

# Energy Management Energy Transducer Type ET330

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- Three phase energy transducer
- Class 0.5S (kWh) according to EN 62053-22
- Accuracy  $\pm 0.5\%$  RDG (current/voltage)
- Current measurement via CT
- Energy measurement: kWh and kvarh (imported/exported); kWh+ by 2 tariffs; kWh per phase
- System variables: kW, kvar, kVA, VLL, VLN, PF, Hz, kWdmd, kWdmd peak
- Phase variables: kW, kvar, kVA, VLL, VLN, A, PF
- Auxiliary power supply
- Dimensions: 3-DIN module
- Protection degree (front): IP20
- RS485 Modbus port
- Run hour meter
- Neutral current calculation
- Digital input (for tariff management)
- Easy connection

## Product description

Three-phase energy transducer. Particularly indicated for active energy metering and for cost allocation (CT 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. The transducer is provided with RS485 Modbus port.

## How to order **ET330 DIN AV5 3 H S1 X**



## Type Selection

Range code	System	Power supply	Output
<b>AV5:</b> 400 to 480 VLL ac - 5(6) A (CT connection) 230 to 277 VLN ac - 5(6) A (CT connection)	<b>3:</b> 3-phase, 3- or 4-wire; 2-phase 3-wire, 1-phase 2 wire	<b>H:</b> auxiliary power supply 100 to 240V ac/dc	<b>S1:</b> RS485 Modbus port

### Option

**X:** none

## Input specifications

<b>Rated Inputs</b>		<b>Memory</b>	
Current type	3-phase loads, CT connection	Energy	10 <sup>12</sup> cycles. Energy value is saved every time the less significant digit increases.
Current range	5(6)A	Programming parameters	10 <sup>12</sup> cycles. When a parameter is modified, only the relevant memory cell is overwritten
Nominal voltage	400 to 480 V LL ac		
Max CTxVT	1000		
<b>Accuracy</b> (@23°C ±2°C, 45 to 65 Hz)	0.01In=0.05A (kWh, PF=1) 0.05In=0.25A (kWh, PF=1) In: 5A, I <sub>max</sub> : 6A; Un: 230 to 277 VLN (400 to 480 VLL)	<b>LEDs</b>	
Current	From 0.04In to 0.2In: ±(0.5%RDG+1DGT) From 0.2In to I <sub>max</sub> : ±(0.5%RDG)	Flashing red light pulses	Proportional to the product of the CT and VT ratios
Phase-neutral voltage	In the range Un: ±(0.5% RDG)	Weight (pulses/kWh) 1	> 700,1 (CT x VT)
Phase-phase voltage	In the range Un: ±(2% RDG)	Weight (pulses/kWh) 10	70.1–700 (CT x VT)
Frequency	Range: 45 to 65Hz.	Weight (pulses/kWh) 100	7.1–70 (CT x VT)
Active power	From 0.05 In to I <sub>max</sub> , within Un range, PF=1: ±(1% RDG) From 0.1 In to I <sub>max</sub> , within Un range, PF=0.5L or 0.8C: ±(1% RDG) ±[0.001+1%(1.000 - "PF RDG")]	Weight (pulses/kWh) 1000	< 7.1 (CT x VT)
Power factor	From 0.05 In to I <sub>max</sub> , within Un range, sinphi=1: ±(2% RDG)	Duration	90ms
Reactive power	From 0.1 In to I <sub>max</sub> , within Un range, sinphi=0.5L or 0.8C: ±(2% RDG)	Fix orange light	wrong current direction (with "B" measurement selection)
Energies		<b>Current overloads</b>	
Active energy	Class 0.5S according to EN 62053-22	Continuous	6A, @ 50Hz
Reactive energy	Class 2 according to EN 62053-23	For 500ms	20 I <sub>max</sub>
Start-up current:	5 mA	<b>Voltage Overloads</b>	
Start-up voltage	90 V LN	Continuous	1.2 Un
<b>Resolution</b>	serial communication	For 500ms	2 Un
Current	0.001 A	<b>Input impedance</b>	
Voltage	0.1 V	230VL-N	2.1 Mohm
Power	0.1 W or var or VA	5(6) A	< 1 VA
Frequency	0.1Hz		
PF	0.001		
Energies (positive)	0.1 kWh or kvarh		
Energies (negative)	0.1 kWh or kvarh		
Run hour	0.01 hour		
<b>Energy additional errors</b>			
Influence quantities	According to EN 62053-22/-23		
<b>Temperature drift</b>	According to EN 62053-22/-23		
<b>Sampling rate</b>	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz		

