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ENERGY

MEASUREMENT

PROTECTION AND CONTROL

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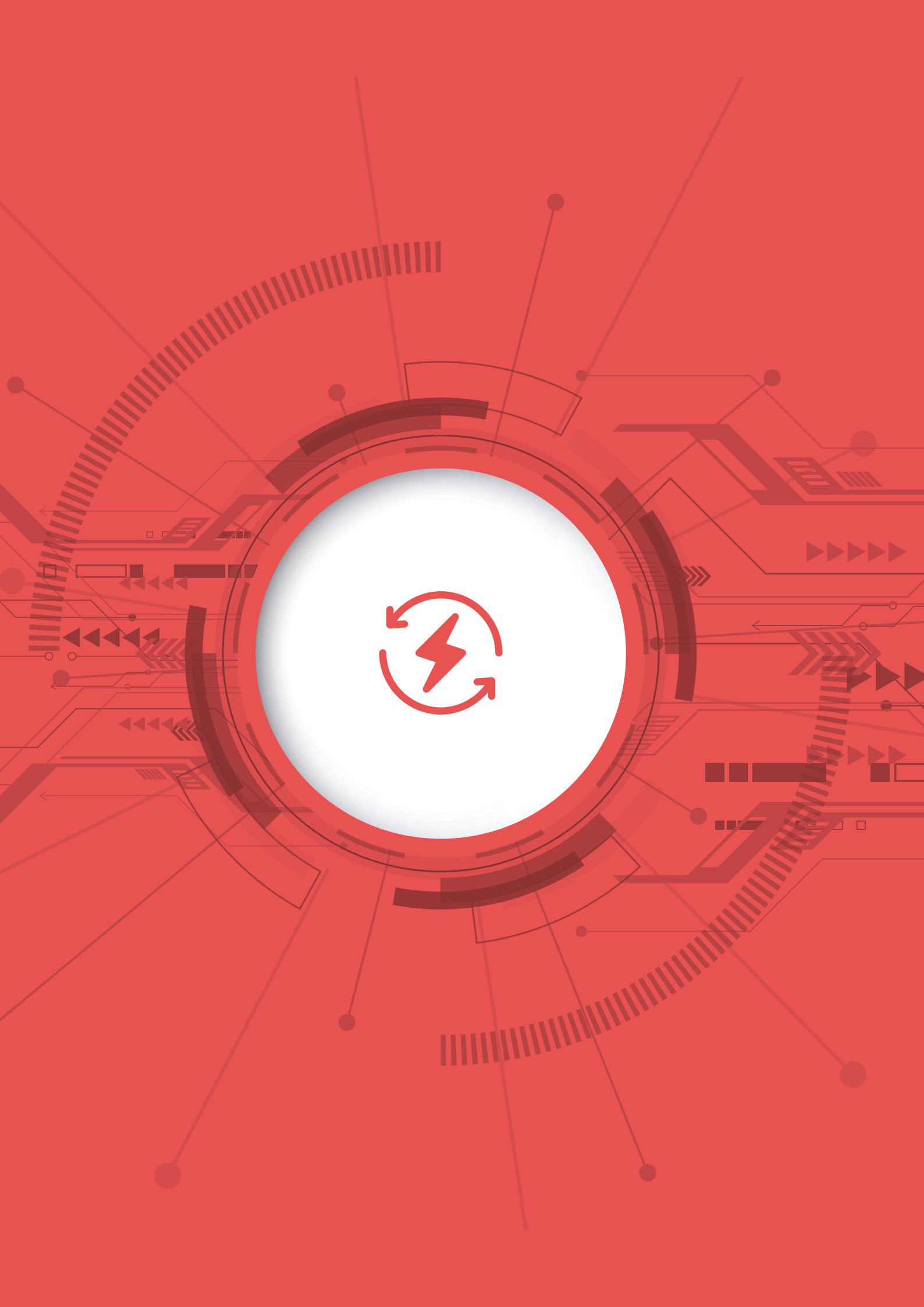
CASE DIMENSIONS



ENERGY

ENERGY

MEASUREMENT

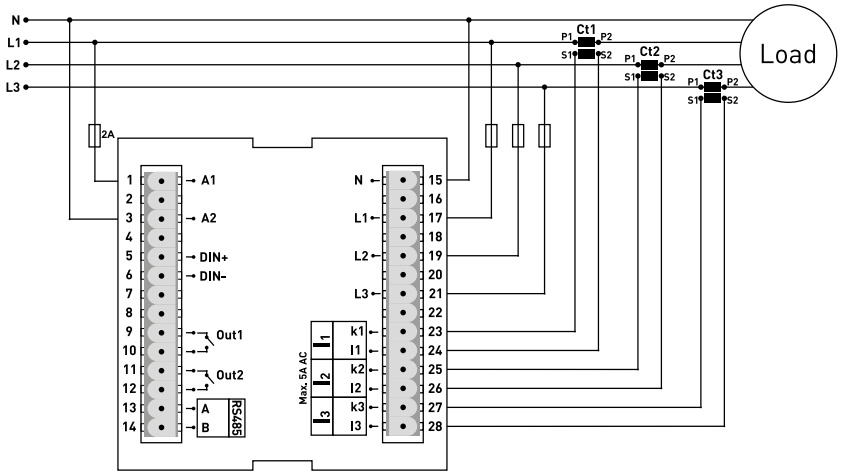
PROTECTION AND CONTROL

ENERGY ANALYZER

	PNA-04
Operating Voltage (Un)	85V - 300VAC
Operating Frequency	50/60Hz.
Operating Power	<10VA
Operating Temperature	-20°C to 55°C
Voltage Input	5V - 330VAC
Voltage Measuring Range	5V - 330kV
Current Input	10mA - 5.5A
Current Measuring Range	10mA - 5.500A
Voltage , Current Accuracy	%±0.5
Active Power, Reactive Power Accuracy	%±1, %±2
Supported Connection	3P4W
Current Transformer Ratio	1....1000
Voltage Transformer Ratio	1,0....999,9
Display	71.5 x 61.5mm Glass LCD
Harmonic Voltage, Current	3 - 31
Communication	RS485 MODBUS RTU
Digital Input	9V - 24VDC
Connection Type	Plug-in terminal connection
Contact	2 x 3A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<300gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting
Protection Class	IP40(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A4

PNA-04 Energy analyzer measures the voltage, current, cosφ, active power, reactive power, minimum and maximum values, demands and energy of the load(s) on the system. It has the characteristics indicated below.

- With 3-phase voltage and 3-phase current transformer.
- It measures Voltage harmonic up to 31st.
- It measures Current harmonic up to 31st.
- Communication with RS485 Modbus RTU
- 4 x 4 Digits Led Display
- It shows total active (P1,P2,P3) Powers for each phase.
- It shows total reactive (Q1,Q2,Q3) Powers for each phase.
- It shows Power Factor (PF) and Cosφ values for each phase.
- It shows minimum, maximum and average values of Phase-Neutral and Phase-Phase voltages. It shows per-phase and total current (I1,I2,I3) value.
- It shows total imported and exported active energy (ΣkWh) value.
- It shows total inductive reactive energy (ΣkVArh) value.
- 2 relay outputs (adjustable), 1 Digital Input.
- Records (High/Low/Average voltage/Current)
- It shows demands.
- You can reset the energy values and demands records .
- Menu is password-protected.

