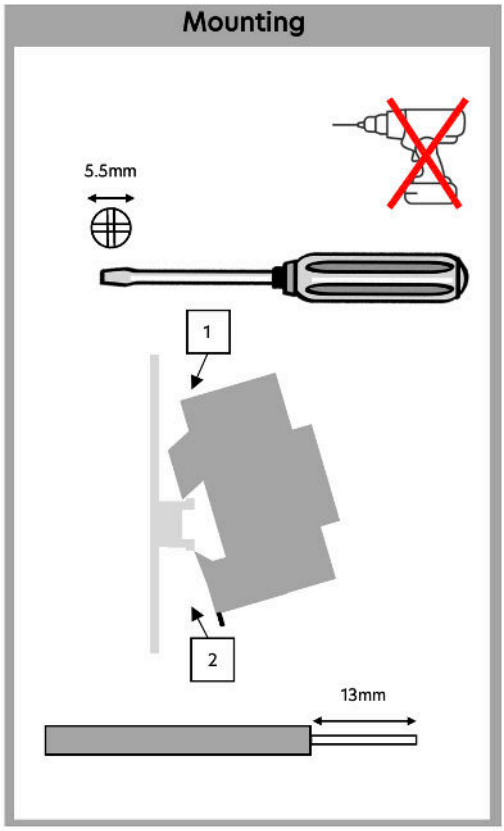


WARNING:

- The installation should be performed by qualified personnel familiar with applicable codes and regulations.
- Use insulated tools to install the device.
- A fuse, thermal cut-off or single-pole circuit breaker should be fitted on the supply line and not on the neutral

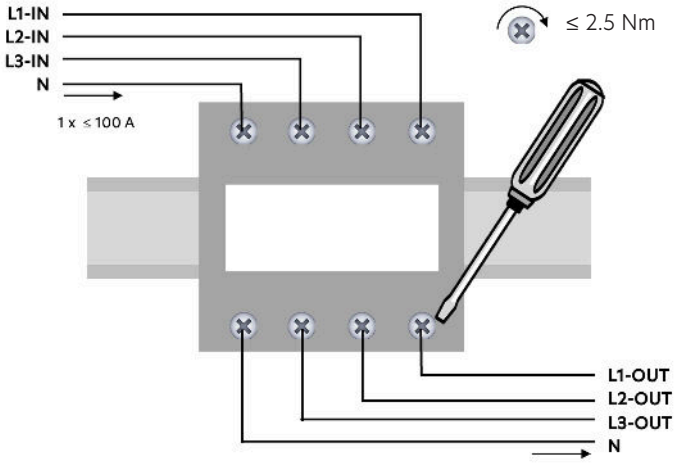
Mounting

Mount the device in a DIN-rail cabinet



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Electrical install procedure



(A)	(mm²)	(Nm)
0-32	1-6	0.9-1.2
32-65	10-14	1.5-2.0
65-100	16-25	2.0-2.5

Maximum cable size:

: 25 mm²

Maximum screw torque:

: 2.5 Nm



Communication install procedure

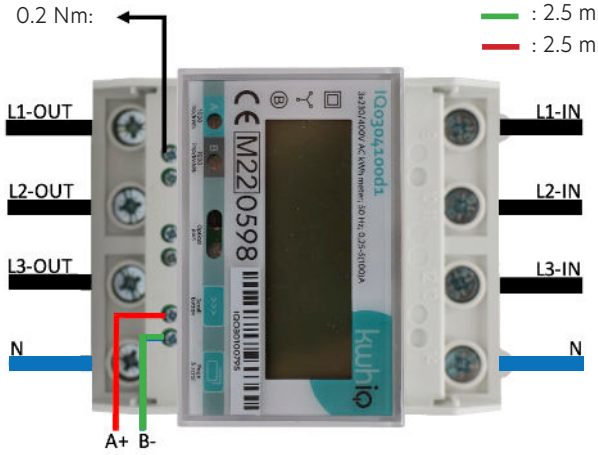
Maximum screw torque:

0.2 Nm:

Maximum cable size:

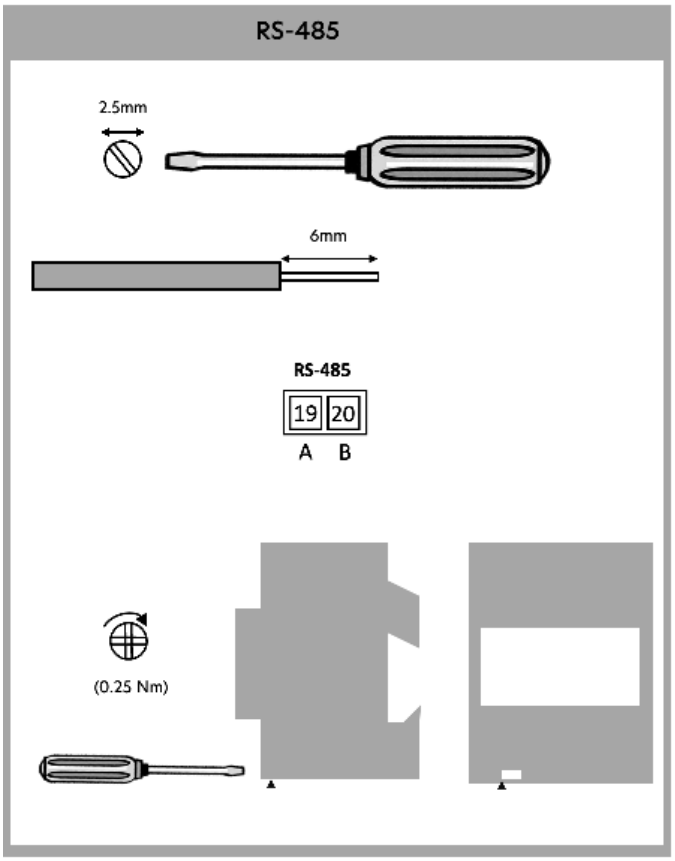
: 2.5 mm²

: 2.5 mm²



Wire the device in accordance to the Wiring Diagram. If the bare wire is visible above the terminal bridge, shorten the stripped part of the wire.

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Operation

Scrolling function

- Automatic scroll: Every 5 seconds the meter will display the next programmed data page (depending on the setting).
- Button scroll: Each short press on the meter button will display the next programmed data page.

Set modbus parameters

By default, the modbus parameters are:

Modbus id	1
Baud rate	9.600
Parity	Even
# Stop bits	1

Meter settings can be adjusted in two ways:

- Manually through the use of the button and display page
- Serially through Modbus commands (see Modbus registers).

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Manually adjusting meter settings

1. Navigate to the SETUP menu by long pressing the push button (see red circle). In the SETUP menu you can enter a PIN code. By long pressing the push button you can enter digits. Press briefly to adjust the value of the flashing digit. Use this method to enter the PIN code 5947.



Default: standard mode



SETUP menu



Pincode

2. Check the following settings in the SETUP menu and change if necessary. Press long to adjust, press briefly to change variables.



Modbus ID: unique per device on the bus



Baud rate: default '9600' (19200/38400/115200)



Parity: default 'Even' (odd/even)



Stop bit: default '1'

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3. Long press the push button to navigate out of the SETUP menu. Configuration is complete.



QUIT

Modbus registers (partly)

A selection of the most important modbus registers:

Page	Reg unit	Modbus Reg Address (DEC)	Modbus Reg Address (HEX)	Modbus Reg Length	Modbus Reg Type	Comment
Serial Number E-meter	UNITLESS	4096	0x1000	3	12-bit serial number, hexadecimal	
Modbus ID	1-247	4099	0x1003	1	8-bit integer	
Forward Active Energy	kWh	270	0x010E	2	INT32(6+2)	
Reverse Active Energy	kWh	280	0x0118	2	INT32(6+2)	
Forward active Power	Watt	1056	0x0104	2	INT32(5+0)	
Reverse active Power	Watt	Negative Forward Power				
Instantaneous Voltage L1-N	Volt	1024	0x0400	2	INT32(3+3)	
Instantaneous Voltage L2-N	Volt	1026	0x0402	2	INT32(2+3)	
Instantaneous Voltage L3-N	Volt	1028	0x0404	2	INT32(2+3)	
Instantaneous Voltage vector	Volt	1036	0x040C	2	INT32(2+3)	[(VA phase - N) + (VB phase - N) + (VC phase - N)] / 3
Instantaneous Voltage vector	Volt	1038	0x040E	2	INT32(2+3)	[(VL1-L2) + (VL2-L3) + (VL3-L1)] / 3
Instantaneous Current L1	Ampère	1040	0x0410	2	INT32(2+3)	
Instantaneous Current L2	Ampère	1042	0x0412	2	INT32(2+3)	
Instantaneous Current L3	Ampère	1044	0x0414	2	INT32(2+3)	
Instantaneous Current vector	Ampère	1048	0x0418	2	INT32(2+3)	

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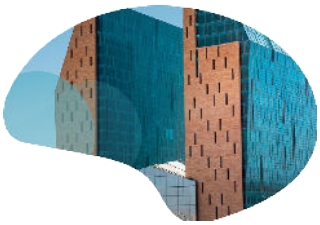
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