



KM-22-P7

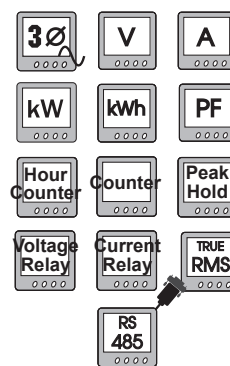


KM-22-P9

รบกวนสินค้าถ่ายรูปใหม่



KM-22-DI



Specification

		KM-22-P7	KM-22-P9	KM-22-DI
Power Supply		110-240VAC 15% 50-60Hz		
Power Consumption		2.5VA		
Display		7-Segment, Size 0.39 Inch, 4 Digit 2 Row, 7 Digit, 1 Row	7-Segment, Size 0.56 Inch, 4 Digit 2 Row 7-Segment, Size 0.39 Inch, 8 Digit 1 Row	7-Segment, Size 0.39 Inch, 4 Digit 2 Row, 8 Digit, 1 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	0.02-5A		
	Accuracy Current	±0.5% FS.		
	kWh	Class 1		
	Counter Input	Dry Contact Max 1k Hz		
	Reset Input	Dry Contact		
Output		SPST 3A 250VAC/3A 30VDC	SPDT 5A 250VAC/5A 30VDC	SPDT 5A 250VAC/5A 30VDC
Communi- cation	Protocol	Modbus RTU		
	Baud Rate	2400, 4800, 9600,19200, 38400, 57600 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		Panel Encloser		DIN RAIL Encloser
		Front Protection Rating : IP52		Case Protection Rating : IP30
		Case Protection Rating : IP30		
Installation		Panel Mounting		DIN RAIL
Material		ABS-V0		
Size (mm.)		72 x 72 x 73	96 x 96 x 76.6	90 x 105 x 61.5
Weight (kg.)		275	300	200

Description

- Three Phase Volt - Amp - kW - kWh - PF Meter With Protection Relay : KM-22-Series is a meter for measuring voltage (V), current (A), and electrical energy (kWh), complete with protection relays for 3-phase electrical systems.
- Under and Over Voltage, Phase Sequence, Phase Loss, and Phase Asymmetry Relay.
- Under and Over Current Protection Relay.
- Voltage measurement range: 20-500 VAC.
- Current measurement range: 0.01-5 A, maximum displayable current 9999 A via CT ratio range 1-2000 (10000/5A).
- kW, kWh, PF (COS), Hour Counter, Counter display with relay output.
- Fault display with memory indicating the cause of relay OFF.
- RS-485 Modbus RTU Protocol communication.
- Peak Hold for maximum values of voltage (V), current (A), and power (kW).
- LED indicators showing measured values for each phase, output status, and peak.
- Manual / Auto display of current and voltage values for each phase

Operation

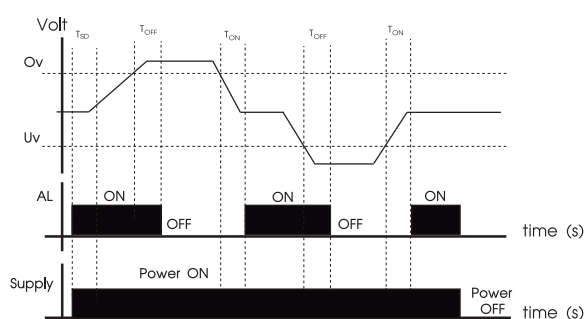
KM-22-Series is a meter for measuring voltage (V), current (A), and electrical energy (kWh), equipped with voltage protection relays for under-voltage and over-voltage protection, as well as current relays, for 3-phase electrical systems. It also displays kW, kWh, Power Factor (P.F.), Hour Counter, and Counter values. In addition, it can store the maximum peak values of voltage (V), current (A), and power (kW) that occur, for analysis of system performance.

The Voltage Protection Relay can be set for under-voltage and over-voltage protection in the range of 20-500 VAC for any single 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 activated, the relay monitors voltage conditions; if the voltage falls below or rises above the set value, if phase unbalance exceeds the set percentage, or if a phase loss occurs, the relay will command OFF.

