

ER-NA[®]

2018 CATALOGUE



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TECHNICAL DATA

Supply Voltage (Un)	: 220V AC (L1 Phase + Mp)
Operation Voltage	: (0,8-1,2) x Un
Operation Frequency	: 50/60 Hz
Screen	: 3 pieces 1x4 digit 14 mm red display
Measuring Parameter	: For every phase; CosQ, Current, Voltage, Capacitor values, Apperent Power, Reactive / Active Power, Frequency, Temperature
Output Contact	: 5A, 1250 VA (12 pieces NO Contact)
Alarm Output	: 5A, 1250 VA (1 pieces NO Contact)
Fan Output	: 5A, 1250 VA (1 pieces NO Contact)
Step Number	: 12 Steps
Connection Type	: Terminal Connection (D-E Socket Klemens)
Set Area	: Separately COSQ setting possibility in Ind. and Cap. region Current Transformer Ratio: 5-10000 Reaction Time : 0-1800 sn Dischage Time : 0-1800 sn
Measuring Sensitivity	: $\pm 1\%$
Operation Temp	: -40...+50 °C
Dimensions (mm.)	: 144x144x60
Net Weight	: 1000 gr.

ERA-12 COMBI

Designed with Micro controller; convenient 3 phase measurement it has 12 step (output) groups.

COSQ, voltage, current, active and reactive power, apparent power temperature and frequency values seeable on screen for every phase.

Capacitor group with 1 phase, 2 phase, 3 phase can be connect mixed. Device automatically knows that capacitor group values, step outputs, connected to which phase or phases.

Current Transformer Ratio adjustable between 5/5 and 10000/5.

Capacitor values can be enter manually or automatically.

Device gives warning when wrong capacitor value measured.

Device works Manual or Automatically.

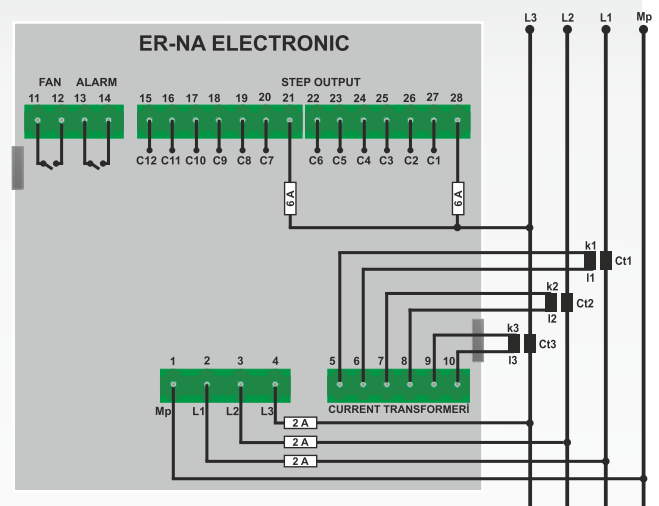
Device has alarm outputs together with warning leds for the Over compensation, Under compensation, Over Voltage, Under voltage, connection wrong and temperature.

Capacitor connect-disconnect time discharge time adjustable.

Current transformer (k, l) can be connect opposite way.

Can be easily installed to the panel.

CONNECTION DIAGRAM



CONNECTION TERMINALS

- 1** : Mp Neutral input
- 2** : L1 Phase input
- 3** : L2 Phase input
- 4** : L3 Phase input
- 5-6** : Current transformer input of L1 Phase
- 7-8** : Current transformer input of L2 Phase
- 9-10** : Current transformer input of L3 Phase
- 11-12** : Fan contact output
- 13-14** : Alarm contact output
- 21,28** : Common phase inputs for relays
- 15...20** : Step outputs between 7-12
- 22...27** : Step outputs between 1-6

NOTE1 : Capacitor learning (Ogrn) mode must operate one time for finding automatically capacitor values and current ways

NOTE2 : Capacitor with 3 phase must connect to the any of step outputs.

EM-05 DIGITAL MULTIMETER



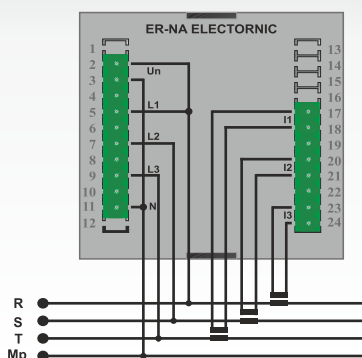
TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,8-1,2) x Un
Frequency	: 50/60 Hz
Screen	: 5x3 digit 9,2 mm. red display
Measurement Range	: 0-500V AC 1-10000A AC (Current Transformer Ratio)
Sensitivity	: $\pm 1\%$
Operation Temperature	: -40...+50 °C
Dimensions (mm.)	: 96x96x75
Net Weight	: 415 gr.

EM-05

- Microprocessor Controlled.
- Frequency meter available.
- Selective the phase to phase or phase to neutral measuring and monitoring can be perform.
- Current transformer input range is 1-10000/5 A
- 3 Phase current is monitored on 3 displays continuously.
- Can be easily installed to panel.

CONNECTION DIAGRAM



CONNECTION TERMINALS

2,3	: Supply Voltage (Un)
5	: R (L1) Phase Input
7	: S (L2) Phase Input
9	: T (L3) Phase Input
11	: Neutral Input
17,18	: T (L3) Phase Current Transformer Input
20,21	: S (L2) Phase Current Transformer Input
23,24	: R (L1) Phase Current Transformer Input

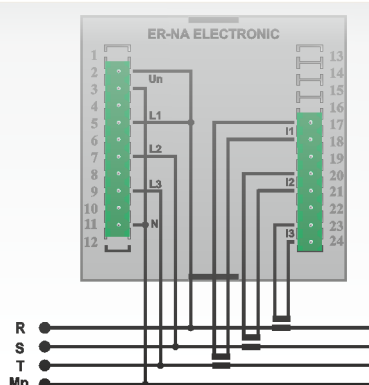
EM-09 DIGITAL MULTIMETER

TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,8-1,2) x Un
Frequency	: 50/60 Hz
Screen	: 9x3 digit 9,2 mm. red display
Measurement Range	: 0-500V AC 1-10000A AC (Current Transformer Ratio)
Sensitivity	: $\pm 1\%$
Operation Temperature	: -40...+50 °C
Dimensions (mm.)	: 96x96x75
Net Weight	: 415 gr.



CONNECTION DIAGRAM



CONNECTION TERMINALS

2,3	: Supply Voltage (Un)
5	: R (L1) Phase Input
7	: S (L2) Phase Input
9	: T (L3) Phase Input
11	: Neutral Input
17,18	: T (L3) Phase Current Transformer Input
20,21	: S (L2) Phase Current Transformer Input
23,24	: R (L1) Phase Current Transformer Input

EM-09

- Designed with micro controller. Monitored 3 current, 6 voltage and 3 frequency.
- 3 Phase Current is monitored on 3 displays continuously.
- All Voltage (R, S, T, R-S, S-T or T-R) are monitored on displays.
- Each Phases Frequency is monitored on 3 displays. Current input range is 1-10000/5 A.
- (With current transformer)

DIGITAL ADJUSTABLE AMPERMETERS



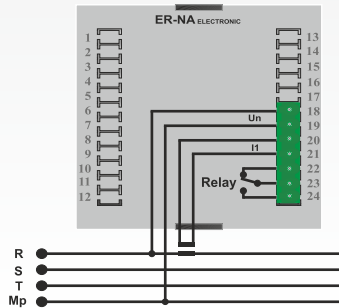
TECHNICAL DATA

Supply Voltage	220V AC (Faz+Nötr)	Sensitivity	±%1
Operation Voltage	(0,8-1,2)x220V AC	Times	0,0 - 999,9 sn.
Operation Freq.	50/60 Hz	Operation Range	-5 +50 °C
Input	0,05 - 5,5 A AC	Dimensions	72x72x70 (DA-72 S)
Input Range	0,05-10000 (Akım Trafosuna Göre)		96x96x60 (DA-96 S)
Current Range	510000/5A	Net Weight	280 gr (DA-72 S)
Power	< 4 VA		310 gr (DA-96 S)
Output	5A - 250V AC (NC + NO)		
Open	>1,5xuc S veya <0,5xdc S		

DA-72S, DA-96S

- DA is used to precisely measure and monitor the RMS value of AC Current.
- Current Transform Ratio is adjustable via buttons on front panel
- Adjustable Current Transformer Ratio (1-10000/5A)
- The measured value is displayed on the screen.

