KM-21

THREE PHASE VOLT-AMP METER WITH PROTECTION RELAY

PM PRIMUS

CE

KM-21-P7

KM-21-P9

KM-21-DI

3Ø V RS485
A TRUE RMS Peak Hold
Voltage Relay Current Relay Hz

SPECIFICATION

		KM-21-P7	KM-21-P9	KM-21-DI
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 2 Row		7-Segment, Size 0.39 Inch, 4 Digit 2 Row
Input	Volt	3 Phase		
	Volt Range	20-500 VAC		
	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		
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	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 Enclouser			
	Front Protection Rating	IP52		
	Case Protection Rating	IP30		
	DIN RAIL Enclouser			
	Case Protection Rating	IP30		
Installation		Panel Mounting	Panel Mounting	DIN RAIL
Material		ABS-V0		
Size (mm.)		72x72x73	96x96x76.6	89.5x150x61.5
Weight		275 g.	300 g.	200 g.

PRIMUS

DESCRIPTION

- KM-21 is voltage(V), current(A) meter with protection relay for Over-Under for 3 phases.
- Voltage Range 20-500 VAC.
- Current Range 0.01- 5A. show value maximum 9,999 A by CT Ratio Range 1-2000 (10000/5A).
- Under and Over Voltage, Phase Sequence, Phase Loss , Phase Asymmetry
- Under and Over Current Protection Relay
- Peak Hold for Maximum of voltage and current.
- Fault Display with Memory
- RS-485 MODBUS RTU
- LED show the operation of Output and Peak.
- Manual/Auto Display current and voltage value in each phase.

OPERATION

KM-21 is measure and display device for voltage and current in 3 phase all in one. It come with Voltage Protection Relay and Current Relay to protect over-under voltage, phase loss, Unbalance Phase and Phase sequence. It can remember maximum peak of voltage and current that happens for analyze how is system going.

Voltage Protection Relay can set Over-Under for 20-500VAC in one of each phase or all 3 phase. User set delay time before start operation for 1-3600 seconds (ON Delay Time) but phase sequence is not correct. Relay will not operate and do not delay when it start to operate it will detect voltage. If voltage lower or over setting value or unbalance % over than setting or phase loss. Relay will command OFF in 0-3600 sec. which can set to cut fast or slow as demand and show the cause of incident on display. When voltage level back to setting range. Relay will back to ON again in setting Time (ON Delay Time) after KM-21 cut circuit or Relay OFF then can browse to see cause of Relay OFF incident from display.

Graph shows Voltage Protection Relay as graph 1.

OPERATION

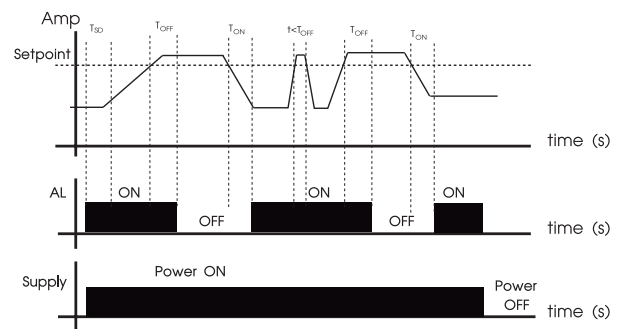Graph 1 shows Voltage Protection operation
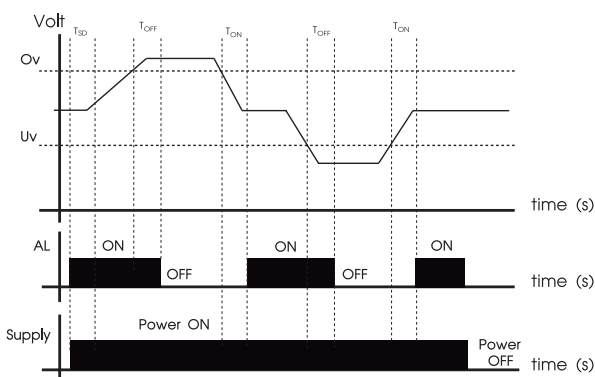
Graph 1

