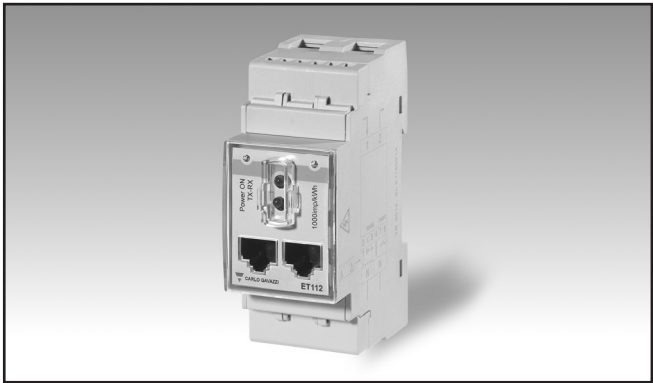


Energy Management

Energy Transducer

Type ET112

CARLO GAVAZZI



- Single phase energy transducer
- Class 1 (kWh) according to EN62053-21
- Accuracy $\pm 0.5\%$ RDG (current/voltage)
- Direct current measurement up to 100AAC
- Energy measurement: kWh and kvarh (imported/exported); kWh+ by 2 tariffs
- System variables, kW, kvar, V, A, PF, Hz, kWdmd, kWdmd peak
- Self power supply
- Dimensions: 2-DIN module
- Protection degree (front): IP20
- RS485 Modbus port (screw terminals and RJ45 connection)
- Optical port
- Digital input (for tariff management)
- Easy connection or wrong current direction detection
- Run hour meter

Product description

Single-phase energy transducer. Particularly indicated for active energy metering and for cost allocation in applications up to 100 A (direct connection), with dual tariff management availability. It can measure imported and exported energy or be programmed to consider only the imported one. Housing

for DIN-rail mounting, with IP20 front degree protection. The transducer is provided with RS485 Modbus port (available through screw terminals, dual RJ45 connectors or optical infrared communication port). A run-hour meter is available to link the energy to the relevant working hours.

How to order ET112-DIN AV0 1 X S1 X

Model	_____
Range code	_____
System	_____
Power supply	_____
Output	_____
Option	_____

Type Selection

Range code	System	Power supply	Output
AV0: 120...240VLN AC - 5(100)A (Direct connection)	1: 1-phase 2-wire	X: Self power supply -30% +20% of the rated measuring input voltage, 45 to 65Hz	S1: RS485 Modbus port

Option

X: none

Input specifications

Rated Inputs		Programming parameters	10^10 cycles. When a parameter is modified, only the relevant memory cell is overwritten
Current type	1-phase loads, direct connection	LEDs	Flashing red light pulses according to EN62052-11, 1000 pulse per kWh (min. period: 90ms) Fix green light: power-on Blinking red light: power-on and communication in progress
Current range	5(100)A		
Nominal voltage	120...240VLN		
Accuracy (@25°C ±5°C, R.H. ≤60%, 45 to 65 Hz) AV0	Imin=0.25A; Ib: 5A, Imax: 100A; Un: 120VLN -30%, 240VLN +20%	Right LED	
Energies	Class 1 according to EN62053-21 Class 2 according to EN62053-23	Left LED	
Active energy			
Reactive energy			
Start-up current:	40mA (AV0, AV1), positive or negative Self-consumption is not measured.	Current overloads	
Start-up voltage	84VLN (AV0)	Continuous For 10ms	100A, @ 50Hz 3000 A
Resolution (via serial port)		Voltage Overloads	
Current	0.001 A	Continuous For 500ms	1.2 Un 2 Un
Voltage	0.1 V	Input impedance	
Power	0.1 W or var	Voltage input 120...240VL-N	1.88Mohm
Frequency	0.1Hz	Current inputs: 5(100) A	< 4VA
PF	0.001		
Energies (positive)	0.1 kWh or kvarh		
Energies (negative)	0.1 kWh or kvarh		
Run hour meter	0.01 h		
Energy additional errors			
Influence quantities	According to EN62053-21		
Temperature drift	≤200ppm/°C		
Sampling rate	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz		
Max. and Min. data values			
Energies	Max. 99 999 999 Min. 0.01		
Variables	Max. 9999 Min. 0.01		
Run hour meter	Max 999 999.99 Min 0.01		
Memory energy storage			
Energy	10^10 cycles. Energy value is saved every time the less significant digit increases.		