CONNECTION DIAGRAM



CONNECTION TERMINALS

18,19 : Supply Voltage (for DA-96S)

14,15 : Supply Voltage (for DA-72S)

20,21 : Current Trans In. (for DA-96S)

16,17 : Current Trans In. (for DA-72S)

22,23,24 : Relay Output (for DA-96S)

18,19,20 : Relay Output (for DA-72S)

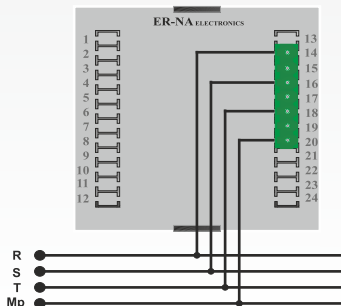
DIGITAL FREQUENCYMETER

TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,8-1,2) x Un
Operation Frequency	: 50/60 Hz
Screen	: 1x3 digit, 14 mm, 7 segment red led display
Measurement Range	: 20-400 Hz.
Sensitivity	: ±%2
Operation Temperature	: -40...+50 °C
Dimensions (mm.)	: 72x72x83 (DF-72)
	: 96x96x75 (DF-96)
Net Weight	: 226 gr. (DF-72)
	: 273 gr. (DF-96)



CONNECTION DIAGRAM



CONNECTION TERMINALS

14 : L1 Phase Input

16 : L2 Phase Input

18 : L3 Phase Input

20 : Neutral Input

DF-72, DF-96

- Frequencymeter is developed for accurate measurement of the line frequency in industrial plants.
- This Device is 3 diferent measurement to make.
- Chose frequency value appear on display screen with button.

DIGITAL VOLTMETERS



TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,8-1,2) x Un
Operation Frequency	: 50/60 Hz
Screen	: 1x3 digit, 14 mm. display 2x3 digit, 14 mm. display (REG-72 for)
Measurement Range	: 0-500V AC
Sensitivity	: \pm %1
Operation Temperature	: -40...+50 °C
Dimensions (mm.)	: 72X72X83 (DV-72, REG-72, DV6-72) 96x96x75 (DV-96, DV6-96)
Net Weight	: 233 gr. (DV-72, REG-72, DV6-72) 266 gr. (DV-96, DV6-96)

DV - DV6 - REG

DV

- Used for Measuring the RMS value of AC voltage in between two points.

- Can be measured Phase-Phase or phase-Neutral voltage.

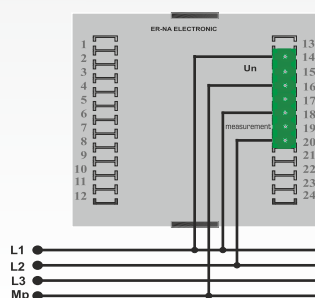
DV6

- Can be measured selectable 3xPhase-Phase or 3xPhase-Neutral voltage. The measured value is displayed on the screen.

REG

- Two different measured value is two different displayed on the screen

CONNECTION DIAGRAM



CONNECTION TERMINALS

DV

- 14, 16 : Supply Voltage (DV-96 for)
- 11, 13 : Supply Voltage (DV-72 for)
- 18, 20 : Input Voltage (DV-96 for)
- 15, 17 : Input Voltage (DV-72 for)

REG-72

- 16 : Supply Voltage
- 18 : Regulator Out Voltage
- 20 : Neutral

DV6

- 14 : L1 Phase Input
- 16 : L2 Phase Input
- 18 : L3 Phase Input
- 20 : Neutral

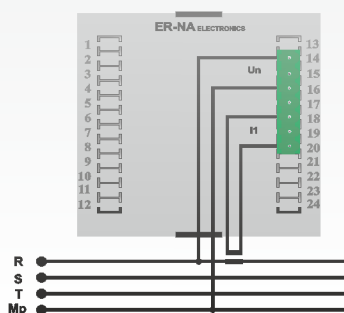
DIGITAL AMPERMETERS

TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,8-1,2) x Un
Operation Frequency	: 50/60 Hz
Screen	: 1x4 digit, 14 mm. red display
Measurement Range	: 1-10000A AC (with current transformers)
Sensitivity	: \pm %2
Operation Temperature	: -40...+50 °C
Dimensions (mm.)	: 72X72X83 (DA-72) 96x96x75 (DA-96)
Net Weight	: 226 gr. (DA-72) 273 gr. (DA-96)



CONNECTION DIAGRAM



CONNECTION TERMINALS

- 14,16** : Supply Voltage (for DA-96)
- 11,13** : Supply Voltage (for DA-72)
- 18,20** : Input Current Transformer (for DA-96)
- 15,17** : Input Current Transformer (for DA-72)

DA-72, DA-96

- DA is used to precisely measure and monitor the RMS value of AC Current.
- Current Transform Ratio is adjustable via Buttons on front panel
- Adjustable Current Transformer Ratio (1-10000/5A)
- The measured value is displayed on the screen.

EDT DIGITAL OVERLOAD RELAYS



TECHNICAL DATA

Operating Voltage(Un)....: 120V - 270V AC 50/60Hz.

Operating Frequency.....: 50/60 Hz.

Operating Power.....: <6VA

Operating Temperature...: -20°C.....+55°C

Display.....: 3x3 digit display, 5x leds

High current (Overload): **EDT-25:** 0,1A - 25A **EDT-50:** 15A - 50A,
EDT-100: 40A - 100A **EDT-200:** 90A - 200A,
EDT-300: 190A - 300A **EDT-400:** 290A - 400A

Waiting (t).....: 0,1sec. - 20sec.(TRM-10/20/50/100)
 1sec. - 200sec.(TRM-200/300/400)

Connection Type.....: Terminal connection

Contact.....: 5A / 250V AC (Resistive Load)

Cable Diameter.....: 2,5mm²

Weight.....: Max. 250gr.

Mounting.....: Vertical assembled in the panel or assembled
 on the din rail

Operating Altitude.....: <2000meter

EDT

General

This overload devices are designed to prevent the loads getting harm from high currents and ability of control at the same time.

Usage of Device and Working Principle

Please make the connection according to the diagram. TRM200(200/5A), TRM300(300/5A), TRM400(400/5A) can be connected with external current transformers and there can be applied maximum 5A. TRM-25 current transformer on the inside of the device. TRM-10, TRM-20, TRM-50 and TRM-100 must be used with the current transformers which comes together with the devices. Otherwise device energise the device. When the devices ys energised you can make adjustment of overload by(A>)button. While you are making your adjustment with this button set value van be seen on the left side display. Delay time is able to be adjusted by button. When the adjusting is be img done the values can be seen on the left side display. When the device is energised it picks the relay up contact out put gets in to the 3 output and output led gets on. If the existed current is higher than adjusted, it counts as long as its delay time and ee led gets on. When the time is up the relay gets deactivated and the contact output gets in to the 1 output and the out led gets off.

EDT

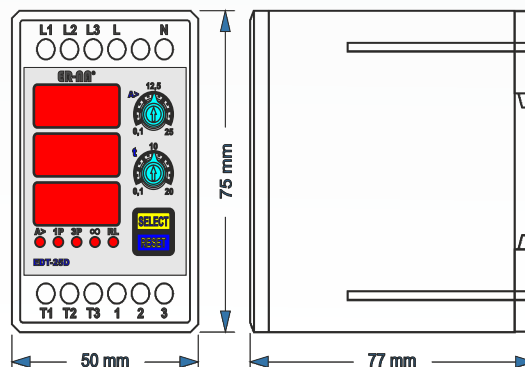
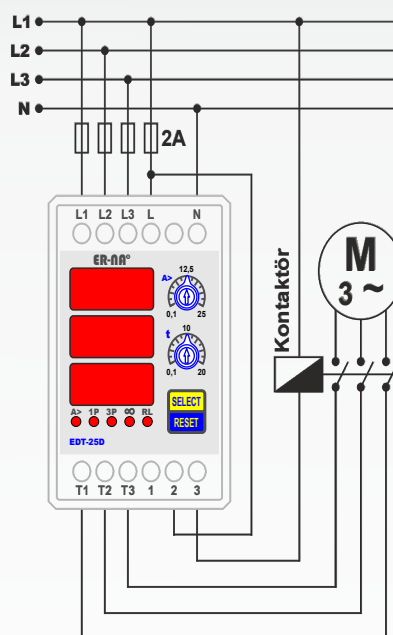
Manuel Control(by Hands): To reset the device when it has any kind of failure, reset button should be pressed. Hand led gets on when the device is on this mode.