OPERATION

Current Protection Relay can set current or over between 0.1-9999A in one of phase or all 3 phase. Set time delay before start operate from 1-3600 seconds (ON Delay TIme). When it operated. It will detect how current is going if voltage over than setting value. Relay will command OFF in 0-3600 seconds which can set to cut fast or slow as demand and show in and show the cause of incident on display when current back range lower from setting. Relay will back to ON again in 1-3600 sec. or operate in Inverse Function that is relay will ON when current value more than from setting after KM-21 cut circuit or Relay OFF from Display.
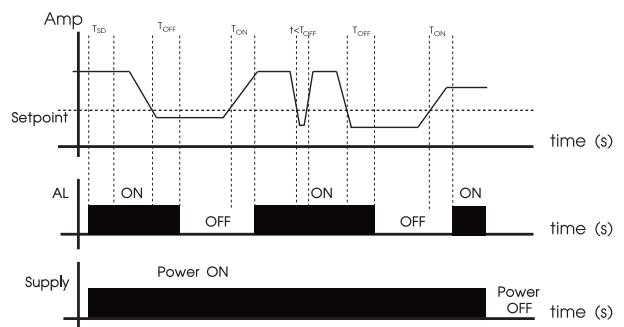
Graph show the operation of Current Protection Relay show as graph 2 and 3. When user needs to send data to computer can communicate via RS-485 MODBUS RTU Protocol.

Graph 2　　Shows Over Current Protection Relay operation.

Graph 2

Graph 3　　Shows Under Current Protection Relay operation.
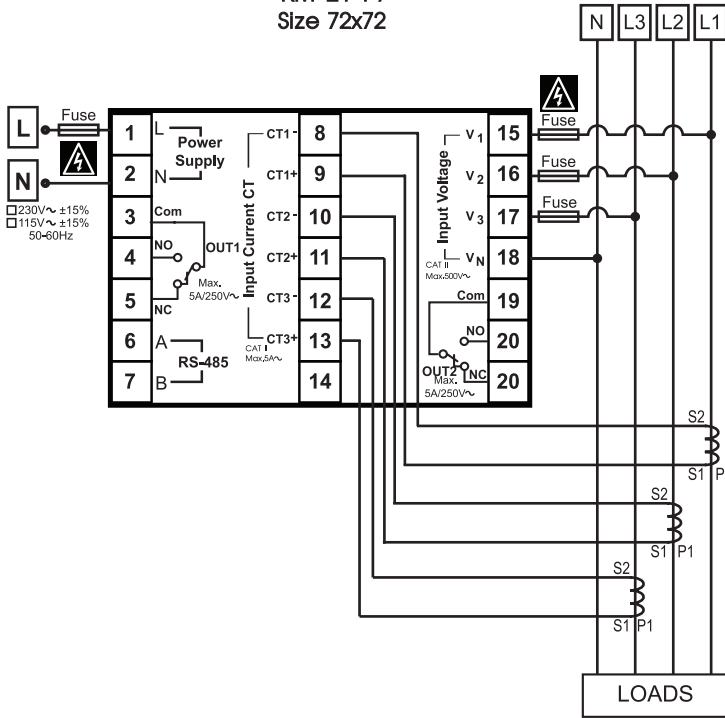

