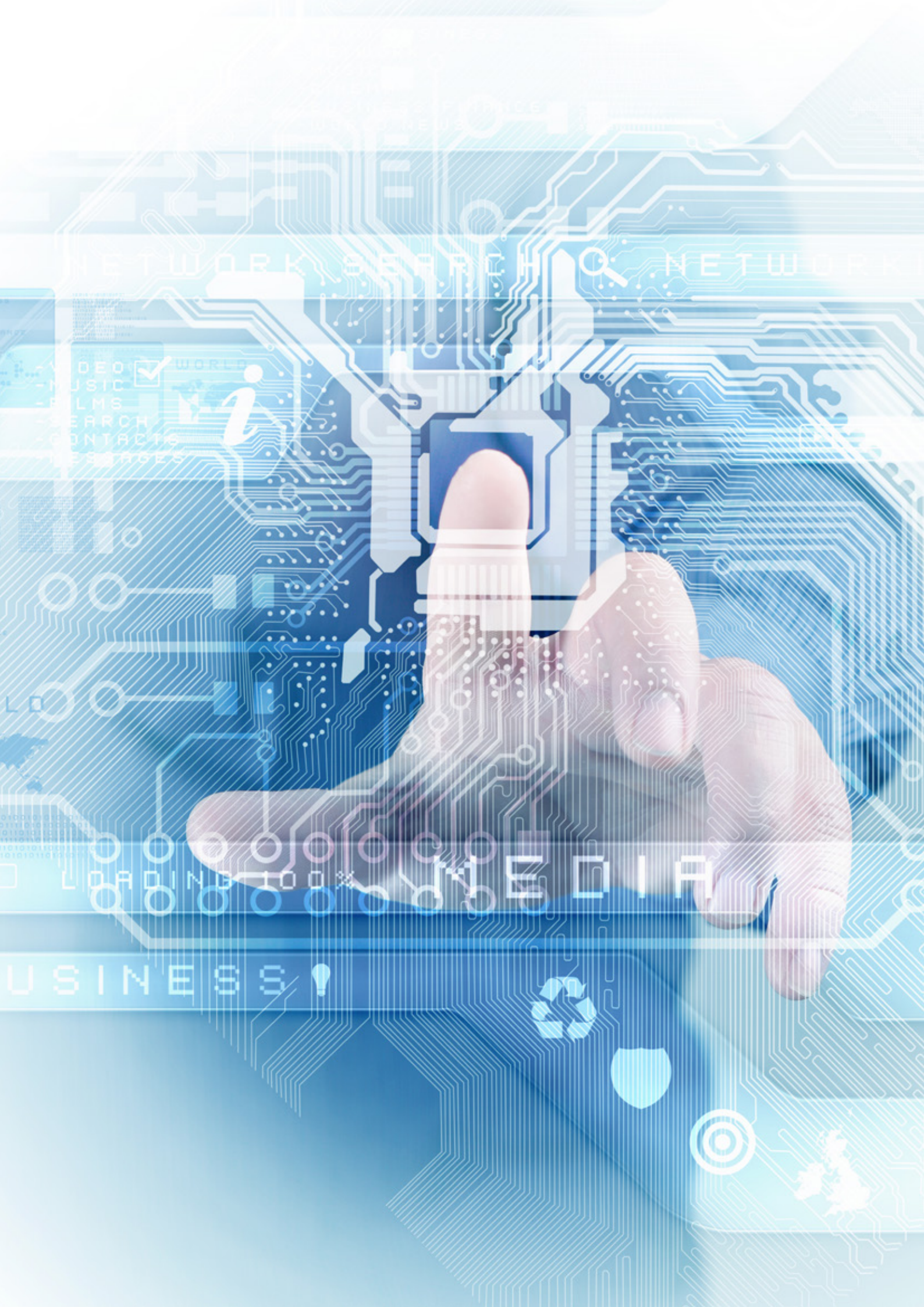




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Tense®

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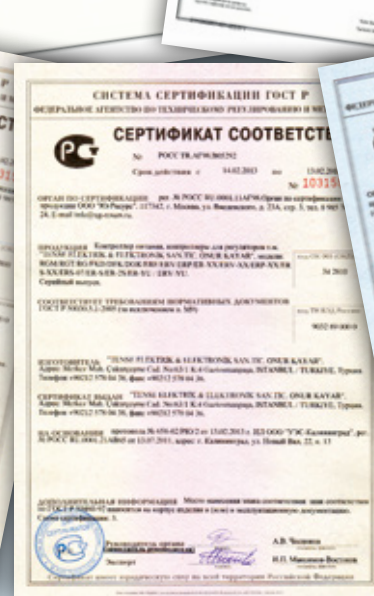
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About Us

Our company has been established for managing energy with best efficiency in our country and providing services with our expert and experienced staffs for industrial automation field which has a very important role in ever-growing electronics sector. We are one of the leading manufacturer of Industrial Electronics, producing variable "industrial protection products, control relays and measuring equipment".

Our aim is to provide quality products for end users by using the technology developed on the basis of customer satisfaction and to put specific products in industrial electronics sector on the local market in accordance with customer demands and expectations.

We provide our dear customers with easily accessible products and also pre-sale and after-sale services thanks to distributors and agents all around the world.

TENSE ELEKTRİK - ELEKTRONİK

↓ PICTURES



RGT-08



RGT-12



RGT-12M



RGT-18



RGT-24

↓ TECHNICAL PROPERTIES

Operating Voltage (Un)	: 160V – 240V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <12VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 5mA – 5,5A
Measurement Precision	: %±1
Current Transformer Ratio	: 5/5A - 10000/5A
Response Time	: 0.4 sec. - 20 sec.
Display	: 2x16 LCD (blue), 3x4digit display and leds
Number Levels	: 8, 12, 18 and 24
Connection Type	: Plug-in Terminal
Contact	: 3A/250V AC
Cable Diameter	: 2.5mm ² (Current and voltage inputs), 1.5mm ² (Contactor outputs)
Weight	: <900gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP41(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

The reactive power control relays are designed to decrease the reactive powers (inductive and capacitive) not used by the loads in the system and drawn from the network due to the characteristics of the loads. It intervenes by activating a capacitor with suitable values if inductive power is drawn from the network. It intervenes by activating a shunt reactor with suitable values if capacitive power is drawn from the network. It has the characteristics indicated below.

You are requested to enter the current transformer value at first when it is energized after the connections of the device are completed. After you enter and approve this value, the system controls the transformer terminals according to the power it draws. After this test is completed, it starts the stage test and tests all stages. After the stage test is completed, it starts to intervene according to the system requirement. It has the characteristics indicated below.

3-phase voltage and 3-phase current transformer

It can compensate the inductive and capacitive systems.

Easy-to-use Turkish menu.

Single phase, two-phase and three-phase capacitor and shunt reactor may be connected.

It shows the active power, reactive power, Cosφ, THD, total active and total reactive energy values of each phase on LCD display.

It shows the 3-phase current, 3-phase voltage or 3-phase Cosφ values on the display.

It saves the total active and total reactive energy values.

The stage (capacitor and shunt reactor) value can be entered manually.

It shows the capacitor or reactor stage values individually for each phase.

The system intervention time can be adjusted.

Capacitor discharging time can be adjusted.

Inductive/ Active and Capacitive/ Active ratios (%) can be adjusted.

It saves the reactive power flow of the system.

Menu is password-protected.

It saves the number of stage use.

It provides equal number of stage use for the stages with the same values.

It shows the inductive/active and capacitive/active ratios reached.

It can set the inductive/active and capacitive/active ratios desired to be reached.

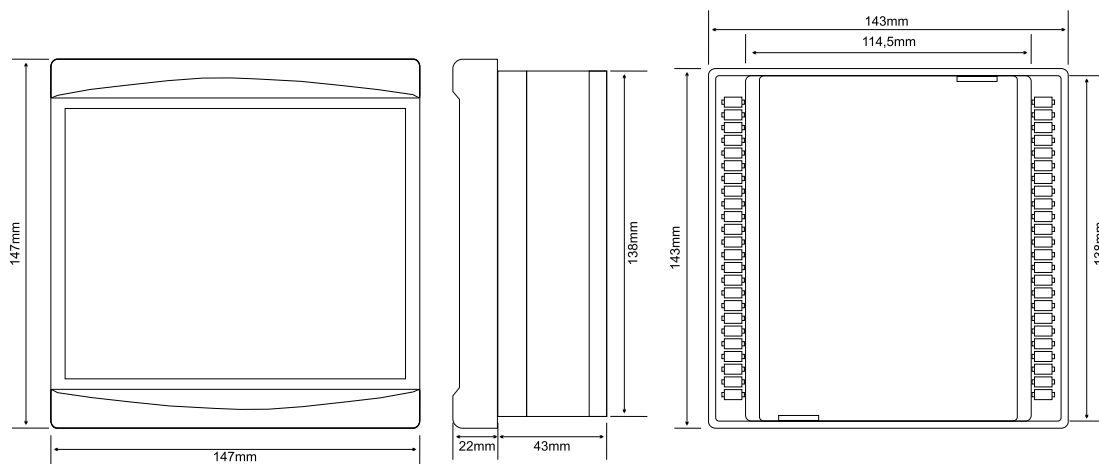
The stage layout time between two stages can be adjusted.

Off set stage can be created.

Time of intervention in the capacitive loads can be changed.

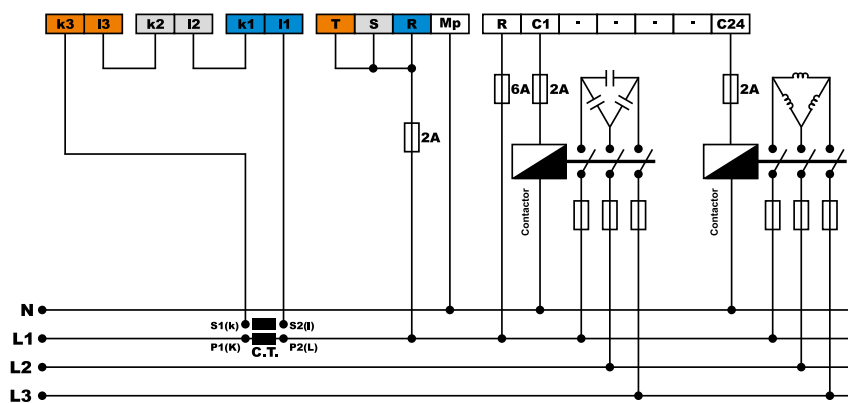
Time of intervention in the inductive loads can be changed.

TECHNICAL DIMENSIONS

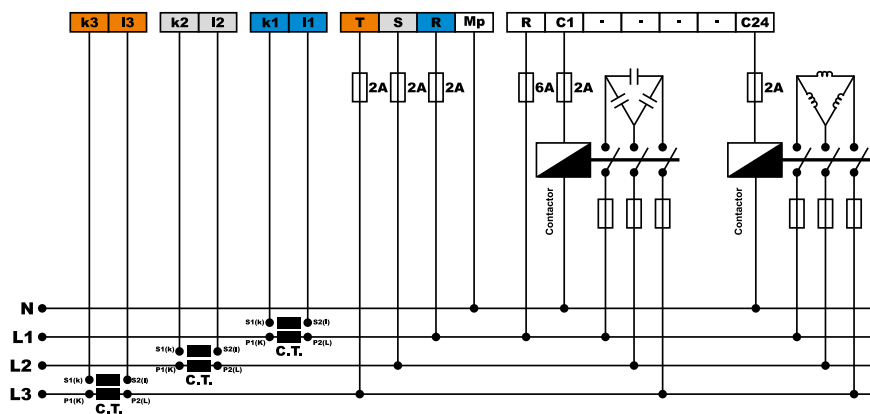


CONNECTION DIAGRAMS

MONOPHASE CONNECTION DIAGRAM



THREEPHASE CONNECTION DIAGRAM



THYRISTOR TRIGGERED THREE-PHASE REACTIVE POWER CONTROL RELAY

↓ PICTURES



RGT-12T



RGT-18T



RGT-24T

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 240V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <12VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 5mA – 5,5A
Measurement Precision	: %±1
Current Transformer Ratio	: 5/5A - 10000/5A
Display	: 2x16 LCD (blue), 3x4digit display and leds
Number Levels	: 12, 18 and 24
Connection Type	: Plug-in Terminal
Tristör Tetikleme Çıkışı	: <30V DC / <40mA
Cable Diameter	: 2.5mm ² (Current and voltage inputs), 1.5mm ² (Contactor outputs)
Weight	: <900gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP41(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

The reactive power control relays are designed to decrease the reactive powers (inductive and capacitive) not used by the loads in the system and drawn from the network due to the characteristics of the loads. It intervenes by activating a capacitor with suitable values if inductive power is drawn from the network. It interferes by activating a shunt reactor with suitable values if capacitive power is drawn from the network.

You are requested to enter the current transformer value at first when it is energized after the connections of the device are completed. After you enter and approve this value, the system controls the transformer terminals according to the power it draws. After this test is completed, it starts the stage test and tests all stages. After the stage test is completed, it starts to intervene according to the system requirement. It has the characteristics indicated below.

Thyristor triggered

3-phase voltage and 3-phase current transformer

It can compensate the inductive and capacitive systems.

Easy-to-use Turkish menu.

Single phase, two-phase and three-phase capacitor and shunt reactor may be connected.

It shows the active power, reactive power, Cosφ, THD, total active and total reactive energy values of each phase on lcd display.

It shows the 3-phase current, 3-phase voltage or 3-phase Cosφ values on the display.

It saves the total active and total reactive energy values.

The stage (capacitor and shunt reactor) value can be entered manually.

It shows the capacitor or reactor stage values individually for each phase.

The system intervention time can be adjusted.

Inductive/ Active and Capacitive / Active ratios (%) can be adjusted.

It saves the reactive power flow of the system.

Menu is password-protected.

It saves the number of stage use.

It provides equal number of stage use for the stages with the same values.

It shows the inductive/active and capacitive/active ratios reached.

It can set the inductive/active and capacitive/active ratios desired to be reached.

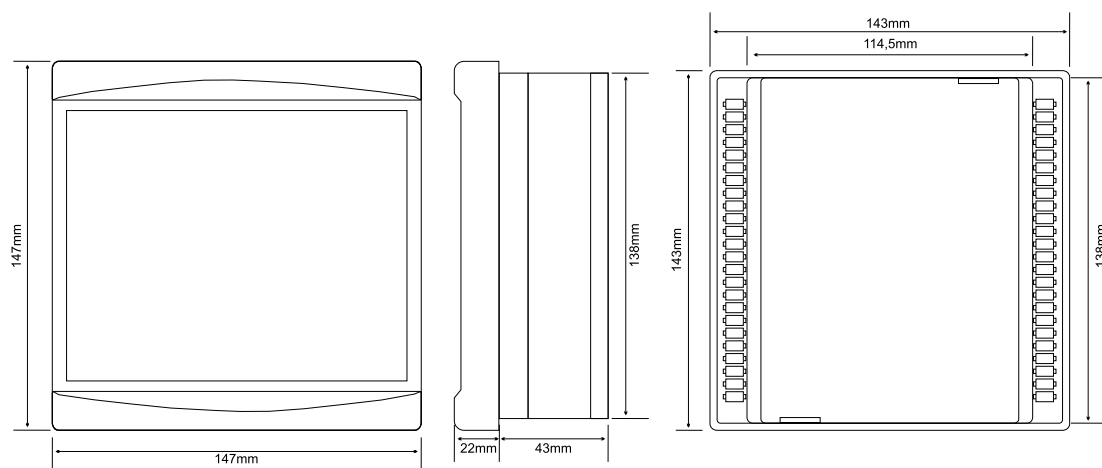
The stage layout time between two stages can be adjusted.

Off set stage can be created.

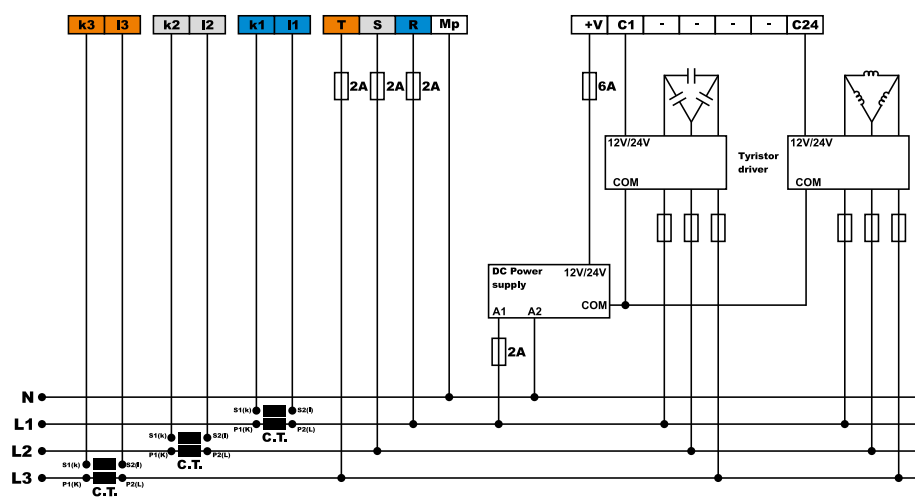
Time of intervention in the capacitive loads can be changed.

Time of intervention in the inductive loads can be changed.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



THREE-PHASE REACTIVE POWER CONTROL RELAY + COMMUNICATION

↓ PICTURES



RGT-12H



RGT-18H



RGT-24H

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 240V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <12VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 5mA – 5,5A
Measurement Precision	: %±1
Current Transformer Ratio	: 5/5A - 10000/5A
Display	: 2x16 LCD (blue), 3x4digit display and leds
Number Levels	: 12, 18 and 24
Connection Type	: Plug-in Terminal
Contact	: 3A/250V AC
Connection isolation	: 2,5kV
Connect Interface	: RS485
Connection Speed	: 9600bps Baudrate
Connection Features	: Databits: 8, Stopbits: 1, Parity : None
Cable Diameter	: 2.5mm ² (Current and voltage inputs), 1.5mm ² (Contactor outputs)
Weight	: <900gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP41(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

The reactive power control relays are designed to decrease the reactive powers (inductive and capacitive) not used by the loads in the system and drawn from the network due to the characteristics of the loads. It intervenes by activating a capacitor with suitable values if inductive power is drawn from the network. It interferes by activating a shunt reactor with suitable values if capacitive power is drawn from the network.

You are requested to enter the current transformer value at first when it is energized after the connections of the device are completed. After you enter and approve this value, the system controls the transformer terminals according to the power it draws. After this test is completed, it starts the stage test and tests all stages. After the stage test is completed, it starts to intervene according to the system requirement. It has the characteristics indicated below.

Communication with RS485

3-phase voltage and 3-phase current transformer

It can compensate the inductive and capacitive systems.

Easy-to-use Turkish menu.

Single phase, two-phase and three-phase capacitor and shunt reactor may be connected.

It shows the active power, reactive power, Cosφ, THD, total active and total reactive energy values of each phase on lcd display.

It shows the 3-phase current, 3-phase voltage or 3-phase Cosφ values on the display.

It saves the total active and total reactive energy values.

The stage (capacitor and shunt reactor) value can be entered manually.

It shows the capacitor or reactor stage values individually for each phase.

The system intervention time can be adjusted.

Capacitor discharging time can be adjusted.

Inductive/ Active and Capacitive / Active ratios (%) can be adjusted.

It saves the reactive power flow of the system.

Menu is password-protected.

It saves the number of stage use.

It provides equal number of stage use for the stages with the same values.

It shows the inductive/active and capacitive/active ratios reached.

It can set the inductive/active and capacitive/active ratios desired to be reached.

