

Energy Management Energy Transducer Type ET330

CARLO GAVAZZI

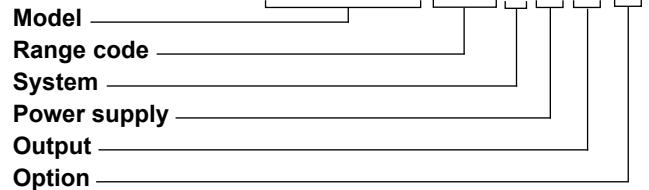


- Three phase energy transducer
- Class 0.5S (kWh) according to EN 62053-22
- Accuracy $\pm 0.5\%$ RDG (current/voltage)
- Current measurement via CT
- Energy measurement: kWh and kvarh (imported/exported); kWh+ by 2 tariffs; kWh per phase
- System variables: kW, kvar, kVA, VLL, VLN, PF, Hz, kWdmd, kWdmd 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) | 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) | LEDs | |
| Current | From 0.04In to 0.2In: ±(0.5%RDG+1DGT) From 0.2In to I _{max} : ±(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 _{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")] | Weight (pulses/kWh) 1000 | < 7.1 (CT x VT) |
| Power factor | From 0.05 In to I _{max} , within Un range, sinphi=1: ±(2% RDG) | Duration | 90ms |
| Reactive power | From 0.1 In to I _{max} , within Un range, sinphi=0.5L or 0.8C: ±(2% RDG) | Fix orange light | wrong current direction (with "B" measurement selection) |
| Energies | | Current overloads | |
| 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 _{max} |
| Start-up current: | 5 mA | Voltage Overloads | |
| Start-up voltage | 90 V LN | Continuous | 1.2 Un |
| Resolution | serial communication | For 500ms | 2 Un |
| Current | 0.001 A | Input impedance | |
| 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 | | |
| 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 | | |
| Contact resistance | ≥100 kohm, open contact | | |
| Input impedance | 10 Mohm | | |

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 | Modbus RTU (slave function) | Data refresh time | 1 s |
| Baud rate | 9.6, 19.2, 38.4, 57.6, 115.2 kbaud, | Read command | 50 words available in 1 read command |
| Data format | even or no parity, | Optical port LEDs | |
| Address | 1 to 247 (default: 1) | LED axial distance | 6.5 mm |
| Driver input capability | 1/8 unit load. Maximum 247 devices on the same bus. | LED function | - Upper LED is a receiver (from the master to the transducer) - Lower LED is a transmitter (from the transducer to the master). |
| Data refresh time | 1 s | | |
| Read command | 50 words available in 1 read command | | |
| RJ45 pin-out | According to Modbus standard: A- (pin5), B+ (pin4), GND (pin8) | | |
| Other ports | All the Modbus ports (screw terminals, two RJ45) are in parallel. Only one port at a time can be used. | | |
| 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 | |
| Storage temperature | -30°C to +80°C (-22 to 176° F) (R.H. < 90% non condensing @ 40°C) | Dimensions (WxHxD) | 54 x 90 x 63 mm |
| Overvoltage category | Cat. III | Material | PBT, self-extinguishing: UL 94 V-0 |
| Insulation (for 1 minute) | 4000 V ac RMS between measuring inputs and digital/serial output (see table) 4000 V ac RMS | Sealing covers | Included |
| Dielectric strength | 4000 V ac RMS for 1 minute | Mounting | DIN-rail |
| EMC | | Protection degree | |
| Immunity | According to EN 61000-6-2 | Front | IP20 |
| Emission | According to EN 61000-6-3 | Screw terminals | IP20 |
| Standard compliance | | Weight | Approx. 240 g (packing included) |
| 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

