



# AUTOMATIC BACKUP CONNECTION BOARD FOR GOODWE INVERTERS OF THE ET AND BT SERIES

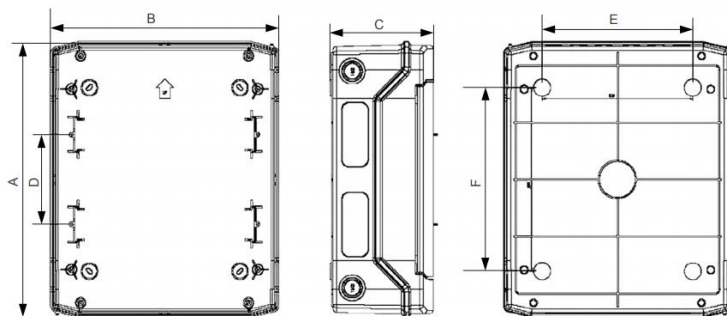
## USER MANUAL



## 1. Introduction

The operating instructions described below are used to assemble the connection board SH-GWET-SZR. After connecting the network and the inverter, the switchgear enables the supply of the three-phase emergency power supply connection during a network failure, as well as during the normal state of network operation. Installation of the switchgear must be carried out in accordance with the contents of this manual and by the recommendations of the inverter manufacturer. Before sale, each switchgear is tested with the use of an inverter and marked with a serial number, any modifications inside the switchgear as well as its incorrect assembly are associated with the loss of warranty.

## 2. Housing assembly



Img.1 Case dimensions

The connection board is designed for surface mounting. The board case provides IP65 protection to the component inside the electrical switchboard. For installation, open the connection board case, then attach it to the wall by screwing it with screws, using the wall plugs in the wall.

Tab. 1 Case dimensions

	A	B	C
PHS 48T	653mm	319mm	144mm

Tab. 2 Case parameters

Numbers of rows	4
Case material	Plastic
Expandable	No
Type of lid	Close
Lock	No
Installation type	Surface mounting.
Built-in depth	0
Protection class (IP)	65

### 3. Technical Parameters

Tab. 3 Technical parameters of the switchboard

Basic parameters	
Compatibility	GoodWe GW5K-ET – GW10K-ET GoodWe GW5K-BT – GW10K-BT
Grid type	TN-S / TN-C-S
Grid parameter, V	230/400
Rated frequency, Hz	50
Source of backup circuit	<b>Energy storage /PV generator</b>
Max output current of backup circuit, A	8.5* <sup>1</sup> 10.8* <sup>2</sup> 13.5* <sup>3</sup> 16.5* <sup>4</sup>
Max output current, A	25
Switching time, s	0.5 < t
Type of connection	3F + N
Energy usage, W	w
Energy usage of backup circuit, W	2,4
Operating temperature °C	-25÷40
Protection class IP	65
Weight, kg	6,075
Dimensions, mm	508 / 319 / 144
Phase signalisation	tak yes
Max. input current, A	50

