



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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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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Specifications

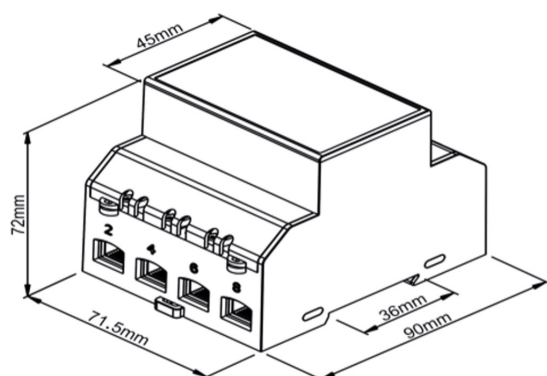
Electrical

| | | |
|-------------------|-------------------------|---------------------|
| 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 \pm 2% | |
| Power consumption | Voltage circuit | \leq 1W |
| | Current circuit | \leq 12VA |
| Pulse constant | 1000 imp/kWh(kvarh) | |

Environmental

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

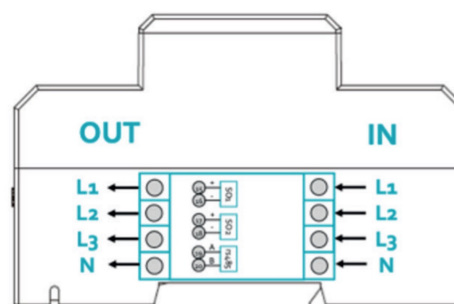
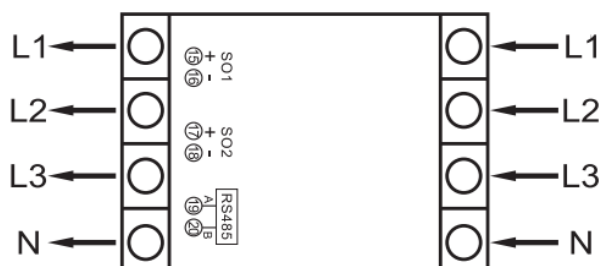
Dimensions



Display format

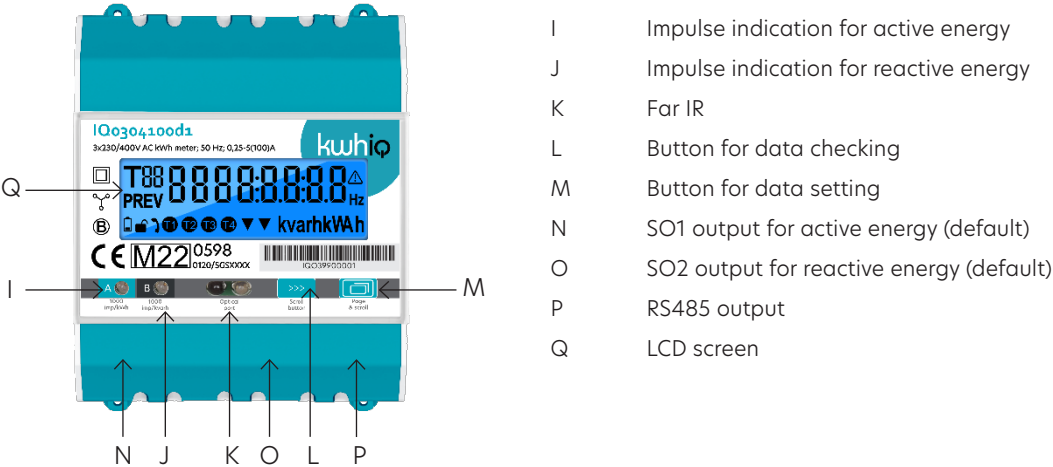


Wiring diagram




General description

Front view



Button instruction

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

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

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 |

Installation

**CAUTION:**

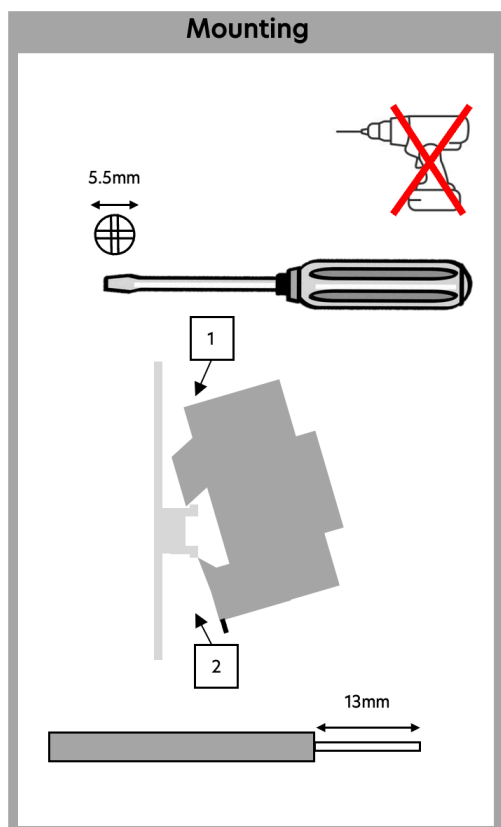
- Turn off and if possible lock all sources supplying the energy meter and the equipment that is connected to it before working on it.
- Always use a properly rated voltage sensing device to confirm that power is off.

