

Digital active and reactive energy-meters with measurement of active and reactive instantaneous power, by IR side set up communication

► Direct connection 80 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 LAMCP/IP, Modbus RTU, M-Bus, EIB-KNX and SD-Card Datalogger interfaces, used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.



Function

Display

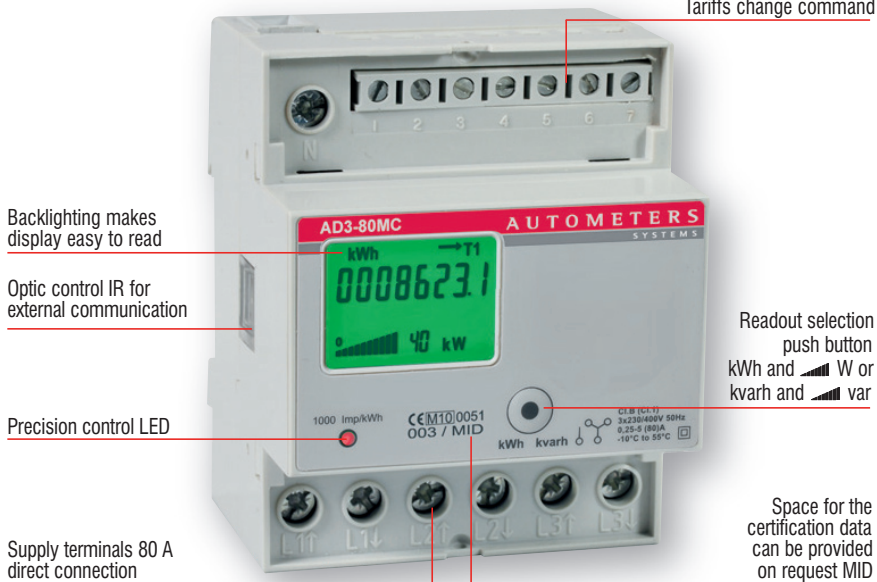
		Unit	ID
Active energy	Tariff 1	(M)-(k)-Wh	Energy absorbed or supplied
	Tariff 2	(M)-(k)-Wh	Energy absorbed or supplied
Reactive energy	Tariff 1	(M)-(k)-varh	Energy absorbed or supplied
	Tariff 2	(M)-(k)-varh	Energy absorbed or supplied
Active power		(M)-k-W	Utilization and instantaneous value
Reactive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

Communication modules



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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Overview

Active energy-meters for three-phase alternating current with either 2, 8 digits digital counters. These meters have 2 S0 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
- 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
- Most attractive operating range current ($I_{st} \dots I_{max}$)
for direct connection 80 A = 0.015 ... 80 A
for connection by CT .../5 A = 0.003 ... 5 A
- 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, EN 50470-3, EN 62053-23 and EN 62053-31			282331-282301 direct connection 80 A	282201-282141 CT connection till 10.000/5 A
General characteristics				
• Housing	DIN 43880	DIN	4 modules	4 modules
• Mounting	EN 60715	35 mm	DIN rail	DIN rail
• Depth		mm	70	70
• Reference standard	active energy	-	EN 50470-1-3	EN 50470-1-3
	reactive energy - pulse output		EN 62053-23-31	EN 62053-23-31
Operating features				
• Connectivity	to single/three-phase network	n° wires	2-4	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 (2 decimal)	8 (2 decimal)
	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	Wh	0.01	0.01
	overflow	MWh	999999.99	999999.99
• Reactive energy: 1 display, 8-digit + display import or export (arrow)	tariffs 2	varh	0.01	0.01
	overflow	Mvarh	999999.99	999999.99
• 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	1	1
Measuring accuracy				
• Active energy and power	acc.to EN 50470-3	class 1	B	B
• Reactive energy and power	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	5	-
• Current I_n		A	-	5
• Current I_{min}		A	0.25	0.05
• Operating range current ($I_{st} \dots I_{max}$)	direct connection	A	0.015 ... 80	-
	transformer connection (CT)	A	-	0.003 ... 6
• Transformer current	primary current of the transformer	A	-	5 ... 10.000
	smallest input step adjus. in 5 A steps	A	-	5

