

Installation and Configuration Manual — EMS Package 3-Phase Sensor without Current Transformer (KDK 2PU CT)

Version:2026.11.1

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1. Introduction

1.1. Legal provisions

Unless otherwise stated, the information contained in these documents is the property of Heckert Solar GmbH. Publication, in whole or in part, requires the written consent of Heckert Solar GmbH.

Diese Anleitung stellt keinen Anspruch auf Vollständigkeit und Korrektheit dar. Sie dient lediglich als Kurzfassung der originalen Anleitung des KDK Dornscheidt 2PU CT.

Online: https://www.kdk-dornscheidt.de/produkte/420506pro20-ct/

Subject to changes and printing errors!

1.2. Qualification of the installer

A qualified installer is a person who has the following experience and training:

- Setting up, switching on, switching off, disconnecting, earthing, short-circuiting and repairing circuits and devices
- Standard maintenance and use of protective devices in accordance with current safety standards
- First aid/emergency care
- Current knowledge of local regulations, standards and guidelines

1.3. Symbols used

	Wichtige, für Montage und Betrieb essenzielle Informationen.
	Hinweis, der die Arbeit an und mit dem Produkt unterstützt.

1.4. Dangers and safety instructions



The meter must be installed by a qualified specialist.

Hierfür ist die Dokumentation https://www.kdk-dornscheidt.de/wp-content/uploads/2021/08/KDK-Bedienungsanleitung_420565PRO20-U_4PU_052021V1.00.pdf zu beachten.

2. Product description

2.1. Scope of delivery

After you have received the delivery, check that all components have been included. Inspect the scope of delivery for damage. If anything is missing or damaged, please contact the supplier immediately. The following components are included in the delivery:

- KDK Dornscheidt 2PU CT
- Installations- und Konfigurationsanleitung für EMS Package 3-Phase Sensor without Current Transformer (KDK Dornscheidt 2PU CT)
- Montageanleitung für KDK Dornscheidt 2PU CT (Online: https://www.kdk-dornscheidt.de/wp-content/uploads/2021/08/KDK-Bedienungsanleitung_420565PRO20-U_4PU_052021V1.00.pdf)

2.2. Prerequisites

To use the 3-phase sensor, the following is required:

- Current transformer
- FENECON Energy Management System (EMS)



Bitte beachten Sie: Die Stromwandler sind nicht im Lieferumfang enthalten! (Online: https://www.kdk-dornscheidt.de/produktkategorie/stromwandler/)

Am Beispiel dieses Zählers ist das Wandlerverhältnis zu 1 oder 5.

You can read the transformer ratio on the current transformers installed on site (see e. g. type label).

2.3. Model overview

Der KDK Dornscheidt 2PU CT ist ein modularer Wirk- und Blindenergiezähler, der verbrauchte Energie zählen und anzeigen kann. Er ist für dreiphasige Netze ausgelegt und muss mit Stromwandlern betrieben werden. Der Zähler ist mit einem MODBUS-Kommunikationsbus ausgestattet.



Image 1. 420506PRO20-CT (2PU CT)

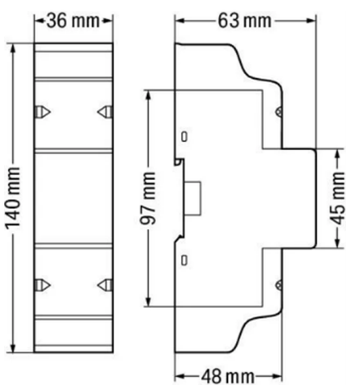


Image 2. Dimensions

Höhe o. Abdeckung	97 mm
Höhe m. Abdeckung	140 mm
Breite	36 mm
Tiefe	63 mm
Gewicht (Netto)	0,2 kg

3. Connection

3.1. Terminal designation

The push-in technique can be used for solid conductors, fine-stranded conductors and fine-stranded conductors with wire ferrule. For fine-stranded conductors, the levers must be opened for connection.

Cross-section of the connection terminals:

Single-wire conductors

0.2 … 4 mm²/24 … 12 AWG

Fine-stranded conductors

0.2 … 4 mm²/24 … 12 AWG

Fine-stranded conductors with wire ferrule and plastic collar

0.25 … 2.5 mm²

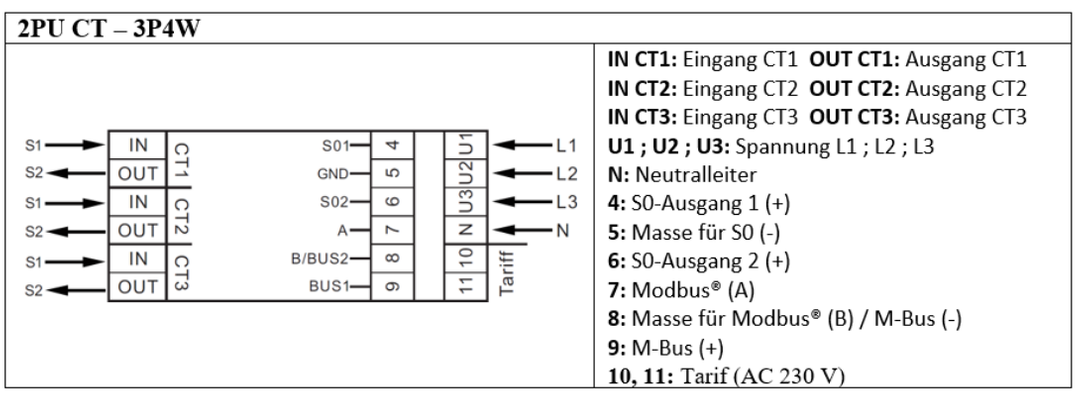


Image 3. Terminal designations

3.2. Voltage tap

The meter is electrically connected through the three phases and the neutral conductor in accordance with the original instructions. As this type of meter can only work with external current measurement sensors, this is a voltage tap of the three phases and the neutral conductor.

