

# Energy Management Energy Transducer Type ET340

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- Three phase energy transducer
- Class 1 (kWh) according to EN62053-21
- Class B (kWh) according to EN50470-3
- 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): IP51
- 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 IP51 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 and MID Annex MI-003 Class B (Class B (kWh) according to EN50470-3)	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	<b>Wrong connection detection</b>	Installation guide to indicate if connections are correctly carried out. Can be disabled.
Voltage	0.1 V	Phase sequence	Indicates if the phase sequence is not the correct one (L1-L2-L3)
Power	0.1 W or var	Correct current direction	Indicates if the current direction is not the right one (only with PFB option or with type "B" measurement selection in case of X option).
Frequency	0.1Hz	Load conditions	The wrong connection detection works in case of loads with: - PF>0.766 (<40°) power factor if inductive or PF>0.996 (<5°) if capacitive - a current at least equal to 10% rated current (primary current transformer)
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		
<b>Temperature drift</b>	≤200ppm/°C		
<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>1kohm</p> <p>≤1kohm, close contact</p> <p>≥100kohm, 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 VAC/ 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, even or no parity,</p> <p>1 to 247 (default: 01)</p> <p>1/8 unit load. Maximum 247 devices on the same bus.</p> <p>1sec</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 and optical) are in parallel. Only one port at a time can be used.</p>	<p><b>Optical port</b></p> <p>Description</p> <p>Function</p> <p>Protocol</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>Other ports</p>	<p>Frontal bi-directional infrared optical coupling with CG optical reader device "Opto-prog" For remote communication of measured data and setting of programming parameters</p> <p>ModBus RTU (slave function)</p> <p>9.6, 19.2 kbaud, even or no parity</p> <p>1</p> <p>1 sec</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>All the Modbus ports (screw terminals, RJ45 and optical) are in parallel. Only one port at a time can be used</p>
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## 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, EN50470-3
<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	IP51
		Screw terminals	IP20
		<b>Weight</b>	Approx. 240 g (packing included)

## Power supply specifications

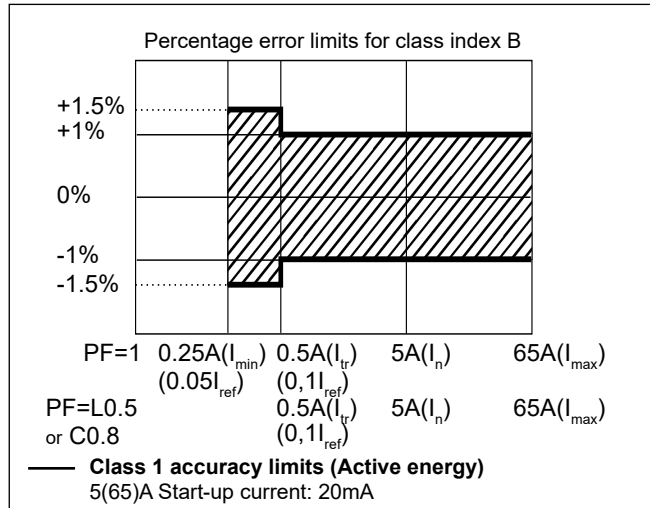
<b>Self power supply</b>	208 to 400VAC VLL, -20% +20% 50/60Hz	<b>Power consumption</b>	≤ 1W, ≤ 10VA
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## Insulation (for 1 minute) between inputs and outputs

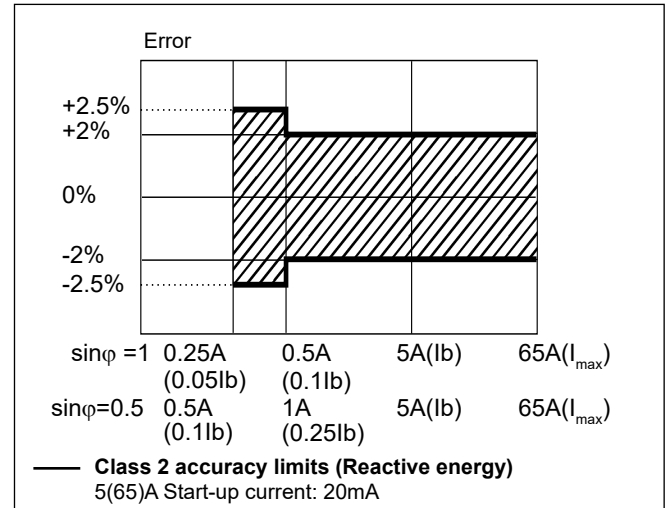
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