Digital input specifications

Digital inputs

Function

Number of inputs

Contact measurement voltage

Input impedance

Contact resistance

Free of voltage contact
Tariff management (switch
between t1-t2)

1

5 V

1kohm

1kohm, close contact

100kohm, open contact

Overload

In case a voltage is
erroneously applied to the
digital input, the input is not
damaged up to 30 VAC/
DC.

Output specifications

RS485 serial port

Function

Protocol

Baud rate

Address

Driver input capability

Data refresh time

Read command

RJ45 pin-out

Other ports

RS485 by screw
connection or RS485 by
standard female RJ45
connectors (not shielded).

For communication
of measured data,
programming parameters
ModBus RTU (slave
function)

9.6, 19.2, 38.4, 57.6, 115.2
kbaud, even or no parity,

1 to 247 (default: 01)

1/8 unit load. Maximum 247
transceivers on the same
bus.

1sec

125 words available in 1
read command

According to Modbus
standard: A- (pin5), B+
(pin4), GND (pin8)

All the Modbus ports
(screw terminals, two
RJ45) are in parallel. Only
one port at a time can be
used.

Baud rate

Address

Data refresh time

Read command

Optical port LEDs

LED axial distance

LED function

9.6 kbaud, no parity

1

1 sec

50 words available in 1
read command

6.5 mm

- Upper LED is a receiver
(from the master to the
transducer

- Lower LED is a
transmitter (from the
transducer to the master).

Optical port

Description

Function

Protocol

Frontal bi-directional
infrared optical coupling
with CG optical reader
device "Opto-prog"

For remote communication
of measured data and
setting of programming
parameters

ModBus RTU (slave
function)

General specifications

Operating temperature	-40°C to +65 °C, indoor, (R.H. from 0 to 90% non- condensing @ 40°C)	Standard compliance Safety Metrology	EN62052-11 EN62053-21
Storage temperature	-40°C to +80°C (R.H. < 90% noncondensing @ 40°C)	Approvals	CE
Overvoltage category	Cat. III	Connections Cable cross-section area	Measuring inputs: max. 25 mm ² , min. 5 mm ² with/ without metallic cable ferrule; Max. screw tightening torque: 2.8 Nm 1.5 mm ² , Min./Max. screws tightening torque: 0.5 Nm
Insulation (for 1 minute)	4000 VAC RMS between measuring inputs and digital/serial output (see table) 4000 VAC RMS	Other terminals	
Dielectric strength	4000 VAC RMS for 1 minute	Housing Dimensions (WxHxD) Material	35 x 63 x 90 mm Noryl, self-extinguishing: UL 94 V-0
EMC	According to EN62052-11	Sealing covers	Included
		Mounting	DIN-rail
		Protection degree Front Screw terminals (cable inputs)	IP20 IP20
		Weight	Approx. 160 g (packing included)

