



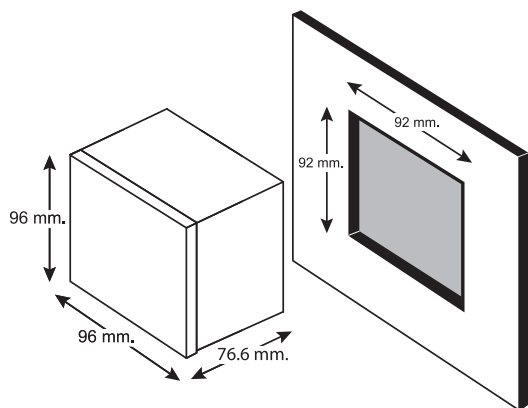
KM-12-V



TECHNICAL SPECIFICATION

Power Supply	230 VAC ±15% 50-60 Hz 115 VAC ±15% 50-60 Hz	
Power Consumption	2.5VA	
Display	7-Segment, Size 0.56 Inch, 4 Digit, 3 Rows	
Input	Voltage	3 Phase
	Phase Voltage (VFULL)	8-500 VAC
	Potential Transformer Ratio	0.1-400.0
	Primary Voltage	40000 V
	Secondary Voltage	8-500V
	Voltage Accuracy	± 1.0% FS
Communication	Frequency Accuracy	45-65 Hz ± 0.1% FS
	Protocol	MODBUS RTU
	Baud Rate	1200, 2400, 4800, 9600, 19200
	Parity	None, Even, Odd
	Stop Bits	1, 2
	Data Bits	8 Bits
Ambient Operation	Support Device Node	128
	Temperature	-10 °C to 60 °C
Ambient Storage	Humidity	85 % RH Non-Condensing
	Temperature	-20 C to 80 °C
Protection Degree	Humidity	85 % RH Non-Condensing
	Front Protection Rating	IP52
Installation	Case Protection Rating	IP30
Material	Panel Mounting	
Size	ABS-V0	
Weighth	96 x 96 x 76.6 mm.	
	465 g.	

DIMENSION



DESCRIPTION

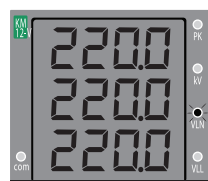
- KM - 12 - V is a device that measures the voltage. Can display three phase R, S, T simultaneously.
- 7 - Segment display size 0.56 in 4 digits, 3 rows
- Can be combined with PT up to 40,000 / 100 or 110 V
- High accuracy TRUE RMS measurement.
- LED status indicator and power unit.
- Can communicate with computer via RS - 485 port MODBUS RTU PROTOCOL
- Voltage range 8 - 500 VAC
- Frequency range 45 - 65 Hz
- Peak Hold to see the maximum Volt value in the system.

OPERATION

Display is 4 Pages. It shows the phase voltage, Line Voltage, Hz which current measured in 3 phases at the same time and Peak Volt Avg. The Peak Volt calculates the average of 15 minutes by pressing the up arrow. Show current voltage and press the down arrow to display Peak Volt Avg. On Peak Volt display, the Peak LED will flash while displaying.

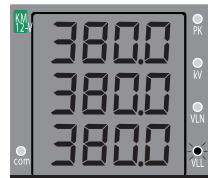
For Com LED (Communication) Used in Models with Option and Com LED (communication) will flash every time there is communication

Display Volt Phase - Neutral



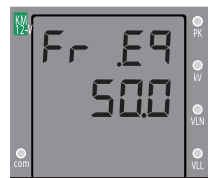
Display Volt Phase-Neutral 1,2,3

Display Volt Line to Line (Key ^)



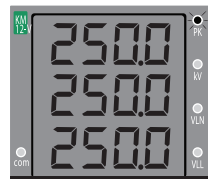
Display Volt Line to Line
Phase1 to Phase2, Phase2 to Phase3
Phase3 to Phase1

Display Hz (Key ^)



