



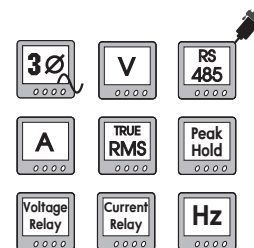
KM-21-P7



KM-21-P9



KM-21-DI



Specification

		KM-21-P7	KM-21-P9	KM-21-DI
Power Supply		230VAC ±15 % 50-60Hz		
		115VAC ±15 % 50-60Hz		
Power Consumption		2.5VA		
Display		7-Segment, Size 0.56 Inch, 4 Digit 2 Row		7-Segment, Size 0.39 Inch, 4 Digit 2 Row
Input	Voltage	3 Phase		
	Voltage Range	20-500VAC		
	Accuracy Volt	±0.5% FS.		
	Current	Connection 3 CT, Direct		
	Current Transformer Ratio	1-2000		
	Primary	9999 AMP		
	Secondary	0.01-5A		
	Accuracy Current	±0.5% FS.		
Output		2 Alarm 5A/250VAC		
Communi- cation	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	255		
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	Panel Encloser			
	Front Protection Rating	IP52		
	Case Protection Rating	IP30		
	DIN RAIL Encloser			
	Case Protection Rating	IP30		
Installation		Panel Mounting	Panel Mounting	DIN RAIL
Material		ABS-V0		
Size (mm.)		72x72x73	96x96x76.6	89.5x150x61.5
Weight (kg.)		275	300	200

Description

- Three Phase Volt-Amp Meter With Protection : KM-21 Series
- KM-21 Series is a meter for measuring voltage (V) and current (A), equipped with protection relays for three-phase power systems.
- Under and Over Voltage, Phase Sequence, Phase Loss, Phase Asymmetry Relay.
- Under and Over Current Protection Relay.
- Voltage measurement range: 20-500 VAC.
- Current measurement range: 0.01-5 A, maximum display up . to 9999 A (via CT Ratio Range 1-2000, 10,000/5 A).
- Fault Display with Memory showing the cause of Relay OFF.
- RS-485 Modbus RTU Protocol.
- Peak Hold for maximum voltage and current values.
- LED indicators for Output operation and Peak status.
- Manual / Auto display of voltage and current values for each phase.

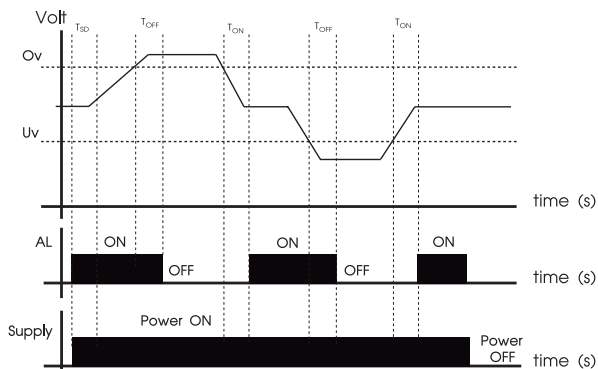
Operation

KM-21 Series is a meter that measures and displays both voltage and current in a single unit for a three-phase system. It is equipped with Voltage Protection Relay and Current Relay to protect against undervoltage, overvoltage, phase loss, phase asymmetry, and incorrect phase sequence. The meter can record the maximum peak values of voltage and current that occur, allowing analysis of system behavior.

The Voltage Protection Relay allows setting undervoltage and overvoltage thresholds in the range of 20-500 VAC for any one phase or all three phases. The ON delay time before operation can be set from 1-3600 seconds. However, if the phase sequence is incorrect, the relay will not operate and no delay time will be applied. Once operating, the relay monitors voltage conditions. If the voltage is lower or higher than the set value, or if phase asymmetry exceeds the set percentage, or if a phase loss occurs, the relay will switch OFF within 0-3600 seconds, which can be adjusted for fast or slow tripping as required. The cause of the fault is displayed on the display. When the voltage returns to within the set range, the relay will switch ON again after the preset ON delay time. After the circuit has been interrupted or the relay has turned OFF, the cause of the Relay OFF can be recalled and viewed on the display.

Operation[Continue]

Graph 1 illustrates the operation of the Voltage Protection Relay.



Graph 1

The Current Protection Relay allows setting undercurrent or overcurrent

thresholds in the range of 0.1–9999 A for any one phase or all three phases.

The ON delay time before operation can be set from 1–3600 seconds.

Once activated, the relay continuously monitors the current condition.