## Accuracy (according to EN50470-3 and EN62053-23)

kWh, accuracy (RDG) depending on the current



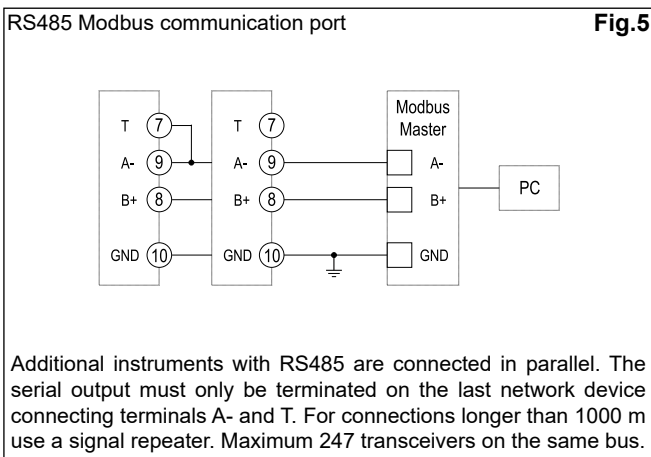
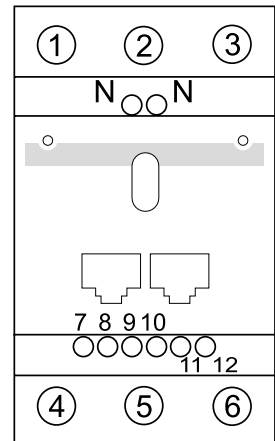
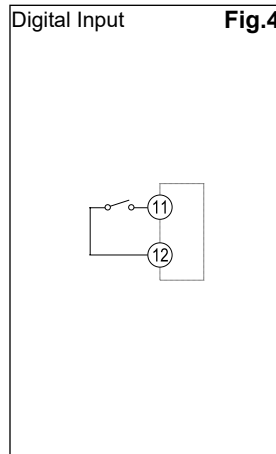
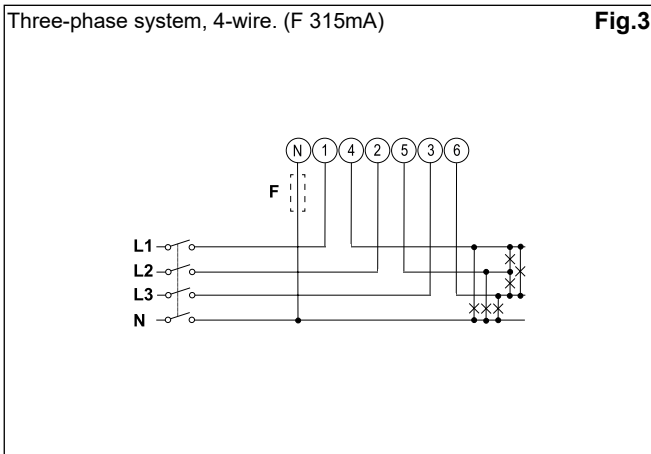
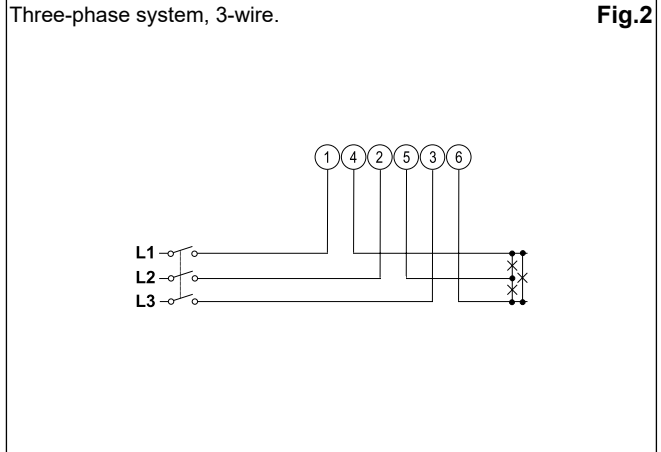
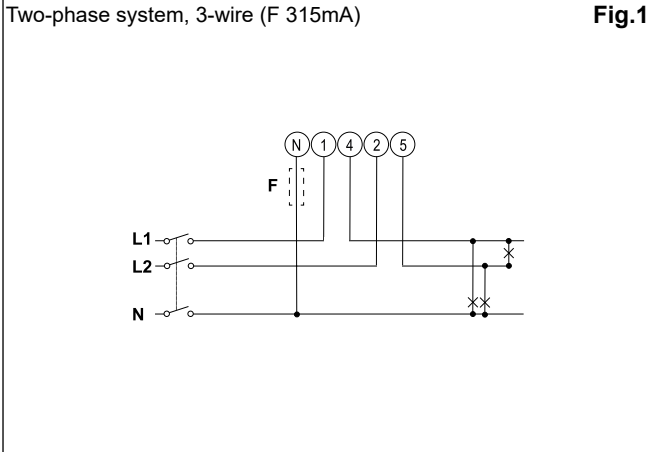
kvarh, accuracy (RDG) depending on the current



