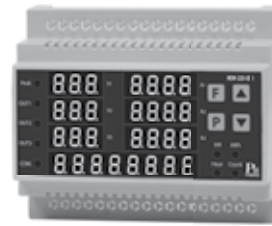




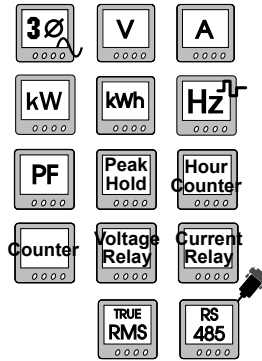
KM-23-P7



KM-23-P9



KM-23-DI



**TECHNICAL SPECIFICATION**

		KM-23-P7	KM-23-P9	KM-23-DI
Power Supply		110-240 VAC 15 % 50-60 Hz		
Power Consumption		2.5VA		
Display		7-Segment, Size 0.39 Inch, 3 Digit 3 Row, 4 Digit, 3 Row, 7 Digit, 1 Row	7-Segment, Size 0.39 Inch, 3 Digit 3 Row, 4 Digit, 3 Row, 8 Digit, 1 Row	
Input	Voltage	3 Phase		
	Voltage Range	20-500 VAC		
	Accuracy Voltage	±0.5% FS.		
	Current	Connection 1 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
Communication	Protocol	MODBUS RTU		
	Baud Rate	2400, 4800, 9600,19200, 38400,57600 bps		
	Parity	None, Even, Odd		
	Stop Bits	1, 2 Bits		
	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.)	72x72x73	96x96x76.6	90x105x61.5	
Weight	275 g.	300 g.	200 g.	

**DESCRIPTION**

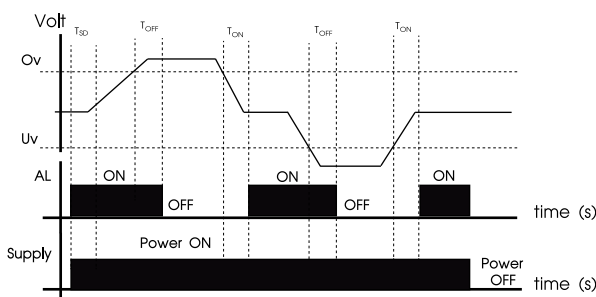
- Three phase voltage measurement system for up to maximum 500 VAC
- Current measurement range 0.02-5 A, showing maximum current value 9999 A by passing C.T. Ratio Range 1-2000 (10000 / 5A)
- kW, kWh, hour counter, counter display with relay output
- Under and Over Voltage, Phase Sequence, Phase Lose, Asymmetry Protection Relay
- Under and Over Current Protection Relay
- Peak Hold for Maximum of voltage, current and kW
- Fault Display with Memory
- RS-485 Modbus RTU
- LED displays the measured values for each phase, Output and Peak
- Manual/ Auto Display Current and voltage values in each phase
- Total P.F. (Power Factor) display in the system

**OPERATION**

KM-23 is a measurement and display device for both voltage and current values in 3 phases. It also displays the values of kW, kWh, Hour and Counter. Hour values are the measurement of the working hours of the electrical system or machines to schedule maintenance. Counter is the number of products produced. To compare with the electrical energy (kWh) used to measure energy efficiency In addition, the peak value of voltage (V), current (A), and power (kW), can be remembered that can happen To analyze the feasibility of the electrical system

Voltage Protection Relay can set the voltage to fall or exceed between 50 to 500 VAC by setting the delay before starting from 1-3600 seconds (ON Delaytime), but if the phase sequence is incorrect, the Relay will not work and do not delay. When starting to work, it will capture the possibility of voltage if the voltage is lower or higher than the set value. Or the unbalance phase exceeds the set value or the missing phase. Relay will order OFF within 0-3600 seconds, which can be set to cut fast or slow as needed and display the reason Display. When the voltage level returns to the set voltage range, the Relay will return ON again within the set time (ON Delay Time).

