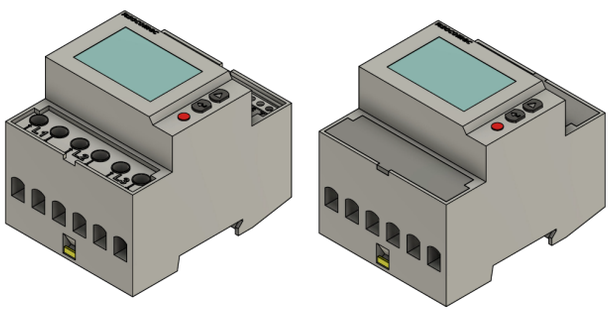


Installation and Configuration Manual — FEMS Package 3-Phase Sensor 80 A (SOCOMEC COUNTIS E23/E24)

Version:2023.7.1

Table of Contents

1. Introduction 2
1.1. Legal provisions . . . 2
1.2. Qualification of the installer . . . 2
1.3. Symbols used . . . 2
1.4. Dangers and safety instructions . . . 3
2. Product description 3
2.1. Scope of delivery . . . 3
2.2. Model overview . . . 4
3. Connection 5
3.1. Screw connection . . . 5
3.2. Connection to a generator . . . 6
3.3. Connection to the meter of the metering point operator . . . 6
3.4. Connection to a consumer load . . . 7
4. Communication 8
5. Overview of controls 9
6. Configuration 10
6.1. Opening the programming mode . . . 10
6.2. Input — RS-485 Modbus address (Addr) . . . 11
6.3. Communication speed (baud rate) . . . 14
6.4. Communication parity . . . 15
6.5. Communication stop bit . . . 16
6.6. Exiting programming mode . . . 18
7. Diagnostic messages 19
7.1. Missing phases . . . 19
7.2. Swapped phases . . . 19
7.3. Malfunction . . . 20
8. Troubleshooting 20
9. Contact us 21
10. Directories 22
10.1. List of illustrations . . . 22

1. Introduction

1.1. Legal provisions

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

This manual does not claim to be complete or accurate. It is intended solely as a summary of the original SOCOMEC manual. You can find the original manual at here.

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

	Attention
	Important information
	Danger

1.4. Dangers and safety instructions

The Socomec Countis E23/E24 must be installed by a qualified specialist.

The manufacturer’s installation and service instructions must be observed.

2. Product description

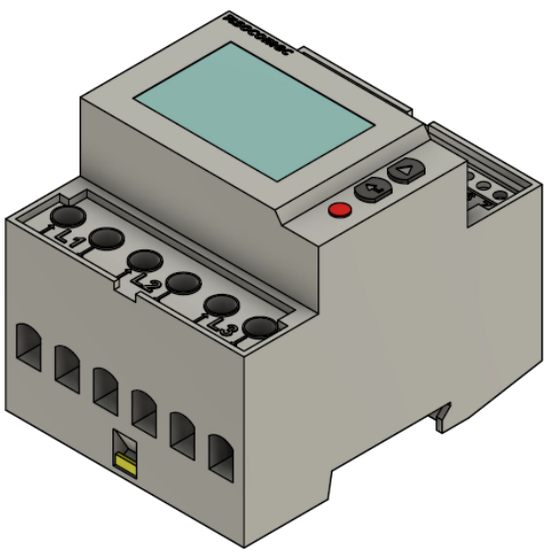
2.1. Scope of delivery

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:

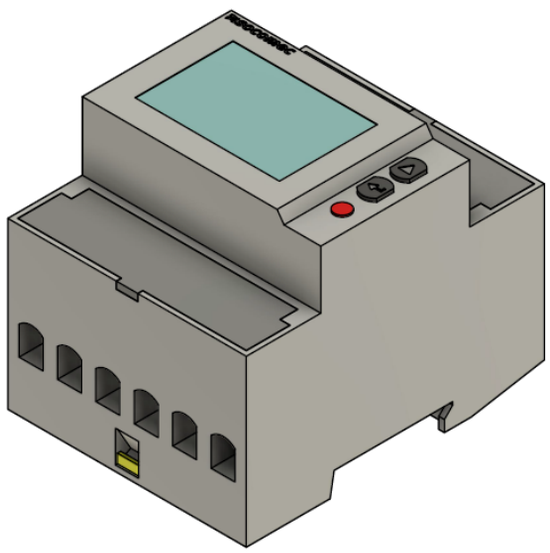
- SOCOMEC COUNTIS E23/E24 3-Phase Sensor
- EasySync adapter RS-485 (optional)
- Installation and Configuration Guide for the FEMS 3-Phase Sensor 80 A Package
- Installation Instructions for SOCOMEC COUNTIS E23/E24 (here)

2.2. Model overview

COUNTIS E23 and E24 are modular active and reactive energy meters that count and display the energy consumed. They are designed for three-phase grids and allow direct connection up to 80 A. They are equipped with a MODBUS communication bus. The COUNTIS E23 and E24 are identical in construction. The E24 is the MID version of the E23.



SOCOMEC COUNTIS E23



SOCOMEC COUNTIS E24

3. Connection

The meter is electrically connected through the 3 phases and the neutral conductor in accordance with the original instructions. The meter has an input and output for connecting the phases. If these are connected incorrectly, the meter may later output a negative value in Online Monitoring.

