

Energy Management Energy Meter Type EM340DINAV23XS1X08 for HUAWEI

CARLO GAVAZZI



- Three phase energy meter
 - Class 1 (kWh) according to EN62053-21
 - Accuracy $\pm 0.5\%$ RDG (current/voltage)
 - Direct current measurement up to 65AAC
 - Backlit LCD display (3x 8-digit) with integrated touch key-pad
 - Energy readout on display: 8 digit
 - Variable readout on display: 4 digit
 - 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
- Digital input (for tariff management)
 - Easy connection or wrong current direction detection
 - RS485 Modbus port

Product description

Three-phase energy meter with backlit LCD display with integrated touch keypad. 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 meter is provided with RS485 Modbus port.

STANDARD

Not certified according to MID Directive. Cannot be used for fiscal (legal) metrology.

How to order EM340-DIN AV2 3 X S1 X 08

Model _____
 Range code _____
 System _____
 Power supply _____
 Output _____
 Option _____

Type Selection

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

Option

X 08: 3-PHASE ENERGY METER FOR HUAWEI

Input specifications

Rated Inputs		Temperature drift	≤200ppm/°C
Current type	3-phase loads, direct connection	Sampling rate	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz
Current range	5(65)A	Display and touch key-pad	
Nominal voltage	208 to 400 VLL AC	Type	Backlit LCD, 3 rows by 8-digit each, h 7 mm
Accuracy (@25°C ±5°C, R.H. ≤60%, 45 to 65 Hz)		Read-out	Energy: 8 digit. Variables: 4 digit
	Imin=0.25A; Ib: 5A, Imax: 65A; Un: 113 to 265VLN (196 to 460VLL)	Touch key	3 (DOWN, Enter and UP).
	Imin=0.25A; Ib: 5A, Imax: 65A; from 208 to 400 VLL AC	Max. and Min. indication	
Current	From 0.04Ib to 0.2Ib: ±(0.5%RDG+1DGT)	Energies	Max. 99 999 999 Min. 0.01
	From 0.2Ib to Imax: ±(0.5%RDG)	Variables	Max. 9999 Min. 0.01
Phase-neutral voltage	In the range Un: ±(0.5% RDG)	Memory	
Phase-phase voltage	In the range Un: ±(1% RDG)	Energy	10 ¹² cycles. Energy value is saved every time the less significant digit increases.
Frequency	Range: 45 to 65Hz.	Programming parameters	10 ¹² cycles. When a parameter is modified, only the relevant memory cell is overwritten
Active power	From 0.05 In to Imax, within Un range, PF=1: ±(1% RDG)	LEDs	Flashing red light pulses according to EN50470-3, EN62052-11, 1000 imp./kWh (min. period: 90ms) Fix orange light: wrong current direction (only with "B" measurement selection)
	From 0.1 In to Imax, within Un range, PF=0.5L or 0.8C: ±(1% RDG)	Current overloads	
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)	For 10ms	8450 A
	From 0.1 In to Imax, within Un range, sinphi=0.5L or 0.8C: ±(2% RDG)	Voltage Overloads	
Energies		Continuous	1.2 Un
Active energy	Class 1 according to EN62053-21	For 500ms	2 Un
		Input impedance	
Reactive energy	Class 2 according to EN62053-23	230VL-N	1.2Mohm
		120VL-N	1.2Mohm
Start-up current:	20mA Self-consumption is not measured.	5(65) A	< 1.25VA
Start-up voltage	90VLN	Wrong connection detection	Installation guide to indicate if connections are correctly carried out. Can be disabled.
Resolution	Display/serial communication	Phase sequence	Indicates if the phase sequence is not the correct one (L1-L2-L3)
Current	0.1/0.001 A	Correct current direction	Indicates if the current direction is not the right one (only with type "B" measurement selection).
Voltage	0.1/0.1 V		
Power	0.01 kW or kvarh / 0.1 W or var		
Frequency	0.1 Hz/0.1Hz		
PF	0.01/ 0.001		
Energies (positive)	0.01 kWh or kvarh / 0.1 kWh or kvarh		
Energies (negative)	0.01 kWh or kvarh / 0.1 kWh or kvarh		
Energy additional errors			
Influence quantities	According to EN62053-21		



Input specifications (cont.)

