VESTEL

Modbus MID Meter Sensor Kit for EV Charging Power Optimization

Klefr 6924 (1 Phase) / Klefr 6934 (3 Phase)

Installation Guide

Contents

IMPORTANT NOTES

- The installation of this device must be done following the steps in this Installation Guide.
- Only energy meters that are delivered by Vestel are compatible with Power Optimizer feature.
- Before the installation of Power Optimizer Meter, main switch before the meter in the distribution box must be turned off and the charging station must be powered off.

 WARNING: Never let people (including children) with reduced physical, sensory or mental capabilities or lack of experience and or knowledge use electrical devices unsupervised.

CAUTION

RISK OF ELECTRIC SHOCK:

CAUTION: VESTEL ELECTRIC VEHICLE CHARGER DEVICE SHALL BE MOUNTED BY A LICENSED OR AN EXPERIENCED ELECTRICIAN AS PER ANY REGIONAL OR NATIONAL ELECTRIC REGULATIONS AND STANDARDS IN EFFECT.

REQUIRED TOOLS FOR INSTALLATION

The list of equipment in order to use for parts replacement:

(1x) PH1 or 4-6mm slotted screwdriver
(1x) PH0 or 3mm slotted screwdriver
(1x) STP cable

This document aims to provide information on integration of power optimizer feature with the EVC04 charging station and how to use it.

WARNING: RISK OF ELECTRICAL SHOCK AND INJURY. TURN OFF THE MAIN SWITCH BEFORE THE METER IN THE DISTRIBUTION BOX AND POWER OFF THE CHARGING STATION MAIN SUPPLY BEFORE ANY INSTALLATION STEPS.

1- POWER OPTIMIZER

The energy meter KLEFR 6934 is used for a 3-phase installation or the model KLEFR 6924 for a 1-phase installation. In power optimizer mode, the total energy drawn from the main switch of the house by charging station and other household appliances is measured with this device integrated to the main power line. The charging station regulates the charging power of the electric vehicle according to the load on main switch of the house.

