

Energy Management Energy Meter GM3D



- Class 1 (kWh) according to EN62053-21
- Class B (kWh) according to EN50470-3
- Accuracy ± 0.5 RDG (current/voltage)
- Energy meter
- Instantaneous variables readout: 3 DGT
- Energies readout: 7 DGT
- System variables: W, Phase-sequence.
- Single phase variables: A
- Energy measurements: total kWh, partial kWh
- TRMS measurements of distorted sine waves (voltages/currents)
- Self power supply
- 1 pulsating output
- Dimensions: 4-DIN modules
- Protection degree (front): IP50
- Easy connections management

Product Description

Three-phase energy meter with built-in configuration joystick and LCD data displaying; particularly indicat-

ed for active energy metering and for cost allocation. Housing for DIN-rail mounting with IP50 (front) protec-

tion degree. Direct connection up to 65A. Moreover the meter is provided with one pulsating output proportion-

al to the active energy being measured.

Input specifications

Rated inputs Current type Voltage Current range (direct)	System type: 3 By direct connection 230 V _{LN} /400 V _{LL} AC 10 (65)AAC	Overload status	EEE indication when the value being measured is exceeding the "Continuous inputs overload" (maximum measurement capacity)
Accuracy (Display) (@25°C $\pm 5^\circ\text{C}$, R.H. $\leq 60\%$, 48 to 62Hz)	lb: 10A, I _{max} : 65A; Un: 184 to 276V _{LN} (318 to 480V _{LL}) From 0.004lb to 0.2lb: $\pm(0.5\% \text{ RDG} + 3\text{DGT})$. From 0.2lb to I _{max} : $\pm(0.5\% \text{ RDG} + 1\text{DGT})$.	Max. and Min. indication	Max. instantaneous variables: 999; energies: 9 999 999. Min. instantaneous variables: 0; energies 0.0
Current	In the range Un: $\pm(0.5\% \text{ RDG} + 1\text{DGT})$.	LEDs	Red LED (Energy consumption), 0.001 kWh by pulse Max frequency: 16Hz according to EN50470-1
Phase-neutral voltage	In the range Un: $\pm(1\% \text{ RDG} + 1\text{DGT})$	Measurements	See "List of the variables that can be connected to:"
Phase-phase voltage	In the range Un: $\pm(1\% \text{ RDG} + 1\text{DGT})$	Method	TRMS measurements of distorted wave forms.
Active power	$\pm(1\% \text{ RDG} + 2\text{DGT})$	Coupling type	Direct
Active energy	Class 1 according to EN62053-21 and Class B according to EN50470-3 Start up current: 40mA	Crest factor	lb 10A ≤ 4 (91A max. peak)
Energy additional errors Influence quantities	According to EN62053-21, EN50470-1-2	Current Overloads Continuous For 10ms	65A, @ 50Hz 1920A max, @ 50Hz
Temperature drift	$\leq 200\text{ppm}/^\circ\text{C}$	Voltage Overloads Continuous For 500ms	1.2 Un 2 Un
Sampling rate	1600 samples/s @ 50Hz 1900 samples/s @ 60Hz	Input impedance Voltage	Refer to "Power Consumption"
Display refresh time	750 msec.	Current	< 4VA
Display Type Instantaneous variables read-out Energies (imported)	2 lines (1 x 7 DGT; 1 x 3DGT) LCD, h 9mm 3 DGT Autorange 6+1DGT or 7DGT (P option);	Frequency	45 to 65 Hz
		Joystick	For variable selection.

Specifications are subject to change without notice GM3D E09 814 91

Output specifications

Digital outputs

Pulse type	100 pulses per kWh (0.01kWh/pulse).
Number of outputs	Output connected to the active energy (kWh)
Type	≥100ms < 120msec (ON), ≥120ms (OFF), according to EN62052-31
Pulse duration	

Static output

Purpose	For pulse output
Signal	V _{ON} 1.2 VDC/ max. 100 mA V _{OFF} 30 VDC max.
Insulation	By means of optocouplers, 4000 VRMS between output to measuring inputs.

Software functions

System selection

System 3-Phase unbalanced load	3-phase (4-wire); 3-phase (3-wire).
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Displaying

Up to 3 variables per page

Easy connection function

Automatic phase sequence detection with current and voltage synchronisation.

