

DE

ECR180D

Ein Phasen-Energiezähler, Direktanschluss 80 A mit MID-Konformitätserklärung und Modbus RTU Kommunikation...



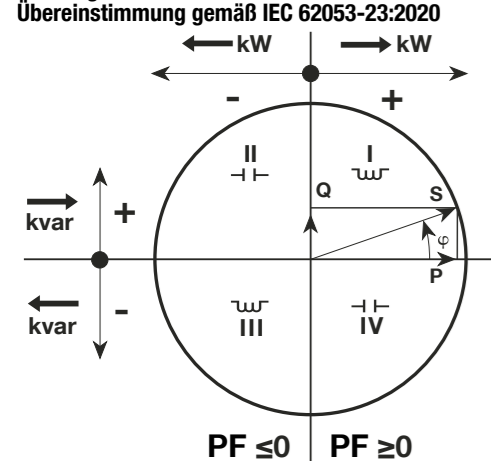
Sicherheitsanweisungen

- Einbau und Montage in Innenbereichen dürfen nur durch eine Elektrofachkraft gemäß den geltenden lokalen Installationsstandards durchgeführt werden.

Funktion

Dieses 4-Quadranten-Modbus-RTU-Messgerät misst die in einer elektrischen Anlage verwendete Wirk- und Blindenergie. 2 Tarife, umschaltbar über 230 VAC Digitaler Eingang und bis zu 8 über Kommunikation...

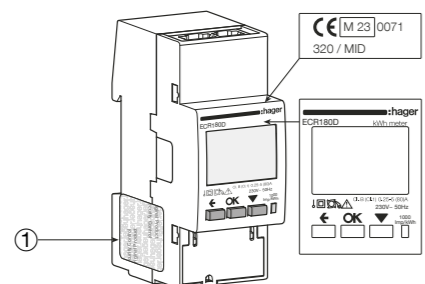
Leistungsfaktor Übereinstimmung gemäß IEC 62053-23:2020



Geräteaufbau

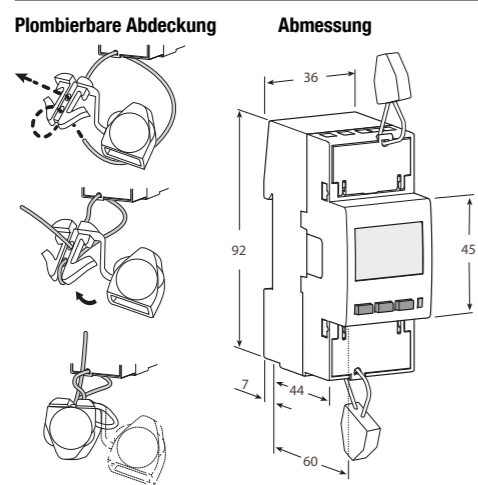
Technical specifications for the meter including LCD display details, energy units, and terminal block information.

MID zertifiziert



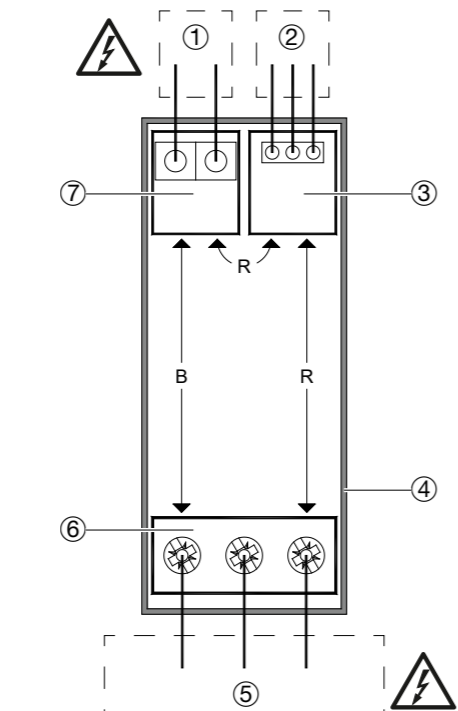
- ① MID Sicherheitsiegel
Symbole
Geschützt durch doppelte Isolierung (Klasse II)
Rücklaufsperr: Umkehrverhinderungsgerät