3.1. Screw connection

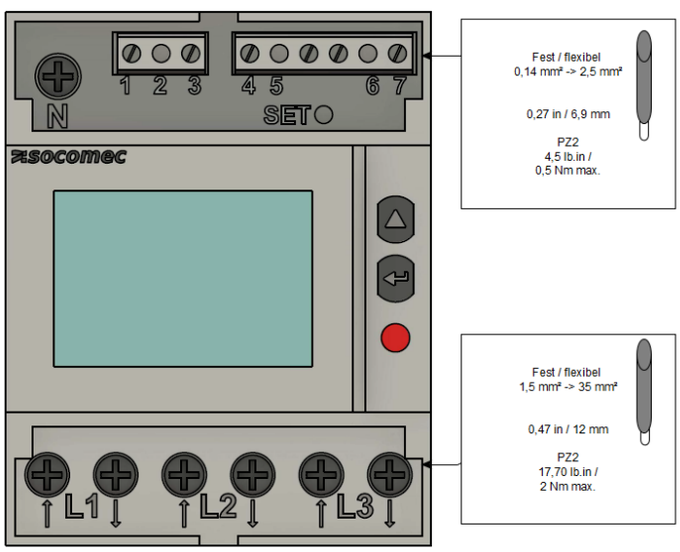


Image 1. Screw connection

3.2. Connection to a generator

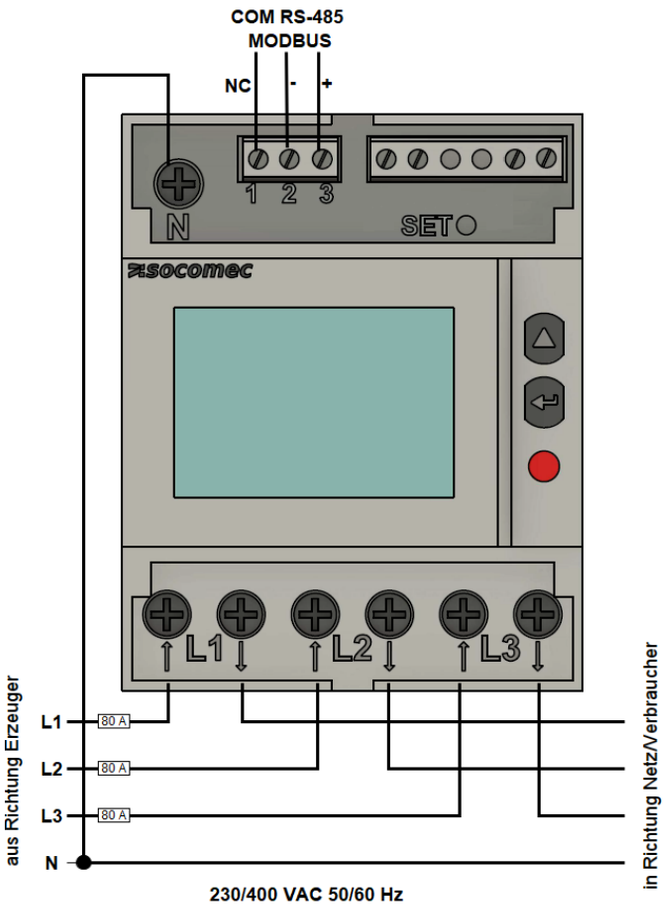


Image 2. Connection — Generator

3.3. Connection to the meter of the metering point operator

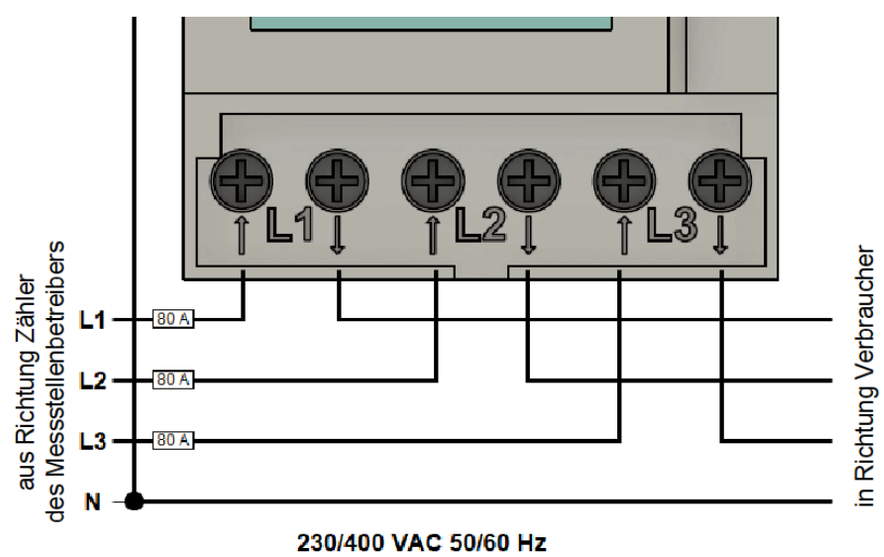


Image 3. Connection — Meter to metering point operator

3.4. Connection to a consumer load

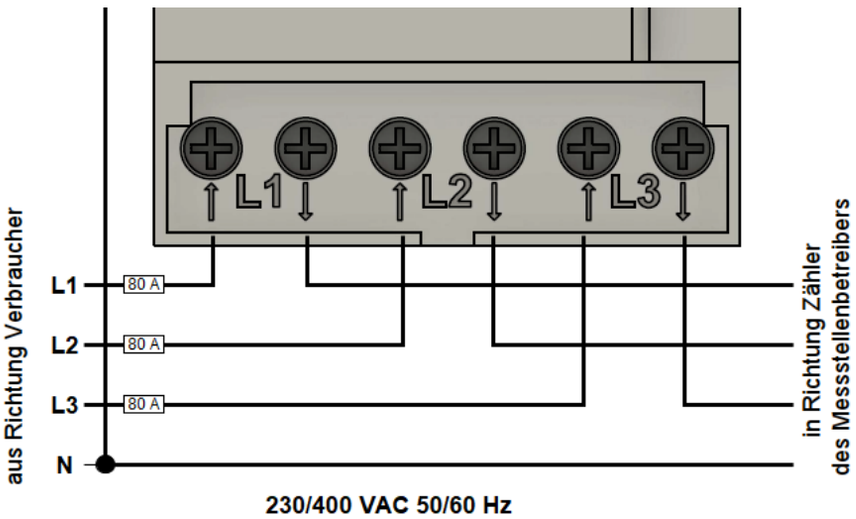


Image 4. Connection — Consumer load

4. Communication

The Modbus communication available with COUNTIS E23/E24 takes place via a serial RS485 interface (2 or 3 wire), which enables the device to be operated from FEMS. In the standard configuration, 32 devices can be connected to a PC or a controller over 1200 meters using an RS485 interface.

