KM-09-E

1 PHASE kWh-MD METER TRUE RMS

Primus
User Manual

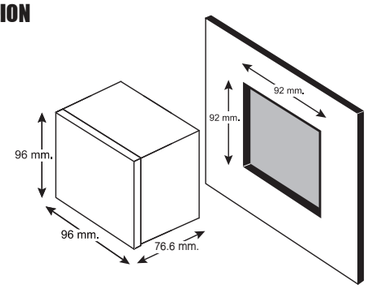
KM-09-E

1Ø kWh MD TRUE RMS RS 485

TECHNICAL SPECIFICATION

Power Supply		230 VAC ± 15 % 50-60 Hz
		115 VAC ± 15 % 50-60 Hz
Power Consumption		2.5 VA
Display		7-Segment, Size 0.56 Inch 4 Digit, 2 Rows
Input	Volt	Single Phase
	Volt Phase (V Full)	20-500 VAC
	Potential Transformer Ratio	0.1-400.0
	Voltage Primary	40000 V
	Voltage Secondary	5-300 V
	Current	Connection 1 CT, Direct
	Current (Direct)	0.03-10 A
	IB(Base Current)	5 A
	Current Transformer Ratio	1-2000
	Current Primary	9999 A
	Current Secondary	0.2-5 A
	Accuracy	KWH:IEC 61036 Class 1
Communication	Protocol	MODBUS RTU
	Baud Rate	1200, 2400, 4800, 9600 19200, 38400 bps
	Parity	None, Even, Odd
	Stop Bits	1, 2
	Data Bits	8 Bits
	Support Device Node	128
Ambient Operation	Temperature	-10 ˚C to 60 ˚C
	Humidity	85 % RH Non-Condensing
Ambient Storage	Temperature	-20 ˚C to 80 ˚C
	Humidity	85 % RH Non-Condensing
Protection Degree	Front Protection Rating	IP52
	Case Protection Rating	IP30
Installation		Panel Mounting
Material		ABS-V0
Size		96 x 96 x 76.6 mm.
Weigth		465 g.

DIMENSION



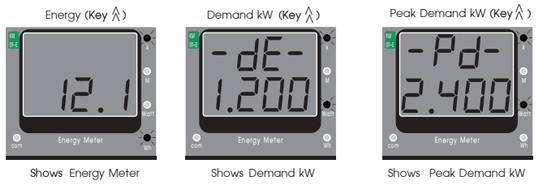
DESCRIPTION

- KM-09-E is a 1 Phase kWh and MD Meter
- Display by 7-Segment size 0.56 inches 4 digits 2 rows
- Able to connect with Current Transmitter Ratio (CT) to 10,000/5A. and Potential Transformer (CT) to 0.1-400.0
- LED show operation status and electrical units
- Communication with computer via port RS-485 MODBUS RTU PROTOCOL

OPERATION

The display has 3 Pages are the present value kWh, Demand kW, and Peak Demand kW and measured the Peak value by pressing the keypad UP. It will show Demand kW and Peak Demand kW value follow the sequence.

For LED Com use in model with the option by LED Com(Communication) will flash whenever the user communicates.



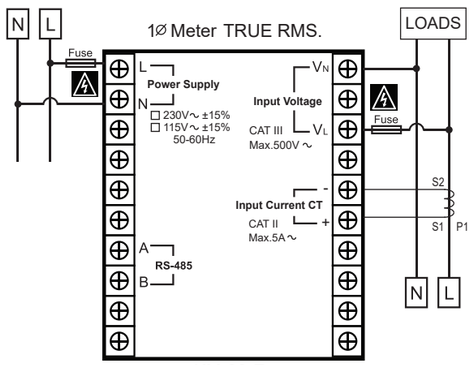
HOW TO RESET Pk-Demand Watt

1. Set PH-d equal to -CLr- .
2. Move meter screen display to Pk-Demand Watt after that press ⩔ hold it for 5 seconds until Pk-Demand Watt is equal to 0.

HOW TO RESET kWh

1. Set uH_d equal to -CLr-
2. Move meter screen display to kWh after that press ⩔ hold it for 5 seconds until kWh is equal to 0.

WIRING DIAGRAM



WARNING

- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.

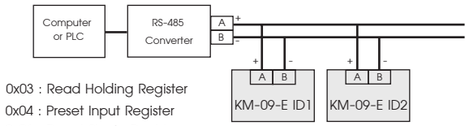
SERIAL COMMUNICATION

KM-09-E can read the parameter data in real-time via the BUS RS-485 system by Protocol

MODBUS RTU Mode

Command code which can use with Meter are

Wiring Diagram



0x03 : Read Holding Register
0x04 : Preset Input Register
0x06 : Preset Single Register
0x10 : Preset Multi Register