Semi Automatic Mode: When the device has a failure three times in a row. It waits to be resetted until the next failure.

Automatic Mode: It resets it self automatically when the device gets into any kind of be resetted until the next failure.

Note: To make a mode change for the device please press select button for 10 sec. and leave pressing after mode led changes.

CONNECTION DIAGRAM



DIGITAL TEMPERATURE CONTROLLER



DT-48, DT-75, DT-96

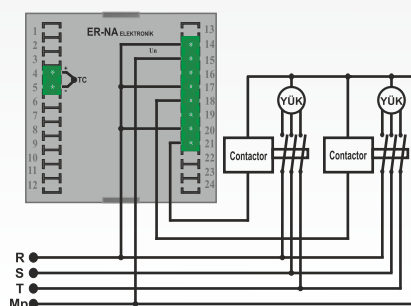
- Heat control devices, designed with microcontroller.
- On-Off and Proportional time (selective) control.
- Couple set points available, set points is adjusted via buttons on front panel.
- Current temperature and set value monitored on screen at same time.
- Histeresis adjust available.
- Head and Alarm relay contact out available. (2NO + 2nc)
- I/O terminals socket clemetsed.

TECHNICAL DATA

Supply Voltage (Un)	: 220V AC	Sensitivity	: 1 °C
Operation Voltage	: (0,9-1,1) x Un	Reliability	: ± %0,5
Operation Frequency	: 50/60 Hz	Operation Temperature	: -40...+50 °C
Output	: 2xRelay, 5A, 1250 VA 1xSSR out (+12V, 30mA)	Dimensions (mm.)	: 48x48x83 (DT-48) 72x72x83 (DT-72) 96x96x75 (DT-96)
Screen	: 2x4 digit, 14 mm. red led display	Net Weight	: 197 gr. (DT-48) 267 gr. (DT-72) 293 gr. (DT-96)
Input Sensor	: Fe-const. NiCr-Ni or PT-100 sensor (selectable)		
Measurement Range	: 0-500 C or 0-1200 C		

CONNECTION DIAGRAM

CONNECTION TERMINALS



14,15 : Supply Voltage (Un)

16 : NC Contact
17 : Common Contact
18 : NO Contact

19 : Alarm Relay NO Contact
20 : Alarm Relay Common Contact
21 : Alarm Relay NC Common Contact

22 : + SSR Out (Solid State Relay)
23 : - SSR Out (Solid State Relay)

DT-36 DIGITAL TEMPERATURE CONTROLLER (-50 +150 °C)

TECHNICAL DATA

Supply Voltage	: 220V AC	Input Sensor	: PTC Sensor
Operation Voltage	: (0,9-1,1)x Un	Measurement Range	: -50.... +150 °C
Operation Freq.	: 50/60 Hz	Sensitivity	: ± 1°C
Output	: 1 Relay, 5A, 1250 VA (NC+NO)	Operation Temperature	: -40.... +50 °C
Histeresis	: 1-20.... +20 °C (Adjustable)	Dimensions (mm.)	: 36x72x75 (DT-36)
Offset	: -20.... +20 °C (Adjustable)	Net Weight	: 189 gr. (DT-36)
Heat Controller	: On-Off or PI (Selectable)		
Screen	: 1x3 Digit display		



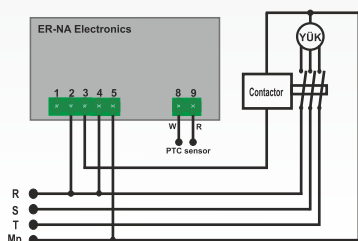
CONNECTION DIAGRAM

CONNECTION TERMINALS

4,5 : Supply Voltage (Un)

1 : NC Contact
2 : Common Contact
3 : NO Contact

6 : PTC Sensor Input
7 : PTC Sensor Input



DT-36

- This devices, designed with microcontroller.
- On-Off Or PI done head and cool controller.
- Sensor input only PTC
- Single contact out available (NO+NC)
- Heat values Monitored on screen.
- I/O terminals socket clemetsed.

DIGITAL MONOPHASE VOLTAGE CONTROL RELAY



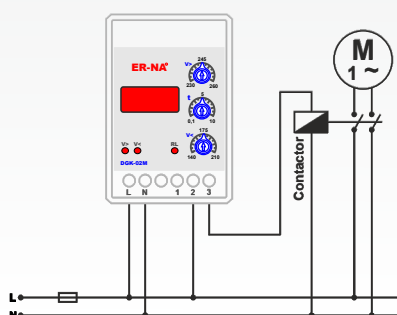
TECHNICAL DATA

Working Voltage.....:	220V AC +1 neutral
Working Frequency.....:	50/60 Hz.
Working Range.....:	Phase-Neutral(130V – 270V)
Working Power.....:	<6VA
Working Temperature..:	-20° C.....+55° C
High Voltage Set.....:	230V – 260V
Low Voltage Set.....:	140V – 210V
Delay (t).....:	0,1sec. – 10sec.
Display.....:	3 leds + 1x3digit display

DGK-02M, DGK-04F

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM



Connection Diagrams:	Vertical assembled in the panel or assembled on the din rail.
Weight.....:	220gr.
Contact.....:	5A 250V AC Resistive Load
Working Altitude.....:	<2000m
Cable Diameter.....:	2,5mm²

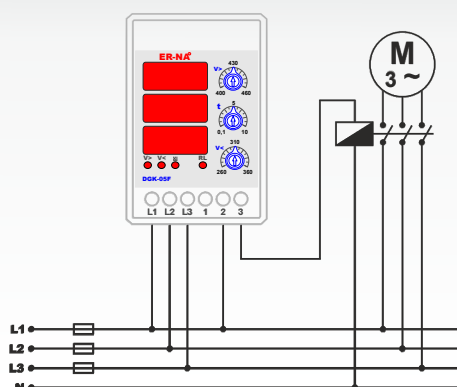
DGK-05F DIGITAL VOLTAGE CONTROL RELAY

TECHNICAL DATA

Working Voltage.....:	3 X 380V AC
Working Frequency.....:	50/60 Hz.
Working Power.....:	<6VA
Working Temperature..:	-20° C.....+55° C
High Voltage Set.....:	400V – 460V
Low Voltage Set.....:	230V – 360V
Delay (t).....:	0,1sec. – 10sec.
Display.....:	4 leds + 3x3digit display



CONNECTION DIAGRAM



Connection Diagrams:	Vertical assembled in the panel or assembled on the din rail.
Weight.....:	220gr.
Contact.....:	5A 250V AC Resistive Load
Working Altitude.....:	<2000m
Cable Diameter.....:	2,5mm²

DGK-05, DGK-05F

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

TIMER RELAY



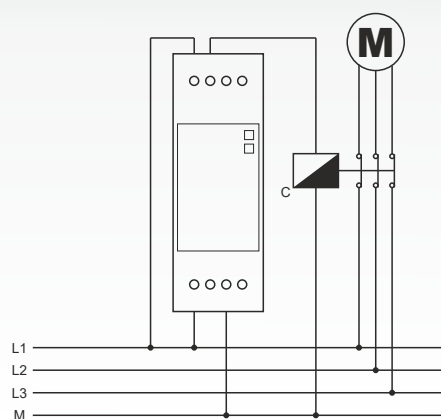
TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO)
Sensitivity	: ±%5
Operation Temperature	: -40...+50 °C
Protection Class	: IP 20
Installation	: To the mounting rails
Dimensions (mm.)	: 23x82x85
Net Weight	: 81 gr.