## Digital input specifications

<p><b>Digital inputs</b></p> <p>Function</p> <p>Number of inputs</p> <p>Contact measurement voltage</p> <p>Input impedance</p> <p>Contact resistance</p>	<p>Free of voltage contact</p> <p>Tariff management (switch between t1-t2)</p> <p>1</p> <p>5 V</p> <p>10 Mohm</p> <p>≤1 kohm, close contact</p> <p>≥100 kohm, open contact</p>	<p>Overload</p>	<p>In case a voltage is erroneously applied to the digital input, the input is not damaged up to 30 V ac/dc.</p>
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## Output specifications

<p><b>RS485 serial port</b></p> <p>Function</p> <p>Protocol</p> <p>Baud rate</p> <p>Data format</p> <p>Address</p> <p>Driver input capability</p> <p>Data refresh time</p> <p>Read command</p> <p>RJ45 pin-out</p> <p>Other ports</p>	<p>RS485 by screw connection or RS485 by standard female RJ45 connectors (not shielded). For communication of measured data, programming parameters</p> <p>Modbus RTU (slave function)</p> <p>9.6, 19.2, 38.4, 57.6, 115.2 kbaud,</p> <p>even or no parity,</p> <p>1 to 247 (default: 1)</p> <p>1/8 unit load. Maximum 247 devices on the same bus.</p> <p>1 s</p> <p>50 words available in 1 read command</p> <p>According to Modbus standard: A- (pin5), B+ (pin4), GND (pin8)</p> <p>All the Modbus ports (screw terminals, two RJ45) are in parallel. Only one port at a time can be used.</p>	<p>Baud rate</p> <p>Address</p> <p>Data refresh time</p> <p>Read command</p> <p>Optical port LEDs</p> <p>LED axial distance</p> <p>LED function</p>	<p>9.6 kbaud, no parity</p> <p>1</p> <p>1 s</p> <p>50 words available in 1 read command</p> <p>6.5 mm</p> <p>- Upper LED is a receiver (from the master to the transducer)</p> <p>- Lower LED is a transmitter (from the trasducer to the master).</p>
<p><b>Optical port</b></p> <p>Description</p> <p>Function</p> <p>Protocol</p>	<p>Frontal bi-directional infrared optical coupling with CG optical reader device "Opto-Prog"</p> <p>For remote communication of measured data and setting of programming parameters</p> <p>Modbus RTU (slave function)</p>		

## General specifications

<b>Operating temperature</b>	-25 to +65 °C (-13 to 149° F), indoor, (R.H. from 0 to 90% non-condensing @ 40°C)	<b>Housing</b>	
<b>Storage temperature</b>	-30°C to +80°C (-22 to 176° F) (R.H. < 90% non condensing @ 40°C)	Dimensions (WxHxD)	54 x 90 x 63 mm
<b>Overvoltage category</b>	Cat. III	Material	PBT, self-extinguishing: UL 94 V-0
<b>Insulation (for 1 minute)</b>	4000 V ac RMS between measuring inputs and digital/serial output (see table) 4000 V ac RMS	Sealing covers	Included
<b>Dielectric strength</b>	4000 V ac RMS for 1 minute	<b>Mounting</b>	DIN-rail
<b>EMC</b>		<b>Protection degree</b>	
Immunity	According to EN 61000-6-2	Front	IP20
Emission	According to EN 61000-6-3	Screw terminals	IP20
<b>Standard compliance</b>		<b>Weight</b>	Approx. 240 g (packing included)
Safety	EN 61010-1		
Metrology	EN 62053-21		
<b>Approvals</b>	CE, cULus (UL 61010-1)		
<b>Connections</b>			
Voltage inputs	Cable cross-section area: max. 4 mm <sup>2</sup> , min. 1 mm <sup>2</sup> with/without metallic cable ferrule; Max. screw tightening torque: 0.6 Nm		
Other terminals	Cable cross-section area: 1.5 mm <sup>2</sup> , Min./Max. screws tightening torque: 0.4 Nm		