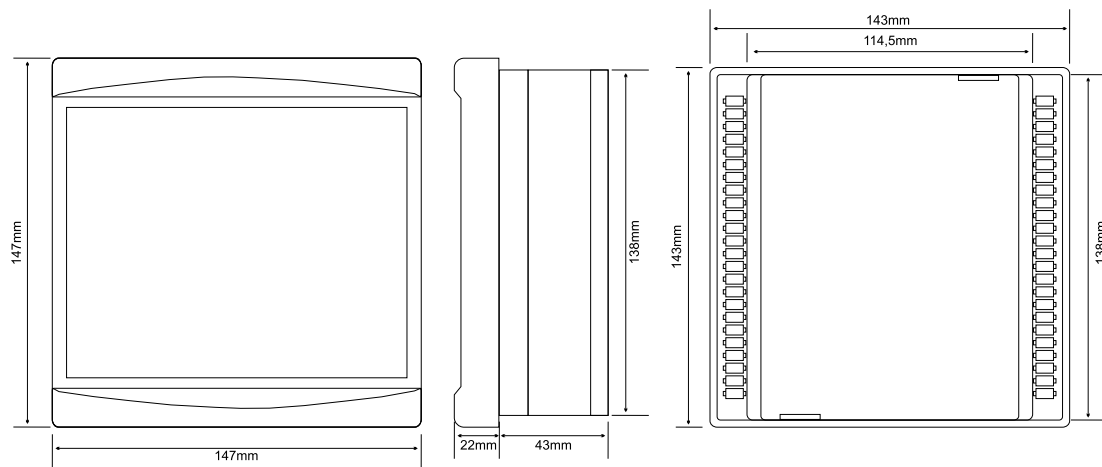
The stage layout time between two stages can be adjusted.

Off set stage can be created.

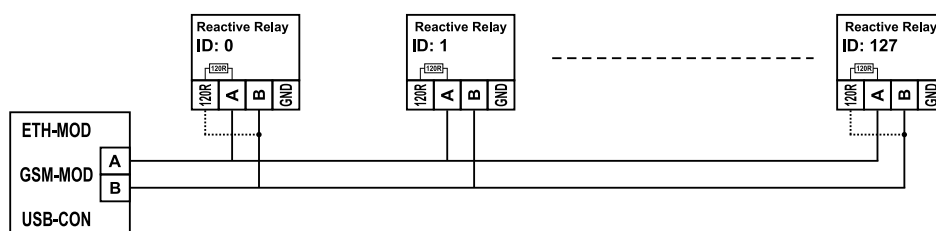
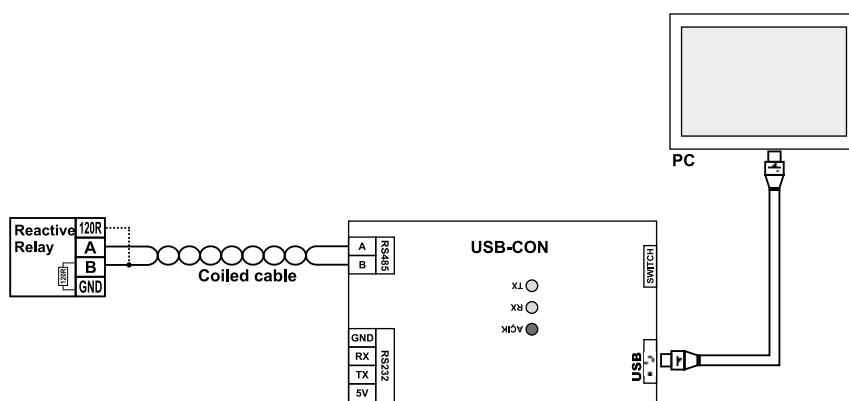
Time of intervention in the capacitive loads can be changed.

Time of intervention in the inductive loads can be changed.

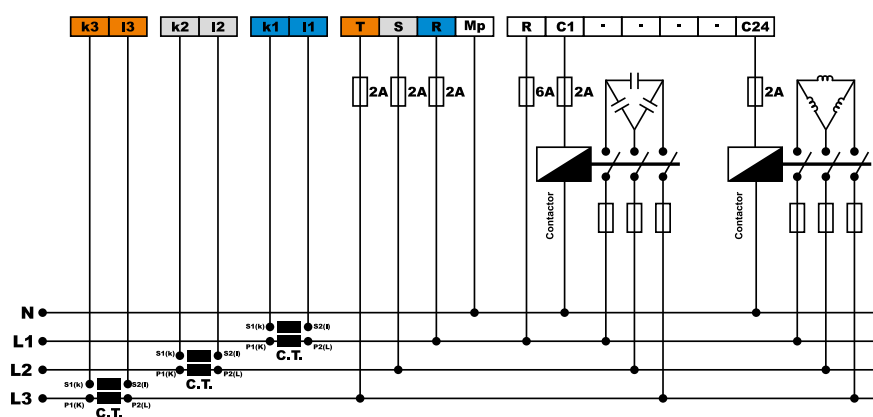
TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



THREEPHASE CONNECTION DIAGRAM



THYRISTOR TRIGGERED THREE-PHASE REACTIVE POWER CONTROL RELAY + COMMUNICATION

↓ PICTURES



RGT-12TH



RGT-18TH



RGT-24TH

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 240V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <12VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 5mA – 5,5A
Measurement Precision	: %±1
Current Transformer Ratio	: 5/5A - 10000/5A
Display	: 2x16 LCD (blue), 3x4digit display and leds
Number Levels	: 12, 18 and 24
Connection Type	: Plug-in Terminal
Tristor Trigger Output	: <30V DC / <40mA
Connection isolation	: 2,5kV
Connect Interface	: RS485
Connection Speed	: 9600bps Baudrate
Connection Features	: Databits: 8, Stopbits: 1,Parity : None
Cable Diameter	: 2.5mm ² (Current and voltage inputs), 1.5mm ² (Contactor outputs)
Weight	: <900gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP41(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

The reactive power control relays are designed to decrease the reactive powers (inductive and capacitive) not used by the loads in the system and drawn from the network due to the characteristics of the loads. It intervenes by activating a capacitor with suitable values if inductive power is drawn from the network. It interferes by activating a shunt reactor with suitable values if capacitive power is drawn from the network.

You are requested to enter the current transformer value at first when it is energized after the connections of the device are completed. After you enter and approve this value, the system controls the transformer terminals according to the power it draws. After this test is completed, it starts the stage test and tests all stages. After the stage test is completed, it starts to intervene according to the system requirement. It has the characteristics indicated below.

Communication with thyristor triggered RS485,
3-phase voltage and 3-phase current transformer
It can compensate the inductive and capacitive systems.
Easy-to-use Turkish menu.

Single phase, two-phase and three-phase capacitor and shunt reactor may be connected.

It shows the active power, reactive power, Cosφ, THD, total active and total reactive energy values of each phase on lcd display.

It shows the 3-phase current, 3-phase voltage or 3-phase Cosφ values on the display.

It saves the total active and total reactive energy values.

The stage (capacitor and shunt reactor) value can be entered manually.

It shows the capacitor or reactor stage values individually for each phase.

The system intervention time can be adjusted.

Inductive/ Active and Capacitive / Active ratios (%) can be adjusted.

It saves the reactive power flow of the system.

Menu is password-protected.

It saves the number of stage use.

It provides equal number of stage use for the stages with the same values.

It shows the inductive/active and capacitive/active ratios reached.

It can set the inductive/active and capacitive/active ratios desired to be reached.

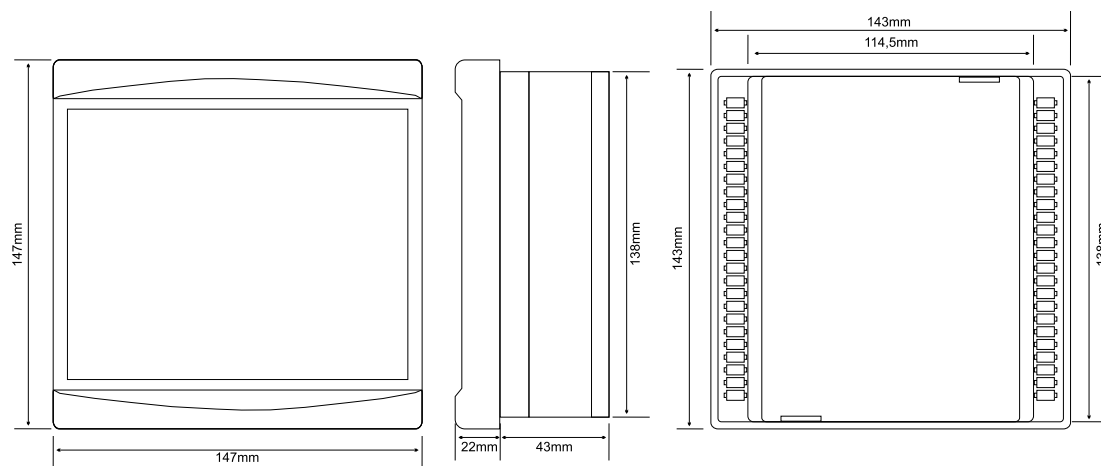
The stage layout time between two stages can be adjusted.

Off set stage can be created.

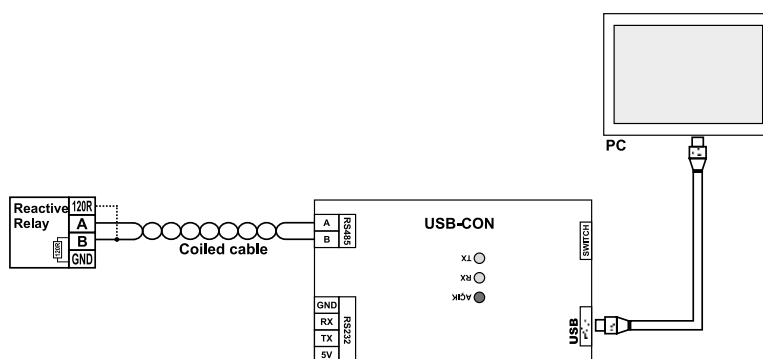
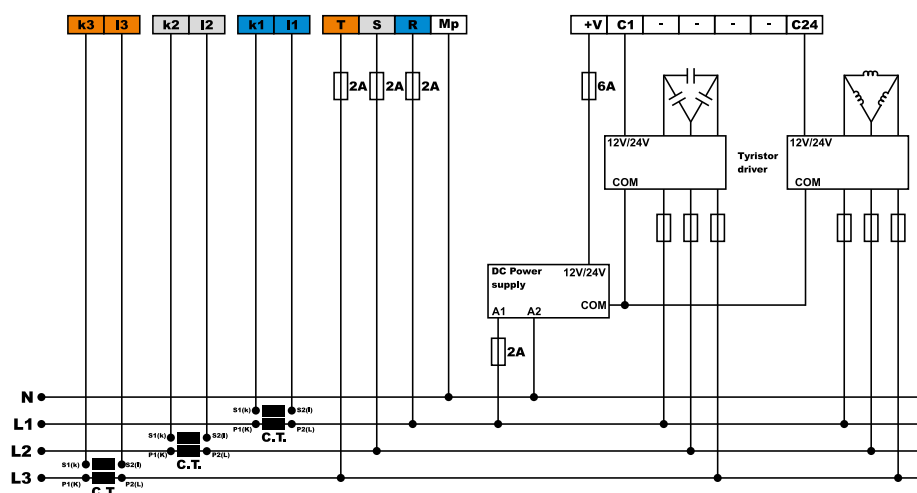
Time of intervention in the capacitive loads can be changed.

Time of intervention in the inductive loads can be changed.

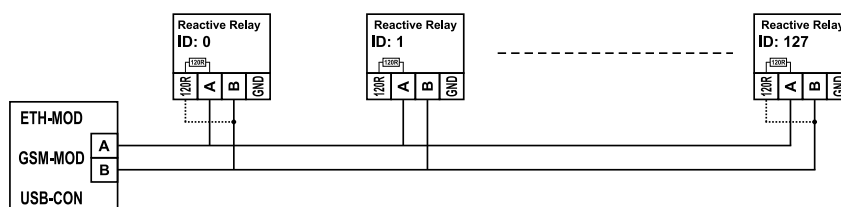
TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



Reactive relay and the computer communicate with USB-CON



Reactive relays communicate using a modem.

↓ PICTURES



RGM-07E



RGM-12E

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 260V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA – 5,5A
Measurement Precision	: %±1
Cosine Measurement Range	: 0.00 - 1.00 Cosφ
Display	: 3x20mm digit display and leds
Number Levels	: 7, 12
Connection Type	: Plug-in Terminal
Contact	: 3A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <600gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP41(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

The reactive power control relays are designed to decrease the reactive powers not used by the loads in the system and drawn from the network due to the characteristics of the loads. It intervenes by activating a capacitor with suitable values if inductive power is drawn from the network.

When it is energized after the connections of the device are completed, it controls the current transformer terminals by holding and releasing the stages respectively. After this test, it starts to intervene in the system. The memory input terminal is shorted out and the current transformer connection test is stored. It has the characteristics indicated below.

Single phase voltage and single phase current transformer.

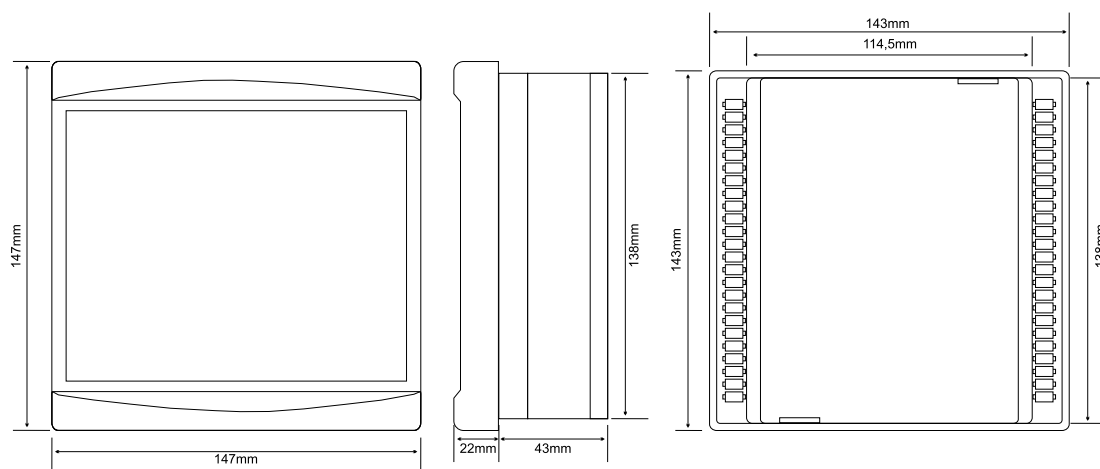
It can compensate the inductive systems.

Easy-to-use

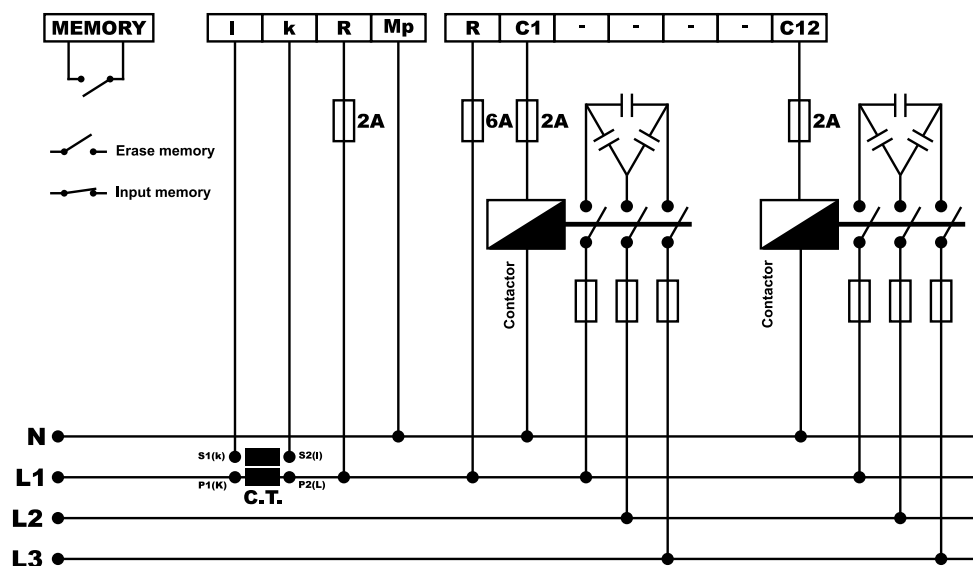
It shows the Cosφ value of the relevant phase to which it is connected on the display.

It functions through the method of holding and releasing respectively.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



GSM-MOD

↓ TECHNICAL PROPERTIES

Operating Voltage	: 85V - 300V AC
Operating Frequency	: 50Hz. / 60Hz.
Operating Temperature	: 0°C – 55°C
ESD Protection	: 10kV
Resistance to Impact	: 4KV
Operating Power	1VA(Stand-by), 10VA(full)
Display	Power, relay, Shooting power, Rx and Tx leds
Connection Features	Max. 19200bps (For energy meter IEC62056-21 protocol)
	: Modbus (Reactive Energy analyzers and relays)
	: RS485 Connect Interface Max. 128 devices
	: RS232 Connect Interface
	: Optik port with Connect Interface
	: TCP/IP
Connection Type	: GSM
Antenna	: 2.2dBi SMA antenna can be changed
Bandwidth	: Quand band GSM/GPRS/EDGE
Weight	: <200gr.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

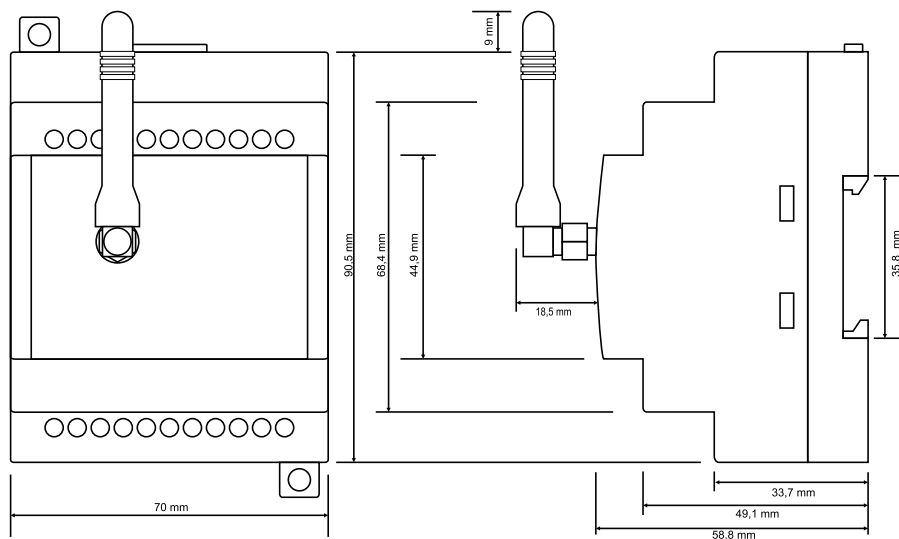
All data of the meter and the relay in the line connected to the modem can be read and controlled from a distance through Meter reading and Compensation Monitoring (by using GSM data line)

It can read, archive and report the instant energy consumption of the company by obtaining the meter data.

Capacitor power values can be obtained through the compensation system, stage tests can be done, retroactive power flow graphics can be charted, active/reactive consumption values can be archived and reported, the current and voltage irregularities, reactive ratios and the faults occurred in the system can be detected from a distance.