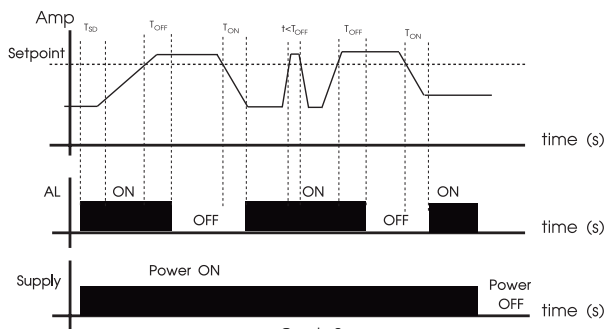
If the current exceeds the set value, the relay will switch OFF within 0–3600 seconds, which can be adjusted for fast or slow tripping as required. The cause of the fault will

be shown on the display. When the current returns to a level below the set value, the relay will switch ON again within 1–3600 seconds, or it can operate in the inverse function mode, where the relay will turn ON when the current exceeds the set value.

After the circuit has been interrupted or the relay has turned OFF, the cause of the Relay OFF can be recalled and viewed on the display. The operating characteristics of the Current Protection Relay are illustrated in Graphs 2 and 3.

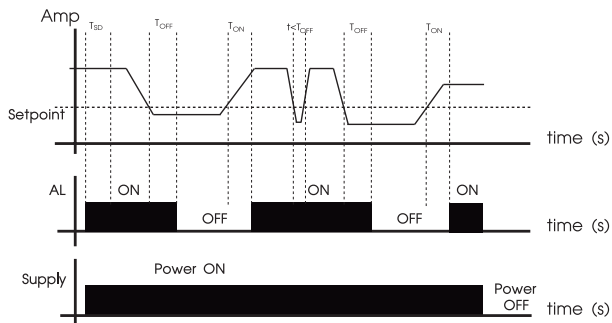
To transmit data to a computer, communication can be made via RS-485 using the Modbus RTU Protocol.

Graph 2 illustrates the operation of the Over Current Protection Relay.



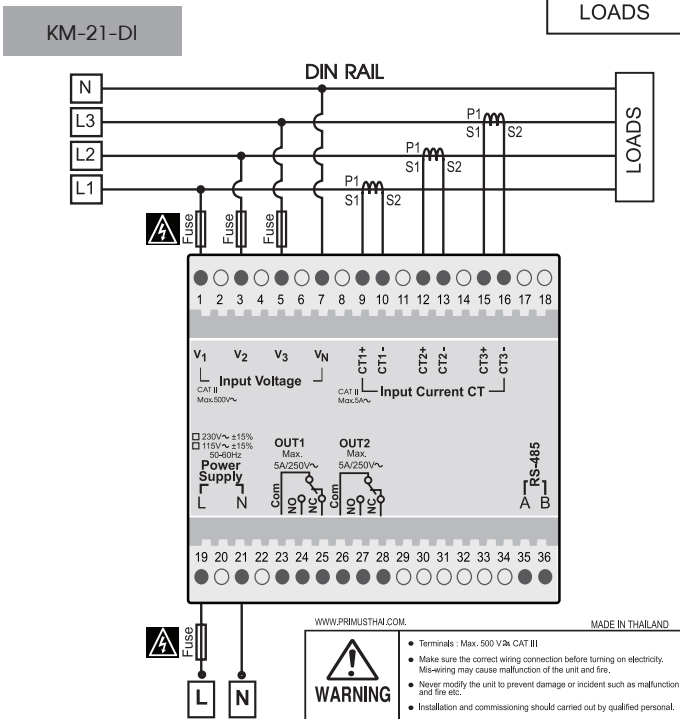
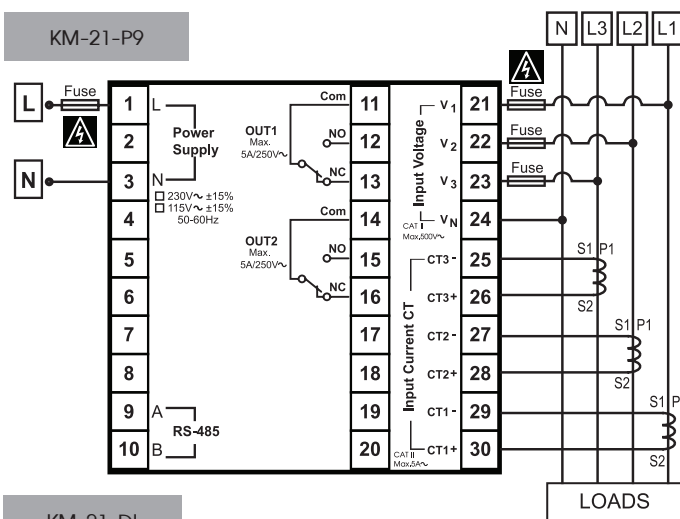
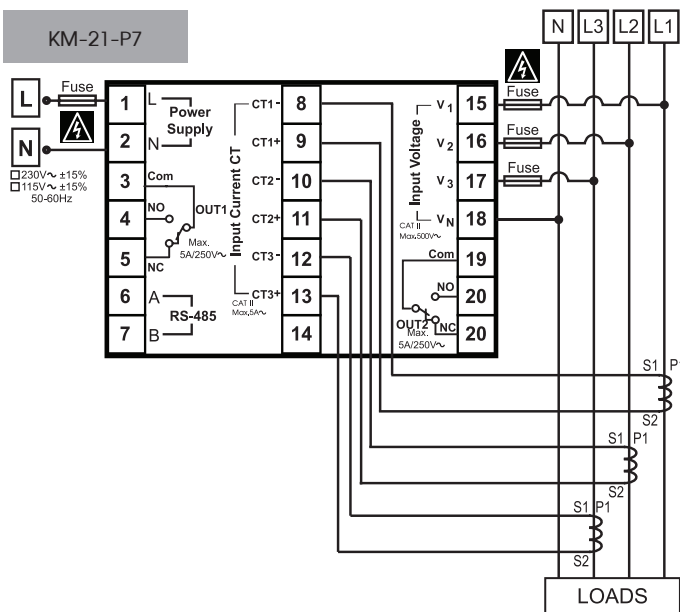
Graph 2

