

## Quick Installation Guide Commercial 50





Single-phased representation, not drawn to scale.

#### System Structure Diagram

in case of submaster BMS installation



Single-phased representation, not drawn to scale.

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#### System Structure Diagram

#### in case of mutiple inverter installation



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#### Quick Installation Guide Commercial 50

The battery storage system is used to store electrical energy in rechargeable lithium battery modules (charging) and to provide electrical energy (discharging). This charging and discharging process is performed by a connected inverter. All processes of the power storage system are monitored and controlled by the FEMS

#### MARNUNG

The equipment may only be used in compliance with the permissible technical data. The installation and maintenance of the equipment may only be carried out by qualified personnel. These quick installation instructions do not replace the installation instructions. The installation instructions must be read and understood before installation.

Before assembly, note or photograph the **serial numbers** of the individual components, as these must be documented later at the IBN (in the IBN log or IBN assistant).

#### Note

Not all possible system configurations are shown in this quick installation guide. These can be found on our website in the download center.

#### Assembly KACO inverter



#### **1** Conditions for installation

The KACO inverter of the Commercial 50 is designed for outdoor and indoor use. In general, when selecting the installation location, pay attention to the protection class, which corresponds to **IP65** for the inverter.

Spacing:	
Above the inverter:	300 mm
Below the inverter :	500 mm
In front of the inverter :	550 mm
Lateral (left/right) of the inverter:	400 mm

Weight of inverter :	75 kg
Dimensions inverter (W D H):	500 760 425 mm

At least 2 people are needed to mount the inverter and the housing!



#### Assembly KACO inverter

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- 2 Installation: Wall mount inverter
  - 1. Unpack the inverter remove the packing material inside the cardboard box
  - 2. Mark the position for mounting on the wall
  - 3. Mark the position of the drill holes using the recesses in the mount
  - 4. Fasten the wall mount upright to the wall using suitable fastening material (note alignment)

Fastening material included in the scope of delivery!



#### Montage KACO Wechselrichter

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3 Installation: Inverter

Always lift the inverter using the handles on the side.

> Never lift by using the lid or the cover

Hook the device into the holder via the housing recess on the rear side

Note: lower marking on the housing must stand out over the upper outer contour of the holder > outer contour of holder must be flush with outer contour of housing



#### **Assembly FEMS Box**

Operating temperature:	-20°C to 45°C
IP protection classification:	IP65
Dimensions (W D H):	315 155 450 mm
Weight:	4 kg

- 1. Hold the FEMS box at the desired position on the wall
- 2. Mark the position of the FEMS box on the wall using the cutouts for drill holes
- 3. Mount the box on the wall using suitable fastening material (use a spirit level for help)

Mounting material is not included in the scope of delivery.



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#### Assembly Battery String Combiner Box

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For use cases in which a submaster BMS is installed

Whether the battery string combiner box is included within the scope of delivery depends on the purchased variant/size of the Commercial 50

> this is the case if a submaster BMS is installed

IP protection classification:	IP66
Dimensions (W D H):	400 200 600 mm
Weight:	15 kg

- 1. Hold the battery string combiner box at the desired position on the wall
- 2. Mark the position of the battery string combiner box on the wall using the cutouts for drill holes
- 3. Mount the battery string combiner box on the wall using suitable fastening material (use a spirit level for help)

Mounting material is not included in the scope of delivery.





#### **1** Installation conditions

The battery rack with the battery modules and the BMS is designed for indoor use. In general, when choosing the installation location, pay attention to the protection class, which corresponds to **IP21**.

Outdoor rack can be purchased for outdoor installation (see following page).

The battery rack shall be installed in front of a wall on solid and level ground.

A distance of 500 mm must be maintained in front of the battery rack.

Weight small rack:	40 kg
Dimensions (W D H) small rack :	625 430 1,471 mm

At least 2 people are required to assemble the battery racks.

optional: Outdoor Rack

#### 2 Outdoor rack

Ambient temperature:	-35°C – 55°C
IP protection classification :	IP55
Dimensions (W D H):	2,100 750 1,850 mm
Weight:	425 kg

More detailed information on the outdoor rack, with regard to assembly and installation, can be found in the separate instructions. These can be found on our website in the download center.