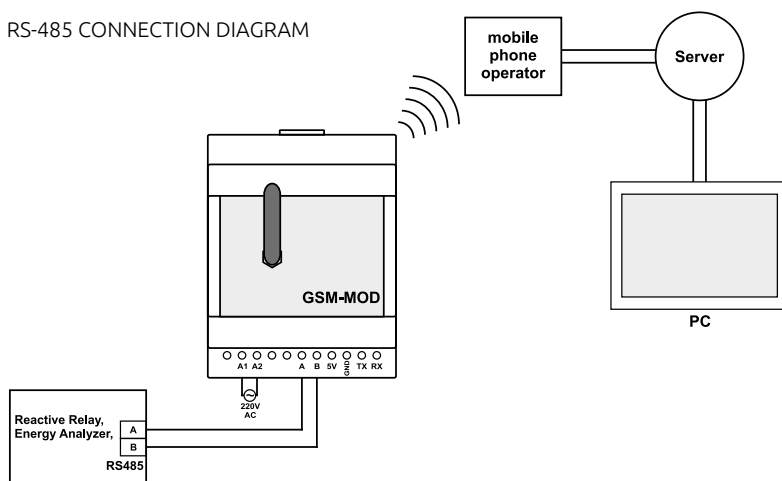
Compatible with all GSM Operators

TECHNICAL DIMENSIONS

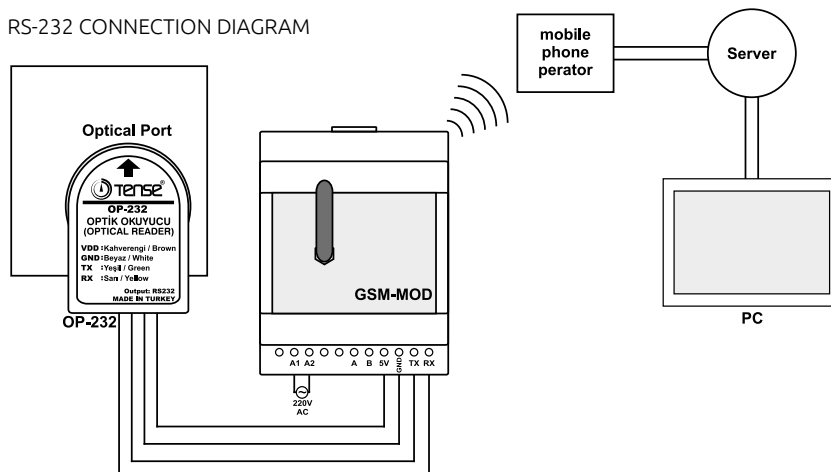


CONNECTION DIAGRAMS

RS-485 CONNECTION DIAGRAM



RS-232 CONNECTION DIAGRAM



↓ PICTURES



ETH-MOD

↓ TECHNICAL PROPERTIES

Operating Voltage	: 85V - 300V AC
Operating Frequency	: 50Hz. / 60Hz.
Operating Temperature	: 0°C – 55°C
ESD Protection	: 10kV
Resistance to Impact	: 4KV
Operating Power	1VA(Stand-by), 6VA(full)
Display	Power, relay, Rx and Tx leds
Connection Features	Max. 19200bps (For energy meter IEC62056-21 protocol)
	: Modbus (Reactive Energy analyzers and relays)
	: RS485 Connect Interface Max. 128 devices
	: RS232 Connect Interface
	: Optik port with Connect Interface
	: TCP/IP
Connection Type	: Modem connected to the Internet
Connection Speed	: 10 / 100 Mbps Ethernet
Weight	: <200gr.
Protection Class	: IP20
Operating Altitude	: <2000 meter

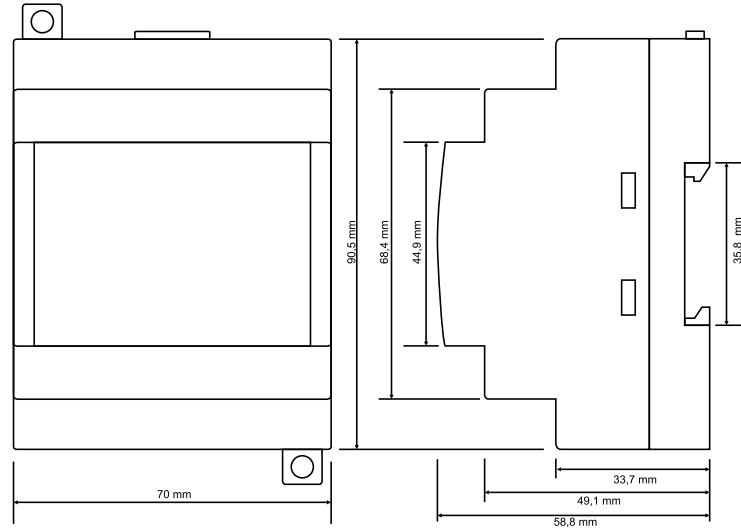
↓ DESCRIPTIONS

All data of the meter and the relay in the line connected to the modem can be read and controlled from a distance through Meter reading and Compensation Monitoring (by using internet connection).

It can read, archive and report the instant energy consumption of the company by obtaining the meter data.

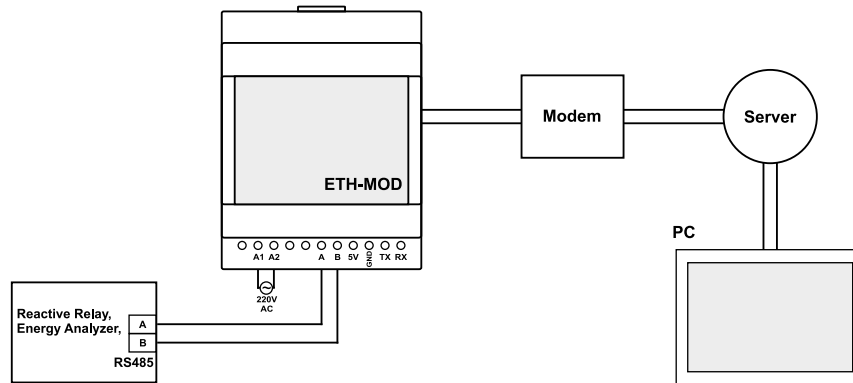
Capacitor power values can be obtained through the compensation system, stage tests can be done, retroactive power flow graphics can be charted, active/reactive consumption values can be archived and reported, the current and voltage irregularities, reactive ratios and the faults occurred in the system can be detected from a distance.

TECHNICAL DIMENSIONS

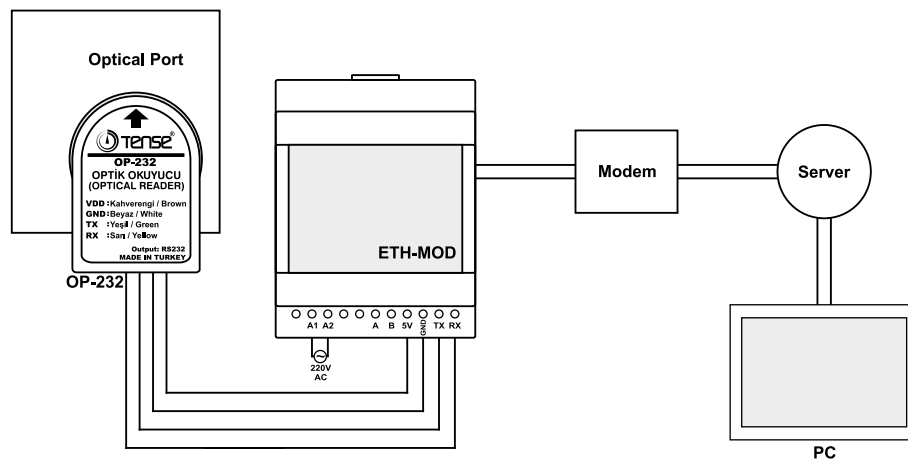


CONNECTION DIAGRAMS

RS-485 CONNECTION DIAGRAM



RS-232 CONNECTION DIAGRAM



↓ PICTURES



USB-CON

↓ TECHNICAL PROPERTIES

Communication Protocol	: RS232, RS485, Compatible with USB1.0/USB 1.1/USB 2.0
Operating Temperature	: 0°C – 55°C
Optical isolation Protection	: 1.5KV Optical isolation Protection
Electrostatic discharge	: 4KV
Display	: Power, Rx and Tx leds
Connection Speed	: 300bps – 230,4 Kbps Baudrate
Connection Features	Databits: 5,6,7,8 Databits Stopbits: 1, 1.5, 2 Stopbits Parity : None, Even, Odd, Space, Mark FIFO: 128 bytes receive buffer, 256 bytes transmit buffer
Connection Type	: USB connector and terminal connector
Weight	: <100gr.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

USB-CON converter is used to convert the data in the devices (meter, energy analyzer, reactive power control relays etc.) with communication characteristics such as RS485, RS232 or optic (RS232) ports to USB protocol.

Use insulated converter, if the devices used in communication have no insulation. Otherwise, the devices used in the communication unit may be damaged.

Determine the protocol (RS485 or RS232) that you want to convert to USB. Adjust from dip switch as belows. Do the connections based on the protocol to be used.

Set the pin no 3 and 4 to ON position in order to convert RS485 to USB. The pin no 1 and 2 should be on OFF position.

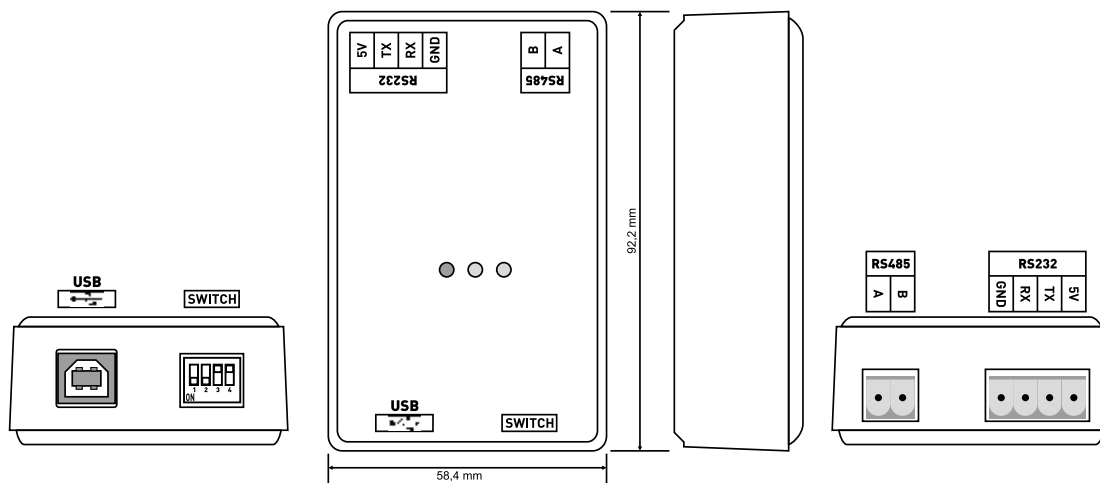
Set the pin no 1 and 2 to ON position in order to convert RS232 to USB. The pin no 3 and 4 should be on OFF position.

RS485 connection cable length should be about 800 meters. The length of the cable may vary depending on whether you use A and B terminals as spirally wound to each other and whether you use a cable having low ohm value. When the cable distance or the number of the devices increases, 120R resistance given with the device can be connected to the network. Maximum 128 devices can be connected.

If RS232 connection cable is longer than 2 meters, data loss may occur. You can connect maximum one device.

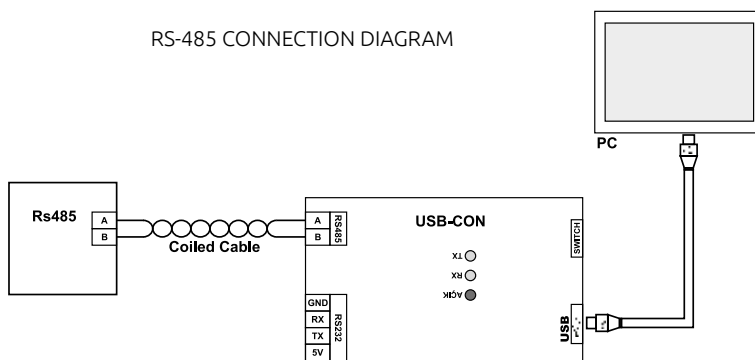
If you use RS485 or RS232 ports for connection with the meters, You may need to cover the optic head of the meter with black tape. Otherwise, there may be distortion in data

TECHNICAL DIMENSIONS

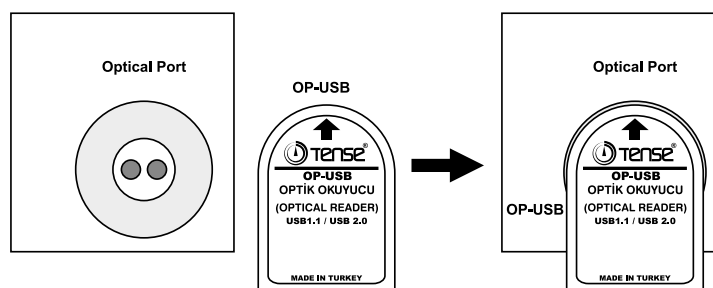


CONNECTION DIAGRAMS

RS-485 CONNECTION DIAGRAM



RS-232 CONNECTION DIAGRAM



↓ PICTURES



↓ TECHNICAL PROPERTIES

Communication Protocol	: IEC1107 (IEC62056-21) RS232
Length of cable	: 4 x 0,22mm ² 2 meter cable (LIYY)
Operating Temperature	: -30°C – 70°C
Magnet	: Neodyum Magnet
Connection Type	: Terminal connector
Weight	: <100gr.
Mounting	: Optical port mounting
Protection Class	: IP20
Operating Altitude	: <4000 meter

↓ DESCRIPTIONS

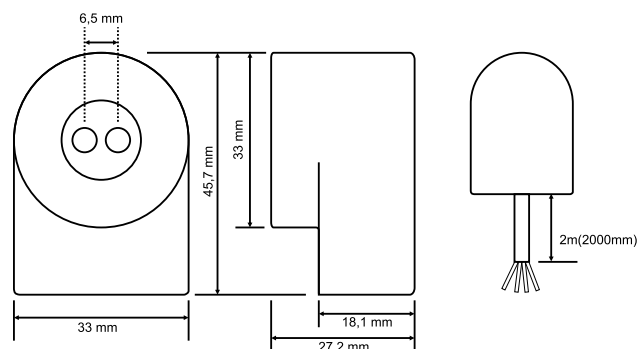
It is designed for providing information exchange through electronic devices providing communication by using IEC1107 (IEC62056-21) protocol on optical port.

GSM/Ethernet or PSTN-based modems providing communication with counters are used for reading data on the counters. Their connection type is as given below.

The device is attached on the metal surface in a way that the arrow mark on the label of the optical port points straight up.

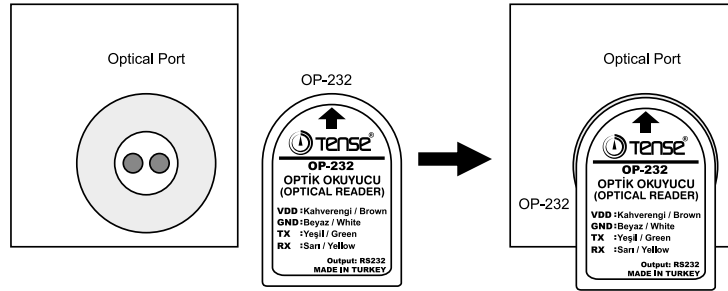
Example: In order to read data on the counter via computer, primarily install the counter software of the relevant counter brand on your computer. Start the counter reading program. Select RS232 as the connection type. Select the COMx port to which the port is connected. Then click on “read the counter” button. Data reading process starts by this way.

↓ TECHNICAL DIMENSIONS

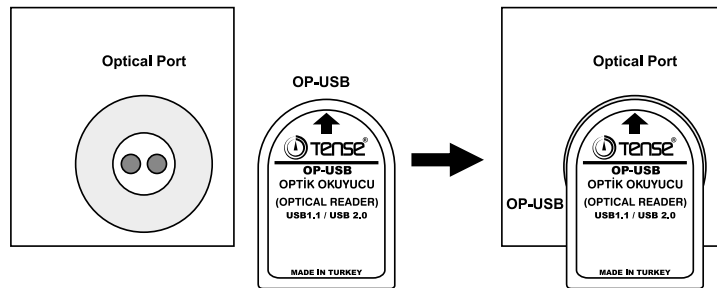


CONNECTION DIAGRAMS

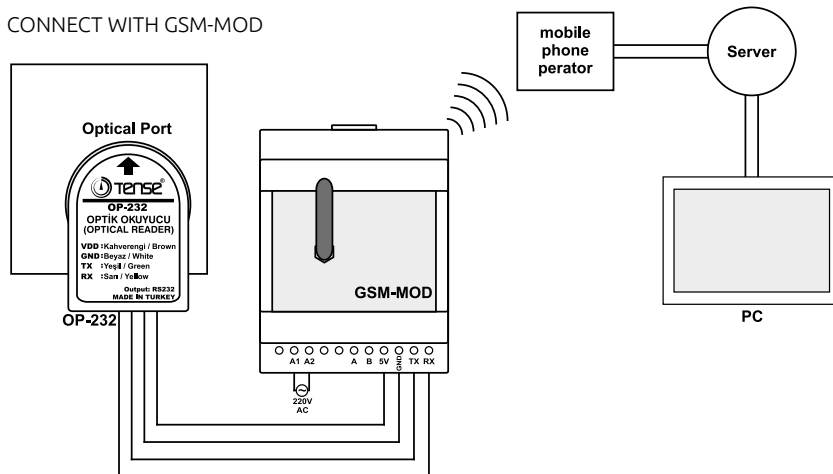
OPTİK PORT



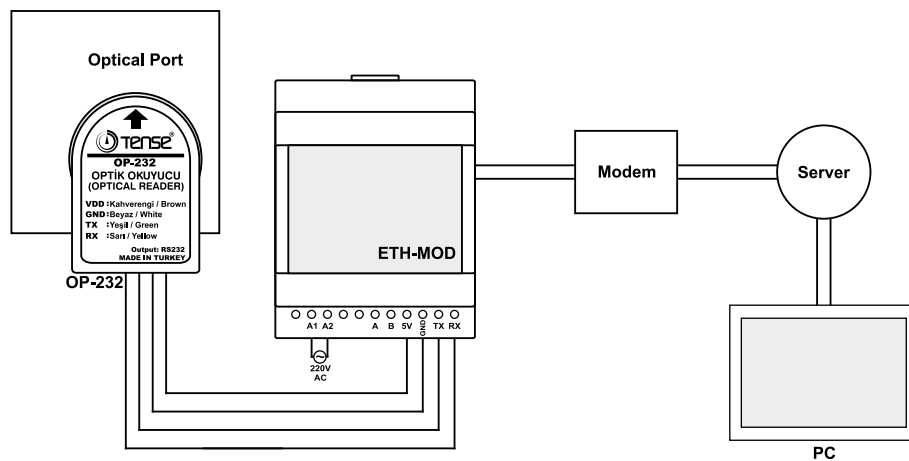
CONNECT WITH USB-CON



CONNECT WITH GSM-MOD



CONNECT WITH ETH-MOD



↓ PICTURES



OP-USB

↓ TECHNICAL PROPERTIES

Communication Protocol	: IEC1107 (IEC62056-21) . Compatible with USB1.0/USB 1.1/USB 2.0
Operating Temperature	: -30°C – 70°C
Magnet	: Neodyum Magnet
Connection Type	: USB Connector
Weight	: <70 gr.
Mounting	: Optical Port Mounting
Protection Class	: IP20
Operating Altitude	: <4000 meter

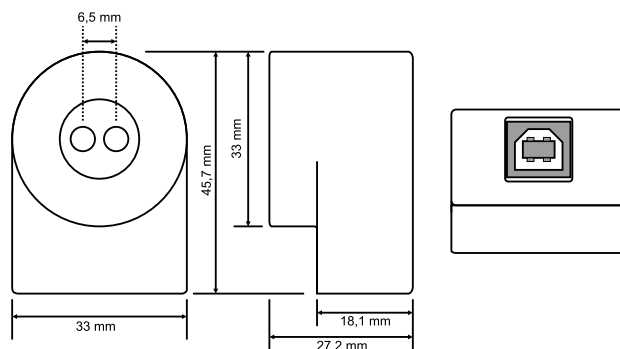
↓ DESCRIPTIONS

It is designed for providing information exchange through electronic devices providing communication by using IEC1107 (IEC62056-21) protocol on optical port.

The device is attached on the metal surface in a way that the arrow mark on the label of the optical port points straight up. Connect one end of the USB cable to OP-USB and connect the other end of the cable to the USB port of the computer. Synchronize OP-USB with your computer (for detailed information, please refer to OP-USB manual).