Graph 3 illustrates the operation of the Under Current Protection Relay.



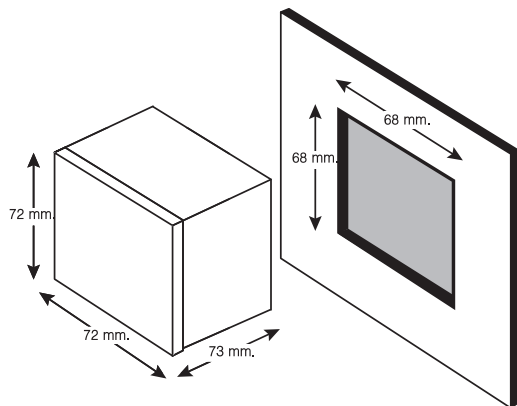
Graph 3

Wiring Diagram

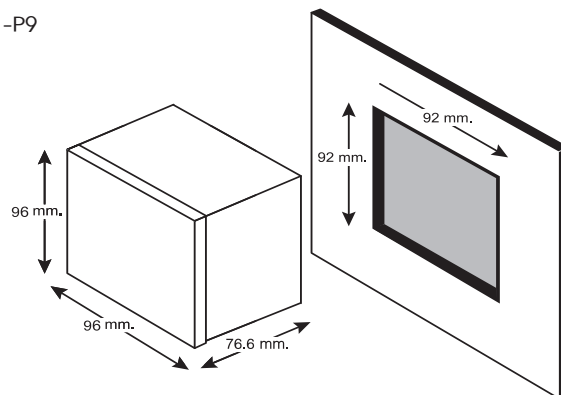


Dimension

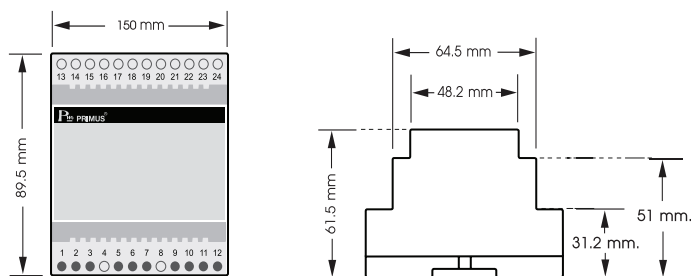
KM-21-P7



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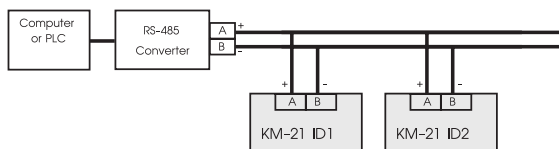
SERIAL COMMUNICATIONS

KM-21 can read various measured parameter values in real time via the RS-485 bus system, using the MODBUS-RTU Mode communication protocol.

The command set that can be used is as follows:

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

Wiring Diagram



Ordering Code

KM-21 -		Installation	- A	Option	-	Power Supply
Installation		Option 1		Power Supply		
DI	DIN RAIL	B	Alarm Relay 2 : Voltage and Current Protection Relay Function		NONE	230VAC
P7	Panel 72x72				115	115VAC
P9	Panel 96x96	M	RS-485			

Example: KM-21-P9-ABM means the unit is equipped with Alarm Relay 1, Alarm Relay 2, and RS-485 communication, panel-mounted with a size of 96 x 96 mm, and powered by 230 VAC.