#### **3** Installation Battery rack + Equipotential bonding

The required fastening material is in the accessories box.

Mount the rack to the wall > if possible, with the mounting bracket at the top of the rack. Mounting material (screws and dowels/anchors) is included in the scope of delivery

Ensure that the racks are provided with equipotential bonding

> At least 10 mm2 cable (not included in the scope of delivery).
 > fastening material (hexagon nut, washer, spring lockwasher, external serrated lock washer and ring cable lug) for grounding bolt included in scope of delivery

Multiple battery racks are grounded to each other with a flat grounding conductor! > included in the scope of delivery



#### 4 Information concerning BMS + Module



Master BMS	
Dimensions (W D H):	180 x 465 x 320 mm
Weight:	13.5 kg





Submaster BMS	
Dimensions (W D H):	180 x 465 x 320 mm
Weight:	12 kg

Battery Module	
Dimensions (W D H):	194 x 465 x 380 mm
Weight:	37.5 kg

#### **5** Battery modules + BMS placement

- 1. Remove the packaging material in the cardboard boxes of the battery modules and BMS to be able to take them out
- 2. Place the BMS box at the very top (above the modules) in the rack.
- 3. Then slide the individual modules below the BMS box one after the other into the rack.

When placing the battery modules no numbering must be taken into account

For a single string (= 1 BMS), a master BMS is used.

For a DC cluster (= several BMS/strings on one inverter + string collection box), a master BMS and a submaster BMS are used.

In an AC cluster (= several BMS/strings with several inverters), one master BMS is used per inverter.



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#### Montage Batterierack

6 Mounting modules + BMS

The required mounting material is located in the accessories box by the cable kit.

- Fasten the individual modules + BMS
   Fastening material included in the scope of delivery.
- 2. Make sure that the individual modules + BMS are grounded

> Make sure to use the serrated serrated lock washers/contact washers included in the scope of delivery (serration is located on the mounting bracket)

 $\rightarrow$  Remove the protective caps from the DC connectors. Keep them for possible disassembly.





1 Hints for wiring the battery racks

> Make sure that the plugs snap audibly into place when wiring the DC lines

> Unlocking is possible on the side of the plug





#### **2** Wiring: Master BMS + first Battery module

The resistor, the DC cable 410 mm and the communication cable 410 mm are in the box of the master BMS box



Resistor gray for plugging into the "PARALLEL OUT" connector in the master BMS (only required here **if no submaster BMS box** is installed)

To the last battery module of the string connection  $_{m}$  – "

DC-cable black 410 mm - 25 mm<sup>2</sup> Connector black/black for connection from master BMS port "MODULE -" to module 1 (first module below BMS box) port " - "



**3** Wiring: Battery modules

In the box of each battery module there is a DC cable 250 mm and a communication cable 300 mm.

DC cable black 250 mm - 25 mm<sup>2</sup>. Connector orange/black for connection between battery modules from terminal " + " to " - ".

Communication cable 300 mm RJ45 connectors for connection between battery modules from "MODULE OUT" connector to "MODULE IN".





Last module of the string

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Wiring: Submaster BMS + first battery module

The DC cable 410 mm and the communication cable 410 mm are in the box of the submaster BMS box.

The resistor is in the box of the master BMS box.



Resistor <u>gray</u> for plugging into the "PARALLEL OUT" connector in the submaster BMS

DC-cable black 410 mm - 25 mm<sup>2</sup> Connector black/black for connection from master BMS port "MODULE -" to module 1 (first module below BMS box) port " - "



To last battery module of the string port " + "



Kommunikationskabel 410 mm RJ45 Anschlüsse zur Verbindung vom Master BMS Anschluss *"MODULE OUT"* zum Batteriemodul 1 (erstes Modul unterhalb der BMS-Box) *"MODULE IN"* 





Last module of the string

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in case a submaster BMS is installed



7

#### Connection Master BMS and Submaster BMS

Communication cable (5 meter) is included in scope of delivery.