VZR

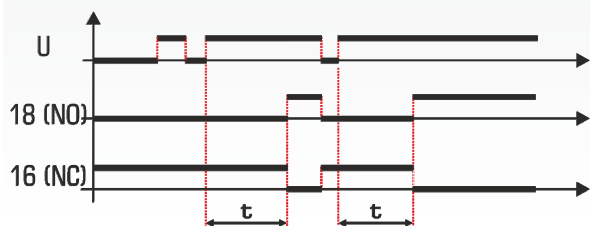
- On delay time relay type.
- The relay is switched on at the end of the set time period and the led turns on.
- Single Contact Out (NO+NC)
- Supply Voltage and Relay Contact leds available.
- Standardized railed relays.

CONNECTION DIAGRAM

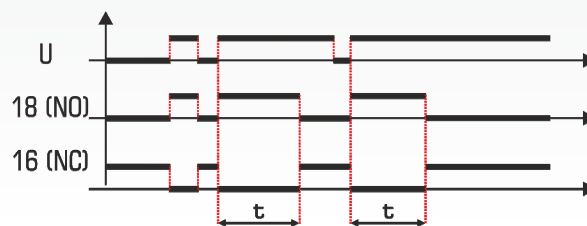


CODE	SUPPLY VOLTAGE	ADJUSTABLE TIME RANGE (minumum-maximum)	TIME TOLERANCE	OUTPUT	DIMENSIONS (mm)	FUNCTION
VZR-03	220V AC 50/60 Hz	0,1 - 3 sec	± %5	1 inverter 5A / 1250VA	23x82x85	ON DELAY
VZR-06		0,1 - 6 sec				
VZR-12		0,1 - 12 sec				
VZR-30		1 - 30 sec				
VZR-60		1 - 60 sec				
VZR-03D		0,1 - 3 min				
VZR-06D		0,1 - 6 min				
VZR-12D		0,1 - 12 min				
VZR-30D		1 - 30 min				
VZR-60D		1 - 60 min				
VZM-30	220V AC	1 - 30 sec	± %5	1 inverter 5A / 1250VA	23x82x85	OFF DELAY
VZM-60	50/60 Hz	1 - 60 sec				

**On Delay Timer
Functional Diagram**



**Off Delay Timer
Functional Diagram**



NOTE : Upon request, the relay with different voltages supplies (12V-24V-48V DC, 12V-24V-48V-110V-380VAC) can be produced.

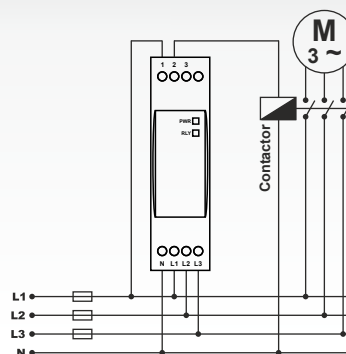
VKR-01DIN PHASE AND SEQ. CONTROL RELAY



TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%40
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

CONNECTION DIAGRAM



VKR-01DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

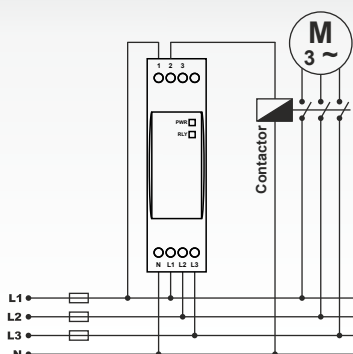
VKR-03DIN PHASE AND SEQ. CONTROL RELAY

TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%40
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²



CONNECTION DIAGRAM



VKR-03DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

TIMER RELAY



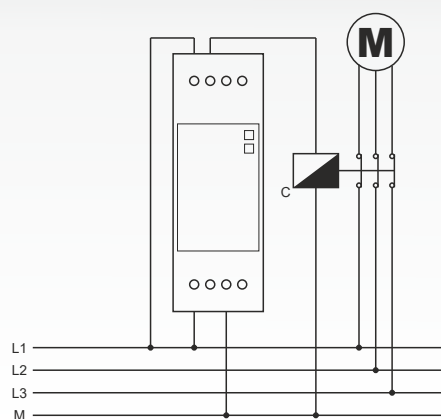
TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO)
Sensitivity	: ± %5
Operation Temperature	: -40... +50 °C
Protection Class	: IP 20
Installation	: To the mounting rails
Dimensions (mm.)	: 23x82x85
Net Weight	: 81 gr.

VZR

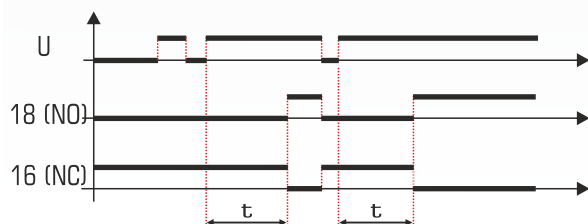
- On delay time relay type.
- The relay is switched on at the end of the set time period and the led turns on.
- Single Contact Out (NO+NC)
- Supply Voltage and Relay Contact leds available.
- Standardized railed relays.

CONNECTION DIAGRAM

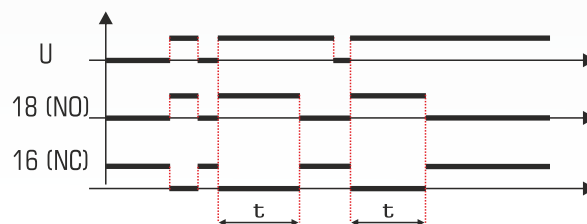


CODE	SUPPLY VOLTAGE	ADJUSTABLE TIME RANGE (minumum-maximum)	TIME TOLERANCE	OUTPUT	DIMENSIONS (mm)	FUNCTION
VZR-03	220V AC 50/60 Hz	0,1 - 3 sec	± %5	1 inverter 5A / 1250VA	23x82x85	ON DELAY
VZR-06		0,1 - 6 sec				
VZR-12		0,1 - 12 sec				
VZR-30		1 - 30 sec				
VZR-60		1 - 60 sec				
VZR-03D		0,1 - 3 min				
VZR-06D		0,1 - 6 min				
VZR-12D		0,1 - 12 min				
VZR-30D		1 - 30 min				
VZR-60D		1 - 60 min				
VZM-30	220V AC	1 - 30 sec	± %5	1 inverter 5A / 1250VA	23x82x85	OFF DELAY
VZM-60	50/60 Hz	1 - 60 sec				

**On Delay Timer
Functional Diagram**



**Off Delay Timer
Functional Diagram**



NOTE : Upon request, the relay with different voltages supplies (12V-24V-48V DC, 12V-24V-48V-110V-380VAC) can be produced.

VKR-01 MOTOR PROTECTION RELAY



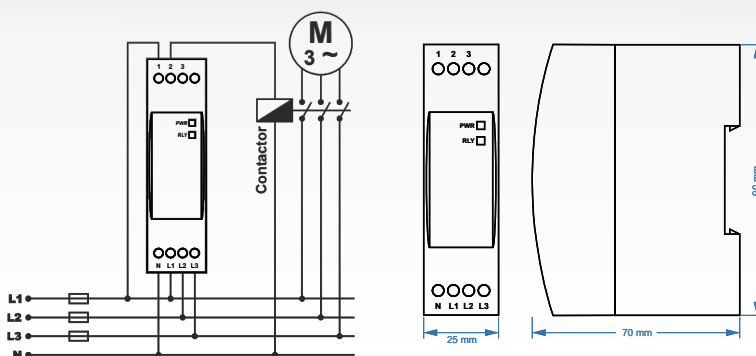
TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%40
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

VKR-01

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM

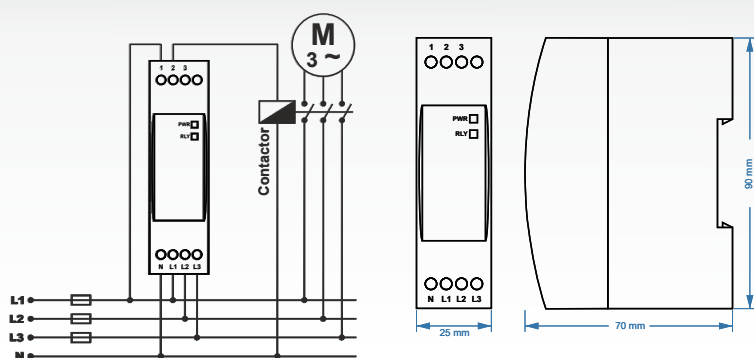


VKR-03 PHASE AND SEQ. MOTOR PROTECTION RELAY (PTC)

TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%40
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

CONNECTION DIAGRAM



VKR-03

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VKR-04 PHASE AND SEQ. ASYMMETRY ADJUSTABLE MOTOR PROTECTION RELAY



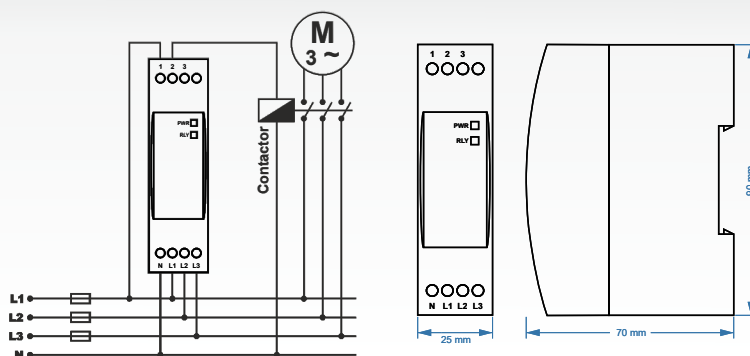
TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%5- --%30 ADJUSTABLE
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

VKR-04

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM



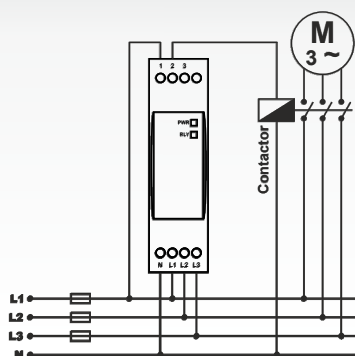
VKR-04DIN PHASE AND SEQ. ASYMMETRY ADJUSTABLE MOTOR PROTECTION RELAY

TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%5- --%30 ADJUSTABLE
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²



CONNECTION DIAGRAM



VKR-04DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VKR-05 PHASE AND SEQ. ASYMMETRY ADJUSTABLE DELAY TIME MOTOR PROTECTION RELAY



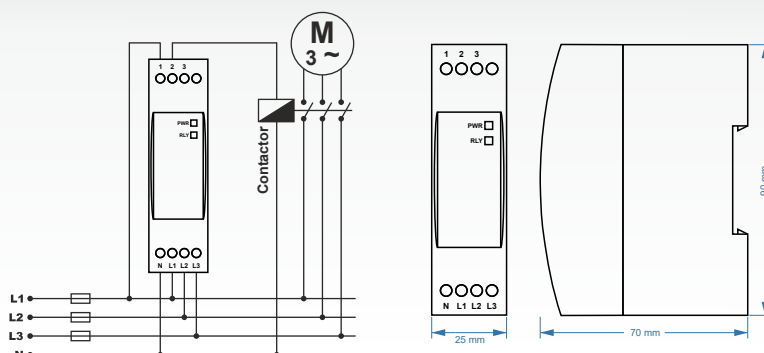
TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%5- --%20 ADJUSTABLE
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

VKR-05

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM



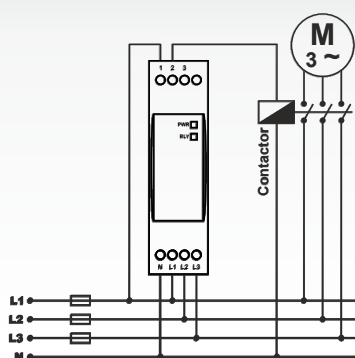
VKR-05DIN PHASE AND SEQ. ASYMMETRY ADJUSTABLE DELAY TIME MOTOR PROTECTION RELAY

TECHNICAL DATA

Operating Voltage (Un)	3 X 380V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Tolerance	~%5- --%20 ADJUSTABLE
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	Max 110gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²



CONNECTION DIAGRAM



VKR-05DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VADR-05F PHASE SEQUENCE DELAY TIME, OVER-UNDER VOLTAGE PROTECTION RELAY



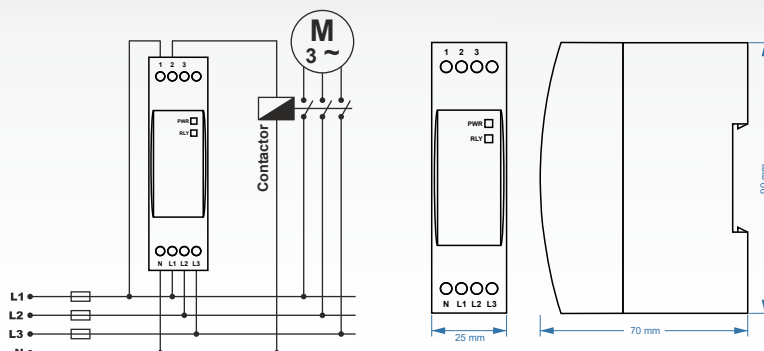
TECHNICAL DATA

Supply Voltage (Un)	: 3x380V AC
The device power is supplied from the network protected.	
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NO + NC)
Under Voltage Range	: 320-370V (adjustable)
Over Voltage Range	: 390-430V (adjustable)
Delay Time	: 1-10 sec. (adjustable)
Operation Temperature	: -40... +50 °C
Protection Class	: IP 20
Dimensions (mm.)	: 45x55x90 (Classic Type) 23x82x85 (Slim Type)
Net Weight	: 102 gr. (Classic Type) 90 gr. (Slim Type)

VKR-05F

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM



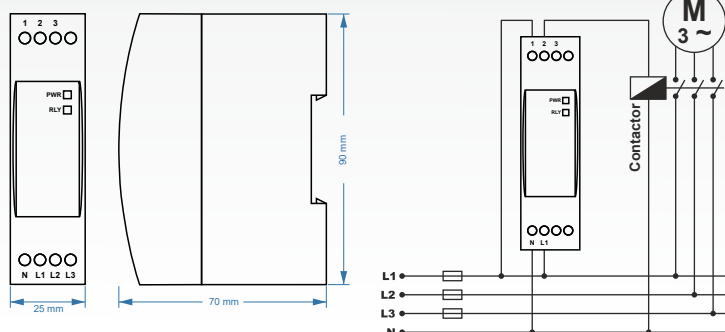
VADR-02F SINGLE PHASE ADJUSTABLE DELAY TIME, OVER-UNDER VOLTAGE PROTECTION RELAY

TECHNICAL DATA

Supply Voltage (Un)	: 1x230V AC
The device power is supplied from the network being protected.	
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO).
Operation Temperature	: -40... +50 °C
Protection Class	: IP 20
Dimensions (mm.)	: 45x55x90

Net Weight : 89 gr.

CONNECTION DIAGRAM



VKR-02F

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

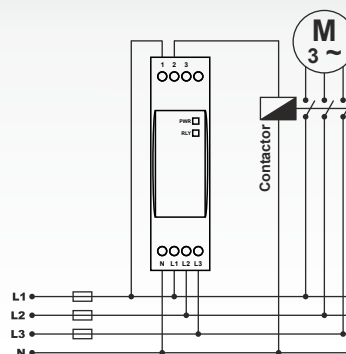
VADR-05F PHASE SEQUENCE DELAY TIME, OVER-UNDER VOLTAGE PROTECTION RELAY



TECHNICAL DATA

Supply Voltage (Un)	: 3x380V AC
The device power is supplied from the network protected.	
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NO + NC)
Under Voltage Range	: 320-370V (adjustable)
Over Voltage Range	: 390-430V (adjustable)
Delay Time	: 1-10 sec. (adjustable)
Operation Temperature	: -40... +50 °C
Protection Class	: IP 20
Dimensions (mm.)	: 45x55x90 (Classic Type) 23x82x85 (Slim Type)
Net Weight	: 102 gr. (Classic Type) 90 gr. (Slim Type)

CONNECTION DIAGRAM



VKR-05F DIN

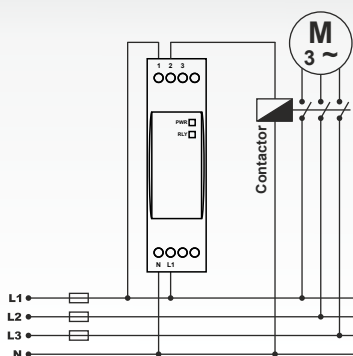
- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VADR-02F SINGLE PHASE ADJUSTABLE DELAY TIME, OVER-UNDER VOLTAGE PROTECTION RELAY

TECHNICAL DATA

Supply Voltage (Un)	: 1x230V AC
The device power is supplied from the network being protected.	
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO).
Operation Temperature	: -40... +50 °C
Protection Class	: IP 20
Dimensions (mm.)	: 45x55x90
Net Weight	: 89 gr.