Both energy and power measurements are independent from the current direction. The displayed energy is always "imported"

General specifications

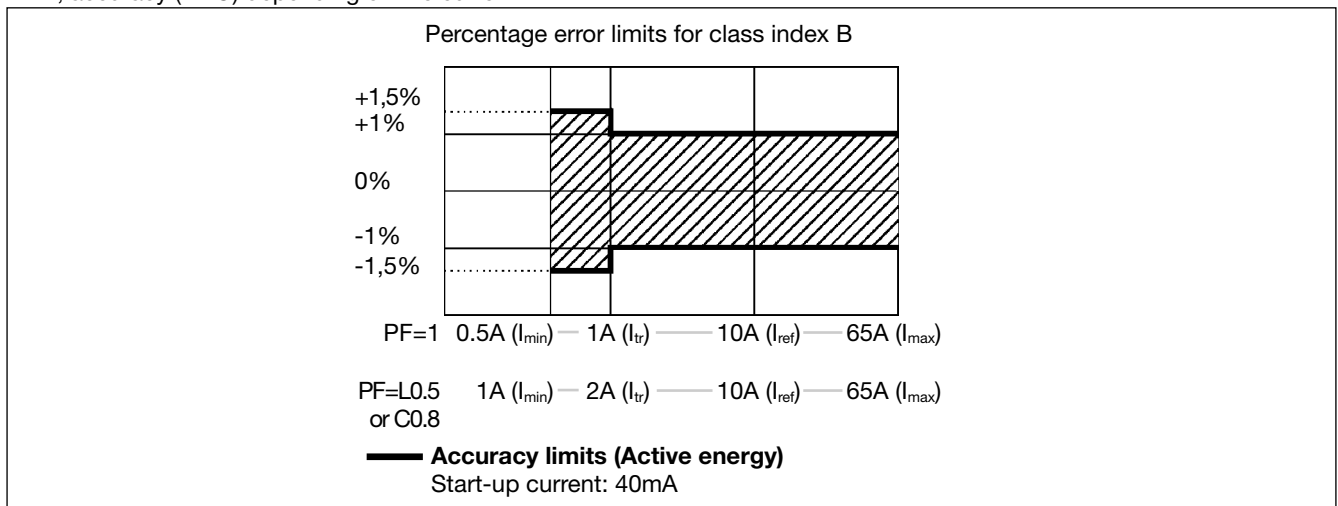
Operating temperature	-25°C to +55°C (-13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN62053-21 and EN50470-1	Radio frequency suppression	According to CISPR 22
Storage temperature	-30°C to +70°C (-22°F to 158°F) (R.H. < 90% non-condensing @ 40°C) according to EN62053-21 and EN50470-1	Standard compliance	IEC60664, IEC61010-1 EN60664, EN61010-1 EN62052-11, EN50470-1 EN62053-21, EN50470-3. MID "Annex MI-003" DIN43864, IEC62053-31 CE
Installation category	Cat. III (IEC60664, EN60664)	Safety	
Insulation (for 1 minute)	4000 VRMS between measuring inputs and digital output	Metrology	
Dielectric strength	4000 VRMS for 1 minute	Pulse output Approvals	
Noise rejection CMRR	100 dB, 48 to 62 Hz	Connections	Screw-type measuring inputs max. 16 mm ² ; min. 2.5 mm ² (by cable lug) Min./Max. screws tightening torque: 1.7 Nm / 3 Nm Output terminals: 1.5 mm ² Screws tightening torque: 0.5 Nm
EMC	According to EN62052-11	Housing DIN	71 x 90 x 64.5 mm
Electrostatic discharges	15kV air discharge;	Dimensions (WxHxD)	Nylon PA66,
Immunity to irradiated	Test with current: 10V/m from 80 to 2000MHz;	Material	self-extinguishing: UL 94 V-0 DIN-rail
Electromagnetic fields	Test without any current: 30V/m from 80 to 2000MHz;	Mounting	
Burst	On current and voltage measuring inputs circuit: 4kV	Protection degree	IP50 IP20
Immunity to conducted disturbances	10V/m from 150KHz to 80MHz	Front	
Surge	On current and voltage measuring inputs circuit: 4kV.	Screw terminals	
		Weight	Approx. 400 g (packing included)

Power supply specifications

Self supplied version	-15% +20% of U_n , 48-62Hz.	Power consumption	$\leq 20VA/1W$
Note	The instrument provided with "O1" option, working in a 3-phase system with neutral may work also if one or two phases are missing.		

Accuracy (according to EN50470-3)

kWh, accuracy (RDG) depending on the current



List of the available variables

No	Variable	3-ph. 4-wire bal. system	3-ph. 4-wire unbal. system	3 ph. 3-wire bal. system	3 ph. 3-wire unbal. system	Notes
1	A L1	x	x	x	x	
2	A L2	x	x	x	x	
3	A L3	x	x	x	x	
4	VL1	x	x	x	x	
5	VL2	x	x	x	x	
6	VL3	x	x	x	x	
7	W sys	x	x	x	x	sys=system
8	Phase seq.	x	x	x	x	
9	kWh	x	x	x	x	Total

(x) = available

Display pages

Display variables in 3-phase systems with or without neutral

No	1 st line	2 nd line	Phase Sequence	Notes
1	Total kWh	kW sys	Warning triangle if reverse sequence	
2	Partial kWh			
3	AL1 - AL2	AL3	Warning triangle if reverse sequence	
4	VL1 ^(*) - VL2 ^(*)	VL3 ^(*)	Warning triangle if reverse sequence	

