

ENERGY-METERS THREE-PHASE

digital active and reactive energy-meters with measurement of active and reactive instantaneous power, set up for communication



EC3-80, EC3-5

- ▶ Direct connection 80 A
- ▶ Connection through CT .../5 A till 10.000/5 A

Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure three-phase systems or single-phase like in Residential, Utility and Industrial applications. Monitoring of the energy-consumption goes via a SO pulse output. The products can be set up to communicate with LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces are used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

- For information on the operation of the LAN, Profibus DP-V0, Modbus RTU, M-Bus, RS-485 and EIB-KNX interfaces, see page 29-41.

Function

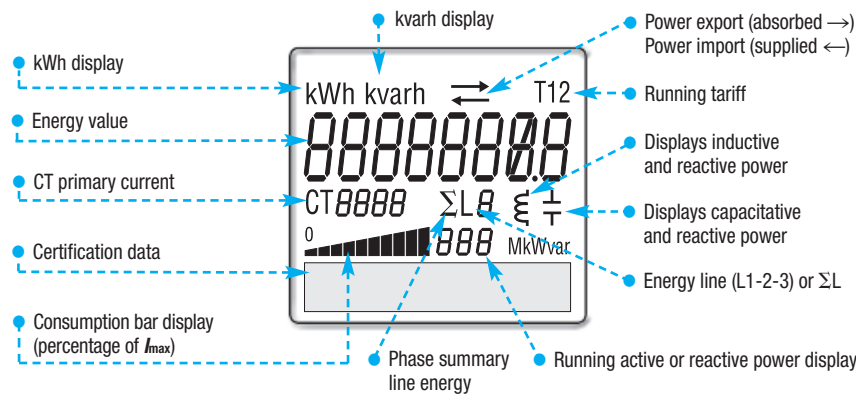
Display

		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Inductive or capacitative load
	Tariff 2	kvarh	Inductive or capacitative load
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value
Connection errors			PHASE Err
Primary transformer	5 ... 10.000/5	A	CT (current transformer)



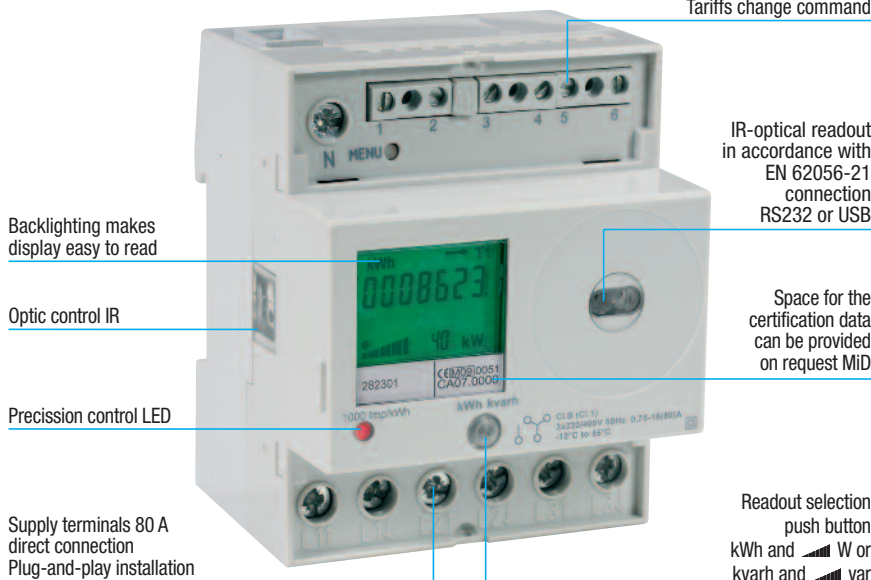
Display

Liquid crystal display with illuminated green background



4 standard module housing, suitable for DIN rail mounting direct connection 80 A

Terminals SO pulse outlet and Tariffs change command



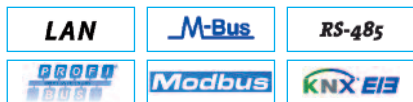
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Communication modules



for the technical data, see page 29-41.