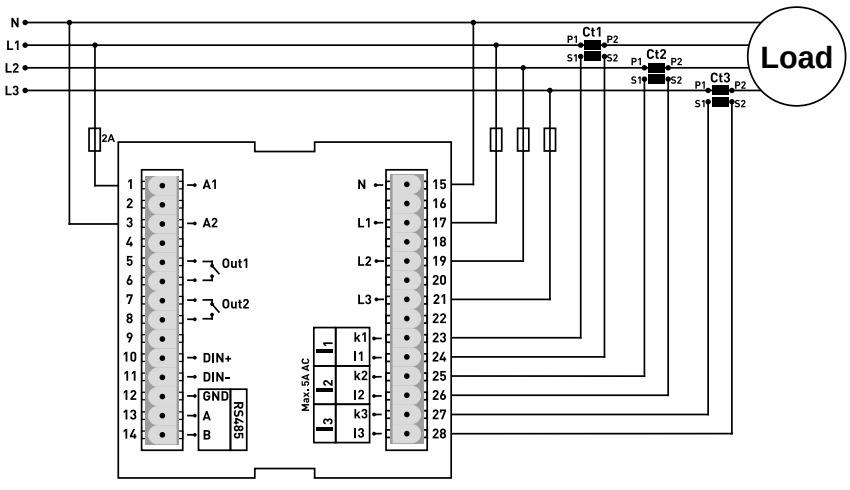


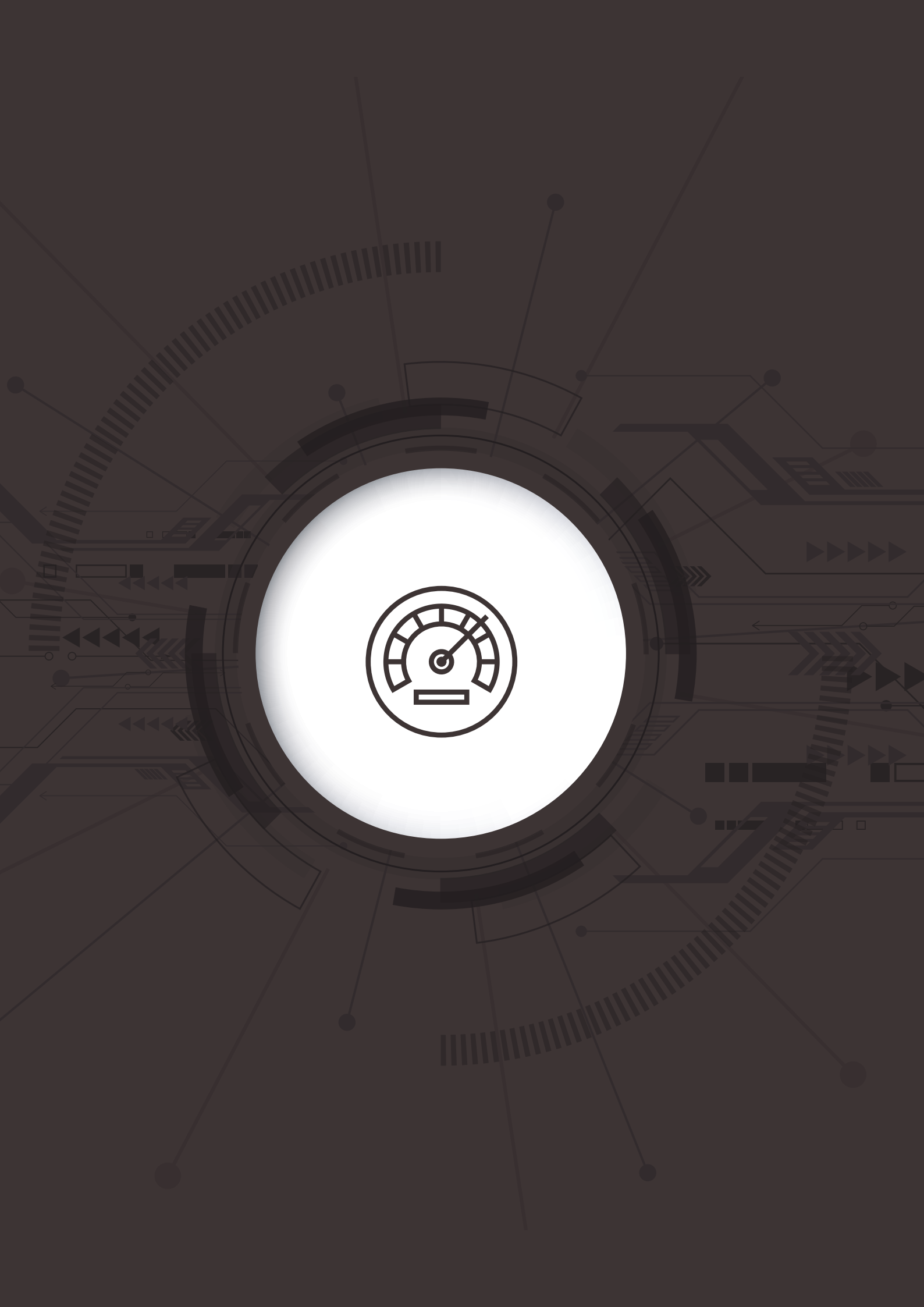
ENERGY ANALYZER

	PNA-05
Operating Voltage (Un)	85V - 300VAC
Operating Frequency	50/60Hz.
Operating Power	<10VA
Operating Temperature	-20°C to 55°C
Voltage Input	5V - 330VAC
Voltage Measuring Range	1V - 600kV
Current Input	1mA - 5.5A
Current Measuring Range	1mA - 50.000A
Voltage , Current Accuracy	%±0.2
Active Power, Reactive Power Accuracy	%±0.5, %±1
Supported Connection	3P3W, 3P4W
Current Transformer Ratio	1....5000
Voltage Transformer Ratio	1,0....4000
Display	71.5 x 61.5mm Glass LCD
Harmonic Voltage, Current	3 - 55
Real Time Clock	>5 years
Communication	RS485 MODBUS RTU
Digital Input	9V - 24VDC
Connection Type	Plug-in terminal connection
Contact	2A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<300gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting
Protection Class	IP40(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A4

PNA-05 Energy analyzer measures the voltage, current, cosφ, active power, reactive power, minimum and maximum values, demands and energy of the load(s) on the system. It has the characteristics indicated below.

- With 3-phase voltage and 3-phase current transformer.
- It measures Voltage harmonic(L-N and L-L) up to 55th.
- It measures Current harmonic up to 55th.
- Communication with RS485 Modbus RTU
- 71.5 x 61.5 Custom Design Glass LCD
- It shows total active (P1,P2,P3, PΣ) Powers for each phase.
- It shows total reactive (Q1,Q2,Q3, QΣ) Powers for each phase.
- It shows Power Factor(PF) and Cosφ values for each phase.
- It shows minimum, maximum and average values of Phase-Neutral and Phase-Phase voltages. It shows per-phase and total current (I1,I2,I3,IΣ) value.
- It shows total imported and exported active energy (ΣkWh) value.
- It shows total inductive reactive energy (ΣkVArh) value.
- 2 relay outputs (adjustable), 1 Digital Input.
- Events records (High voltage, Low voltage, power cut, energy disorder, High current, current disorder, THDV and THDI limits)
- Date and clock can be adjusted.
- Real time clock.
- It shows demands.
- You can reset the energy values, demands and event records .
- Menu is password-protected.





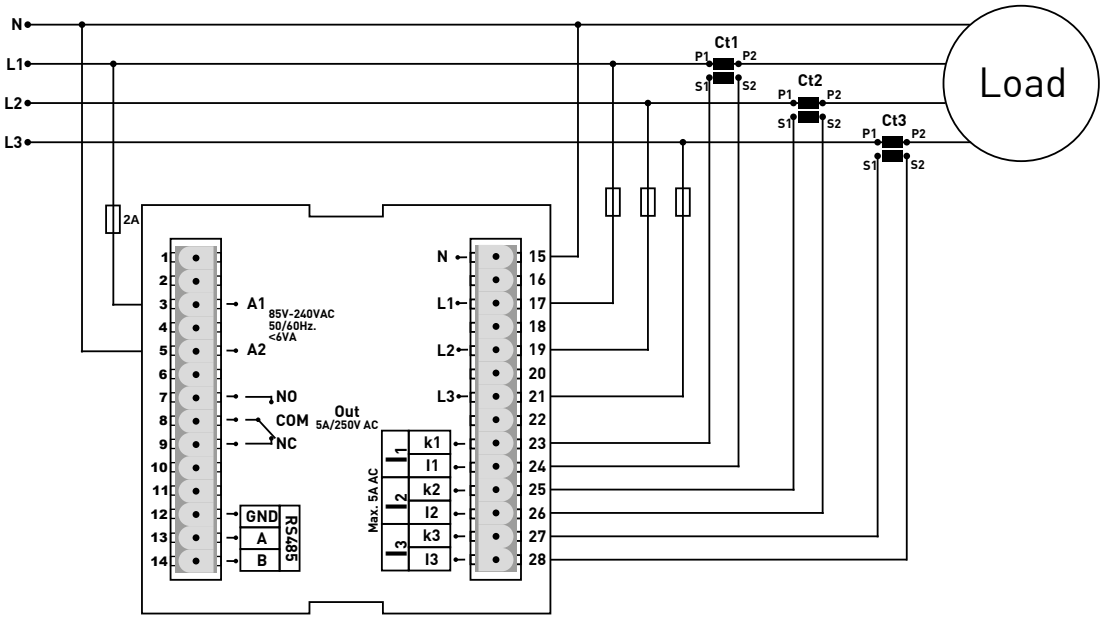
MEASUREMENT

MULTIMETER

	PMM-07
Operating Voltage (Un)	85V - 240VAC
Operating Frequency	50/60Hz.
Operating Power	<10VA
Operating Temperature	-20°C to 55°C
Voltage Input	5V - 300VAC
Voltage Measuring Range	5V - 300kV
Current Input	50mA - 5.5A
Current Measuring Range	50mA - 10.000A
Voltage , Current Accuracy	%±1
Supported Connection	3P4W
Current Transformer Ratio	1.....2000
Voltage Transformer Ratio	1.....999
Display	71.5 x 61.5mm Glass LCD
Communication	RS485 ModBus RTU (1200 - 38400bps)
Contact	2A/250VAC Resistive Load
Connection Type	Plug-in terminal connection
Cable Diameter	1.5mm²
Weight	<300gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting
Protection Class	IP41(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A4

PMM-07 multimeter is designed to monitor voltage, current, frequency , apparent power values and their minimum, average and maximum values, demands and energy of the load(s) on the system. The have the common characteristics indicated below.

- Communication with RS485 Modbus RTU
- Glass LCD.
- With 3-phase voltage and 3-phase current transformer.
- It shows value of L1, L2, L3, L12, L23, L31, I1, I2, I3, S1, S2, S3, F.
- It shows minimum, maximum and average values of L1, L2, L3, L12, L23, L31, F.
- It shows minimum, maximum and demand values of I1, I2, I3, S1, S2, S3.
- High/Low voltage, current, frequency(adjustable).
- Line to Line or Line to Neutral protection (adjustable)
- 1 relay output
- Voltage, current and frequency Protection.



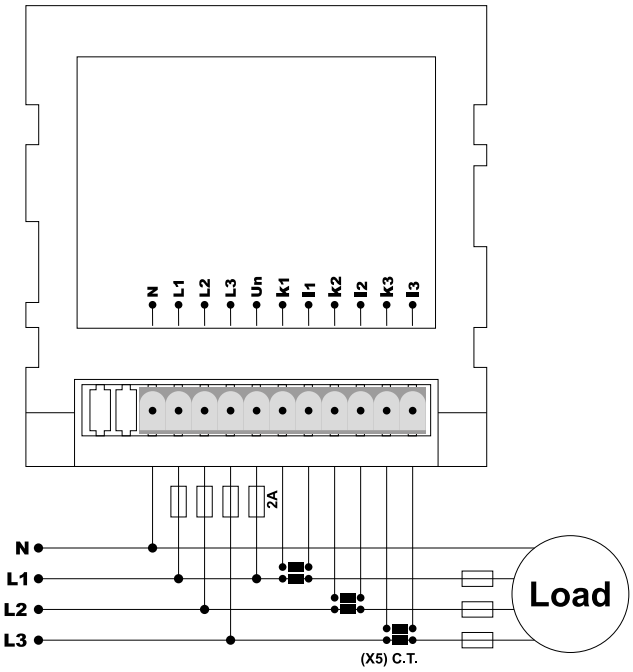
MULTIMETER

	PMM-06
Operating Voltage (Un)	140V - 270VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Current Measuring Range	100mA - 5.5A AC 10/5A - 9995/5A (X5)
Current Transformer	
Measuring Accuracy	±1%
Voltage Measuring Range	1V - 500VAC
Display	6 x 9 mm 3 digit display and LEDs
Connection Type	Plug-in terminal connection
Cable Diameter	1.5 mm²
Weight	<325gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting.
Protection Class	IP41(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A2

Digital multimeter is designed to monitor the current and voltage values of the threephase operating loads. It is used in industry or any place to desire voltage and current measurement.

PMM-06: it is used with X5 current transformer.

- True RMS voltage and current measuremnt
- 50/60 Hz measurement
- Frequency measurement
- Phase sequence measurement
- It shows 3 phase voltage and current at the same time.
- 6 x 9mm 3 digit display and 9 x leds.