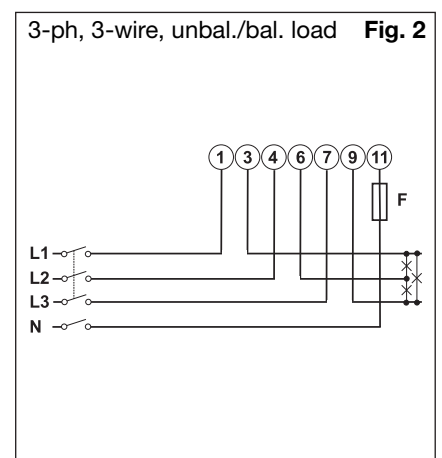
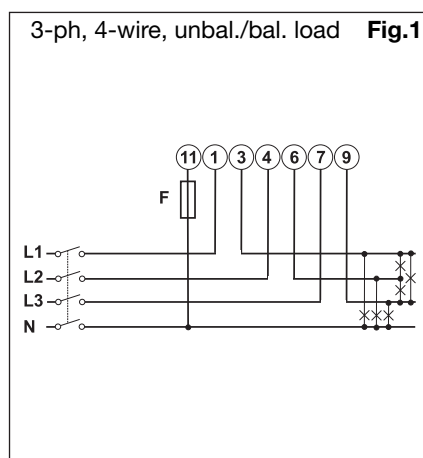
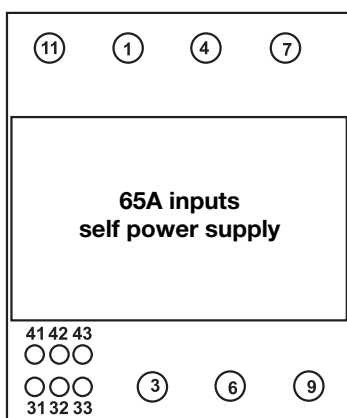
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(*) phase to neutral voltage.

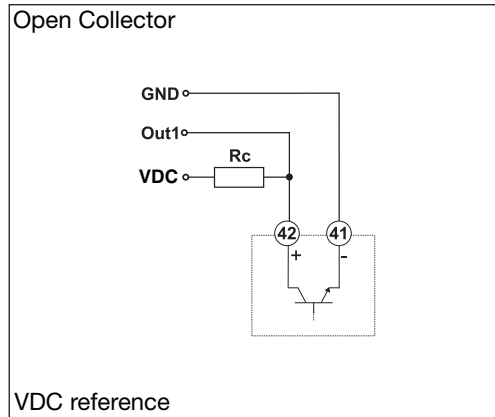
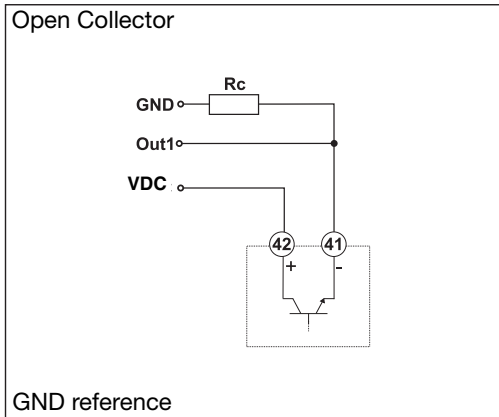
Insulation between inputs and outputs

	Measuring Inputs	Open collector outputs	Self power supply
Measuring Inputs	-	4kV	0kV
Open collector outputs	4kV	-	4kV
Self power supply	0kV	4kV	-

Wiring diagrams

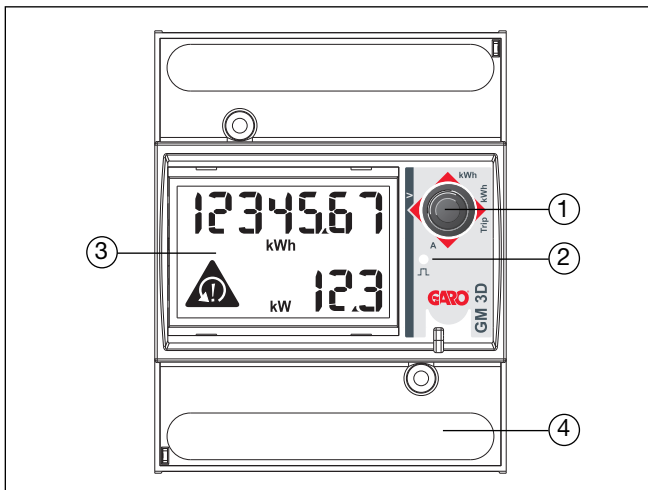


Open collector output wiring diagrams



The load resistances (R_c) must be designed so that the close contact current is lower than 100mA; the VDC voltage must be lower than or equal to 30VDC.

Front panel description



1. **Joystick**
To scroll the variables on the display.
2. **LED**
Red LED blinking proportional to the energy being measured.
3. **Display**
LCD-type with alphanumeric indications to display all the measured variables.
4. **Connections**
Screw terminal blocks for instrument wiring.

Dimensions