Power supply specifications

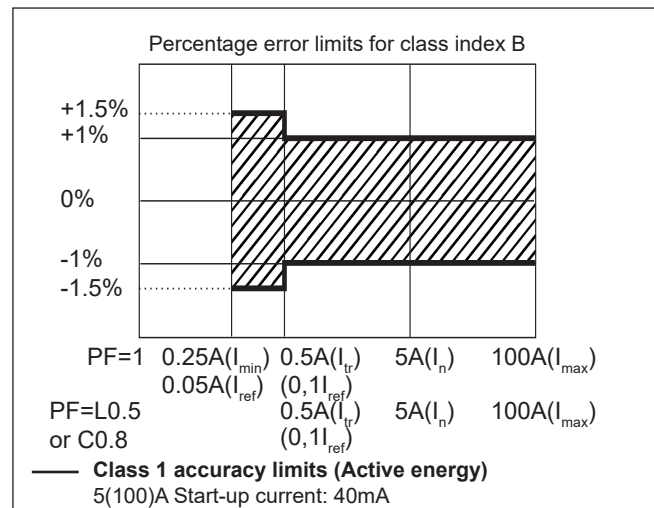
Self power supply AV0	120VLN -30%, 240VLN +20%, 50/60Hz	Power consumption	≤ 1.0W, ≤ 8VA
---------------------------------	--------------------------------------	--------------------------	---------------

Insulation (for 1 minute) between inputs and outputs

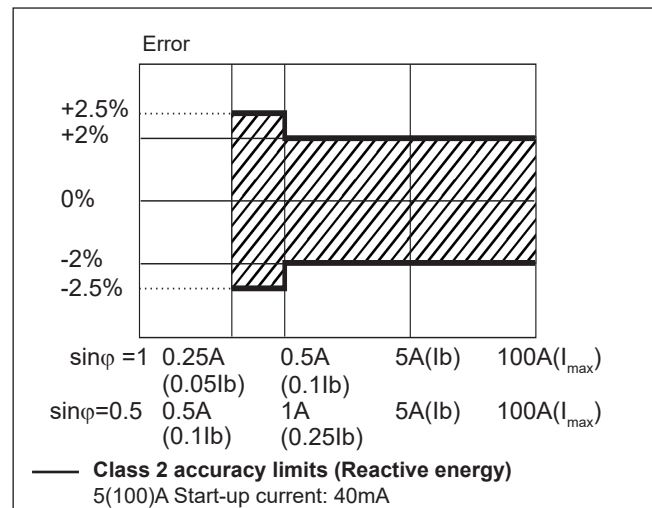
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

Accuracy (according to 62053-21 and EN62053-23)

kWh, accuracy (RDG) depending on the current



kvarh, accuracy (RDG) depending on the current



Available variables

1	kWh+ (imported)
2	kWh- (exported)
3	kWh (t1 and t2)
4	kW
5	kW dmd
6	kW dmd peak
7	kvar
8	kVA
9	V
10	A
11	PF
12	Hz
13	Run hour meter

List of programming parameters

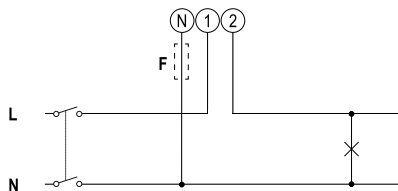
Menu name and description		Range	Default setting
Measure	Measurement type (A=easy connection; B=bidirectional, imported and exported energy). Not available in PFA and PFB versions (MID)	A; b	A
P int	Integration time for Wdmd calculation	1 to 30 min	1
Tariff	Tariff enabling	Yes/No	No
Address	Modbus serial address	1 to 247	01
Kbaud	Modbus baud rate	9.6; 19.2; 38.4; 57.6, 115.2 kbps	9.6
ParlY	Modbus parity	No/even	No
RESET	Allow the reset of tariff meters and W dmd peak and of the kWh/kvarh partial meter available only via serial communication	Yes/No	No

Wiring diagrams

Note: fuses F of 315 mA, if required by local law.