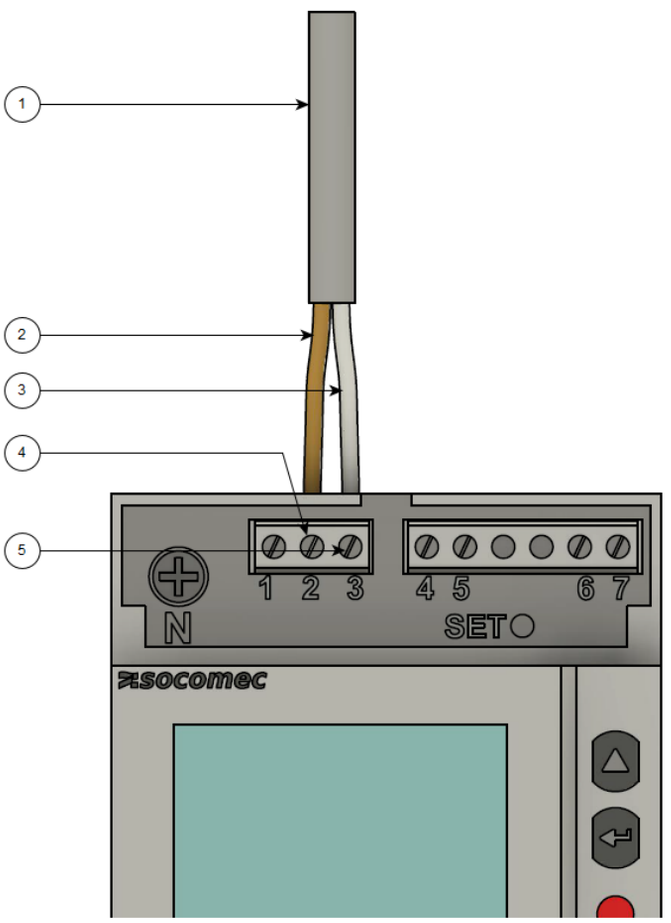


Image 5. RS-485 wiring

1. COM RS-485 connection from FEMS
2. Data conductor minus (-) (B conductor)
3. Data conductor plus (+) (A 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)!

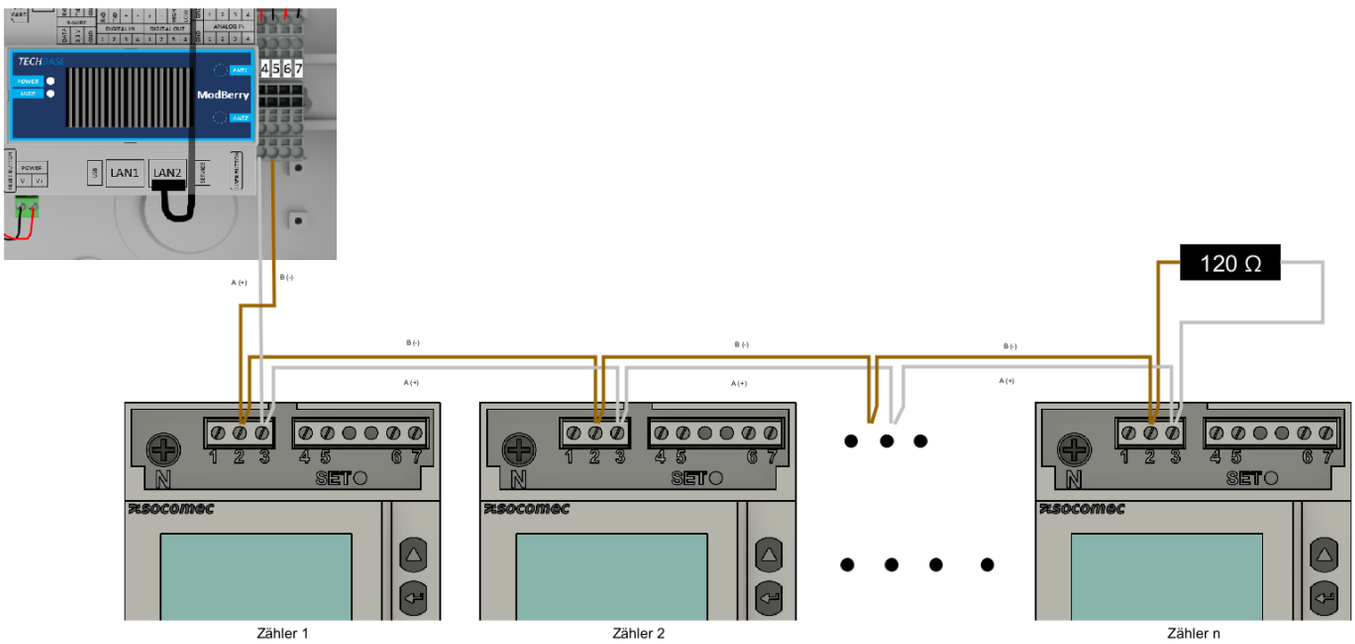


Image 6. Looping through the RS-485 wiring

If the supplied RS485 cable is not long enough, we recommend using a LiYCY with a cross-section of 0.5 mm². This is suitable for max. 500 m. In general, the manufacturer's specifications and recommendations must be observed.

5. Overview of controls

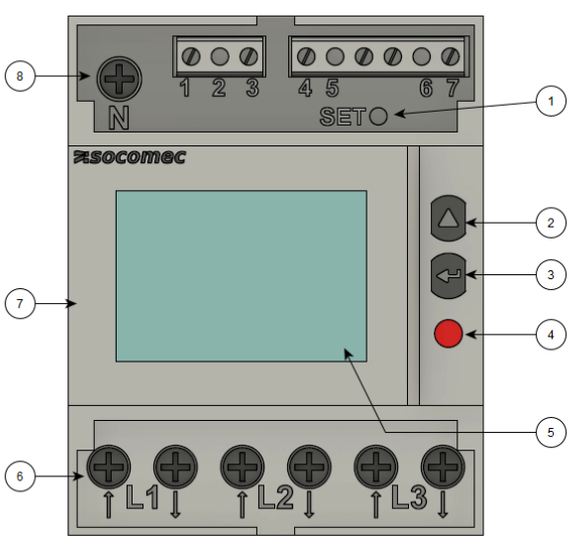


Image 7. Control elements

1. SET button

2. Cursor key UP (^)
3. ENTER button
4. LED operating control
5. LCD screen
6. Three-phase network connection
7. Details of MID certification (if available)
8. Neutral conductor connection

