



Электрические счетчики однофазные Socomes Countis E15 и Countis E16 - руководство по эксплуатации. Юниджет

Постоянная ссылка на страницу: <https://www.uni-jet.com/catalog/commutation/schetchiki/socomes-countis-e10-e11-e12.html>



**INSTRUCTION
MANUAL**

COUNTIS E15/E16

Single-phase energy meter
Direct - 80 A M-BUS

EN



COUNTIS E15



COUNTIS E16 - MID

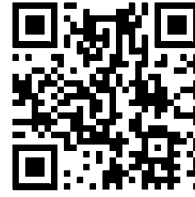


[www.socomec.com/
en/countis-e1x](http://www.socomec.com/en/countis-e1x)

| | |
|--|-----------|
| 1. DOCUMENTATION | 3 |
| 2. HAZARDS AND WARNINGS | 4 |
| 2.1. Risk of electrocution, burns or explosion | 4 |
| 2.2. Risk of damaging the unit | 4 |
| 2.3. Responsibility | 4 |
| 3. PRELIMINARY OPERATIONS | 5 |
| 4. INTRODUCTION | 6 |
| 4.1. Introducing the COUNTIS E15 / E16 | 6 |
| 4.2. Functions | 6 |
| 4.3. Front panels | 6 |
| 4.4. LCD display | 7 |
| 4.5. Dimensions | 7 |
| 4.6. Electrical readings | 8 |
| 4.6.1. Measurements | 8 |
| 5. INSTALLATION | 9 |
| 5.1. Recommendations and safety | 9 |
| 5.2. DIN rail mounted | 9 |
| 6. CONNECTION | 10 |
| 6.1. Connecting the COUNTIS E15/E16 | 10 |
| 6.2. Connection to the electrical network and to the loads | 10 |
| 7. MID COMPLIANCE | 11 |
| 8. COMMUNICATION | 12 |
| 8.1. General information | 12 |
| 8.2. Recommendations | 12 |
| 8.3. Communication structure | 12 |
| 8.4. Communication tables | 12 |
| 9. CONFIGURATION | 13 |
| 9.1. Onscreen configuration | 13 |
| 9.1.1. View of the entire "SETUP" menu | 14 |
| 9.1.2. Detailed view of menu "SETUP" | 15 |
| 9.1.3. Example: setting the communication address | 16 |
| 10. USE | 17 |
| 10.1. Detailed view of the tariff menu, "Tar.2" | 18 |
| 10.2. Detailed view of the total menu, "tot" | 19 |
| 10.3. Detailed view of the menu for partial and realtime readings, "P. rt" | 20 |
| 10.3.1. Starting up the partial energy meter | 21 |
| 10.3.2. Stopping the partial energy meter | 21 |
| 10.3.3. Resetting the partial energy meter to zero | 21 |
| 10.4. Detailed view of the menu "info" | 22 |
| 11. DIAGNOSTICS MESSAGES | 23 |
| 12. ASSISTANCE | 23 |
| 13. CHARACTERISTICS | 24 |
| 14. GLOSSARY OF ABBREVIATIONS | 26 |

1. DOCUMENTATION

All documentation on the COUNTIS E15/E16 is available online at:
www.socomec.com/en/countis-e1x



2. HAZARDS AND WARNINGS

The term "device" used in the paragraphs below refers to the COUNTIS E15/E16.

The assembly, use, servicing and maintenance of this equipment must only be carried out by trained, qualified professionals.

SOCOMEK shall not be held responsible for failure to comply with the instructions in this manual.

2.1. Risk of electrocution, burns or explosion

- Only duly authorised and qualified personnel may work or install/uninstall the device.
- The instructions are valid together with the specific instructions for the device.
- The devices are designed only for their intended purpose as set out in the instructions.
- Only accessories authorised or recommended by SOCOMEK may be used in association with the devices.
- Before proceeding with installation, maintenance, cleaning, disassembly, connection, or maintenance work, the device and system must be cut off from the mains to avoid electrocution and damaging the system and device.
- These devices are not designed to be repaired by the user.
- For any questions related to the disposal of the device, please contact SOCOMEK.

Failure to comply with the instructions of the device and this safety information can cause bodily injury, electric shock, burns, death or damage to property.

2.2. Risk of damaging the unit

To ensure that the unit operates correctly, make sure that:

- The unit is correctly installed.
- There is a maximum voltage at the voltage input terminals of 288 VAC phase-neutral
- The network frequency indicated on the device is observed: 50 or 60 Hz.
- There is a maximum current of 80 A at the current input terminals (I1).

Failure to respect these precautions could cause damage to the unit.

2.3. Responsibility

- Assembly, connection and use must be carried out in accordance with the installation standards currently in force.
- The unit must be installed in accordance with the rules given in this manual.
- Failure to observe the rules for installing this unit may compromise the device's intrinsic protection.
- The unit must be positioned within an installation which complies with the standards currently in force.
- Any cable which needs to be replaced may only be replaced with a cable having the correct rating.