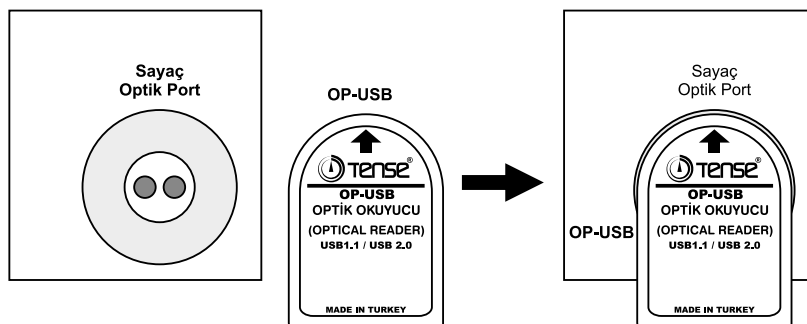
Example: In order to read data on the counter, primarily install the counter software of the relevant counter brand on your computer. Start the counter reading program. Select RS232 as the connection type. Select the COMx port to which the port is connected. Then click on "read the counter" button. Data reading process starts by this way.

TECHNICAL DIMENSIONS

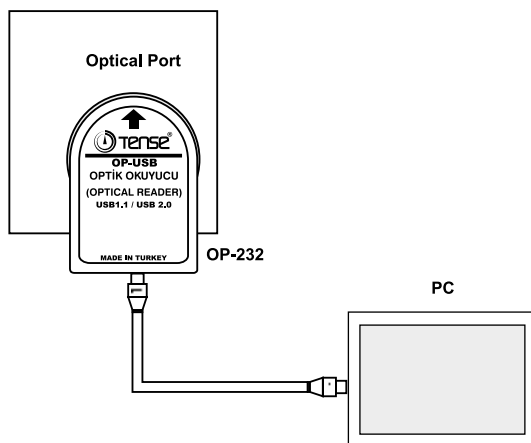


CONNECTION DIAGRAMS

Optical Port Mounting.



Connect with PC.



↓ PICTURES



TPM-01

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 240V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <7VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 5mA – 5,5A
Measurement Precision	: %±1
Current Transformer Ratio	: 5/5A - 10000/5A
Display	: 2x16 LCD (blue)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <500gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted
Protection Class	: IP40(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

TPM-01 energy analyzer measures the voltage, current, $\cos\phi$, active power, reactive power, minimum and maximum values, demands and energy of the load(s) on the system.

You are requested to enter the current transformer value at first when it is energized after the connections of the device are completed. After you enter and approve this value, the system controls the transformer terminals according to the power it draws. You can set the current transformer terminals manually. After completing this test, it starts to record the information regarding to the system. It has the characteristics indicated below.

With 3-phase voltage and 3-phase current transformer.

Easy-to-use Turkish menu.

It shows per-phase and total active (P, ΣP) powers.

It shows per-phase and total reactive (Q, ΣQ inductive and capacitive) powers.

It shows $\cos\phi$ value of each phase.

It shows voltage values (V) of each phase.

It shows current value (I) of each phase.

It shows total imported active energy (ΣkWh) value.

It shows total exported active energy (ΣkWh) value.

It shows total inductive reactive energy ($\Sigma kVarh$) value.

It shows total capacitive reactive energy value ($\Sigma kVarh$).

It shows the minimum values.

It shows the maximum values.

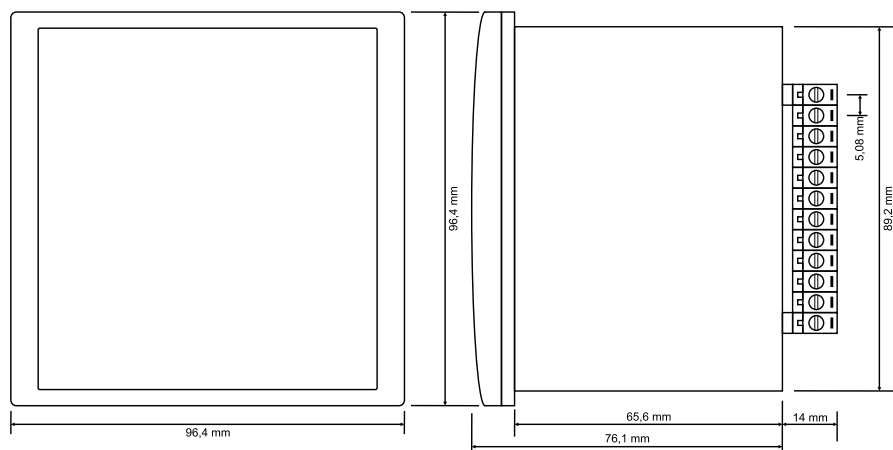
It shows demand values.

You can reset the energy values.

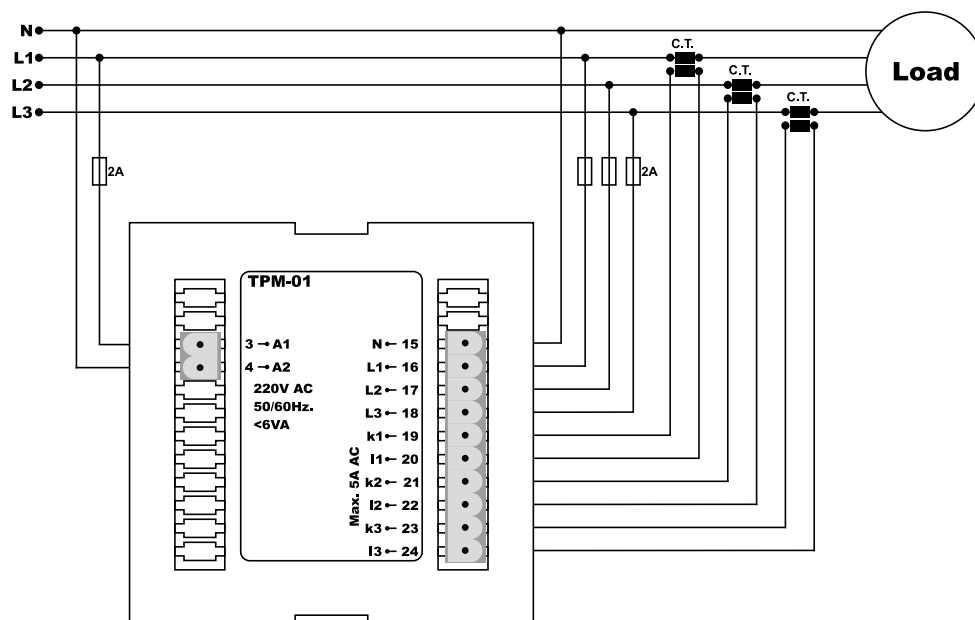
The records can be reset.

The demand drawing time can be adjusted.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



TPM-02

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 85V – 300V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <3VA
Operating Temperature	: 0°C – 55°C
Voltage Input	: 5V - 330V AC
Voltage Measurement Range	: 5V - 600kV
Current Input	: 5mA – 10A
Current Measurement Range	: 5mA - 50.000A
Voltage, Current Accuracy	: %±0,5
Active Power Accuracy	: %±1
Reactive Power Accuracy	: %±2
Connection Mode	: 3P4W
Current Transformer Ratio	: 1.....5000
Voltage Transformer Ratio	: 1,0.....4000
Display	: 128 x 64 grafik LCD
Harmonic Voltage	: 2 - 31
Harmonic Current	: 2 - 31
Neutral Current Measurement	: None
Real Time Clock	: >5 yıl
Communication	: RS485 ModBus RTU
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <300gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted
Protection Class	: IP40(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

TPM-02 energy analyzer is designed for tracking the electrical magnitudes of the load(s) in the system. It has the characteristics indicated below.

V1, V2, V3: Voltage values between one phase and neutral

V12, V23, V31 : Phase-to-phase voltage values

I1, I2, I3, IΣ : Each phase and total current values

PF1, PF2, PF3 : Power factor of each phase

Cosφ1,Cosφ2,Cosφ3 : Cosφ values of each phase

F1, F2, F3: Frequency values of each phase

P1, P2, P3, PΣ : Active and total active values of each phase

Q1, Q2, Q3, QΣ : Reactive and total reactive values of each phase

S1, S2, S3, SΣ : Visible power and total visible power values of each phase

Wh: Import and export active energy values

VArh : Inductive and capacitive energy values

Current irregularity %

Voltage irregularity %

THDV-L1, THDV-L2, THDV-L3, THDV-LΣ : Total voltage harmonic values

THDI-L1, THDI-L2, THDI-L3, THDI-LΣ : Total voltage harmonic values

V1, V2, V3 max-min-mean : Maximum, minimum and mean voltage values between phase and neutral

V12, V23, V31 max-min-mean : Phase-to-phase maximum, minimum and mean voltage values

I1, I2, I3 max-min-mean : Maximum, minimum and mean current values of each phase

P1, P2, P3, PΣ max-mean : Maximum and mean active power values of each phase

Q1, Q2, Q3, QΣ max-mean : Maximum and mean reactive power values of each phase

S1, S2, S3, SΣ max-mean : Maximum and mean visible power values of each phase

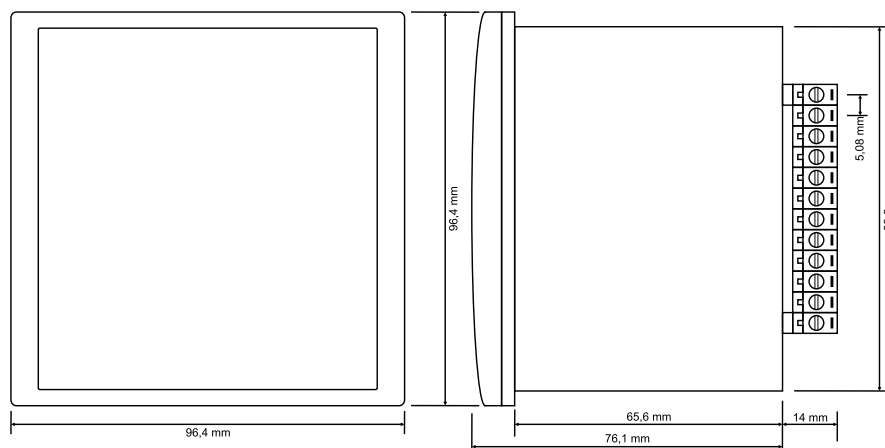
Time/ Date: hour, minute, second/ day, month, year

HDV-L1, HDV-L2, HDV-L3, HDV-LΣ : 2 – 31. Phase-neutral voltage harmonic values

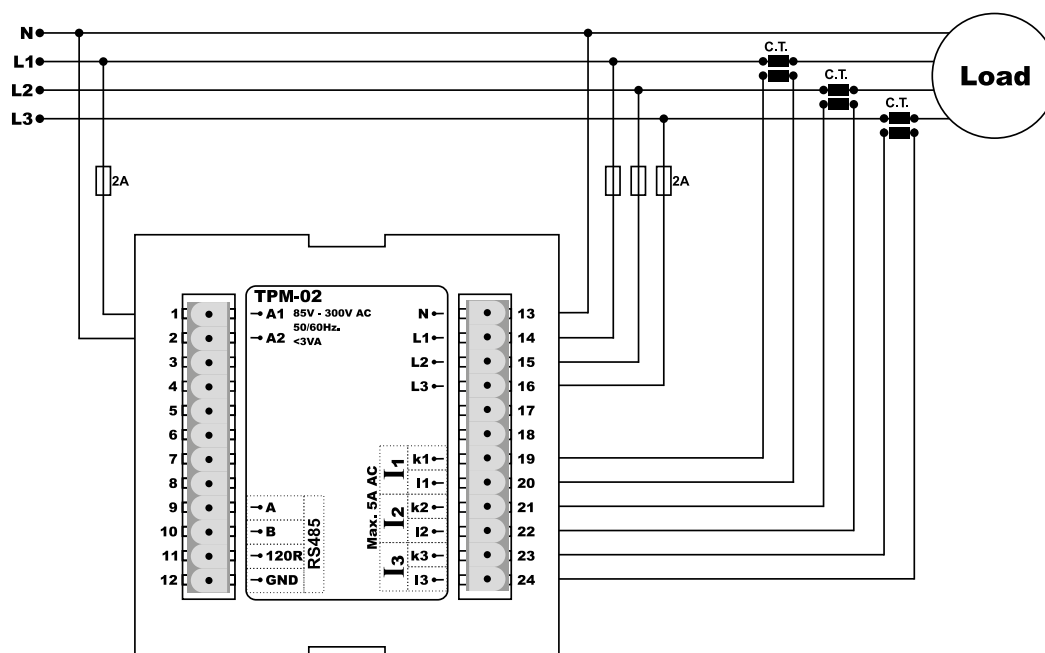
HDI-L1, HDI-L2, HDI-L3, HDI-LΣ : 2 – 31. Phase-neutral current harmonic values

Demand Values: Current, Active Power, Reactive Power, Visible Power (For each phase and total)

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



TPM-03

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 85V – 300V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Voltage Input	: 5V - 330V AC
Voltage Measurement Range	: 1V - 600kV
Current Input	: 1mA – 10A
Current Measurement Range	: 1mA - 50.000A
Voltage, Current Accuracy	: %±0,2
Active Power Accuracy	: %±0,5
ReActive Power Accuracy	: %±1
Connection	: 3P3W, 3P4W
Current Transformer Ratio	: 1.....5000
Voltage Transformer Ratio	: 1,0.....4000
Display	: 128 x 64 grafik LCD
Harmonic Voltage	: 1 - 63
Harmonic Current	: 1 - 63
Neutral Current Measurement	: Ok.
Real Time	: >5 yıl
Communication	: RS485 ModBus RTU
Connection Type	: Plug-in Terminal
Contact Çıkış	: 2A / 250V AC
Pulse Çıkış	: Max. 30V DC , Max. 40mA DC
Cable Diameter	: 1.5mm²
Weight	: <300gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted
Protection Class	: IP40(Front panel), IP00(Case)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

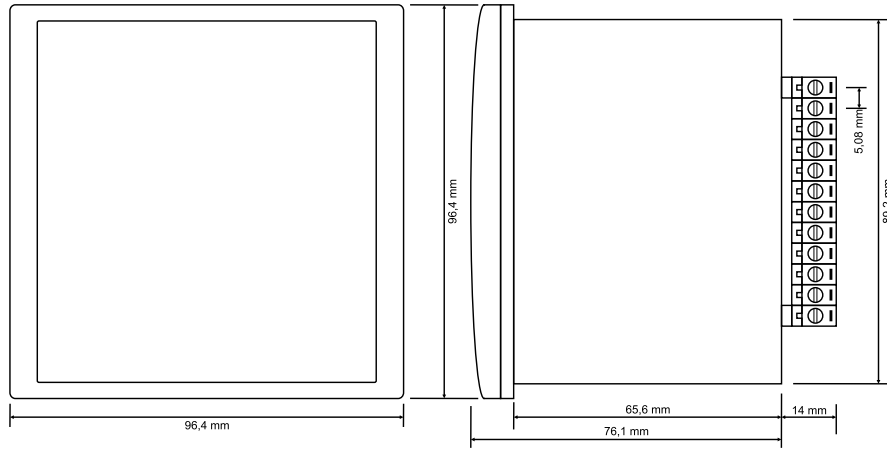
TPM-03 energy analyzer is designed for tracking the electrical magnitudes of the load(s) in the system. It has the characteristics indicated below.

V1, V2, V3: Voltage values between one phase and neutral
V12, V23, V31 : Phase-to-phase voltage values
I1, I2, I3, Ineutral: Each phase and neutral current values
PF1, PF2, PF3 : Power factor of each phase
Cosφ1, Cosφ2, Cosφ3 : Cosφ values of each phase
F1, F2, F3: Frequency values of each phase
P1, P2, P3, PΣ : Active and total active values of each phase
Q1, Q2, Q3, QΣ : Reactive and total reactive values of each phase
S1, S2, S3, SΣ : Visible power and total visible power values of each phase
Wh: Import and export active energy values
VArh : Inductive and capacitive energy values
Current irregularity %
Voltage irregularity %
THDV-L1, THDV-L2, THDV-L3, THDV-LΣ : Total voltage harmonic values
THDI-L1, THDI-L2, THDI-L3, THDI-LΣ : Total voltage harmonic values
V1, V2, V3 max-min-mean : Maximum, minimum and mean voltage values between phase and neutral
V12, V23, V31 max-min-mean: Phase-to-phase maximum, minimum and mean voltage values
I1, I2, I3 max-min-mean: Maximum, minimum and mean current values of each phase
P1, P2, P3, PΣ max-mean : Maximum and mean active power values of each phase

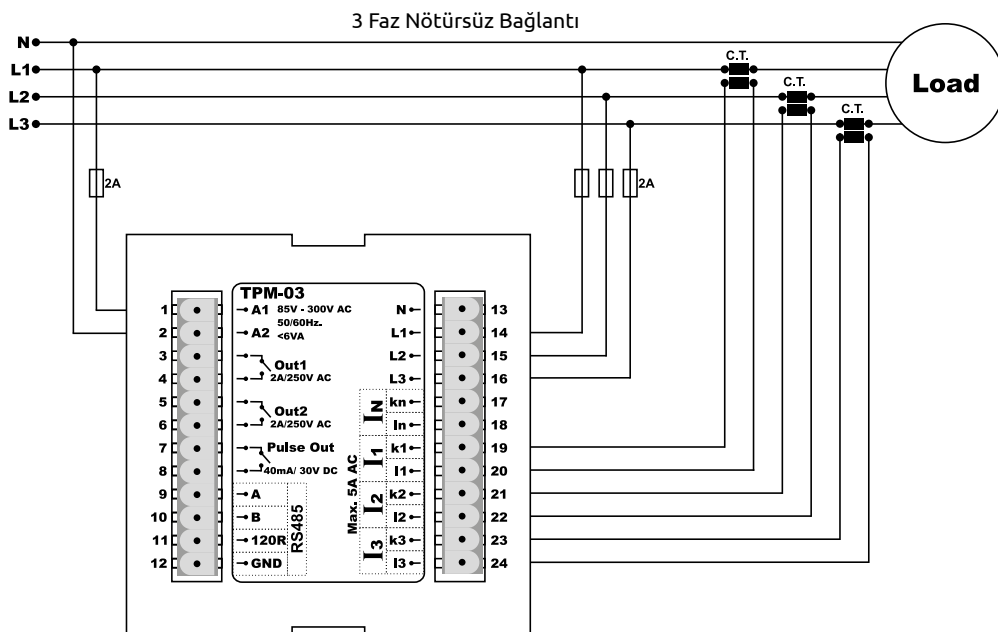
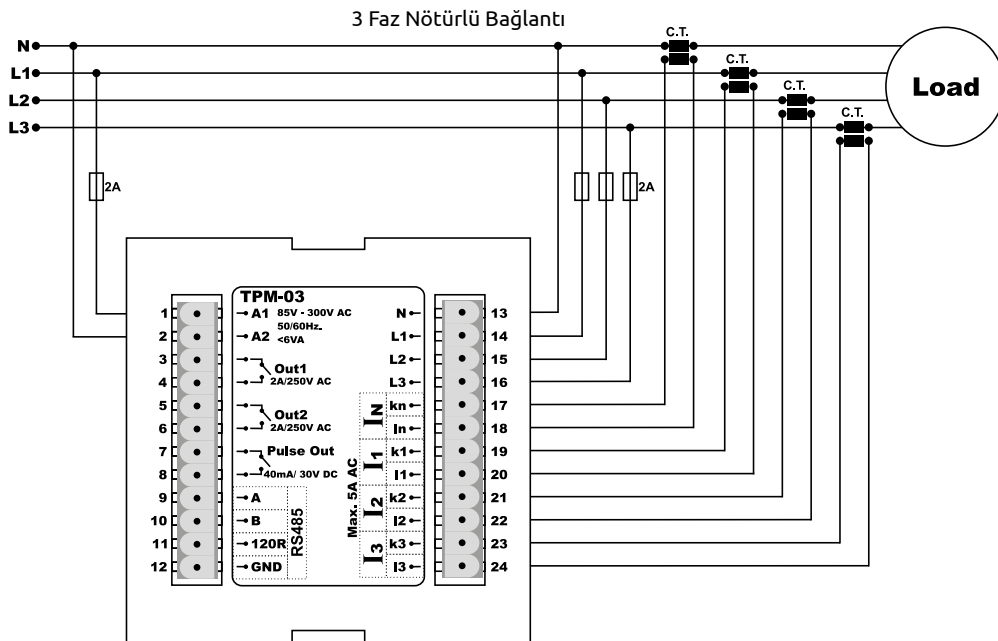
Q1, Q2, Q3, QΣ max-mean : Maximum and mean reactive power values of each phase
S1, S2, S3, SΣ max-mean : Maximum and mean visible power values of each

phase
Time/ Date: hour, minute, second/ day, month, year
HDV-L1, HDV-L2, HDV-L3, HDV-LΣ : 2 – 63. Phase-neutral voltage harmonic values
HDV-L12, HDV-L23, HDV-L31, HDV-LΣ : 2 – 63. Phase-phase voltage harmonic values
HDI-L1, HDI-L2, HDI-L3, HDI-LΣ : 2 – 63. Phase-neutral current harmonic values
Demand Values: Current, Active Power, Reactive Power, Visible Power (For each phase and total)
Occurrence records (High voltage) : For each phase
Occurrence records (Low voltage) : For each phase
Occurrence records (Energy interruption) : For each phase
Occurrence records (voltage irregularity) : for 3-phase
Occurrence records (High current) : for each phase and 3-phase
Occurrence records (Current irregularity) : for 3-phase
Occurrence records (Cres factor) : For each phase
Alarm state: Associating with occurrence
Relay Control: Separate parameters for two relays
Pulse Output: Dry contact output