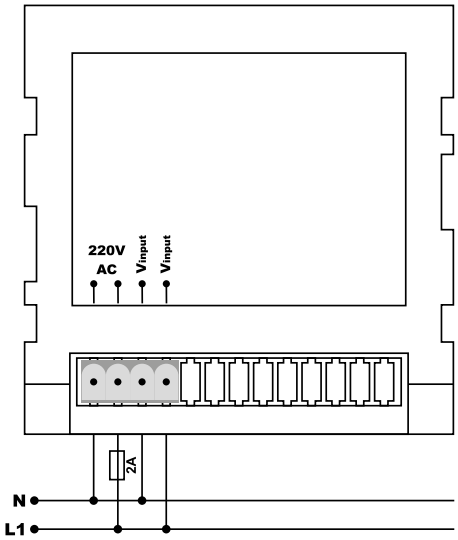


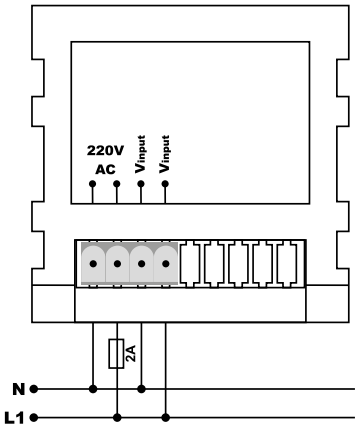
FREQUENCYMETER

	PDF-96	PDF-72
Operating Voltage (Un)	140V - 260VAC	
Operating Frequency	50/60Hz.	
Operating Power	<6VA	
Operating Temperature	-20°C to 55°C	
Frequency Measuring Range	1 - 400 Hz. (15V - 500VAC)	
Measuring Accuracy	±1%	
Display	20mm 3 digits display	14mm 3 digits display
Connection Type	Plug-in terminal connection	
Cable Diameter	1.5mm²	
Weight	<220gr.	
Panel Hole Sizes	91mm x 91mm	68mm x 68mm
Mounting	Front panel mounting	
Protection Class	IP41(Front panel), IP20(Body)	
Operating Altitude	<2000 meters	
Case	A2	A5

Digital frequency meters are designed to monitor AC voltage frequency value continuously.

When the device is energized, it shows the frequency value of the phas-to-neutral or phase-to-phase AC voltage coming to Vinputs constantly on the display. The voltage the frequency value of which is desired to be measured should be between 15V - 500 V.





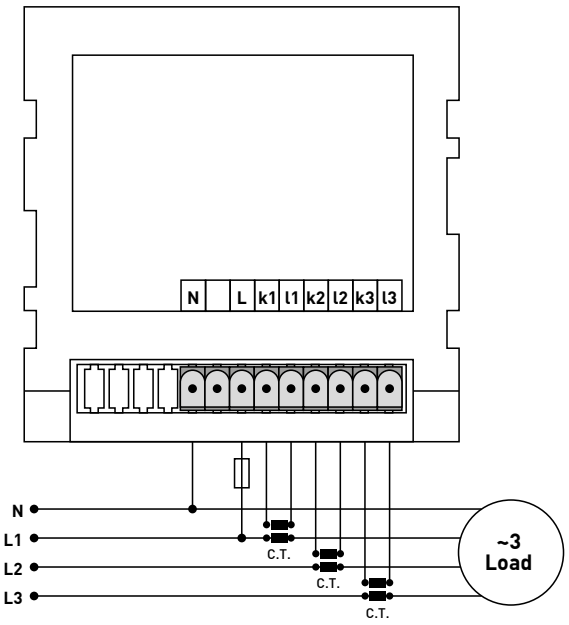
THREE PHASE AMMETER

	PDA-96T
Operating Voltage (Un)	150V - 240VAC
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Measuring Range	5mA - 5.5A
Measuring Accuracy	±2%
Current Transformer Ratio	5/5A - 10000/5A
Display	3 x 14mm 4 digits display
Connection Type	Plug-in terminal connection
Cable Diameter	1.5mm²
Weight	<300gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting
Protection Class	IP41(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A2

Digital ammeters are designed to monitor AC current values in three-phase systems continuously.

It is used for loads (motor, resistance, machine, etc.) which requiring three phase current tracking in industry.

- True RMS current measurement
- 50/60Hz measurement
- 14mm 3 digit Display
- It uses with X5 current transformer

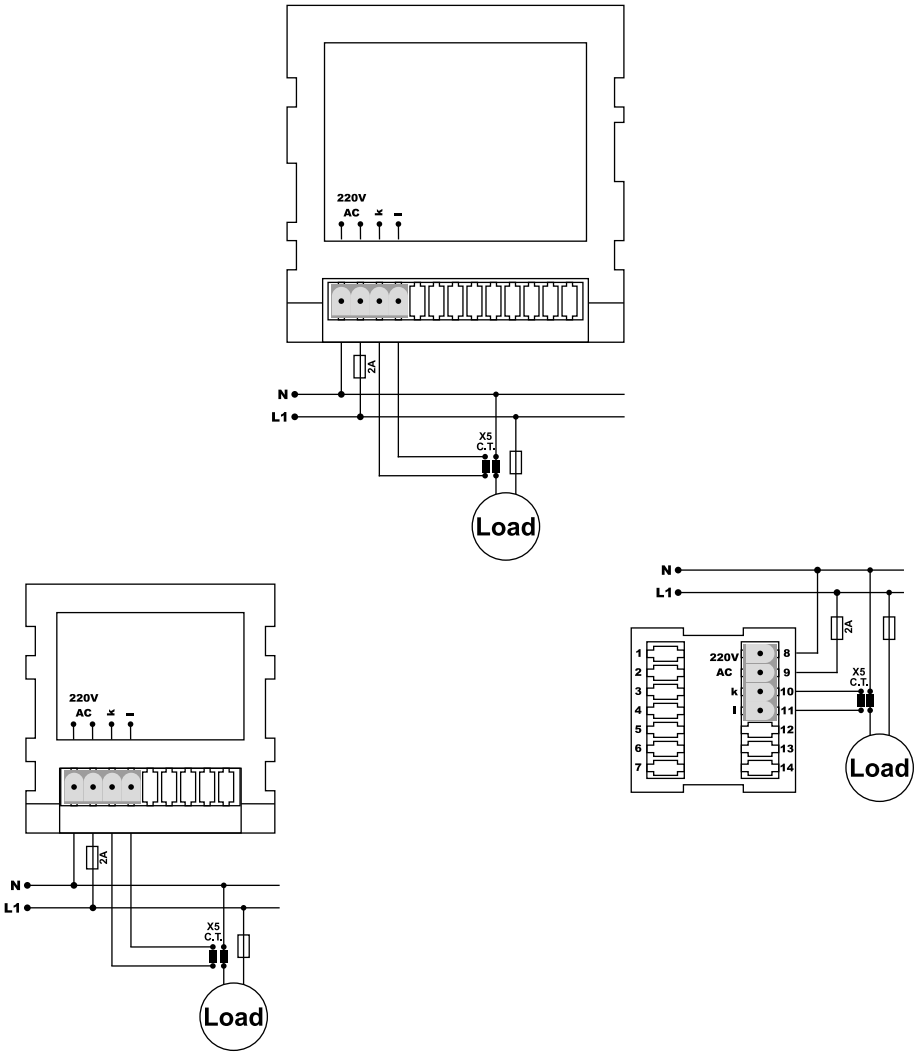


AMMETER

	PDA-96	PDA-72	PDA-48
Operating Voltage (Un)	150V - 260VAC		
Operating Frequency	50/60Hz.		
Operating Power	<6VA		
Operating Temperature	-20°C to 55°C		
Current Measuring Range	100mA - 5.5A AC		
Current Transformer	10/5A - 9995/5A (X5)		
Measuring Accuracy	±1%		
Display	20mm 4 digits displa	14mm 4 digits display	9mm 4 digits display
Connection Type	Plug-in terminal connection		
Cable Diameter	1.5mm²		
Weight	<220gr.		
Panel Hole Sizes	91mm x 91mm	68mm x 68mm	45mm x 45mm
Mounting	Front panel mounting		
Protection Class	IP41(Front panel), IP20(Body)		
Operating Altitude	<2000 meters		
Case	A2	A5	A7

Digital ammeters are designed to monitör AC current values in single-phase systems continuously . It is used for loads (motor, resistance, machine, etc.) which requiring single phase current tracking in industry.

- True RMS current measurement
- 50/60Hz measurement
- 14mm 4 digit display
- It is used with X5 current transformer



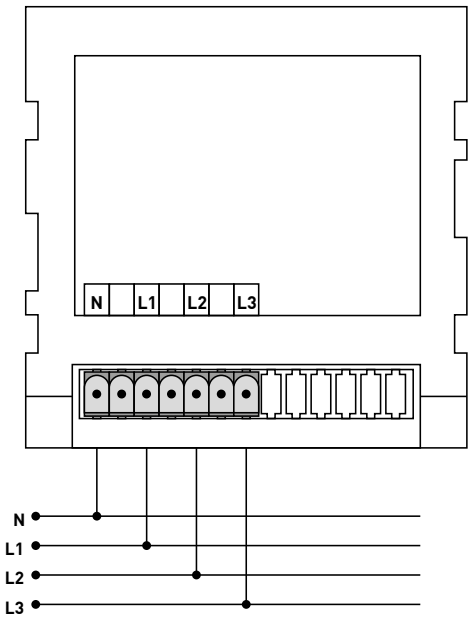
THREE-PHASE VOLTMETER

	 PDV-96T
Operating Voltage (Un)	140V - 300VAC
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Measuring Range (L-N)	5V - 300VAC (L1 must be at least 140V)
Measuring Range (L-L)	5V - 500VAC (L1 must be at least 140V)
Measuring Accuracy	%±1
Display	3 adet 14mm 3 digits display
Connection Type	Plug-in terminal connection
Cable Diameter	1.5mm²
Weight	<300gr.
Panel Hole Sizes	91mm x 91mm
Mounting	Front panel mounting
Protection Class	IP41(Front panel), IP20(Body)
Operating Altitude	<2000 meters
Case	A2

Digital voltmeters are designed to monitor AC voltage value of three-phase continuously. It can be used everywhere which requiring three phase voltage measurement in industry.

When the device is energized, it shows the voltage value between N – L. When the SELECT button is pressed , it shows the voltage value between L – L. When the SELECT button is pressed again, it shows phase order. If phase sequence is correct, it shows L1, L2, L3 on Displays from top to bottom respectively. If phase sequence is wrong, it shows L1, L3, L2 on Displays from top to bottom respectively.