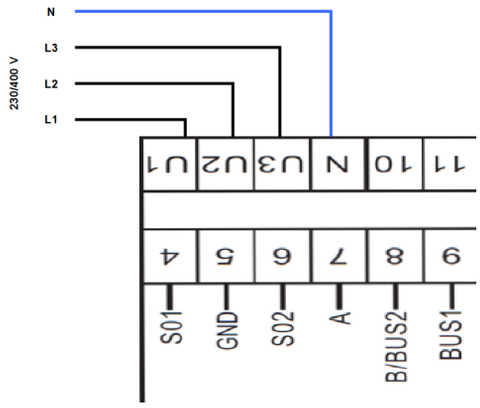


Image 4. Voltage tap

Auxiliary table for dimensioning the secondary cables for transformers with 5 A secondary current (XXXX/5A)

Bei einem Leiterquerschnitt von 2,5mm²			
		Wandler mit 2,5 VA	*Wandler mit 5 VA*
1-fache Leitungslänge	*Min.*	*3 Meter*	*3,5 Meter*
	Max.	*7 Meter*	*14 Meter*

Bei einem Leiterquerschnitt von 4m²			
		Wandler mit 2,5 VA	*Wandler mit 5 VA*
1-fache Leitungslänge	*Min.*	*4,5 Meter*	*6 Meter*
	Max.	*11 Meter*	*22 Meter*

- 1-fold cable length means one cable with two cores! For K and L.
- Für abweichende Stromwandler oder Kabelquerschnitte kostenlose Beratung bei KDK Dornscheidt Tel.: 02244 9199447.

3.3. Connection of current transformers to the meter of the metering point operator

The current transformers must be connected to the meter of the metering point operator as shown below:

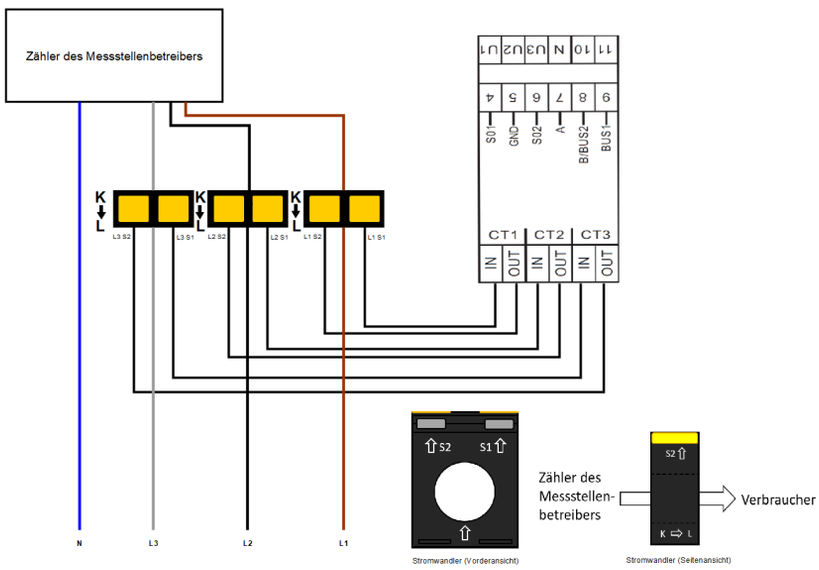


Image 5. Connection of current transformers to the meter of the metering point operator

Ensure that the transformers are aligned correctly from K to L!

3.4. Connection of current transformer to generator

The current transformers must be connected to the generator (inverter) as shown below:

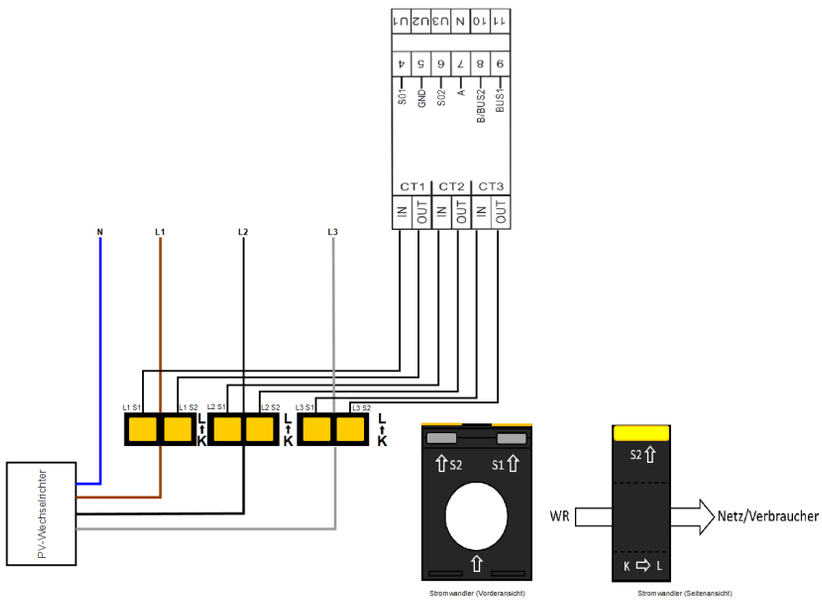


Image 6. Connection of current transformer to generator

Ensure that the transformers are aligned correctly from K to L!