6. Configuration

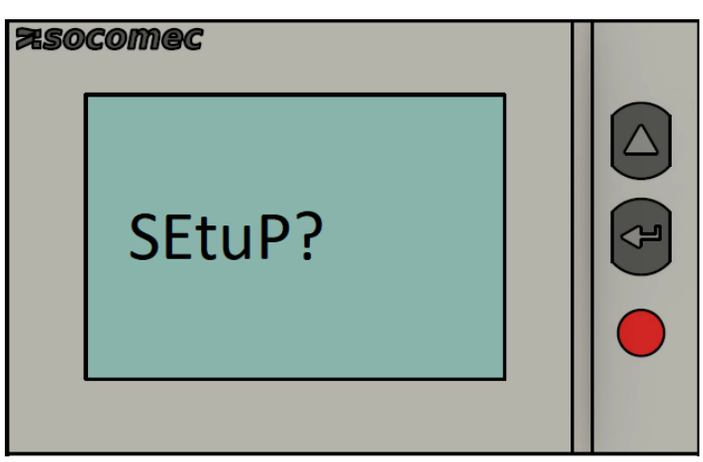
The following configuration settings must be used for use with FEMS:

Baud rate for communication	9.6
RS-485 Modbus address — Grid connection point	005
RS-485 Modbus address — PV generation	006
RS-485 Modbus address — Other generators/consumers	007...246

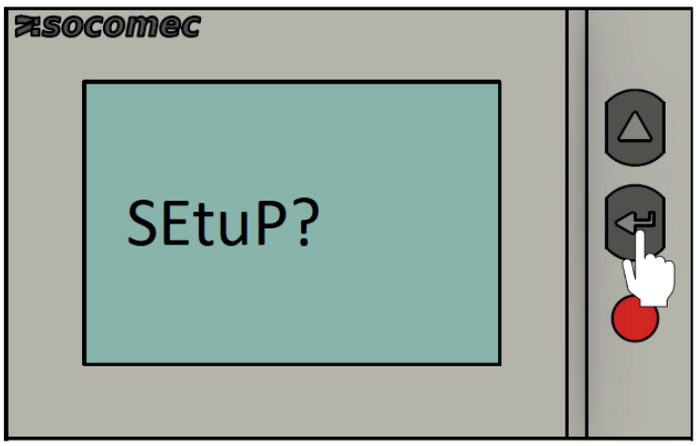
Follow the installation and service instructions for the meter installed to make the settings. The following steps are for simplification purposes only.

6.1. Opening the programming mode

1. Press the ENTER button to switch between the menu items within the configuration menu until the SETUP menu item appears.



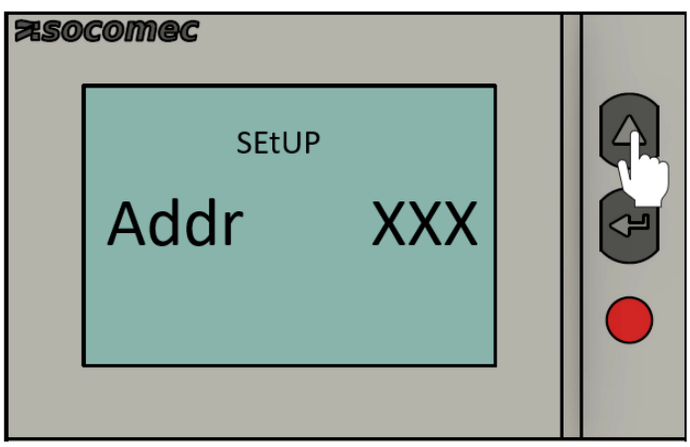
2. Then press and hold the ENTER button for three seconds to enter programming mode.



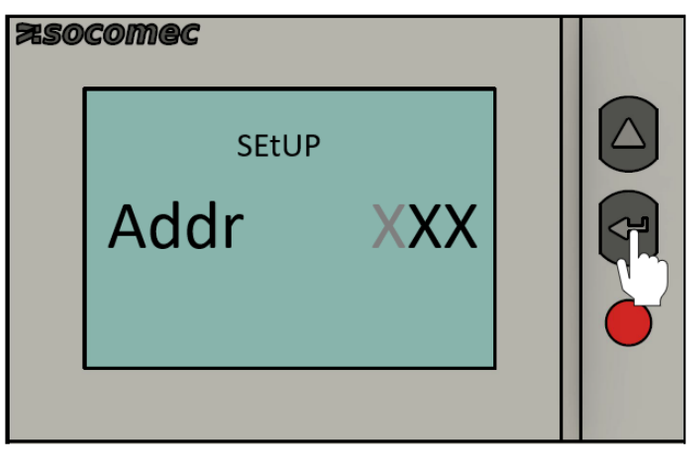
6.2. Input — RS-485 Modbus address (Addr)

The following steps describe the procedure for configuring the RS-485 Modbus address.

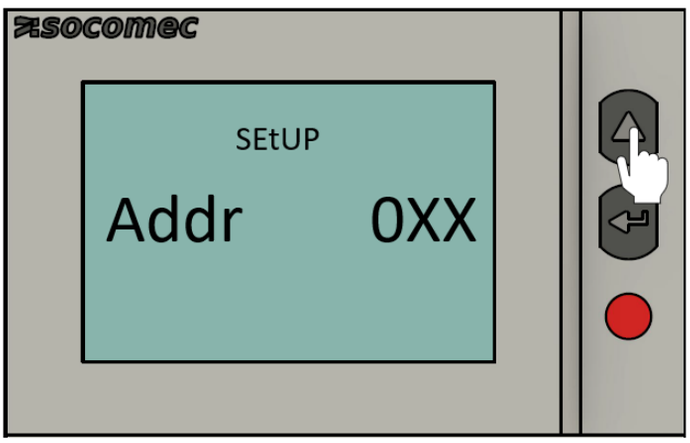
1. Press the ^ button until the menu for setting the address appears



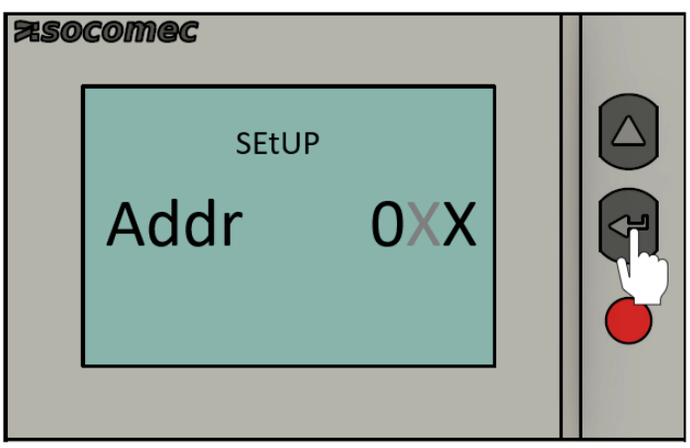
2. Press the ENTER button. The left-hand digit then flashes