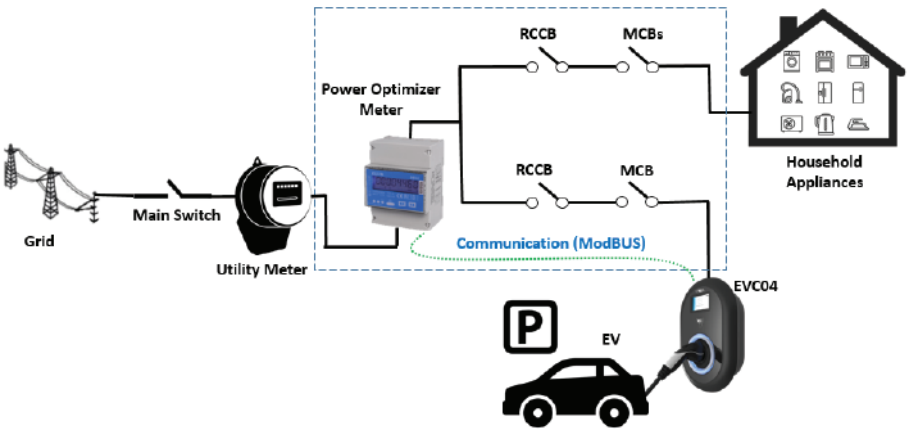


Figure-1

1.1- THREE PHASE

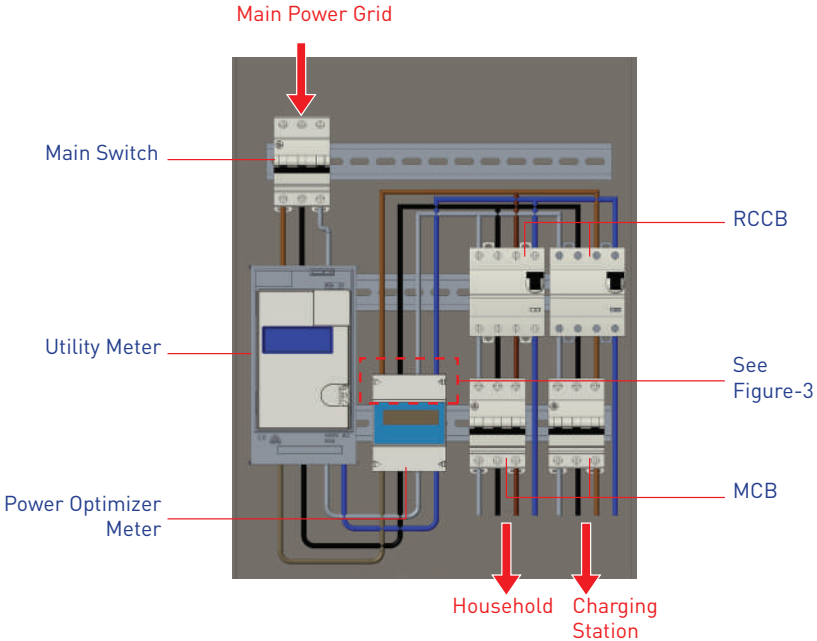


Figure-2

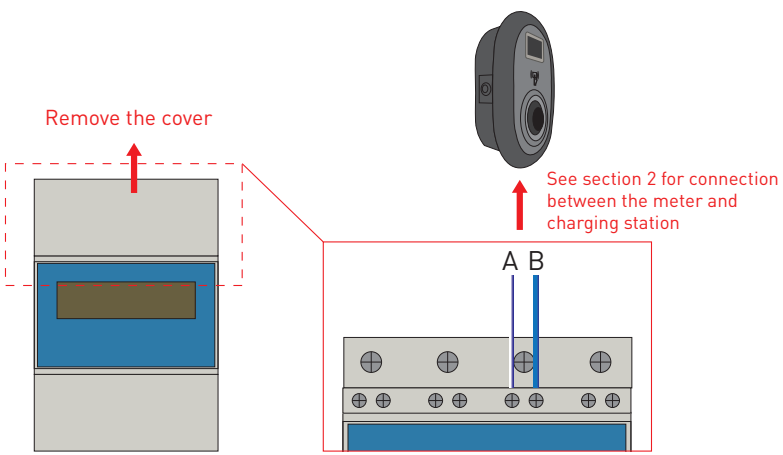


Figure-3

1.2- SINGLE PHASE

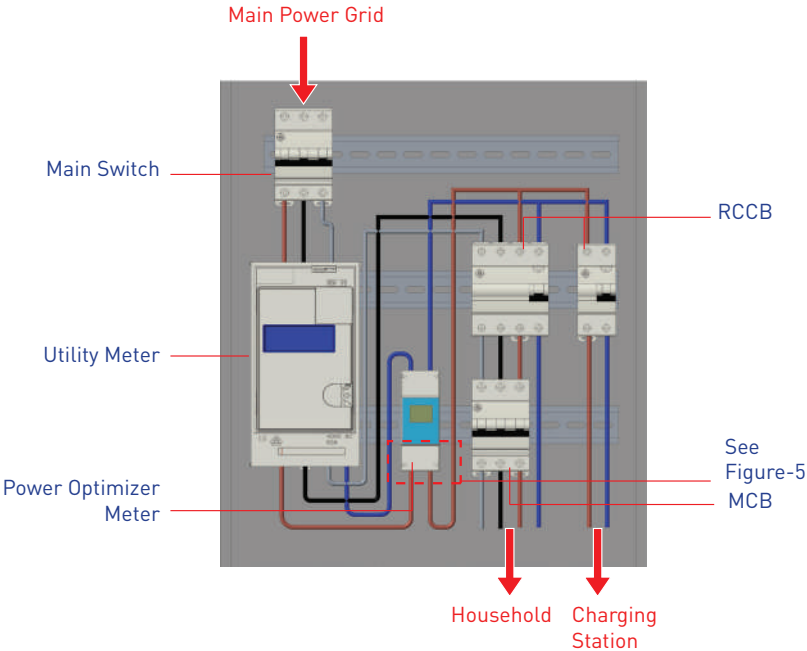


Figure-4

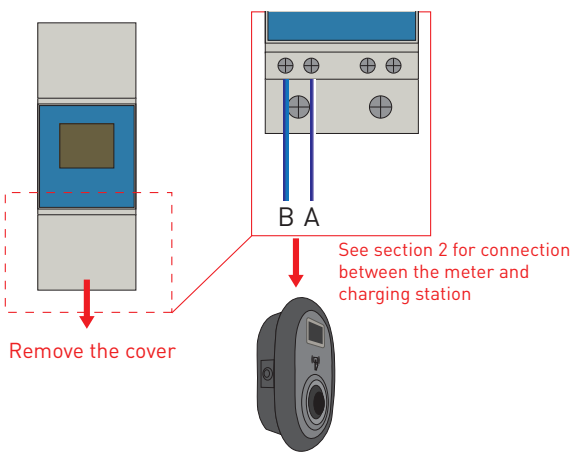
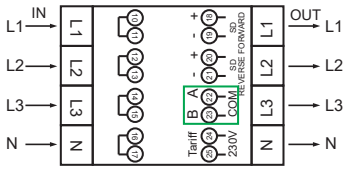


Figure-5

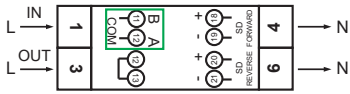
The figures are just generic examples of power optimizer meter installation to a distribution box of the house, not to be exactly the same for the actual house installation.

