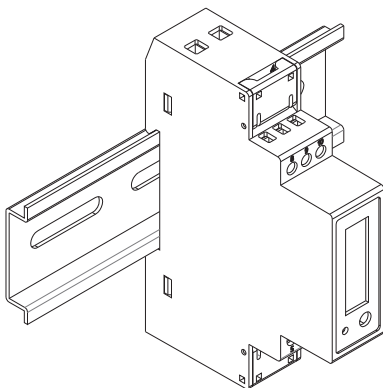




ZHEJIANG ETEK ELECTRICAL TECHNOLOGY CO., LTD.



Single-Phase Multifunctional DIN Rail Meter

EKEM1D Series

User Manual V1.0

1.Overview

1.1 Products Introduction

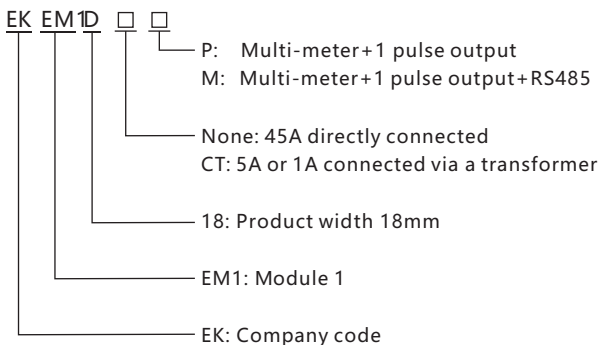
EKEM1Dseries single-phase multifunctional DIN rail meter is applied to single-phase two wire power grids. It can accurately measure various important power parameters ,such as voltage, current, power, frequency, import and export energy.It is suitable for real-time power monitoring systems. The detection results can be used not only for local display but also connected to industrial controlling equipments and computers, composing the measurement and control system.

1.2 Products Features

- ▲ Measures kWh,kVArh,kW,kVAr,kVA,PF,HZ,dmd,V,A,etc.
- ▲ Bi-directional measures IMP and EXP.
- ▲ One pulse output, active energy pulse.
- ▲ RS485, Modbus_RTU.
- ▲ DIN rail 35mm.
- ▲ 45A directly connected, 5A or 1A connected via a transformer.

2.Naming and specification

2.1 Naming instructions



2.2 Specification

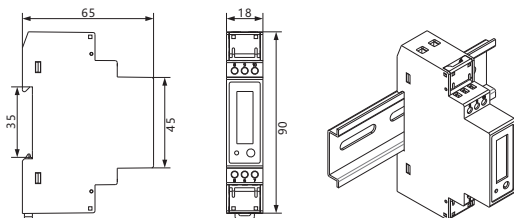
Model	Current input	Communication interface
EKEM1DP	45A directly connected	- - -
EKEM1DM	45A directly connected	RS485 Modbus_RTU
EKEM1DCTP	5A or 1A connected via a CT	- - -
EKEM1DCTM	5A or 1A connected via a CT	RS485 Modbus_RTU

3. Technical Parameters

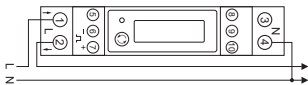
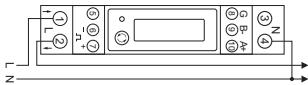
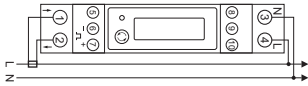
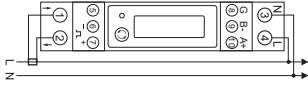
Parameters		Index
Input	Voltage	Voltage(Un): 230VAC
		Voltage range: 176-276VAC
	Current	directly connected: 0.25-0.5(45)A Overcurrent withstand: 30I _{max} for 0.01s
		connected via a CT: 0.25-0.5(6)A, Overcurrent withstand: 20I _{max} for 0.5s
	Frequency	50Hz
Display		Display: LCD with white back-light Max reading: 99999.9kWh
Accuracy		Active energy: Class 1, Class B
Output	Communication	Interface: RS485 Protocol: Modbus_RTU
	Pulse	Pulse constant: 1000imp/kWh
Power consumption		<2W/10VA
Withstand	AC voltage	4kV/1min
	DC impulse	6kV-1.2μs waveform
Environment	Temperature	Operating temperature: -25℃~+55℃
		Storage temperature: -40℃~+70℃
	Humidity	≤95%, non-condensing, no corrosive gas
	Altitude	≤2000m