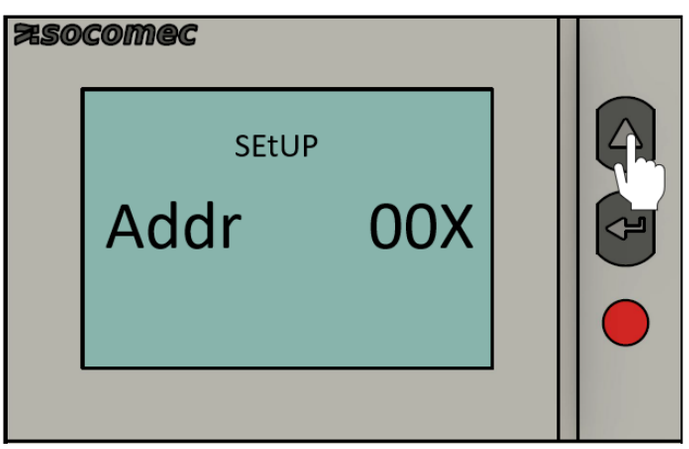
3. Press the ^ button until the value of the left-hand digit is set to 0.



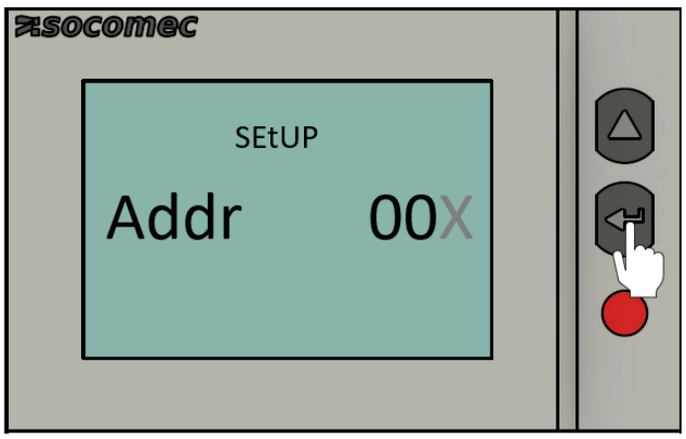
4. Press the ENTER button. The middle digit then flashes.



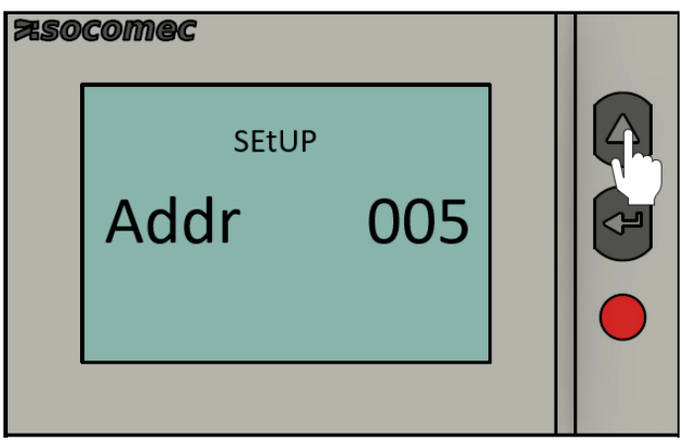
5. Press the ^ button until the value of the middle digit is set to 0.



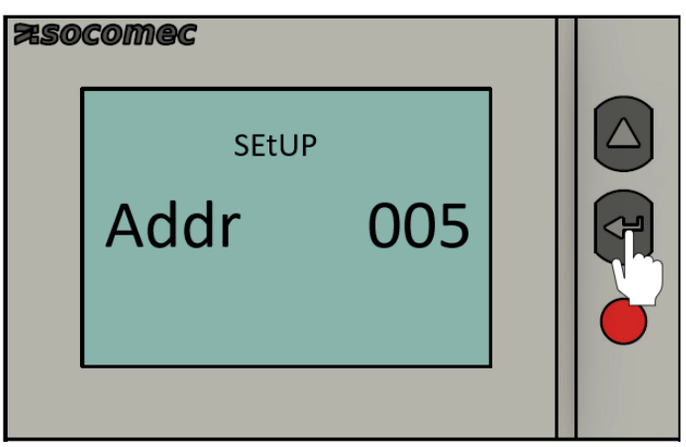
6. Press the ENTER button. The right-hand digit then flashes.



7. Press the ^ button until the value of the right-hand digit is set to 5.



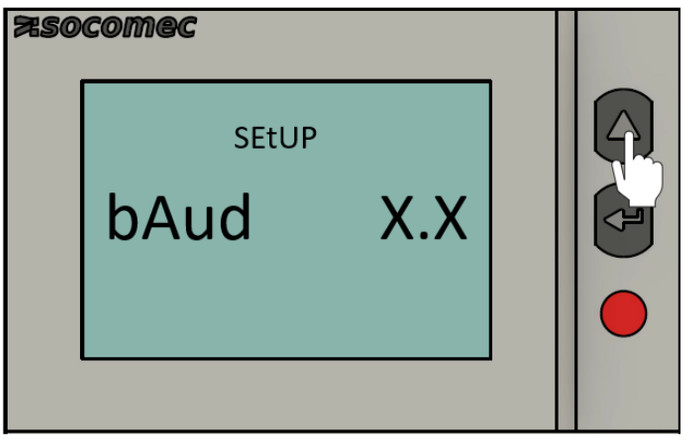
8. Press the ENTER button to save the entries.



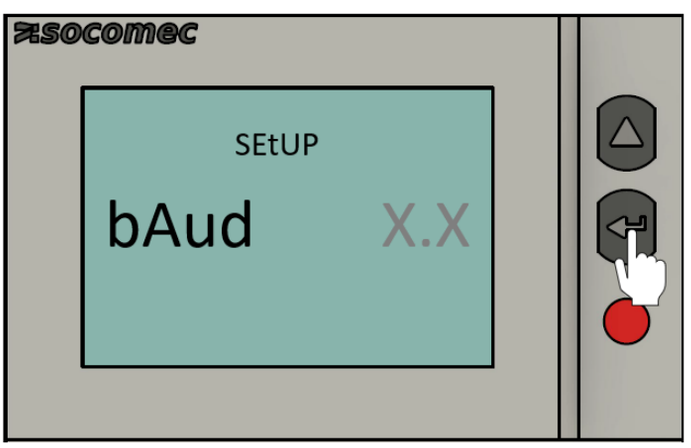
6.3. Communication speed (baud rate)

The following steps describe the procedure for configuring the baud rate.