Graph3

Show voltage and current from measure can do by Manual is press to select voltage and current value in each phase or Auto is show voltage and current in each phase circulating all the time. It can set to show value from 10 second to 60 second per phase. If don't want to show in Auto can do by set time to be 0.
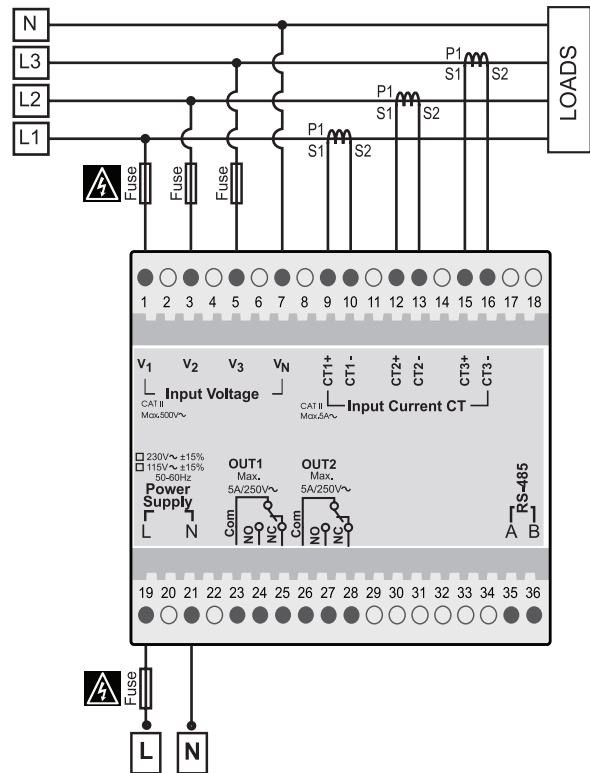
WIRING DIAGRAM

KM-21-P9
Size 96x96
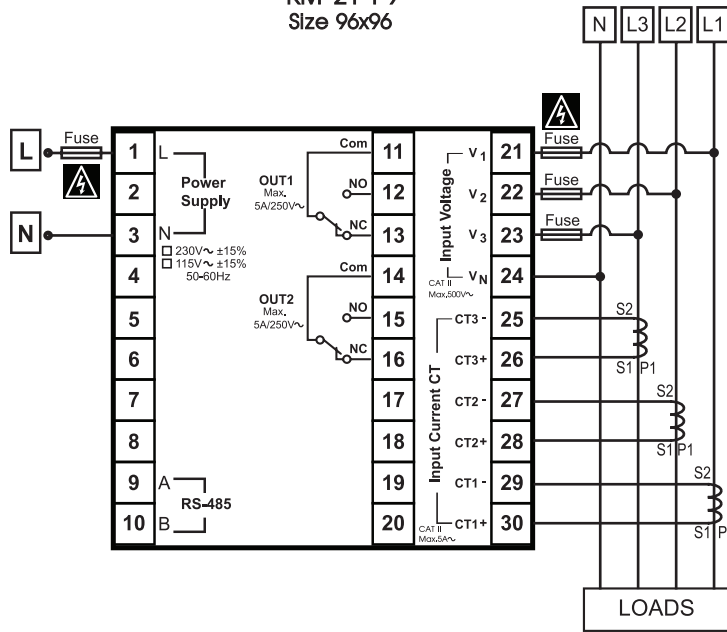
KM-21-P7
Size 72x72

KM-21-D1
Size DIN RAIL

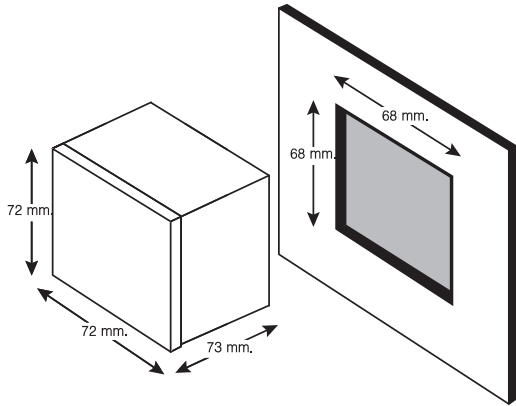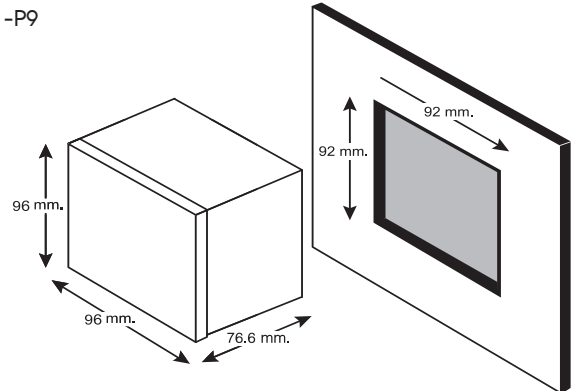WWW.PRIMUSTHAI.COM.   MADE IN THAILAND