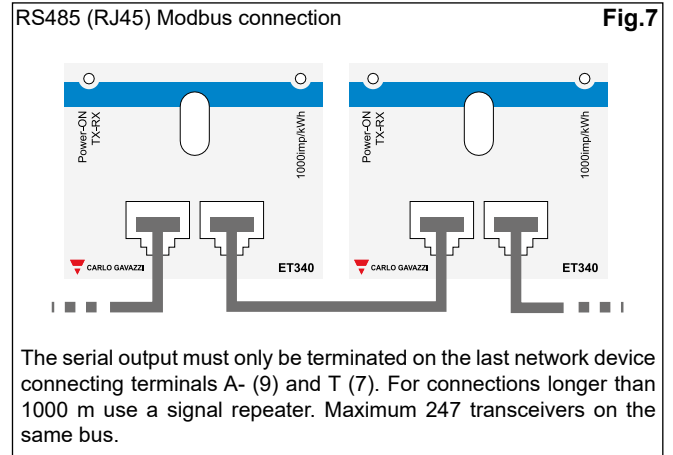
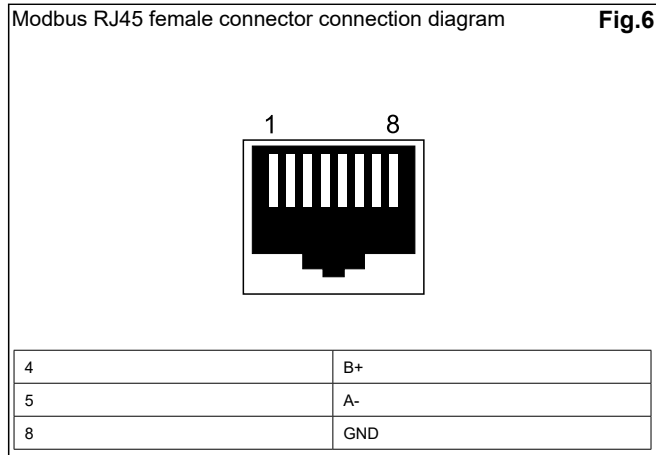
## Available variables

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

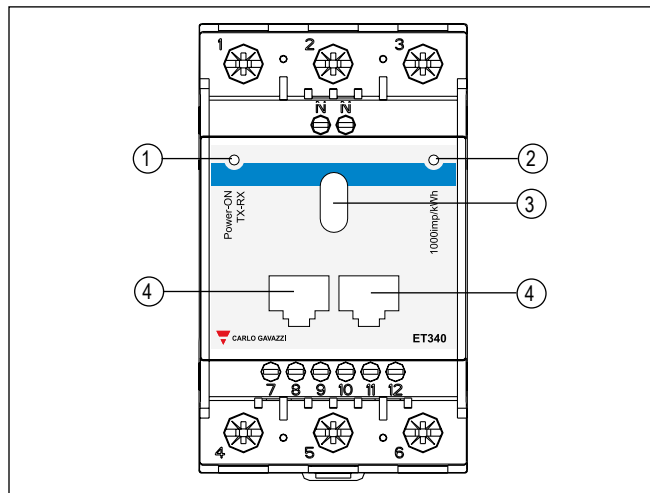
## Wiring diagrams



## 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

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