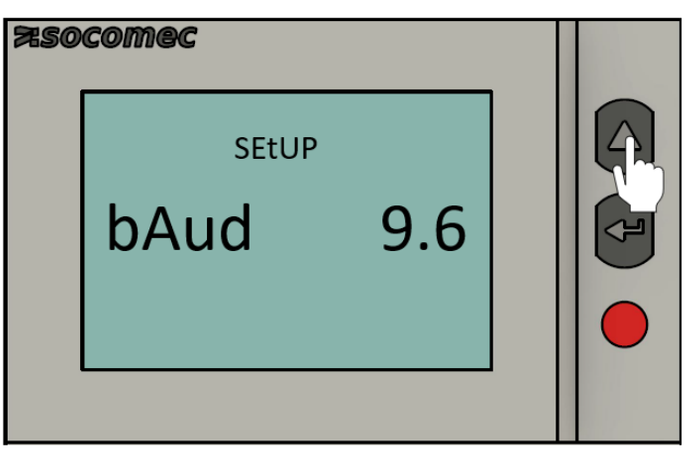
1. Press the ^ button. The menu item for setting the baud rate appears.



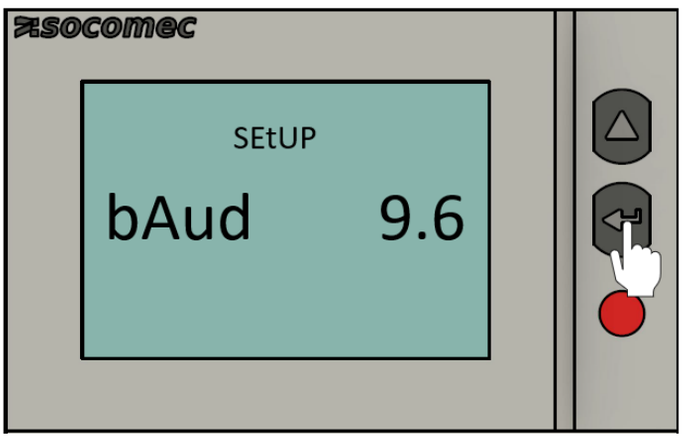
2. Press the ENTER button. The baud rate value then flashes.



3. Press the ^ button to switch between the different baud rate values. Select the value 9.6.



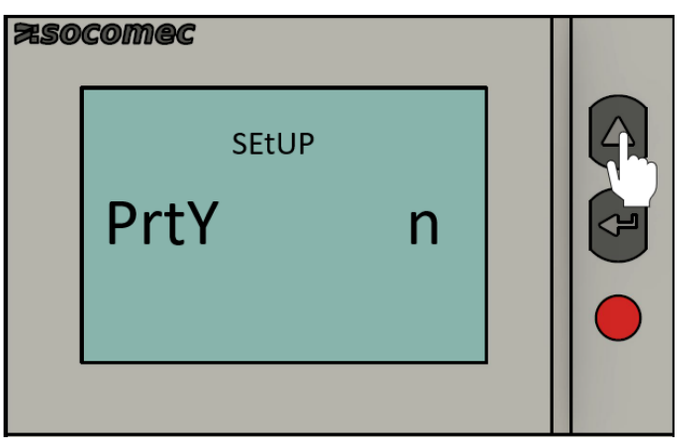
4. Press the ENTER button to save the entry.



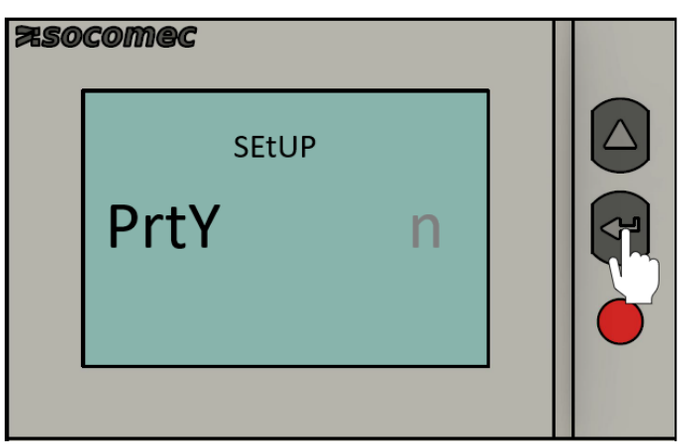
6.4. Communication parity

The following steps describe the procedure for configuring the communication parity.

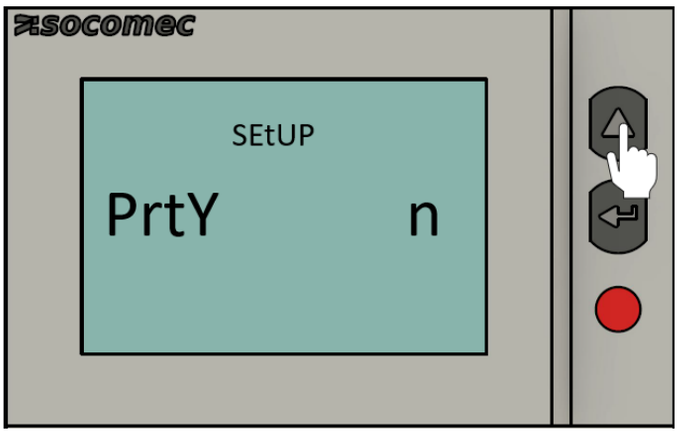
1. Press the ^ button. The menu item for setting the communication parity appears.



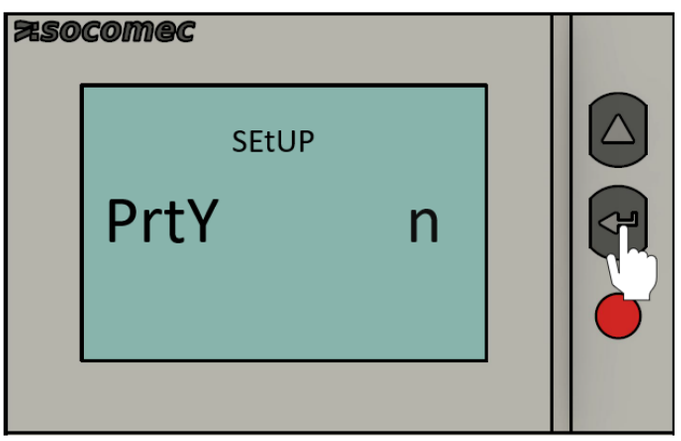
2. Press the ENTER button. The communication parity value then flashes.



