

## Digital active and reactive energy meter 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 single-phase systems 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 TCP/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.

- For information on the operation of the LAN TCP/IP, Modbus RTU, M-Bus, EIB-KNX and SD-Card Datalogger interfaces, see page 22-30.



#### Function

##### Display

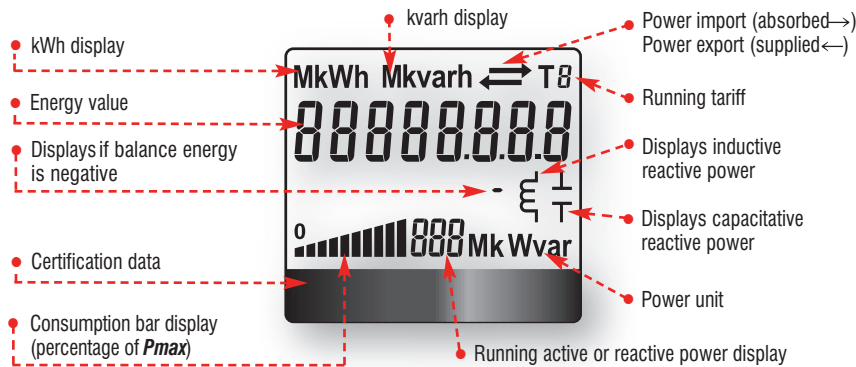
		Unit	ID
Active energy	Tariff 1	kWh	Energy absorbed or supplied
	Tariff 2	kWh	Energy absorbed or supplied
Reactive energy	Tariff 1	kvarh	Energy absorbed or supplied
	Tariff 2	kvarh	Energy absorbed or supplied
Active power		(k-M) W	Utilization and instantaneous value
Reactive power		(k-M) var	Utilization and instantaneous value

#### Communication modules



#### Display

Liquid crystal display with illuminated green background



### 2 standard module housing, suitable for DIN rail mounting Direct connection 80 A

Terminals SO pulse outlet and Tariffs change command

Optic control IR for external communication

Precision control LED

Supply terminals 80 A direct connection



Backlighting makes display easy to read

Space for the certification data can be provided on request MID

Readout selection push button kWh and W or kvarh and var

#### Sealable terminal covers





► **Direct connection 80 A**

## Overview

Active energy-meters for single-phase alternating current with either 1, 7 digits digital counters. These meters have 2 S0 output generating pulses for remote processing of the energy active and reactive measurements for 2 tariff.

- Green backlighted LCD
- For direct connection 80 A
- 7 digits for energy values indication
- 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 (*Ist ... I<sub>max</sub>*) for direct connection 80 A = 0.02 ... 80 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
- 2 DIN modules wide (36 mm)

## Technical data

Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31

### 282101-282551 direct connection 80 A

<b>General characteristics</b>			
• Housing	DIN 43880	DIN	2 modules
• Mounting	EN 60715	35 mm	DIN rail
• Depth		mm	70
• Reference standard	active energy	-	EN 50470-1-3, EN 62053-23-31
	reactive energy - pulse output		
<b>Operating features</b>			
• Connectivity	to single-phase network	n° wires	2
• Storage of energy values and configuration	digital display (EEPROM)	-	yes
• Display tariffs identifier	for active and reactive energy	n° 2	T1 and T2
<b>Supply</b>			
• Rated control supply voltage <i>U<sub>n</sub></i>		VAC	230
• Operating range voltage		V	184 ... 276
• Rated frequency <i>f<sub>n</sub></i>		Hz	50
• Rated power dissipation (max.) <i>P<sub>v</sub></i>		VA (W)	≤8 (0.6)
<b>Overload capability</b>			
• Voltage <i>U<sub>n</sub></i>	continuous	V	276
	momentary (1 s)	V	300
• Current <i>I<sub>max</sub></i>	continuous	A	80
	momentary (10 ms)	A	2400
<b>Display (readouts)</b>			
• Display type	LCD	n° digits	7 (1 decimal)
	digit dimensions	mm x mm	6.00 x 3
• Active energy: 1 display, 7-digit	tariffs 1-2	kWh	000000.0 ... 999999.9
+ display import or export (arrow)	overflow	kWh	999999.9 ... 000000.0
• Reactive energy: 1 display, 7-digit	tariffs 1-2	kvarh	000000.0 ... 999999.9
+ display import or export (arrow)	overflow	kvarh	999999.9 ... 000000.0
• Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999
• Instantaneous reactive power: 1 display, 3-digit		var, kvar or Mvar	000 ... 999
• Instantaneous tariff measurement		-	1
	1 display, 1-digit	-	T1 or T2
• Display period refresh		s	1
<b>Measuring accuracy</b>			
• Active energy and power	at 23 ±1°C, referred to nominal values		
• Reactive energy and power	acc.to EN 50470-3	%	B
	acc.to EN 62053-23	%	2
<b>Measuring input</b>			
• Type of connection	phase/N	-	direct
• Operating range voltage	phase/N	V	184 ... 276
• Current <i>I<sub>ref</sub></i>		A	15
• Current <i>I<sub>min</sub></i>		A	0.75
• Operating range current ( <i>I<sub>st</sub> ... I<sub>max</sub></i> )	direct connection	A	0.025 ... 80
• Frequency		Hz	50
• Input waveform		-	sinusoidal
• Starting current for energy measurement ( <i>I<sub>st</sub></i> )		mA	25
<b>Pulse output S0</b>			
• Pulse output	acc.to EN 62053-31	-	yes
• Pulse quantity	for active and reactive energy T1 and T2	imp/kWh	1000
• Pulse duration		ms	30 ±2 ms
• Required voltage	min. (max.)	VAC (DC)	5 ... 230 ±5% (5 ... 300)
• Permissible current	pulse ON (max. 230 V AC/DC)	mA	90
• Permissible current	Impuls OFF (leakage cur. max. 230 V AC/DC)	µA	1
<b>Optical interfaces</b>			
• Front side ( <i>accuracy control</i> )	LED	imp/kWh	1000
<b>Safety acc. to EN 50470-1</b>			
• Indoor meter		-	yes
• Degree of pollution		-	2
• Operational voltage		V	300

