

Energy Management

Energy Transducer

Type ET330



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

Option

X: none

Input specifications

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

Digital input specifications

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

Output specifications

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

General specifications

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

Power supply specifications

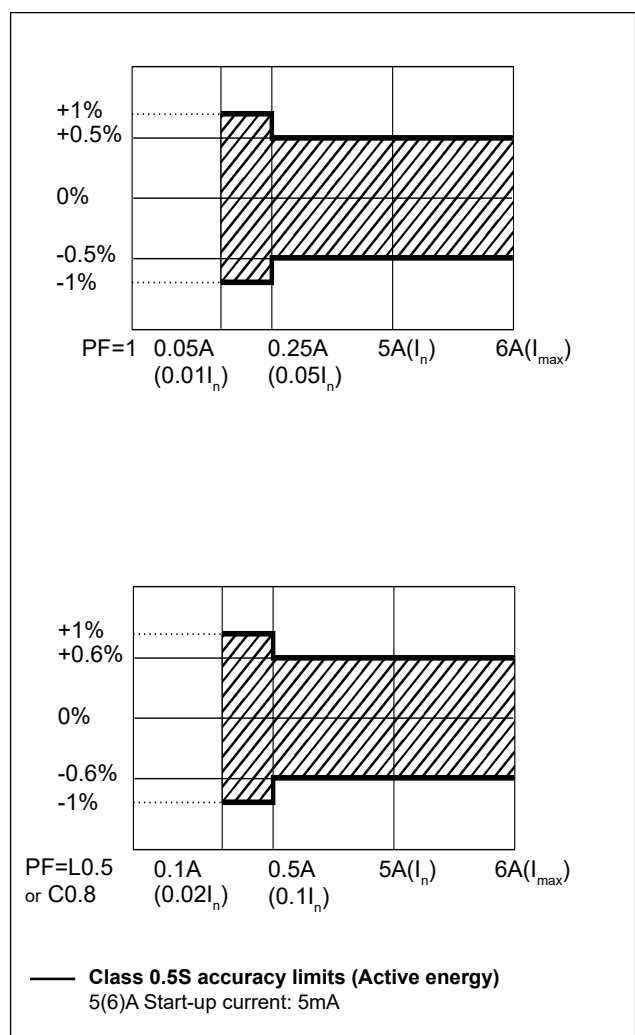
Auxiliary power supply	H: 100 to 240 V ac/dc	Power consumption	≤ 1W, ≤ 8VA
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Insulation (for 1 minute) between inputs and outputs

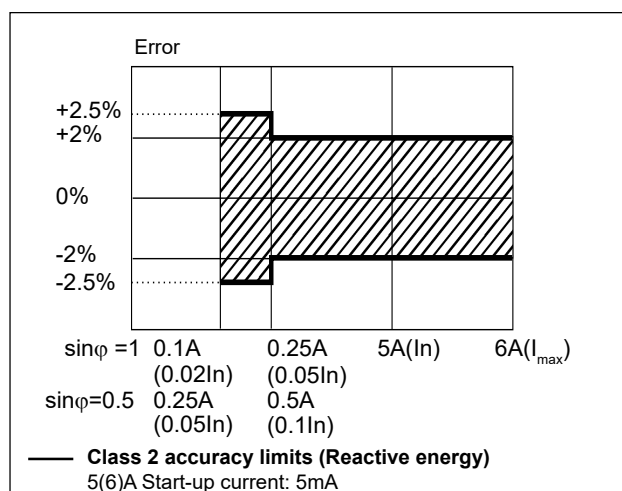
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