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



AT-XX

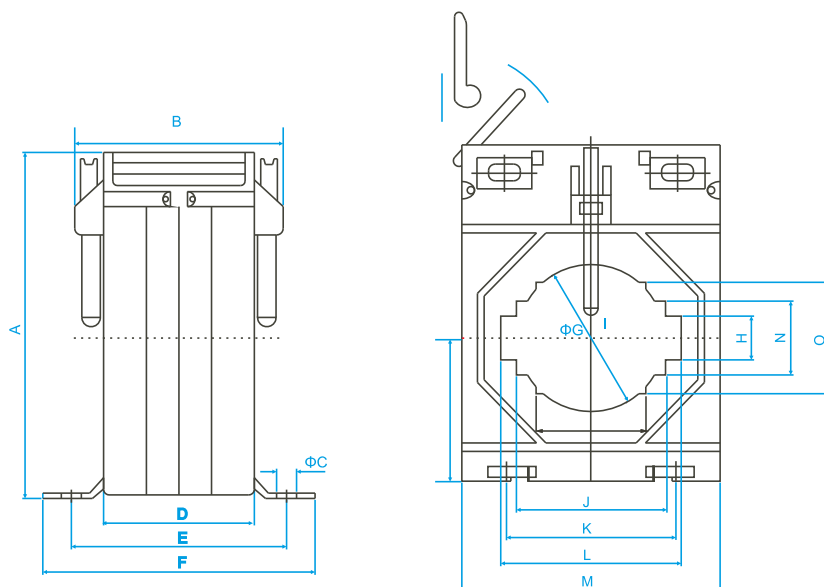
↓ TECHNICAL PROPERTIES

Accuracy (Class)	: 0,5
Operating Temperature	: (-25°C) – (55°C)
Voltage Test	: 720V AC
Operating Frequency	: 50 / 60 Hz
High Voltage Test	: 4KV 50Hz./min.
Standard	: IEC44-1, BS3938 and DIN 42600
Cable Diameter	: ≤2,5mm ²
Connection Type	: Bara and cable inside.
Mounting	: Rail mounting
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

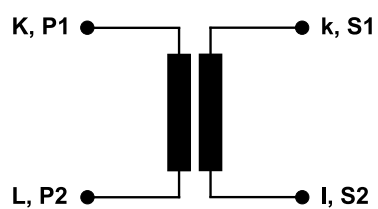
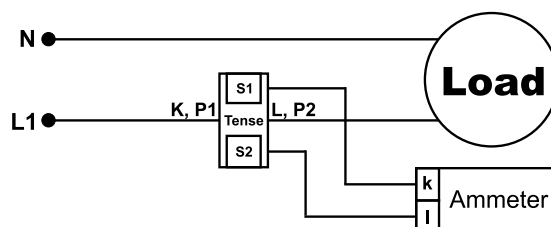
Product Code	Frame	Input / Output Current	Output Power (VA)
AT-30	SF 62/20	30/5A	2.5
AT-40	SF 62/20	40/5A	2.5
AT-50	SF 62/20	50/5A	2.5
AT-60	SF 62/20	60/5A	2.5
AT-75	SF 62/20	75/5A	2.5
AT-100	SF 62/30	100/5A	5
AT-125	SF 62/30	125/5A	5
AT-150	SF 62/30	150/5A	5
AT-200	SF 62/40	200/5A	10
AT-250	SF 62/40	250/5A	10
AT-300	SF 62/40	300/5A	10
AT-400	SF 62/40	400/5A	10
AT-500	SF 62/40	500/5A	10
AT-600	SF 62/50	600/5A	10
AT-750	SF 74/50	750/5A	10
AT-800	SF 74/50	800/5A	10
AT-1000	SF 74/50	1000/5A	15
AT-1250	SF 86/60	1250/5A	15
AT-1500	SF 140/100	1500/5A	15
AT-2000	SF 140/100	2000/5A	20
AT-2500	SF 140/100	2500/5A	20
AT-3000	SF 140/100	3000/5A	30
AT-4000	SF 140/100	4000/5A	35
AT-5000	SF 140/100	5000/5A	45

TECHNICAL DIMENSIONS



Code	(mm)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
AT-30, AT-40, AT-50, AT-60, AT-75		78	36	6.6	36	55	71	30.1	30.1	11	23	44	21	62	21	26
AT-100, AT-125, AT-150		78	47	6.6	35	55	71	31	31	16	31	44	31	62	21	26
AT-200, AT-250, AT-300, AT-400, AT-500		78	47	6.6	35	55	71	33	33	11	31	47	41	74	21	31
AT-750, AT-800, AT-1000		98	61	6.6	45	67	81	51	51	21	51	68	51	86	31	44
AT-1250		110	56	6.6	40	62	76	65	65	31	61	86	61	104	31	56

CONNECTION DIAGRAMS



↓ PICTURES

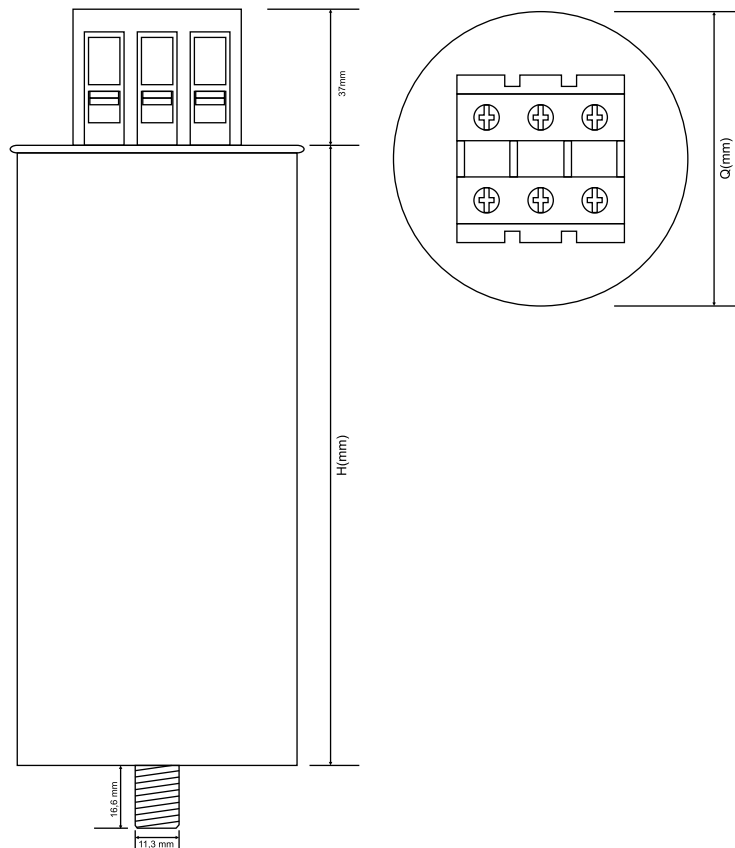


CAPACITORS

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 230V AC (Monophase), 400V AC (Threephase),
Maksimum Operating Voltage	: $U_n \times 1.1$
Maximum Operating Current	: $I_n \times 1.3$
Operating Frequency	: 50Hz. / 60Hz.
Operating Temperature	: (-25°C) – (55°C)
Operating Humidity Value.	: $\leq 95\%$
Capacity Tolerance	: (-5%) or (+10%)
Terminal Test Voltage	: $U_n \times 2.15$ 5sec.
Isolation Voltage	: 3000V AC 2sec.
PCB	: None PCB
Life	: 100.000 hours
Standard	: IEC 60831-1, IEC 60831-2
Connection Type	: Terminal connection
Protection Class	: IP00
Operating Altitude	: <2000 meter

↓ TECHNICAL DIMENSIONS





MONOPHASE LOW VOLTAGE COMPENSATION CAPACITORS

230 VOLT AC	50 HZ (230V AC)		60 HZ(230V AC)		Capacity (µf)	Dimension (ØmmxHmm)
	Capacitive Power (Kvar)	Current (A)	Capacitive Power (Kvar)	Current (A)		
0,25 kVAr	0.25	1	0.4	0.75	15.1	40 x 95
0,5 kVAr	0.5	1.1	0.75	1	35	50 x 95
1 kVAr	1	1.3	1.5	1.5	50.8	63 x 125
1,5 kVAr	1.5	1.8	1.9	2.5	90.3	63 x 125
2,5 kVAr	2.5	3.3	3	4	127.4	75 x 160
5 kVAr	5	20	6	24	254.8	76 x 175
7,5 kVAr	7.5	30	9	36	382.2	76 x 240
10 kVAr	10	40	12	48	509.6	86 x 240

THREEPHASE LOW VOLTAGE COMPENSATION CAPACITORS

400 VOLT AC	50 HZ (400V AC)		60 HZ(400V AC)		Capacity (µf)	Dimension (ØmmxHmm)
	Capacitive Power (Kvar)	Current (A)	Capacitive Power (Kvar)	Current (A)		
0,5 kVAr	0.5	1.3	0.75	1.8	3x12,1	40 x 145
1 kVAr	1	1.6	1.3	2.4	3x15,1	40 x 145
1,5 kVAr	1.5	2.8	1.8	3.9	3x16,6	40 x 145
2,5 kVAr	2.5	3.6	3	4.3	3x33,2	50 x 145
5 kVAr	5	7.2	6	8.6	3x49,7	75 x 160
7,5 kVAr	7.5	10.8	9	13	3x66,3	75 x 160
10 kVAr	10	14.4	12	17.3	3x79,6	75 x 203
12,5 kVAr	12.5	17.3	14.4	20.8	3x99,5	75 x 203
15 kVAr	15	21.7	18	26	3x132,6	75 x 238
20 kVAr	20	28.9	24	34.7	3x165,8	90 x 278
25 kVAr	25	32	30	43.3	3x198,9	100 x 278
30 kVAr	30	36.1	36	52	3x232,2	100 x 278
40 kVAr	40	57.7	42	60.6	3x256,6	135 x 285
50 kVAr	50	62.5	48	69.3	3x274	135 x 345

↓ PICTURES



TRM-100



TRM-400

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 110V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Current (Thermic A>)	: 0,1A-10A(TRM-10), 8A-20A(TRM-20), 15A-50A(TRM-50) : 40A-100A(TRM-100), 90A-200A(TRM-200) : 190A-300A(TRM-300), 290A-400A(TRM-400)
Waiting (t)	: 0,1sec. - 20sec.(TRM-10, TRM-20, TRM-50, TRM-100) : 1sec. - 200sec.(TRM-200, TRM-300, TRM-400)
Display	: 3 x 9mm 3 digit display and 4 leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <250gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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, semi-automatic and automatic.

Whenever the device is reset, the relay draws current, load current is allowed and the relay controls depending on the starting current and high current values.

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 current errors automatically by waiting the error time. 4. The device is required to be reset by pressing the button manually when current error occurs.

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

TRM-10 (0,1 A - 10 A)

TRM-20 (8 A - 20 A)

TRM-50 (15 A - 50 A)

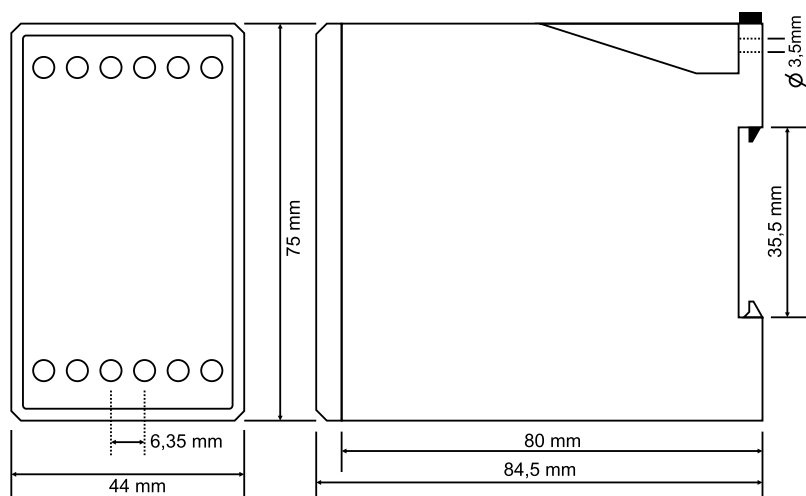
TRM-100 (40 A - 100 A)

TRM-200 (90 A - 200 A)

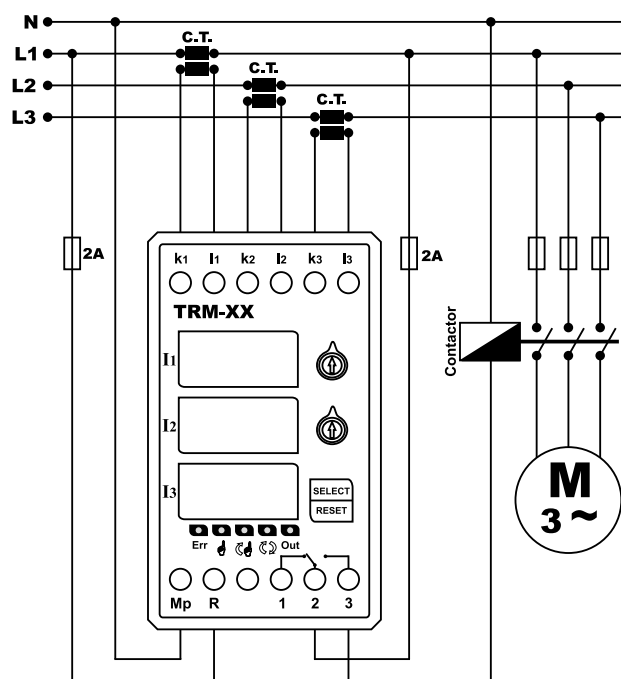
TRM-300 (190 A - 300 A)

TRM-400 (290 A - 400 A)

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



EM-06



EM-60D



EM-250D

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 70mA - 5,5A AC (EM-06) 1A - 100A AC (EM-60D) 2A - 250A AC (EM-250D)
Current Transformer	: 10/5A - 9995/5A (X5) (EM-06) CT-120 (EM-60D) CT-300 (EM-250D)
Measurement Precision	: ±1%
Voltage Measurement Range	: 1V - 500V AC
Display	: 6 x 9mm 3 digit display and 9 x leds
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm²
Weight	: <325gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital multimeter is designed to monitor the current and voltage values of the three-phase operating loads.

EM-06

When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. You can set the current transformer value by entering the menu. If you make direct connection without current transformer under 5A, you need to ensure that the current transformer value is 5. The device shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values.

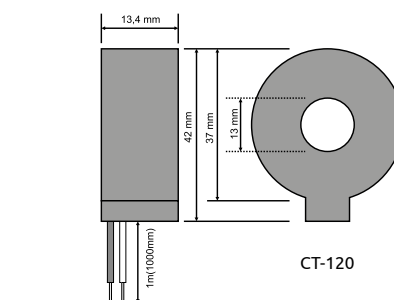
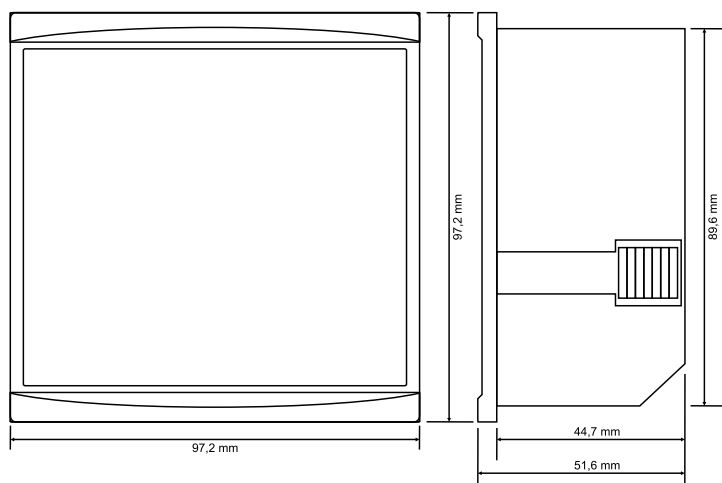
EM-60D

Use the 100 A current transformers provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values on the displays.

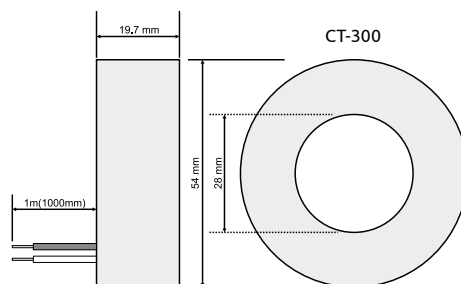
EM-250D

Use the 250A current transformers provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values on the displays.

TECHNICAL DIMENSIONS

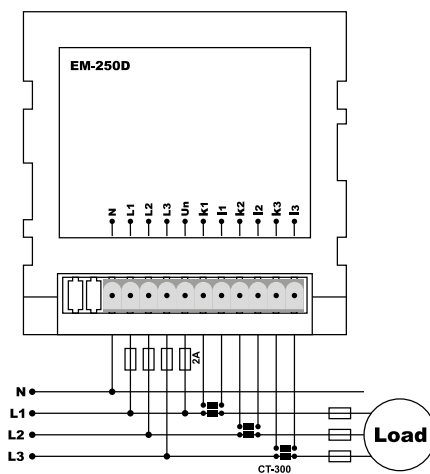
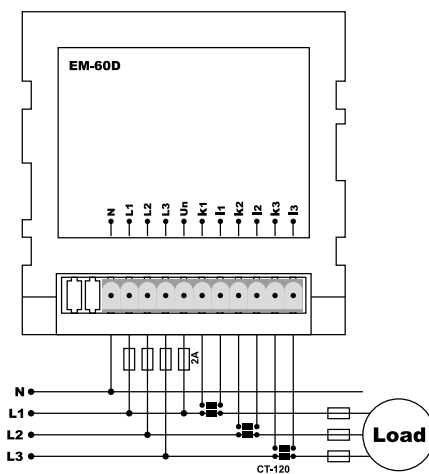
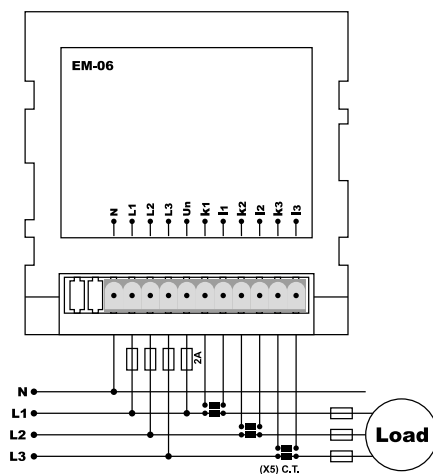


CT-120



CT-300

CONNECTION DIAGRAMS



DIN TYPE MULTIMETER

↓ PICTURES



EM-06DIN



EM-60DIN



EM-250DIN

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 70mA - 5,5A AC (EM-06DIN) 1A - 100A AC (EM-60DIN) 2A - 250A AC (EM-250DIN)
Current Transformer	: 10/5A - 9995/5A (X5) (EM-06DIN) CT-120 (EM-60DIN) CT-300 (EM-250DIN)
Measurement Precision	: ±1%
Voltage Measurement Range	: 1V - 500V AC
Display	: 6 x 9mm 3 digit display and 9 x leds
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <325gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital multimeter is designed to monitor the current and voltage values of the three-phase operating loads.