3.5. Connection of current transformer to consumer load(s)

The current transformers must be connected to a consumer load as shown below:

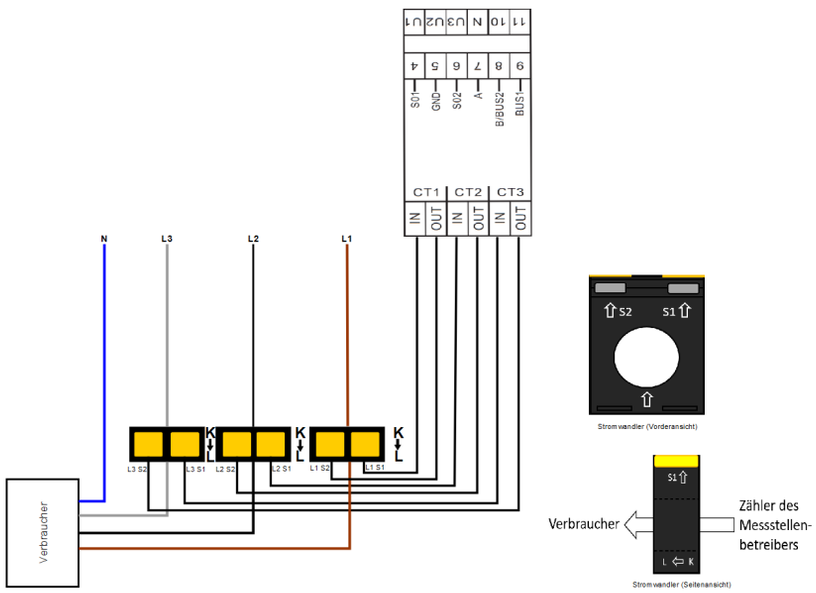


Image 7. Connection of current transformer to consumer load(s)

- Ensure that the transformers are aligned correctly from K to L!
- In contrast to the connection to a generator or the meter of the metering point operator, the current transformers must be installed upside down here!

4. Communication

Die beim 2PU CT verfügbare Modbus-Kommunikation erfolgt über eine serielle RS485-Schnittstelle (2- oder 3-Draht), die den Betrieb des Gerätes vom EMS aus ermöglicht. In der Standardkonfiguration können mit einer RS485-Schnittstelle 64 Geräte mit einem PC oder einem Controller auf 1000 Meter verbunden werden.

The connections for Modbus communication are located above the meter, in the front row of terminals.

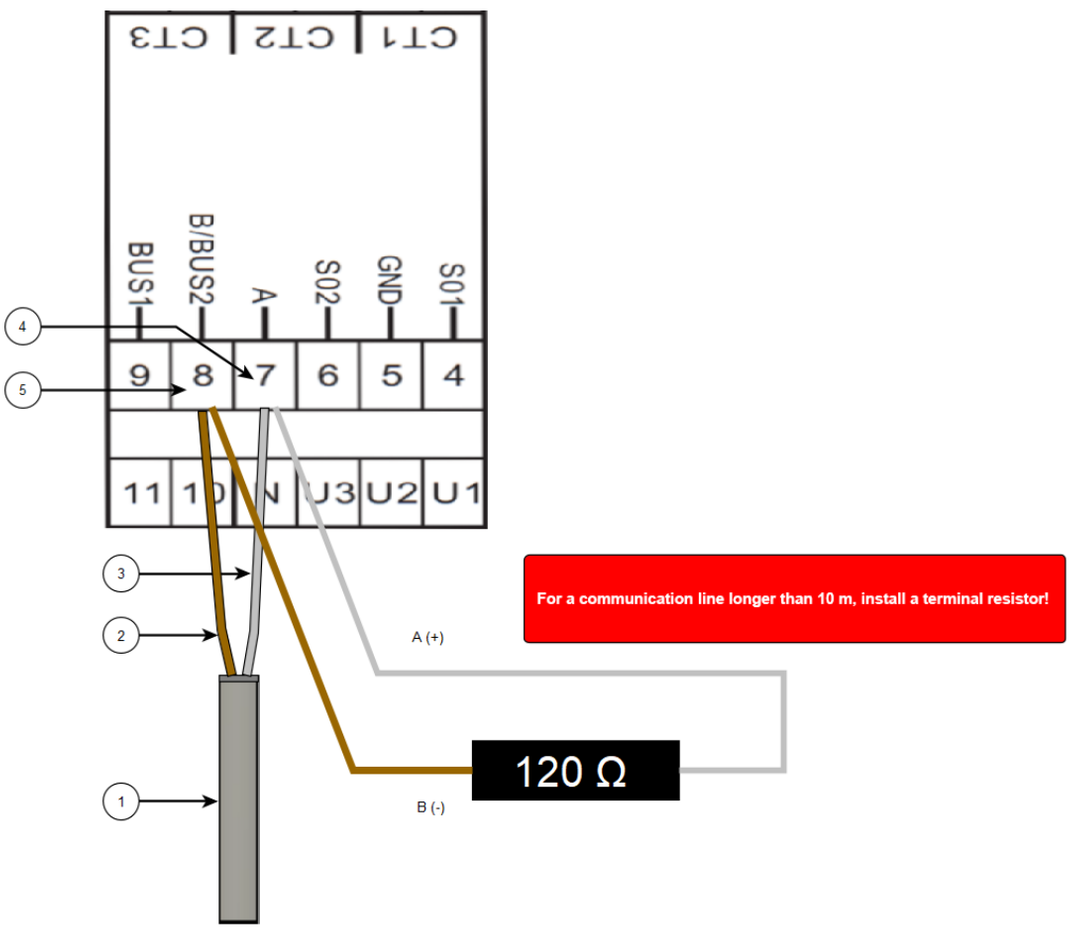


Image 8. RS-485 connection

1. COM RS-485 connection from EMS
2. Data conductor Positive (+) (A conductor)
3. Data conductor Negative (-) (B conductor)
4. Minus (-) contact
5. Plus (+) Contact

To connect several meters in series, the RS-485 connection must be looped through, as shown in the figure below.