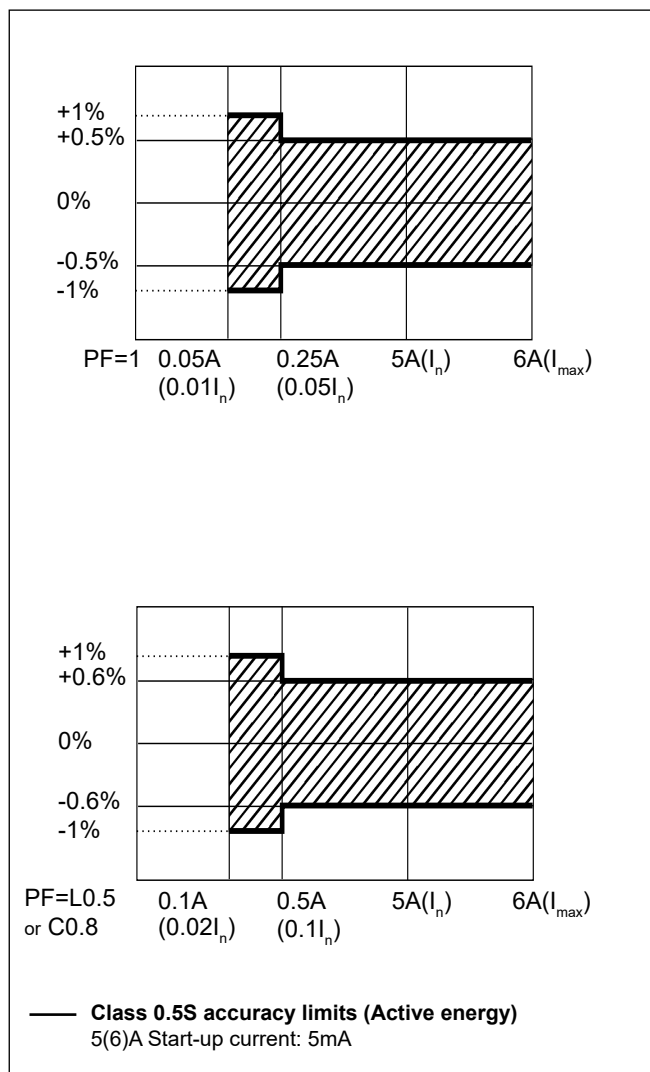
| | | | |
|-------------------------------|-----------------------|--------------------------|-------------|
| Auxiliary power supply | H: 100 to 240 V ac/dc | Power consumption | ≤ 1W, ≤ 8VA |
|-------------------------------|-----------------------|--------------------------|-------------|

Insulation (for 1 minute) between inputs and outputs

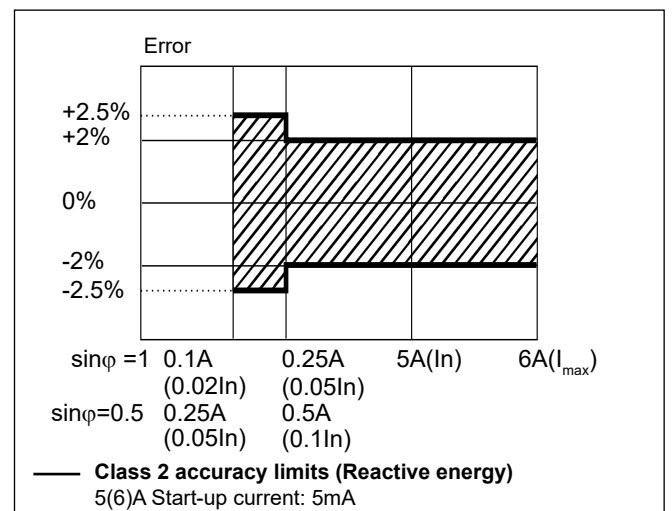
| | Measuring input | Serial output | Digital input |
|-----------------|-----------------|---------------|---------------|
| Measuring input | - | 4 kV | 4 kV |
| Serial output | 4 kV | - | 0 kV |
| Digital input | 4 kV | 0 kV | - |