3. PRELIMINARY OPERATIONS

To ensure the safety of staff and the equipment, it is vital to read and absorb the contents of these instructions thoroughly before commissioning.

Check the following points as soon as you receive the package containing the unit:

- The packaging is in good condition
- The unit has not been damaged during transportation
- The device reference number conforms to your order
- The package includes:
 - 1 device
 - 1 sealing kit (for COUNTIS E16)
 - 1 Quick Start guide

4. INTRODUCTION

4.1. Introducing the COUNTIS E15 / E16

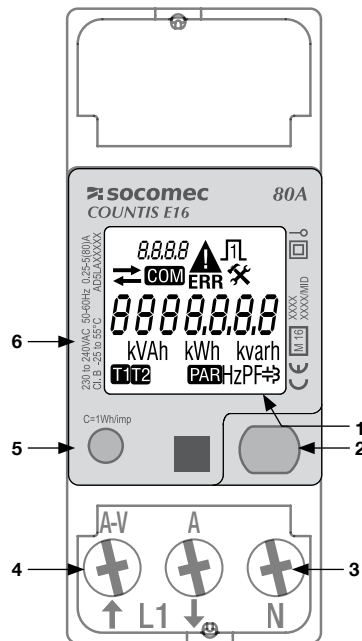
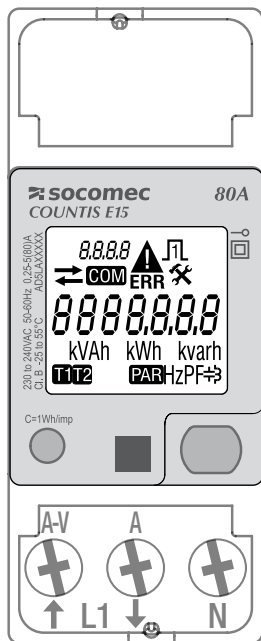
The COUNTIS E15 and E16 are modular active and reactive electrical energy meters that display consumed energy. They are designed for single-phase networks and allow a direct connection of up to 80 A. They are equipped with an M-BUS communication Bus.

4.2. Functions

- Measures and displays total and partial energy
- Dual tariff management: T1 / T2
- Electrical parameter measurements: I, U, V, f
- Power, power factor
- M-Bus communication
- MID version (according to reference)

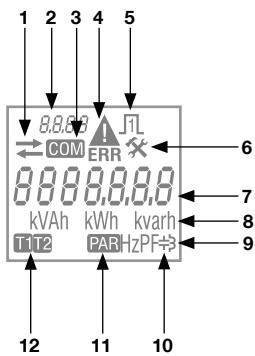
| Description | Reference |
|---------------------------|-----------|
| COUNTIS E15 | 4850 3045 |
| COUNTIS E16 - Version MID | 4850 3046 |

4.3. Front panels



1. LCD display
2. ENTER key
3. Neutral connection
4. Single-phase network connection
5. Metrological LED
6. Information relating to MID certification

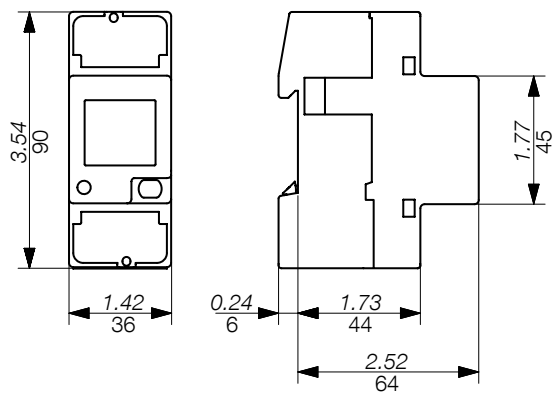
4.4. LCD display



1. Imported (→) or exported (←) energy or power
2. Identification of current menu
3. Active communication
4. Device malfunction. Replace the device
5. Active pulse output
6. Setup menu
7. Main zone
8. Unit of measure
9. Inductive value
10. Capacitive value
11. Partial meters. Flashing = partial meter has stopped
12. Tariff display

4.5. Dimensions

Dimensions: in/mm



4.6. Electrical readings

4.6.1. Measurements

Settings vary by model.

| Realtime values | Symbol | Unit of measure | LCD display | Via communication |
|--|---------------|------------------------|--------------------|--------------------------|
| Neutral voltage | V | V | ● | ● |
| Current | I | A | ● | ● |
| Power factor | PF | | ● | ● |
| Apparent power | S | kVA | | ● |
| Active power | P | kW | ● | ● |
| Reactive power | Q | kvar | ● | ● |
| Frequency | f | Hz | ● | |
| Direction of current | ↻ | | ● | |
| Logged data | | | | |
| Total active, reactive energy | Ea, Er | kWh, kvarh | ● | ● |
| Total apparent energy | Eap | kVah | ● | |
| Total reactive, inductive and capacitive energy | Er | kvarh | ● | |
| Total active and reactive energy for each tariff (T1/T2) | Ea, Er | kWh, kvarh | ● | ● |
| Active, partial energy for each tariff (T1/T2) | Ea | kWh | ● | |
| Partial active and reactive energy | Ea, Er | kWh, kvarh | ● | ● |
| Miscellaneous | | | | |
| Current tariff | T | 1/2 | ● | |
| Partial meters | BY | START/STOP | ● | |
| State of the pulse output | ⏏ | Active / inactive | ● | |

5. INSTALLATION

The paragraphs below describe how to install the device.

