



## Measurements

The parameters are available according to the device model.

Instantaneous values	Symbol	Measure unit	Display	Com.
Phase to Neutral voltages	$\sum V$	V	●	●
	V1, V2, V3			
Phase to Phase voltages	$\sum U$	●	●	
	U12, U23, U31			
Current	$\sum I$	A	●	●
	I1, I2, I3, IN			
Power factor	$\sum PF$	●	●	
	PF1, PF2, PF3			
Apparent power	$\sum S, S1, S2, S3$	kVA	●	●
Active power	$\sum P, P1, P2, P3$	kW	●	●
Reactive power	$\sum Q, Q1, Q2, Q3$	kvar	●	●
Frequency	f	Hz	●	●
Phase sequence	CW / CCW	●	●	
Power direction	$\rightleftarrows$	●		

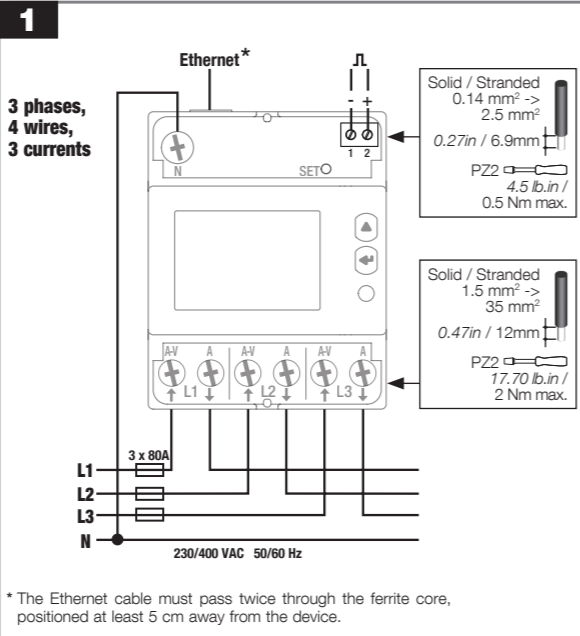
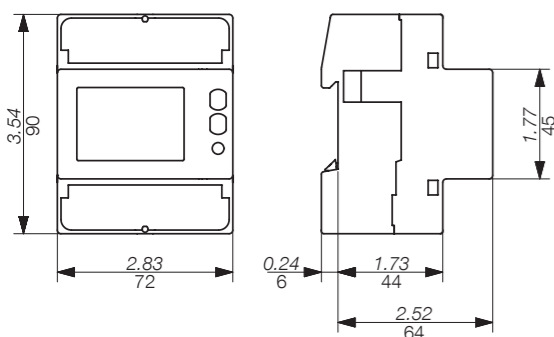
Recorded data				
Total energy counters	Ea, Er ( $\sum$ & per phase)	kWh, kvarh	●	●
	Eap ( $\sum$ )	kVAh	●	●
Total apparent energy	Eap (per phase)	●	●	
	Er ( $\sum$ )	kvarh	●	●
Total ind. and cap. reactive energy	Er (per phase)	●	●	
	Ea, Er ( $\sum$ )	kWh, kvarh	●	●
T1/T2 tariff energy counters	Ea, Er, Eap ( $\sum$ & per phase)	kWh, kvarh, kVAh	●	●
	Er ( $\sum$ )	kvarh	●	●
T1/T2 tariff ind. and cap. reactive energy	Er (per phase)	●	●	
	Ea ( $\sum$ )	kWh	●	●
Resettable partial energy counters	Ea, Er, Eap ( $\sum$ )	kWh, kvarh, kVAh	●	●
Energy balance	$\sum$	kWh, kvarh	●	●

Other information	Symbol	Value/status	Display	Com.
Present tariff	T	1/2	●	●
Partial counters	PAR	START/STOP	●	
S0 output status	$\square$	Active/Not active	●	

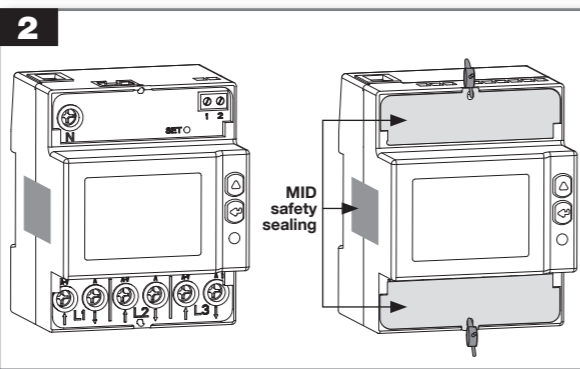
## Energy balance values calculation

Energy balance	Formula
kWh	(+kWh T1) - (-kWh T1) + (+kWh T2) - (-kWh T2)
kvarh	(+kvarh T1) - (-kvarh T1) + (+kvarh T2) - (-kvarh T2)

Dual dimensions : in/mm



\* The Ethernet cable must pass twice through the ferrite core, positioned at least 5 cm away from the device.