## Power supply specifications

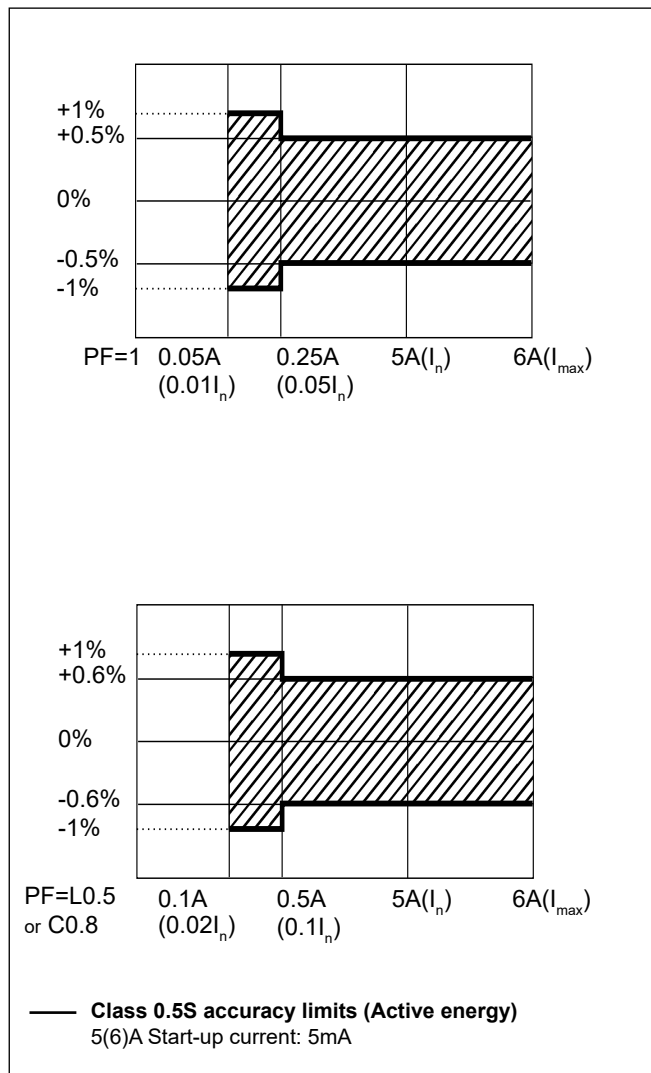
<b>Auxiliary power supply</b>	H: 100 to 240 V ac/dc	<b>Power consumption</b>	≤ 1W, ≤ 8VA
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### Insulation (for 1 minute) between inputs and outputs

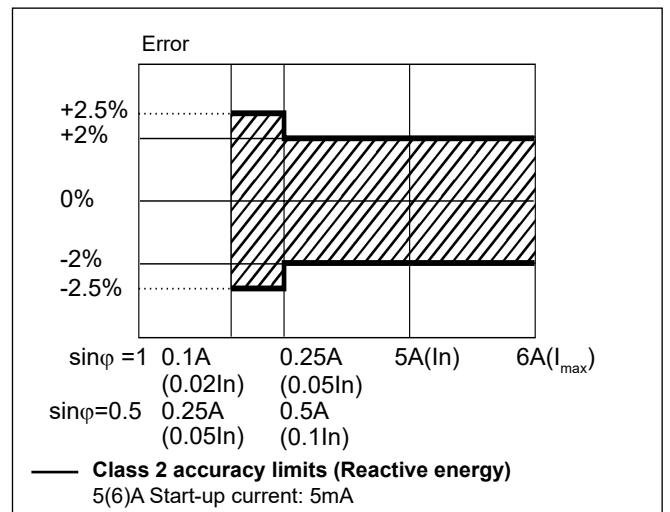
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

