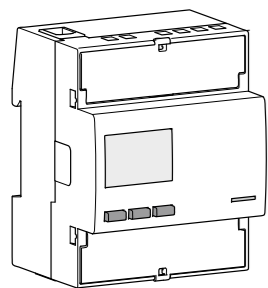


6LED09290A



DE

ECR381D Dreiphasiger Energiezähler, Direktanschluss 80 A Mit MID-Konformitätserklärung und Modbus-RTU-Kommunikation Die MID-Zertifizierung betrifft nur die Wirkenergie.

Bedienungsanleitung EU-Konformitätserklärung: Modbus-Tabelle: Download von: http://nhr.io/r/ecr381d

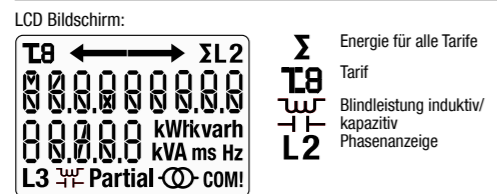
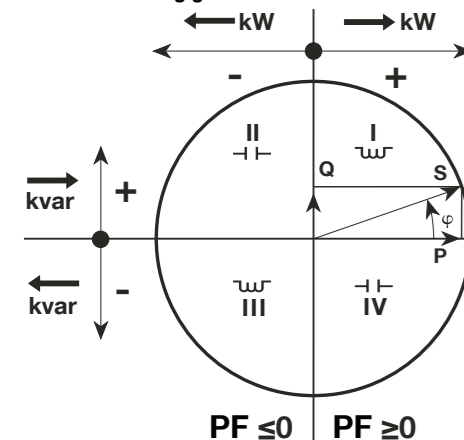
Sicherheitsanweisungen

- Einbau und Montage in Innenbereichen dürfen nur durch eine Elektrofachkraft gemäß den geltenden lokalen Installationsstandards durchgeführt werden. Ein-Ausbau des Produktes nur bei ausgeschalteter Spannungsversorgung. Jegliche Eingriffe an den Produkten, einschließlich der Gehäuse, im Falle von Störungen oder Mängeln, können die Sicherheit des Betreibers gefährden und entbinden den Hersteller von jeglicher zivil- und strafrechtlichen Haftung.

Funktion

Dieses 4-Quadranten-Modbus-RTU-Messgerät misst die in einer elektrischen Anlage verwendete Wirk- und Blindenergie. Die Blindenergie wird gemessen, aber nicht angezeigt, 2 Tarife, umschaltbar über 230 VAC Digitaleingang und bis zu 8 über Kommunikation. Gemäß der Messgeräteichtlinie (MID) darf nur das Register der gesamten positiven Blindenergie für die Rechnungsstellung berücksichtigt werden.

Leistungsfaktor Übereinstimmung gemäß IEC 62053-23:2020



Hauptenergieregister, nicht rücksetzbar Teil-Energieregister, rücksetzbar

Einheiten Energieimport (Verbrauch ->) Energieexport (Produktion <-) Status der Kommunikationsaktivität

Der Energiezähler hat eine Nachricht mit der korrekten Adresse und der richtigen Prüfsumme erhalten, der Zähler hat jedoch im Falle von Modbus eine Ausnahmemeldung beantwortet:

- illegale Funktion - illegale Datenadresse - illegaler Datenwert

Befehle OK OK-Taste: Wird verwendet, um eine Änderung eines Parameters (oder einer Ziffer eines numerischen Parameters) zu bestätigen oder um eine Frage zu beantworten

ESCROLL-Taste: Zum Scrollen von Menüseiten oder zum Ändern des gesamten Wertes oder einer Ziffer eines Parameters

ESCAPE-Taste: Wird verwendet, um von einem beliebigen Punkt zum Hauptmenü zu gelangen oder um zur vorherigen Stelle des zu ändernden Werts zurückzuspringen

Optische messtechnische LED 1000 imp/kWh

Hinweis: Wenn für mindestens 20 Sekunden keine Taste gedrückt wird, wechselt die Anzeige zur Hauptseite zurück und die Hintergrundbeleuchtung wird wieder ausgeschaltet.