Note the connection of the terminating resistor (120 Ω/0.25 W)!

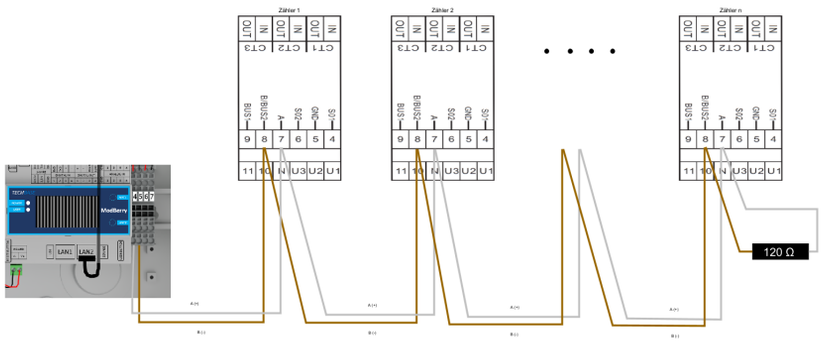


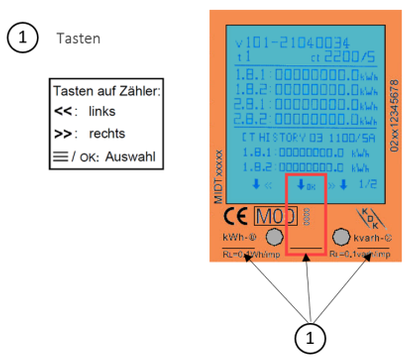
Image 9. Looping through RS-485 of several meters

Falls das gelieferte RS485-Kabel nicht ausreicht, empfehlen wir die Nutzung eines LiYCY mit 0,5-mm²-Querschnitt. Dieses ist für max. 500 m geeignet. Generell sind die Vorgaben und Empfehlungen des Herstellers zu beachten.

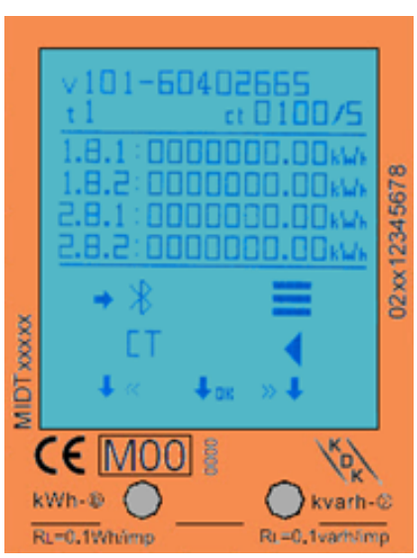
5. Overview of controls

There are three buttons on the front of the meters, marked with a line. To access the menu, press and hold the middle button for **≥ 5 seconds**.

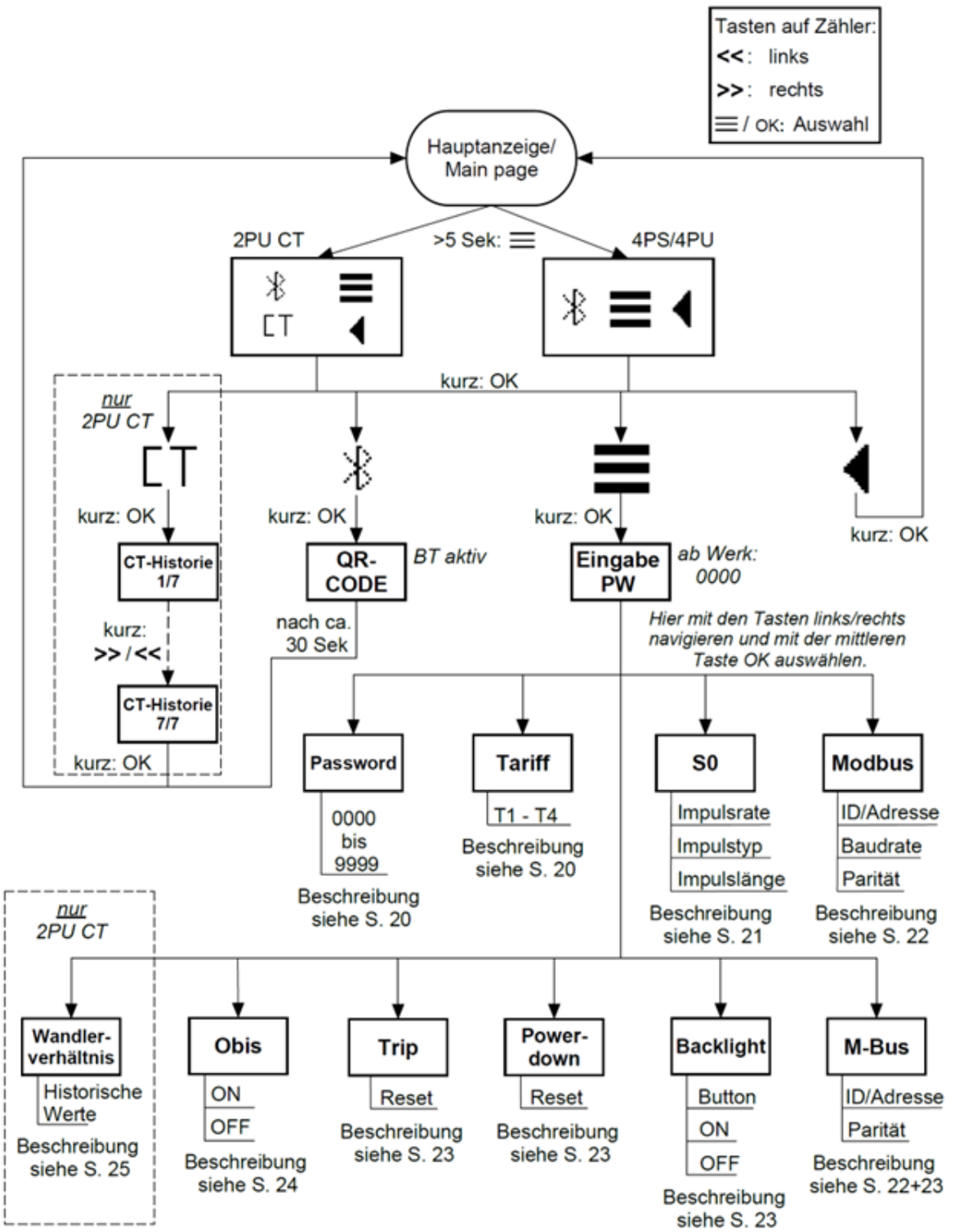
The following display appears:



Here you have the option of activating the meter's Bluetooth, on the far left in the picture. The symbol in the middle, three dashes, takes you to the actual menu where you can make adjustments to the meter settings. The arrow to the left, on the right in the picture, takes you back to the measured values.



5.1. Menu structure



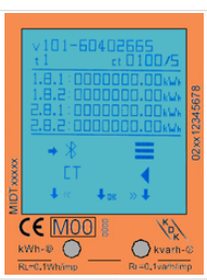
6. Adjust configuration via buttons on the meter

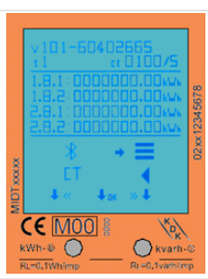
6.1. Configuration parameters

The following configuration settings must be used for use with EMS:

Measuring transformer current ratio	…/5 e. g. 500/5 = 500 *A*.
RS485 Modbus address grid connection point	005
RS485 Modbus address PV generation	006
RS485 Modbus address — other generators/consumers	007…246
Baud rate for communication	9600
Parity	None

The symbol in the display, with three dashes, takes you to the actual menu where you can make adjustments to the counter settings. The arrow to the left, on the right in the picture, takes you back to the measured values.

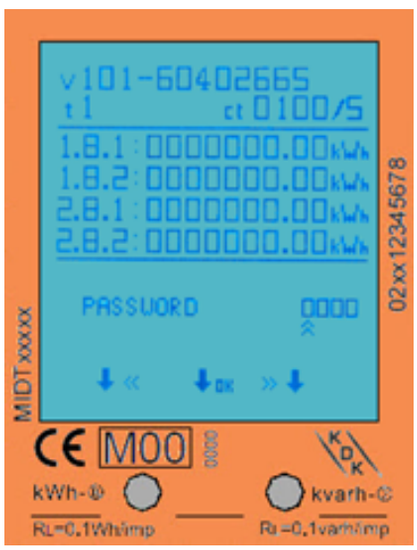




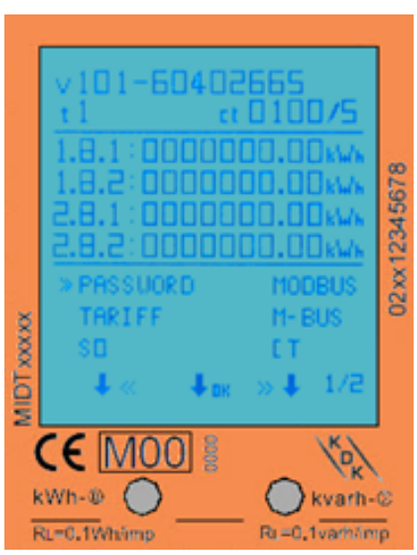
6.2. Passwort-Eingabe

The settings can be made using the sensitive push-buttons on the front of the meter. Use the left and right buttons to scroll through the options. Confirm the setting with the middle button. Select the menu symbol (3 horizontal lines) to access the settings menu:

To access the settings menu, enter the 4-digit password (factory set to **0000**). Confirm each digit (0-9) by pressing the middle button:



Once the password has been entered correctly, the settings menu appears:

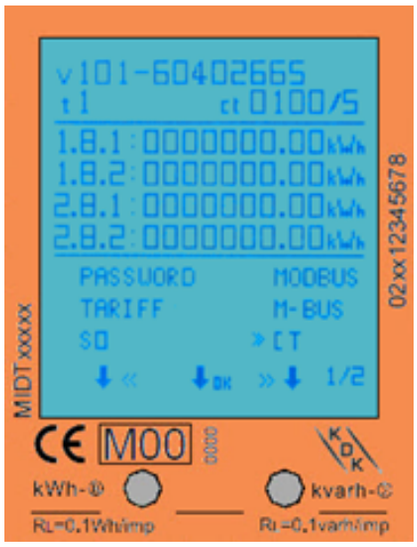


6.3. Input — Measuring transformer — Current ratio

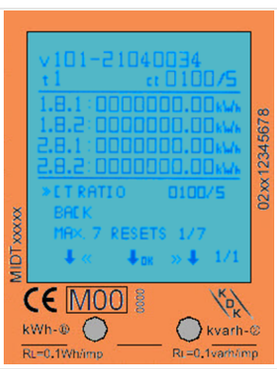
The following steps describe the procedure for configuring the measuring transformer current ratio.

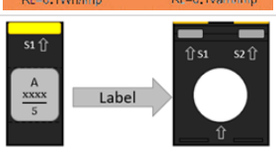
The primary current can be set to 0001 - 9999 A (with a secondary current of 1A) or 0005 - 9995 A (with a secondary current of 5 A). The secondary current can be set to /1A or /5A. A transformer ratio of CT=5/5A is preset at the factory.