Power Optimizer Meter wiring connections can be made according to the information below.

Three Phase



Single Phase



- 22-23: A-B (COM) Modbus connection over RS485 for three phase charging station models. (See the following section "DATA CABLE CONNECTION TO EVC04 CHARGING STATION")
- 11-12: A-B (COM) Modbus connection over RS485 for single phase charging station models. (See the following section "DATA CABLE CONNECTION TO EVC04 CHARGING STATION")

Related board wiring of Power Optimizer connections can be made as shown below:

2- DATA CABLE CONNECTION TO EVC04 CHARGING STATION

You can use STP (shielded twisted-pair) cable with maximum length of 300 m for the connection between the meter and the charging station.

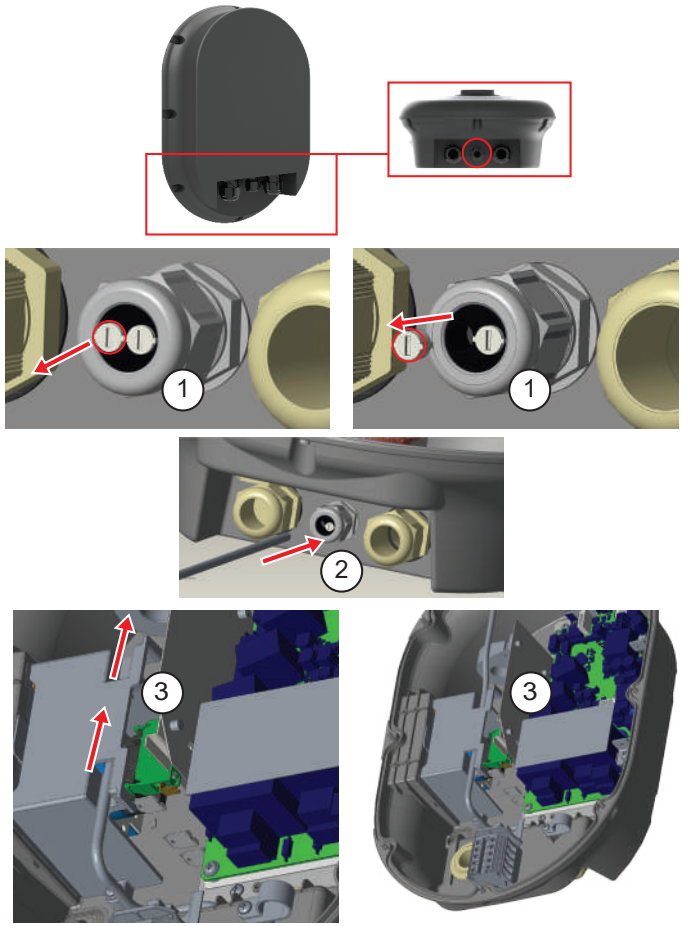


Figure-5

1- Remove rubber cork.
2- Insert cable through the cable hole.
3- Insert the cable through the RCCB housing holes.
4- Connect the wires to the mainboard. See the following section.

Related board wiring of Power Optimizer connections can be made as shown below:

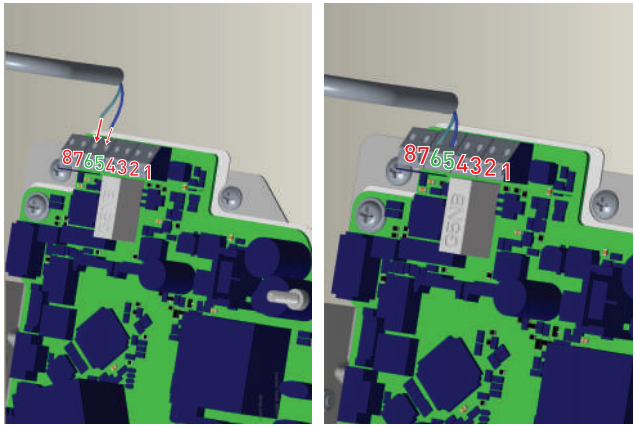


Figure-6

Cable Terminal	Cable Color	Description
6 (CN20-2)	White Blue	A (COM)
5 (CN20-1)	Blue	B (COM)

Table-1

Current limit of the main power line, which can be defined by main power regulations or by the limitations of power switches used, is set through the DIP switch located on the mainboard of the EVC04 charging station.