MODBUS Table of KM-09-E follow as

Address Decimal	Address Hex	Contents	Format	Word	Access
0-1	00-01	Current Register	Unsignde long	2	Read Only
2-3	02-03	Volt Register	Unsignde long	2	Read Only
4	04	Power Factor Register	Unsignde int	1	Read Only
5	05	Hz	Unsignde int	1	Read Only
6	06	Watt Unit Register	Unsignde int	1	Read Only
7	07	Watt Exponential	Unsignde int	1	Read Only
8-9	08-09	Watt Register	Unsignde int	2	Read Only
10	0A	Pk-Demand Watt Unit Register	Unsignde long	1	R
11	0B	Pk-Demand Watt Exponential	Unsignde int	1	R
12-13	0C-0D	Pk-Demand Watt Register	Unsignde long	2	R/W
14	0E	kWh Unit Register	Unsignde int	1	R
15	0F	kWh Exponential Register	Unsignde int	1	R
16-17	10-11	kWh Register	Unsignde long	2	R/W

Address Decimal	Address Hex	Contents	Format	Word	Access
256	0x100	CT Ratio Redigter	Unsignde int	1	R/W
257	0x101	PT Ratio Register	Unsignde int	1	R/W
258	0x102	Meter ID	Unsignde int	1	Read Only
259	0x103	Baud Rate	Unsignde int	1	Read Only
260	0x104	Comm (Parity, Stop Bit)	Unsignde int	1	Read Only
261	0x105				
262	0x106				
263	0x107				
264	0x108				
265	0x109	Clear Pk Demand	Unsignde int	1	R/W
266	0x10A	Clear kWh	Unsignde int	1	R/W

Example Send Command to Register Volt by Meter ID is 1

Slave ID	Fun	Hi Order Address	Low Order Address	Hi Order Word	Low Order Word	CRC Hi Order	CRC Low Order
01	03	00	00	00	02	C4	0B

Note All of example are Hex

The application MODBUS RTU with PLC/HMI

Protocol of KM-09-E designed from MODBUS RTU standard. If it uses with PCI/HMI the user has to read follow Register table for Holding Register (03) It must start at Address 40001and for Input Register (04) it must start at Address 30001.

Example Meter KM-09-E

The user needs to read the Volt Register value. The device must be set Address at Address 30001(For Fun 4) and if the user needs to read the kWh Register value. It must define the Address for reading to 30017 (For Fun 04).

Calculate Register from reading

$$\text{Volt} = \frac{\text{V reg}}{10} \qquad \text{Hz} = \frac{\text{Hz reg}}{10}$$

$$\text{Current} = \frac{\text{Current reg}}{1000} \qquad \text{Power Factor} = \frac{\text{Power Factor reg}}{1000}$$

Calculate Register Watt/Pk-Demand Watt Value

= Watt Register / 10

When Watt/Pk-Demand Unit Reg. = 0 --> Unit is Watt

Watt/Pk-Demand Unit Reg. = 1 --> Unit is kWatt

Calculate Register kWh

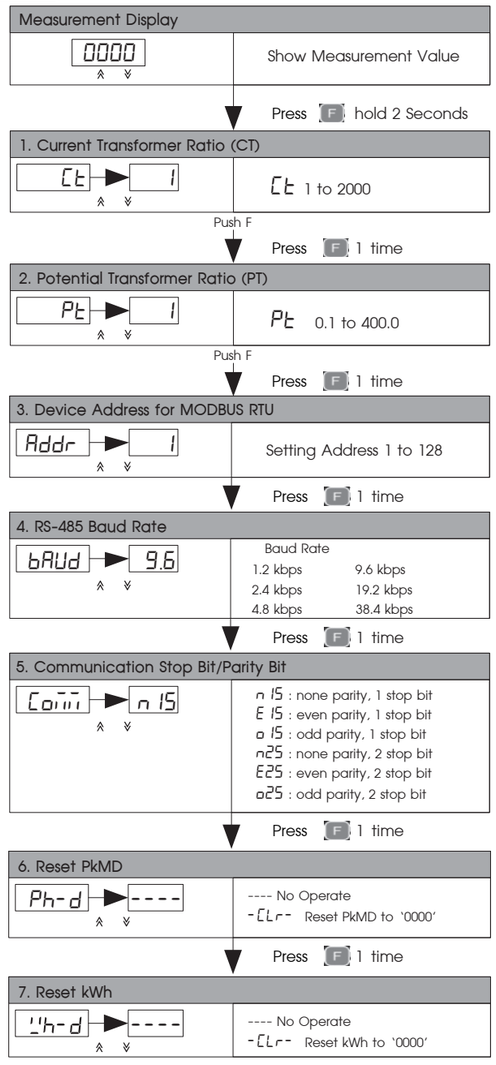
= kWh reg / 10

When kWh Unit reg. = 0 --> Unit is kWh

kWh Unit reg. = 1 --> Unit is MWh

CONFIGURATION

KM-09-E



ORDERING CODE

KM-09-E - [OPTION 1] - [POWER SUPPLY]

OPTION 1	
M	RS-485

CODE	POWER SUPPLY
NONE	230 VAC
115	115 VAC

Example : KM-09-E-M means measure KWh and MD and RS-485

KM-09-E

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