

# Energy Management Energy Transducer Type ET340

CARLO GAVAZZI

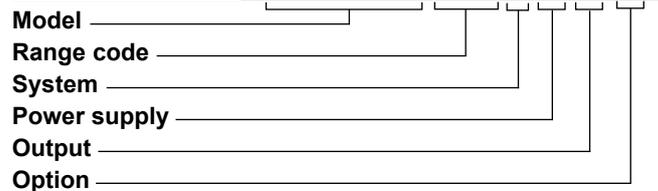


- Three phase energy transducer
- Class 1 (kWh) according to EN62053-21
- Accuracy  $\pm 0.5\%$  RDG (current/voltage)
- Direct current measurement up to 65AAC
- Energy measurement: kWh and kvarh (imported/exported); kWh+ by 2 tariffs; kWh per phase
- System variables: kW, kvar, kVA, VLL, VLN, PF, Hz, kWdmd, kWdmd peak
- Phase variables: kW, kvar, kVA, VLL, VLN, A, PF
- Self power supply
- Dimensions: 3-DIN module
- Protection degree (front): IP20
- Optical port
- RS485 Modbus port (optional)
- Digital input (for tariff management)
- Run hour meter
- Easy connection or wrong current direction detection

## Product description

Three-phase transducer. Particularly indicated for active energy metering and for cost allocation in applications up to 65 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.

## How to order **ET340-DIN AV2 3 X S1 X**



## Type Selection

Range code	System	Power supply	Output
<b>AV2:</b> 208 to 400 VLL AC - 5(65)A (Direct connection)	<b>3:</b> 3-phase, 3- or 4-wire; 2-phase 3-wire	<b>X:</b> self power supply -20% +20% of the rated measuring input voltage, 45 to 65Hz	<b>S1:</b> RS485 Modbus port

### Option

**X:** none

## Input specifications

<b>Rated Inputs</b>		<b>Max. and Min. data values</b>	
Current type	3-phase loads, direct connection	Energies	Max. 99 999 999 Min. 0.01
Current range	5(65)A	Variables	Max. 9999 Min. 0.01
Nominal voltage	208 to 400 VLL AC	Run hour meter	0.01 h
<b>Accuracy</b> (@25°C ±5°C, R.H. ≤60%, 45 to 65 Hz)		<b>Memory</b>	
	Imin=0.25A; Ib: 5A, Imax: 65A; Un: 113 to 265VLN (196 to 460VLL) Imin=0.25A; Ib: 5A, Imax: 65A; from 208 to 400 VLL AC	Energy	10 <sup>12</sup> cycles. Energy value is saved every time the less significant digit increases.
Current	From 0.04Ib to 0.2Ib: ±(0.5%RDG+1DGT) From 0.2Ib to Imax: ±(0.5%RDG)	Programming parameters	10 <sup>12</sup> cycles. When a parameter is modified, only the relevant memory cell is overwritten
Phase-neutral voltage	In the range Un: ±(0.5% RDG)	<b>LEDs</b>	
Phase-phase voltage	In the range Un: ±(1% RDG)	Right LED	Flashing red light pulses according to EN50470-3, EN62052-11, 1000 pulse per kWh (min. period: 90ms)
Frequency	Range: 45 to 65Hz.	Left LED	Fix green light: power-on Blinking red light: power- on and communication in progress
Active power	From 0.05 In to Imax, within Un range, PF=1: ±(1% RDG) From 0.1 In to Imax, within Un range, PF=0.5L or 0.8C: ±(1% RDG)	<b>Current overloads</b>	
Power factor	±[0.001+1%(1.000 - "PF RDG")]	Continuous	65A, @ 50Hz
Reactive power	From 0.05 In to Imax, within Un range, sinphi=1: ±(2% RDG) From 0.1 In to Imax, within Un range, sinphi=0.5L or 0.8C: ±(2% RDG)	For 10ms	8450 A
		<b>Voltage Overloads</b>	
Energies		Continuous	1.2 Un
Active energy	Class 1 according to EN62053-21	For 500ms	2 Un
Reactive energy	Class 2 according to EN62053-23	<b>Input impedance</b>	
Start-up current:	20mA Self-consumption is not measured.	230VL-N	1.2Mohm
Start-up voltage	90VLN	120VL-N	1.2Mohm
<b>Resolution</b>		5(65) A	< 1.25VA
Current	0.001 A		
Voltage	0.1 V		
Power	0.1 W or var		
Frequency	0.1Hz		
PF	0.001		
Energies (positive)	0.1 kWh or kvarh		
Energies (negative)	0.1 kWh or kvarh		
Run hour meter	0.01 h		
<b>Energy additional errors</b>			
Influence quantities	According to EN62053-21 ≤200ppm/°C		
<b>Temperature drift</b>			
<b>Sampling rate</b>	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz		