5.1. Recommendations and safety

Refer to the safety instructions (section "2. Hazards and warnings", page 4 4)

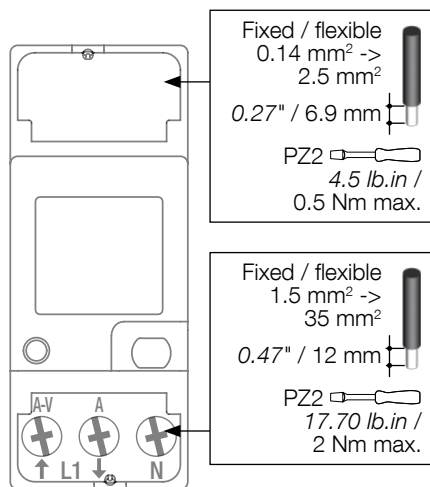
- Keep away from electromagnetic interference generator systems,
- Avoid vibrations with accelerations greater than 1 g for frequencies lower than 60 Hz.

5.2. DIN rail mounted

The COUNTIS E15/E16 can be mounted on a 35-mm DIN rail (EN 60715TM35). They must be used inside electrical cabinets.

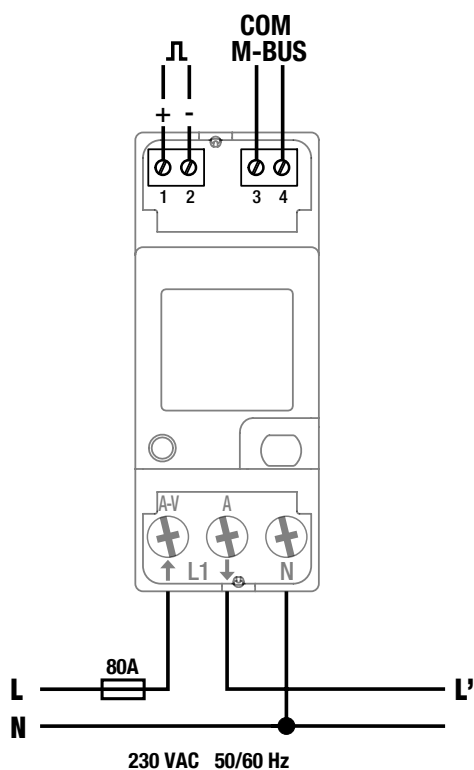
6. CONNECTION

6.1. Connecting the COUNTIS E15/E16



6.2. Connection to the electrical network and to the loads

The COUNTIS E15/E16 are intended for single-phase networks with neutral.



Pulse output

1: +
2: -

Optocoupler pulse outputs

Terminals 4-5 must be supplied with voltage between 5 and 27 VDC (27mA max)

M-BUS

3-4: M-Bus connection

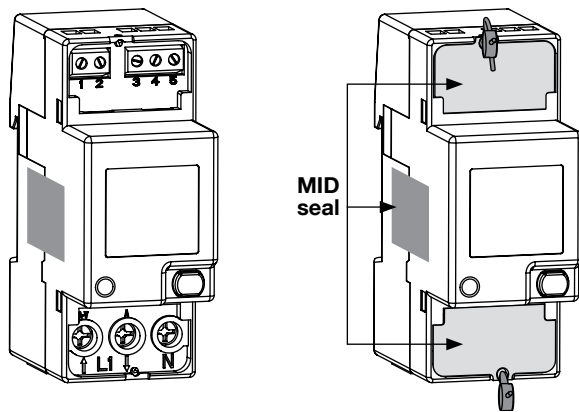
Network

L1 A-V: Phase input
L': A: Phase output
N: Neutral connection

7. MID COMPLIANCE

The following points must be taken into consideration to ensure that the device is used in compliance with directive MID 2014/32/EU:

- **Type of network**
COUNTIS E16 meters comply with the MID directive for connection to networks: 1P+N (see "6.2. Connection to the electrical network and to the loads", page 10)
- **Fitting terminal covers**
After connecting the device, ensure that the terminal covers are fitted properly and secured by the plastic seals provided with the device.
- **Communication**
The information provided via the M-BUS COM is transmitted for information only and has no legal value.
- **MID Declaration of Conformity**
The MID Declaration of Conformity is available on the website: www.socomec.com/en/countis-e1x