### Accuracy (according to EN 62053-22 and EN 62053-23)

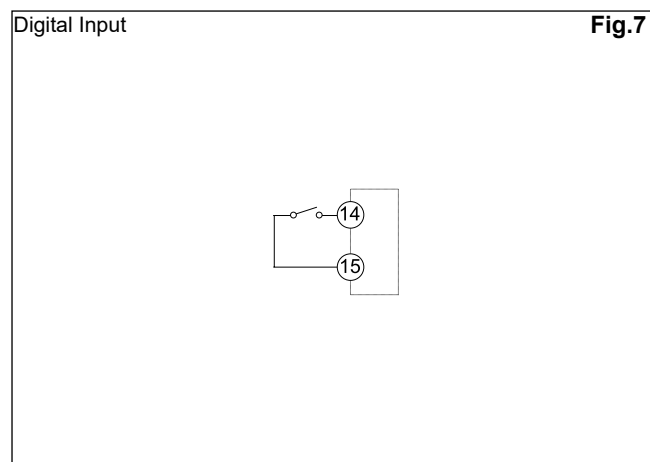
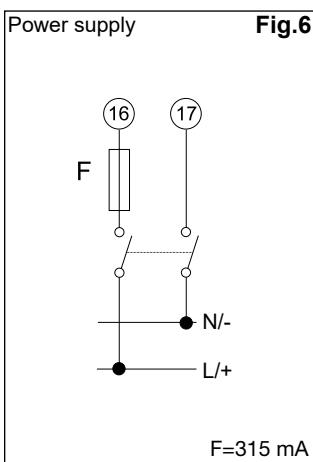
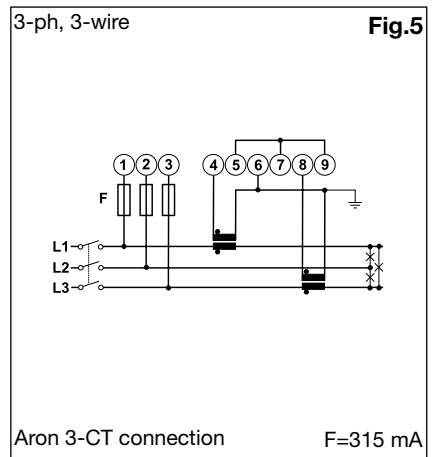
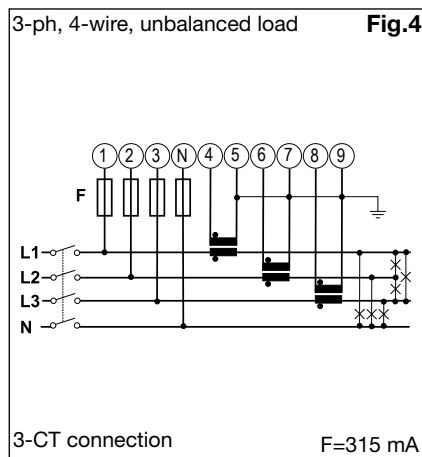
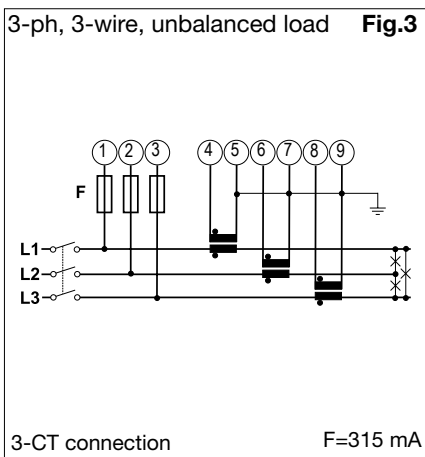
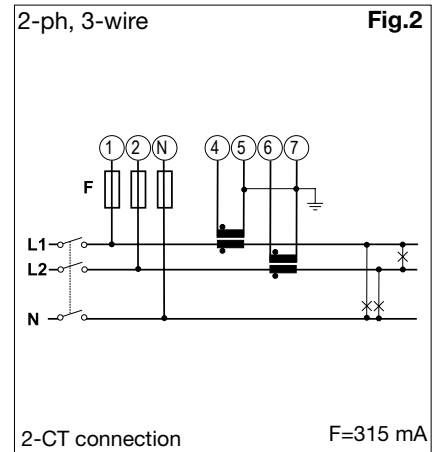
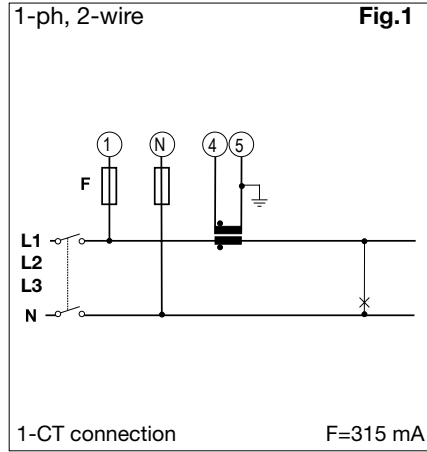
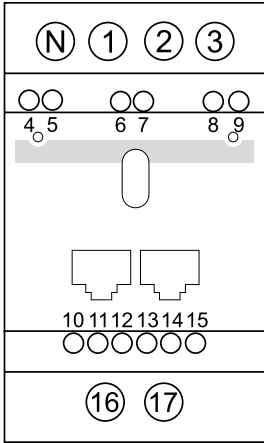
kWh, accuracy (RDG) depending on the current