CONNECTION DIAGRAM



VKR-02F DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VSR-05 LIQUID LEVEL RELAY



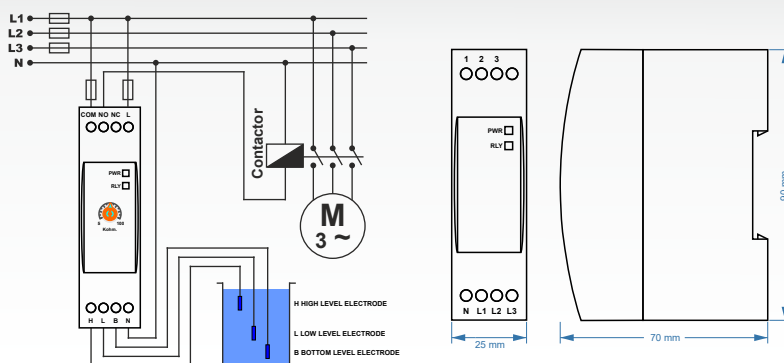
TECHNICAL DATA

Operating Voltage (Un)	150 - 260V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Sensitivity	5 - 100 KOhm
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	<250gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²

VKR-05

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

CONNECTION DIAGRAM



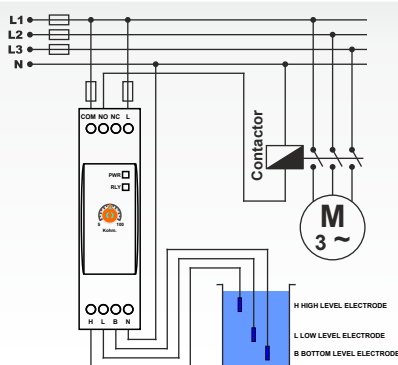
VSR-05 DIN LIQUID LEVEL RELAY

TECHNICAL DATA

Operating Voltage (Un)	150 - 260V AC
Operating Frequency	50/60 Hz.
Operating Power	<4VA
Operating Temperature	-20°C.....+55°C
Sensitivity	5 - 100 KOhm
Display	POWER led and RELAY led
Connection Type	Terminal connections.
Weight	<250gr.
Relay Contact.....	5A 250V AC Resistive Load
Operating Altitude	<2000m
Cable Diameter	1,5mm ²



CONNECTION DIAGRAM



VKR-05DIN

- Please use the device according to the manual.
- Don't use the device in wet.
- Include a switch and circuit breaker in the assembly.
- Put the switch and circuit breaker nearby the device, operator can reach easily.
- Mark the switch and circuit breaker as releasing connection for device.

VBR-8X DOUBLE ADJUSTABLE AND MULTIFUNCTIONAL FLASHER RELAY



TECHNICAL DATA

Operating Voltage(Un)... 140V - 260V AC
Operating Frequency.... 50/60 Hz.
Operating Power..... <4VA
Operating Temperature.. -20°C.....+55°C
ton time..... 0,1sec. - 100hours
toff time..... 0,1sec. - 100hours
Display..... Power, On and Off led
Connection Type..... Terminal connection
Weight..... Max. 110gr.
Contact..... 5A/250V AC (Resistive Load)
Mounting..... Vertical assembled in the panel or
assembled on the din rail
Operating Altitude..... <2000meter
Cable Diameter..... 2,5mm²

VBR-8X

Make the connections according to the diagram.

Max.On Time: Sets the stage of “on” and display the maximum “on” time.

Max.Off Time: Sets the stage of “off” and display the maximum “off” time.

ton: Divides the “on” time by 10 and multiples by displayed value.

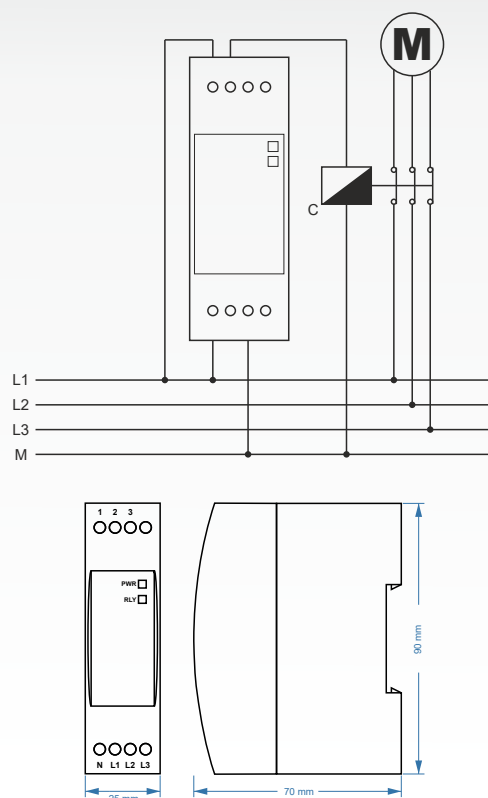
toff: Divides the “off” time by 10 and multiples by displayed value.

Example: Working time(on) is 75minutes, waiting time (off) is 60seconds.

Turn on the stage button to 100m and ton button between 7-8. “On” time will be adjusted to 75 minutes.

Turn off the stage button to 100s and toff button to 6. “Off” time will be adjusted to 60 seconds.

CONNECTION DIAGRAM



MAINTENANCE

Switch off the device and release from connections.
Clean the trunk of device

with a swab. Don't use any conductor or chemical might damage the device.

Make sure device works after cleaning.

WARNINGS

Please use the device according to the manual.
Don't use the device in wet.

Include a switch and circuit breaker in the assembly.
Put the switch and circuit breaker nearby the device,
operator can reach easily.

Mark the switch and circuit breaker as releasing
connection for device.

Note= In order to adjust much sensitive higher time values, set “t” by chronometer in low stages and increase the stage to the time required.

VZR-08 MULTIFUNCTIONAL TIMER RELAY



TECHNICAL DATA

Operating Voltage(Un): 150V - 260V AC, 12V-240V AC/DC (VZR-08M)
Operating Frequency: 50/60 Hz.
Operating Power: <4VA
Operating Temperature: -20°C.....+55°C
Time(t): 10sec, 100sec, 10min, 100min, 10hr. and 100hours
Display: On led and Out(RLY) led
Connection Type: Terminal connection, 8 pin socket(VZR-08)
Weight: Max. 90gr., Max. 120gr (VZR-08 / VZR-08M)
Contact: 5A/250V AC (Resistive Load)
Mounting: Vertical assembled in the panel or assembled on the din rail. Panel front mounted.(VZR-08)
Panel Hole Sizes: 46x46mm(VZR-08)
Operating Altitude: <2000meter
Cable Diameter: 2,5mm²

VBR-8X

Make the connections according to the diagram.

Max.Time(Time Steps)= Adjusts the stage and display the max.time.

t= Divides the stage by 10 and multiply with displaying value.

Example= Time is 75 minutes.

Make stage button to 100m(100 minutes) and turn "t" button between 7-8. In this case time is adjusted to 75 minutes.