8. COMMUNICATION

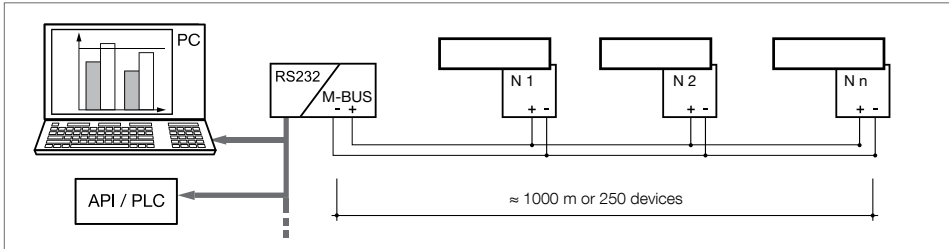
8.1. General information

In a standard configuration, an M-BUS connection is used to connect 250* devices to a PC or a controller over a distance of 1000 metres**.

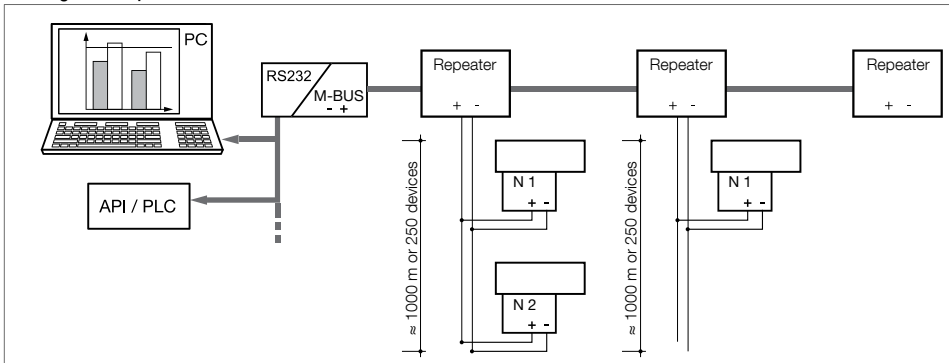
* depending on the M-BUS capacity

** depending on the number of devices and the communication speed

M-BUS cabling



Cabling with repeater



8.2. Recommendations

Use a non-shielded JYSTY Nx2x0.8 mm twisted pair (0.5 mm²).

If the distance of 1000 m is exceeded and/or the number of devices is greater than 250, add a repeater to allow additional devices to be connected.

If there are more than 250 units, use the secondary address only.

8.3. Communication structure

The device communicates via an M-BUS protocol which involves a master/slave dialogue. The COUNTIS units (slaves) are compatible with the 2 primary and secondary addressing modes. You can configure the primary and secondary addressing modes via the device's interface.

8.4. Communication tables

The communication tables and relevant notes are available online on the COUNTIS E15/E16 documentation page at:

www.socomec.com/en/countis-e1x




9. CONFIGURATION


The device can be configured directly from the COUNTIS E15/E16 screen in programming mode or via the communication link. The paragraphs below describe configuring using the screen.


9.1. Onscreen configuration

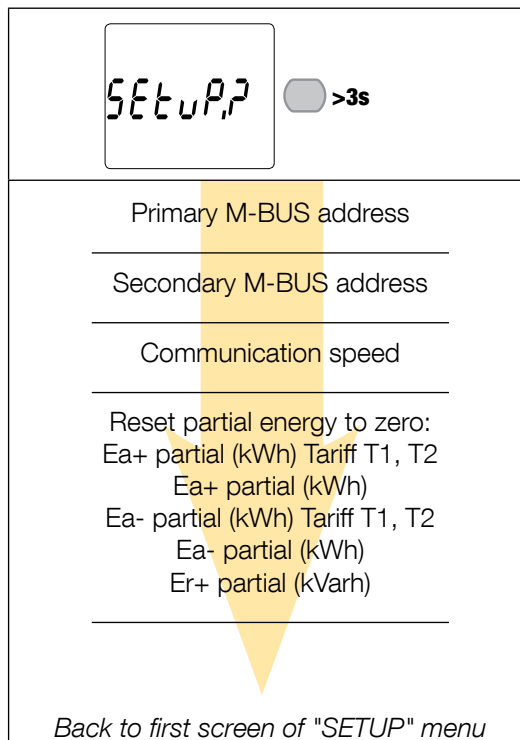
From the screen, go to programming mode to change your communication settings. How to browse through the programming mode is described in the following stages:

| Function | Where | Buttons | Press |
|---|---|---|-----------------------------|
| Switch menus | Every page except SETUP menu |  | Double speed (x2 < 0.5 sec) |
| Switch pages within a menu | Every page within a menu | | Realtime |
| Go to SETUP menu | Menu page SETUP | | > 3 sec |
| Change a value/digit | SETUP pages | | realtime |
| Confirm a value/digit | SETUP pages | | Double speed (x2 < 0.5 sec) |
| Exit SETUP menu | SETUP Menu | | > 3 sec |
| Start/stop the displayed partial meter | Partial meter menu | | > 3 sec |
| Reset the displayed partial meter to zero | Partial meter menu | | > 3 sec |
| Display test | Every page with the exception of SETUP and partial meters | | > 10 sec |