**WARNING:**

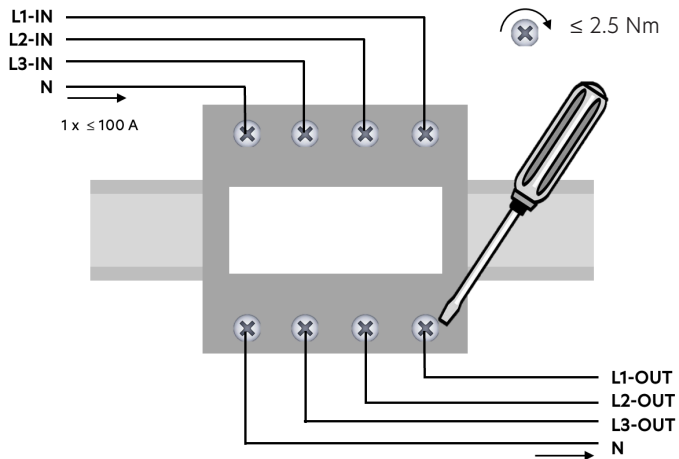
- The installation should be performed by qualified personnel familiar with applicable codes and regulations.
- Use insulated tools to install the device.
- A fuse, thermal cut-off or single-pole circuit breaker should be fitted on the supply line and not on the neutral

Mounting

Mount the device in a DIN-rail cabinet



Electrical install procedure



| (A) | (mm ²) | (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

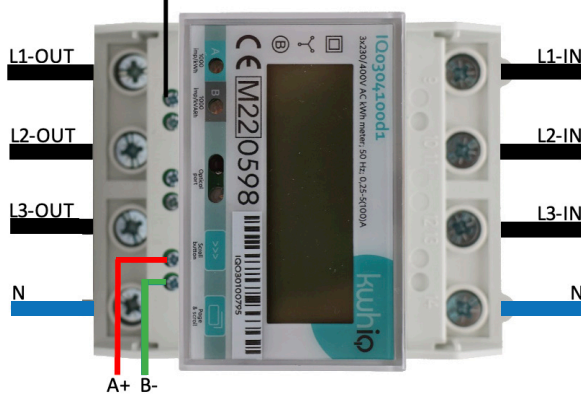
Maximum screw torque:

0.2 Nm:

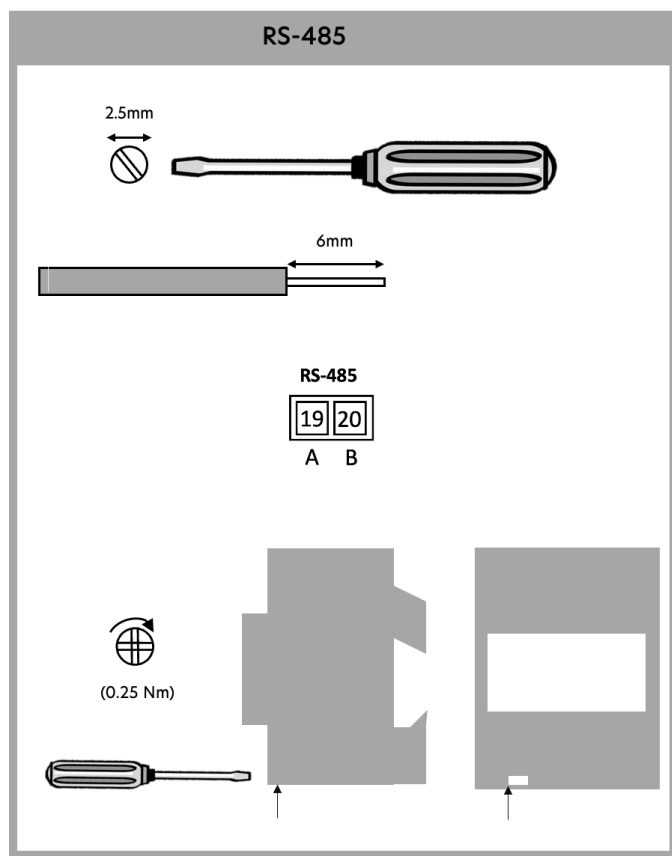
Maximum cable size:

■ : 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.



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).

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 busBaud rate: default '9600'
(19200/38400/115200)Parity: default 'Even'
(odd/even)

Stop bit: default '1'

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) | $[(VA \text{ phase} - N) + (VB \text{ phase} - N) + (VC \text{ phase} - N)] / 3$ |
| 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) | |

Contact information



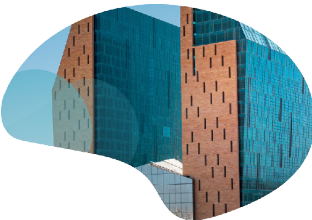
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