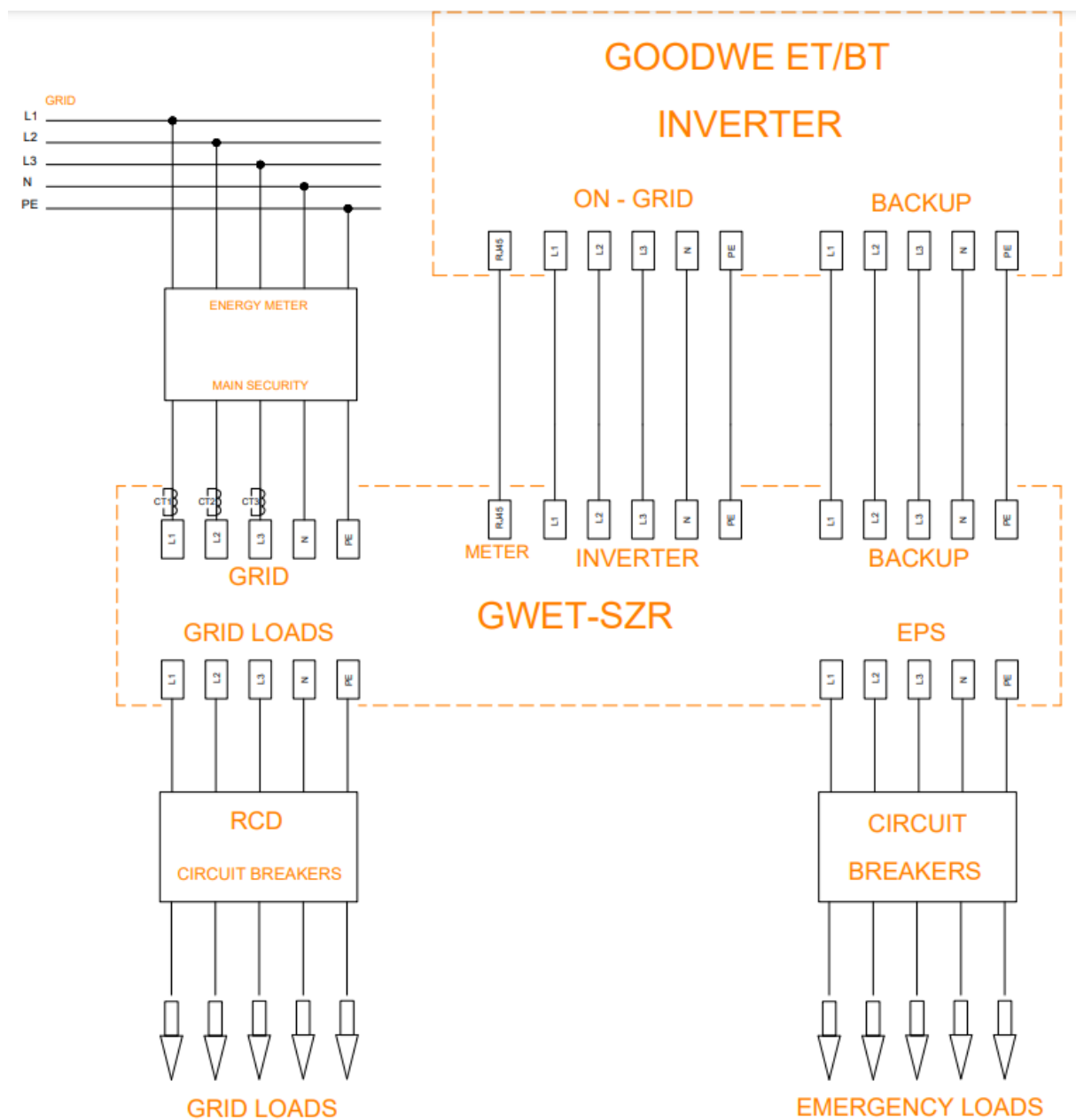
\*1: Dla GoodWe GW5K-ET / GW5K-BT,

\*2: Dla GoodWe GW6.5K-ET / GW6.5K-BT,

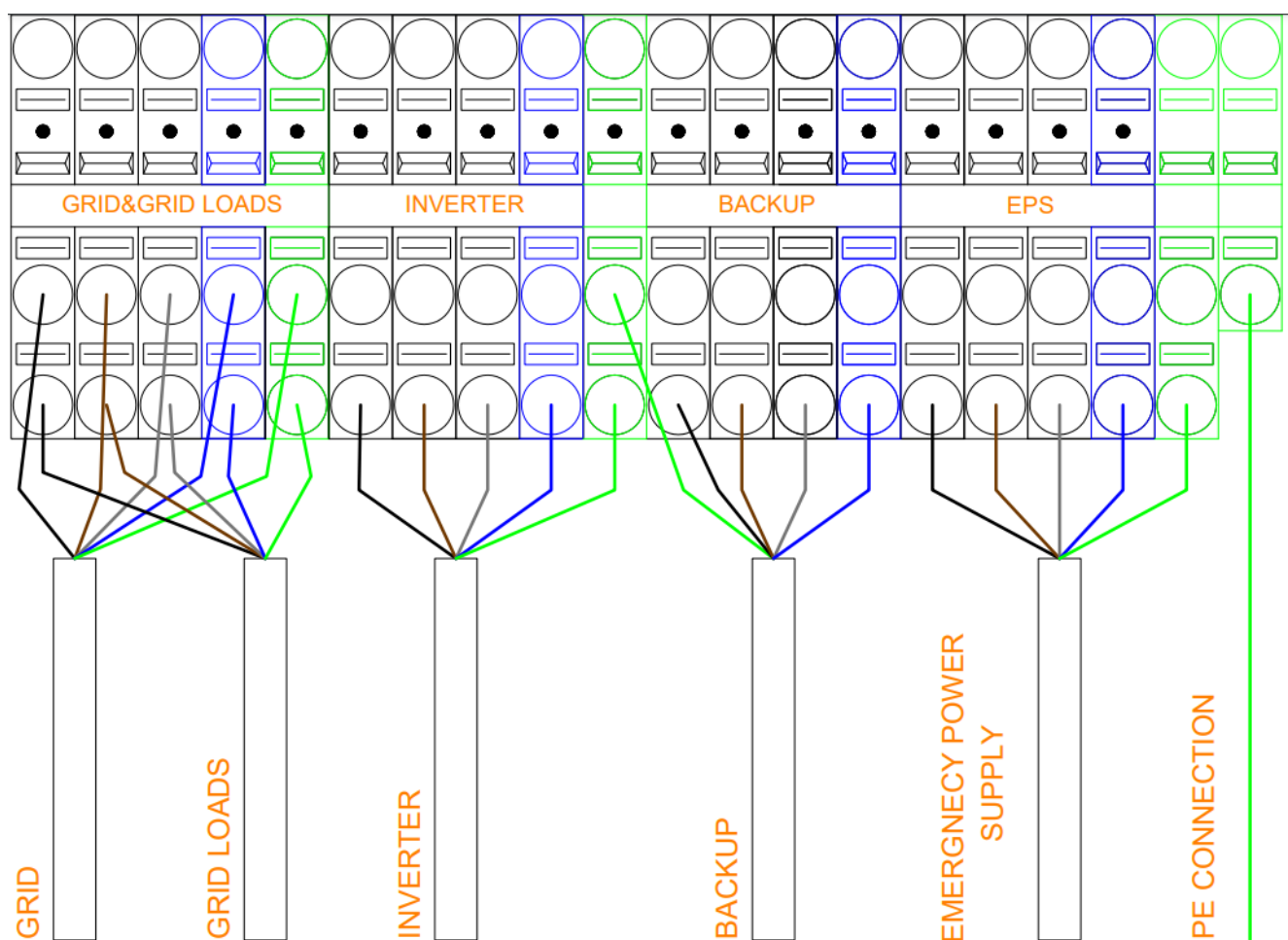
\*3: Dla GoodWe GW8K-ET / GW8K-BT,

\*4: Dla GoodWe GW10K-ET / GW10K-BT.

## 4. Connection



Img. 2 Connection diagram



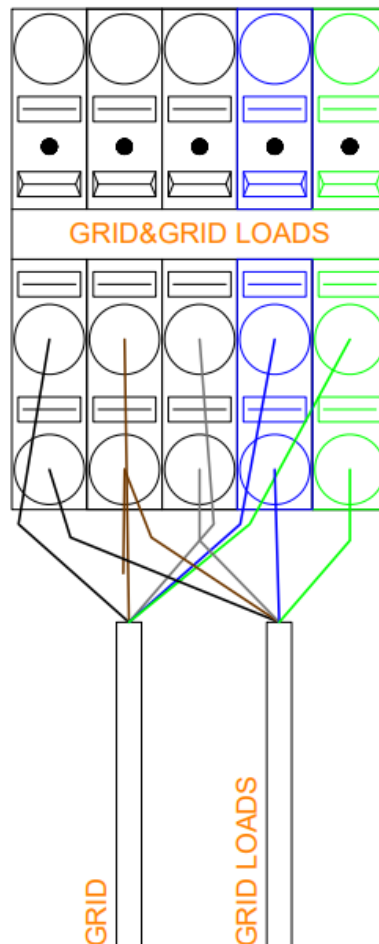
Img. 3 Terminal block of circuits and PE connection of the surge arrester.

The **GRID circuits** are powered directly from the energy system and are connected to the connection blocks named "GRID" / "GRID LOADS" img.4. Connected commissioning of the customer's installation should be additionally secured in accordance with the installation design.

When connecting the switchgear box, it is important to maintain the phase sequence, all gray connection blocks on the busbar are prepared in the phase sequence L1 L2 L3. Use the M25 gland to lead the cables inside the switchgear. Transformers of the energy meter should be placed on the wires from the main power supply. It is important that the order of the phase rotation is clockwise.