Operation [Continue]

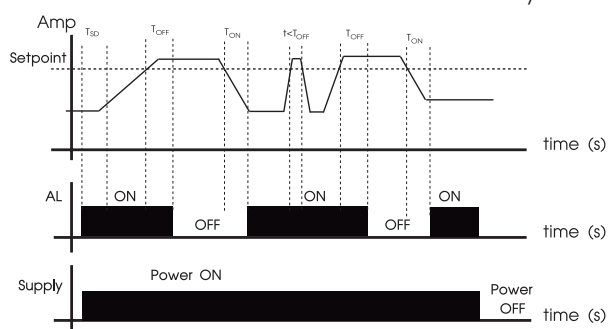
within 0–3600 seconds, which can be set for fast or slow tripping as required, and the cause will be displayed on the Display. When the voltage level returns to within the set voltage range, the relay will turn ON again within the preset time(ON Delay Time). After the circuit is cut or the relay is OFF, the cause of the relay OFF can be reviewed on the display. The operation graph of the Volt Protection Relay is shown in Figure 1.

กราฟที่ 1 แสดงการทำงานของ Voltage Protection Relay



The Current Protection Relay can be set for under-current or over-current protection in the range of 0.1–9999 A for any one phase or all three phases. The start delay time can be set from 1–3600 seconds (ON Delay Time). Once activated, the relay monitors the current condition; if the current exceeds the preset value, the relay will switch OFF within 0–3600 seconds, which can be adjusted for fast or slow tripping as required, and the cause will be shown on the Display. When the current level returns to below the preset value, the relay will turn ON again within 1–3600 seconds, or it can operate in the opposite manner (Inverse Function), where the relay turns ON when the current is higher than the preset value. After the circuit is cut or the relay is OFF, the cause can be reviewed on the display. The operation graph of the Current Protection Relay is shown in Figure 2.

กราฟที่ 2 แสดงการทำงานของ Current Protection Relay



Relay Output for kW, Hour, and Counter

The alarm relay for kW, Hour, and Counter can be selected to perform load switching by choosing one function as follows:

kW Function can be set in the range of 0–100% of the measuring range, and the start delay time can be set from 1–3600 seconds (ON Delay Time). Once activated, it monitors the kW in use; if the kW value exceeds the preset level, the relay will switch OFF within 0–3600 seconds.

The tripping time can be adjusted to be fast or slow as required, and the cause will be displayed on the Display.

If the kW value exceeds the preset level, the relay will switch OFF within 0–3600 seconds, which can be adjusted to trip faster or slower as required, and the cause will be shown on the Display. When the kW level returns to below the preset value, the relay will switch ON again within 1–3600 seconds, or it can operate in the opposite manner (Inverse Function), where the relay will turn ON when the kW value is higher than the preset level.

Hour Counter Function measures the operating hours of the machine and allows the desired operating time to be set. When the preset time is reached, the relay will switch ON, and it can be reset to OFF by pressing the button or by using the Terminal Reset.

Counter Function measures the number of products produced and compares it with energy consumption (kWh) to evaluate the electricity cost per unit produced (Cost per Unit). The desired quantity can be preset; when the preset quantity is reached, the relay will switch ON, and it can be reset to OFF by pressing the button or by using the Terminal Reset.

Display Manual and Auto Modes

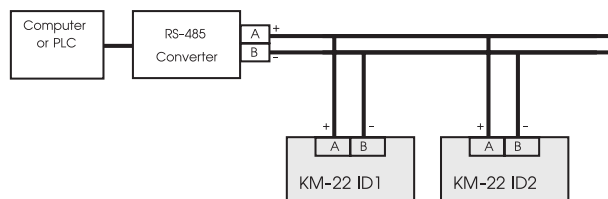
The display of measured values—Volt, Amp, kW, kWh, PF, Hour, and Counter—can be performed in Manual mode, where the user selects and views each value by pressing the keypad on the device, or in Auto mode, where the values of Volt, Amp, kW, kWh, PF, Hour, and Counter for each phase are displayed sequentially in rotation. The display time can be set from 10 seconds to 60 seconds per phase. If Auto display is not required, it can be disabled by setting the time to 0.

SERIAL COMMUNICATIONS

KM-22 can read various measured parameter values in real time via the RS-485 bus system. The communication protocol used is Modbus-RTU Mode.

The command set that can be used is:

Wiring Diagram



0 x 06 : Preset Single Register

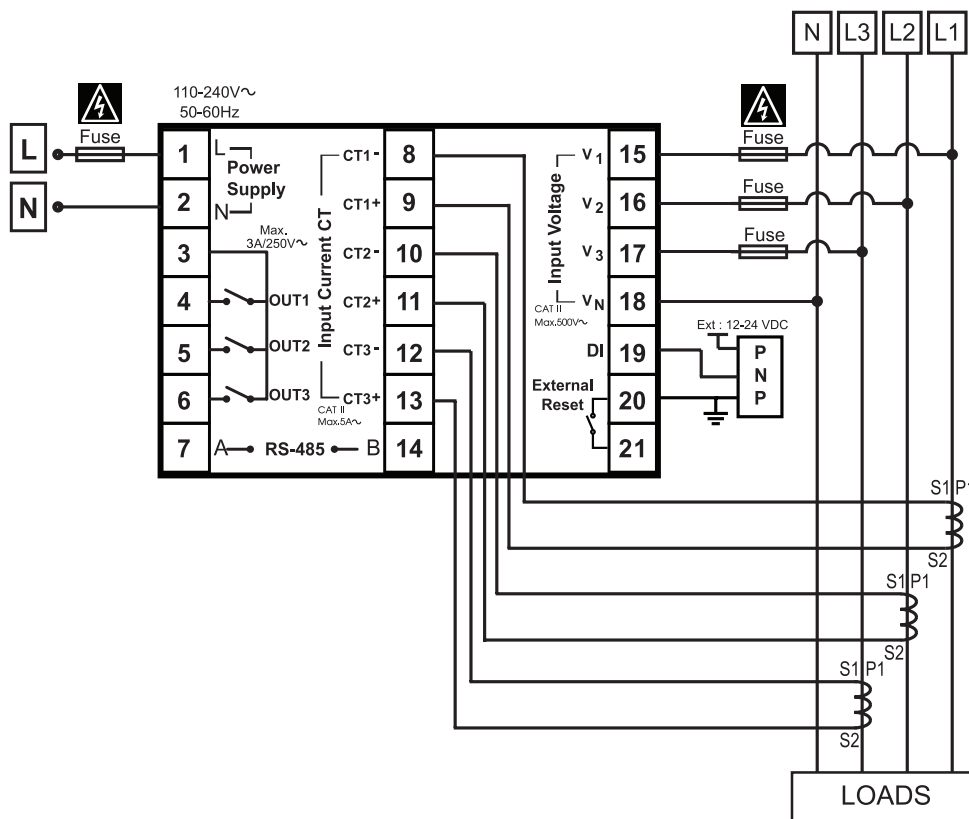
0 x 10 : Preset Multi Register

0 x 03 : Read Holding Register

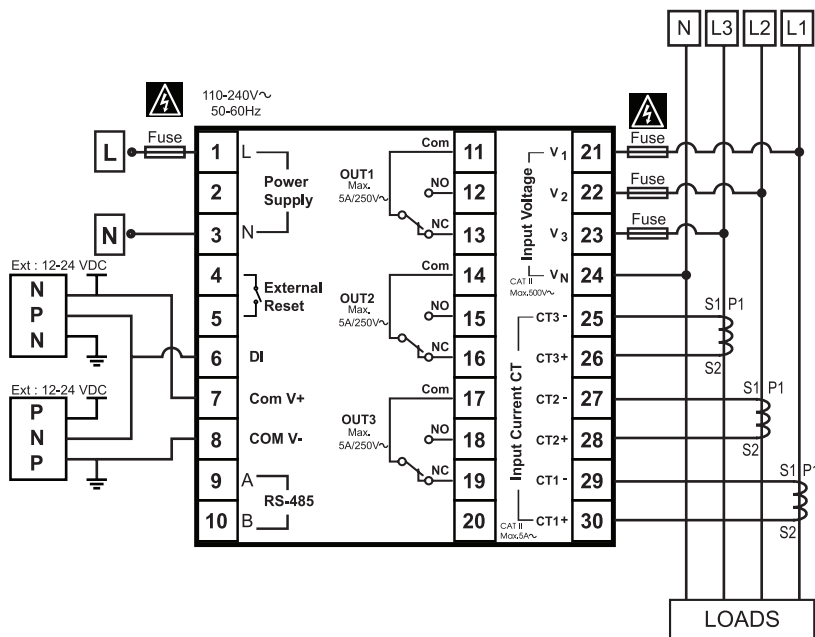
0 x 04 : Preset Input Register

Wiring Diagram

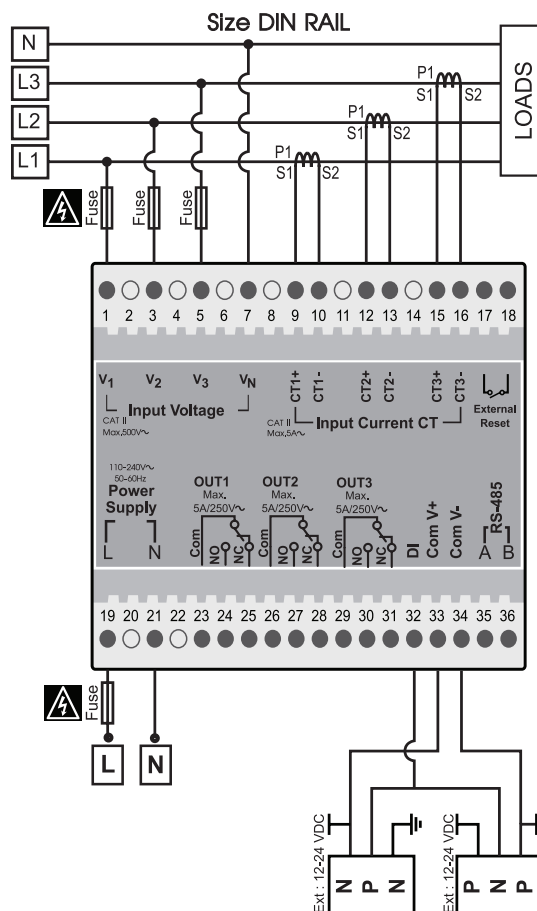
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KM-22-P9



KM-22-DI



WWW.PRIMUSTHAI.COM

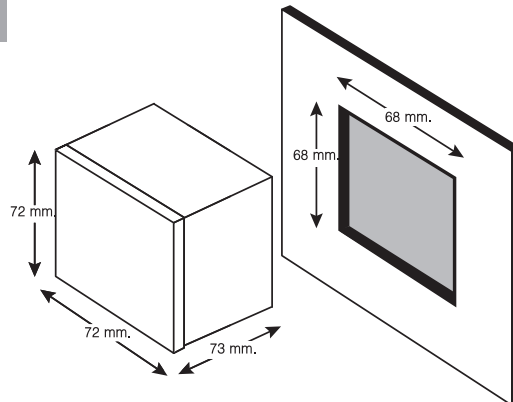
MADE IN THAILAND



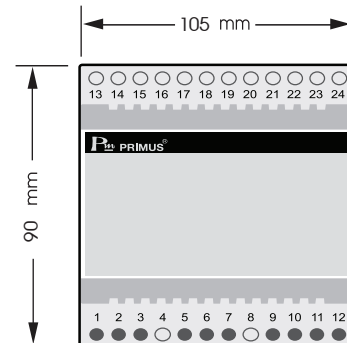
- Terminals : Max. 500 V~ CAT III
- Make sure the correct wiring connection before turning on electricity.
- Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.
