ERA-12 COMBI

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

COSφ, 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.

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, o) can be connect opposite way.

Can be easily installed to the panel.

NOTE1: Capacitor learning (Ogm) 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 DiJital Multimeter**

- Microprocessor Controlled.
- Frequencymeter 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.

**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:** ± 1%
- **Operation Temperature:** -40...+50 °C
- **Dimensions (mm.):** 96x96x75
- **Net Weight:** 415 gr.

**Connection Diagram**

**EM-09 DiJital 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:** ± 1%
- **Operation Temperature:** -40...+50 °C
- **Dimensions (mm.):** 96x96x75
- **Net Weight:** 415 gr.

**Connection Diagram**

- 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 Amperometers (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 the front panel.
- Adjustable Current Transformer Ratio (1:10000/5A)
- The measured value is displayed on the screen.

**Technical Data**

- **Supply Voltage**: 220V AC (Faz+N0+tr)
- **Operation Voltage**: 0.8-1.2 x 220V AC
- **Operation Freq.**: 50/60 Hz
- **Input**: 0.05 - 5.5 A AC
- **Input Range**: 0.05-10000 (Atom Trafosuna Giriş)
- **Current Range**: 5... 10000/5A
- **Power**: < 4 VA
- **Output**: 5A - 250V AC (NC + NO)
- **Open**: > 1.5ncs 6 vynamics <0.5ncs S
- **Sensitivity**: ± 9.1%
- **Times**: 0.0 - 999.9 s
- **Operation Range**: -5 ... +50 °C
- **Dimensions**: 72 x 72 x 70 (DA-72S)
  96 x 96 x 80 (DA-96S)
- **Net Weight**: 280 gr (DA-72S)
  310 gr (DA-96S)

**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 Frequency Meter (DF)**

**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**: ± 9.2%
- **Operation Temperature**: -40... + 50 °C
- **Dimensions (mm.)**: 72 x 72 x 83 (DF-72)
  96 x 96 x 85 (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**

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

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DIGITAL VOLTMETERS

**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.

---

**TECHNICAL DATA**

- **Supply Voltage (Vac)**: 220V AC
- **Operation Voltage**: (0.8-1.2) x Un
- **Operation Frequency**: 50/60 Hz
- **Screen**: 1x3 digits, 14 mm. display
- **Measurement Range**: 0-500V AC
- **Sensitivity**: ± 4%
- **Operation Temperature**: -40...+50 °C
- **Dimensions (mm.)**: 72x72x83 (DV-72, REG-72, DV6-72)
  - 96x96x75 (DV-96, DV6-96)
- **Net Weight**: 238 gr. (DV-72, REG-72, DV6-72)
  - 266 gr. (DV-96, DV6-96)

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**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 (Vac)**: 220V AC
- **Operation Voltage**: (0.8-1.2) x Un
- **Operation Frequency**: 50/60 Hz
- **Screen**: 1x4 digits, 14 mm. display
- **Measurement Range**: 1-10000A AC (with current transformers)
- **Sensitivity**: ± %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**

- **DA-72, DA-96**
  - DA is used to precisely measure and monitor the RMS value of AC Current.
  - Current Transformer 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
- **Waiting (t):** 0,1sec. - 200sec. (TRM-200/300/400)
- **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:** <2000 meter

**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-30 and TRM-100 must be used with the current transformers which comes together with the devices. Otherwise device energise the device. When the devices is energised you can make adjustment of overload by (A) button. Whyile 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 the3 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 deacivated and the contact output gets in to the 1 output and the out led gets off.