You can store the transformer ratio under the CT menu item.



Das Wandlerverhältnis (CT RATIO) wird in der Form XXXX/5 oder XXX/1 dargestellt. Sie können das Wandlerverhältnis vor Ort ablesen (z. B. am Typenschild).





6.4. Input RS485 Modbus address

To do this, use the sensitive touch buttons to go to the settings menu and select Modbus.
Then navigate to Modbus ID and press the middle button; you can now use the right and left buttons to lock the values. When the desired Modbus address is displayed, press the middle button to confirm it.

The factory-set Modbus address is **001**.
The following addresses are required for communication.

RS485 Modbus address grid connection point

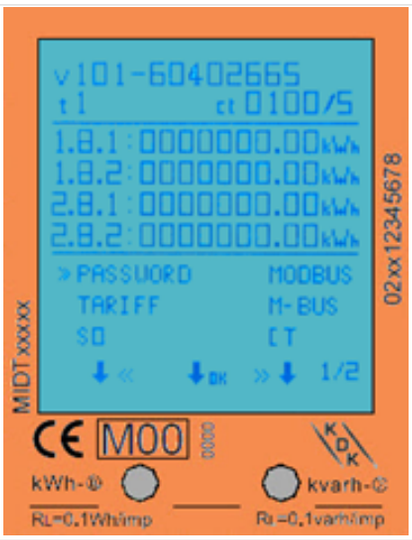
005

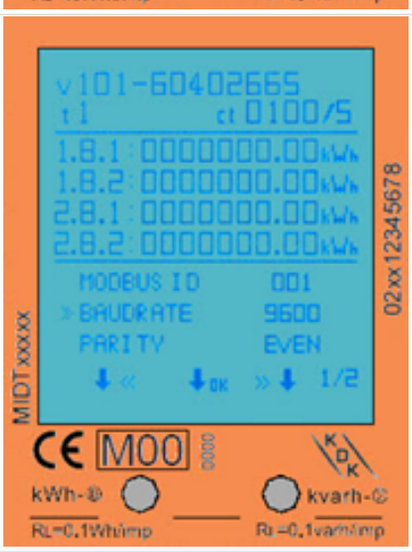
RS485 Modbus address PV generation

006

RS485 Modbus address — other generators/consumers

007…246





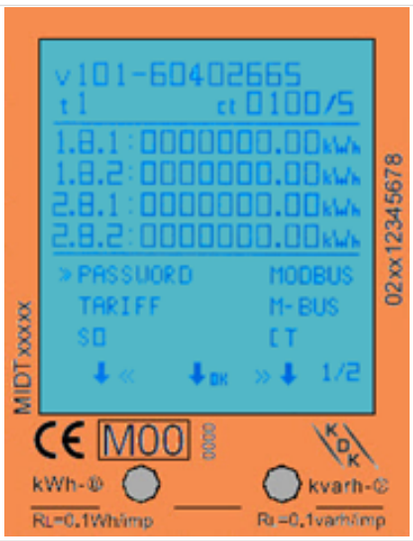
6.5. Communication speed input (baud rate)

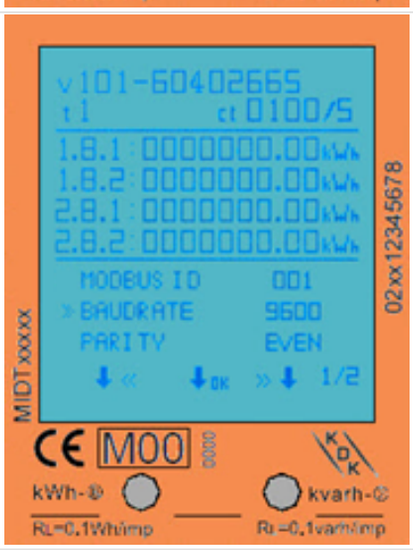
To do this, use the sensitive touch buttons to go to the settings menu and select Modbus.
Then navigate to Baud rate and press the middle button; you can now use the right and left buttons to lock the values. When the desired baud rate is displayed, press the middle button to confirm it.

The factory-set Modbus® baud rate is **9600 Bd**. Please check the baud rate.

Baud rate for communication

9600

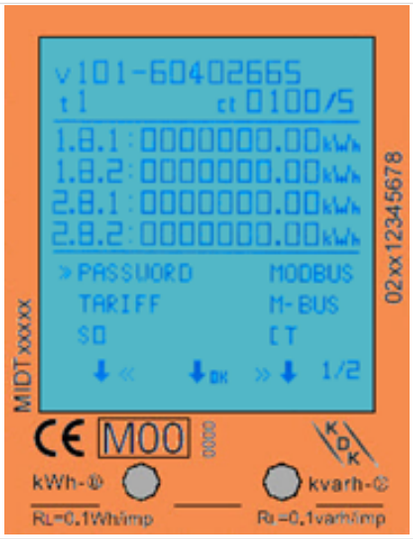


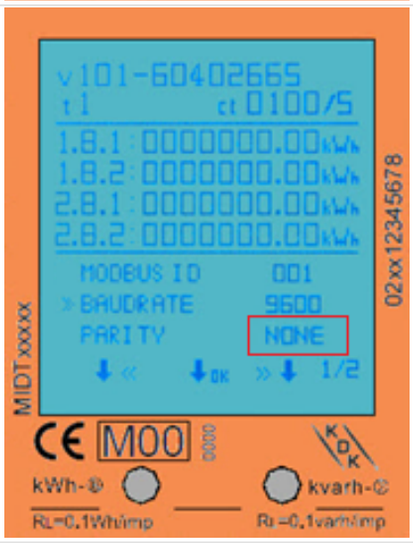


6.6. Communication parity input

To do this, use the sensitive touch buttons to go to the settings menu and select Modbus.
Then navigate to Parity and press the middle button; you can now use the right and left buttons to adjust the setting. When the desired parity is displayed, press the middle button to confirm.