- True RMS voltage measurement
- 50/60Hz measurement
- Phase sequence measurement
- It shows three phase voltage simultaneously
- 3 x 14mm 4 digit Display



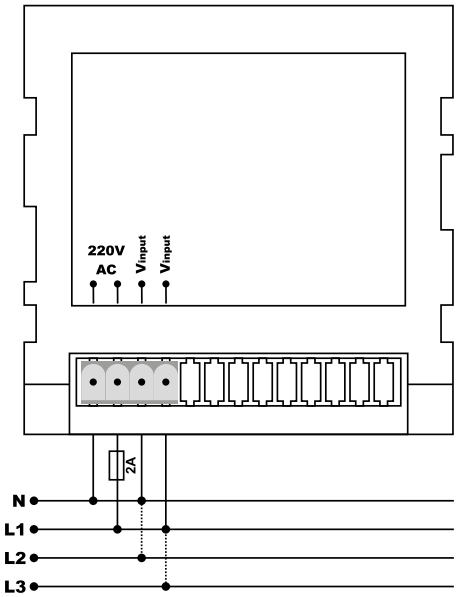
VOLTMETER

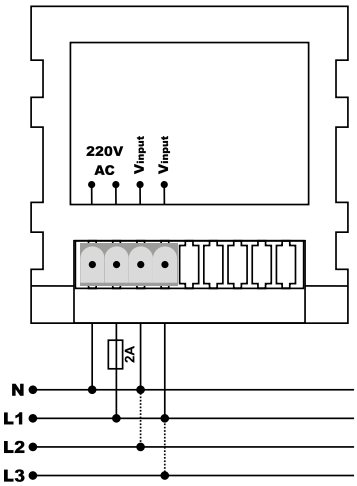
	 PDV-96	 PDV-72	 PDV-48
Operating Voltage (Un)	140V - 260VAC		
Operating Frequency	50/60Hz.		
Operating Power	<6VA		
Operating Temperature	-20°C to 55°C		
Voltage Measuring Range	1V - 500VAC		
Measuring Accuracy	±1%		
Display	20mm 3 digits display	14mm 3 digits display	9mm 3 digits display
Connection Type	Plug-in terminal connection		
Cable Diameter	1.5mm²		
Weight	<220gr.		
Panel Hole Sizes	91mm x 91mm	68mm x 68mm	45mm x 45mm
Mounting	Front panel mounting		
Protection Class	IP41(Front panel), IP20(Body)		
Operating Altitude	<2000 meters		
Case	A2	A5	A7

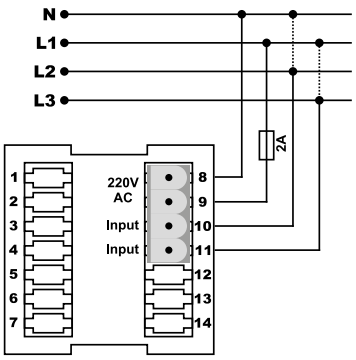
Digital voltmeters are designed to monitor AC voltage value continuously. It is used everywhere that required voltage measurement in industry.

You may apply Line to Neutral or Line to Line to Vinputs of device.

- True RMS voltage measurement
- 50/60Hz measurement
- 3 digits Display







PROTECTION AND CONTROL

DIGITAL OVERLOAD RELAYS

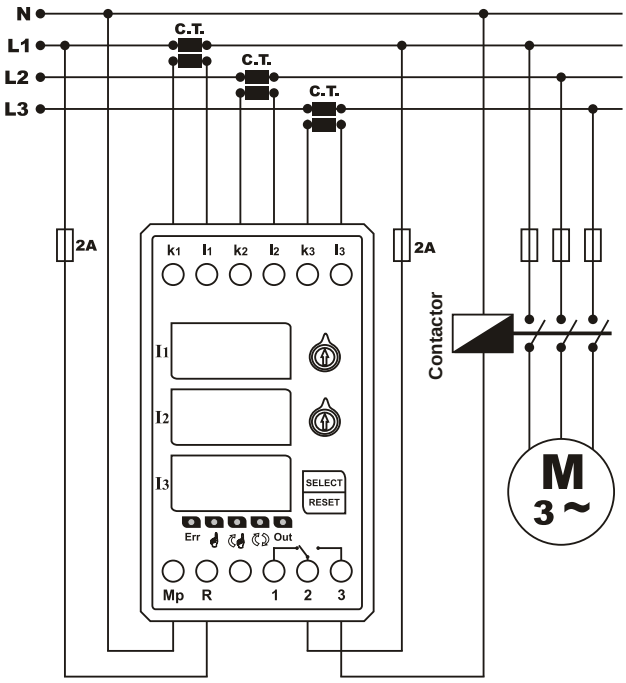
	PDT-50	PDT-100	PDT-200	PDT-300	PDT-400
Operating Voltage (Un)	110V - 270VAC				
Operating Frequency	50/60Hz.				
Operating Power	<6VA				
Operating Temperature	-20°C to 55°C				
High Current (Overload A>)	15A-50A	40A-100A	90A-200A	190A-300A	290A-400A
Delay (t)	0.1sec. - 20sec.	0.1sec. - 20sec.	1sec. - 200sec.	1sec. - 200sec.	1sec. - 200sec.
Display	3 x 9mm 3 digit display and 4 LEDs				
Connection Type	Terminal connection				
Contact	5A/250VAC Resistive Load				
Cable Diameter	2.5mm²				
Weight	<250gr.				
Mounting	DIN rail mounting				
Protection Class	IP20				
Operating Altitude	<2000 meters				
Case	B2				

Digital Overload Relays are designed to protect the devices having precise operating current values against the errors likely to arise from excessive current. There are High (Overload Relay A>) current set button and error latency (t) time set button and Reset/ Select button on the device. There are 3 operating modes on the device: manual, semiautomatic and automatic.

- Manual operation mode: The device is required to be reset by pressing the button manually when current error occurs.

- Semi-automatic operation mode: The device resets 3 times current errors automatically by waiting the error time. The device is required to be reset by pressing the button manually For 4th current error occurs.

- Automatic operation mode: The device resets the current errors automatically after waiting the error time.



DIGITAL OVERLOAD RELAYS (Internal Current Transformer)

	PDT-03	PDT-12	PDT-25
Operating Voltage (Un)	110V - 270VAC		
Operating Frequency	50/60Hz.		
Operating Power	<6VA		
Operating Temperature	-20°C to 55°C		
High Current (Overload A>)	0.1A-3A	3A-12A	0.1A- 25A
Delay (t)	0.1sec. - 10sec.	0.1sec. - 10sec.	1sec. - 20sec.
Asymmetry	%50 Fixed		
Demurrage	5 sec.		
Display	3 x 9mm 3 digit display and 4 LEDs		
Connection Type	Terminal connection		
Contact	5A/250VAC Resistive Load		
Cable Diameter	2.5mm²		
Weight	<250gr.		
Mounting	DIN rail mounting		
Protection Class	IP20		
Operating Altitude	<2000 meters		
Case	B2		

Digital Overload Relays are designed to protect the devices having precise operating current values against the errors likely to arise from excessive current. There are High (Overload Relay A>) current set button and error latency (t) time set button and Reset/ Select button on the device. There are 3 operating modes on the device: manual, semiautomatic and automatic.

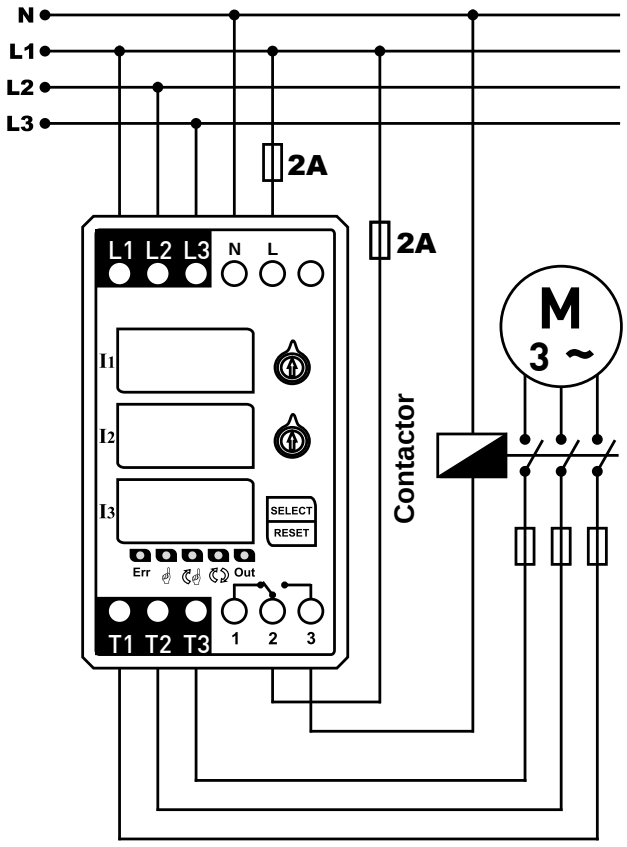
- Manual operation mode: The device is required to be reset by pressing the button manually when current error occurs.

- Semi-automatic operation mode: The device resets 3 times current errors automatically by waiting the error time. The device is required to be reset by pressing the button manually when 4th current error occurs.

- Automatic operation mode: The device resets the current errors automatically after waiting the error time.

- Asymmetry : If there is more than 50% difference between the lowest current and the highest current that pass from phases, the device switches on to asymmetry fault after 2 seconds.

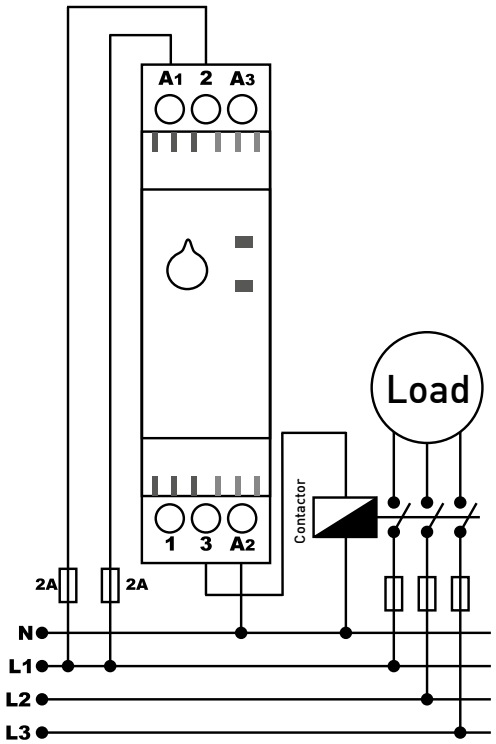
- Demurrage (starting current) : it doesn't current control for 5 seconds after relay switches on. it is allowed to Demurrage current.