MID zertifiziert



1 MID Sicherheitssiegel

Symbole Drei Phasen Geschützt durch doppelte Isolierung (Klasse II) Rücklaufsperrle: Umkehrverhinderungsgerät

Abmessungen

Plombierbare Abdeckung Abmessung



Abmessung

Abmessung

Abmessung

Abmessung

Abmessung

Abmessung

Abmessung

Modbus RTU Kommunikation

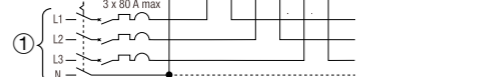
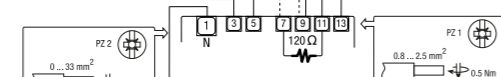
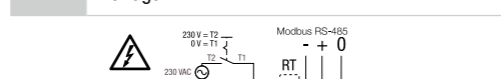
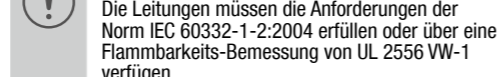
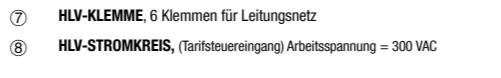
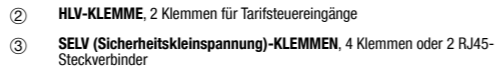
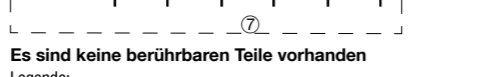
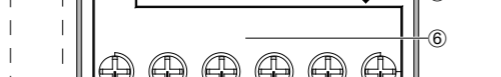
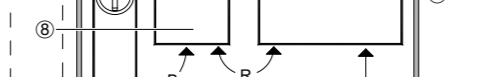
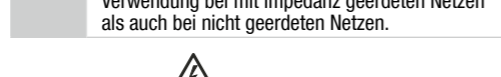
Empfehlungen Verwenden Sie das HTG485H-Referenzkabel, das speziell von Hager als Zubehör entwickelt wurde.

Modbus-Protokoll: Das Modbus-Protokoll arbeitet auf einer Master/Slave-Struktur: - Lesen (Funktion 3), - Schreiben (Funktion 6 oder 16), Broadcast-Option an Adresse 0.

Die Kommunikationsschnittstelle ist eine RTU (Remote Terminal Unit) mit Hexadezimalwerten.

Wichtig Es ist wichtig, einen Widerstand von 120 Ohm an beiden Enden der Busleitung anzuschließen.

Bestimmungsgemäße Verwendung Der Energiezähler eignet sich sowohl für die Verwendung bei mit Impedanz geerdeten Netzen als auch bei nicht geerdeten Netzen.



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 (dies würde bewirken, dass die internen Sicherungen den Zähler dauerhaft beschädigen). • Kontrolle der korrekten Anzeige (ohne Fehlermeldung).

Wartung

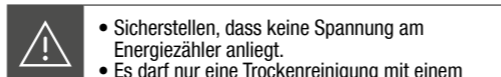
Sicherstellen, dass keine Spannung am Energiezähler anliegt. Es darf nur eine Trockenreinigung mit einem Naturfasertuch (bspw. aus Baumwolle oder Leinwand) oder einem Tuch aus synthetischem Stoff, das keine Restfasern auf der Oberfläche oder im Inneren des Zählers hinterlässt, durchgeführt werden.

Für diesen Energiezähler ist keine Wartung bzw. Reparatur und auch kein Ersetzen von Teilen vorgesehen. Solche Eingriffe sind untersagt. Im Fall einer Störung muss der Zähler ersetzt werden.

Hilfe bei Problemen

Fehlerbedingung Bei blinkender Teil-Energie, Teil-Energieregister zurücksetzen. Wenn auf dem Display die Meldung ERROR N02 oder ERROR N03 erscheint, hat das Messgerät eine Fehlfunktion und muss ausgetauscht werden.

Diagnosemeldung



Die Reihenfolge der Verkabelung (L1-L2-L3) ist falsch. L1-, L2- und L3-Symbole blinken. Tauschen Sie die Adern von 2 Phasen (Phase 1 <-> Phase 2 oder Phase 2 <-> Phase 3). Andernfalls wird die Nachricht durch Drücken der "OK"-Taste für mindestens 5 Sekunden bis zum nächsten Neustart gelöscht.