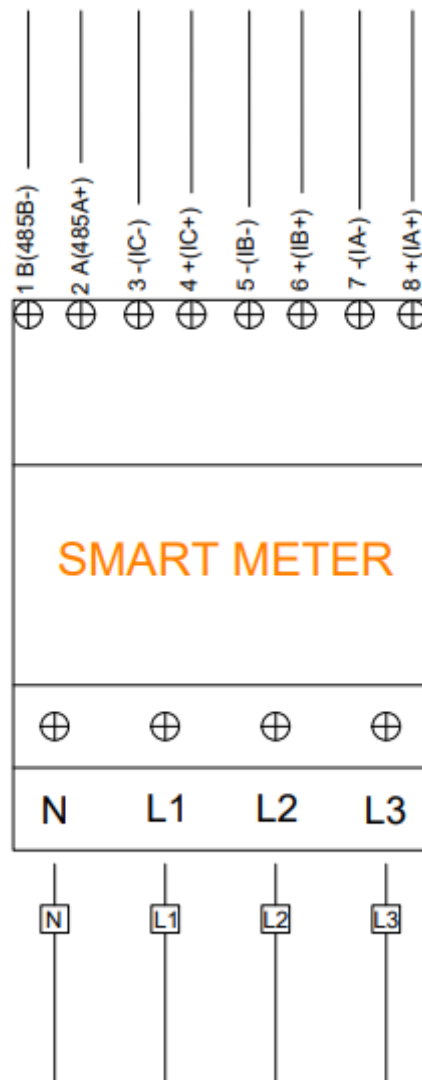
**Connection of the main power supply** takes place at the input marked as "GRID" / "GRID LOADS". Such a connection enables the connection of the current transformers of the energy meter inside the switchgear box and allows total measurement of the energy consumed, the maximum value of the phase current that can be connected to the GRID connector is 50A Use the M25 gland to lead the cables inside the switchgear.

- gray connectors - phase wires in the order L1, L2, L3,
- blue connector- neutral wire,
- greenish/yellow connector- neutral-protecting wire,



Img 4. Common grid terminal block is used with connected power supply and switchgear loads

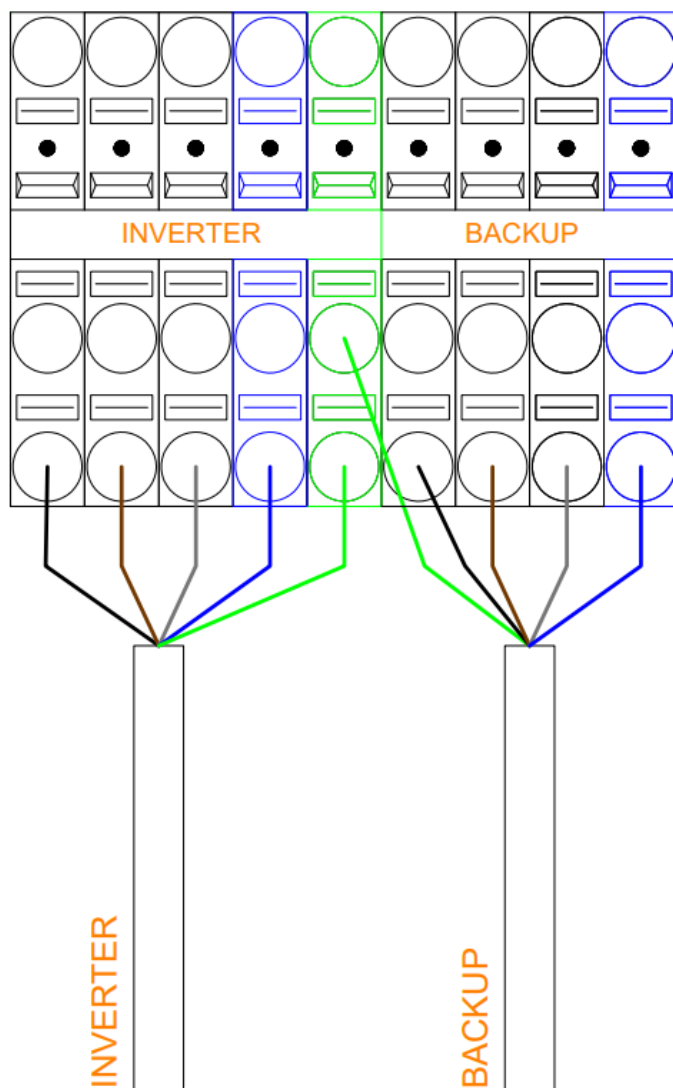
**Connecting energy meters (GoodWe Smart Meter)** meter voltage measurement wires are placed in the area marked as a meter, they should be connected to the energy meter. Each of the wires have an assigned name : N, L1, L2, L3. The communication port must be connected with the communication cable of the ac driver ,Place current transformers on the network wires in accordance with the recommendations of the meter manufacturer. It is important to maintain the order of the phases in the whole system.