EM-06DIN

When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. You can set the current transformer value by entering the menu. If you make direct connection without current transformer under 5A, you need to ensure that the current transformer value is 5. The device shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values.

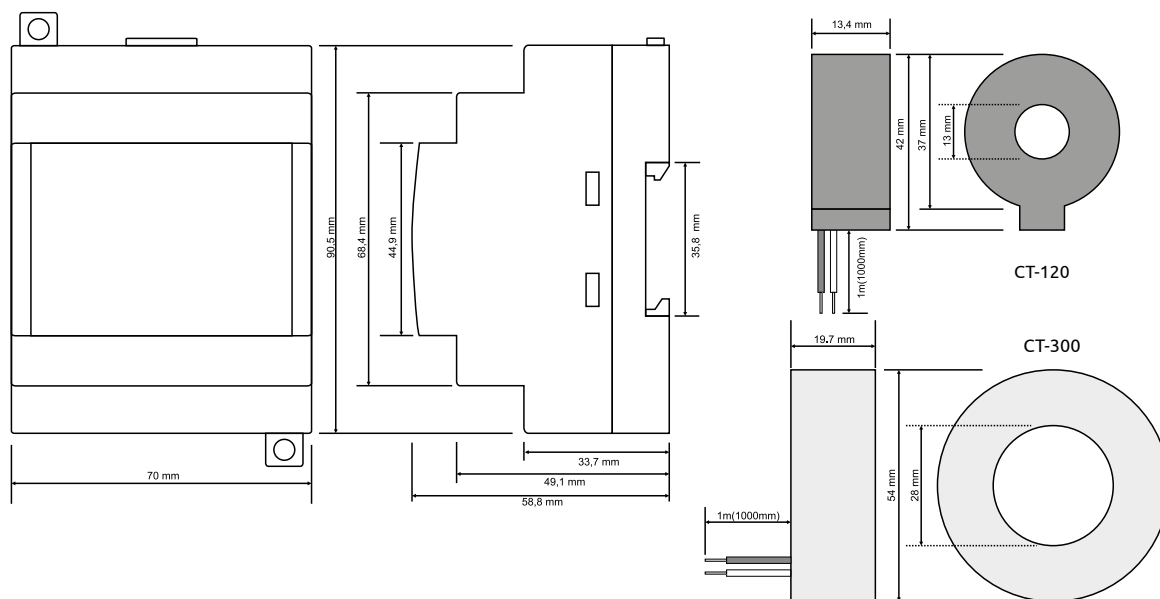
EM-60DIN

Use the 100 A current transformers provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values on the displays.

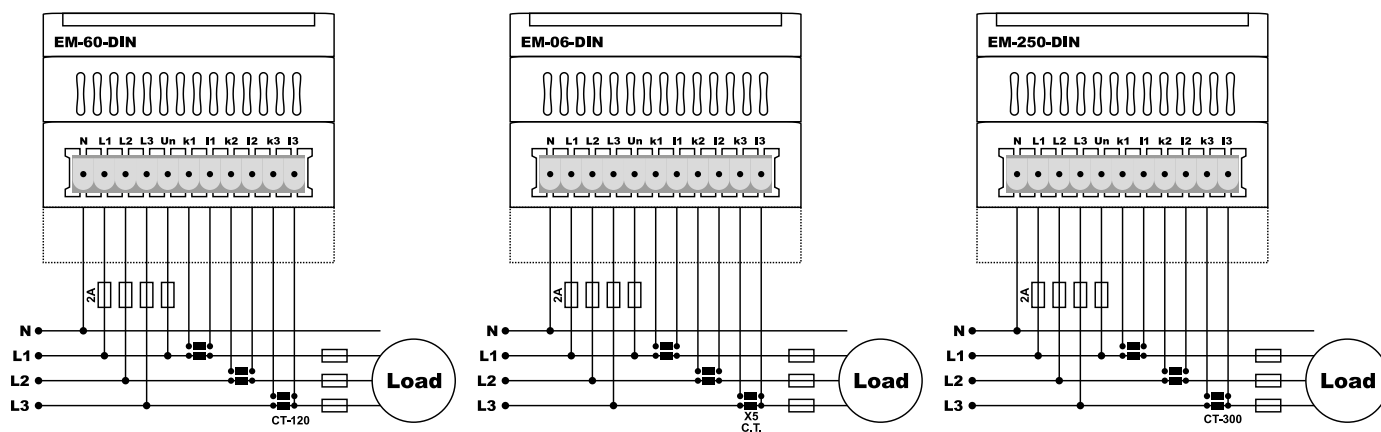
EM-250DIN

Use the 250A current transformers provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device is adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it shows the phase-neutral, phase-phase voltages, frequency, phase sequence and current values on the displays.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



EM-04S

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA - 5,5A AC
Current Transformer	: 10/5A - 9995/5A (X5)
Measurement Precision	: ±1%
Voltage Measurement Range	: 1V - 500V AC
Display	: 4 x 9mm 4 digit display
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <250gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted.
Protection Class	: IP20
Operating Altitude	: <2000 meter

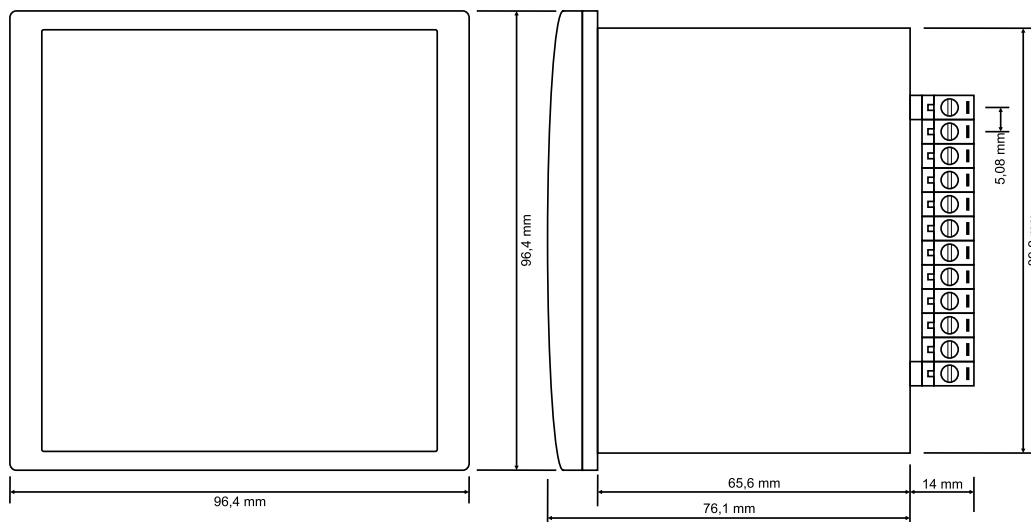
↓ DESCRIPTIONS

Digital set multimeter is designed to protect the three-phase operating precise loads against the faults likely to arise from currents or voltages.

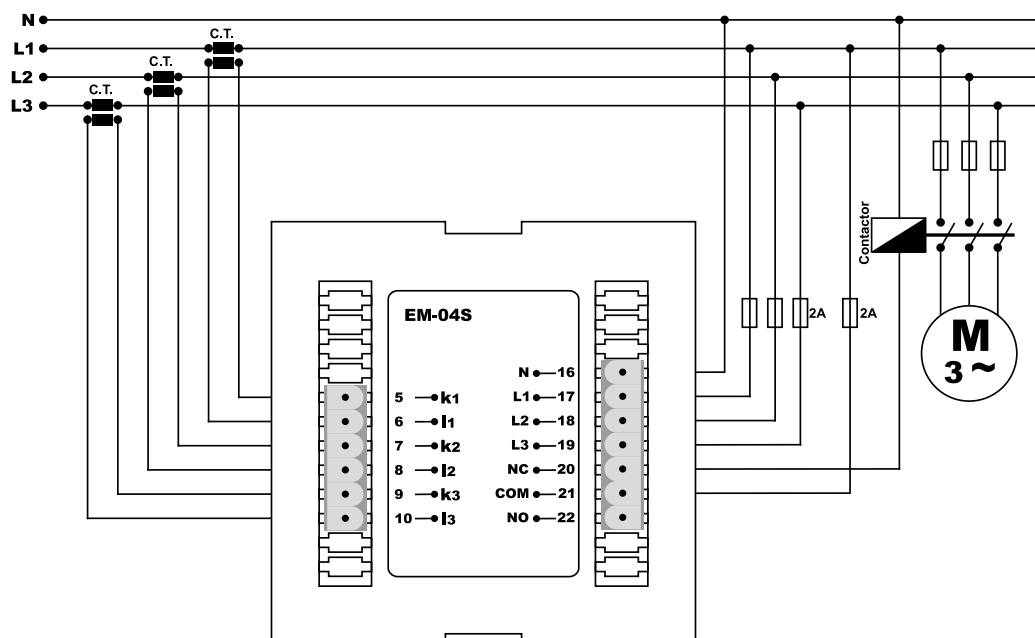
When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. You can set the current transformer value on Pr.1 by entering the menu. You can see the phase-neutral, phase-phase, frequency and current values on the display.

- High and low voltage can be adjusted,
- High and low current can be adjusted,
- Demurrage (starting) Multiplier and time can be adjusted,
- High and low current automatic reset times can be adjusted,
- High and low current error waiting times can be adjusted,
- Voltage and current asymmetry can be adjusted.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DJ-F96



DJ-F72



DJ-F48

↓ TECHNICAL PROPERTIES

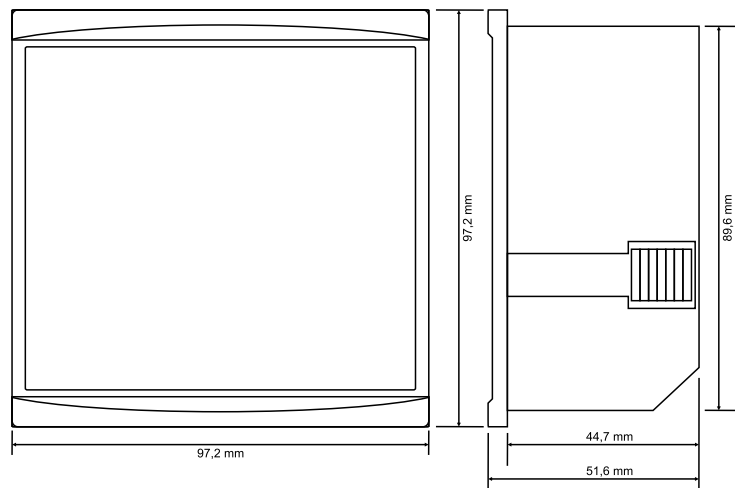
Operating Voltage(Un)	: 140V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Frequency Measurement Range	: 1 - 400 Hz.(15V - 500V AC)
Measurement Precision	: ±1%
Display	: 20mm 3 digit display (DJ-F96) 14mm 3 digit display (DJ-F72) 9mm 3 digit display (DJ-F48)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-F96) 68mm x 68mm (DJ-F72) 45mm x 45mm (DJ-F48)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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

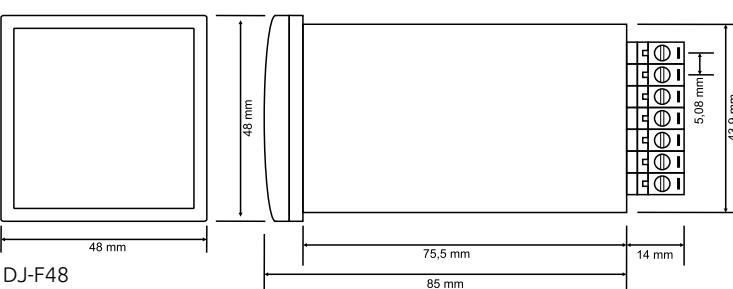
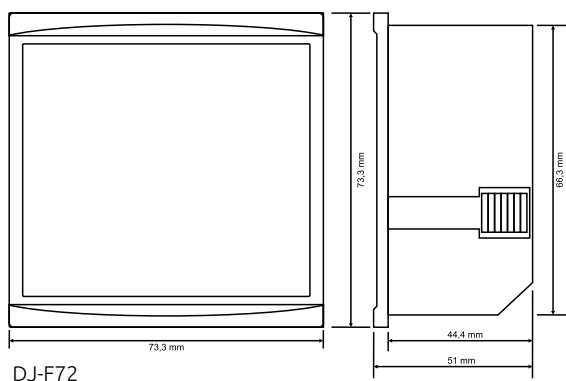
When the device is energized, it shows the frequency value of the phas-to-neutral or phase-to-phase AC voltage coming to Vinputs constantly on the display. The voltage the frequency value of which is desired to be measured should be between 15V - 500 V.

↓ TECHNICAL DIMENSIONS

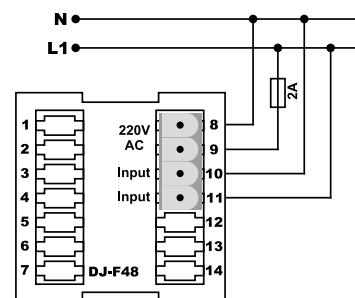
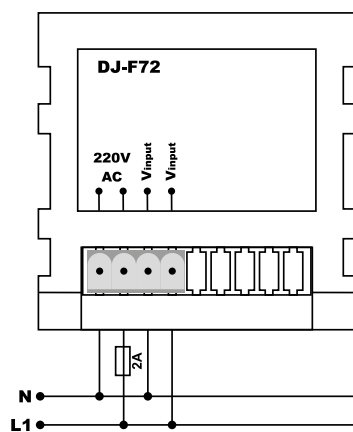
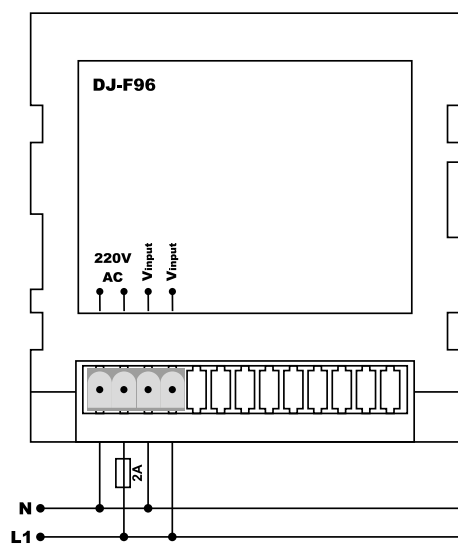


DJ-F96

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



FREQUENCY METER

↓ PICTURES



DJ-F36



DF-DIN

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Frequency Measurement Range	: 1 - 400 Hz.(15V - 500V AC)
Measurement Precision	: ±1%
Display	: 14mm 3 digit display (DJ-F36) 9mm 3 digit display (DF-DIN)
Connection Type	: Plug-in Terminal(DJ-F36) Terminal connection(DF-DIN)
Cable Diameter	: 1.5mm ² (DJ-F36), 2.5mm ² (DF-DIN)
Weight	: <220gr.
Panel Hole Sizes	: 30mm x 72mm (DJ-F36)
Mounting	: Front panel mounted (DJ-F36) Vertical assembled in the panel or assembled on the din rail (DF-DIN)
Protection Class	: IP20
Operating Altitude	: <2000 meter

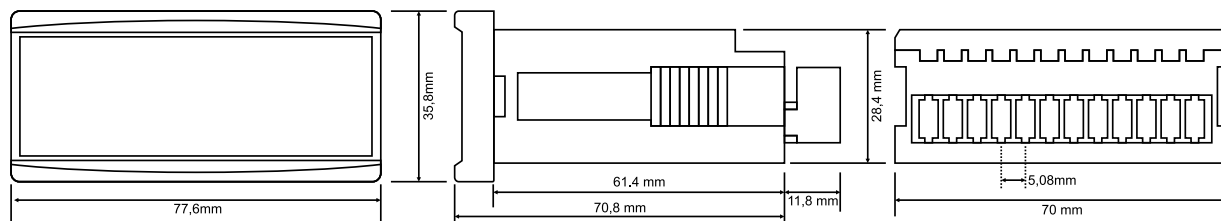
↓ DESCRIPTIONS

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

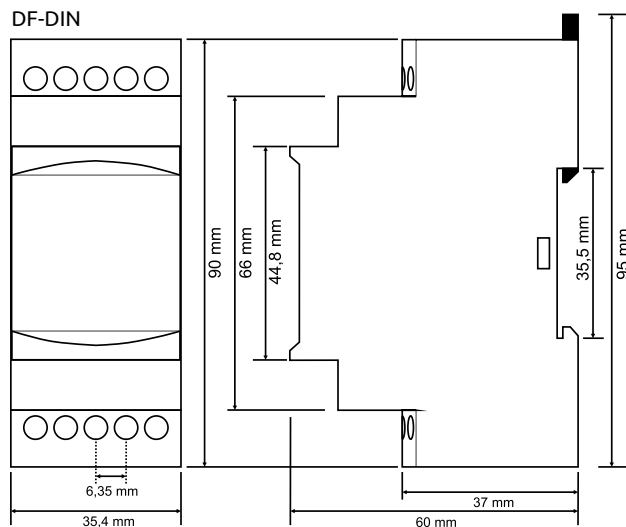
When the device is energized, it shows the frequency value of the phase-neutral or phase-phase AC voltage coming to Vinputs constantly on the display. The voltage the frequency value of which is desired to be measured should be between 15V - 500 V.

TECHNICAL DIMENSIONS

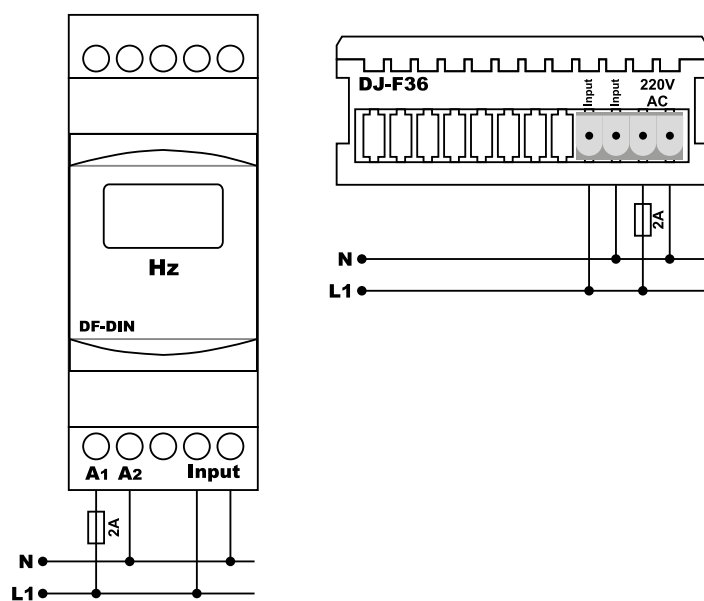
DJ-F36



DF-DIN



CONNECTION DIAGRAMS



SET AMMETER

↓ PICTURES



DA-VIP04

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V - 260V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 250mA - 5,5A AC
Current Transformer	: 100A/5A (X5)
Measurement Precision	: ±%1
Display	: 20mm 3 digit display, 14mm 3 digit display
Contact	: 5A / 250V AC
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital set ammeters are designed to prevent the faults likely to arise from the current drawn by the loads.