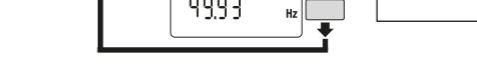
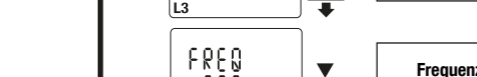
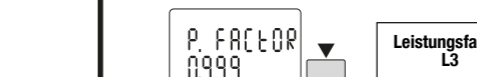
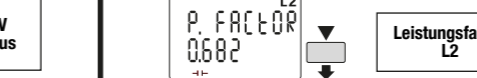
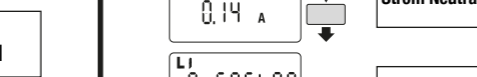
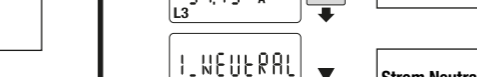
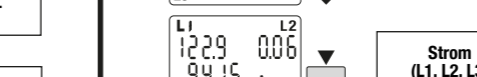
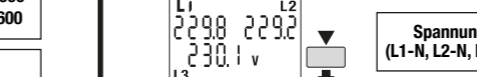
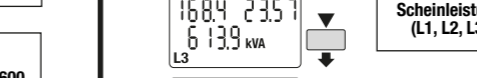
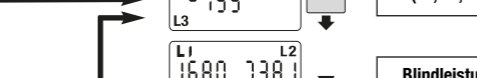
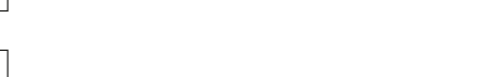
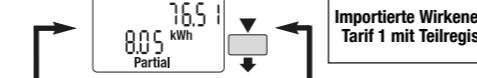
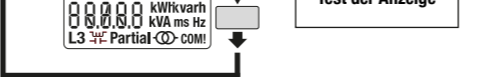
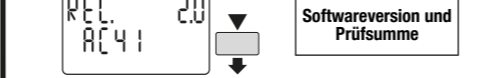
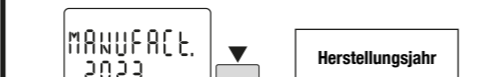
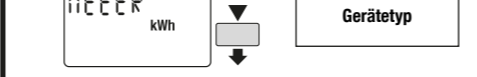
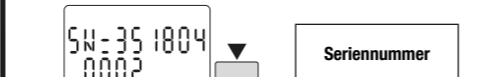
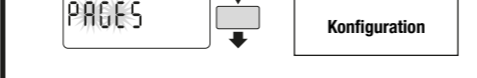
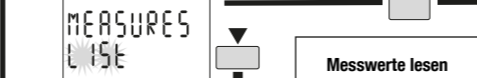
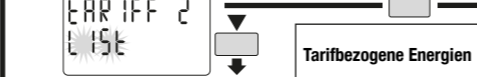
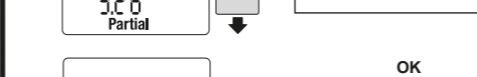
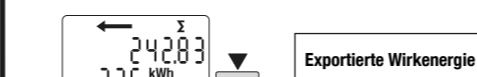
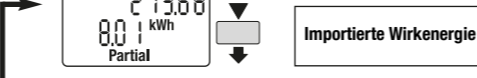
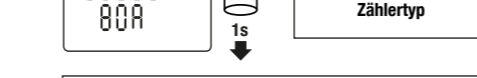
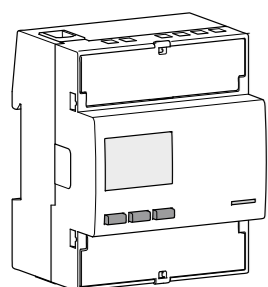


Table with technical data including dimensions, electrical characteristics, and environmental conditions. It lists parameters like housing dimensions, reference voltage, current, power, and temperature ranges.

6LED09290A



GB

ECR381D

Three 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/ecr381d>



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. The device and the equipment connected can be destroyed by loads exceeding the values stated.
- 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

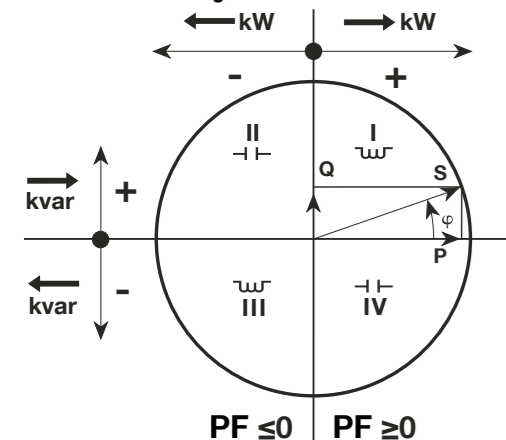
This 4 quadrants Modbus RTU meter measures the active and reactive energy used in an electrical installation. Reactive energy is measured but not displayed. This device can manage 2 tariffs by 230 VAC digital input and up to 2 controlled via communication. Only the total active energy register can be used for billing purposes according to measuring instrument directive (MID).