Communication Ethernet: To connect rack 1 Master BMS port PARALLEL OUT to Submaster BMS port PARALLEL IN.





Resistor

gray into PARALLEL OUT port on submaster BMS

#### Wiring FEMS box Overview

Cables for connection with BMS and inverter are included in the scope of delivery.

1	Connection to master BMS (to the "INTERNAL" port)
2	Connection to master BMS (to the 8-pin connector - pins 3 and 4)
*	Further master BMSs are connected to the following relay ports in the same way as masters 1, 2 and 3
3	Communication to meter (see separate instructions for installation and configuration of the meter)
4	Communication to inverter (LAN/Ethernet - RJ45)
5	Connection to operator network (LAN – RJ45 – not included in delivery)

6 Supply FEMS (e.g. NYM-I 3x1,5 mm<sup>2</sup> – AC connection cable not included in delivery)



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#### **Connection FEMS box with Master BMS**

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From master BMS port "INTERNAL" to FEMS connection box switch port "Ethernet 2, 3 and 4".



To the master BMS box - 8-pin connector: Pin 4 - Wire no. 1 of FEMS connection box Relay board connection 8 - Pin L To master BMS box - 8-pin connector: Pin 3 - Wire no. 2 of FEMS connection box Relay board connection 8 - Pin NC





#### Wiring of KACO Inverter





#### Wiring of KACO Inverter Overview

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5	AC grid connection (AC connection cable not included in the scope of delivery)
4	Communication to additional inverters
3	Communication FEMS (LAN)
2	DC connection BMS box or string collection box (if installed) - Power Out -
1	DC connection BMS box or string collection box (if installed) - Power Out +

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# Connection of KACO Inverter with Master BMS Box and FEMS Box



"Ethernet 6" connection on the switch in the FEMS box

### Connection of the Battery String Combiner Box to Inverter



in case a submaster BMS is installed



#### Connection of the Battery String Combiner Box to BMS boxes



#### in case a submaster BMS is installed



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#### Meter Configuration – SOCOMEC



For installation and configuration of the meter (SOCOMEC Diris A10), please refer to the "Installation and configuration instructions for FEMS package 3phase sensor without current transformer". You can find this on our website in the download center.

Note:

AC generator meters are **not** part of the scope of delivery! However, for a correct display of consumption and generation in the online monitoring, the generation must be measured!

Attention:

The transformer ratio (secondary current) in this case is 5.

The meter package **includes** the SOCOMEC Diris A10 meter and the corresponding FEMS app for Socomec meters. The current transformers are **not** part of the delivery.



#### Meter Configuration– KDK

For the installation and configuration of the meter (KDK 2PU CT), please refer to the "Installation and configuration instructions for FEMS package 3-phase sensor without current transformer". You can find this on our website in the download center.

Note:

Meters for generation measurement are **not** part of the scope of delivery! However, for a correct display of consumption and generation in the online monitoring, the generation must be measured!

Attention:

The transformer ratio (secondary current) can be 1 or 5 for this meter!

The meter package **includes** the KDK 2PU CT meter and the corresponding FEMS app for KDK meters. The current transformers are **not** part of the delivery.



#### System – Switch-On

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- 1. Set fuse B6 in the FEMS connection box to "ON"
- 2. Switch on AC residual current circuit breaker and fuses (not shown in picture)
- 3. Turn the "Main Switch" on the submaster BMS boxes (if present) from "OFF" to "ON"
- 4. To switch on, press the "Power" button on the submaster *BMS boxes (if present)*
- 5. Turn the "Main Switch" on the master BMS box from "OFF" to "ON "
- 6. To switch on, press the "Power" button on the master BMS box and then the "Master Power" button

> If no errors occur in the system, lamps A, B and C light up green after a certain time





Make sure that the battery is switched on during configuration. If the battery switches off, press the "MASTER POWER" button again.