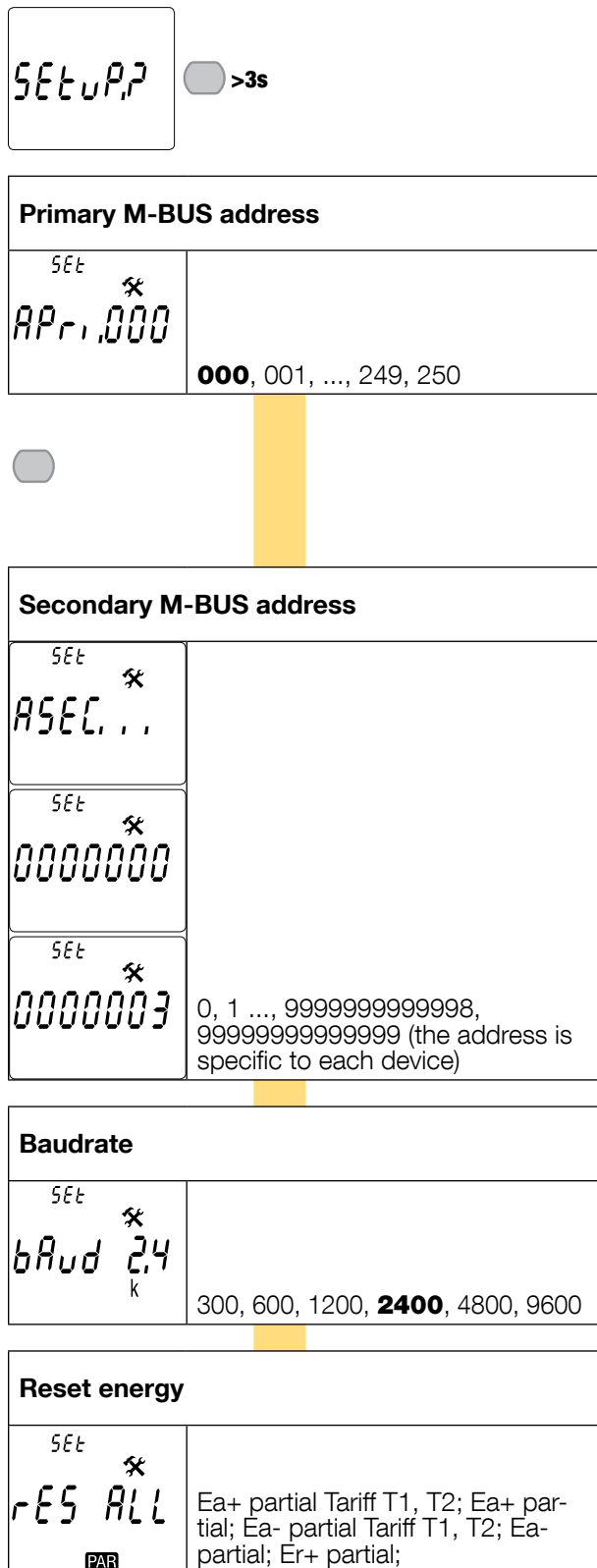
9.1.1. View of the entire "SETUP" menu

In the SETUP menu, press "  " for 3 seconds to put the device into programming mode.

Press "  " to go to the different screens:



9.1.2. Detailed view of menu "SETUP"

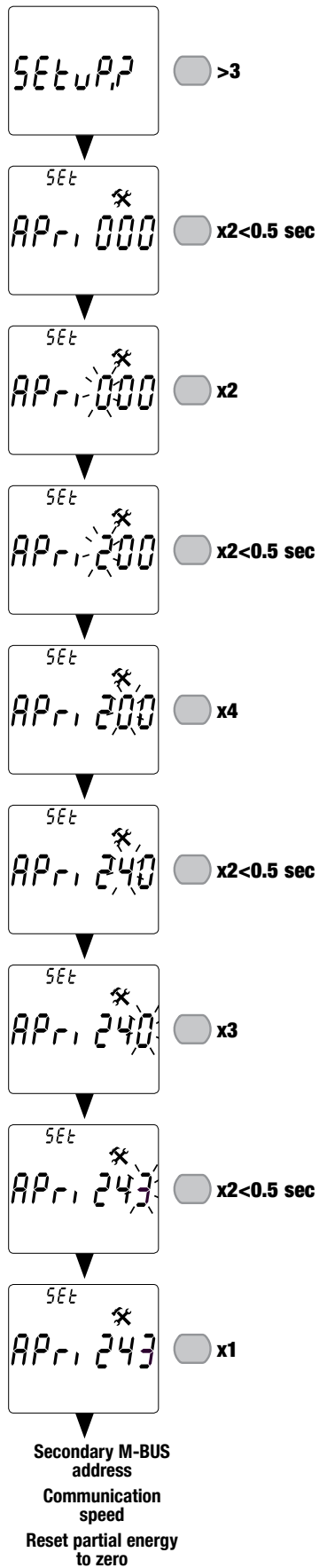


Back to first screen of "SETUP" menu

9.1.3. Example: setting the communication address

In "SETUP" mode (see page 14), go to the "APri primary address" screen

Example: changing the communication address to 243.



