

Energy Management

Energy Meter

Type EM110



- Single phase energy meter
- Class 1 (kWh) according to EN62053-21
- Class B (kWh) according to EN50470-3
- Electro-mechanical display
- Energy readout on display: 6+1 digit
- Measurements on display: total kWh
- Direct current measurement up to 45AAC
- Self power supply
- Dimensions: 1-DIN module
- Protection degree (front): IP51
- Pulse output (by open collector PNP)
- Detects wrong current direction
- Certified according to MID Directive (option PF only): see "how to order" below

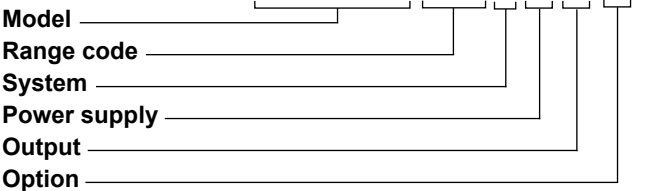
Product description

Single-phase energy meter with electro-mechanical data displaying; particularly indicated for active energy metering and for cost allocation in applications up to 45 A (direct connection), especially when energy reading is necessary during power down. Housing for DIN-rail mounting, with IP51 front degree protection. The meter is provided with pulse output proportional to the active energy being measured.

STANDARD

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

How to order **EM110-DIN AV8 1 X 01 X**



Type Selection

Range code	System	Power supply	Output
AV8: 230VLN AC - 5(45)A (Direct connection)	1: 1-phase 2-wire	X: Self power supply -30% +20% of the rated measuring input voltage, 45 to 65Hz	01: pulse output
AV7: 120VLN AC - 5(45)A (Direct connection)			
Option			
X: none			

MID Certified according to MID Directive, Annex "B" + Annex "D" or Annex "B" + Annex "F" for legal metrology relevant to active electrical energy meters (see Annex MI-003 of MID). Can be used for fiscal (legal) metrology.

How to order **EM110-DIN AV8 1 X S1 PF B**

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

Type Selection

Range code	System	Power supply	Output
AV8: 230VLN AC - 5(45)A (Direct connection)	1: 1-phase 2-wire	X: Self power supply -30% +20% of the rated measuring input voltage, 45 to 65Hz	O1: pulse output
AV7: 120VLN AC - 5(45)A (Direct connection)			
Option	Measurement		
PF: Certified according to MID Directive, Annex "B" + Annex "D" for legal metrology relevant to active electrical energy meters (see Annex MI-003 of MID). Can be used for fiscal(legal) metrology.	B: Only the total positive energy meter is certified according to MID. Negative energy is not measured.		

Input specifications

Rated Inputs		Sampling rate	4096 samples/s @ 50Hz 4096 samples/s @ 60Hz
Current type	1-phase loads, direct connection	Display	
Current range	5(45)A	Type	Electro-mechanical, h 5 mm
Nominal voltage	230VLN AC (AV8 option), 120 VLN (AV7 option)	Energies read-out	Total: 6+1 digit Only positive energy is integrated
Accuracy (@25°C ±5°C, R.H. ≤60%, 45 to 65 Hz)		Max. and Min. indication	Max. 999 999.9 Min. 0.0
AV7	I _{min} =0.25A; I _b : 5A, I _{max} : 45A; U _n : 120VLN -30% +30%	LEDs	Flashing red light pulses according to EN50470-3, EN62052-11, 1000 imp./ kWh (min. period: 90ms) Fix orange light: wrong current direction
AV8	I _{min} =0.25A; I _b : 5A, I _{max} : 45A; U _n : 230VLN -30% +20%	Current overloads	
Energies	Class 1 according to EN62053-21 and MID Annex MI-003 Class B (Class B (kWh) according to EN50470-3)	Continuous	45A, @ 50Hz
Start-up current:	20mA (AV7, AV8) Self-consumption is not measured.	For 10ms	1350 A
Start-up voltage	84V (AV7), 161V (AV8)	Voltage Overloads	
Resolution		Continuous	1.2 U _n
Energy	0.1 kWh	For 500ms	2 U _n
Energy additional errors		Input impedance	
Influence quantities	According to EN62053-21	Voltage input 230VL-N	> 750 Kohm
Temperature drift	≤200ppm/°C	Voltage input 120VL-N	> 750 Kohm
		Current inputs: 5(45) A	< 0.5 VA

Output specifications

Static output		Output type	EN62052-31 open collector PNP
Purpose	For pulse output proportional to the active energy (kWh)	Load	V _{ON} 1 VDC; max. 100 mA V _{OFF} 80 VDC max
Pulse rate	1000 pulses per kWh		
Pulse ON duration	30ms, according to		

General specifications

Operating temperature	-25 to +65 °C, indoor, (R.H. from 0 to 90% non- condensing @ 40°C)	Standard compliance	EN62052-11 EN62053-21, EN50470-3
Storage temperature	-30°C to +80°C (R.H. < 90% noncondensing @ 40°C)	Approvals	CE, MID (PF option only)
Overvoltage category	Cat. III	Connections	
Insulation (for 1 minute)	4000 VAC RMS between measuring inputs and digital/serial output (see table) 4000 VAC RMS	Cable cross-section area	Measuring inputs: 6 mm ² , with/without metallic cable ferrule; Max. screw tightening torque: 1.1 Nm 1.5 mm ² , Min./Max. screws tightening torque: 0.4 Nm
Dielectric strength	4000 VAC RMS for 1 minute	Other terminals	
EMC		Housing	
Electrostatic discharges	According to EN62052-11 15kV air discharge;	Dimensions (WxHxD)	17.5 x 63 x 90 mm
Immunity to irradiated electromagnetic fields	Test with current: 10V/m from 80 to 2000MHz; Test without any current: 30V/m from 80 to 2000MHz;	Material	Noryl, self-extinguishing: UL 94 V-0
Burst	On current and voltage measuring inputs circuit: 4kV	Sealing covers	Included
Immunity to conducted disturbances	10V/m from 150KHz to 80MHz	Mounting	DIN-rail
Surge	On current and voltage measuring inputs circuit: 4kV;	Protection degree	
Radio frequency	According to CISPR 22	Front	IP51
		Screw terminals (cable inputs)	IP20
		Weight	Approx. 75 g (packing included)