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)
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Digital input specifications

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

Output specifications

RS485 serial port	RS485 by screw connection. For communication of measured data, programming parameters	Data refresh time	1sec
Function	ModBus RTU (slave function)	Broadcast commands	Accepted without any replay frames. Compatible with Huawei devices.
Protocol	9.6, 19.2, 38.4, 57.6, 115.2 kbaud,	Read command	50 words available in 1 read command
Baud rate	even or no parity,	Rx/Tx indication	Rx segment on display is shown when a valid Modbus command is sent to that specific meter
Data format	1 to 247 (default: 01)		Tx segment on display is shown when a valid Modbus reply is sent back to the master.
Address	1/8 unit load. Maximum 247 devices on the same bus.		
Driver input capability			

General specifications

Operating temperature	From -25 to +55°C/from -13 to +131°F (PF option) From -25 to +65°C/from -13 to +149°F, indoor, (R.H. from 0 to 90% non-condensing @ 40°C)	Standard compliance Safety Metrology	EN62052-11 EN62053-21, EN50470-3
Storage temperature	From -30 to +80°C/from -22 to +176°F (R.H. < 90% non-condensing @ 40°C)	Approvals	CE
Overvoltage category	Cat. III	Connections Cable cross-section area	Measuring inputs: max. 16 mm ² , min. 2.5 mm ² with/without metallic cable ferrule; Max. screw tightening torque: 2.8 Nm 1.5 mm ² , Min./Max. screws tightening torque: 0.4 Nm
Insulation (for 1 minute)	4000 VAC RMS between measuring inputs and digital/serial output (see table) 4000 VAC RMS	Other terminals	
Dielectric strength	4000 VAC RMS for 1 minute	Housing Dimensions (WxHxD) Material	54 x 90 x 63 mm Noryl, self-extinguishing: UL 94 V-0
EMC Electrostatic discharges Immunity to irradiated electromagnetic fields	According to EN62052-11 15kV air discharge; Test with current: 10V/m from 80 to 2000MHz;	Sealing covers	Included
Electromagnetic fields	Test without any current: 30V/m from 80 to 2000MHz;	Mounting	DIN-rail
Burst	On current and voltage measuring inputs circuit: 4kV	Protection degree Front	IP51
Immunity to conducted disturbances	10V/m from 150KHz to 80MHz	Screw terminals	IP20
Surge	On current and voltage measuring inputs circuit: 4kV;	Weight	Approx. 240 g (packing included)
Radio frequency	According to CISPR 22		



Power supply specifications

Self power supply

208 to 400VAC VLL, -20%
+20% 50/60Hz

Power consumption

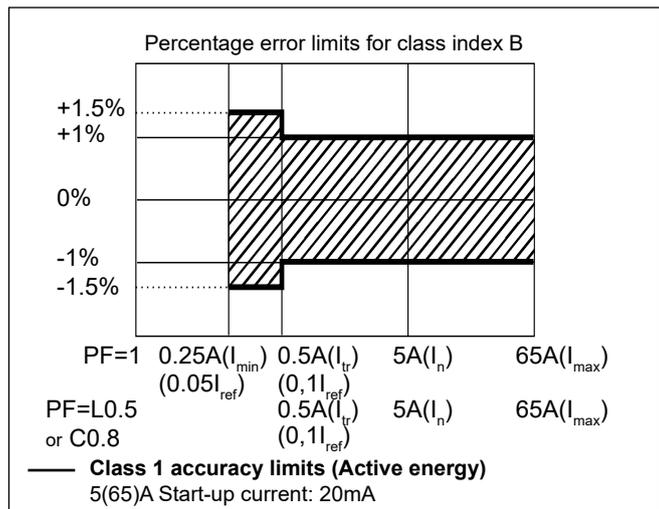
≤ 1W, ≤ 10VA

Insulation (for 1 minute) between inputs and outputs

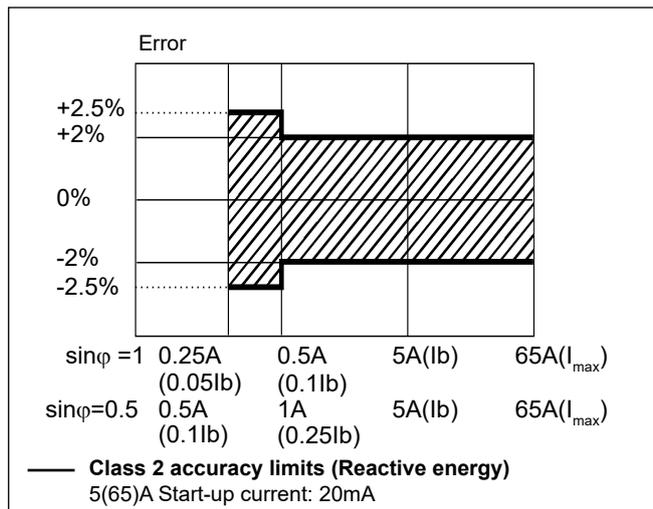
	Measuring input	Serial output	Digital input
Measuring input	-	4 kV	4 kV
Serial output	4 kV	-	0 kV
Digital input	4 kV	0 kV	-