10. USE

Switch menus by pressing "  " twice for at least 0.5 seconds.
Press "  " to see the electrical readings or menu information.

The menus and related measurements are described in the table below:

| Tariff (Tar.) | Total (tot) | Partial and realtime readings (P. rt) | Information (inFo) |
|---|--|---|---|
| <p>Tariff 1 - Imported and exported active energy</p> <hr/> <p>Tariff 1 - Imported and exported reactive energy</p> <hr/> <p>Tariff 2 - Imported and exported active energy</p> <hr/> <p>Tariff 2 - Imported and exported reactive energy</p> <hr/> <p><i>Back to first screen of "Tar." menu</i></p> | <p>Total imported and exported active energy</p> <hr/> <p>Total apparent energy</p> <hr/> <p>Total imported and exported inductive reactive energy</p> <hr/> <p>Total imported and exported capacitive reactive energy</p> <hr/> <p>Total imported and exported reactive energy</p> <hr/> <p><i>Back to first screen of "tot" menu</i></p> | <p>Partial imported active energy by tariff</p> <hr/> <p>Partial imported active energy</p> <hr/> <p>Partial exported active energy by tariff</p> <hr/> <p>Partial exported active energy</p> <hr/> <p>Partial imported reactive energy</p> <hr/> <p>Active and reactive power</p> <hr/> <p>Voltage</p> <hr/> <p>Current</p> <hr/> <p>Power factor</p> <hr/> <p>Frequency</p> <hr/> <p><i>Back to first screen of "P.rt" menu</i></p> | <p>Metrological firmware version</p> <hr/> <p>Non-metrological firmware version</p> <hr/> <p>Checksum of metrological firmware</p> <hr/> <p>Checksum of non-metrological firmware</p> <hr/> <p>Installed communication port</p> <hr/> <p><i>Back to first screen of "InFO" menu</i></p> |

XX = default value

10.1. Detailed view of the tariff menu, "Tar."

| | |
|--|--|
| Imported active energy, tariff 1 | |
| $\xrightarrow{\text{tariff 1}}$ 000062.2 kWh | |

| | |
|---|--|
| Exported active energy, tariff 1 | |
| $\xleftarrow{\text{tariff 1}}$ 000062.2 kWh | |

| | |
|--|--|
| Imported reactive energy, tariff 1 | |
| $\xrightarrow{\text{tariff 1}}$ 000062.2 kvarh | |

| | |
|---|--|
| Exported reactive energy, tariff 1 | |
| $\xleftarrow{\text{tariff 1}}$ 000062.2 kvarh | |

| | |
|--|--|
| Imported active energy, tariff 2 | |
| $\xrightarrow{\text{tariff 2}}$ 000062.2 kWh | |

| | |
|---|--|
| Exported active energy, tariff 2 | |
| $\xleftarrow{\text{tariff 2}}$ 000062.2 kWh | |

| | |
|--|--|
| Imported reactive energy, tariff 2 | |
| $\xrightarrow{\text{tariff 2}}$ 000062.2 kvarh | |

| | |
|---|--|
| Exported reactive energy, tariff 2 | |
| $\xleftarrow{\text{tariff 2}}$ 000062.2 kvarh | |

Back to first screen of "Tar." menu

10.2. Detailed view of the total menu, "tot"

| | |
|---|--|
| Total imported active energy | |
| $\xrightarrow{\text{tot}}$ 000083.2 kWh | |

| | |
|--|--|
| Total exported active energy | |
| $\xleftarrow{\text{tot}}$ 000083.2 kWh | |

| | |
|----------------------------------|--|
| Total apparent energy | |
| tot 000083.2 kVAh | |

| | |
|--|--|
| Total imported inductive reactive energy | |
| $\xrightarrow{\text{tot}}$ 000083.2 kvarh ⌋ | |

| | |
|---|--|
| Total exported inductive reactive energy | |
| $\xleftarrow{\text{tot}}$ 000083.2 kvarh ⌋ | |

| | |
|--|--|
| Total imported capacitive reactive energy | |
| $\xrightarrow{\text{tot}}$ 000083.2 kvarh ⌋ | |

| | |
|---|--|
| Total exported capacitive reactive energy | |
| $\xleftarrow{\text{tot}}$ 000083.2 kvarh ⌋ | |

| | |
|---|--|
| Total imported reactive energy | |
| $\xrightarrow{\text{tot}}$ 000083.2 kvarh | |

| | |
|--|--|
| Total exported reactive energy | |
| $\xleftarrow{\text{tot}}$ 000083.2 kvarh | |