Abmessungen



Anschluss

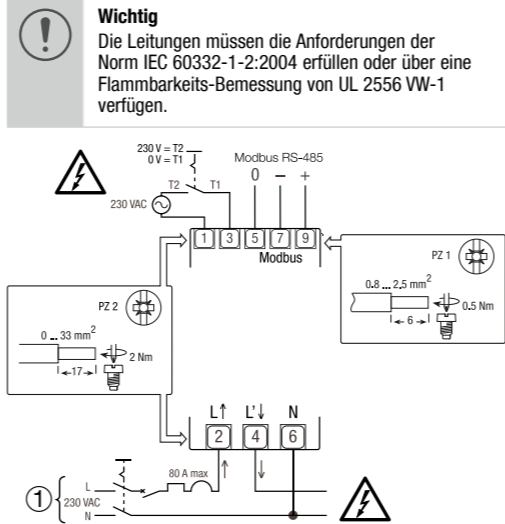
Modbus RTU Kommunikation section containing recommendations, protocol details, and important usage instructions.



Es sind keine berührbaren Teile vorhanden

- Legende: B = Basisisolierung, D = doppelte Isolierung, R = verstärkte Isolierung
① HL V (Gefährliche aktive Spannung)-KLEMME, 2 Klemmen für Tarifsteuereingänge
② SEL V (Sicherheitskleinspannung)-KLEMMEN, 2 oder 3 Klemmen für Kommunikation
③ SEL V (Sicherheitskleinspannung)-STROMKREIS, (Kommunikation) Arbeitsspannung < 25 VAC, < 60 VDC
④ KUNSTSTOFFGEHÄUSE (NICHT GEERDET)
⑤ HL V (Gefährliche aktive Spannung)-KLEMME, 3 Klemmen für Leitungsnetz
⑥ HL V (Gefährliche aktive Spannung)-STROMKREIS, (Netz) Arbeitsspannung = 300 VAC
⑦ HL V (Gefährliche aktive Spannung)-STROMKREIS, (Tarifsteuereingang) Arbeitsspannung = 300 VAC

Schaltplan



Installation

Das einspeisende Schalt- oder Schutzgerät (Nummer ① im Anschlussplan) muss leicht zu identifizieren bzw. zu bedienen und zudem nahe am Zähler installiert sein.

Inbetriebnahme

- Empfehlungen
Folgende Punkte müssen vor der Inbetriebnahme beachtet werden:
• Sicherstellen, dass keine gefährliche Spannung an den SELV-Klemmen anliegen.
• Sicherstellen, dass keine Außenleiter an die Neutralleiterklemme angeschlossen wurde...

Wartung

- Sicherstellen, dass keine Spannung am Energiezähler anliegt.
Es darf nur eine Trockenreinigung mit einem Naturfasertuch (bspw. aus Baumwolle oder Leinenstoff) oder einem Tuch aus synthetischem Stoff, das keine Restfasern auf der Oberfläche oder im Inneren des Zählers hinterlässt, durchgeführt werden.
Für diesen Energiezähler ist keine Wartung bzw. Reparatur und auch kein Ersetzen von Teilen vorgesehen.

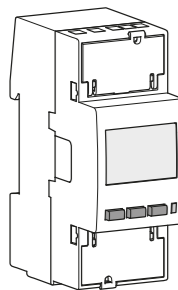
Hilfe bei Problemen

Fehlerbedingung
Bei blinkender Teil-Energie, Teil-Energieregister zurücksetzen (Register für maximale Teilenergie). Wenn auf dem Display die Meldung ERROR N02 oder ERROR N03 angezeigt wird, funktioniert der Zähler nicht korrekt und muss ausgetauscht werden.

Main navigation flowchart showing the sequence of menu screens from the main display to various settings like Modbus address, baud rate, and meter type.

Technische Daten

Technical data table including general characteristics, functions, supply voltage, and safety information.



GB

ECR180D

One phase energy meter, direct connection 80 A with MID declaration of conformity and Modbus RTU communication

MID certification concerns active energy only. User instructions

EU declaration of conformity:

Modbus table:

Download from: http://hgr.io/r/ecr180d

Safety instructions

This device must be installed indoor only by a professional electrician fitter according to local applicable installation standards.