## Ethernet parameters selection

SETUP,2

Eth SDEF

CONF,2 4

IP 1 192

IP 1 192

IP 1 007

IP 1 007

IP 1 052

IP 1 052

IP 1 002

IP 1 002

IP 1 002

Exit from setup (on any page)

SAVE,2 4

Ethernet parameters selection menu flow:

- SETUP,2 (press >3s)
- Eth SDEF (press \* then x1)
- CONF,2 4 (press \* then x1 Confirm)
- IP 1 192 (press x1)
- IP 1 192 (press x2)
- IP 1 007 (press x1)
- IP 1 007 (press x1)
- IP 1 052 (press x5)
- IP 1 052 (press x1)
- IP 1 002 (press x5)
- IP 1 002 (press x1)
- SAVE,2 4 (press \* then x1 Confirm)

IP address 2'nd figure

IP address 3'rd figure

IP address 4'th figure

Netmask 1'st figure

Netmask 2'nd figure

Netmask 3'rd figure

Netmask 4'th figure

Gateway 1'st figure

Gateway 2'nd figure

Gateway 3'rd figure

Gateway 4'th figure

All partial counters reset

Y=Save setting and exit

N=Exit without saving

C=Continue without saving

**3**

Device switch ON

Ea+ (kWh) Tariff T1

Ea- (kWh) Tariff T1

Er+ lagging (kVarh) Tariff T1

Er- lagging (kVarh) Tariff T1

Er+ leading (kVarh) Tariff T1

Er- leading (kVarh) Tariff T1

Er+ (kVarh) Tariff T1

Er- (kVarh) Tariff T1

Ea+ (kWh) Tariff T2

Ea- (kWh) Tariff T2

Er+ lagging (kVarh) Tariff T2

Er- lagging (kVarh) Tariff T2

Er+ leading (kVarh) Tariff T2

Er- leading (kVarh) Tariff T2

Er+ (kVarh) Tariff T2

Er- (kVarh) Tariff T2

Ea+ partial (kWh) Tariff T1, T2

Ea+ partial (kWh)

Ea- partial (kWh) Tariff T1, T2

Ea- partial (kWh)

Eap partial (kVAh)

Er+ partial (kVarh)

Er- partial (kVarh)

Ea Energy balance (kWh)

Er Energy balance (kVarh)

Active power (kW) L1, L2, L3,  $\sum$

Apparent power (kVA) L1, L2, L3,  $\sum$

Reactive power (kVar) L1, L2, L3,  $\sum$

System voltage ( $\sum U$ ), ( $\sum V$ )

System current ( $\sum I$ )

System power factor ( $\sum PF$ )

Frequency (f)

Ethernet parameters selection

Metrological Fw release (Fw Rel1)

Non metrological Fw release (Fw Rel2)

Metrological fw checksum (CHK 1)

Non metrological fw checksum (CHK 2)

Installed communication port (Eth)

Device switch ON menu flow:

- L1 tAr,1 kWh (press x8)
- L1 tAr,2 kWh (press x8)
- L1 tot kWh (press x21)
- PAR kWh (press x1)
- PAR kWh (press x11)
- L1 rt kWh (press x17)
- SETUP,2 (press x1)
- REL 1 120 (press x5)

## Technical characteristics

Data in compliance with EN 50470-1, EN 50470-3

General	
Housing	4 modules DIN 43880
Mounting	DIN rail EN 60715
Operating features	
Connectivity	4 wires 3x 230/400V to 3x 240/415V
Storage of energy values and configuration	FRAM
Display tariffs identifier	T1 and T2
Supply	
Autosupplied	
Operating voltage range	184 ... 288 VAC
Operating frequency range	45 ... 65 Hz
Rated power dissipation (max.) Pv	3.5VA - 1W
Overload capability	
Voltage Un continuous	288 VAC
Voltage Un momentary (1 s)	300 VAC
Current Imax continuous / momentary	80 A / 30 Imax for 1/2c
Display	
Display type	LCD 8 digits with backlight
Active energy: 1 display, 8-digit	000000.00 ... 999999.99 kWh
Reactive energy: 1 display, 8-digit	000000.00 ... 999999.99 kvarh
Apparent energy: 1 display, 8-digit	000000.00 ... 999999.99 kVAh
Instantaneous active power: 1 display, 4-digit	00.00 ... 99.99 kW
Instantaneous reactive power: 1 display, 4-digit	00.00 ... 99.99 kvar
Instantaneous apparent power: 1 display, 4-digit	00.00 ... 99.99 kVA
Instantaneous voltage: 1 display, 4-digit	000.0 ... 999.9 V
Instantaneous current: 1 display, 4-digit	00.00 ... 99.99 A
Power Factor: 1 display, 4-digit	0.000 ... 1.000
Frequency: 1 display, 4-digit	45.00 ... 65.00 Hz
Display period refresh	1 s
Measuring accuracy	
Active energy	class B acc. to EN 50470-3
Reactive energy	class 1 acc. to EN 62053-21
Apparent energy	class 2 acc. to EN 62053-23
Measuring input	
Type of connection	direct phase/N
Certified voltage Un	230/240 VAC
Current Iref / Imin	5 A / 0.25A
Operating range current (Ist ... Imax)	0.020 ... 80 A
Certified frequency fn	50/60 Hz $\pm$ 1 Hz
Starting current for energy measurement (Ist)	20 mA
Optical interfaces (LED)	
Meter constant	1 Wh/imp
S0 Output	
Type	Optoisolated - 5 to 27VDC 27mA acc. to EN 62053-31
Pulse weight	100 Wh
Safety	
Indoor meter	yes
Degree of pollution	2
Operational voltage	300 VAC
AC voltage test (EN 50470-3, 7.2)	4 kV
Impulse voltage test	6 kV 1.2/50 $\mu$ s
Protection class (EN 50470)	class II
Housing material flame resistance	UL 94 class V0
Embedded communication	
Ethernet Modbus TCP	10/100 Mbps
Webserver login	Username: admin/Password: Admin
Default IP address	192.168.0.4
Default Gateway IP address	192.168.0.1
Default Netmask	255.255.255.000
Isolation class	SELV Circuit
Environmental conditions	
Mechanical environment	M1
Electromagnetic environment	E2
Operating temperature	-25 ... +55 °C
Limit temperature of transportation and storage	-25 ... +75 °C
Relative humidity (not condensation)	$\leq$ 80 %
Vibrations	$\pm$ 0.075 mm
Degree protection	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.