Back to first screen of "tot" menu

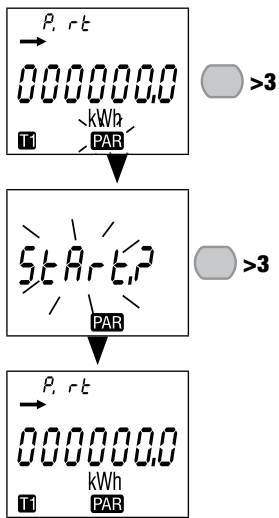
10.3. Detailed view of the menu for partial and realtime readings, "P. rt"

| | |
|---|--|
| Imported partial active energy for tariff T1 | |
| \rightarrow P. rt 000083.2 kWh T1 PAR | |
| Imported partial active energy for tariff T2 | |
| \rightarrow P. rt 000083.2 kWh T2 PAR | |
| Partial imported active energy | |
| \rightarrow P. rt 000083.2 kWh PAR | |
| Exported partial active energy for tariff T1 | |
| \leftarrow P. rt 000083.2 kWh T1 PAR | |
| Exported partial active energy for tariff T2 | |
| \leftarrow P. rt 000083.2 kWh T2 PAR | |
| Partial exported active energy | |
| \leftarrow P. rt 000083.2 kWh PAR | |
| Partial imported reactive energy | |
| \rightarrow P. rt 000083.2 kvarh PAR | |

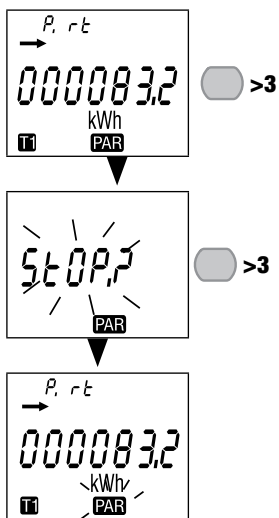
| | |
|---|--|
| Realtime active power | |
| \rightarrow P. rt 08.32 kW | |
| Realtime reactive power | |
| \rightarrow P. rt 08.32 kvar ± | |
| Realtime voltage | |
| P. rt 228.2 V | |
| Realtime current | |
| P. rt 00.00 A | |
| Realtime power factor | |
| P. rt 0.000 PF± | |
| Frequency | |
| P. rt 50.01 Hz | |

Back to first screen of "P. rt" menu

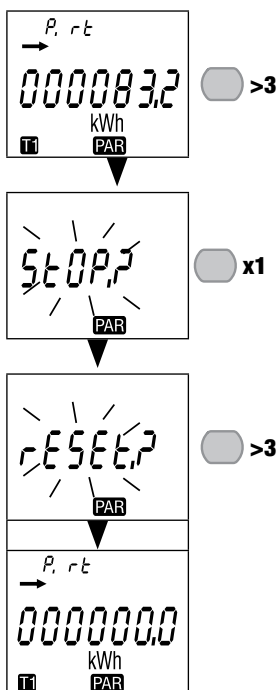
10.3.1. Starting up the partial energy meter



10.3.2. Stopping the partial energy meter



10.3.3. Resetting the partial energy meter to zero



10.4. Detailed view of the menu "info"

| Metrological firmware version | |
|-------------------------------|--|
| <i>info</i> | |
| Fr 1 1.22 | |

| Non-metrological firmware version | |
|-----------------------------------|--|
| <i>info</i> | |
| Fr 2 3.00 | |

| Checksum of metrological firmware | |
|-----------------------------------|--|
| <i>info</i> | |
| CS 1C 166 | |

| Checksum of non-metrological firmware | |
|---------------------------------------|--|
| <i>info</i> | |
| CS288C 1 | |

| Installed communication port | |
|------------------------------|--|
| <i>info</i> | |
| RS-485 | |



Back to first screen of "info" menu

11. DIAGNOSTICS MESSAGES

The following message appears if there are connection or malfunction errors.

11.1. Malfunction



- If you see this message, the meter has malfunctioned and must be replaced.