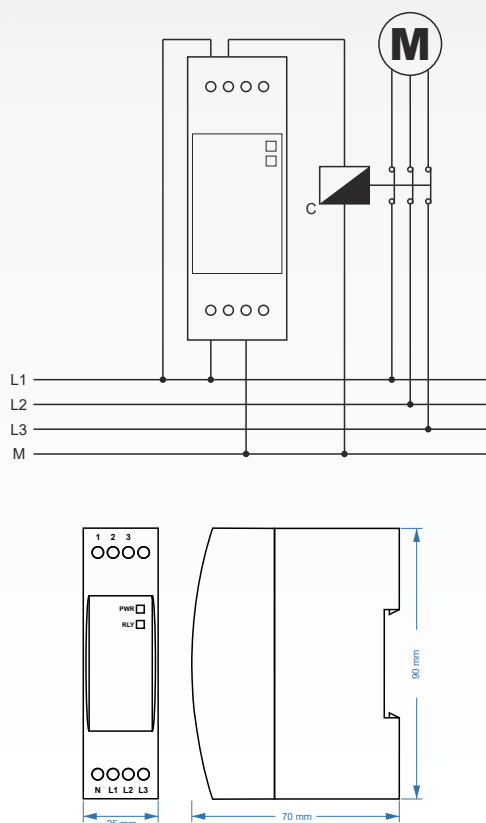
Note= In order to adjust much sensitive higher time values, set "t" by chronometer in low stages and increase the stage to the time required.

Example= Time is 25 hours.

Turn stage button to 10s(10 seconds) and "t" button between 2-3. Make power on and check with a chronometer for 2.5 seconds. If it is high or low, set "t" again. Re-check the device. Make the stage button 100h(100 hours). In this case, you set it more sensitive. After setting the time, power on the device. Device will start timing and meanwhile led switches on-off.

When device is timing relay connect out is (NC)1(socket 5). When the timing finish (set time is up) relay led is switches on stable and contact out is (NO) 3(socket 6) this time. Device keeps stable till the power is off.

CONNECTION DIAGRAM



MAINTENANCE

Switch off the device and release from connections. Clean the trunk of device with a swab. Don't use any conductor or chemical might damage the device. make sure device works after cleaning.

WARNINGS

Please use the device according to the manual. Don't use the device in wet.

Include a switch and circuit breaker in the assembly. Put the switch and circuit breaker nearby the device, operator can reach easily.

Mark the switch and circuit breaker as releasing connection for device.

Note= In order to adjust much sensitive higher time values, set "t" by chronometer in low stages and increase the stage to the time required.

SER-30 SOCKET TYPE TIMERS (48X48)



TECHNICAL DATA

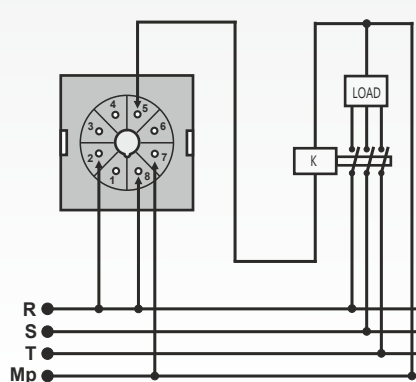
Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO)
Sensitivity	: $\pm 5\%$
Operation Temperature	: -40...+50 °C
Protection Class	: IP 20
Installation	: Front panel mounting or to the mounting rails
Dimensions (mm.)	: 48x48x83

Net Weight : 77 gr.

SER-30

On delay time relay type. (Upon request, the relay with of delay.)
48x48 mm. Panel Type Relay.
The Relay is switched on at the end of the set time period and the led turns on. The relay keeps position until the energy is cut off.
Single contact out. (NO+NC)
Supply Voltage and relay contact led available.
8-Pin socketed, mounted directly to panel's iron sheet.

CONNECTION DIAGRAM



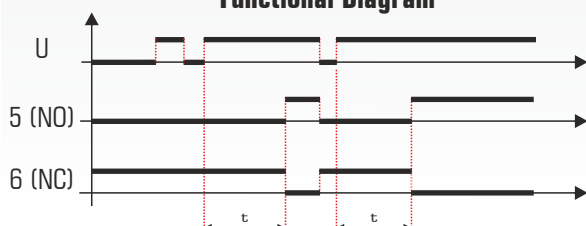
CONNECTION TERMINALS

2,7	: Supply Voltage	
6	: NC Contact	
8	: Common Contact	
5	: NO Contact	
(SER-xx)		
1	: Instantaneous Common Contact	
3	: Instantaneous NO Contact	
2	8	1

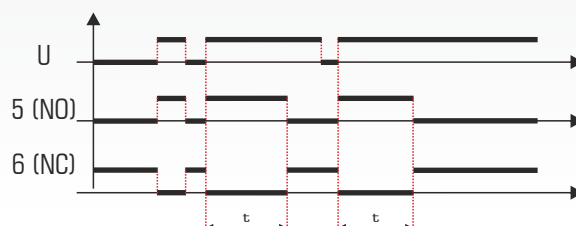
CODE	SUPPLY VOLTAGE	ADJUSTABLE TIME RANGE (minumum-maximum)	TIME TOLERANCE	OUTPUT	DIMENSIONS (mm)	FUNCTION
SER-03	220V AC 50/60 Hz	0,1 - 3 sec	$\pm 5\%$	1 RELAY 5A / 1250VA	23x82x85	ON DELAY
SER-06		0,1 - 6 sec				
SER-12		0,1 - 12 sec				
SER-30		1 - 30 sec				
SER-60		1 - 60 sec				
SER-03D		0,1 - 3 min				
SER-06D		0,1 - 6 min				
SER-12D		0,1 - 12 min				
SER-30D		1 - 30 min				
SER-60D		1 - 60 min				

SER-30 R	220V AC	1 - 30 sec	$\pm 5\%$	1 RELAY 5A / 1250VA	23x82x85	OFF DELAY
SER-60 R	50/60 Hz	1 - 60 sec				

SER-xx
On Delay Timer
Functional Diagram



Off Delay Timer
Functional Diagram



NOTE : Upon request, the relay with different voltages supplies (12V-24V-48V DC, 12V-24V-48V-110V-380V AC) can be produced.

PER-30 PANEL TYPE TIMERS (48X48)



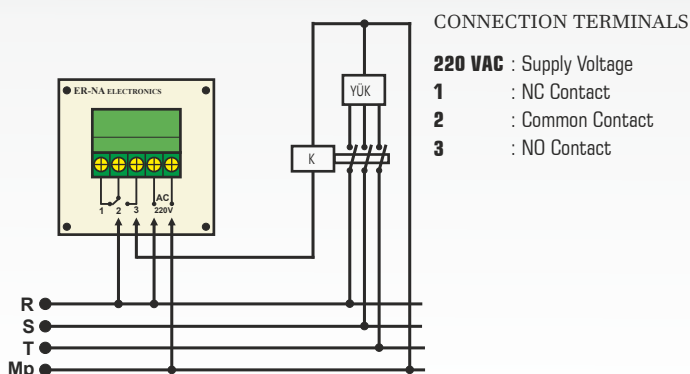
TECHNICAL DATA

Supply Voltage (Un)	: 220V AC
Operation Voltage	: (0,9-1,1) x Un
Operation Frequency	: 50/60 Hz
Output	: 1 Relay, 5A, 1250 VA (NC+NO)
Sensitivity	: $\pm 5\%$
Operation Temperature	: -40...+50 °C
Protection Class	: IP 20
Installation	: Front panel mounting or to the mounting rails
Dimensions (mm.)	: 48x48x83
Net Weight	: 79 gr.

PER-30

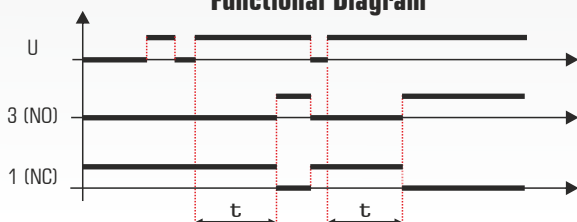
- On delay time relay type. (Upon request, the relay with of delay.)
- 48x48 mm. Panel Type Relay.
- The Relay is switched on at the end of the set time period and the led turns on.
- Single contact out. (NO+NC)
- Supply Voltage and relay contact led available.
- I/O terminals clemensed.