**EDT**

**Manual 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.
DIGITAL TEMPERATURE CONTROLLER

TECHNICAL DATA

Supply Voltage (Un) : 220V AC
Operation Voltage : (0.9-1.1) x Un
Operation Frequency : 50/60 Hz
Output : 2xRelay, 5A, 1250 VA
          1xSSR out (12V, 30mA)
Screen : 2x4 digit, 14 mm. red led display
Input Sensor : Fe-const. NiCr-Ni or Pt-100 sensor (selectable)
Measurement Range : 0-500 C or 0-1200 C
Sensitivity : ± 1 C
Reliability : ± %160.5
Operation Temperature : -40...+50 °C
Dimensions (mm.) : 48x48x83 (DT-48)
                    72x72x83 (DT-72)
Net Weight : 197 gr. (DT-48)
             267 gr. (DT-72)
             293 gr. (DT-96)

DT-48, DT-75, DT-96

- Heat control devices, designed with microcontroller.
- On-Off and Proportional time (selectable) control.
- Couple set points available, sets point is adjusted via buttons on
  front panel.
- Current temperature and set value monitored on screen at
  same time.
- Hysteresis adjustable.
- Head and Alarm relay contact out available. (NO + NC)
- 1/0 terminals socket clemened.

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

TECHNICAL DATA

Supply Voltage : 220V AC
Operation Voltage : (0.9-1.1) x Un
Operation Freq. : 50/60 Hz
Output : 1 Relay, 5A, 1250 VA (NC+N0)
Hysteresis : ± 20... - 20 °C (Adjustable)
Offset : ± 20... + 20 °C (Adjustable)
Heat Controller : On-Off or PI (selectable)
Screen : 1x3 Digit display
Input Sensor : PTC Sensor
Measurement Range : -50... + 150 °C
Sensitivity : ± 1 C
Operation Temperature : -40... + 50 °C
Dimensions (mm.) : 36x72x75 (DT-36)
Net Weight : 189 gr. (DT-36)

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.
- 1/0 terminals socket clemened.

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DGK-05, DGK-05F

**Technical Data**

- Working Voltage: 220V AC +1 neutral
- 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 + 3x3 digit display

**Connection Diagram**

- 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-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.

DGK-02M

**Technical Data**

- Working Voltage: 220V AC +1 neutral
- Working Frequency: 50/60 Hz.
- 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 + 1x3 digit display

**Connection Diagram**

- 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

**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 + 3x3 digit display

**Connection Diagram**

- 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
**VZR-DIN 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°C to +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** (minimum-maximum) | **TIME TOLERANCE** | **OUTPUT** | **DIMENSIONS (mm)** | **FUNCTION**
---|---|---|---|---|---|---
V2R-03 | 220V AC 50/60 Hz | 0.1 - 3 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-06 | 220V AC 50/60 Hz | 0.1 - 6 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-12 | 220V AC 50/60 Hz | 0.1 - 12 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-30 | 220V AC 50/60 Hz | 1 - 30 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-60 | 220V AC 50/60 Hz | 1 - 60 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-030 | 220V AC 50/60 Hz | 0.1 - 3 min | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-060 | 220V AC 50/60 Hz | 0.1 - 6 min | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-120 | 220V AC 50/60 Hz | 0.1 - 12 min | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-300 | 220V AC 50/60 Hz | 1 - 30 min | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2R-600 | 220V AC 50/60 Hz | 1 - 60 min | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | ON DELAY
V2M-30 | 220V AC 50/60 Hz | 1 - 30 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | OFF DELAY
V2M-60 | 220V AC 50/60 Hz | 1 - 60 sec | ± 5% | 1 inverter 5A / 1250VA | 23x82x85 | OFF DELAY

**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**

- 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.

**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: 1,5mm²

**CONNECTION DIAGRAM**

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**VKR-03DIN PHASE AND SEQ. CONTROL RELAY**

- 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.

**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: 1,5mm²

**CONNECTION DIAGRAM**
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 nailed relays.

**TECHNICAL DATA**

- **Supply Voltage (Un):** 220V AC
- **Operation Voltage:** (0.8-1.1) x Un
- **Operation Frequency:** 50/60 Hz
- **Output:** 1 Relay, 5A, 1250 VA (NC+NO)
- **Sensitivity:** ± 2%
- **Operation Temperature:** -40...+50 °C
- **Protection Class:** IP 20
- **Installation:** To the mounting rails
- **Dimensions (mm):** 23x82x85
- **Net Weight:** 81 gr.