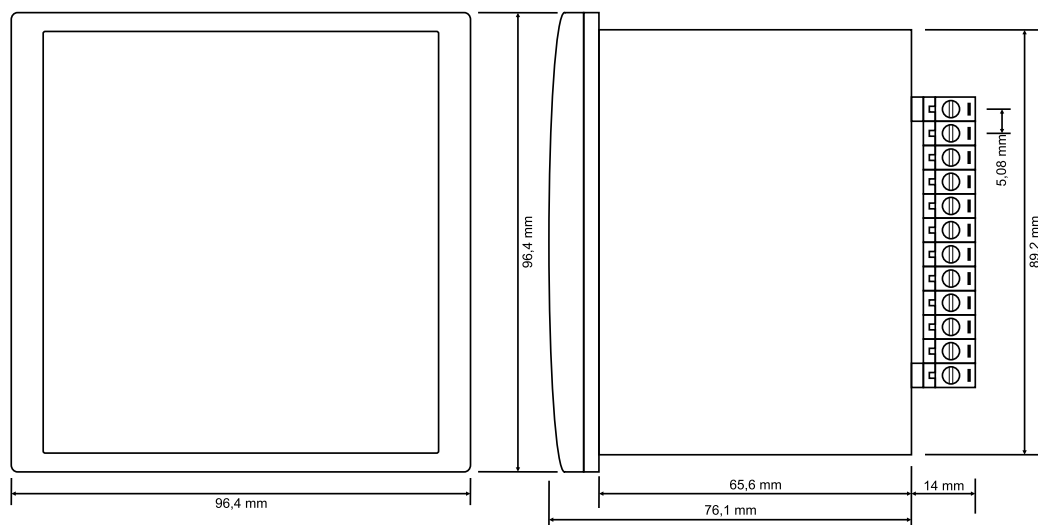
Current transformer value is fixed based on 100/5A. The device shows the current drawn by the load on the 1st display (20 mm large). It shows the high current set value on the 2nd display (14 mm small). You can adjust the high voltage set value by pressing Up and Down buttons.

If the current value is 0, the relay doesn't draw. If the current value is over 0, the relay draws. If the current is over the high current set value, the relay releases instantly. When the current value drops below the high current set value by 1A, the relay draws current again.

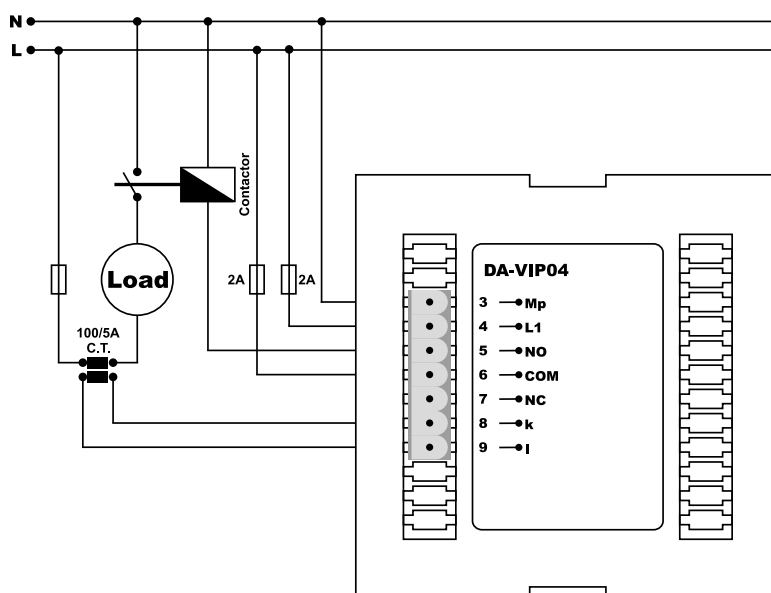
When the relay draws: 1(NC) and 2(COM) contactor terminals are open circuit and 2(COM) and 3(NO) contactor terminals are short circuit.

When the relay releases: 1(NC) and 2(COM) contactor terminals are short circuit and 2(COM) and 3(NO) contactor terminals are open circuit.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



SET AMMETER

↓ PICTURES



DJ-A96S



DJ-A72S

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 150mA - 5,5A AC
Current Transformer	: 10/5A - 995/5A (X5)
Measurement Precision	: ±%1
Display	: 20mm 3 digit display, 14mm 3 digit display (DJ-A96S) 14mm 3 digit display, 9mm 3 digit display (DJ-A72S)
Contact	: 5A / 250V AC
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-A96S) 68mm x 68mm (DJ-A72S)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

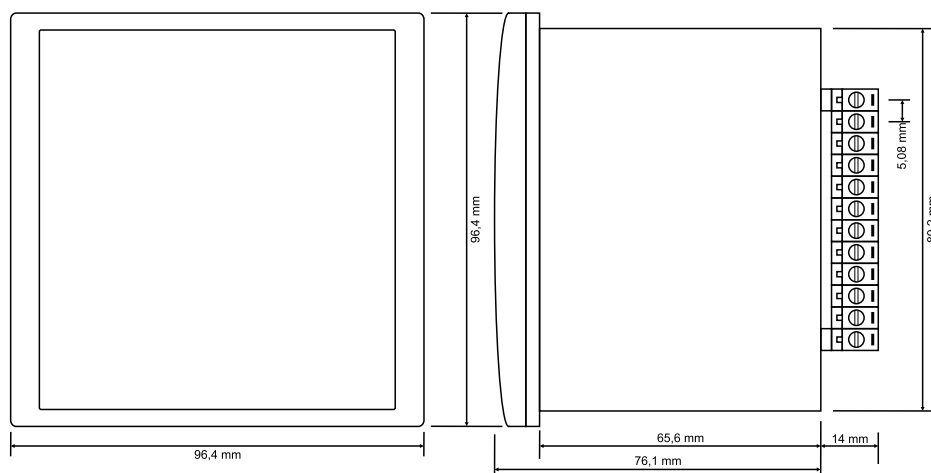
↓ DESCRIPTIONS

Digital set ammeters are designed to prevent the faults likely to arise from the current drawn by the loads.

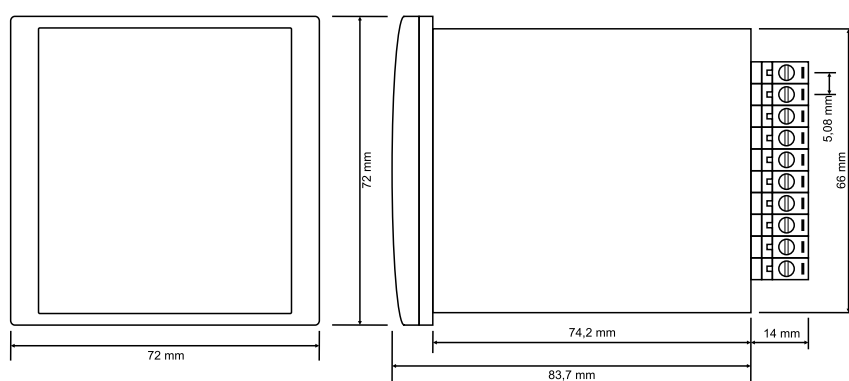
- High and low voltage can be adjusted,
- High and low current can be adjusted,
- Demurrage (starting) Multiplier and time can be adjusted,
- High and low current automatic reset times can be adjusted,
- High and low current error waiting times can be adjusted,
- Current automatic reset value can be adjusted,
- High and low current hysteresis values can be adjusted,

TECHNICAL DIMENSIONS

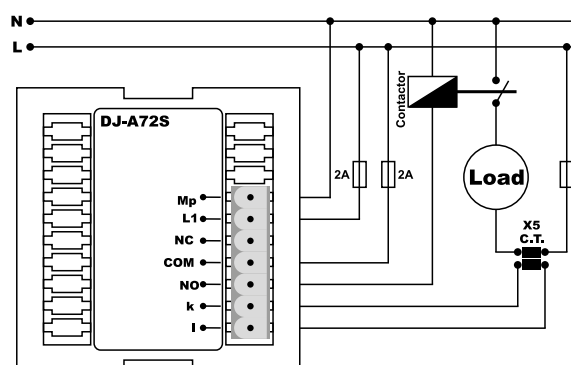
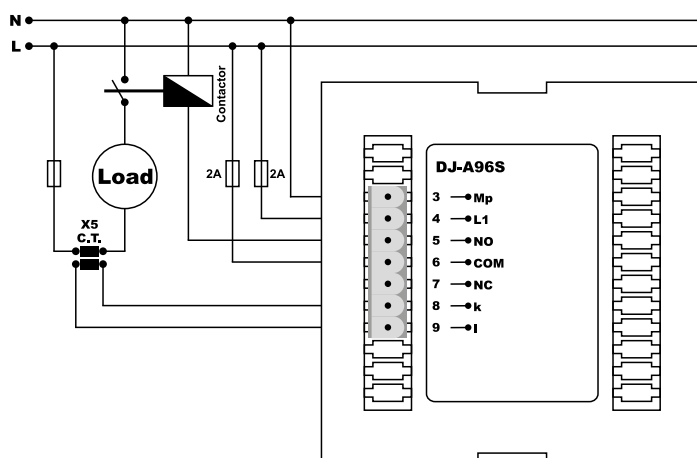
DJ-A96S



DJ-A72S



CONNECTION DIAGRAMS



↓ PICTURES



DJ-A96



DJ-A72



DJ-A48

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA - 5,5A AC
Current Transformer	: 10/5A - 9995/5A (X5)
Measurement Precision	: ±%1
Display	: 20mm 4 digit display (DJ-A96) 14mm 4 digit display (DJ-A72) 9mm 4 digit display (DJ-A48)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-A96) 68mm x 68mm (DJ-A72) 45mm x 45mm (DJ-A48)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

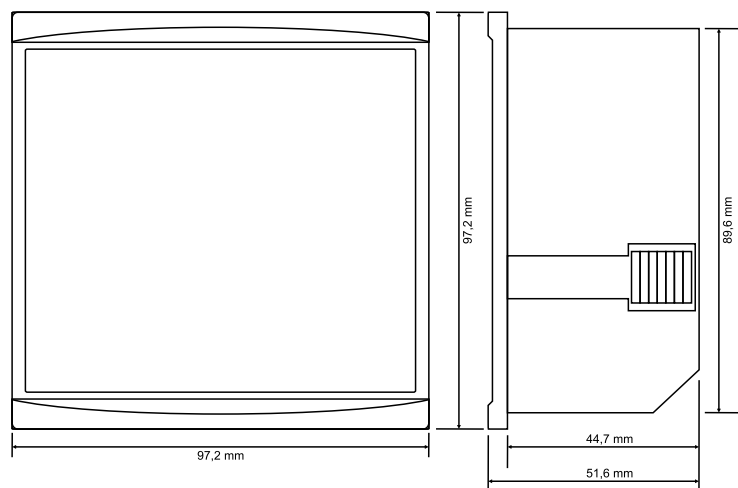
↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

If the current value drawn by the load is below 5A (I), you can connect the current input (k) and current output (l) terminals directly without current transformer. When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. Press the menu button to enter the current transformer value and enter the value by pressing the Up or Down buttons. Then, the value is saved when you pressed the menu button and the current drawn by the load is shown on the display. Default value is set to 50/5A. If you make direct connection without current transformer under 5A, you need to ensure that the current transformer value is 5.

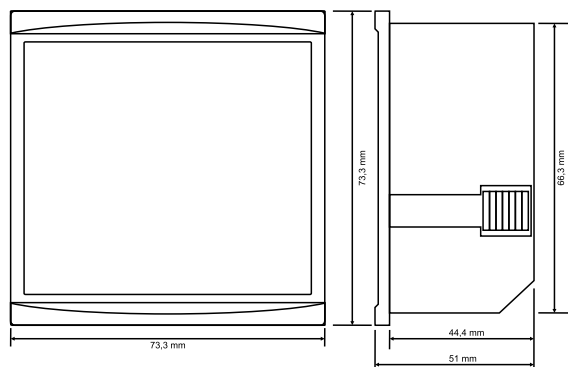
↓ TECHNICAL DIMENSIONS

DJ-A96

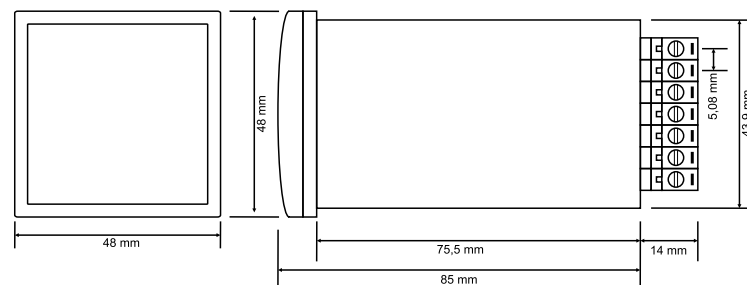


TECHNICAL DIMENSIONS

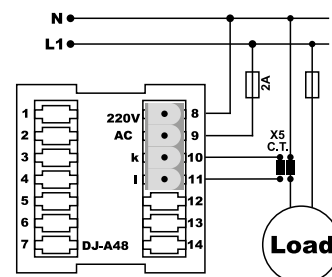
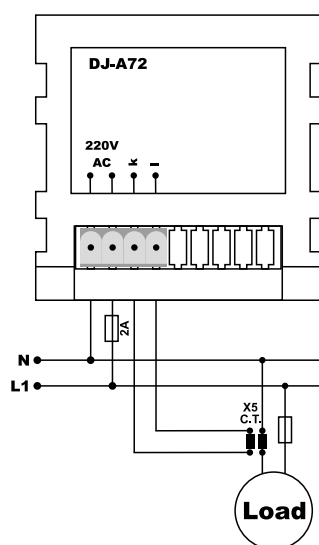
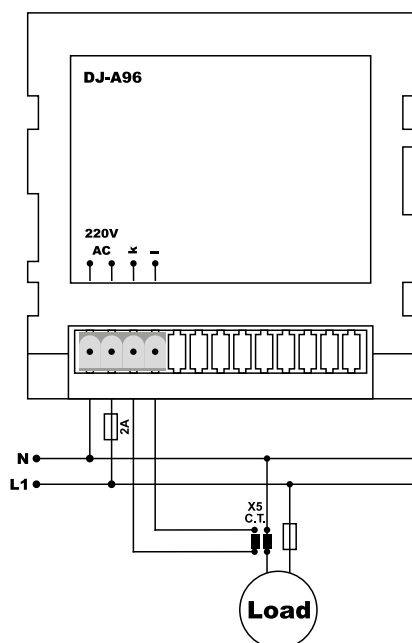
DJ-A72



DJ-A48



CONNECTION DIAGRAMS



↓ PICTURES



DJ-A36



DA-DIN

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA - 5,5A AC
Current Transformer	: 10/5A - 9995/5A (X5)
Measurement Precision	: ±%1
Display	: 10mm 4 digit display (DJ-A36) 9mm 3 digit display (DA-DIN)
Connection Type	: Plug-in Terminal(DJ-A36) Terminal connection(DA-DIN)
Cable Diameter	: 1.5mm ² (DJ-A36), 2.5mm ² (DA-DIN)
Weight	: <200gr.
Panel Hole Sizes	: 30mm x 72mm (DJ-A36)
Mounting	: Front panel mounted (DJ-A36) Vertical assembled in the panel or assembled on the din rail (DA-DIN)
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

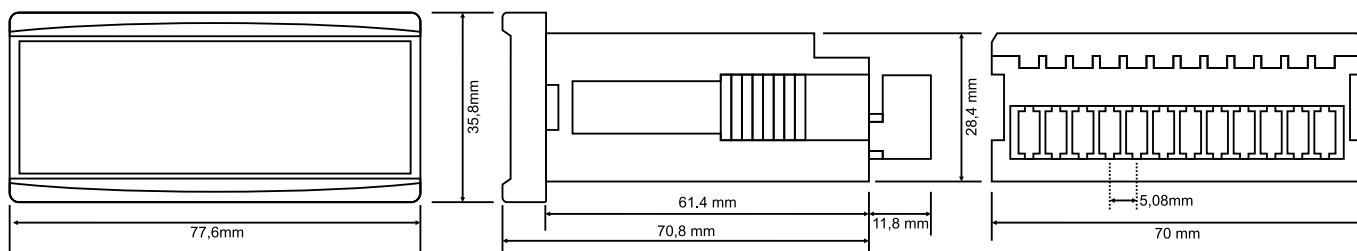
If the current value drawn by the load is below 5A (I), you can connect the current input (k) and current output (l) terminals directly without current transformer. When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. Press the menu button to enter the current transformer value and enter the value by pressing the Up or Down buttons. Then, the value is saved when you pressed the menu button and the current drawn by the load is shown on the display. Default value is set to 50/5A. If you make direct connection without current transformer under 5A, you need to ensure that the current transformer value is 5.

DA-DIN:

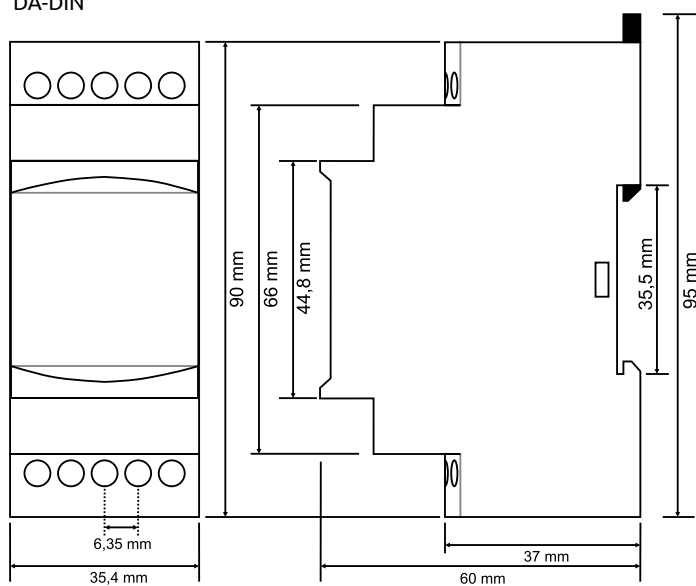
Connect the current transformer output terminals to the inputs. When the device is energized, the current drawn by the load is shown on the display. Product should be demanded depending on the current transformer value to be used.