- Installation and commissioning should carried out by qualified personnel.

Dimension

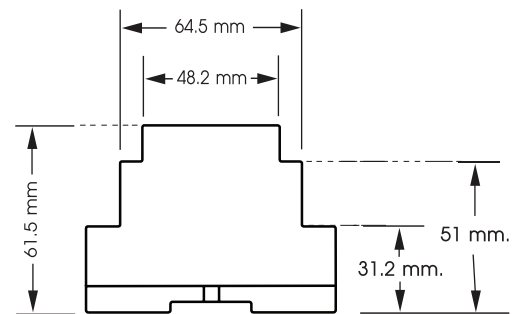
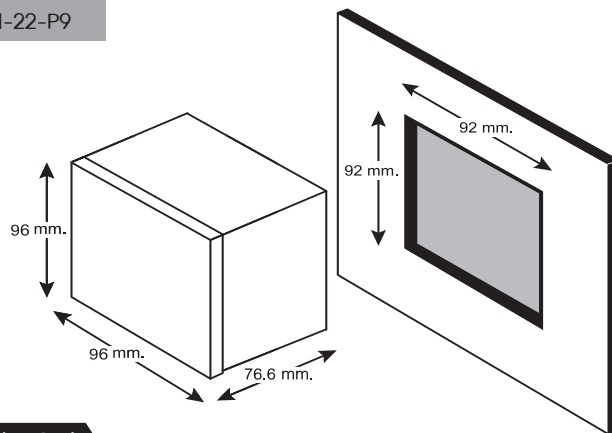
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KM-22-DI



KM-22-P9



Ordering Code

KM-22 - Installation - A Option 1

Installation	
DI	DIN RAIL
P7	Panel 72x72
P9	Panel 96x96

Option 1	
NONE	Alarm Relay1 : Voltage and Current Protection Relay Function
B	Alarm Relay 2 : Voltage and Current Protection Relay Function
C	Alarm Relay 3 : kW, Hour Counter and Counter Function
M	RS-485

Example: KM-22-P9-ABM means Alarm Relay 1, Alarm Relay 2, and RS-485
Panel-mounted, size 96×96, and Power 230 VAC