3. Press the ^ button to switch between the different values. Select the value **n** (none).



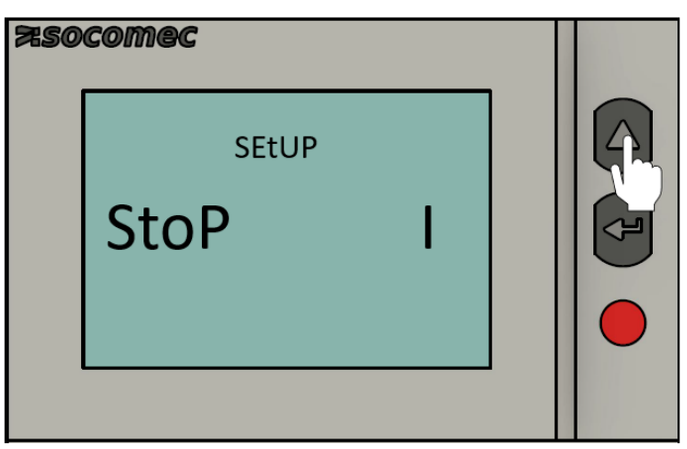
4. Press the ENTER button to save the entry.



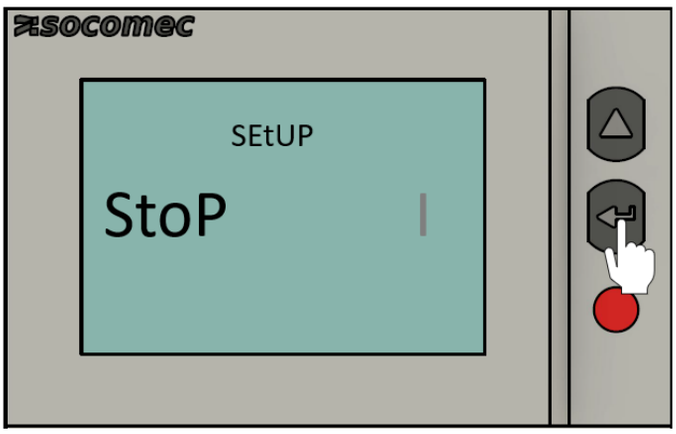
6.5. Communication stop bit

The following steps describe the procedure for configuring the communication stop bit.

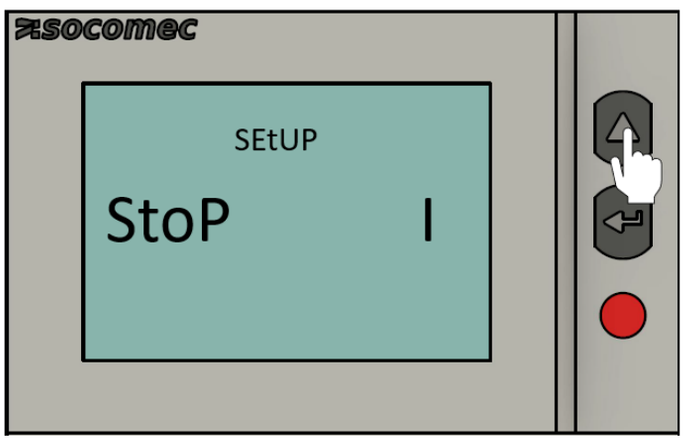
1. Press the ^ button. The menu item for setting the communication stop bit appears.



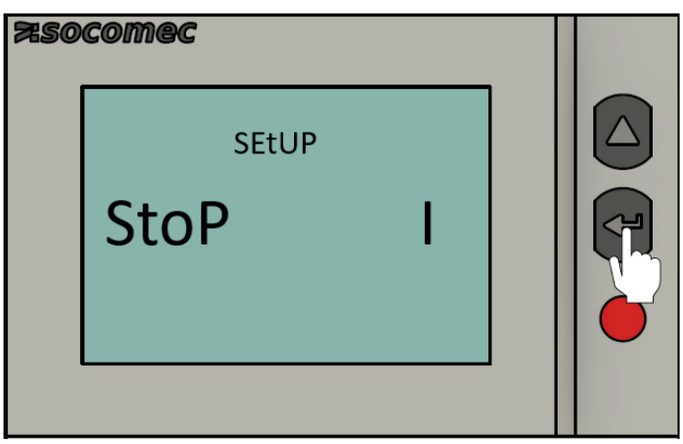
2. Press the ENTER button. The communication parity value then flashes.



3. Press the ^ button to switch between the different values. Select the value **1**.

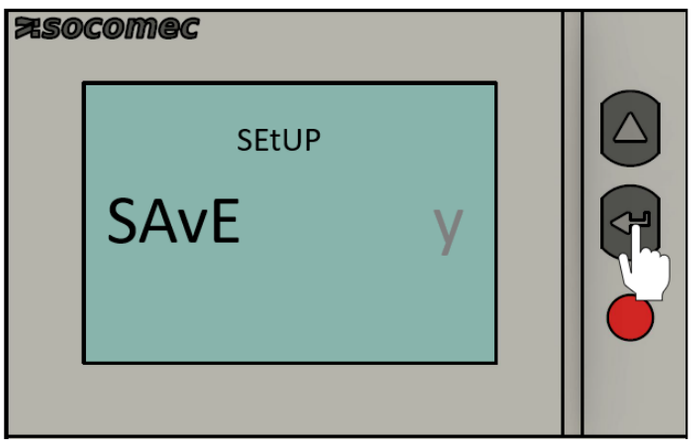


4. Press the ENTER button to save the entry.

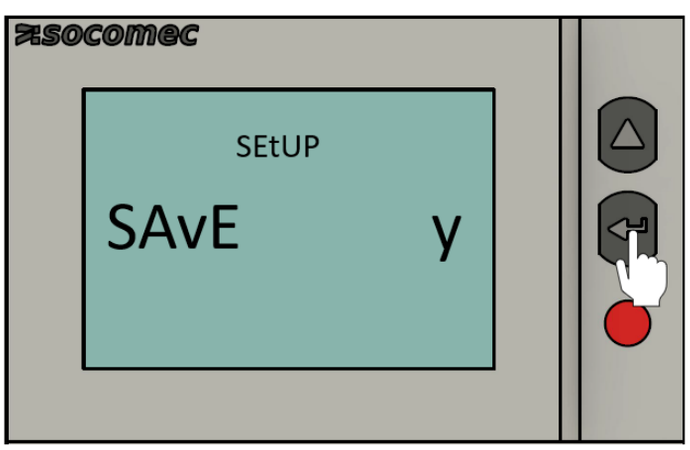


6.6. Exiting programming mode

1. Press and hold the ENTER button for three seconds. The "SAVE" menu then flashes with the value "y" (YES). This means that the entries will be saved. If you want to discard the entries, press the ^ button to go to the value "n" (NO)