- Active Energy Class B (according to EN 50470-3:2022)  
 - 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).

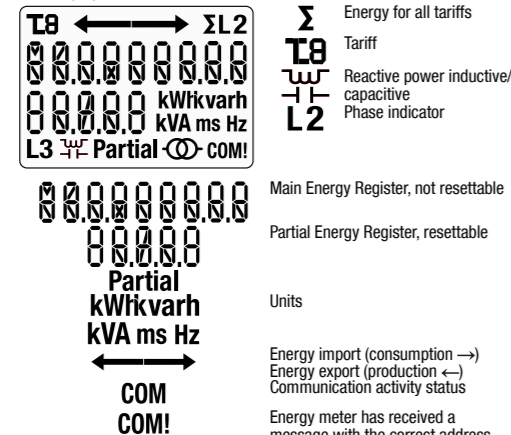
This device has a backlit LCD and 3 push-button keys to read Energies, V, I, PF, F, P, Q and to configure some parameters. The design and manufacture of this meter comply with Standard EN 50470-3:2022 requirements.

Power factor

Convention according to IEC 62053-23:2020



LCD display:



Main Energy Register, non resettable  
 Partial Energy Register, resettable  
 Units  
 Energy import (consumption →)  
 Energy export (production ←)  
 Communication activity status

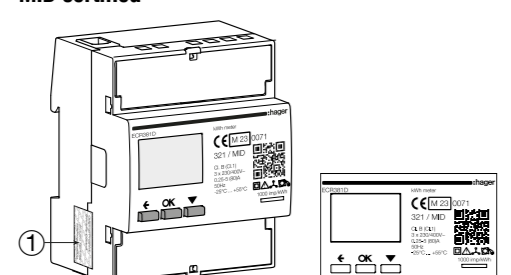
Commands

- 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

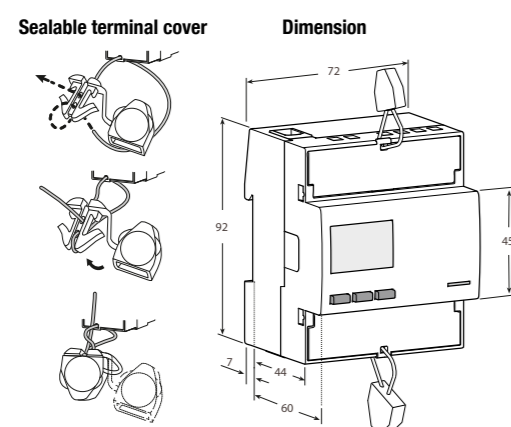
Note: If no button is pushed for at least 20 seconds the display goes back to the main page and the backlight is switched off again.

MID certified



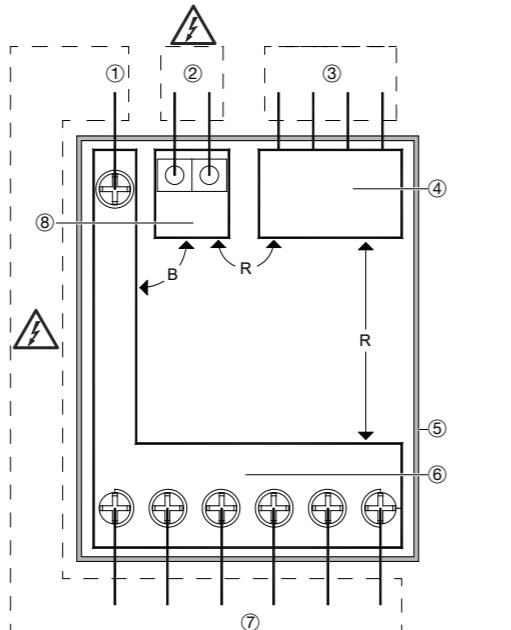
- MID safety sealing
- Three phases
- Protected by double insulation (Class II)
- Backstop: Reversal preventing device

