AD1-80MC
Energy Meters Single-Phase

Application

The energy-meters "with a green back-lighted LCD screen for perfect reading" are used to measure single-phase like in Residential, Utility and Industrial applications.

Monitoring of the energy-consumption goes via a S0 pulse output. The products can be set up to communicate with the Modbus RS485 Autometers Protocol V6 interface, used to analyze the energy-consumption to reduce the running cost to a minimum for Industrial plants and buildings like Offices, Hospitals, Universities etc.

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.

Communication Modules

Modbus RS485
Autometers Protocol V6

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	Utilisation and Instantaneous Value
Reactive Power		(M)-(k)-var	Utilisation and Instantaneous Value
Connection Errors			Phase Err

2 Standard Module Housing *Suitable for DIN Rail Mounting*
Direct Connected 80 A

Terminals S0 Pulse Outlet and Tariffs Change Command

Backlighting makes display easy to read

Space for the Certification Data can be provided on request MID

Optic Control IR for external communication

Readout Selection Push Bar kWh and ▄▄▌ W or kvarh and ▄▄▌ var

Precision Control LED

Supply Terminals 80 A Direct Connection

Technical Data

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

General Characteristics			Direct Connection 80A
• Housing	DIN 43880	DIN	4 Modules
• Mounting	EN 60715	35mm	DIN Rail
• Depth		mm	70
• Reference Standard	Active Energy	-	EN 50470-1-3
	Reactive Energy - Pulse Output		EN 62053-23-31
Operating Features			
• Connectivity	o Single/Three-phase Network	Nº Wires	2-4
• Storage of Energy Values and Configuration	Digital Display (EEPROM)		Yes
• Display Tariffs Identifier	For Active & Reactive Energy	Nº 2	T1 and T2
Supply			
• Rated Control Supply Voltage **Un**		VAC	230
• Operating Range Voltage		V	184 ... 276
• Rated Frequency **Fn**		Hz	50
• Rated Power Dissipation (Max for Phase) **Pv**		VA (W)	<8 (0.9)
Overload Capacity			
• Voltage **Un**	Continuous: Phase/Phase	V	480
	1 Second: Phase/Phase	V	800
	Continuous: Phase/N	V	276
	1 Second: Phase/N	V	460
• Current **Imax**	Continuous	A	80
	Momentary (0.5s)	A	-
	Momentary (10ms)	A	2400
Display (Readouts)			
• Connection Errors & Phase Out	Discernible from Phase Sequence indic.	-	Phase Err
• Display Type	LCD	Nº Digits	8 (2 decimal)
	Digit Dimensions	mm x mm	6.00 x 3
• Active Energy: 1 Display, 8 Digit	Tariffs 2	Wh	0.01
+ Display Import or Export (Arrow)	Overflow	MWh	999999.99
• Reactive Energy: 1 Display, 8 Digit	Tariffs 2	varh	0.01
+ Display Import or Export (Arrow)	Overflow	Mvarh	999999.99
• 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 Measurment	1 Display, 1 Digit		T1 or T2
• Transformer Primary Current		A	
• Display Period Refresh		S	1
Measuring Accuracy			
• Active Energy and Power	Acc. to EN 50470-3	Class 1	3
• Reactive Energy and Power	Acc. to EN 62053-23	Class 2	2
Measuring Input			
• Type of Connection			Direct
• Voltage **Un**	Phase/Phase	V	400
	Phase/N	V	230
• Operating Range Voltage	Phase/Phase	V	310 ... 480
	Phase/N	V	184 ... 276
• Current **Iref**		A	5
• Current **In**		A	
• Current **Imin**		A	0.25
• Operating Range Current **(Ist ... Imax)**	Direct Connection	A	0.015 ... 80
	Transformer Connection (CT)	A	-
• Transformer Current	Primary Current of the Transformer	A	
	Smallest Input Step Adjus. in 5 A Steps	A	-
• Frequency		Hz	50
• Input Waveform		-	Sinusoidal
• Starting Current for Energy Measurment **(Ist)**		mA	15
Pulse Output 50			
• Pulse Output	Acc. to EN 62053-31 for Act. and React.		
	Energy T1 and T2		Yes
• Quantity Pulse Output	For Direct Connection 80A	Imp/kWh	500
	Depending on the transf. factor	Imp/kWh	-
• Pulse Duration		ms	30 +2ms
• Required Voltage	Min. (Max.)	VAC (DC)	5 ... 230 ±5% (5...300)
• Permissible Current	Pulse ON (Max 230V AC/DC)	mA	90
• Permissible Current	Pulse OFF (Leak Cur. Max. 230V AC/DC)	uA	1

Technical Data (Cont'd)

Optical Interfaces

• Front Side *(Accuracy Control)*	LED	imp/kWh	1000

Safety Acc. to EN50470-1

• Indoor Meter			Yes
• Degree of Pollution		-	2
• Operational Voltage		V	300
• AC Voltage Test (EN 50470-3, 7.2)		kV	4
• Impulse Voltage Test		1.2/50 µs 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. 282331-282141)**			Yes

Adapator for Communication

• 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

**Connection Terminals**

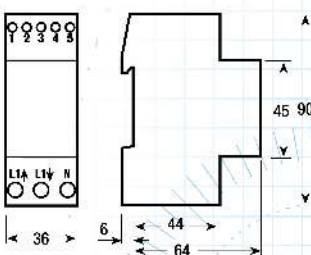|			
• Type Cage Main Current Paths	Screw Head Z +/-	POZ DRIV	PZ2
• Type Cage Pulse Output	Blade for Slotted Screw	mm	0.8 x 3.5
• Terminal Capacity Main Current Paths	Solid Wire Min. (Max.)	mm²	1.5 (35)
	Stranded Wire with Sleeve Min. (Max.)	mm²	1.5 (35)
• Terminal Capacity Pulse Outlet	Solid Wire Min. (Max.)	mm²	0.14 (2.5)
	Stranded Wire with Sleeve Min. (Max.)	mm²	0.14 (1.5)

Environmental Conditions

• Mechanical Environment		-	M1
• Electromagnetic Environment		-	E2
• Operating Temperature		°C	-10 ... +55
• Limit Temperature of Transportation/Storage		°C	-25 ... +70
• Relative Humidity (Not Condensation)		%	≤80
• Vibrations	50Hz Sinusodial Vibration Amplitude	mm	-0.075
• Degree Protection	Housing when mounted in front (term.)		IP51(*) / IP20

Display
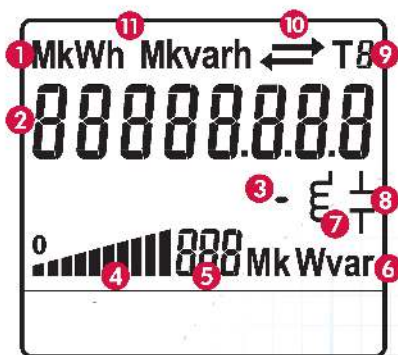
1. (M)-(k)-Wh Display
2. Energy Value
3. Displays if Balance Energy is Negative
4. Cunsumption Bar Display (Percentage of **Pmax**)
5. Running Active or Reactive Power Display
6. Power Unit
7. Displays Inductive and Reactive Power
8. Displays Capacitative and Reactive Power
9. Running Tariff
10. Power Import (absorbed -->)
    Power Export (supplied <--)
11. kvarh Display

Circuit Diagrams

Dimensions