Power supply specifications

Self power supply		Power consumption	≤1.0W, ≤ 8VA
AV8	230VAC VL-N, -30% +20% 50/60Hz		
AV7	120VAC VL-N, -30% +30% 50/60Hz		

Insulation (for 1 minute) between inputs and outputs

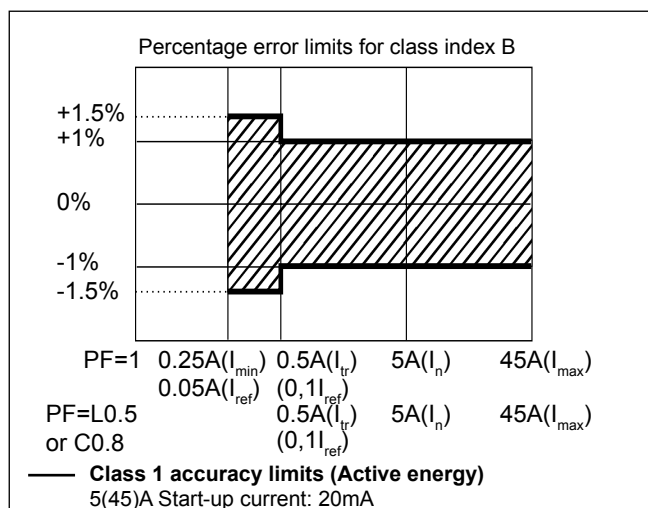
	Measuring input	Auxiliary power supply	Digital output
Measuring input	-	0 kV	4 kV
Digital output	4 kV	4 kV	-

MID "Annex MI-003" compliance (PF option only)

Accuracy	$0.9 U_n \leq U \leq 1.1 U_n$; $0.98 f_n \leq f \leq 1.02 f_n$; f_n : 50 Hz; $\cos\varphi$: 0.5 inductive to 0.8 capacitive. Class B Considering listed I_b or I_n values
Operating temperature	-25 to +55°C (13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C)
EMC compliance	E2
Mechanical compliance	M2

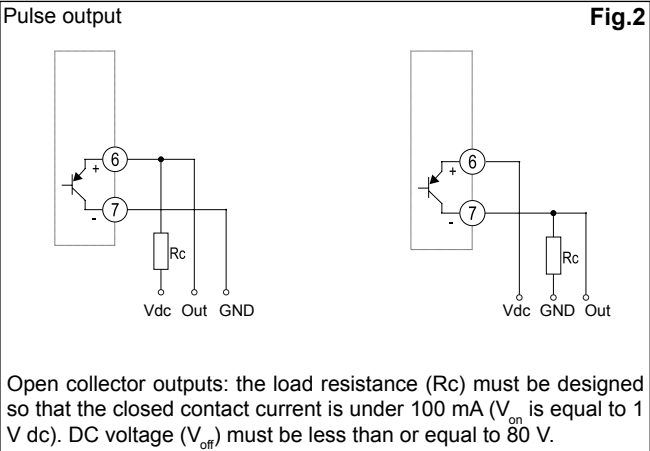
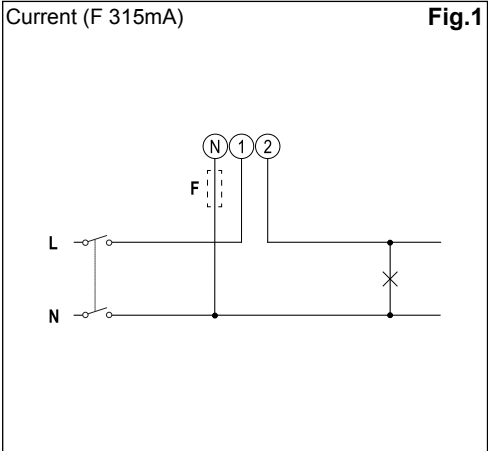
Accuracy according to EN50470-3

kWh, PF=accuracy (RDG) depending on the current

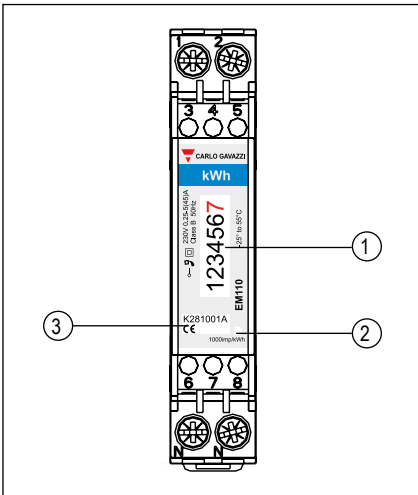




Wiring diagrams



Front panel description



- 1. **Display**
Electro-mechanical type with total kWh indication
- 2. **LED**
LED proportional to kWh reading
- 3. **Serial number and MID data**
Area reserved to serial number and MID-relevant data in PF versions

Dimensions