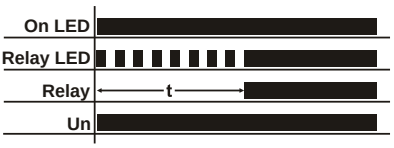
DIN TYPE TIME RELAYS

	PTR-XX							
Operating Voltage (Un)	150V – 260VAC(A1-A2), 24VAC/DC(A3-A2)							
Operating Frequency	50/60Hz.							
Operating Power	<4VA							
Operating Temperature	-20°C to 55°C							
Time Select	0.1-3 Sec	0.1-12 Sec	0.1-30 Sec	0.1-60 Sec	0.1-3 Min	0.1-12 Min	0.1-30 Min	0.1-60 Min
Output	5A/250VAC Resistive Load							
Display	2 LEDs							
Connection Type	Terminal connection							
Cable Diameter	1.5mm²							
Weight	<100gr.							
Mounting	DIN rail mounting							
Protection Class	IP20							
Operating Altitude	<2000 meters							
Case	C1							

PTR-XX is a time relay delayed in drawing and designed to be used where time based control is required (industry, house, factory etc.). Waiting time (t) is adjusted with button. When the device is energized, it starts counting the waiting time. While it is counting the time, ON led lights up and OUT led blinks. At this stage, 1(NC) and 2(COM) contacts become short-circuit. Relay led lights constantly after the time is up, 3(NO) and 2(COM) contacts become short-circuit. The device maintains its position until it is de-energized.



PTR-XX (On delay)



MULTI-FUNCTIONAL TIME RELAYS

	 PRX-10
Operating Voltage (Un)	12V - 240VAC/DC
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Program Select	10 different programs
Time Select	0.1 Sec. - 30 hours
Display	4 LEDs
Connection Type	Terminal connection
Output	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<100gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C3

PRX-10 is a multi-time relay delayed in drawing and designed to be used where time based control is required (industry, house, factory etc.).

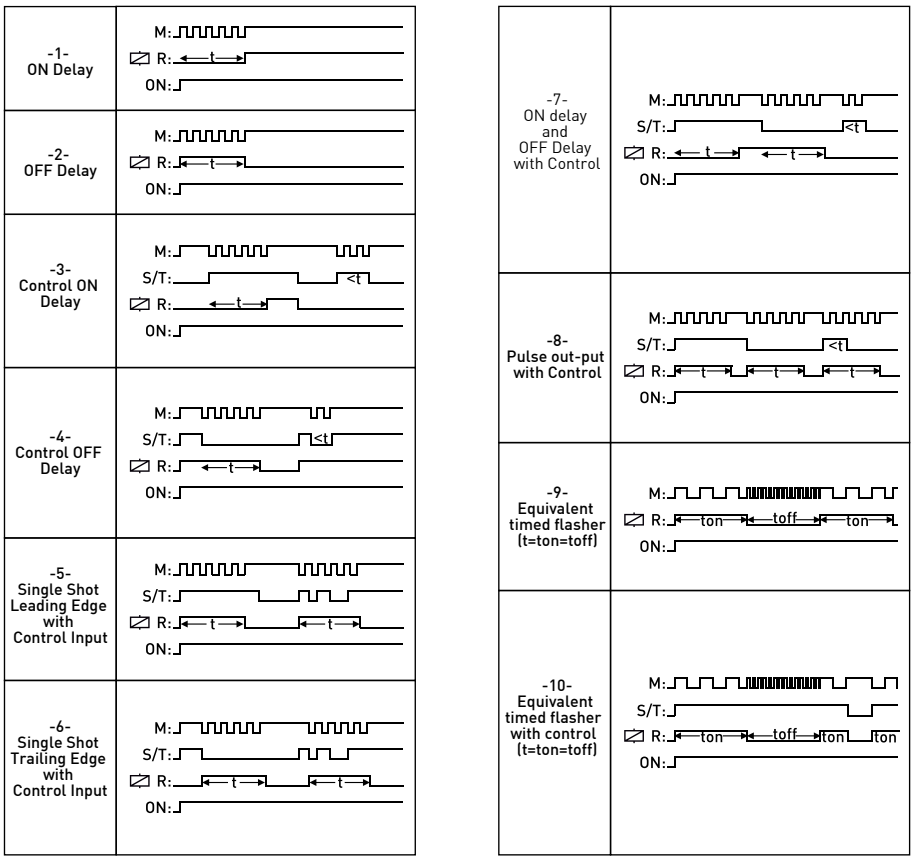
Function button(Fn) : It defines functions. You can select the function that you want to use from the table.

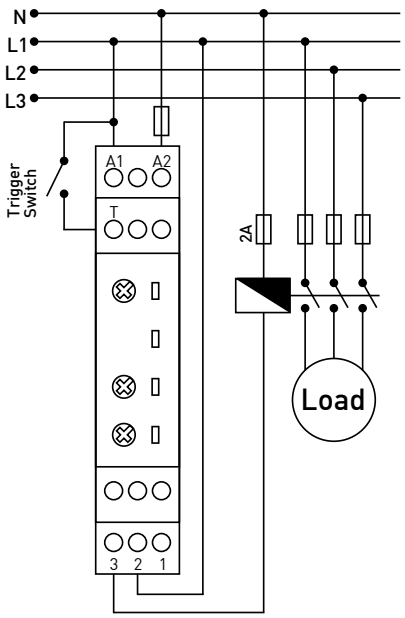
Maximum Time Button(tm) : It defines the maximum time you want to use in functions. Function values are indicated on the cover as letter.

There are 10 different time levels. You can see the function that you want to use from the table.

Time Multilplier button (Xn):It multiplies the maximum time to reach the intermediate values. it has 10 stepped multiplying values between 0.1 and 1.

Programs on the device are as follows :



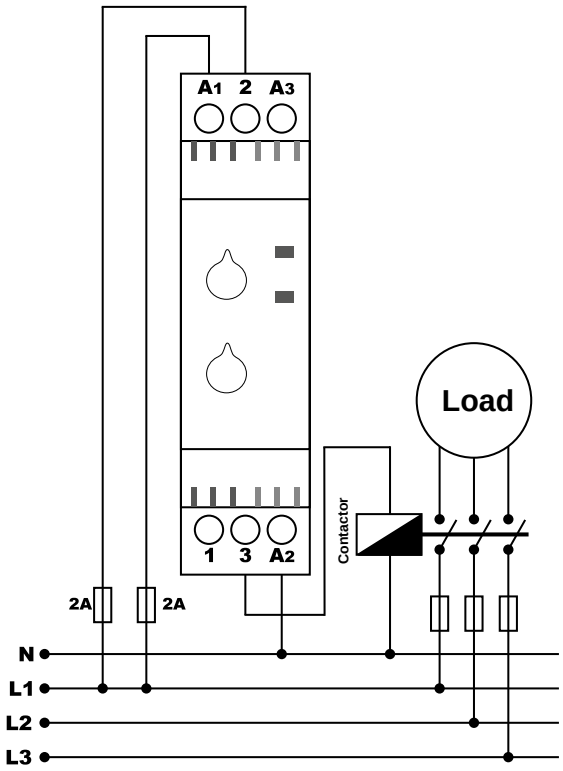


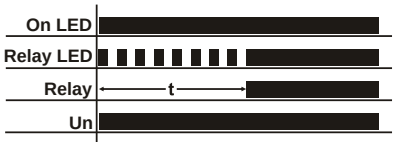
MULTI-FUNCTIONAL TIME RELAYS

	 PRV-08
Operating Voltage (Un)	150V – 260VAC(A1-A2), 24VAC/DC(A3-A2)
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Time Select	0.1 Sec - 100 Hours
Display	2 LEDs
Connection Type	Terminal connection
Output	5A/250VAC Resistive Load
Cable Diameter	2.5mm²
Weight	<100gr.
Mounting	Inside of panel vertical or DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C1

PRV-08 is a multi-time relay delayed in drawing and designed to be used where time based control is required (industry, house, factory etc.). 6 different time levels (A=10s., B=100s., C=10m., D=100m., E=10h. and F=100h) are available. Waiting time is adjusted with level and time set button. Level set button shows the maximum (10) value of time set button.

PRV-08



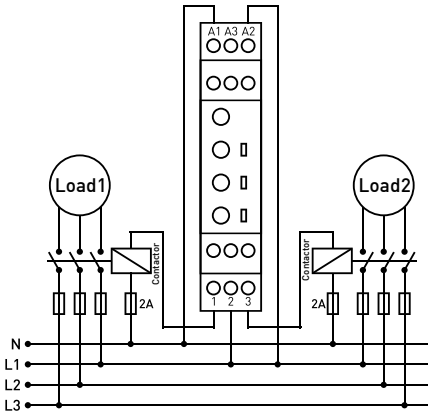


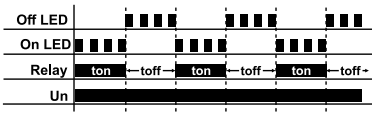
MULTI-FUNCTIONAL FLASHER RELAYS

	 PFL-09
Operating Voltage (Un)	150V – 260VAC
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Time Select	0.1Sec. - 100 Hours
Display	3x LEDs
Connection Type	Terminal connection
Output	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<110gr.
Mounting	Inside of panel vertical or DIN rail mounting
Panel Hole Sizes	-
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C3

PFL-09 is a multi-time flasher relays are designed to be used where time based control is required (industry, house, factory etc.). There are 6 different time levels (A=10s, B=100s, C=10m, D=100m, E=10h and F=100h) Operating time is adjusted with level (ton) and time (ton) set button. Level set buttons show the maximum (10) value of time set buttons. “ton” is written under the time set button of the operating time. The level set button of the operating time is under this button. “toff” is written under the time set button of the waiting time. The level set button of the waiting time is under this button.