The factory-set parity is **EVEN**. This must be changed to **NONE**.


V101-60402665
t1 ct 0100/5
1.8.1 0000000.00kWh
1.8.2 0000000.00kWh
2.8.1 0000000.00kWh
2.8.2 0000000.00kWh
» PASSWORD MODBUS
TARIFF M-BUS
SO CT
1/2
MIDT xxxxx
02xx12345678
M00
kWh-
kvarh-
RL=0.1Wh/imp
RL=0.1varh/imp


V101-60402665
t1 ct 0100/5
1.8.1 0000000.00kWh
1.8.2 0000000.00kWh
2.8.1 0000000.00kWh
2.8.2 0000000.00kWh
MODBUS ID 001
» BAUDRATE 9600
PARITY NONE
1/2
MIDT xxxxx
02xx12345678
M00
kWh-
kvarh-
RL=0.1Wh/imp
RL=0.1varh/imp

7. Bluetooth smartphone app

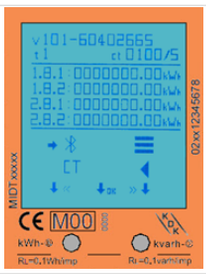
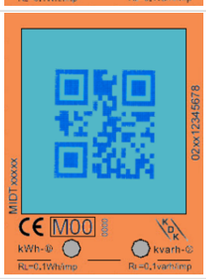
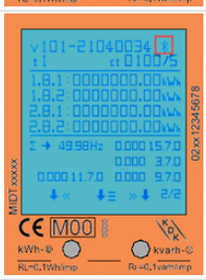


Alle Push-in-CAGE CLAMP® Zähler sind in der Lage, per Bluetooth® ausgelesen und konfiguriert zu werden. Der verwendete Standard ist BLE 4.2. Sie können die Smartphone-App für Android und IOS kostenlos in den jeweiligen Stores herunterladen. Die Smartphone-App finden Sie unter dem Namen **KDK Meter Configurator**.

iOS

Below you will find a QR code for the explanatory video on how to activate Bluetooth and the options via the app:

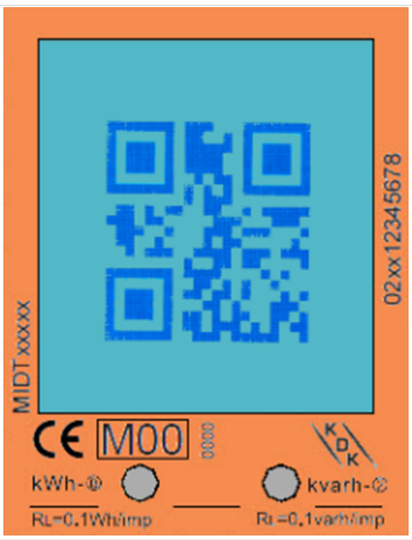
7.1. Activating the BT interface on the meter

1. Wenn die Pfeile >> auf das Bluetooth®-Symbol zeigen, drücken Sie kurz die mittlere Taste:	
2. Nun ist die Bluetooth®-Schnittstelle des Zählers aktiviert und bereit für die Kommunikation mit der KDK Meter Configurator. Um die Verbindung mit dem Zähler aufzubauen, scannen Sie den QR-Code via der Kamera Ihres Smartphones oder durchsuchen Sie die Bluetooth®-Umgebung in dem Sie den entsprechenden Menüpunkt in der App wählen.	
3. Wenn eine Bluetooth®-Verbindung aufgebaut ist, wird das Bluetooth®-Symbol oben rechts im Display angezeigt.	

7.2. Bluetooth connection with the meter

1. Start the smartphone app. The desired language can be set in the settings menu (cogwheel) at the top right of the display.





2. The energy meter can be connected with the *Scan Bluetooth* or *Scan QR* function.
   a. *Scan Bluetooth*: The app scans for all Bluetooth measuring devices in the vicinity.
   Select the correct serial number for the connection.
   b. *Scan QR*: The app opens the camera of the cell phone to scan the QR code on the meter display. As soon as the code has been scanned, the meter is connected.

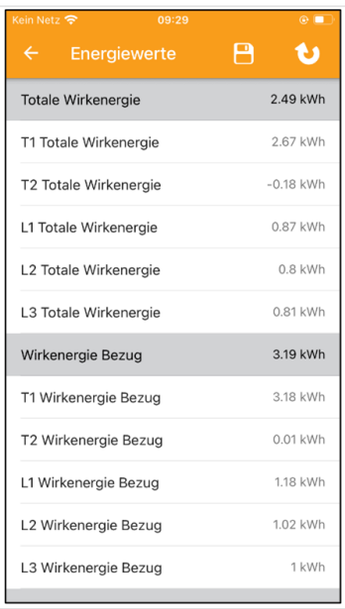
7.3. App — Geräteseite

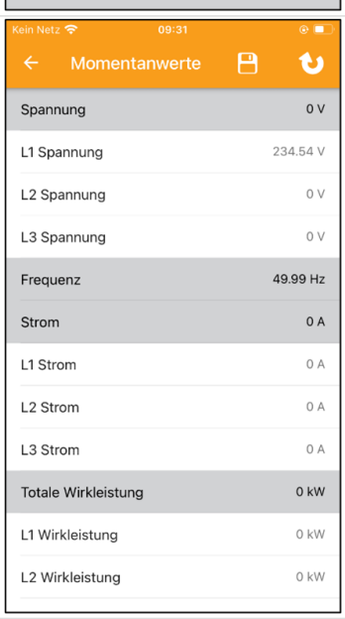
The energy meter is now connected to the smartphone app. The meter type, serial number, software version and checksums are displayed on the device page.



