

6LED09272A

GB

ECP381D

Three phase energy meter,
direct connection 80 A
with MID declaration of conformity and 2 pulse (S0)
outputs
MID certification concerns active energy only.
User instructions
EU declaration of conformity:
<http://hgr.io/r/ecp381d>

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.

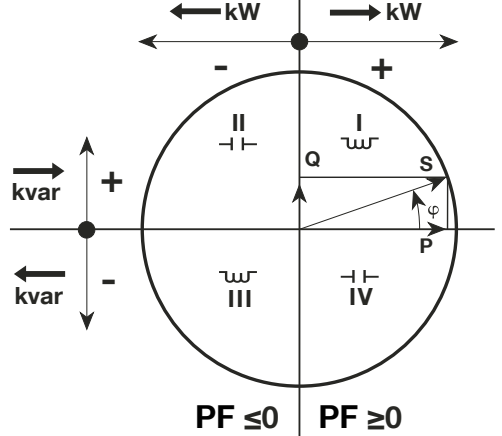
Function

This 4 quadrants pulse 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. 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



Presentation of device

LCD display:

T8

Σ L2

000000000000

000000 kWhkvarh

000000 kVA ms Hz

L3

Partial

COM

Main Energy Register, not resettable

Partial Energy Register, resettable

Units

Energy import (consumption →)

Energy export (production ←)

Commands

OK

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

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

ESCAPE

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

1000 imp/kWh

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.

1

MID safety sealing

Symbols

Three phases

Protected by double insulation (Class II)

Backstop: Reversal preventing device

Dimensions

Sealable terminal cover

Dimension

Wiring

Intended use

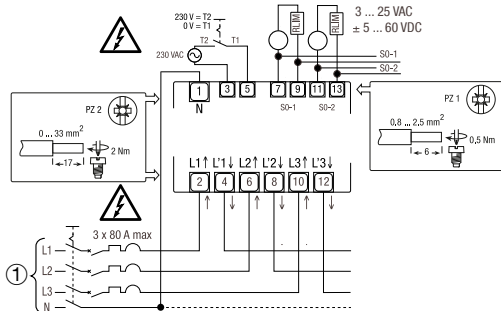
The Energy Meter is suitable for use on both impedance grounded networks and not grounded networks.

There are no accessible parts
Legend:
B = Basic Insulation
D = Double Insulation
R = Reinforced Insulation
F = Functional Insulation

- HLV TERMINAL, 1 terminal for neutral
- HLV 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)
- HLV CIRCUIT, (mains) Working Voltage = 300 Vac
- HLV TERMINAL, 6 terminal for mains
- 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-unstallation

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, must be installed in an adequate cabinet (IP51 and V1) and it must be easy to intervene on them whenever appropriate. 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 with permanent damage to 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.

Diagnostic message

L1

PHASE SEQ

L2

Error

L3

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.

REL. AC41

20

By powering. Software version and checksum

2 PULSES

80A

Meter type

Main page is depending on current power direction indication ↔ with the corresponding global and partial energy register display.

Active energy imported

Active energy exported

Tariff related Energies

Partial Register Reset

Measures reading

Configuration

Serial number

Instrument type

Year of Manufacturing

Software version and checksum

Display test

T1

76.5

80.5 kWh

Partial

Active Energy Imported Tariff 1 with Partial register

T1

21368

80.1 kWh

Partial

Active Energy Exported Tariff 1 with Partial register

T2

346518097

27703 kWh

Partial

Active Energy Imported Tariff 2 with Partial register

T2

40765231

53870 kWh

Partial

Active Energy Exported Tariff 2 with Partial register

RESET

Partial

OK

After 2 seconds it goes back to the Main Page

L1

88.7

L2

263.4

L3

-795

kW

Active Power (L1, L2, L3)

L1

1680

L2

738.1

L3

0.06

kvar

Reactive Power (L1, L2, L3)

L1

168.4

L2

235.7

L3

6.139

kVA

Apparent Power (L1, L2, L3)

L1

229.8

L2

229.2

L3

230.1

V

Voltage (L1-N, L2-N, L3-N)

L1

122.9

L2

0.06

L3

94.15

A

Current (L1, L2, L3)

L1

1

L2

0.14

L3

0

A

Neutral current

L1

P. FACTOR

L2

-0.901

L3

Power factor L1

L1

P. FACTOR

L2

0.682

L3

Power factor L2

L1

P. FACTOR

L2

0.999

L3

Power factor L3

L1

FREQ

L2

49.93

L3

Hz

Frequency

PULSE

100

ms

OK

Pulse length (ON time): 30 ... 100 ms

PLS. RATE

200

kWh

OK

50 p/kWh: 1 ... 200

ACTIVE OUT1

kWh

OK

Pulse output Mode S-01/S-02 → kWh, ← kWh, → kvarh, ← kvarh, → kWh T1, → kWh T2

ACTIVE OUT2

kWh

OK

bidirect

OK

Unidirectional Bidirectional

1 TARIFF ONLY

OK

Tariffs configuration: 1T 2T input 230 V

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			
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	-	☑
Tariff	for active and reactive energy(*)	-	T1 ... T2 230V
Approval (EN 62052-31:2016-06 EN 50470-3:2022)			
Reference Voltage (Un)	phase / neutral	VAC	230
Reference Current (In)	phase / phase	VAC	400
Minimum Current (Imin)		A	5
Maximum Current (Imax)		A	0.25
Starting Current (Ist)		A	80
Transitional Current (Itr)		A	0.015
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)		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 / 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
	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 +3.2
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
Apparent Power	2 digits + 2 decimal digits	kVA	0.00 ... 22.08
Running Tariff	1 digit	-	T1 ... T2 230V
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		-	☑
Printed circuit board flammability class		-	V1
Material Group		-	IIla
IR Connectable Communication Modules			
For communication modules		-	☑
Pulse Outputs (S0 signals, acc. to EN 62052-31:2016-06)			
Pulse Output 1 or 2	selectable	-	kWh →, kWh ←, kvarh →, kvarh ←, kWh (T1) →, kWh (T2) →
Pulse Rate (number of pulses per kWh)	adjustable	p/kWh	1 ... 200
Pulse ON duration	adjustable	ms	30 ... 100
Operating voltage		VAC / VDC	3 ... 25 / ±5 ... 60
Pulse ON maximum current	in the range 3 ... 27.6 VAC / ±5 ... 39 VDC	mA	90
Pulse OFF leakage current	in the range 3 ... 27.6 VAC / ±5 ... 39 VDC	μA	1
Isolation class	SELV	-	☑
Tariff			
Tariff 1		-	☑
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
Emission class compatibility CISPR 32		classe	B
Durability Certification	according to EN 62059-32-1		
(*) Tariff management is available for active and reactive energy via communication.			