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

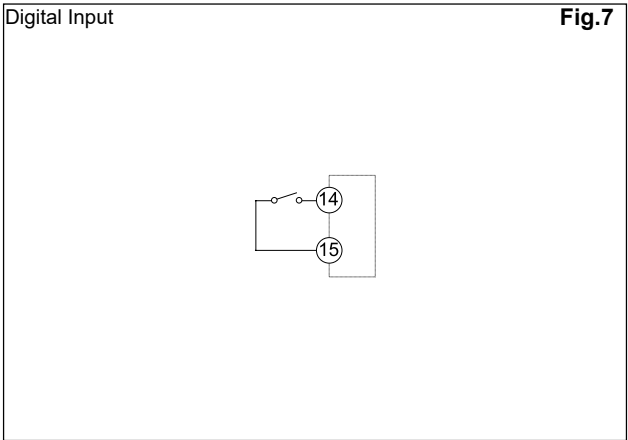
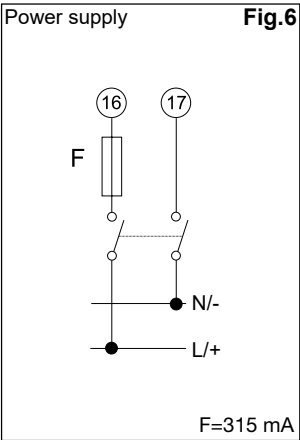
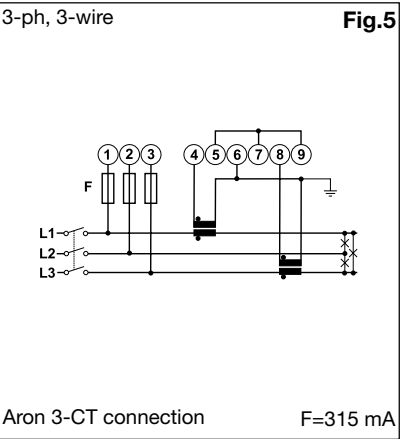
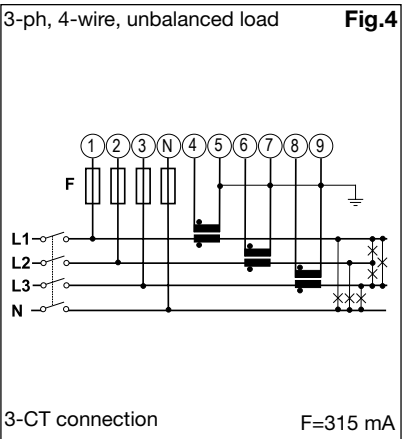
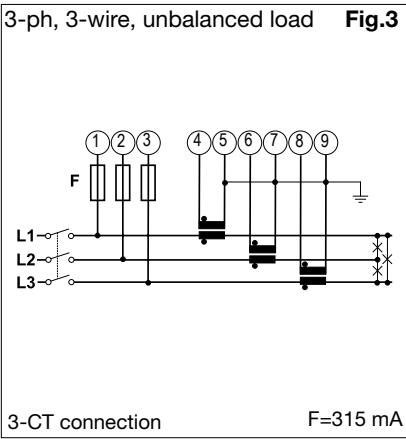
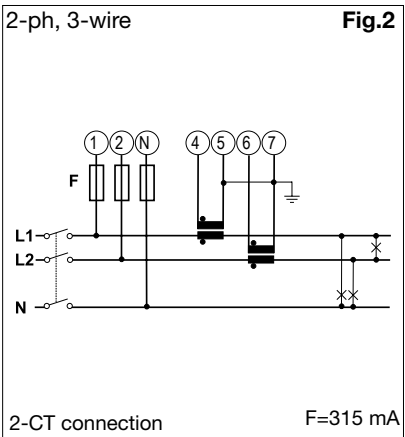
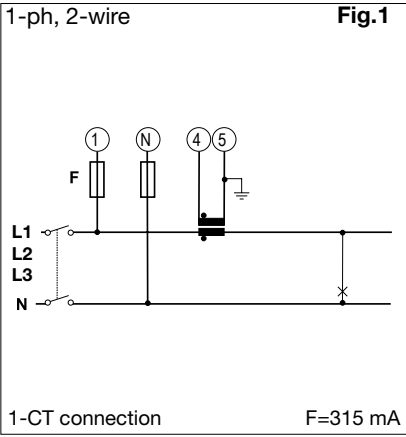
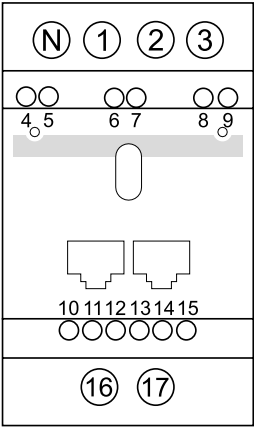
kWh, accuracy (RDG) depending on the current