12. ASSISTANCE

| Causes | Solutions |
|--------------------|---|
| Device not working | Check the neutral and phase cable connections |
| Error message | Check the meter is working OK |

13. CHARACTERISTICS

| GENERAL FEATURES | |
|-------------------------------------|--|
| Compliant with | European EMC Directive No. 2014/30/EU dated 26/02/2014 LV Directive No. 2014/35/EU dated 26/02/2014 Measuring Instrument Directive MID No. 2014/32/EU dated 26/02/2014 EN50470-1/-3 IEC 62053-21/-23 |
| Frequency | 50 and 60 Hz (± 1 Hz) |
| Power supply | Self-supplied |
| Rated dissipated power (Wmax.) | 7.5VA (0.5W) |
| FEATURES | |
| Single-phase connectivity | 2 wires 230 - 400V |
| Stores energy readings and settings | In FRAM memory |
| Identifies display of tariffs | T1 and T2 |
| CURRENT MEASUREMENTS | |
| Type | Single-phase - direct 80 A |
| Input consumption | 0.5VA max. per phase |
| Startup current (Ist) | 20mA |
| Minimum current (Imin) | 0.25A |
| Transition current (Itr) | 0.5A |
| Reference current (Iref) | 5A |
| Permanent overload (Imax) | 80A |
| Intermittent overload | 30 Imax for 1/2 cycle |
| OVERLOAD CAPACITY | |
| DC voltage Un | 288 VAC |
| Realtime voltage Un (1 s) | 300 VAC |
| DC current Imax | 80 A |
| Realtime current Imax | 30 Imax for 1/2 cycle |
| VOLTAGE MEASUREMENTS | |
| Range of measurement | 230-240V $\pm 20\%$ |
| Consumption | 7.5VA max. per phase |
| Permanent overload | 290V phase-neutral |
| FREQUENCY MEASUREMENT | |
| Frequency measurement | 45-65 Hz |
| ENERGY MEASUREMENT | |
| Active | Yes |
| Reactive | Yes |
| Total and partial reading | Yes |
| MID metering | Bidirectional with single-phase |
| Resolution | 10 Wh, 10 varh |
| ENERGY ACCURACY | |
| Active energy Ea+ | Class B (EN 50470-3) E16 Class 1 (EN 62053-21) |
| Reactive energy Er+ | Class 2 (EN 62053-23) |
| TARIFF for Ea+ | |

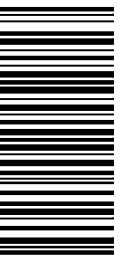
| | |
|---|---|
| Tariff management | Yes (via communication) |
| Number of tariffs managed | 2 |
| METROLOGICAL LED (Ea+) | |
| Pulse value | 1000 pulses / kWh |
| Colour | Red |
| PULSE OUTPUT | |
| Type | Opto-isolated - 5 ... 27VDC 27mA according to EN 62053-31 |
| Pulse weight | 100 Wh |
| DISPLAY | |
| Type | 7-digit LCD with backlight |
| Refresh time | 1 s |
| Backlight activation time | 10 s |
| Active energy: 1 display, 7-digit | 000000.0 - 999999.9 kWh |
| Reactive energy: 1 display, 7-digit | 000000.0 - 999999.9 kvarh |
| Apparent energy: 1 display, 7-digit | 000000.0 - 999999.9 kVAh |
| Realtime active power: 1 display, 4-digit | 00.00 - 99.99 kW |
| Realtime reactive power: 1 display, 4-digit | 00.00 - 99.99 kvar |
| Realtime voltage: 1 display, 4-digit | 000.0 ... 999.9 V |
| Realtime current: 1 display, 4-digit | 00.00 ... 99.99 A |
| Power factor: 1 display, 4-digit | 0.001-1.000 |
| Frequency: 1 display, 4-digit | 45.00-65.00 Hz |
| COMMUNICATION | |
| M-BUS | 2 wires + shielding/ half duplex |
| Protocol | M-BUS |
| Baudrate | 300, 600, 1200, 2400, 4800, 9600 bps |
| Load unit | 1 |
| SAVING | |
| Energy registers | In FRAM memory |
| ENVIRONMENTAL CONDITIONS | |
| Mechanical environment | M1 |
| Electromagnetic environment | E2 |
| Operating temperature range | -25°C to +55°C |
| Storage temperature | -25°C to 75°C |
| Humidity | ≤ 80% |
| Installation | Internal (box/cabinet) |
| Vibrations | ±0.075 mm |
| HOUSING | |
| Dimensions W x H x D (mm) | Modular - width of 2 modules (DIN 43880) 36 x 90 x 64 |
| Installation | On DIN rail (EN 60715) |
| Connection capacity, tightening torque | See chapter "6. Connection", page 10 |
| Protection index | Front: IP51 - casing: IP20 |
| Insulation class | Class II (EN 50470-1) |
| Weight | 205 g |

14. GLOSSARY OF ABBREVIATIONS

| | |
|--------|--|
| info | Menu information |
| Fr1 | Metrological firmware version |
| Fr2 | Non-metrological firmware version |
| CS1 | Checksum of metrological firmware |
| CS2 | Checksum of non-metrological firmware |
| tAr. | Tariff menu |
| tot | Total menu |
| P. rt | Partial and realtime readings menu |
| SEtuP. | Setup menu |
| APri. | Primary M-BUS address |
| ASEC. | Secondary M-BUS address |
| bAu. | Communication speed in bauds (bits per second) |
| rES | Reset partial energy |
| SAVE? | Confirm selection |
| Y | Save and exit |
| N | Exit without saving |
| C | Continue without saving |

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