2. Press the ENTER button to confirm the entry.



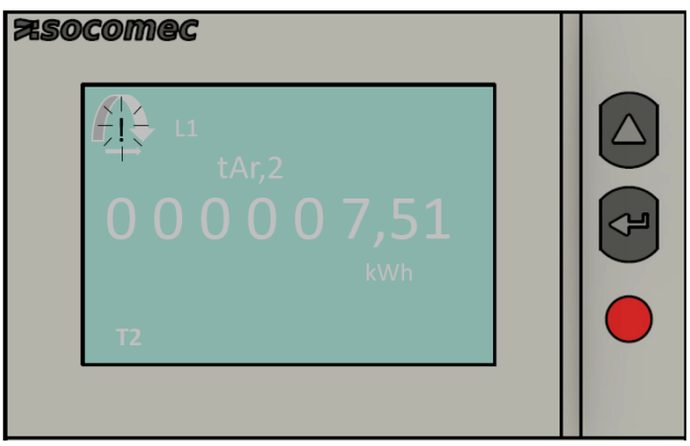
The configuration of the meter is now complete. Proceed in the same way to configure other meters. Please note the different RS485 Modbus addresses.

7. Diagnostic messages

The following diagnostic messages are displayed if there are connection errors or faults

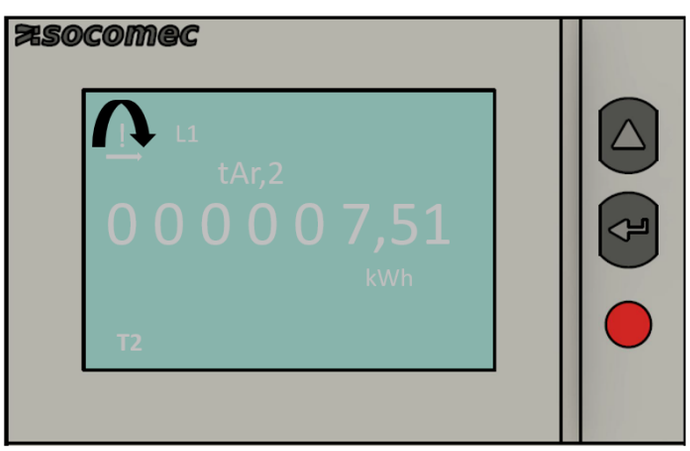
7.1. Missing phases

If one or more phases are not recognized, the exclamation mark flashes at the top left of the display.

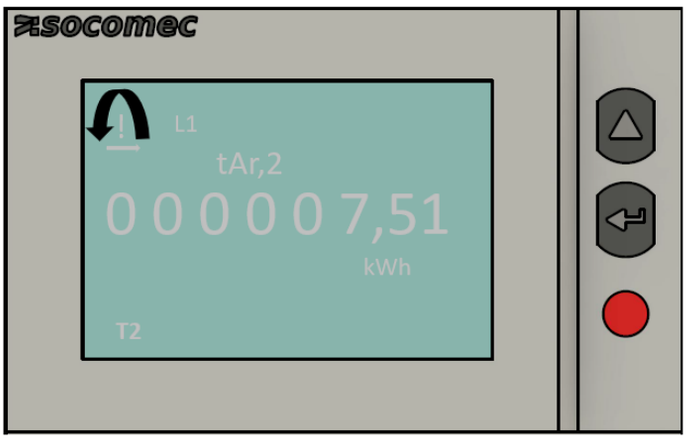


7.2. Swapped phases

If a 123 phase sequence is detected, the arrow appears clockwise on the display.

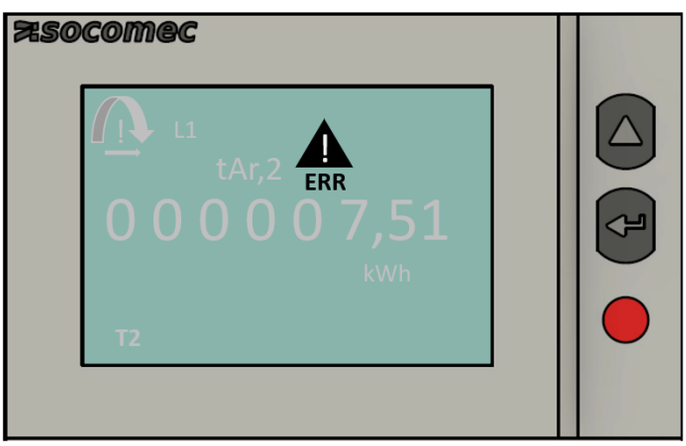


If a 132 phase sequence is detected, the arrow appears at the top of the display, rotating to the left.



7.3. Malfunction

If the message ERR appears on the display, there is a measuring device fault and the measuring device must be replaced.



8. Troubleshooting

Causes	Solutions
Device switched off	Check neutral conductor and phase 1 cable connections
Phases not shown on the display	Check connections
Phases reversed on the display	Check network configuration
Error message	Check whether meter is working properly

The configuration is now complete.

9. Contact us

For support, please contact:

FENECON GmbH
Gewerbepark 6
94547 Iggensbach

Phone — Service: +49 (0) 9903 6280 0
E-mail — Service: service@fenecon.de

10. Directories

10.1. List of illustrations

Image 1. Screw connection
Image 2. Connection — Generator
Image 3. Connection — Meter to metering point operator
Image 4. Connection — Consumer load
Image 5. RS-485 wiring
Image 6. Looping through the RS-485 wiring
Image 7. Control elements