Img.5 Meter connection system

**\* If the meter is not installed in the place intended for its installation, the wires used to connect the meter should be removed and the sleeves should be reattached. If the wires are not removed, a metallic short circuit may occur inside the junction box.**

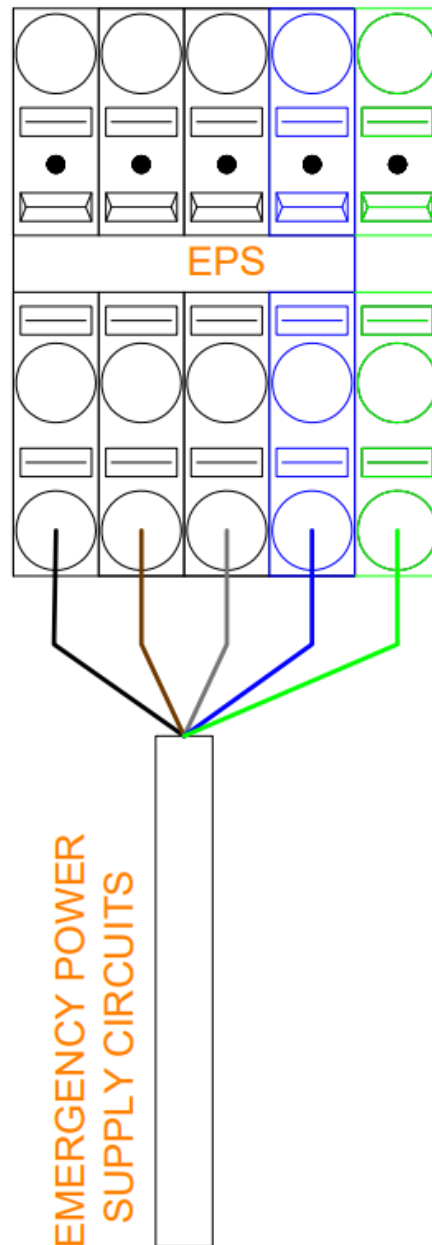
**Connectors connected to the inverter:** the inverter INVERTER and BACKUP connectors should be plugged into dedicated places marked by the same name in the connection box. PE conductors should be connected to the joint PE block intended for them. The connection is shown in IMG. 6



Img.6 Connection of the inverter emergency connector "BACK UP" and the inverter network connector "ON GRID"



**Emergency power supply circuits** are connected directly to their designated place and signed with an appropriate name IMG. 7 It is important that the power of the connected circuits is adequate to the output power of the selected inverter. When connecting emergency circuits without a battery, the energy given back to emergency circuits will be equal to the instantaneous energy generation from the PV generator. If the power drawn by the emergency circuits (supplied directly from the PV generator) exceeds its power, the inverter will cut off the emergency power supply. For an inverter with an energy storage connected, the power in emergency circuits is directly related to the power of the inverter and the amount of energy stored in the battery. Emergency circuits require additional protection in accordance with the assumptions of the building's electrical installation.