Optical interfaces

- IR

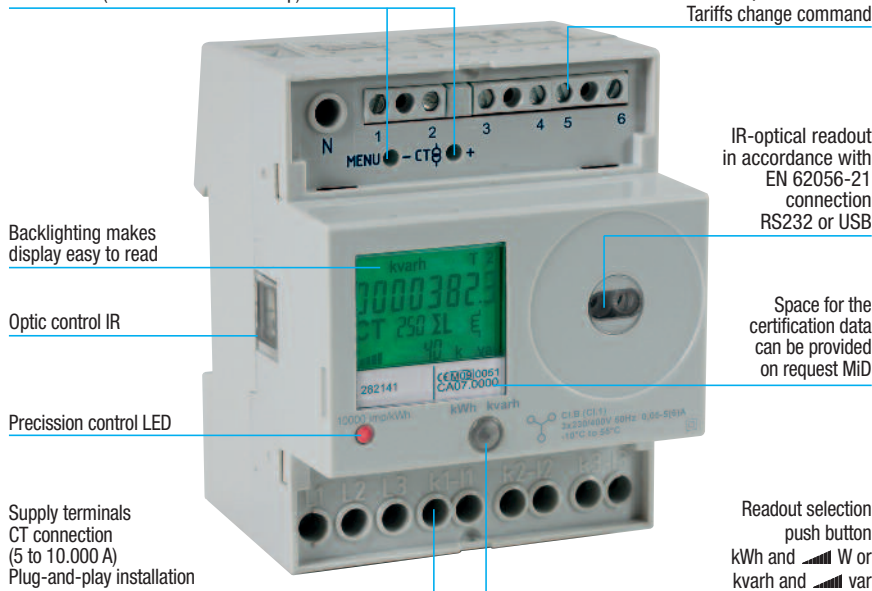
IR-optical readout in accordance with EN 62056-21 connection RS232 or USB



4 standard module housing, suitable for DIN rail mounting Connection through CT .../5 A till 10.000/5 A

CT selection (5 to 10.000/5 A - 5 A step)

Terminals S0 pulse outlet and Tariffs change command



Sealable terminal covers



ENERGY-METERS THREE-PHASE

digital active and reactive energy-meter with measurement of active and reactive instantaneous power, set up for communication - 2 tariffs - 2 SO



EC3-80, EC3-5



- ▶ **Direct connection 80 A**
- ▶ **Connection through CT .../5 A till 10.000/5 A**

Overview

Active energy-meters for three-phase alternating current with either 1, 8 digits digital counters. These meters have 2 SO output generating pulses for remote processing of the instantaneous energy active and reactive measurements for 2 tariff.

- Green backlighted LCD
- For direct connection 80 A, or for transformer .../5 A
- For transformer primary current of 5 A to 10.000/5 A. Input is in 5 A increments
- 8 digits - 8 display for energy values indication
- Parameter also readings from front mounted IR in accordance with EN 62056-21
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy according to EN 62053-23
- The standard versions are designed to be combined with the communication module
- Energy register zero setting (**NO MID**)
- Energy register for import and export
- Instantaneous power active and reactive display
- Sealable terminal covers
- 4 DIN modules wide (72 mm)

Technical data

Data in compliance with EN 50470-1

General characteristics

			direct connection 80 A	CT connection till 10.000/5 A
• Housing	DIN 43880	DIN	4 modules	4 modules
• Mounting	EN 60715	35 mm	DIN rail	DIN rail
• Depth		mm	70	70
• Reference standard	EN 50470-1-3, EN 62053-23-31	-	EN 50470-1-3 EN 62053-23-31	EN 50470-1-3 EN 62053-23-31

Operating features

• Connectivity	to single/three-phase network	n° wires	2-3-4	3-4
• Storage of energy values and configuration	digital display (EEPROM)	-	yes	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2	T1 and T2

Supply

• Rated control supply voltage U_n		VAC	230	230
• Operating range voltage		V	184 ... 276	184 ... 276
• Rated frequency f_n		Hz	50	50
• Rated power dissipation (max. for phase) P_v		VA (W)	≤8 (0.6)	≤8 (0.6)

Overload capability

• Voltage U_n	continuous; phase/phase	V	480	480
	1 second; phase/phase	V	800	800
	continuous; phase/N	V	276	276
	1 second; phase/N	V	460	460
• Current I_{max}	continuous	A	80	6
	momentary (0,5 s)	A	-	120
	momentary (10 ms)	A	2400	-

Display (readouts)

• Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
• Display type	LCD	n° digits	8 (1 decimal)	8
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3
• Active energy: 1 display, 8 digit + display import or export (arrow)	tariffs 2	kWh	0000000.0 ... 9999999.9	0000000.0 ... 9999999.9
• Reactive energy: 1 display, 8-digit + display import or export (arrow)	overflow	kWh	9999999.9 ... 0000000.0	9999999.9 ... 0000000.0
	tariffs 2	kvarh	0000000.0 ... 9999999.9	0000000.0 ... 9999999.9
	overflow	kvarh	9999999.9 ... 0000000.0	9999999.9 ... 0000000.0
• Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999	000 ... 999
• Instantaneous reactive power: 1 display, 3-digit		var, kvar or Mvar	000 ... 999	000 ... 999
• Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2
• Transformer primary current		A	-	5 ... 10.000
• Display period refresh		s	2	2