Dimensions



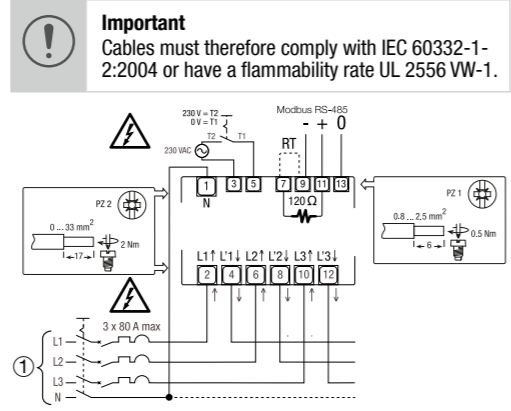
Modbus RTU Communication

- Recommendations**  
Use HT6485H 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  
 F = Functional Insulation
- HV TERMINAL, 1 terminal for neutral
  - HV TERMINAL, 2 terminal for tariff Input
  - SELV TERMINALS, 4 terminals or 2 RJ45 connectors
  - SELV CIRCUIT, (communication) working voltage <25 Vac, < 60 Vdc
  - PLASTIC CASE (NOT EARTHED)
  - HV CIRCUIT, (mains) Working Voltage = 300 Vac
  - HV TERMINAL, 6 terminal for mains
  - HV CIRCUIT, (tariff input) working voltage = 300 Vac

Wiring diagram



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. The Energy Meter, the disconnectors and the overload current protection devices must be easily identifiable. They must be installed in an adequate cabinet (IP51 and V1) and it must be easy to intervene on them if necessary. Inside the cabinet, do not install any other device with a flammability class worse than V1.

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

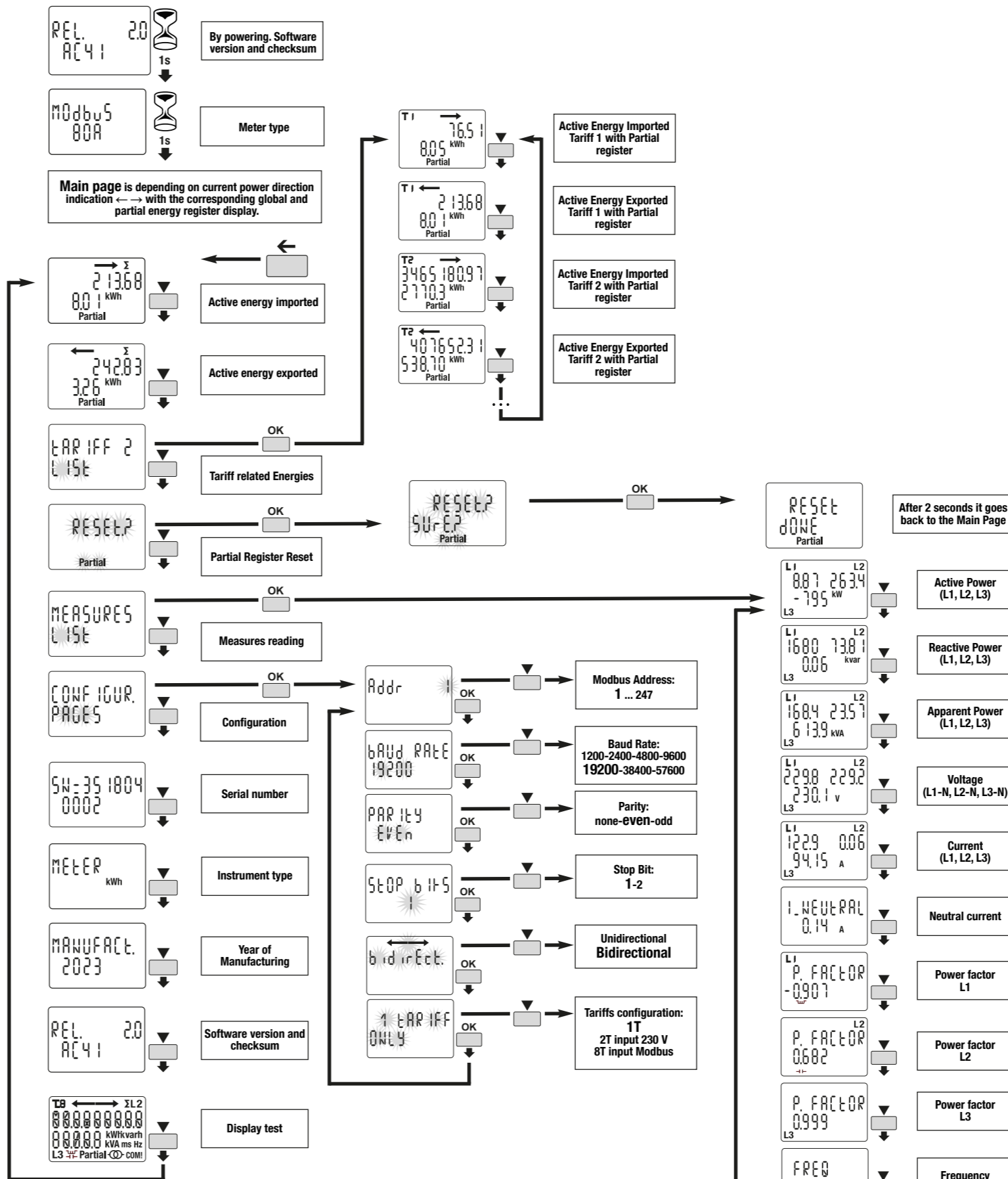
- Make sure that no voltage is applied to the instrument.
- Only dry cleaning is allowed with a natural fiber cloth (for example cotton or linen) or synthetic fabric that does not leave residual fibers that can remain on the surface of the Energy Meter or that can penetrate into the Energy Meter.
- For 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 NO2** or **ERROR NO3**, the meter has got a malfunction and must be replaced.