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

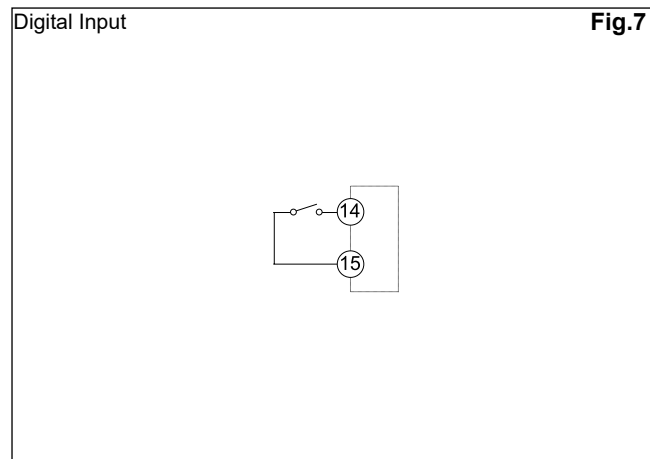
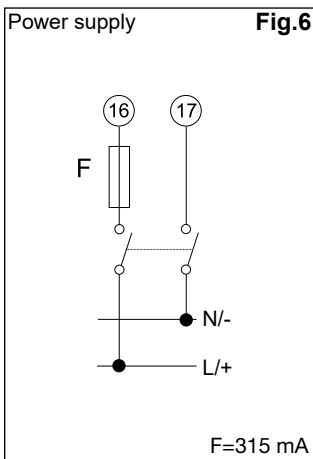
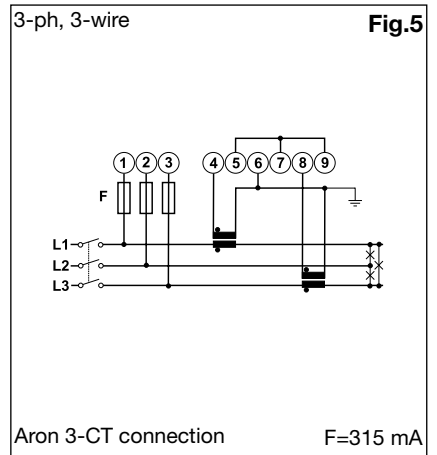
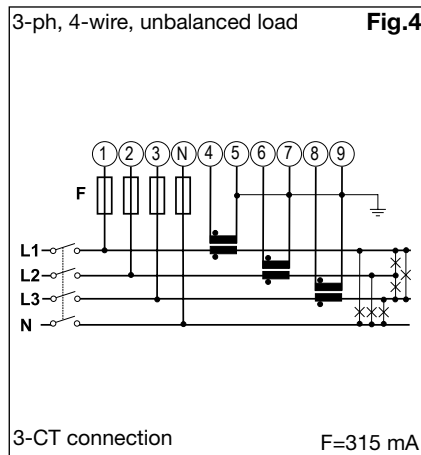
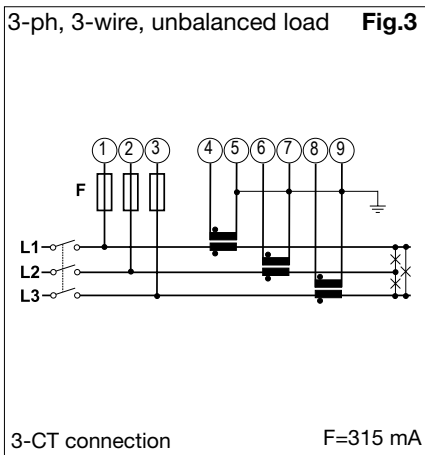
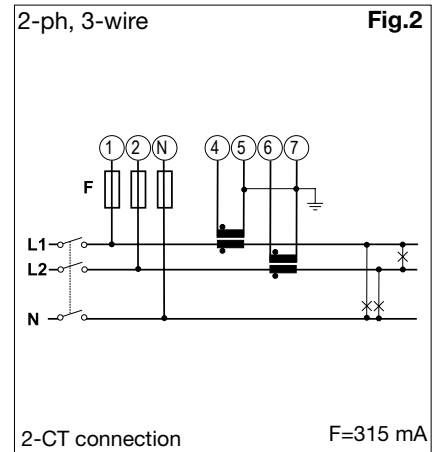
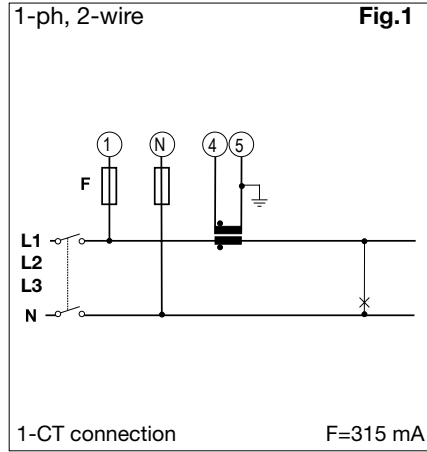
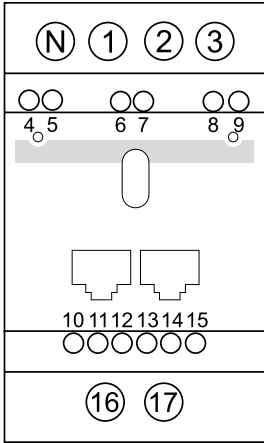
kWh, accuracy (RDG) depending on the current