⚠ WARNING
- 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.
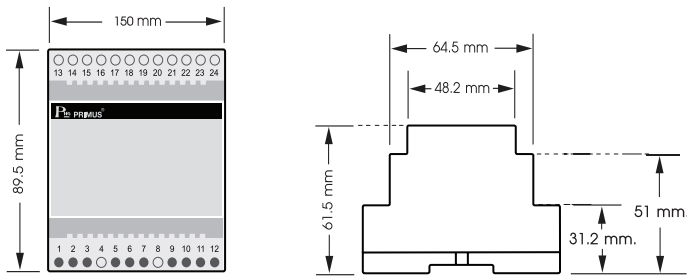- Installation and commissioning should carried out by qualified personal.

DIMENSION

KM-21-P7

68 mm.
68 mm.
72 mm.
72 mm.
73 mm.

KM-21-P9

92 mm.
92 mm.
96 mm.
96 mm.
76.6 mm.

KM-21-DI

150 mm
13 14 15 16 17 18 19 20 21 22 23 24
PRIMUS
89.5 mm
1 2 3 4 5 6 7 8 9 10 11 12
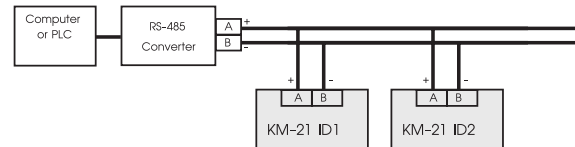
64.5 mm
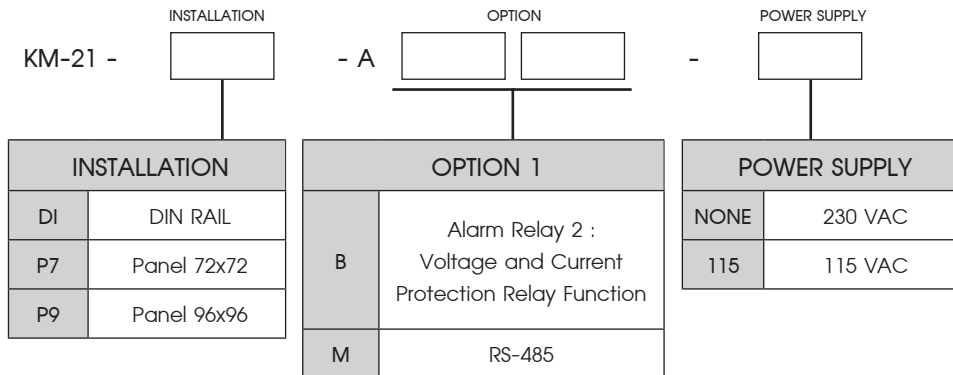48.2 mm
61.5 mm
51 mm.
31.2 mm.

SERIAL COMMUNICATIONS

KM-21 can read data Parameter from measure in Real Time by Bus RS-485. Protocol that use for communicate is MODBUS-IDA RTU Mode

Command set that can use are

0x03 : Read Holding Register

0x04 : Preset Input Register

0x06 : Preset Single Register

0x10 : Preset Multi Register

Wiring Diagram

Computer or PLC

RS-485 Converter

A +
B -

+ -
A B
KM-21 ID1

+ -
A B
KM-21 ID2

ORDERING CODE

INSTALLATION   OPTION   POWER SUPPLY

KM-21 - [   ] - A [   ] [   ] - [   ]

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

OPTION 1	
B	Alarm Relay 2 : Voltage and Current Protection Relay Function
M	RS-485

POWER SUPPLY	
NONE	230 VAC
115	115 VAC

ตัวอย่าง : KM-21-P9-ABM means Alarm Relay1, Alarm Relay 2 and RS485 install on Panel size 96x96 and Power 230VAC