For systems which were delivered as of July 2023, the "Configuration for TCP communication" can be skipped, since the settings are already preconfigured for these systems.



1. Pull the patch cable out of the "INTERNAL" connector on the master BMS

 Take a patch cable and connect the "INTERNAL" connector on the master BMS to a PC/laptop.

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3. Open the "**Ethernet settings**" on the PC/laptop.

4. Click on the **"Change adapter options"** button.

5. Now there are **different Ethernet connections** to choose from. Select here the connection to the master BMS with a double click. (No "x" is visible at the corresponding Ethernet connection).



6. A window "Status of Ethernet X" opens. With a click on the field "Properties" another window is opened. In this window the line "Internet protocol. Version 4 (TCP/IPv4)" must be selected. Again a window opens, here the selection option "Use the following IP address" must be selected. The following number is now entered in the "IP address" field: "192.168.0.30". These steps are each confirmed with "OK".

📱 Status von Ethernet 6 🛛 🕹 🗙	🖗 Eigenschaften von Ethernet 6 🛛 🗙	Eigenschaften von Internetprotokoll, Version 4 (TCP/IPv4)
Allgemein	Netzwerk Freigabe	Allgemein
Verbindung IPv4-Konnektivität: Kein Netzwerkzugriff IPv6-Konnektivität: Kein Netzwerkzugriff Medienstatus: Aktiviert Dauer: 00:04:51 Übertragungsrate: 100,0 MBit/s Details	Verbindung herstellen über: Intel(R) Ethemet Connection (4) I219-LM Konfigurieren Diese Verbindung verwendet folgende Elemente: Client für Microsoft-Netzwerke Client für Microsoft-Netzwerke	IP-Einstellungen können automatisch zugewiesen werden, wenn das Netzwerk diese Funktion unterstützt. Wenden Sie sich andernfalls an den Netzwerkadministrator, um die geeigneten IP-Einstellungen zu beziehen. O IP-Adresse automatisch beziehen P-Adresse: 192 . 168 . 0 . 30 Subnetzmaske: 255 . 255 . 0 Standardgateway:
Aktivität	Microsoft-Multiplexorprotokoll fur Netzwerkadapter      Microsoft-LLDP-Treiber      Internetprotokoll, Version 6 (TCP/IPv6)	DNS-Serveradresse automatisch beziehen     OFolgende DNS-Serveradressen verwenden:
Pakete: 219 0	Installieren Deinstallieren Eigenschaften Beschreibung TCP/IP, das Standardprotokoll für WAN-Netzwerke, das den Datenauetausch über verschiedene miteinander verbundene	Alternativer DNS-Server:
Eigenschaften     Diagnose       Schließen	Netzwerke emöglicht.	Erweitert OK Abbrechen

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- 7. Open now any **browser**.
- Enter the following IP address in the adress bar: 192.168.0.7
- 9. In the field that appears, you must enter **"admin"** for the username **AND** the password.
- 10. Then click "Log in".

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- 11. Now select the **"Serial Port"** tab on the left side of the page.
- 12. In the line "Work Mode" the setting "TCP Server" must be selected.(By default, "TCP Client" is usually selected.)
- 13. This setting must be stored with "Save".
- 14. Then click " **Restart Module**".





Finally, the connection between Master BMS and laptop/PC must be disconnected again.

In addition, the connection between the Master BMS and the FEMS box must be reestablished. To do this, reconnect the previously disconnected cable: INTERNAL to FEMS-Box



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#### Configuration for TCP Communication (AC-Cluster)

The configuration for AC clusters <u>cannot</u> be skipped even for systems as of July 2023!

If your system consists of **more than one master BMS**, make these settings on each of the master BMSs. Switch one after the other.

In addition, the Static IP must be changed for further Master BMS.