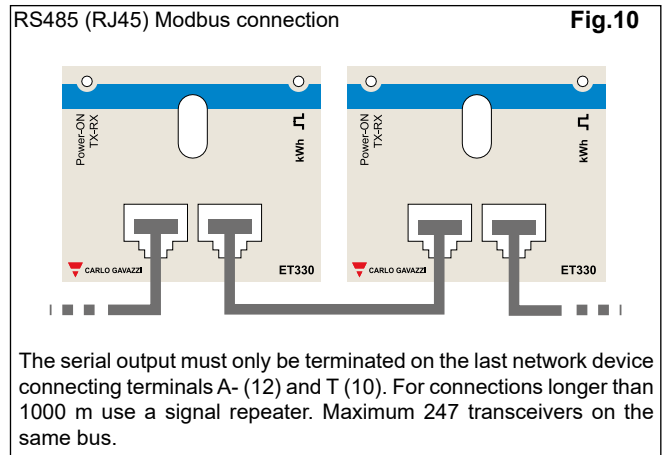
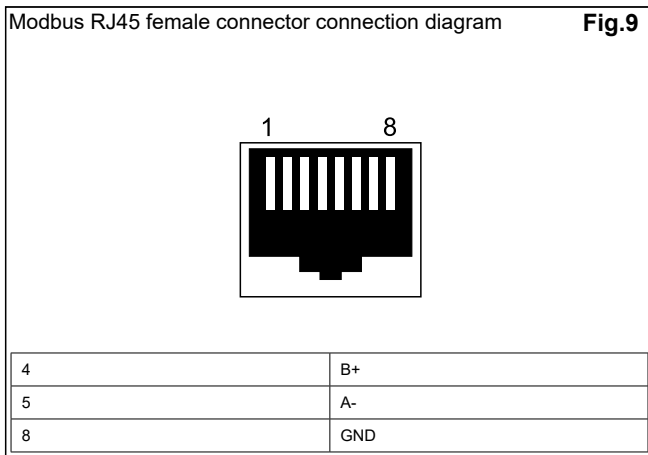
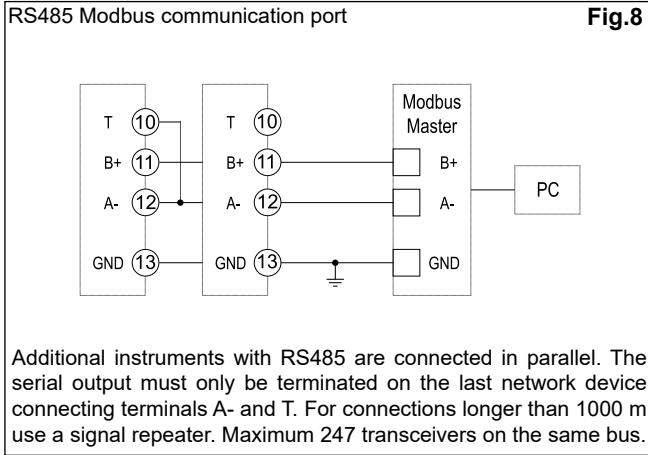
kvarh, accuracy (RDG) depending on the current



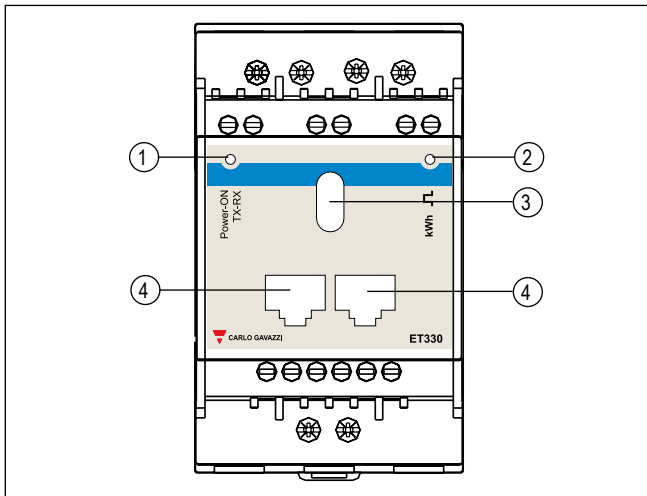
# Wiring diagrams



## Wiring diagrams (cont.)



## 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