PFL-09



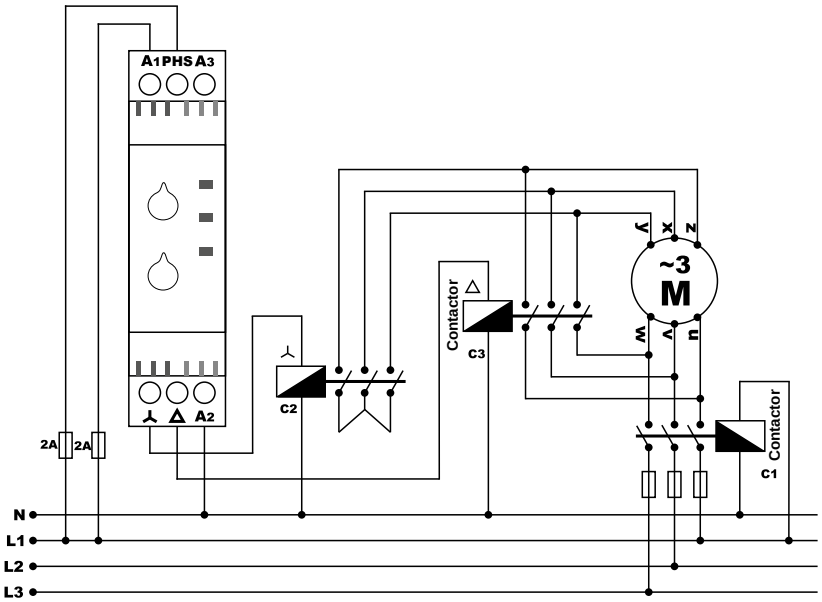


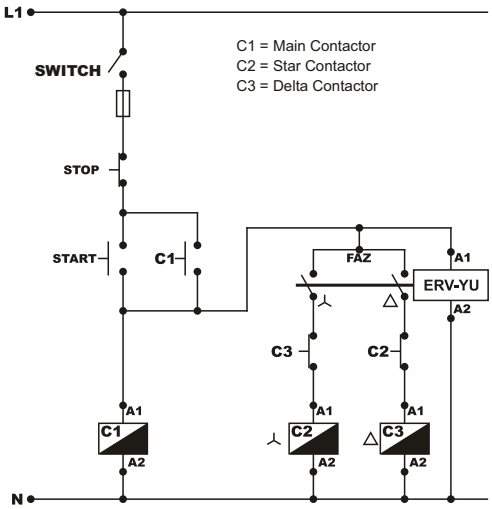
STAR DELTA RELAY

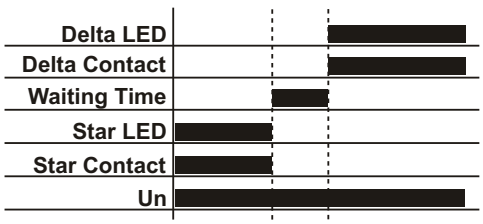
	PTR-SD
Operating Voltage (Un)	150V – 260VAC(A1-A2), 24VAC/DC(A3-A2)
Operating Frequency	50/60Hz.
Operating Power	<4VA
Operating Temperature	-20°C to 55°C
Star Contact Waiting	0.1 Sec. - 30 Sec.
Star to Delta Passing	10 msec - 500msec.
Display	3 LEDs
Connection Type	Terminal connection
Output	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<110gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C1

PTR-SD star delta relay is designed to control the three-phase motor take-offs. There are star contact waiting time set button (1sec.– 30sec.) and the time set button for drawing the delta contact after releasing the star contact (10msec.–500msec.)

When the device is energized, the star draws the contact, it counts the star contact waiting time that you adjusted, ON led and “star” led lights up. At this stage, PHASE and star terminals are short-circuit, PHASE and delta terminals are open-circuit. After the star waiting time is up, it releases the star contact. Star led turns off. It starts counting the time of switching to delta. At this stage, PHASE terminal is open-circuit with the other terminals. After the time of switching from star to delta, PHASE and delta contacts become short-circuit and the delta led lights up. The device maintains its position until it is de-energized.







PHOTOCELL RELAYS

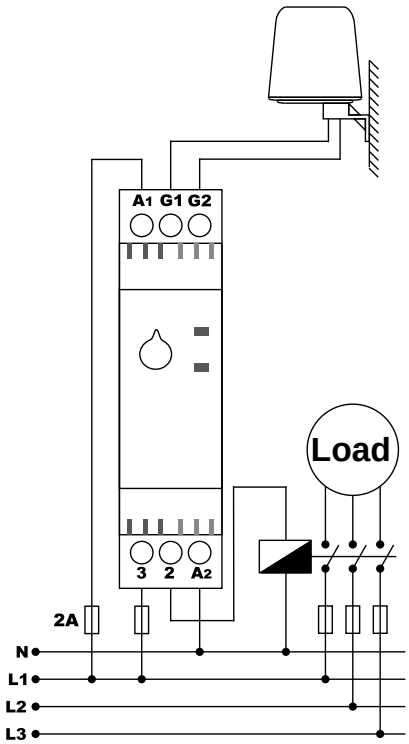
	 PFR-04
Operating Voltage (Un)	150V – 260VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Display	2 LEDs
Lux Measuring Range	1 - 10 Lux
Delay	15 Sec. (Fixed)
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<100gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C1

PFR-04: It has been designed for the systems requiring control depending on the light intensity.

There is lux adjustment knob on the device. When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are opencircuit. If the lux value of the area where the photocell element is installed is lower than the adjusted lux value, the device counts for about 15 seconds and after the time is up, the relay led lights up and contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.

If the lux value of the area is higher than the adjusted lux value, the device counts for about 15 seconds and after the time is up, the relay led lights up and contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit.

Note: While mounting the photocell element, make sure that it will not be affected from street lamp, headlights of vehicles and other light sources and that it is mounted in a way that the arrow mark points straight up.



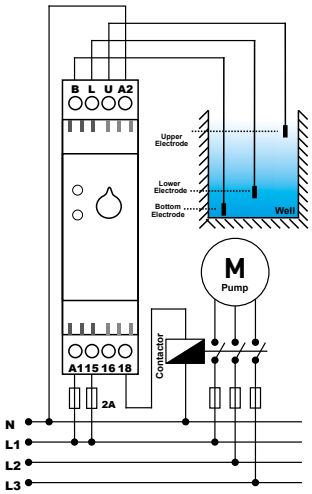
LIQUID LEVEL RELAYS

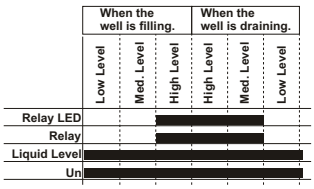
	 PLL-05
Operating Voltage (Un)	150V – 260VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Upper Electrode Waiting Time	-
Liquid Sensitivity	<100KΩ
Display	2 LEDs
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<250gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C2

PLL-05 liquid level relays are designed for controlling drainage of tanks and wells including conductive liquids. The adjusting knob on the device is used to adjust the liquid conductivity level (kΩ) in order to enable the electrodes to detect each other when liquid contact with one electrode. Only if the liquid conductivity level is lower than the value set by the adjustment button, electrodes detect each other.

If liquid conductivity level is high, the liquid conducts electricity better and kΩ value is low. If liquid conductivity level is lower than this, the liquid conducts electricity less and kΩ value is high. Conductivity of drinking waters is generally low and high kΩ adjustment is required. Conductivity level of tap water and municipal water is higher and low kΩ adjustment is required.

-Do not use electrode liquid level relays with flammable and explosive liquids.





PHASE SEQUENCE PROTECTION RELAY WITH FIXED ASYMMETRY

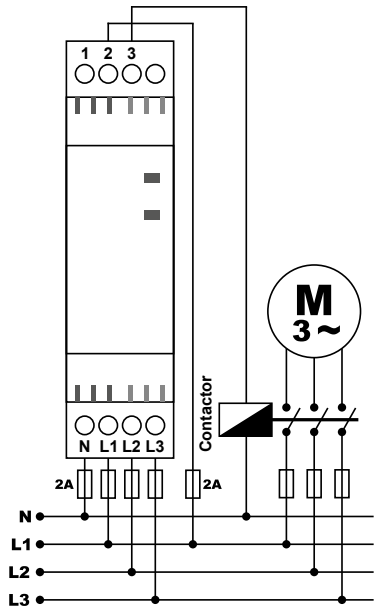
	 PMK-03
Operating Voltage (Un)	3x380VAC + Neutral
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Asymmetry	~%40(Fixed)
Without Neutral	-
Display	2 LEDs
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	1.5mm²
Weight	<110gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	C2

PMK-03 Phase protection relays are designed to protect the devices having precise operating voltage values and the feature of phase sequence against errors likely to arise from mains voltage. The device has 40% constant asymmetry. Asymmetry means the difference between the voltage values.

When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are opencircuit. If the voltage values are within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM) are open-circuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

When the difference between the voltage values exceeds 30%, the relay led turns off in about 1 seconds and contactor terminals no. 1(NC) and 2(COM) become shortcircuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the difference between voltage values decreases by 5V, the relay led lights up and contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.

If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit.



DIGITAL MONO-PHASE VOLTAGE CONTROL RELAYS

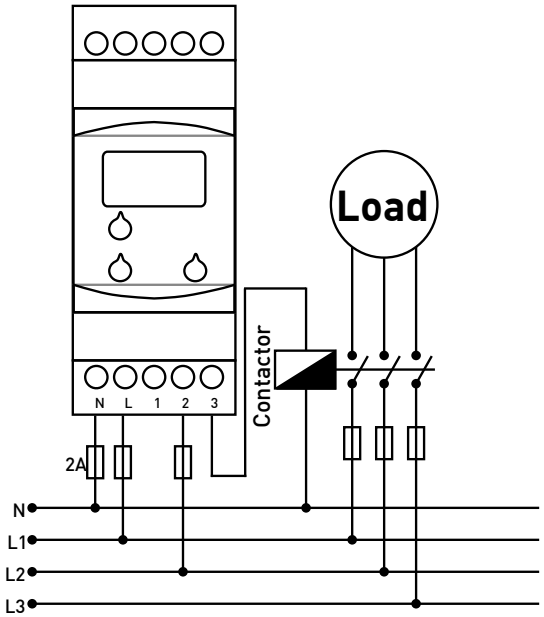
	 PVR-01
Operating Voltage (Un)	140V - 290VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Low Voltage	150V - 210VAC
High Voltage	230V - 280VAC
Delay	0.1sec. - 10sec.
Display	1 x 3 digits display and 3 LEDs
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	2.5mm²
Weight	<220gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	B4

PVR-01 is designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There are high (U>) voltage set button, low (U<) voltage set button and error latency (t) time set button on the device.

Please make the connection of the device according to the diagram. Energize the device. When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are opencircuit. Adjust the high voltage, low voltage and error latency time values depending on the load you will use. While adjusting the values via the set button, the value being adjusted is shown on the display. If the voltage value is within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.

If the voltage value exceeds the high voltage set value, the high voltage (U>) error led lights up and if the voltage value does not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this position, the relay led turns off, contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the voltage value drops below the high voltage set value by 5V, the high voltage error led turns off and the device starts to count the error latency (t) time. When the error latency time is up, the relay led lights up and contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.

If the voltage values drop below the low voltage set value, the low voltage (U<) error led lights up and if the voltage values do not increase to the normal value within the error latency time, low voltage error occurs on the device. In this position, the relay led turns off, contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the voltage value exceeds the low voltage set value by 5V, the low voltage error led turns off and the device starts to count the error latency (t) time. When the error latency time is up, the relay led lights up and contactor terminals no. 1(NC) and 2(COM) become opencircuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.



DIGITAL OVER & UNDER VOLTAGE CONTROL RELAYS

	 PDV-04F
Operating Voltage (Un)	3x380VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Low Voltage	260V - 360VAC
High Voltage	400V - 460VAC
Delay	0.1sec. - 10sec.
Phase Sequence Feature	Yes
PTC Feature	-
Display	4 LEDs
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	2.5mm²
Weight	<210gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	B2

Digital voltage control relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There are high (U>) voltage set button, low (U<) voltage set button and error latency (t) time set button on the device.