4. Installation and Wiring

4.1 Shape and Dimensions (unit: mm, standard DIN35mm rail installation)

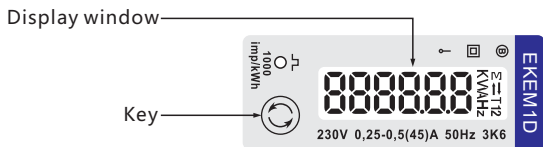


4.2 Wiring diagram

Model	Wiring diagram	Parameter
EKEM1DP		230V,50Hz 0,25-0,5(45)A
EKEM1DM		230V,50Hz 0,25-0,5(45)A RS485
EKEM1DCTP		230V,50Hz 0,25-0,5(6)A
EKEM1DCTM		230V,50Hz 0,25-0,5(6)A RS485

5. Operational Instruction

5.1 Panel Instruction



After the correct wiring is completed and powered on, the meter enters the measurement state, displaying as follows:

1		Full Screen
2		Software version
3		Total active energy

5.2 Key operation instructions

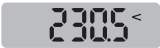
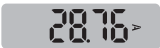
There are two types of key operations: long press and short press:

▲ Long press: press key for 3 seconds, it will enter to set-up mode.



▲ Short: press the key, the LCD display will scroll the measurements.

1		Total active energy (kWh)
2		Import active energy (kWh)
3		Export active energy (kWh)

4		Voltage (V)
5		Current (A)
6		Active power (W)
7		Frequency (F)
8		Power factor (PF)
9		Modbus address (ID) Default: 001
10		Baud rate,default 9600bps, optional:1200bps/2400bps/4800bps
11		Parity ,default: NONE optional:NONE/EVEN/ODD
12		Software version in kind prevail

6.Modbus register map

Function code	Description
04	Read input parameters

Address	Input Register Parameter			Start Address Hex	
	Parameters	Unit	Format	Hi byte	Low Byte
30001	Voltage	Volts	Float	00	00
30007	Current	Amps	Float	00	06
30013	Active power	Watts	Float	00	0C
30019	Apparent power	VA	Float	00	12
30025	Reactive power	Var	Float	00	18
30031	Power factor	1	Float	00	1E
30071	Frequency	Hz	Float	00	46
30073	Import active energy	kWh	Float	00	48
30075	Export active energy	kWh	Float	00	4A
30077	Import reactive energy	kvarh	Float	00	4C
30079	Export reactive energy	kvarh	Float	00	4E
30085	Total power demand	W	Float	00	54
30087	Max total power demand	W	Float	00	56
30089	Import power demand	W	Float	00	58
30091	Max Import power demand	W	Float	00	5A
30093	Export power demand	W	Float	00	5C
30095	Max Export power demand	W	Float	00	5E
30259	Current demand	Amps	Float	01	02
30265	Max current demand	Amps	Float	01	08
30343	Total active energy	kWh	Float	01	56
30345	Total reactive energy	kvarh	Float	01	58

Function code	Description
10	Set holding parameter
03	Read holding parameter

Address	Holding Register Parameter		Start Address Hex		Description
	Parameters	Format	Hi byte	Low byte	
40003	Demand Period	Float	00	02	Demand period, unit:min default 60min Settable range: 0~60, 0 represents Real time update (1 second update of demand) Length: 4 bytes

Address	Holding Register Parameter		Start Address Hex		Description
	Parameters	Format	HI byte	Low byte	
40019	Network Parity Stop	Float	00	12	Write the port parity/stop bits: default: 1 stop bit and even parity. Length : 4 byte. 0 = 1 stop bit and no parity, 1 = 1 stop bit and even parity. 2 = 1 stop bit and odd parity. 3 = 2 stop bits and none parity.
40021	Meter ID	Float	00	14	Ranges from 1 to 247, Default ID is 1. Length : 4 byte.
40029	Baud rate	Float	00	1C	Baud rate for MODBUS , 0 = 2400 baud 1 = 4800 baud 2 = 9600 baud(default) 5 = 1200 baud Length : 4 byte
40061	Backlit on time	Float	00	3C	Range: 0-121 minutes Default: 60 0 = the backlight is always on 121 = backlit permanently off Length: 4 bytes
461457	Reset historical data	HEX	F0	10	00 00: reset demand info Length : 2 byte
463745	Time of scroll display	BCD	F9	00	0-30s Default 0: not display in turns Length : 2 byte
463777	Measurement mode	HEX	F9	20	0001: mode 1 (total = import) 0002: mode 2 (Default) (total = import + export) 0003: mode 3 (total = import - export) Length : 2 byte