- 1. To do this, select the "Local IP Config" tab on the left side of the page.
- Make sure that the "Static IP" is consecutive.
   First Master BMS: 192.168.0.7
   Second Master BMS: 192.168.0.8
   Third Master BMS: 192.168.0.9



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#### Configuration of the inverter KACO blueplanet gridsave 50.0 TL3-S



The configuration wizard does not reappear when the inverter is restarted after it has been completed successfully.

You can then only change the country settings via the password-protected parameter menu. The password must be requested from KACO service.

The AC and DC power supply must be ensured during initial commissioning.



- 1) To select a setting, press the Up key and the Down key.
- 2) To select the next menu item, press the Enter key.
- 3) To return to the last selected menu item, press the ESC key.
- 4) Insert the required settings.
- 5) In the last menu item, press the Enter key.

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#### **Configuration Wizard**

- 1. Select the menu language.
- 2. Set the country of the system operation and the network type.
- 3. Set the date and time.
- 4. In order to save the country settings and network type, confirm with "Yes".
  - You have completed the initial configuration.

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Country settings can be then changed via the password-protected parameter menu. The password must be requested from KACO service.



Check the software version in the main menu item under the information SW version PKT:V5.56 Perform firmware update see blueplanet gridsave 50.0 TL3 Software Update Guide V5.59



In Austria the firmware update is mandatory - contact your FENECON contact person for the update file.

The USB interface is located on the communication board inside the housing door.

1. connect the USB stick to the device

2. if you want to perform the update, select the "Yes" button. If "No", pressing the "Enter" button

will cancel the update process and the device will start feeding operation.

In the event of an error, you must repeat the update process.

Does not replace the operating instructions of the KACO blueplanet gridsave 50.0TL3-S



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Start interface Use the right key to enter the main menu to make settings.







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for the case when several inverters are installed





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▼Input the subnet mask → via the 4-way push button 255.255.000.000 and confirm →

Webserver 
remote configuration

#### blueplanet

# Hauptmenü DHCP IP-Adresse Subnetzmaske Gateway DNS-Server Webserver Modbus TCP



ESC –

#### blueplanet





ESC	L
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ESC return to start display (graphic display)

blueplan	et		
	<sup>atum</sup>	Uhrzeit O KW	
	<b>1</b> 10kWh	10kWh 365	ESC 🖊

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#### **Please note:**

There is the possibility of an automatic commissioning via our initial setup assistant.

The further procedure for this is described on the following page.

However, this is currently only possible for selected system configurations.

- You have installed a maximum of one battery inverter (50 kW)

- You are using the system for **self-consumption optimization** or for **peak shaving** 

If you have a larger system with two or three inverters (100 kW to 250 kW), commissioning is carried out with the support of our service team (see information on the right).

If you use other additional apps (such as heating element, EV charging stations), please also contact our service team.

For telephone commissioning, please make an appointment <u>two</u> <u>weeks in advance</u> with your contact person at FENECON.

For on-site IBN, a lead time of at least <u>4 weeks</u> is required.

For support please contact :

FENECON GmbH Brunnwiesenstraße 4 +49 9903 628 00 (Service) service@fenecon.de

Monday to Thurday:	8 am – 5 pm
Friday:	8 am – 3 pm

The initial setup takes approx. one hour.

During the IBN, it is mandatory to fill out the <u>IBN protocol</u> and send it to FENECON <u>within 30 days</u> or the automatically created IBN protocol must be transmitted via the IBN wizard during installation - without this, there are no warranty claims!

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#### **IBN-Commissioning Assistent**

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2	🛆 Login	
	E-Mail / User	
	Password	
	Reset Password Create installer account	госім 원
	NOTE	
	If no installer account has been created yet, this can be done directly on the login page	

Create account		×	4		
INSTALLER	U	SER			By creating a FENECO agree to the FENECON
Company name*					I confirm the <u>AGB</u> .*
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#### **Online Monitoring**



#### NOTE

When the configuration is completed, you will be redirected to the online monitoring. A green check mark is displayed at the top left when configuration was successful.

#### NOTE

Once the battery and the configuration of the installed meters are successfully completed, the appropriate values are displayed in the online monitoring.

Notes			() fenecon