Do not plug in or unplug this product when the power supplying is ON. Its use is only permitted within the limits shown and stated in the installation instructions.

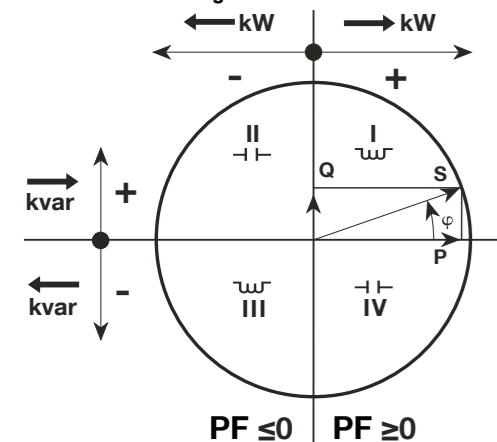
Any type of intervention on the products, including cases in which they cease to function or present defects, can be dangerous for the operator's safety and relieves the Manufacturer from all civil and criminal liability.

Function

This 4 quadrants Modbus RTU meter measures the active and reactive energy used in an electrical installation. This device can manage 2 tariffs by 230 VAC digital input and up to 8 controlled via communication.

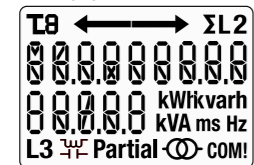
- Active Energy Class B (according to EN 50470-3:2022) and IEC 61557-12:2018)
- Active Power Class 1 (according to IEC 62053-21:2020 and IEC 61557-12:2018)
- Reactive Energy Class 2 (according to IEC 62053-23:2020)
- Reactive Power Class 2 (according to IEC 62053-21:2020).

Power factor Convention according to IEC 62053-23:2020



Presentation of device

LCD display:



Energy for all tariffs
Tariff
Reactive power inductive/capacitive

Main Energy Register, non resettable

Partial Energy Register, resettable

Units

Energy import (consumption ->)
Energy export (production <-)
Communication activity status

Energy meter has received a message with the correct address and with the correct checksum, but the meter has answered with an Exception Message in case of Modbus:
- illegal function
- illegal data address
- illegal data value

Commands

OK button: is used to confirm a modification of a parameter (or of a digit of a numerical parameter) or to answer to a question

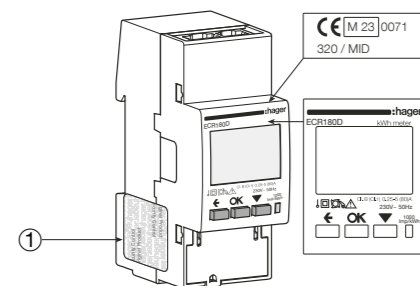
SCROLL button: is used to scroll Menu pages or to modify the whole value or a digit of a parameter

ESCAPE button: is used to escape to main menu from anywhere or to skip back to the previous digit of the value under modification

Optical metrological LED

Note: If no button is pushed for at least 20 seconds the display goes back to the Main Page and the backlight is switched off again.

MID certified



MID safety sealing

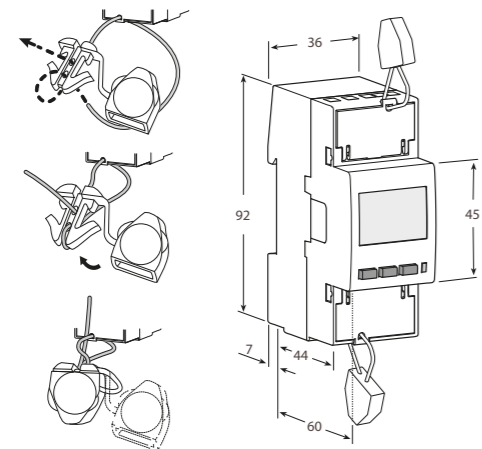
Symbols

- One phase
Protected by double insulation (Class II)
Backstop: Reversal preventing device

Dimensions

Sealable terminal cover

Dimension



Wiring

Modbus RTU Communication

Recommendations
Use HTG485H reference cable specially developed as accessory by Hager.