CONNECTION DIAGRAM

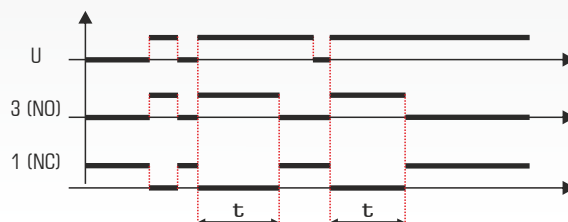


CODE	SUPPLY VOLTAGE	ADJUSTABLE TIME RANGE (minimum-maximum)	TIME TOLERANCE	OUTPUT	DIMENSIONS (mm)	FUNCTION
PER-03	220V AC 50/60 Hz	0,1 - 3 sn.	$\pm 5\%$	1 RELAY 5A / 1250VA	23x82x85	ON DELAY
PER-06		0,1 - 6 sn.				
PER-12		0,1 - 12 sn.				
PER-30		1 - 30 sn.				
PER-60		1 - 60 sn.				
PER-03D		0,1 - 3 dk.				
PER-06D		0,1 - 6 dk.				
PER-12D		0,1 - 12 dk.				
PER-30D		1 - 30 dk.				
PER-60D		1 - 60 dk.				
PEM-30	220V AC	1 - 30 sn.	$\pm 5\%$	1 RELAY 5A / 1250VA	23x82x85	OFF DELAY
PEM-60	50/60 Hz	1 - 60 sn.				

PER-xx
On Delay
Functional Diagram



Off Delay Timer
Functional Diagram



NOTE : Upon request, the relay with different voltages supplies (12V-24V-48V DC, 12V-24V-48V-110V-380V AC) can be produced.

DCC-01 DIGITAL CIRCUIT BREAKER DEVICE



TECHNICAL DATA

Supply	: 220V AC (PHASE+NOTR)
Iup SET	: 0,1-20,0A (adjustable)
ton	: 1-999 sec. (adjustable)
tof	: 1-999 sec. (adjustable)
tin	: 1-999 sec. (adjustable)
Uup SET	: 230-280V (adjustable)
Udn SET	: 160-210V (adjustable)
Screen	: 2x3 digit display and 5x3mm led
Dimensions	: 45x75x45 mm.
Weight	: 230 gr.

DCC-01

The power led turns on once the device is energized, If the switch on '1' the ON led turns on and the device starts working. When the current stream gets higher than the set value the device stops the circuit in 30-35 secs. and FAULT led turns on.

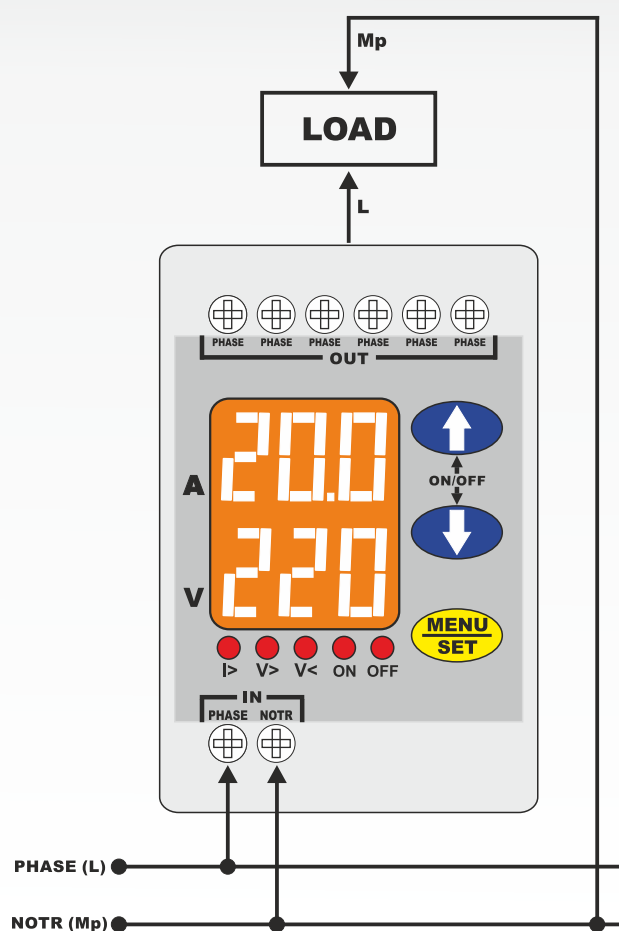
The Device starts the current circuit after 4 ~ 45 secs and FAULT led turns off. If the problems happens again the device breaks the current circuit in 30-35 secs. Then it waits for another 40-45 secs and starts the current circuit again... This process is repeated when ever the problem occurs.

If the electric current is not getting higher and normal as the set value the device keeps working with out any changes.

If the electric current gets higher double of the set value the device breaks the circuit with out waiting and FAULT led turns on. After 40-45 secs. the device starts the circuit and the FAULT led turns off but if the problem happens again the device turns off and FAULT led turns on.

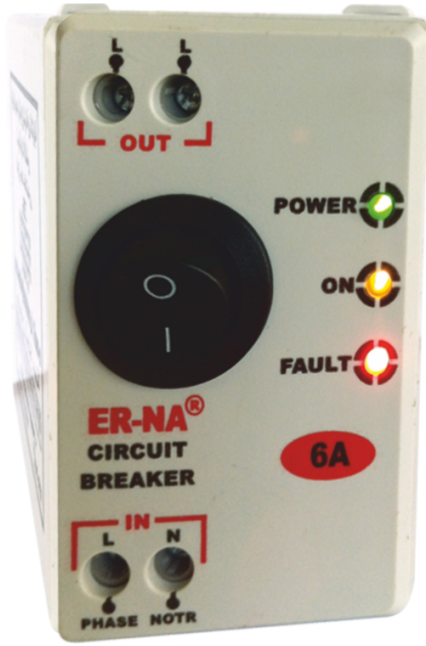
The switch controls the circuit. Switch '1' means that the device is working and the ON led turns on, When the switch is '0' the device turns off and the ON led turns off.

CONNECTION DIAGRAM



NOTE : The device is produced with different measures 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 12A, 14A, 16A and 20A.

CC-01 CIRCUIT BREAKER



TECHNICAL DATA

Supply Voltage	: 220V AC (FAZ + NOTR)
Output	: 5 out put tips.
Dimensions (mm)	: 45x75x75.
Weight (gr.)	: 132

CC-01

The power led turns on once the device is energized, If the switch on '1' the ON led turns on and the device starts working. When the current stream gets higher than the set value the device stops the circuit in 30-35 secs. and FAULT led turns on.

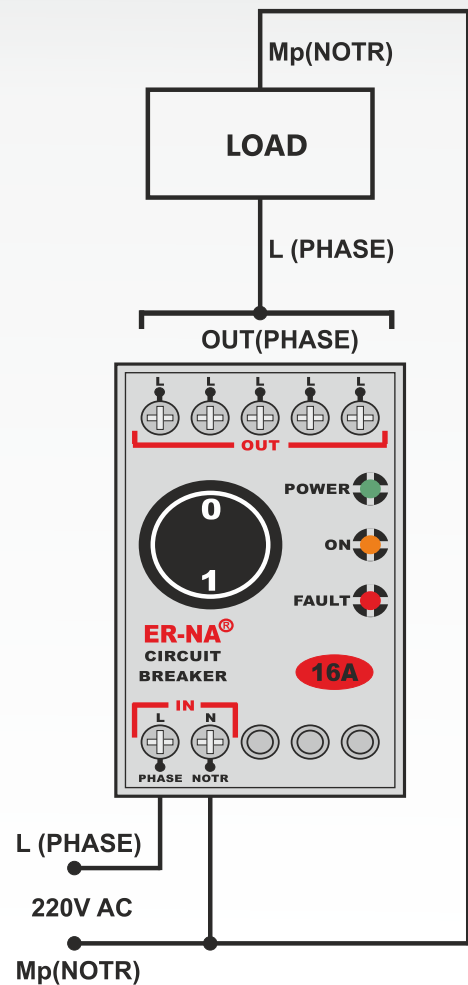
The Device starts the current circuit after 4 ~ 45 secs and FAULT led turns off. If the problems happens again the device breaks the current circuit in 30-35 secs. Then it waits for another 40-45 secs and starts the current circuit again... This process is repeated when ever the problem occurs.

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The switch controls the circuit. Switch '1' means that the device is working and the ON led turns on, When the switch is '0' the device turns off and the ON led turns off.

CONNECTION DIAGRAM



NOTE : The device is produced with different measures 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, 12A, 14A, 16A and 20A.



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