## Digital input specifications

<b>Digital inputs</b> 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

<b>RS485 serial port</b>   Function  Protocol  Baud rate  Data format 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 devices on the same bus. 1sec 50 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.	<b>Optical port</b> Description  Function  Protocol  Baud rate  Address Data refresh time Read command  Optical port LEDs LED axial distance LED function	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) 9.6, 19.2 kbaud, even or 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).
--	--	--	--

## General specifications

<b>Operating temperature</b>	-20 to +65 °C, indoor, (R.H. from 0 to 90% non-condensing @ 40°C)	<b>Standard compliance</b>	
<b>Storage temperature</b>	-30°C to +80°C (R.H. < 90% noncondensing @ 40°C)	Safety	EN62052-11
<b>Overvoltage category</b>	Cat. III	Metrology	EN62053-21
<b>Insulation (for 1 minute)</b>	4000 VAC RMS between measuring inputs and digital/serial output (see table) 4000 VAC RMS	<b>Approvals</b>	CE
<b>Dielectric strength</b>	4000 VAC RMS for 1 minute	<b>Connections</b>	
<b>EMC</b>	According to EN62052-11	Cable cross-section area	Measuring inputs: max. 16 mm <sup>2</sup> , min. 2.5 mm <sup>2</sup> with/without metallic cable ferrule; Max. screw tightening torque: 2.8 Nm
Electrostatic discharges	15kV air discharge;	Other terminals	1.5 mm <sup>2</sup> , Min./Max. screws tightening torque: 0.4 Nm
Immunity to irradiated electromagnetic fields	Test with current: 10V/m from 80 to 2000MHz;	<b>Housing</b>	
Electromagnetic fields	Test without any current: 30V/m from 80 to 2000MHz;	Dimensions (WxHxD)	54 x 90 x 63 mm
Burst	On current and voltage measuring inputs circuit: 4kV	Material	Noryl, self-extinguishing: UL 94 V-0
Immunity to conducted disturbances	10V/m from 150KHz to 80MHz	Sealing covers	Included
Surge	On current and voltage measuring inputs circuit: 4kV;	<b>Mounting</b>	DIN-rail
Radio frequency	According to CISPR 22	<b>Protection degree</b>	
		Front	IP20
		Screw terminals	IP20
		<b>Weight</b>	Approx. 240 g (packing included)

## Power supply specifications

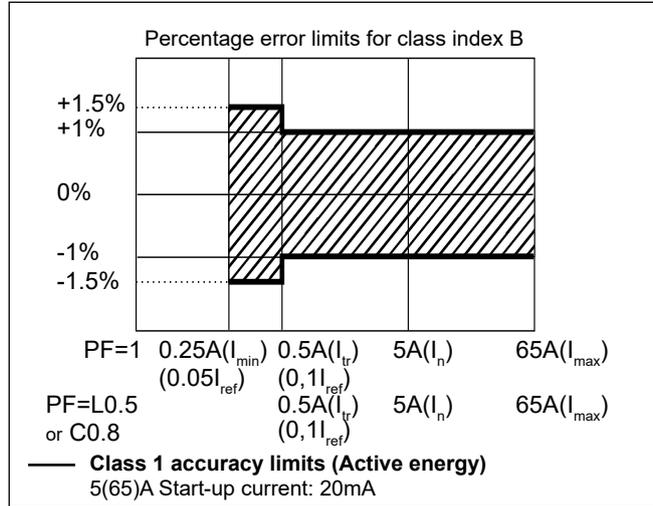
<b>Self power supply</b>	208 to 400VAC VLL, -20% +20% 50/60Hz	<b>Power consumption</b>	≤ 1W, ≤ 10VA
--------------------------	--------------------------------------	--------------------------	--------------