Modbus protocol

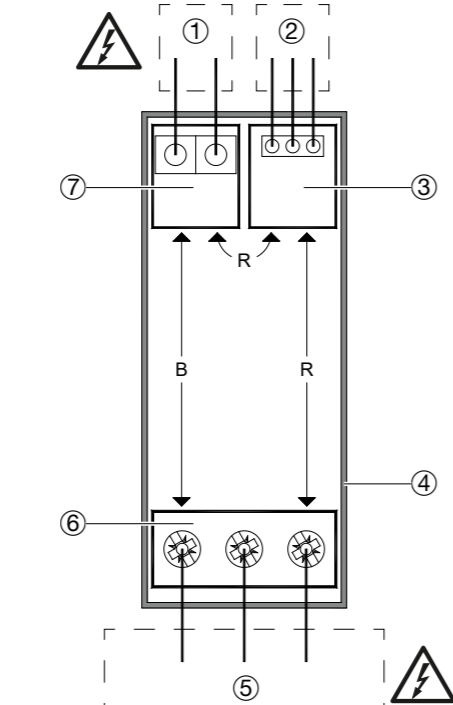
The Modbus protocol operates on a master/slave structure:
- Reading (Function 3),
- Writing (Function 6 or 16), broadcast option at address 0.
The communication method is RTU (Remote Terminal Unit) with hexadecimal.

Important

It is essential to connect a resistance of 120 Ohms at the 2 ends of the connection.

Intended use

The Energy Meter is suitable for use on both impedance grounded networks and not grounded networks.



There are no accessible parts

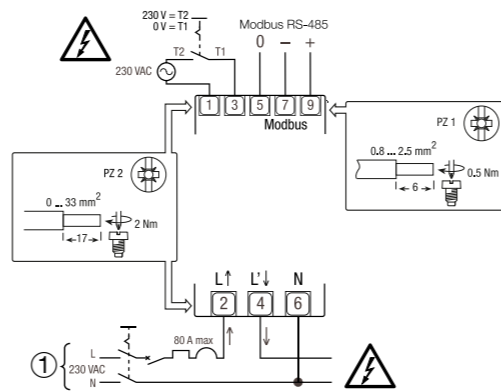
Legend:

- B = Basic Insulation
D = Double Insulation
R = Reinforced Insulation

- HLV TERMINAL, 2 terminal for tariff Input
SELV TERMINALS, 2 or 3 terminals for communication
SELV CIRCUIT, (communication) working voltage <25 Vac, < 60 Vdc
PLASTIC CASE (NOT EARTHED)
HLV TERMINAL, 3 terminals for mains
HLV CIRCUIT, (mains) Working Voltage = 300 Vac
HLV CIRCUIT, (tariff input) working voltage = 300 Vac

Wiring diagram

Important
Cables must therefore comply with IEC 60332-1-2:2004 or have a flammability rate UL 2556 VW-1.



In-uninstallation

The four-pole disconnector (reference 1 in the wiring diagrams) must be easy to identify and to operate and must be close to the Meter. They both must be in "OFF" position (open circuits) from the beginning to the end of the installation or of the uninstallation.

Commissioning

Recommendations

- Check the following before putting it into service:
- Make sure that no dangerous voltages are connected to the SELV terminals.
- Make sure that a phase has not been connected to the Neutral terminal (this would cause the internal protections to intervene and will damage the Meter).
- Check that the main page appears on the display (see menu description) and not the Phase Sequence Error page.