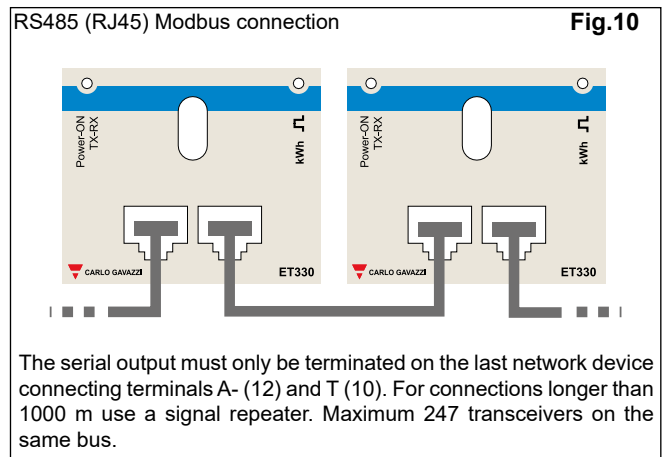
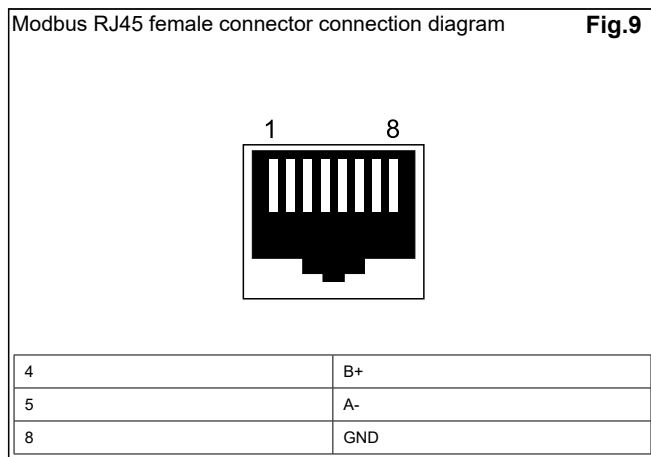
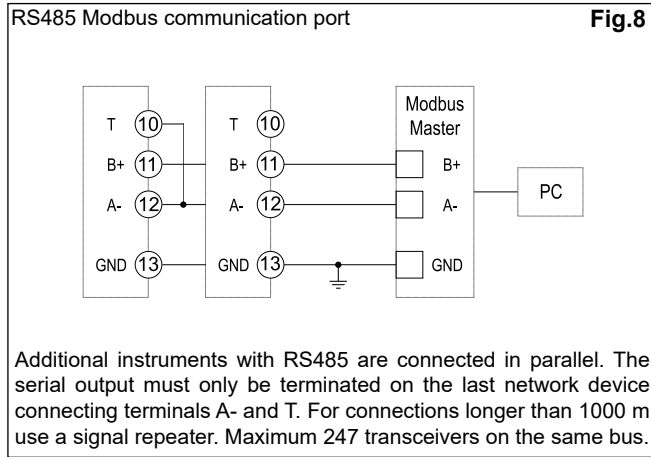
kvarh, accuracy (RDG) depending on the current



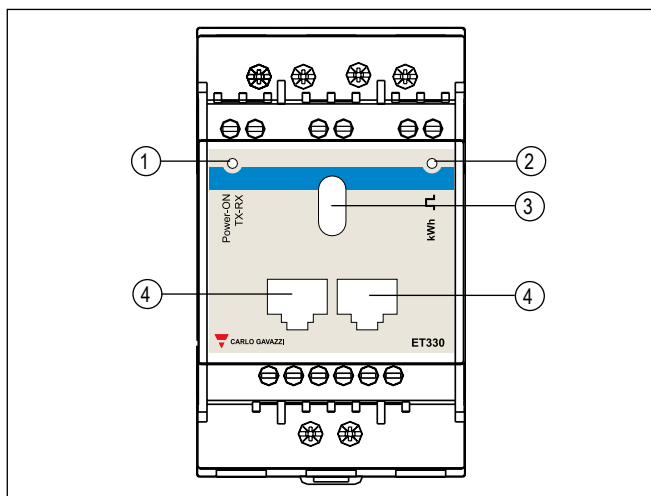
Wiring diagrams



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