**V2R**

**CONNECTION DIAGRAM**

**CODE** | **SUPPLY VOLTAGE** | **ADJUSTABLE TIME RANGE (minimum-maximum)** | **TIME TOLERANCE** | **OUTPUT** | **DIMENSIONS (mm)** | **FUNCTION**
---|---|---|---|---|---|---
VZR-03 | 220V AC 50/60 Hz | 0.1 - 3 sec | ± 2% | 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-030 | | 0.1 - 3 min | | |
VZR-060 | | 0.1 - 6 min | | |
VZR-120 | | 0.1 - 12 min | | |
VZR-300 | | 1 - 30 min | | |
VZR-600 | | 1 - 60 min | | |

**V2M-30** | 220V AC 50/60 Hz | 1 - 30 sec | ± 2% | 1 inverter 5A / 1250VA | 23x82x85 | OFF DELAY
**V2M-60** | | 1 - 60 sec | | |

**On Delay Timer Functional Diagram**

![On Delay Timer Functional Diagram](image)

**Off Delay Timer Functional Diagram**

![Off Delay Timer Functional Diagram](image)

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

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**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**: 1.5mm²

### CONNECTION DIAGRAM

- 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.

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**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**: 1.5mm²

### CONNECTION DIAGRAM

- 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**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tr>
<td>Operating Voltage (Un)</td>
<td>3 X 380V AC</td>
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<tr>
<td>Operating Frequency</td>
<td>50/60 Hz.</td>
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<tr>
<td>Operating Power</td>
<td>&lt;4VA</td>
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<td>Operating Temperature</td>
<td>-20°C......+55°C</td>
</tr>
<tr>
<td>Tolerance</td>
<td>~%5- --%30 ADJUSTABLE</td>
</tr>
<tr>
<td>Display</td>
<td>POWER led and RELAY led</td>
</tr>
<tr>
<td>Connection Type</td>
<td>Terminal connections.</td>
</tr>
<tr>
<td>Weight</td>
<td>Max 110gr.</td>
</tr>
<tr>
<td>Relay Contact</td>
<td>5A 250V AC Resistive Load</td>
</tr>
<tr>
<td>Operating Altitude</td>
<td>&lt;2000m</td>
</tr>
<tr>
<td>Cable Diameter</td>
<td>1,5mm²</td>
</tr>
</tbody>
</table>

**CONNECTION DIAGRAM**

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

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<tr>
<td>Weight</td>
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</tr>
<tr>
<td>Relay Contact</td>
<td>5A 250V AC Resistive Load</td>
</tr>
<tr>
<td>Operating Altitude</td>
<td>&lt;2000m</td>
</tr>
<tr>
<td>Cable Diameter</td>
<td>1,5mm²</td>
</tr>
</tbody>
</table>

**CONNECTION DIAGRAM**

- 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**: 1.5mm²

**CONNECTION DIAGRAM**

- 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-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**: 1.5mm²

**CONNECTION DIAGRAM**

- 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.

**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

**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)
- **Net Weight:** 102 gr. (Classic Type)

**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**

- 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 ....................: 1,5mm²

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 ....................: 1,5mm²

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.

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

**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. - 100 hours
- **toff time:** 0,1sec. - 100 hours
- **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:** <2000 meter
- **Cable Diameter:** 2,5mm²

### CONNECTION DIAGRAM

![Connection Diagram](image)

### 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 75 minutes, waiting time (off) is 60 seconds.

Turn on the stage button to 100m and ton button between 7-8. “On” stage 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.

### 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.
VBR-8X

Make the connections according to the diagram.

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

\[ t = \frac{\text{stage}}{10} \times \text{displaying value} \]

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.

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.

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.