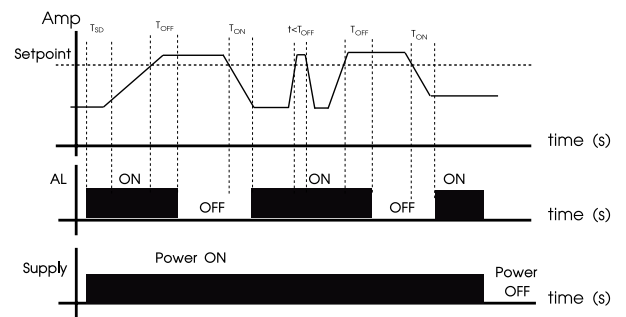
After the KM-23 circuit breaker or Relay OFF, can view the cause of the Relay OFF from the Display. The graph showing the operation of the Volt Protection is shown in graph 1.



**OPERATION**

Current Protection Relay can set low current or can be between 0.1 to 9999A. Set the delay time before starting to run from 1-3600 seconds (ON delay time). When starting, it will catch the possibility of electricity. If the electricity is higher than that set, the Relay will order OFF within 0-3600 seconds, which can be set to cut fast or slow as needed and display the cause at Display. When the current level returns to the level below the set, Relay will return. ON again within 1-3600 seconds

After the KM-23 circuit breaker or Relay OFF, can see the cause of the Relay OFF from the Display or reverse function. The current protection relay operation graph is shown in graph 2.



Relay Output for kW, Hour and Counter

Alarm Relay for kW, Hour, Counter. This can be selected to act on load contact Which one is

kW Function can set kW 0 -100% of Range and set the delay time before starting from 1-3600 seconds (ON Delay Time) when starting and then capturing the possibility of kW being used if the kW value is higher The relay set will order OFF within 0-3600 seconds, which can be set to cut fast or slow as needed. And display the reason that the Display when the kW level returns to the lower level than the Relay will return ON again within 1-3600 seconds or to work in the reverse (Inverse Function) is Relay will ON when the kW value is higher set

Hour Counter Function can set the desired working hours at the end of the time. Relay sends ON and can be reset to OFF by pressing the button or using the Terminal Reset PIN.

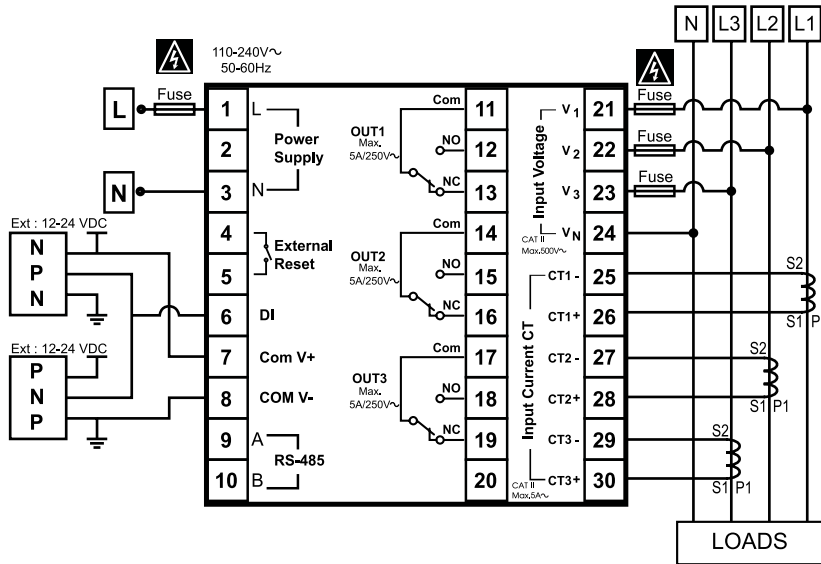
Counter Function can set the desired amount when the number is set. Relay will order ON and can reset to OFF by pressing the button or using Terminal Reset PIN.