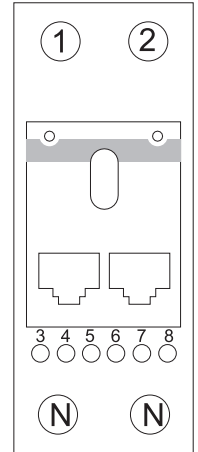
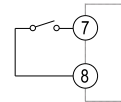
1-ph, 2-wire (F 315mA)

Fig.1



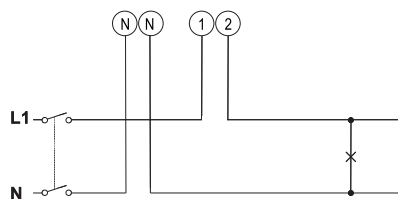
Digital Input

Fig.2



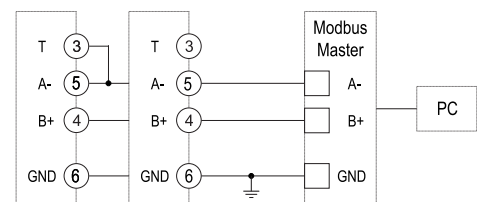
1-ph, 2-wire (F 315mA)

Fig.3



RS485 (screw terminals) Modbus communication port

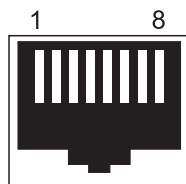
Fig.4



Additional instruments with RS485 are connected in parallel. The serial output must only be terminated on the last network device connecting terminals A- and T. For connections longer than 1000 m use a signal repeater. Maximum 247 transceivers on the same bus.