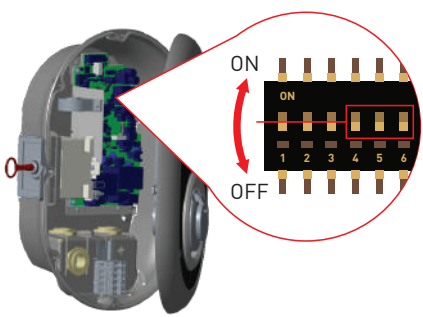


Figure-7

According to the limit set by the user, charging station adjusts its output charging current dynamically according to the measurement of main power line. When total current drawn by the charging station and household appliances reach the limit set via the DIP switch, the amount of current allocated for the charging station will be decreased.

DIP Switch Positions			Current Limit Value
4	5	6	
OFF	OFF	OFF	Power Optimizer Disabled
OFF	OFF	ON	16
OFF	ON	OFF	20
OFF	ON	ON	25
ON	OFF	OFF	32
ON	OFF	ON	40
ON	ON	OFF	63
ON	ON	ON	80

Table-2

Finally, you can turn on the main switch in the distribution box you turned off before.

3- CONFIGURATION

You must use the KLEFR meter with default configurations. Please check the configuration parameters. For detailed configuration parameters and information you can check the KLEFR datasheet provided.

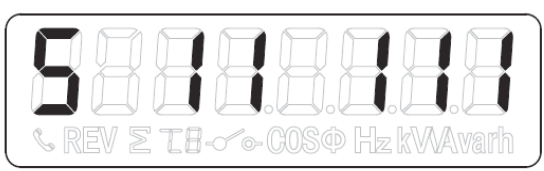
- Baudrate 9600
- 8 data bits
- Even parity
- 1 stop bit

4- ERRORS / DIAGNOSTICS DISPLAY

4.1- THREE PHASE

If the third, fourth or fifth digit shows a 0 (zero); please check the wiring for power issues.

The meter is equipped with a display field that shows errors and diagnostics. It consists of the character S followed by 2 + 3 digits. The meaning of each digit is as follows:



First digit: Program status (0 fail / 1 passed)
Second digit: Eeprom status (0 fail / 1 passed)
Third digit: Phase A status (0 not available / 1 available)
Fourth digit: Phase B status (0 not available / 1 available)
Fifth digit: Phase C status (0 not available / 1 available)

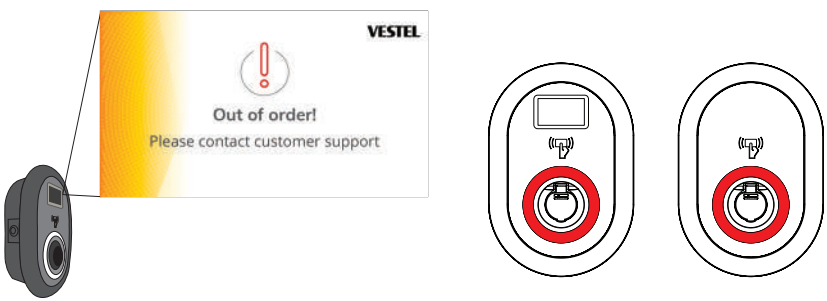
If the first or second digit shows a 0 (zero); then please return the meter, as the meter is malfunctioning.
If the third, fourth or fifth digit shows a 0 (zero); please check the wiring for power issues.

4.2- SINGLE PHASE

It could be that one of the following errors is displayed on the meter:

Display shows	Kind of errors	Recommended solution
Err 01	EEPROM error	Please contact technical support for a meter replacement.
Err 02	Program code checksum error	Please contact technical support for a meter replacement.

For smart models (with display), due to any fault you can see the screen "Out of order!" of charging station. Also the status information LED is constant red.



When error indications appear on the charging station, please check the installation steps. If the situation continues you can also see the IB document of the charging station EVC04.

VESTEL

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