## Insulation (for 1 minute) between inputs and outputs

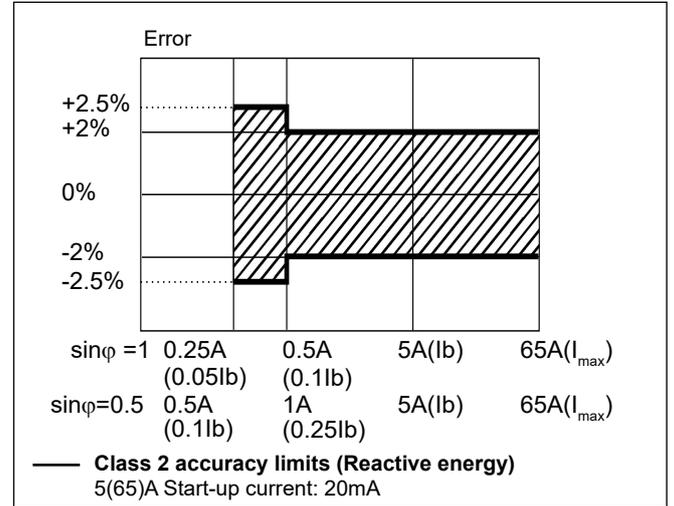
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

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

kWh, accuracy (RDG) depending on the current



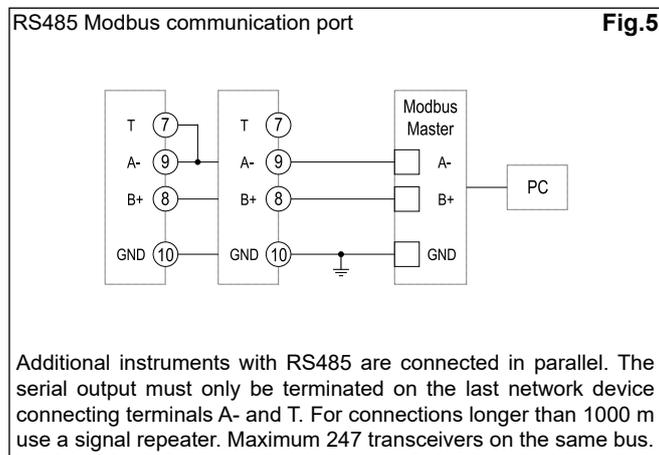
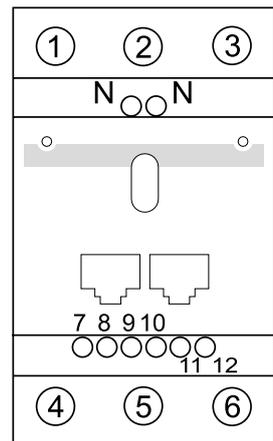
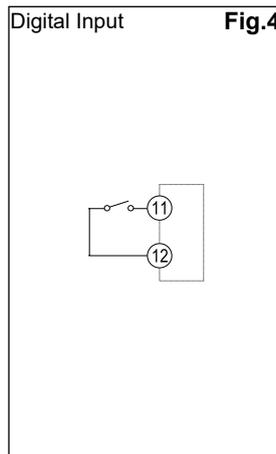
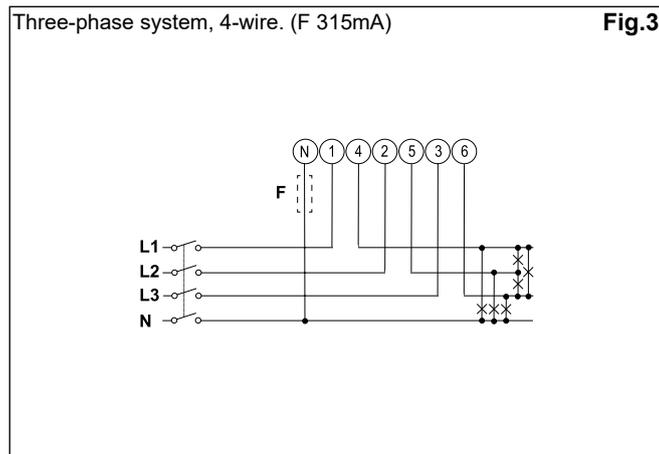
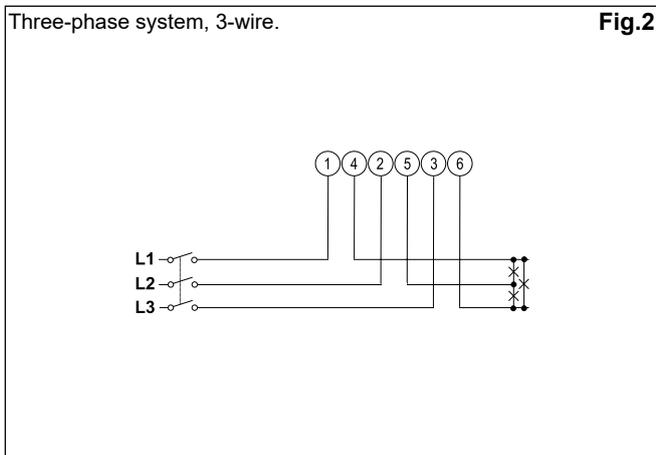
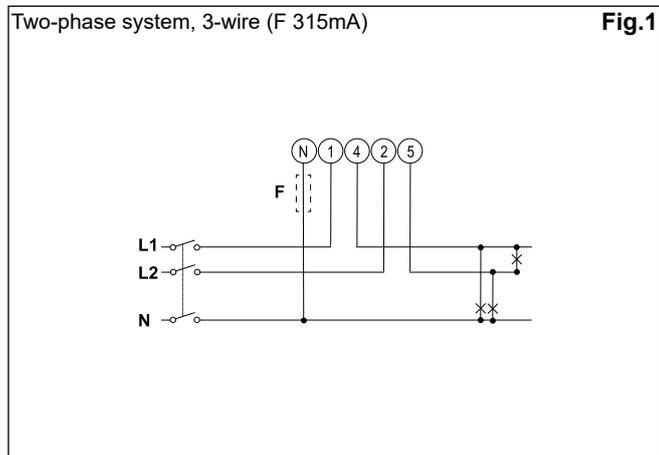
kvarh, accuracy (RDG) depending on the current