Modbus RJ45 female connector connection diagram

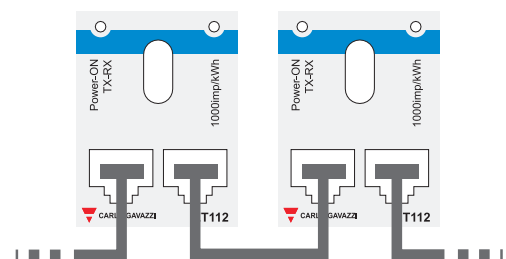
Fig.5



4	B+
5	A-
8	GND

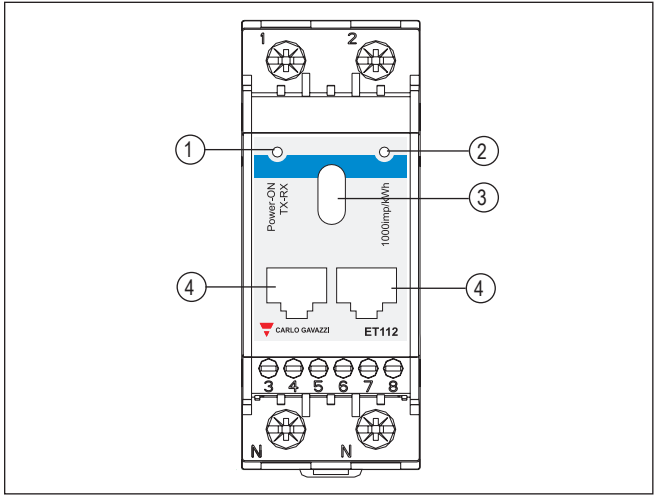
RS485 (RJ45) Modbus connection

Fig.6



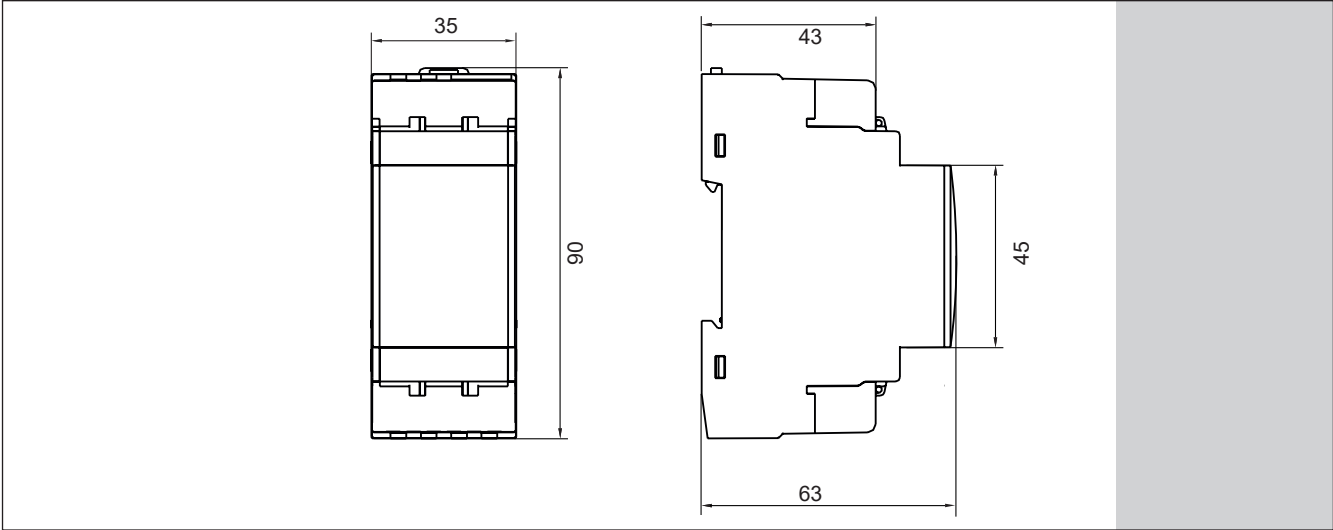
The serial output must only be terminated on the last network device connecting terminals A- (5) and T (3). For connections longer than 1000 m use a signal repeater. Maximum 247 transceivers on the same bus.

Front panel description



- 1. **LED**
Power-ON LED with communication indication (when blinking)
- 2. **LED**
LED proportional to kWh reading
- 3. **Optical port**
Optical port for data transmission or programming
- 4. **RJ45 Modbus RTU ports (RS485)**
Modbus ports for fast bus connection. The ports are in parallel. The screw terminals can be used as well (same Modbus port).

Dimensions (mm)



Annex A for ET112
(For product produced before June 2026)



Introduction

This Annex provides additional information regarding engineering changes introduced in the ET112 energy analyzer starting from June 2026 production series. It has been added to this document to help users identify the correct version of the device and understand the key differences between models. The distinction between the two product versions is based on the serial number:

- Devices with a serial number starting from **2026151000A** are considered the updated models with the engineering changes from June 2026.
- Devices with a lower serial number belong to the pre-June 2026 generation and follow the specifications outlined in the previous version of the datasheet (see below).

In the following section, only the technical specifications that were modified with the June 2026 update will be reported. All other specifications not explicitly mentioned remain unchanged and equally applicable to both versions.

Technical Specifications for ET112 Units Produced Before June 2026

Type Selection

Range code	
AV0	230 VLN AC
AV1	120 VLN AC - 5(100) A (Direct connection). Available on request (MOQ 100 pcs).

Input specifications

Rated inputs	
Nominal voltage	230 VLN AC (AV0 option), 120 VLN (AV1 option)
Accuracy	
AV1	120VLN -30% +30% Imin=0.25A; Ib: 5A, Imax: 100A; Un: 230VLN -30% +20%
Start-up voltage	(AV1), 161 VLN
Input impedance	
Voltage input 230VL-N	1.2Mohm
Voltage input 120VL-N	1.2Mohm
Current inputs: 5(100) A	< 1.25VA

Output specifications

RS485 optical port	
Read command	50 words available in 1 read command
Optical port	
Baud rate	9.6, 19.2 kbaud, even or no parity

General specifications

Operating temperature	-25 °C
Storage temperature	-30 °C

Power supply specifications

Self power supply	
AV0	230VAC VL-N, -30% +20% 50/60Hz
AV1	120VAC VL-N, -30% +30% 50/60Hz