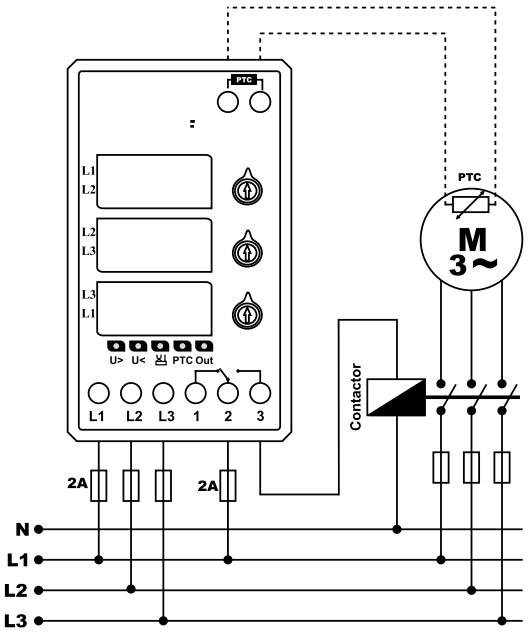
Please make the connection of the device according to the diagram. Energize the device. When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are opencircuit. Adjust the high voltage, low voltage and error latency time values depending on the load you will use. While adjusting the values via the set button, the value being adjusted is shown on the display. If the voltage values are within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM) are open-circuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

If the voltage values exceed the high voltage set value, the high voltage (U>) error led lights up and if the voltage values do not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this situation, the relay led turns off; the relevant display blinks depending on which phase to phase value causes error; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the voltage value drops below the high voltage set value by 5V, the high voltage error led turns off and the device starts to count the error latency (t) time. When the error latency time is up, the relay led lights up, the display remains open and contactor terminals no. 1(NC) and 2(COM) are opencircuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

If the voltage values drop below the low voltage set value, the low voltage (U<) error led lights up and if the voltage values do not increase to the normal value within the error latency time, low voltage error occurs on the device. In this situation, the relay led turns off; the relevant display blinks depending on which phase to phase value causes error; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the voltage values exceed the low voltage set value by 5V, the low voltage error led turns off and the device starts to count the error latency (t) time. When the error latency time is up, the relay led lights up, the display remains open and contactor terminals no. 1(NC) and 2(COM) are opencircuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

PDV-04F

If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals no. 1(NC) and 2(COM) become shortcircuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit.



THREE-PHASE VOLTAGE CONTROL RELAYS (MONO-PHASE DIAL)

	 PVC-02
Operating Voltage (Un)	140V - 300VAC
Operating Frequency	50/60Hz.
Operating Power	<6VA
Operating Temperature	-20°C to 55°C
Low Voltage	140V - 210VAC + Off (Can be disabled)
High Voltage	230V - 300VAC + Off (Can be disabled)
Delay Time	0.1sec. - 20sec.
Reset Time	0.1sec. - 20sec.
Phase Sequence Feature	-
Display	4 LEDs
Connection Type	Terminal connection
Contact	5A/250VAC Resistive Load
Cable Diameter	2.5mm²
Weight	<210gr.
Mounting	DIN rail mounting
Protection Class	IP20
Operating Altitude	<2000 meters
Case	B4

Voltage control relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage.

Please make the connection of the device according to the diagram. Adjust the high voltage(U>), low voltage (U<) and error latency time (t) values depending on the load you will use. When the device is energized, the power led lights up. Contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are open-circuit. If the voltage value is within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit.

High Voltage Protection : If one or more of the phases voltage values exceed the high voltage set value, HV led lights up and the device waits up to latency time(DT). When the time is up, relay contacts switch on and relay led lights off.

High Voltage Fuse Protection : If one or more of the phases voltage values exceed more than 1.5 times of the nominal operating voltage, HV led flashes and after 100 ms., relay contacts switch on and relay led lights off.

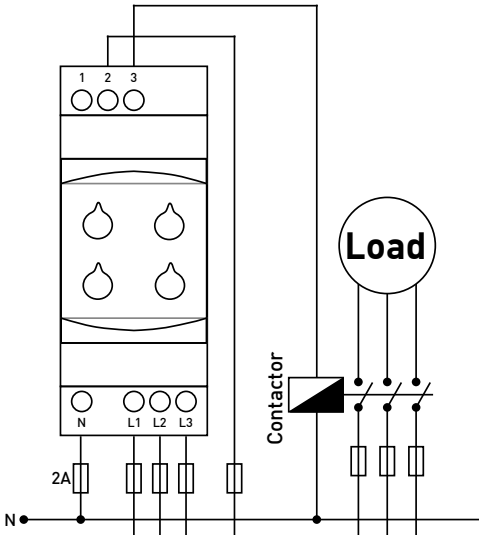
Low Voltage Protection : If one or more of the phase voltage values drop the low voltage set value, LV led lights up and the device waits up to latency time(DT). When the time is up, relay contacts switch on and relay led lights off.

Low Voltage Fuse Protection : If one or more of the phases voltage values drop more than 0.5 times of the nominal operating voltage, LV led flashes and after 100 ms., relay contacts switch on and relay led lights off.

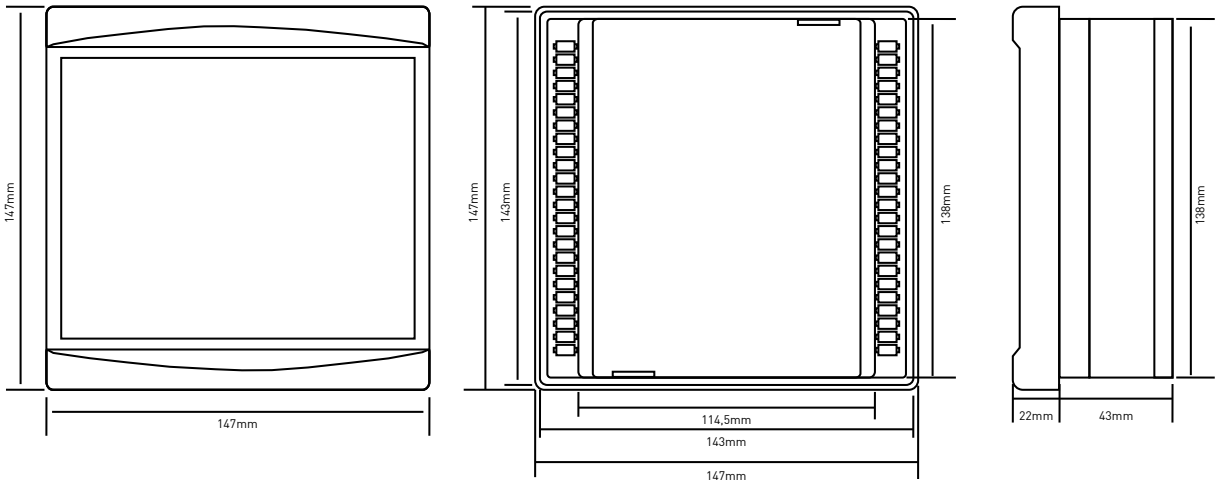
Low Supply Voltage Protection – Enter Error State : for PVC-02, if voltage value of N-L1 drops more than 0.4 times of the nominal operating voltage, LV and HV leds light up and after 100 ms., relay contacts switch on and relay led lights off.

Phase Sequence Protection : If the phase sequence is reversed, Phase Sequence error led lights up and relay doesn't switch on. Lack of phase is phase sequence error too.

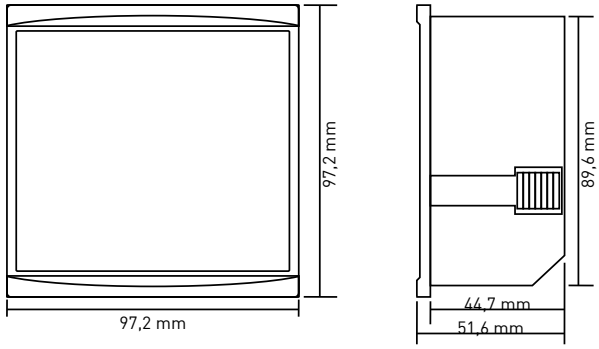
Neutral Lack Protection : If neutral can't move to the device, neutral lack led flashes for PVC-02.