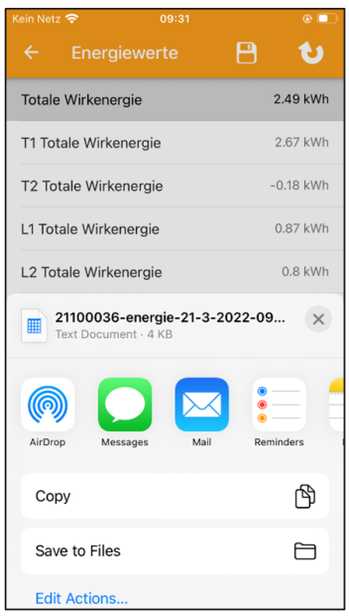
7.4. App — Auslesen der Zählerdaten

All energy values can be found under "Energy" and all instantaneous values under "Instantaneous".
Refresh the data using the refresh arrow in the top right-hand corner.





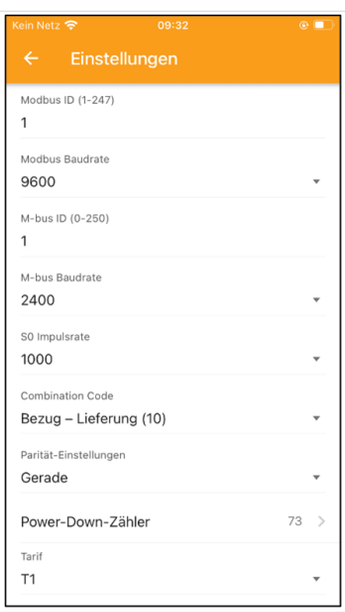
Save the data using the electrical energy storage icon in the top right-hand corner. The data can be saved locally on the smartphone or forwarded via various channels such as e-mail, Bluetooth or other programs.

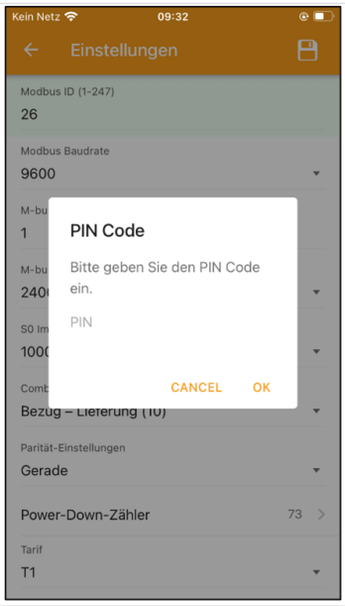


7.5. App — Ändern von Zählerparametern

Settings can be selected individually and/or saved all at once.

1. Wählen Sie die Einstellungen aus, die Sie verändern möchten.
   Die geänderten Einstellungen werden grün hinterlegt.
2. Save the values via the storage disk in the top right-hand corner.
3. Zunächst erscheint ein Pop-up-Menü für das Passwort.
   Werksseitig ist das Passwort immer **0000**.
4. Das Passwort kann nur am Zähler über die Tasten geändert werden.
   Nach Eingabe des richtigen Passworts werden die neuen Einstellungen im Zähler gespeichert.





The following configuration settings must be used for use with EMS:

Measuring transformer current ratio	…/5 e. g. 500/5 = 500 *A*.
RS485 Modbus address grid connection point	005
RS485 Modbus address PV generation	006
RS485 Modbus address — other generators/consumers	007…246
Baud rate for communication	9600
Parity	None

8. Troubleshooting

Problem	Mögliche Ursache	Überprüfung/Lösung
Die rote Verbrauchs-LED auf der Frontseite blinkt nicht oder das Zählwerk zählt nicht hoch.	Es ist keine Last an den Zähler angeschlossen oder die Last auf der Leitung ist sehr gering.	Schließen Sie einen Verbraucher an das Messgerät an und messen Sie mit einem Messgerät z. B. Amperemeter, ob die Last vorhanden ist und die LED blinken.
Das Zählwerk zählt nicht.	Es ist keine Last am Zähler angeschlossen.	Prüfen Sie, ob die rote Verbrauchs-LED blinkt.
Kein Impulsausgang.	Der Impulsausgang wird nicht mit Gleichspannung versorgt. Der Impuls-ausgang ist nicht korrekt angeschlossen.	Prüfen Sie mit einem Spannungsmessgerät, ob die externe Spannungsquelle (Ui) DC 5 - 27 V beträgt. Prüfen Sie, ob der Anschluss korrekt ist: vgl. Abschnitt 6.6.3 S0-Impulsausgang.
Wenn keiner der oben genannten Punkte zu einer Lösung geführt haben, wenden Sie sich bitte an den technischen Support: KDK Dornscheidt Tel.: 02244 9199447 E-Mail: support@kdk-dornscheidt.com		

The configuration is now complete.

9. Contact us

For support, please contact:

Symphon-E Service

Service phone: +49 (0) 371 45 85 68 - 100

E-mail service: symphon-e@heckert-solar.com

10. Directories

10.1. List of illustrations

Image 1. 420506PRO20-CT (2PU CT)
Image 2. Dimensions
Image 3. Terminal designations
Image 4. Voltage tap
Image 5. Connection of current transformers to the meter of the metering point operator
Image 6. Connection of current transformer to generator
Image 7. Connection of current transformer to consumer load(s)
Image 8. RS-485 connection
Image 9. Looping through RS-485 of several meters