Manual and Auto Display

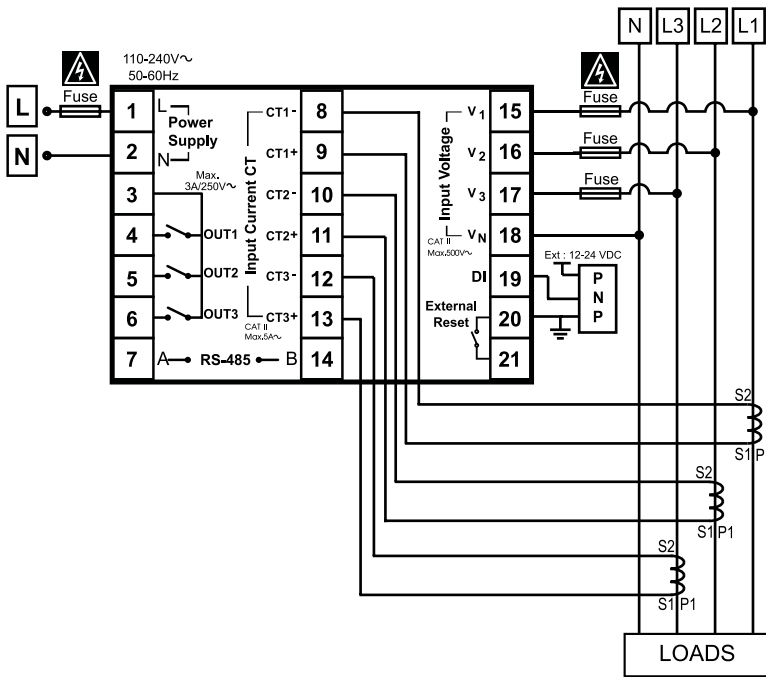
Display of Volt, Amp, kW, kWh, Hour and Counter values that can be measured in Manual mode, ie Volt, Amp, kW, kWh, Hour and Counter by pressing Key pad on the device or Auto is Displays Volt, Amp, kW, kWh, Hour and Counter values. Each phase rotates all the time. Which can be set to display values from 10 seconds to 60 seconds per phase If you do not want to display Auto, you can do so by setting the time to 0.