Maintenance

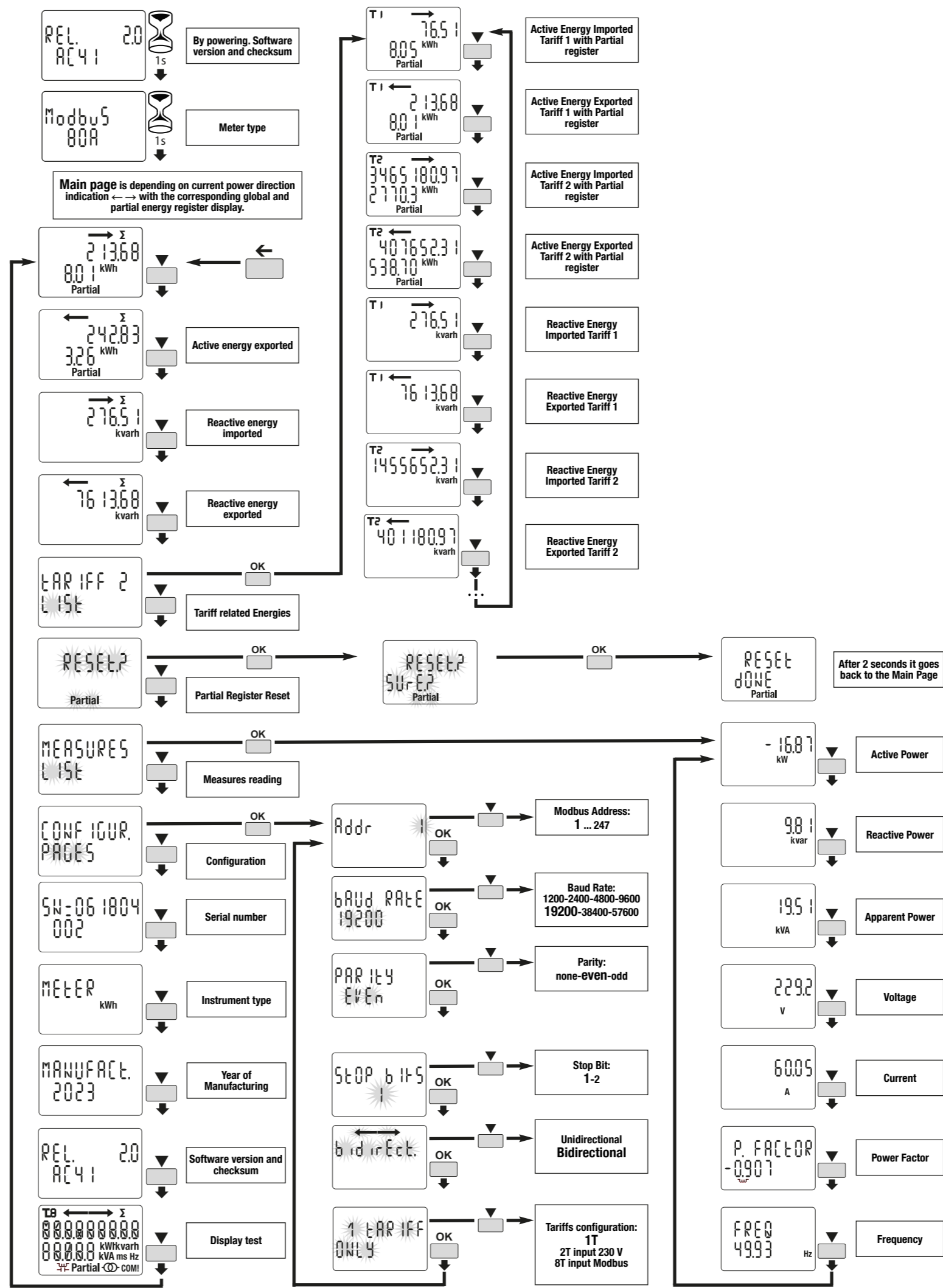
- Make sure that no voltage is applied to the instrument.
Only dry cleaning is allowed with a natural fiber cloth (for example cotton or linen) or synthetic fabric that does not leave residual fibers that can remain on the surface of the Energy Meter or that can penetrate into the Energy Meter.

For this Energy meter, no maintenance, repair or replacement of parts is foreseen. Such interventions are to be considered prohibited. In case of malfunction, it must be replaced.

Help in case of problems

Error condition

When partial energy blinks, reset partial energy (maximum partial energy register). When the display shows the message ERROR N02 or ERROR N03, the meter has got a malfunction and must be replaced.



Technical data

Data in compliance with EN 62052-11:2021+A11:2022, EN 62052-31:2016-06, IEC 62052-31, EN 62059-32-1:2012

General characteristics table with columns for parameter, standard, and value.