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

kWh, accuracy (RDG) depending on the current



kvarh, accuracy (RDG) depending on the current



Display pages

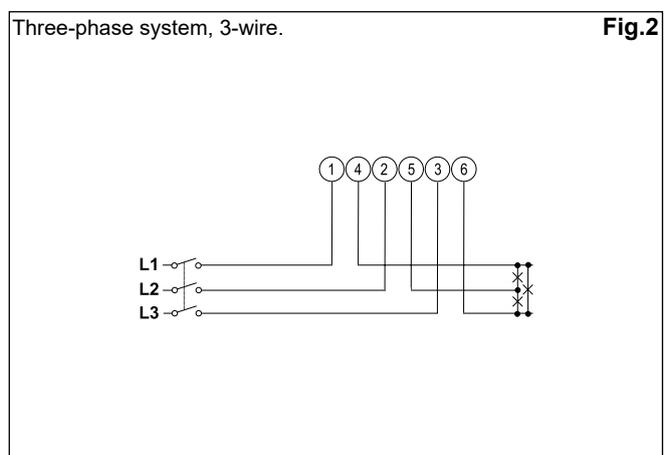
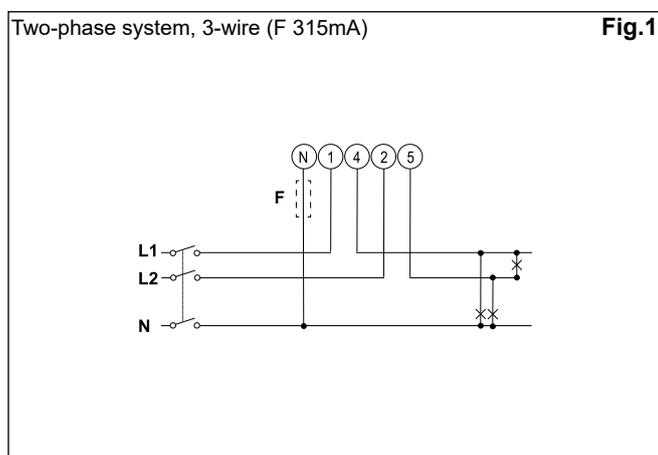
No	1 st row	2 nd row	3 rd row	“Full” mode	“Easy” mode	Note
0	kWh+ (imported)		kW system	X	X	With Measurement menu set to “A”, this is considering the total energy without considering the current direction.
1	kWh- (exported)		kW system	X	X	With Measurement menu set to “B”
2	kWh+ (imported)		V L-L system	X	X	
3	kWh+ (imported)		V L-N system	X	X	
4	kWh+ (imported)		PF system	X		
5	kWh+ (imported)		Hz	X		
6	kvarh+ (imported)		kvar system	X	X	With Measurement menu set to “A”, this is considering the total positive reactive energy without considering the current direction.
7	kvarh- (exported)		kvar system	X	X	With Measurement menu set to “B”
8	kWh+ (imported)		kVA system	X		
9	kWh+ (imported)	kWdmd peak	kWdmd	X		
10	kWh (t1)	“t1”	kW system	X	X	Only relevant to kWh+, with Tariff menu set to ON.
11	kWh (t2)	“t2”	kW system	X	X	Only relevant to kWh+, with Tariff menu set to ON.
12	kWh L1	kWh L2	kWh L3	X		With Measurement menu set to “A”, this is considering the total energy without considering the current direction. In case of Measurement menu set to “B”, this is considering only the imported energy.
13	kVA L1	kVA L2	kVA L3	X		
14	kvar L1	kvar L2	kvar L3	X		
15	PF L1	PF L2	PF L3	X		
16	V L-N L1	V L-N L2	V L-N L3	X		
17	V L-L L1	V L-L L2	V L-L L3	X		
18	A L1	A L2	A L3	X	X	
19	kW L1	kW L2	kW L3	X		