Measuring accuracy

• Active energy and power	at 23 ±1°C, referred to nominal values			
• Reactive energy and power	acc.to EN 50470-3	class 1	±1% (B)	±1% (B)
	acc.to EN 62053-23	class 2	±2%	±2%

Measuring input

• Type of connection			direct	transformer .../5 A
• Voltage U_n	phase/phase	V	400	400
	phase/N	V	230	230
• Operating range voltage	phase/phase	V	319 ... 480	319 ... 480
	phase/N	V	184 ... 276	184 ... 276
• Current I_{ref}		A	15	-
• Current I_n		A	-	5
• Current I_h		A	0.75	0.05
• Operating range current (I_{st} ... I_{max})	direct connection	A	0.025 ... 80	-
	transformer connection	A	-	0.010 ... 6
• Transformer current	primary current of the transformer	A	-	5 ... 10.000
	smallest input step adjus. in 5 A steps	A	-	5
• Frequency		Hz	50	50
• Input waveform		-	sinus. symm.	sinus. symm.
• Starting current for energy measurement (I_{st})		mA	25	10

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EC3-80, EC3-5



Technical data

Data in compliance with EN 50470-1			direct connection 80 A	CT connection till 10.000/5 A
Pulse output SO				
• Pulse output	acc.to EN 62053-31	-	yes	yes
• Terminal output	for act. and react. energy T1 and T2 for direct connection 80 A depending on the transf. factor, adjus.	Imp/kWh Imp/kWh	500 -	- 100-10-1
• Pulse duration		ms	30 ±2 ms	30 ±2 ms
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90	90
• Permissible current	Imp. OFF (leak. cur. max. 230 V AC/DC)	µA	1	1
Optical interfaces				
• Front side (<i>accuracy control</i>)	LED	imp/kWh	1000	10.000
Safety acc. to EN 50470-1				
• Indoor meter		-	yes	yes
• Degree of pollution		-	4	4
• Operational voltage		V	600	600
• Impulse voltage test		1.2/50 µs-kV	6	6
• Housing material flame resistance	UL 94	class	V0	V0
• Safety-sealing between upper and lower housing part (mod. 282331-282141)		-	yes	yes
Adaptor for Communication				
• Plug-and-play technology		-	•	•
• LAN Server (TCP/IP)	Ethernet 802.3	-	10/100 Mbps	10/100 Mbps
• Modbus RTU, Ascii / RS-485	RS-485 - 2 wires	-	up to 19.200 bps	up to 19.200 bps
• Profibus DP-V0	RS-485 - 2 wires	-	up to 12 Mbps	up to 12 Mbps
• M-Bus	2 wires	-	up to 9.600 bps	up to 9.600 bps
• EIB-KNX	EIB-standard	-	up to 9.600 bps	up to 9.600 bps
Connection terminals				
• Type cage main current paths	screw head Z +/-	POZIDRIV	PZ2	PZ1
• Type cage pulse output	blade for slotted screw	mm	0.8 x 3.5	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max.)	mm ²	1.5 (35)	1.5 (6)
	stranded wire with sleeve min. (max.)	mm ²	1.5 (35)	1.5 (6)
• Terminal capacity pulse outlet	solid wire min. (max.)	mm ²	0.14 (2.5)	0.14 (2.5)
	stranded wire with sleeve min. (max.)	mm ²	0.14 (1.5)	0.14 (1.5)
Environmental conditions				
• Mechanical environment		-	M1	M1
• Electromagnetic environment		-	E2	E2
• Operating temperature		°C	-10 ... +55	-10 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
• Relative humidity (not condensation)		%	≤80	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075	±0.075
• Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

(*) For the installation in a cabinet at least with IP51 protection.

Selection and ordering data

three-phase active and reactive energy-meter with measurement of active and reactive instantaneous power, set up for communication - 4 modules DIN

Code	Code	Description
Energy register zero setting (not calibratable - MiD)	Energy with MiD calibration on board	
22.461.300.000	22.461.300.100	three-phase digital active and reactive energy-meter with direct connection 0.75-15 (80) A - 2 tariffs - 2 SO
22.461.400.000	22.461.400.100	three-phase digital active and reactive energy-meter with connection by CT .../5 A, up to 10.000/5 A - 0.05 ... 5 (6) A - 2 tariffs - 2 SO

Optional - additional communication modules - 1 or 2 modules DIN

			for the technical data, see page 29-41.