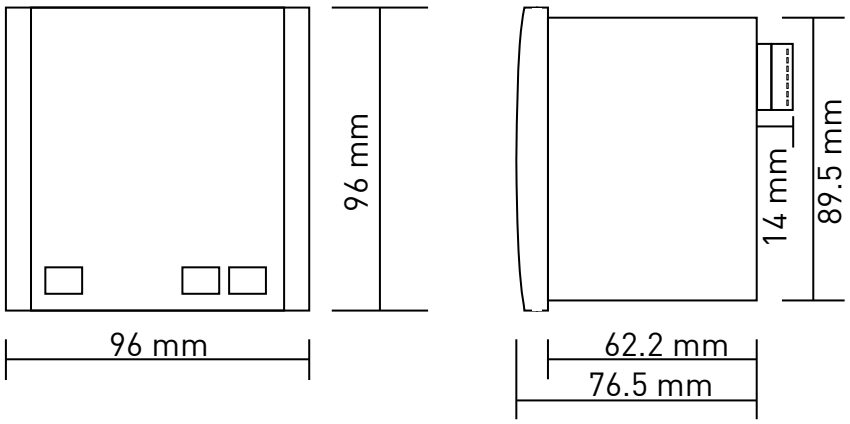
A1 CASE



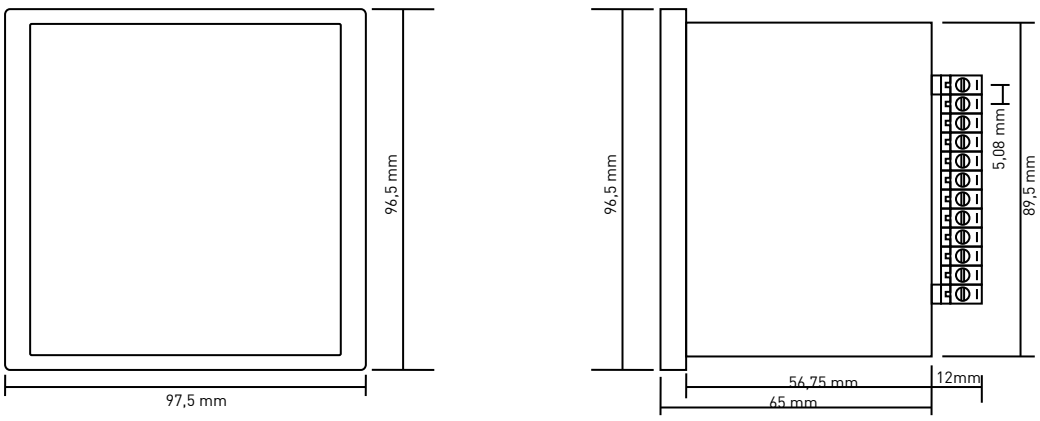
A2 CASE



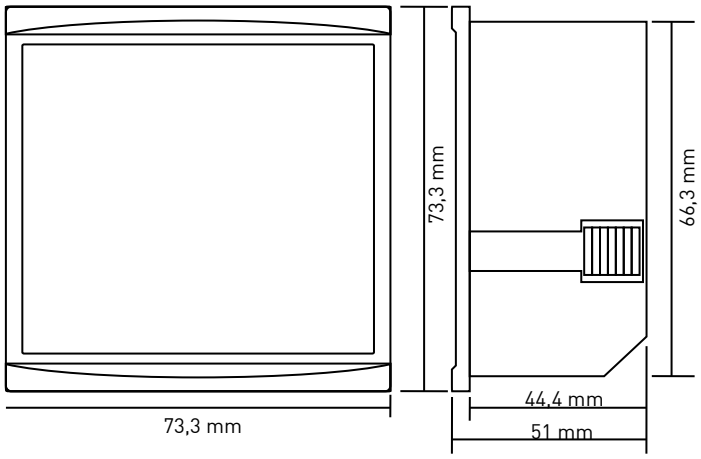
A3 CASE



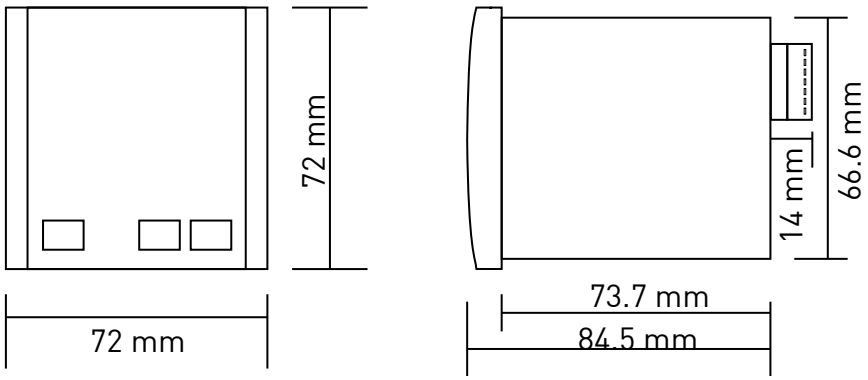
A4 CASE



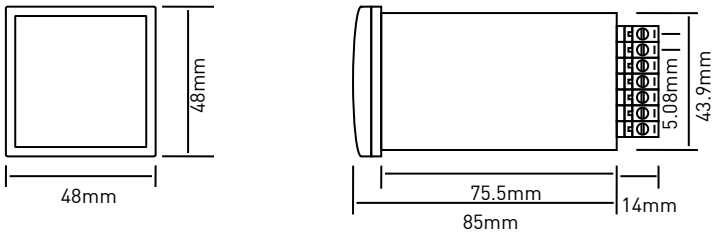
A5 CASE



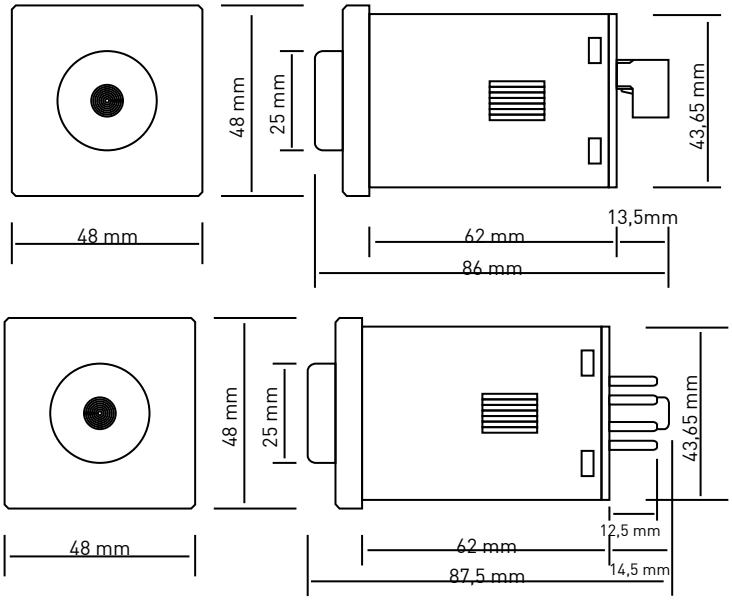
A6 CASE



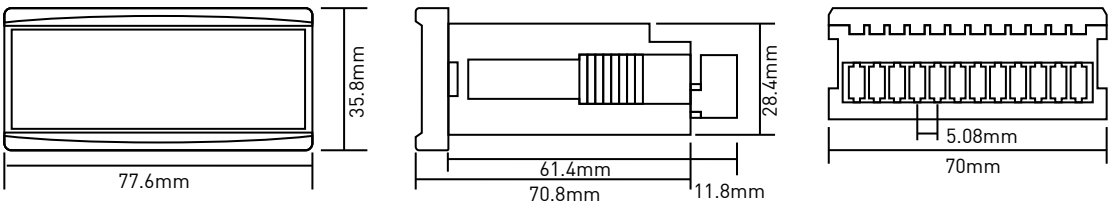
A7 CASE



A8 CASE



A9 CASE



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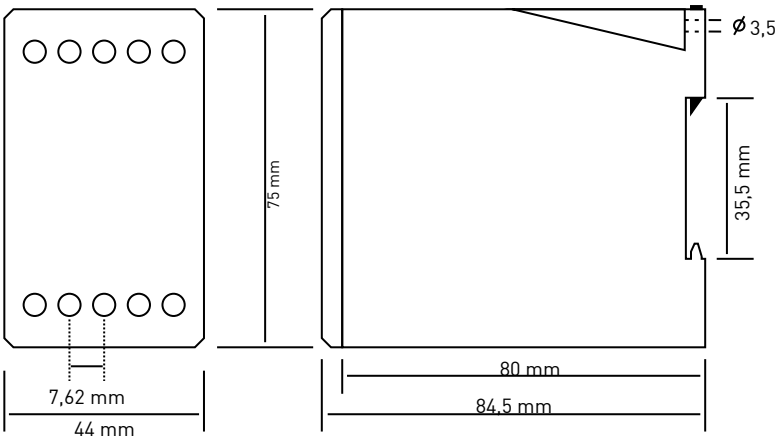

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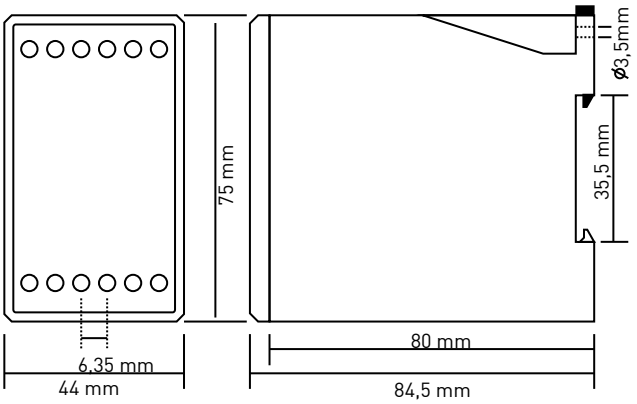

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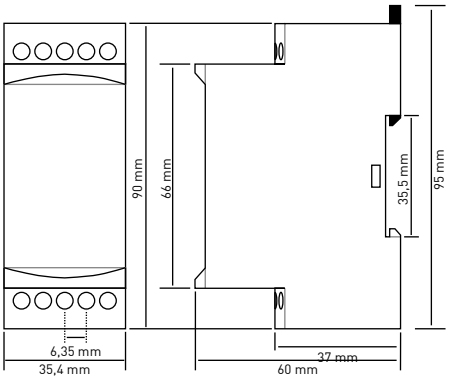

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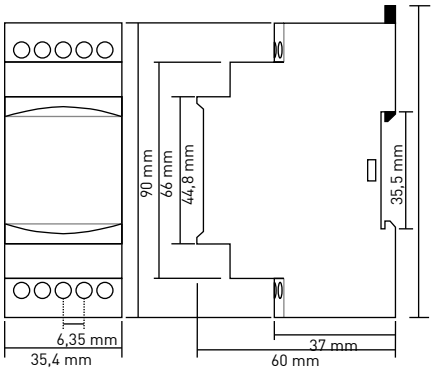

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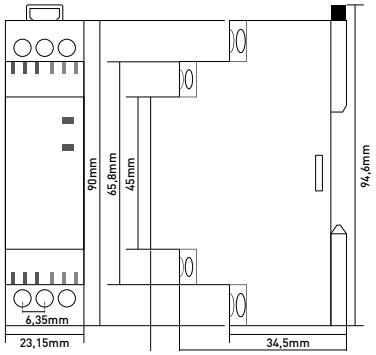

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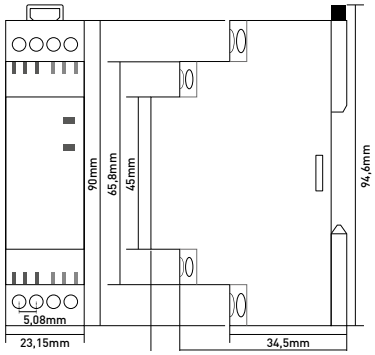

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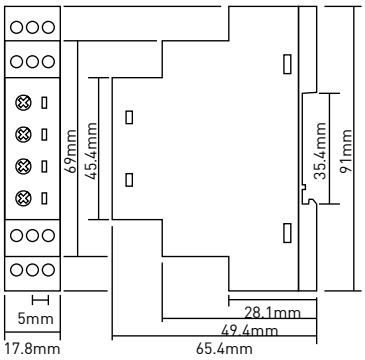

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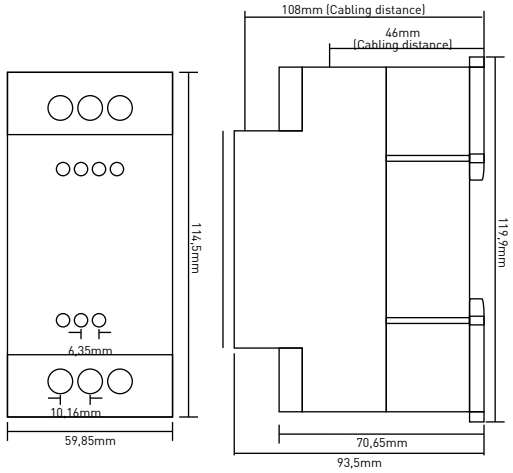

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