Operating features
Connection: to single-phase network - number of wires: 2
Storage of energy values and configuration: internal flash non volatile memory: 2

Approval (EN 62052-31:2016-06 EN 50470-3:2022)

Reference Voltage (Un): phase / neutral VAC 230
Reference Current (In): A 5
Minimum Current (Imin): A 0.25
Maximum Current (Imax): A 80
Starting Current (Ist): A 0.015
Transitional Current (Itr): A 0.05
Reference Frequency (fn): Hz 50
Number of phases / number of wires: - 1 / 2
Certified Measures: kWh -> kWh <- kWh

Accuracy
- Active Energies (accord. to EN 50470-3:2022) classe B / 1
- Active Powers (accord. to IEC 62053-21:2020 and IEC 61557-12:2018) classe 2
- Reactive Energies (accord. to IEC 62053-23:2020)
- Reactive Power (accord. to IEC 62053-21:2020)

Supply Voltage and Power Consumption
Operating Supply Voltage range: V 92 ... 276
Maximum Power Consumption (Voltage circuit): VA / W <= 2 / <= 1
Maximum VA burden (Current circuit) @ Imax: VA <= 1
Voltage Input Waveform: - AC
Voltage impedance: MΩ 1
Current impedance: mΩ <= 20

Overload capability
Voltage: continuous phase / neutral VAC 276
temporary (1 s) phase / neutral VAC 300
Current: Maximum A 96
temporary (10 ms) A 2400

Measuring Features
Voltage range: phase / neutral VAC 92 ... 276
Current range: A 0.25 ... 80
Frequency range: Hz 45 ... 65
Measured quantities: - V, A, kWh, kvarh, PF, Hz, kW, kvar

Display features
Display type: LCD with backlight
Active Energy: 7 digits + 2 decimal digits kWh 0.01 ... 9999999.99
Voltage: 3 digits + 1 decimal digit V 92.0 ... 276.0
Current: 2 digits + 2 decimal digits / 3+1 / 4+0 A 0.00 ... 80.00
Power factor: 1 digit + 3 decimal digits with sign + capac./induc. indic. - 1.000 ... 1.000
Frequency: 2 digits + 2 decimal digits Hz 45.00 ... 65.00
Active Power: 2 digits + 2 decimal digits kW 0.00 ... 22.08
Reactive Power: 2 digits + 2 decimal digits kvar 0.00 ... 22.08
Running Tariff: 1 digit - 1 ... 230V-T1 ... T8 Modbus
Display refresh period: s 1

Optical metrological LED
Front mounted red LED (meter constant) proportional to active imp/exp Energy imp/kWh 1000

Safety
Utilization category: - UC2
Overvoltage category: - 3
Protective class: classe II
AC voltage test (EN 50470-3:2022): kV 4
Degree of pollution: - 2
Operational voltage: V 300
Impulse voltage test (Uimp): 1.2/50 µs-kV 6.4

Housing material flame resistance UL 94 classe V0
Safety-sealing between upper and lower housing part: - E2
Printed circuit board flammability class: - V1
Material Group: - IIIa

IE Connectable Communication Modules
For communication modules: -

Embedded Modbus communication
Physical interface: RS-485 - 3 wires - -, +, 0
Baud rate: adjustable bps 1200 ... 57600
Parity: adjustable: Odd, Even, None - E2
Stop Bit: adjustable - 1, 2
Address: adjustable - 1 ... 247
Isolation class: SELV - E2

Tariff
Tariff 1: - E2
Tariff 2: VAC 230 ±20%
Input impedance: kΩ 224

Environmental conditions
Storage temperature range: °C -25 ... +70
Operating temperature range: °C -25 ... +55
Mechanical environment: - E2
Electromagnetic environment: - E2
Installation: indoor only - E2

Altitude (max.): m <= 2000
Humidity: yearly average, without condensation - <= 75%
on 30 days per year, without condensation - <= 95%
IP rating: in built-in condition (front part) - IP51 (*)
terminal block - IP20

Emission class compatibility CISPR 32 classe B
Durability Certification according to EN 62059-32-1