X= available

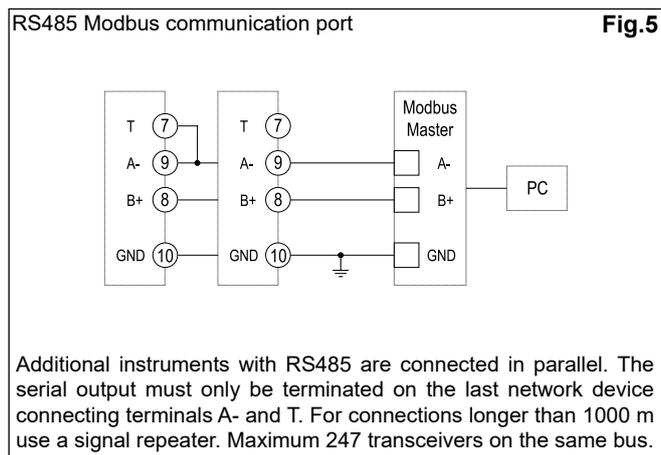
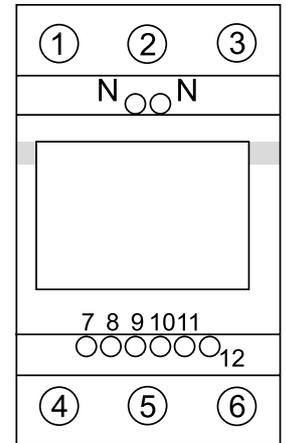
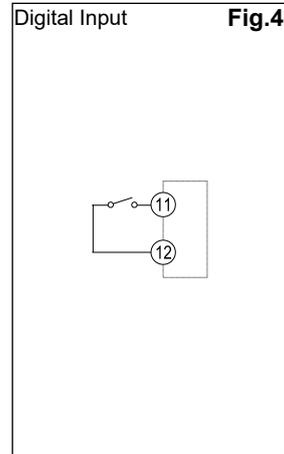
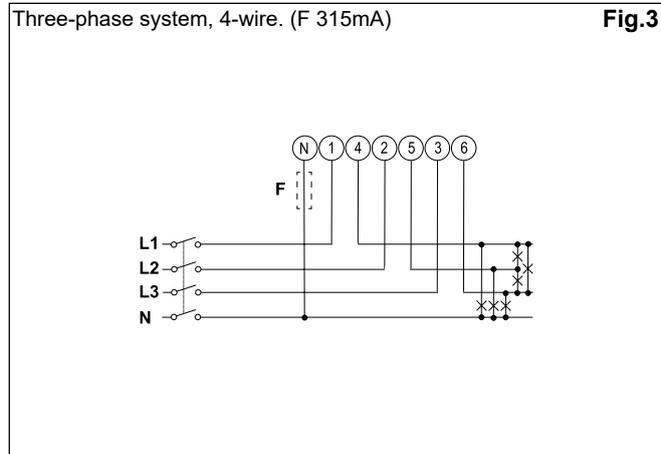
Additional available information on the display

Type	Description	Note
Info 1	Year (2016)	Year of production
Info 2	Serial (dddnnnA)	Serial number (ddd= day of the year; nnn=progressive number; A= production line, internal use only)
Info 3	Rev (A.01)	Firmware revision
Info 4	Puls led	Led pulsed/kWh
P3	System	System type
P6	Measure	Measurement type
P7	Install	Wrong connection detection
P8	P int	Integration time for Wdmd calculation
P9	Mode	Set of variables on display
P10	Tariff	Tariff enabling
P11	Home	Selected home page
P12-1	Pulse duration	Pulse ON duration
P12-2	Pulse rate	Pulse rate
P13	Address	Modbus serial address
P14	Kbaud	Modbus baud rate
P15	Parity	Modbus parity

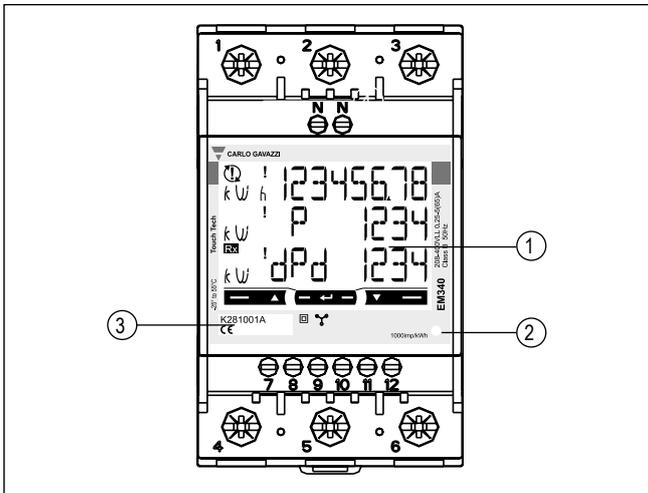
Wiring diagrams



Wiring diagrams (cont.)



Front panel description



1. **Display**
Backlit LCD display with touch key-pad.
2. **LED**
LED proportional to kWh reading
3. **Serial number**
Area reserved to serial number

Dimensions