WIRING DIAGRAM

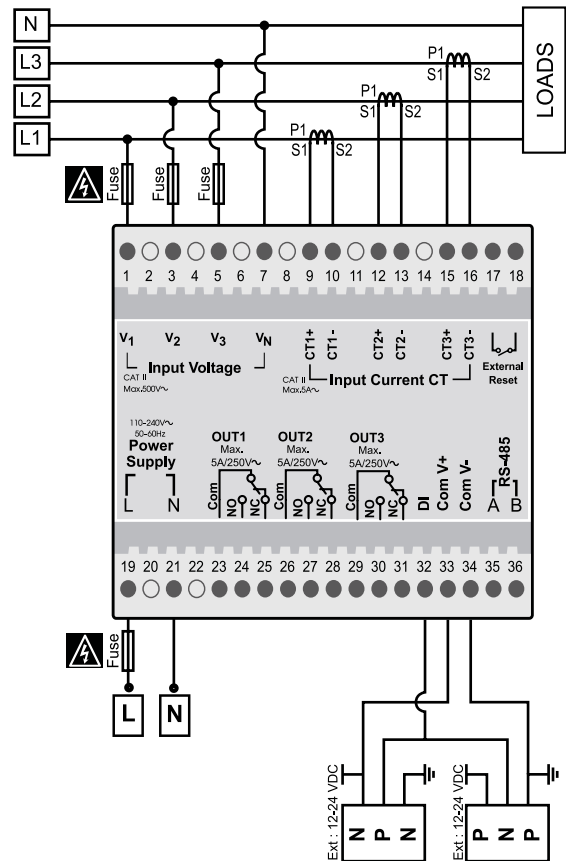
**KM-23-P9**  
Size 96x96



**KM-23-P7**  
Size 72x72



**KM-23-DI**  
Size DIN RAIL



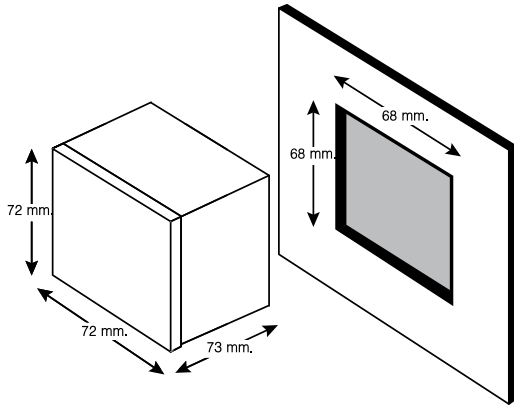
WWW.PRIMUSTHAL.COM. MADE IN THAILAND

**WARNING**

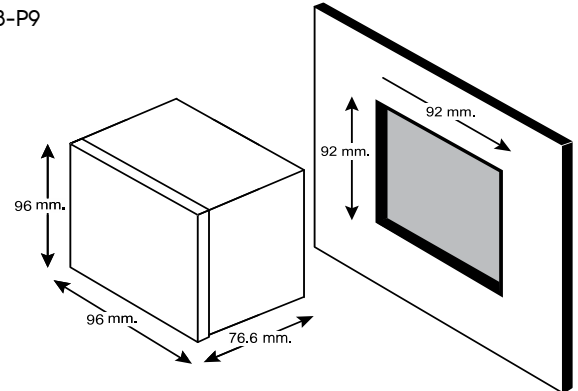
- Terminals : Max. 500 V $\approx$  CAT III
- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.
- Installation and commissioning should be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

**DIMENSION**

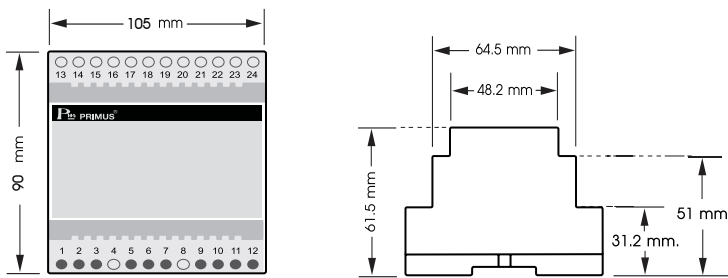
KM-23-P7



KM-23-P9



KM-23-DI

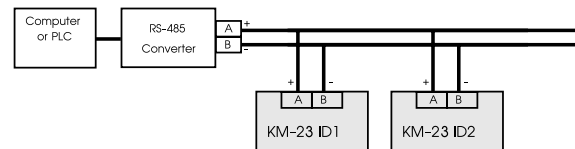


**SERIAL COMMUNICATIONS**

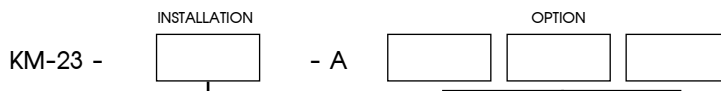
The KM-23 are Equipped With a RS-485 Series Communication Interface to Allow Connection to Computer or PLCs. MODBUS PROTOCOL is Provided as Standard Communication. The User Can Connect KM-23 as Network Up to 128 Meters.

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

Wiring Diagram



**ORDERING CODE**



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

OPTION 1	
NONE	Alarm Relay1 : Voltage and Current Protection
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-23-P9-ABM mean Alarm Relay1, Alarm Relay 2 and RS-485  
Installation Panel size 96x96 and Power 230VAC