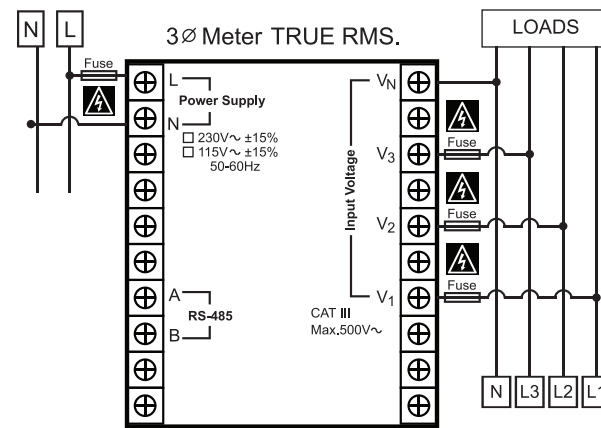
Display Hz

Display Peak (Key v)



Display Peak Volt

WIRING DIAGRAM



WARNING

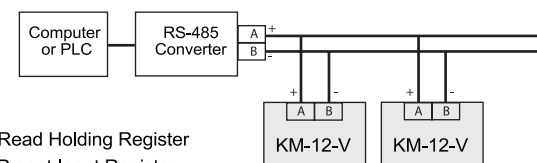
- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.

SERIAL COMMUNICATION

KM - 12 - V can read parameter values measured in real time with the system BUS RS - 485 by PROTOCOL. Communication is MODBUS RTU Mode.

A set of commands that can be used with the Meter

Wiring Diagram



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

Modbus table of km - 12 - v is shown in the following table

Address		Contents	Format	Word	Access
Decimal	Hex				
0-1	00-01	Volt Phase 1 Register	Unsignde long	2	Read Only
2-3	02-03	Volt Phase 2 Register	Unsignde long	2	Read Only
4-5	04-05	Volt Phase 3 Register	Unsignde long	2	Read Only
6-7	06-07	Volt Line 1-2 Register	Unsignde long	2	Read Only
8-9	08-09	Volt Line 2-3 Register	Unsignde long	2	Read Only
10-11	0A-0B	Volt Line 3-1 Register	Unsignde long	2	Read Only
12-13	0C-0D	Peak Volt Phase 1 Register	Unsignde long	2	Read Only
14-15	0E-0F	Peak Volt Phase 2 Register	Unsignde long	2	Read Only
16-17	10-11	Peak Volt Phase 3 Register	Unsignde long	2	Read Only
18	12	PT	Unsignde int	1	R/W
19	13	Hz	Unsignde int	1	Read Only

Using modbus RTU with PLC / HMI

PROTOCOL of KM - 12 - V is designed according to MODBUS standard. RTU if used with PLC / HMI. Read values for the register table for the Holding Register (03) must start at Address 40001 and for Input Register (04) must start at Address 30001

Example of sending Command reads register Volt value 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

Example of km - 12 - v meter

To read Volt Phase 1 Register must specify the address used. For readings on 30001 (for Fun 04) and to read values at Volt Line 1 - 2 Register must set the address used to read 30006 (for Fun 04)

Calculating readable register

$$\text{Volt} = \frac{V_{reg}}{10} \quad \text{Volt Line to Line} = \frac{VL-L_{reg}}{10}$$

$$\text{Hz} = \frac{Hz_{reg}}{10} \quad \text{Peak Volt} = \frac{\text{Peak Volt}_{reg}}{10}$$

CONFIGURATION

KM-12-V

Power ON

0000 Show Measurement Value

Press hold 2 seconds

1. PT Ratio

PT 0.1 to 400.0

Press 1 time

2. Device Address for MODBUS RTU

Addr Setting Address 1 to 128

Press 1 time

3. RS-485 Baud Rate

Baud Rate

1.2 kbps	9.6 kbps	57.6 kbps
2.4 kbps	19.2 kbps	
4.8 kbps	38.4 kbps	

Press 1 time

4. Communication Stop Bit/Parity Bit

Com n 1S

N1S : none parity, 1 stop bit
e1S : even parity, 1 stop bit
o1S : odd parity, 1 stop bit
n2S : none parity, 2 stop bit
e2S : even parity, 2 stop bit
o2S : odd parity, 2 stop bit

Press 1 time

5. Reset PkMD

Ph-d --- No Operate
-CLR- Reset PKMD to '0000'

How to Reset Pk-Demand volt

1. Set PH-d to -CLR-
2. Scroll down the Meter display on the Pk - Demand Volt page, then press Hold for 5 seconds until Pk - Demand Volt equals 0

ORDERING CODE

OPTION		POWER SUPPLY	
M	RS 485	NONE	230 VAC
NONE	None RS- 485	115	115 VAC

Example: KM - 12 - V - M means Volt Voltage and RS - 485.

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