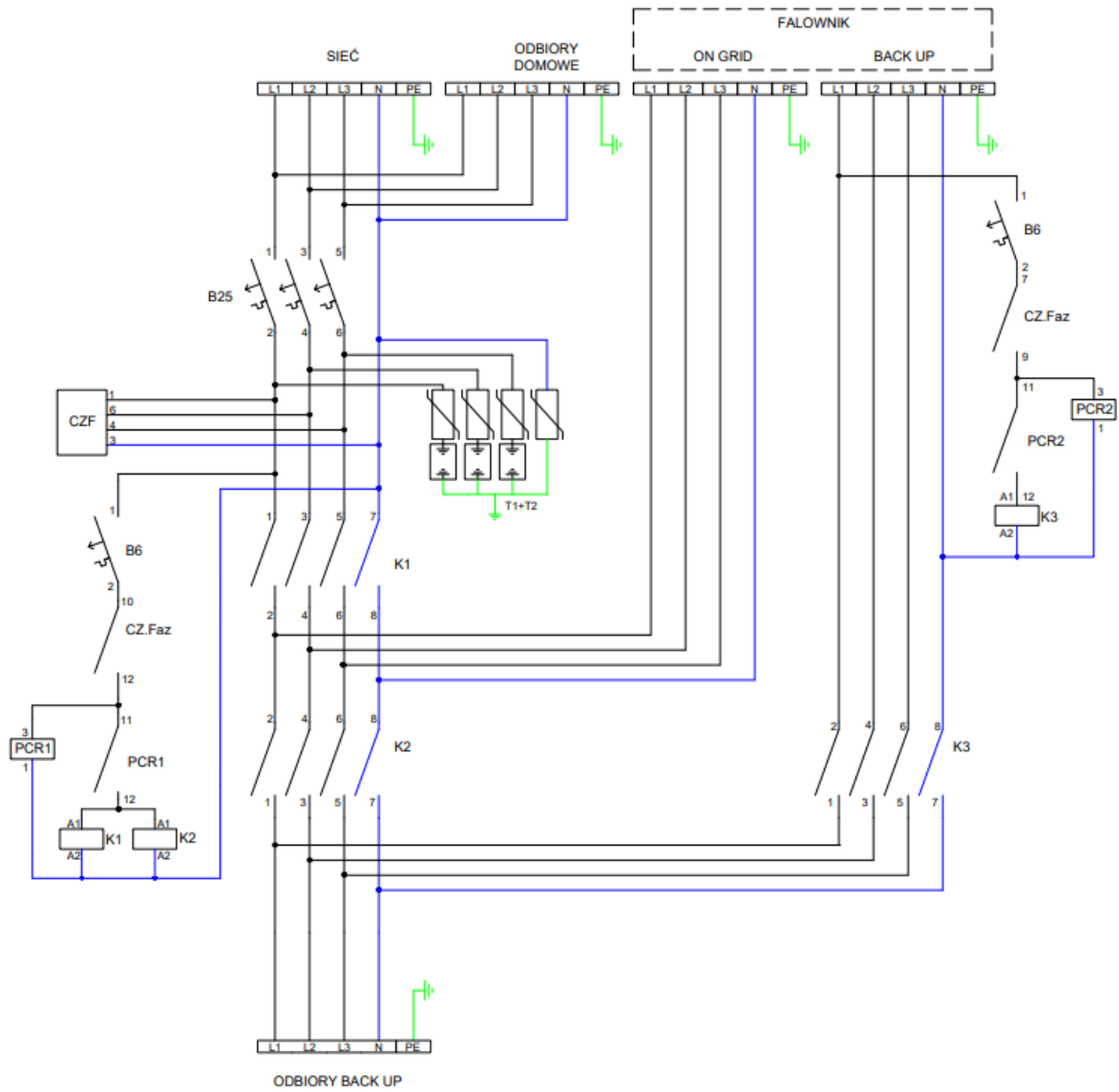
Img. 7 Connecting emergency powered loads to the "Emergency Power" connector

After complete assembly, before putting the switchgear into operation, the assembler is obliged to carry out electrical measurement tests and check the phase sequence, he is also obliged to verify the tightening torque of all electrical devices before starting up.

## 5. General informations

- The junction box has a complete protection of the AC side of the inverter. SPD T1 + T2 overvoltage protection and overcurrent protection.
- The default switching time is set to 0.5s. Changing the time settings of the time relays is associated with the possibility of failure of the system and loss of warranty.
- Turning off the main switch causes complete disconnection of the control system and emergency circuits from the network, it does not disconnect the power supply from the BACK-UP supply side. The voltage on the network circuits connected directly to the mains supply remains also when the main switch of the junction box is turned off.
- In order to disconnect the voltage on the side of emergency circuits, one must turn off the main switch and control installation switches.
- In the event of exceeding the power of the circuits connected to the emergency power supply side, the inverter is turned off.
- If the meter is not installed in the place intended for its installation, the wires used to connect the meter should be removed and the sleeves should be reattached. If the cables are not removed, a metallic short circuit may occur inside the junction box.
- In order to use the inverter backup power, the BACK-UP function must be enabled in the inverter settings.
- The loss of voltage in any of the phases causes the switchover of the emergency circuits supply from the mains supply to the inverter emergency supply.
- An energy meter is included with each GoodWe inverter of the ET / BT series.
- In emergency power mode, the inverter maintains the compliance of the grid and operates in the grid TN-S.
- The system enables the unbalanced load in the emergency power supply circuits.
- When designing the installation, it should be ensured that all connected components are usable only within the permissible operating range of the connection switchboard.
- With a potential difference between the PE and N conductors in the customer's installation, when the power supply is connected, the residual current circuit breaker connected upstream of the inverter may trip, this phenomenon occurs because the inverter short-circuits the PE and N conductors at the moment of emergency operation. This phenomenon is a standard solution and it is conditioned by the necessity to operate the inverter in the TN network system during emergency power supply.

## 6. Schematic diagram of the system



Img. 8 Electrical diagram of the connection BOX SH-GWET-SZR.