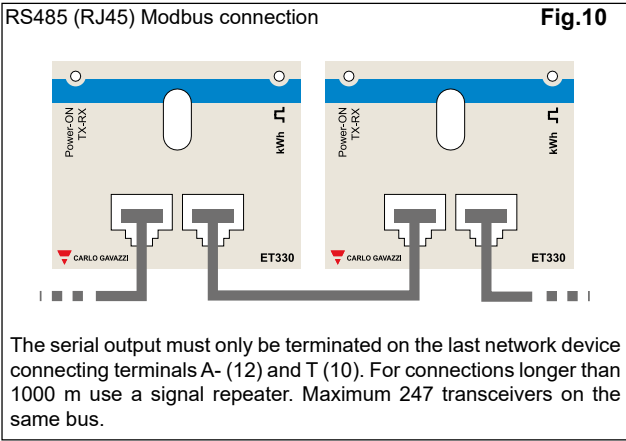
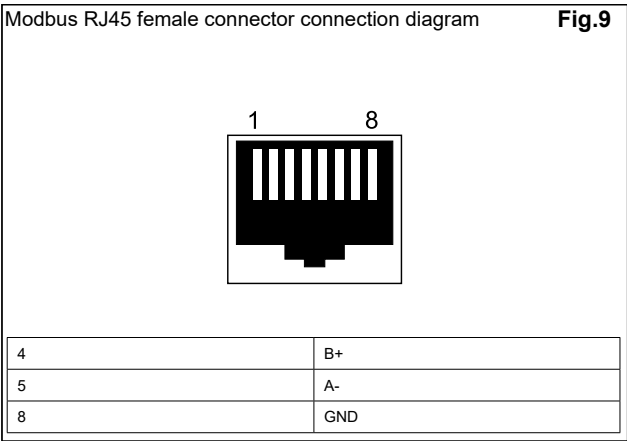
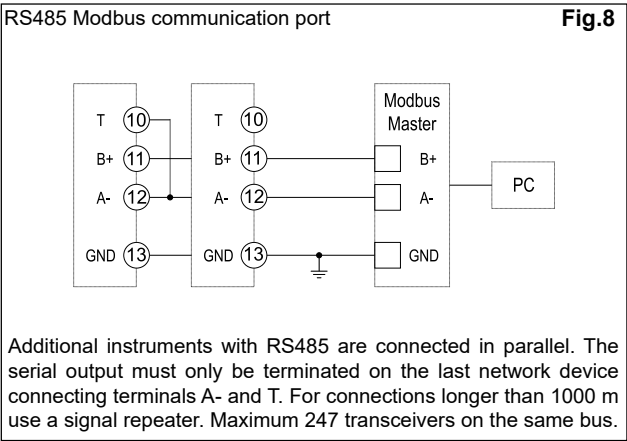
kvarh, accuracy (RDG) depending on the current



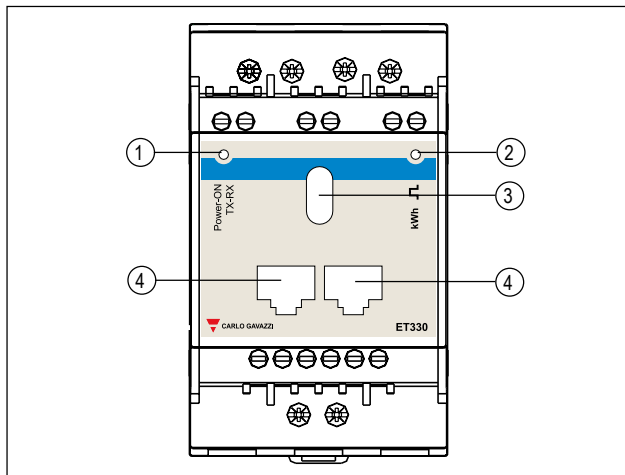
Wiring diagrams



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