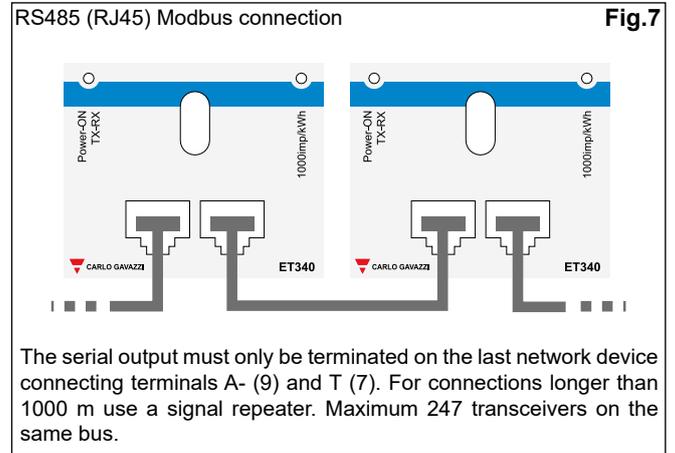
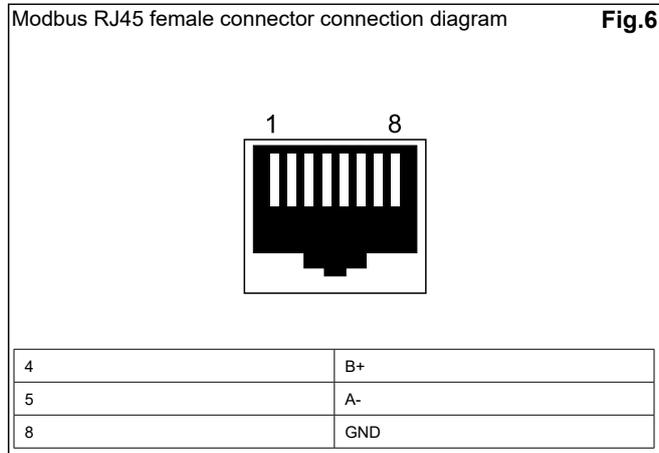
## Available variables

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

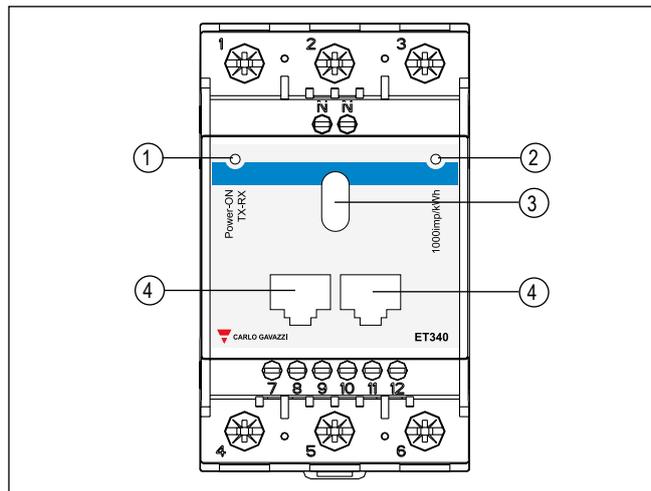
# Wiring diagrams



## 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

---