**Diagnostic message**

The cabling sequence (L1-L2-L3) is wrong. L1, L2 and L3 icons blink. Invert the voltage wires of 2 phases (phase 1 <-> phase 2 or phase 2 <-> phase 3). Otherwise, by pressing the "OK" button for at least 5 seconds, the message disappears until the next restart.



**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**

Housing	DIN 43880	DIN	4
Mounting	EN 60715	DIN rail	35 mm
Depth		mm	60
Weight		g	424

**Operating features**

Connection	to three-phase network - number of wires	-	4
Storage of energy values and configuration	Internal flash non volatile memory	-	ES
Tariff	for active and reactive energy (*)	-	T1 ... T2 230V - T1 ... T8 Modbus

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

Reference Voltage (Un)	phase / neutral	VAC	230
	phase / phase	VAC	400
		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		-	3 / 4
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)		
- Reactive Energies (accord. to IEC 62053-23:2020)	classe	2
- Reactive Power (accord. to IEC 62053-21:2020)		

**Supply Voltage and Power Consumption**

Operating Supply Voltage range	V	92 ... 276 / 160 ... 480
Maximum Power Consumption (Voltage circuit)	VA / W	≤2 / 0.6
Maximum VA burden (Current circuit) @ Imax	VA	≤0.7
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
	continuous	phase / phase	VAC	480
	temporary (1 s)	phase / phase	VAC	800
Current	Maximum		A	96
	temporary (10 ms)		A	2400

**Measuring Features**

Voltage range	phase / neutral	VAC	92 ... 276
	phase / phase	VAC	160 ... 480
Current range		A	0.25 ... 80
Frequency range		Hz	45 ... 65
Measured quantities		-	V, A, kWh, kvarh, PF, Hz, kW, kvar
3 phases Energy calculation		-	WELMEC

**Display features**

Display type	LCD with backlight	-	7.2 x 3.2
Active Energy	7 digits + 2 decimal digits	kWh	0.01 ... 999999.99
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
Apparent Power	2 digits + 2 decimal digits	kVA	0.00 ... 22.08
Running Tariff	1 digit	-	T1 ... T2 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
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**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	-	ES	
Printed circuit board flammability class	-	V1	
Material Group	-	IIIa	

**IP Connectable Communication Modules**

For communication modules

**Embedded Modbus communication**

Physical interface	RS-485 - 3 wires	-	- , + 0
Internal termination resistor		-	120 Ω
Baud rate	adjustable	bps	1200 ... 57600
Parity	adjustable: Odd, Even, None	-	ES
Stop Bit	adjustable	-	1, 2
Address	adjustable	-	1 ... 247
Isolation class	SELV	-	ES

**Tariff**

Tariff 1	-	ES
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	-	M1	
Electromagnetic environment	-	E2	
Installation	-	indoor only	
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

EMI class compatibility CISPR 32

Durability Certification	according to EN 62059-32-1	classe	B
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(\*) Tariff management is available for active and reactive energy via communication.