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

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.
SER-30 SOCKET TYPE TIMERS (48X48)

**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage (Un)</td>
<td>220V AC</td>
</tr>
<tr>
<td>Operation Voltage</td>
<td>(0.9-1.1) x Un</td>
</tr>
<tr>
<td>Operation Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Output</td>
<td>1 Relay, 5A, 1250 VA (NC+NO)</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>± 5%</td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>-40...+50 °C</td>
</tr>
<tr>
<td>Protection Class</td>
<td>IP 20</td>
</tr>
<tr>
<td>Installation</td>
<td>Front panel mounting or to the mounting rails</td>
</tr>
<tr>
<td>Dimensions (mm.)</td>
<td>48x48x83</td>
</tr>
<tr>
<td>Net Weight</td>
<td>77 gr.</td>
</tr>
</tbody>
</table>

**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.

**FUNCTION**

**SER-30**

<table>
<thead>
<tr>
<th>Code</th>
<th>Supply Voltage</th>
<th>Adjustable Time Range (Minimum-Maximum)</th>
<th>Time Tolerance</th>
<th>Output</th>
<th>Dimensions (mm)</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>SER-03</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 3 sec</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-06</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 6 sec</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-12</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 12 sec</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-30</td>
<td>220V AC 50/60 Hz</td>
<td>1 - 30 sec</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-60</td>
<td>220V AC 50/60 Hz</td>
<td>1 - 60 sec</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-30D</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 3 min</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-60D</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 6 min</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-12D</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 12 min</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-30D</td>
<td>220V AC 50/60 Hz</td>
<td>1 - 30 min</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>SER-60D</td>
<td>220V AC 50/60 Hz</td>
<td>1 - 60 min</td>
<td>± 5%</td>
<td>1 Relay</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
</tbody>
</table>

**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:** ±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**

On Delay Time Relay

**CONNECTION TERMINALS**

- 220 VAC : Supply Voltage
- 1 : NC Contact
- 2 : Common Contact
- 3 : NO Contact

**CODE**

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUPPLY VOLTAGE</th>
<th>ADJUSTABLE TIME RANGE (minimum-maximum)</th>
<th>TIME TOLERANCE</th>
<th>OUTPUT</th>
<th>DIMENSIONS (mm)</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER-03</td>
<td>220V AC 50/60 Hz</td>
<td>0.1 - 3 sn.</td>
<td>± %5</td>
<td>1 RELAY 5A / 1250VA</td>
<td>23x82x85</td>
<td>ON DELAY</td>
</tr>
<tr>
<td>PER-06</td>
<td></td>
<td>0.1 - 6 sn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-12</td>
<td></td>
<td>0.1 - 12 sn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-30</td>
<td></td>
<td>1 - 30 sn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-60</td>
<td></td>
<td>1 - 60 sn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-030</td>
<td></td>
<td>0.1 - 3 dk.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-060</td>
<td></td>
<td>0.1 - 6 dk.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>PER-120</td>
<td></td>
<td>0.1 - 12 dk.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>PER-300</td>
<td></td>
<td>1 - 30 dk.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PER-600</td>
<td></td>
<td>1 - 60 dk.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUPPLY VOLTAGE</th>
<th>ADJUSTABLE TIME RANGE (minimum-maximum)</th>
<th>TIME TOLERANCE</th>
<th>OUTPUT</th>
<th>DIMENSIONS (mm)</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEM-30</td>
<td>220V AC 50/60 Hz</td>
<td>1 - 30 sn.</td>
<td>± %5</td>
<td>1 RELAY 5A / 1250VA</td>
<td>23x82x85</td>
<td>OFF DELAY</td>
</tr>
<tr>
<td>PEM-60</td>
<td></td>
<td>1 - 60 sn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 40-45 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**

- **LOAD**: Mp
- **IN**: L
- **PHASE (L)**
- **NOTR (Mp)**

---

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

www.er-na.com.tr
CC-01 CIRCUIT BREAKER

TECHNICAL DATA

Supply Voltage : 220V AC (FAZ + NOTR)
Output : 5 output 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.

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 'O' the device turns off and the ON led turns off.

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