## Technical data

Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			282101-282551 direct connection 80 A
<b>Safety acc. to EN 50470-1</b>			
• AC voltage test (EN 50470-3, 7.2)		kV	4
• Impulse voltage test		1.2/50 $\mu$ s-kV	6
• Protection class (EN 50470)		class	II
• Housing material flame resistance	UL 94	class	V0
• Safety-sealing between upper and lower housing part (mod. 282551)		-	yes
<b>Adaptor for Communication</b>			
• Plug-and-play technology		-	•
• LAN (TCP/IP) interface	Ethernet 802.3	-	10/100 Mbps
• Modbus RTU, Ascii interface	RS-485 - 3 wires	-	up to 19.200 bps
• M-Bus interface	2 wires	-	up to 9.600 bps
• EIB-KNX interface	EIB-standard	-	up to 9.600 bps
• SD-Card Datalogger		-	1 to 8 Gigabytes
<b>Connection terminals</b>			
• Type cage main current paths	screw head Z +/- blade for slotted screw	POZIDRIV	PZ2
• Type cage pulse output	solid wire min. (max.)	mm	0.8 x 3.5
• Terminal capacity main current paths	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	1.5 (35)
	solid wire min. (max.)	mm <sup>2</sup>	1.5 (35)
	stranded wire with sleeve min. (max.)	mm <sup>2</sup>	0.14 (2.5)
		mm <sup>2</sup>	0.14 (1.5)
<b>Environmental conditions</b>			
• Mechanical environment		-	M1
• Electromagnetic environment		-	E2
• Operating temperature		°C	-10 ... +55
• Limit temperature of transportation and storage		°C	-25 ... +70
• Relative humidity (not condensation)		%	≤80
• Vibrations	50 Hz sinusoidal vibration amplitude	mm	±0.075
• Degree protection	housing when mounted in front (terminal)	-	IP51(*)/IP20

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

## Selection and ordering data

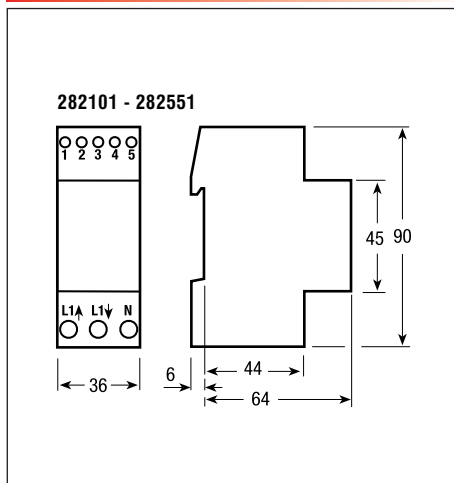
**single-phase active and reactive energy-meter with measurement of active and reactive instantaneous power, set up for communication - 2 modules DIN**

Code	Code	Description
Resettable Energy registers (not MID certified)	Non Resettable Energy registers MID certified	
282101	282551	single-phase digital active and reactive energy-meter with direct connection 0.75-15 (80) A - 2 tariffs - 2 S0

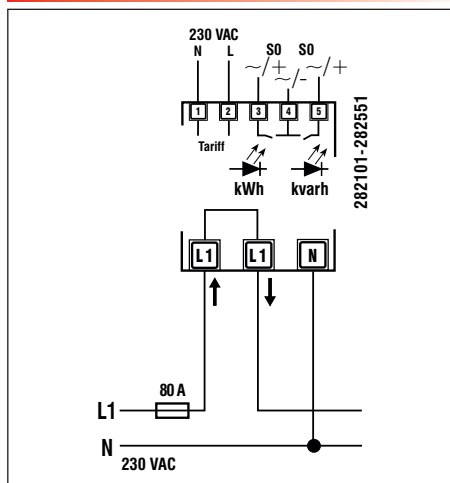
## Optional - additional communication modules - 1 module DIN



## Overall dimensions



## Circuit diagrams



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