Technical data

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Measuring input				
• Frequency		Hz	50	50
• Input waveform		-	sinusoidal	sinusoidal
• Starting current for energy measurement (<i>Ist</i>)		mA	15	3
Pulse output S0				
• Pulse output	acc. to EN 62053-31	-	yes	yes
• Quantity pulse output	for act. and react. energy T1 and T2	imp/kWh	500	-
	for direct connection 80 A	imp/kWh	-	100-10-1
	depending on the transf. factor.	ms	30 ±2 ms	30 ±2 ms
• 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	pulse 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		-	2	2
• Operational voltage		V	300	300
• AC voltage test (EN 50470-3, 7.2)		kV	4	4
• Impulse voltage test		1.2/50 µs-kV	6	6
• Protection class (EN 50470)		class	II	II
• 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 (TCP/IP) interface	Ethernet 802.3	-	10/100 Mbps	10/100 Mbps
• Modbus RTU, Ascii interface	RS-485 - 3 wires	-	up to 19.200 bps	up to 19.200 bps
• M-Bus interface	2 wires	-	up to 9.600 bps	up to 9.600 bps
• EIB-KNX interface	EIB-standard	-	up to 9.600 bps	up to 9.600 bps
• SD-Card Datalogger		-	1 to 8 Gigabytes	1 to 8 Gigabytes
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

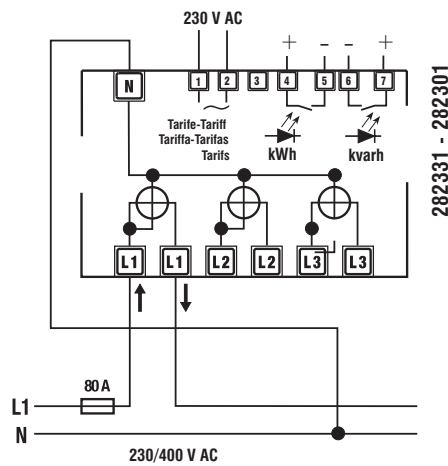
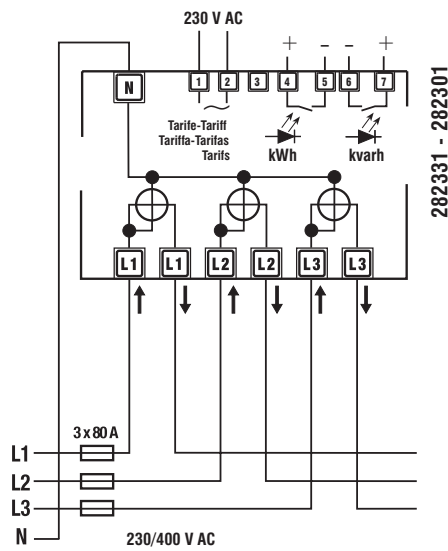
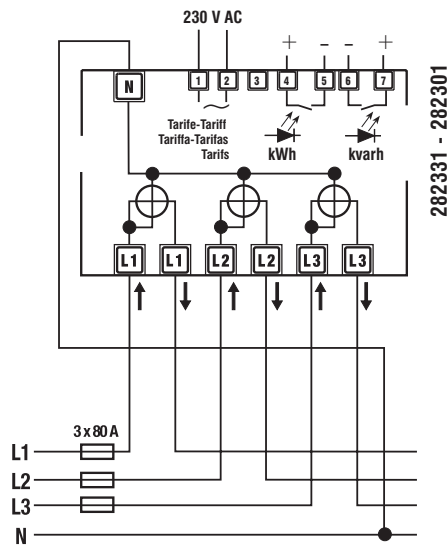
Code	Code	Description
Resettable Energy registers (not MID certified)	Non Resettable Energy registers MID certified	
282331	282301	three-phase digital active and reactive energy-meter with direct connection 0.25-5 (80) A - 2 tariffs - 2 S0
282201	282141	three-phase digital active and reactive energy-meter with connection by CT .../5 A, up to 10.000/5 A - 0.05-5 (6) A - 2 tariffs - 2 S0

Optional - additional communication modules - 1 module DIN

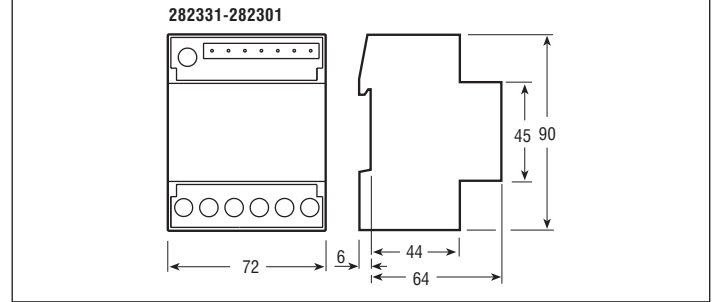
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Circuit diagrams



Wire N needs to be connected to the meter

Overall dimensions



A fuse of 80 A is recommended for the line protection.