TECHNICAL DIMENSIONS

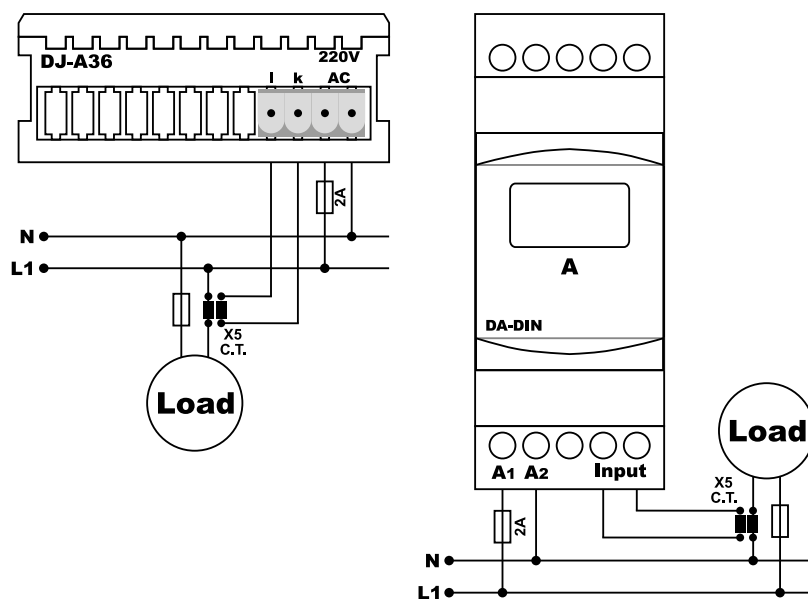
DJ-A36



DA-DIN



CONNECTION DIAGRAMS



↓ PICTURES



DJ-A96D



DJ-A72D



DJ-A48D

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 1A - 100A AC
Current Transformer	: CT-120
Measurement Precision	: ±%1
Display	: 20mm 3 digit display (DJ-A96D) 14mm 3 digit display (DJ-A72D) 9mm 3 digit display (DJ-A48D)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-A96D) 68mm x 68mm (DJ-A72D) 45mm x 45mm (DJ-A48D)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

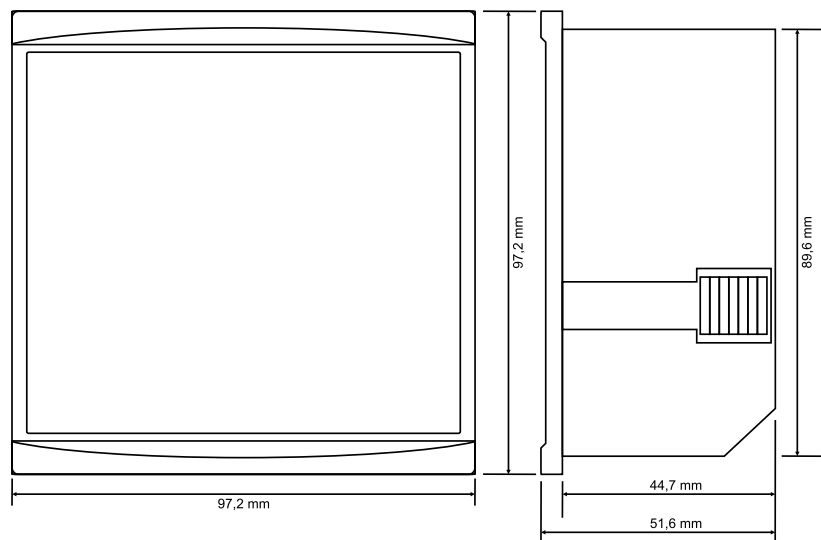
↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

Use the 100 A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 1A – 100A AC.

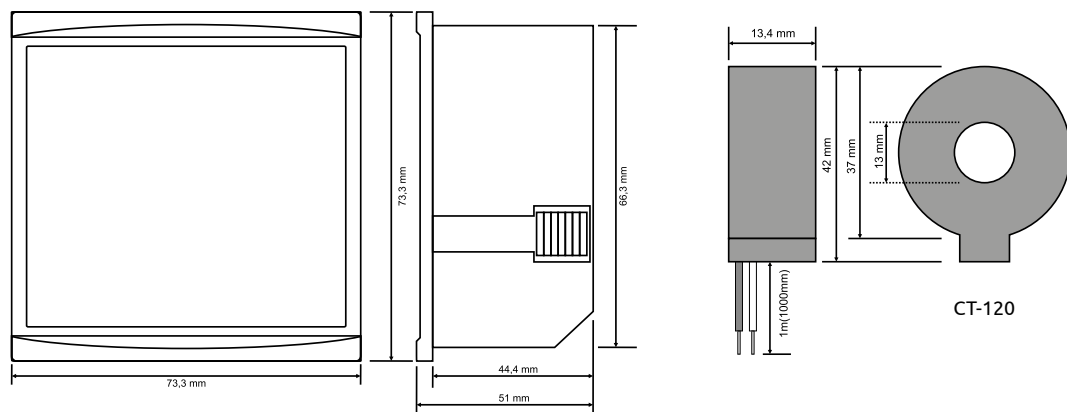
↓ TECHNICAL DIMENSIONS

DJ-A96D

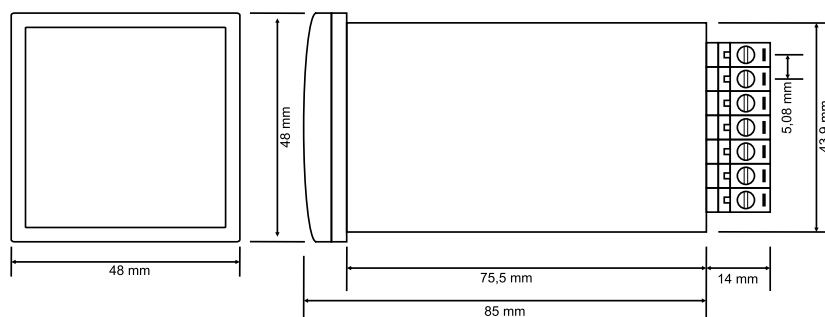


TECHNICAL DIMENSIONS

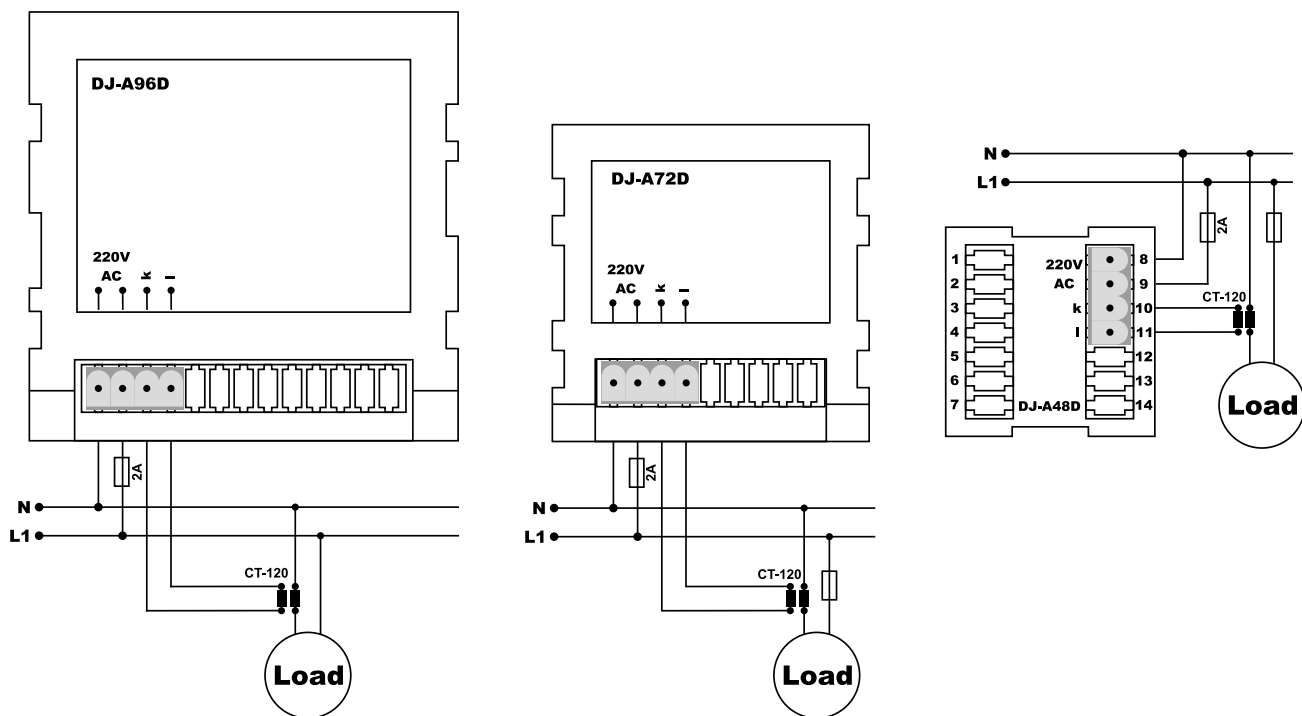
DJ-A72D



DJ-A48D

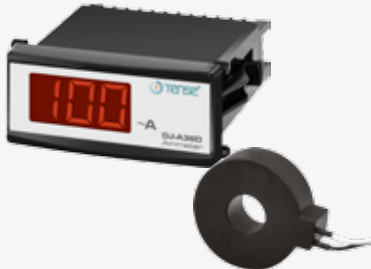


CONNECTION DIAGRAMS



AMMETER

↓ PICTURES



DJ-A36D



DA-120

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 1A - 100A AC
Current Transformer	: CT-120
Measurement Precision	: ±%1
Display	: 14mm 3 digit display (DJ-A36D) 9mm 3 digit display (DA-120)
Connection Type	: Plug-in Terminal (DJ-A36D) Terminal connection(DA-120)
Cable Diameter	: 1.5mm ² (DJ-A36D), 2.5mm ² (DA-120)
Weight	: <200gr.
Panel Hole Sizes	: 30mm x 72mm (DJ-A36D)
Mounting	: Front panel mounted (DJ-A36D) Vertical assembled in the panel or assembled on the din rail (DA-120)
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

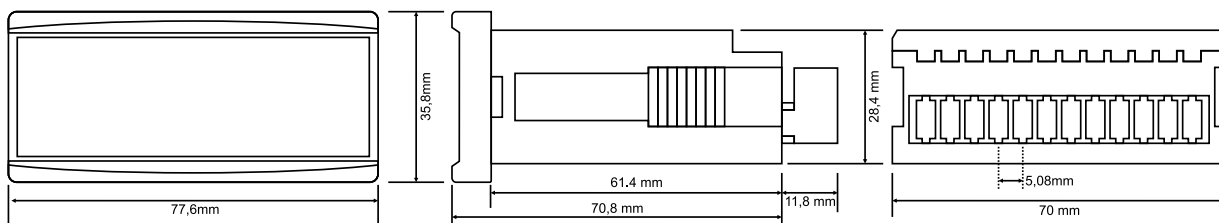
Use the 100 A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 1A – 100A AC.

DA-120:

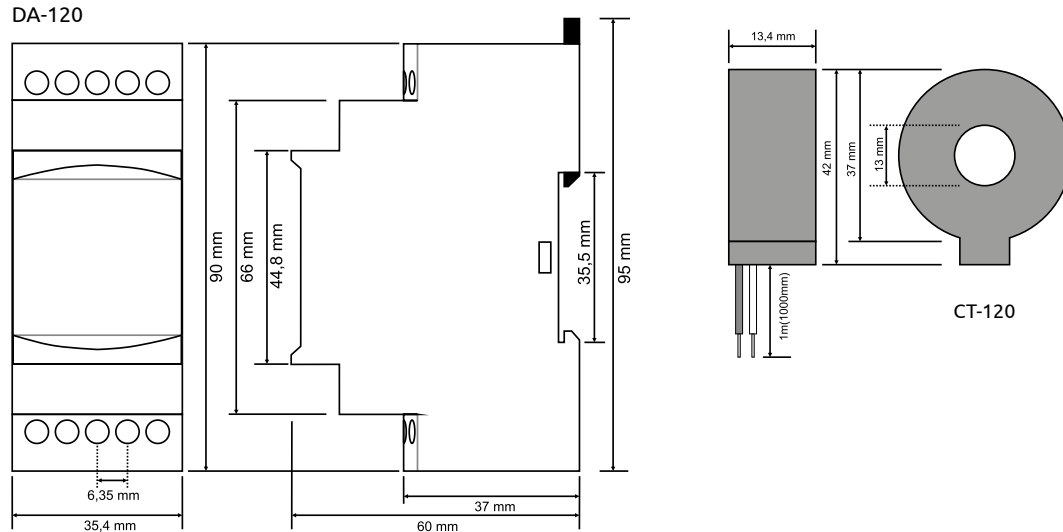
Use the 100 A current transformer provided with the device. Connect the current transformer lead wires to input terminals of the device. The values of the device is adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 1A – 100A AC.

TECHNICAL DIMENSIONS

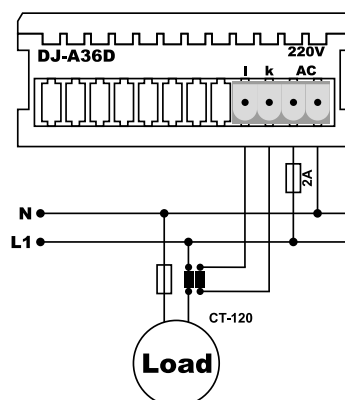
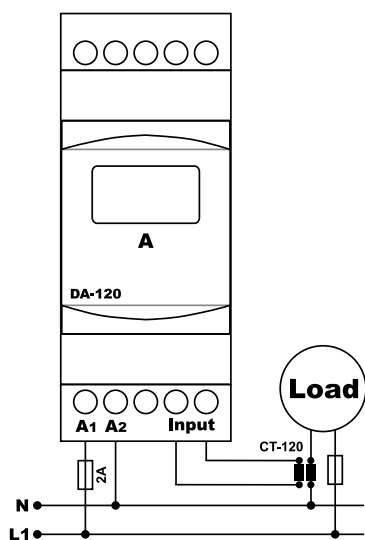
DJ-A36D



DA-120



CONNECTION DIAGRAMS



↓ PICTURES



DA-209



DA-207



DA-204

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 2A - 250A AC
Current Transformer	: CT-300
Measurement Precision	: ±%1
Display	: 20mm 3 digit display (DA-209) 14mm 3 digit display (DA-207) 9mm 3 digit display (DA-204)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DA-209) 68mm x 68mm (DA-207) 45mm x 45mm (DA-204)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

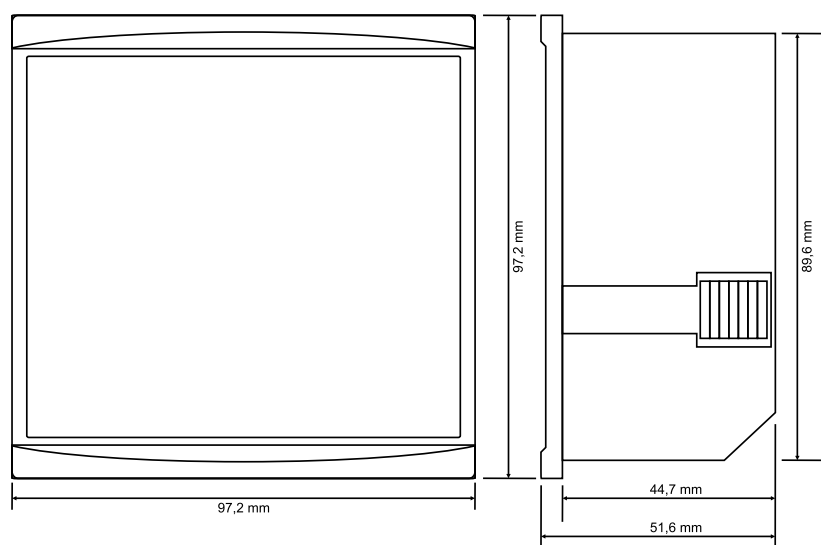
↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

Use the 250A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 2A – 250A AC.

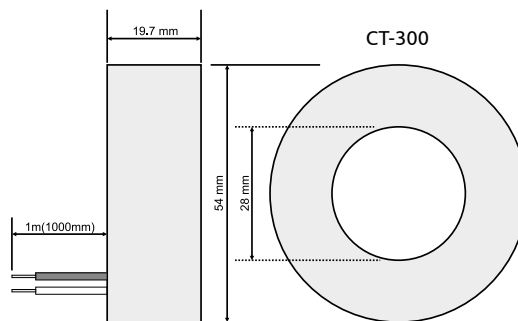
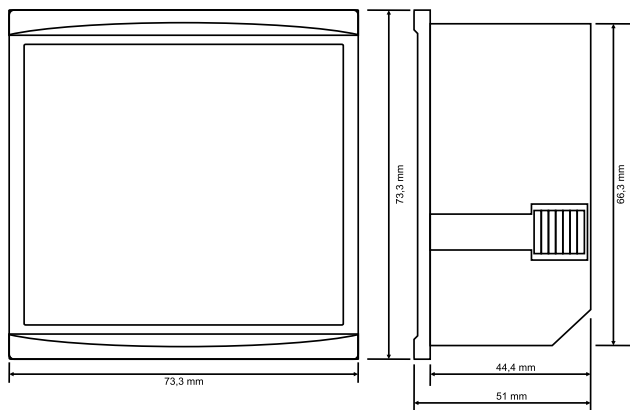
↓ TECHNICAL DIMENSIONS

DA-209

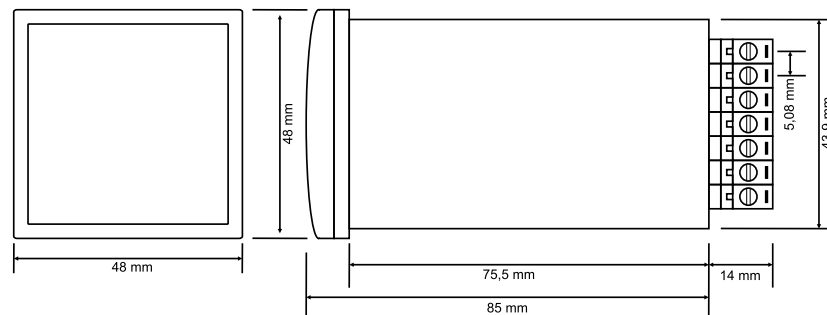


TECHNICAL DIMENSIONS

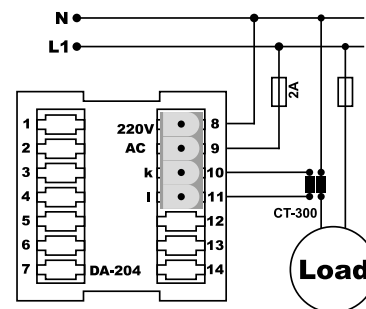
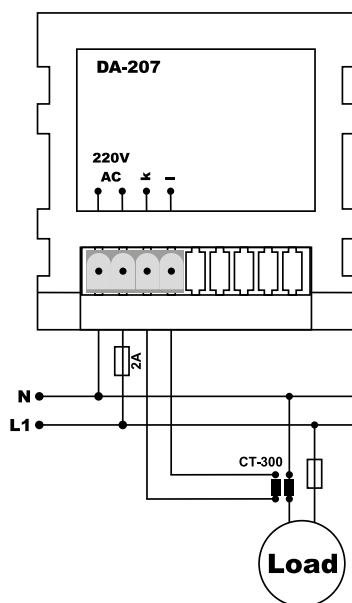
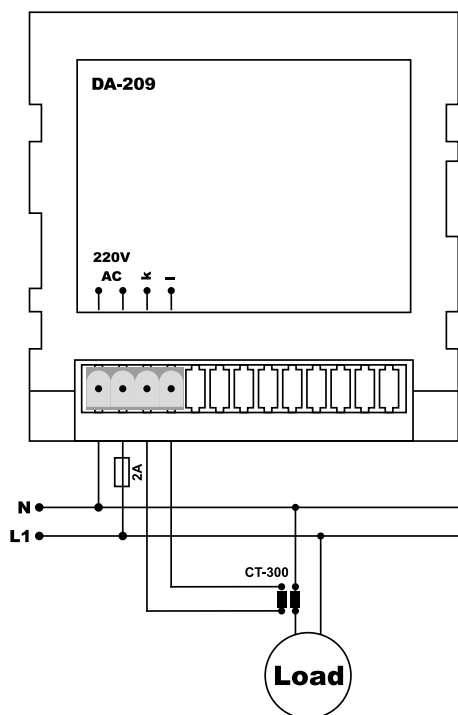
DA-207



DA-204

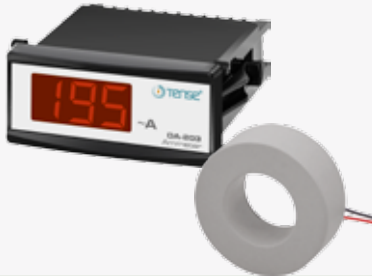


CONNECTION DIAGRAMS



AMMETER

↓ PICTURES



DA-203



DA-300

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 2A - 250A AC
Current Transformer	: CT-300
Measurement Precision	: ±%1
Display	: 14mm 3 digit display (DA-203) 9mm 3 digit display (DA-300)
Connection Type	: Plug-in Terminal (DA-203) Terminal connection(DA-300)
Cable Diameter	: 1.5mm ² (DA-203), 2.5mm ² (DA-300)
Weight	: <200gr.
Panel Hole Sizes	: 30mm x 72mm (DA-203)
Mounting	: Front panel mounted (DA-203) Vertical assembled in the panel or assembled on the din rail (DA-300)
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital ammeters are designed to monitor the AC current value drawn by the loads continuously.

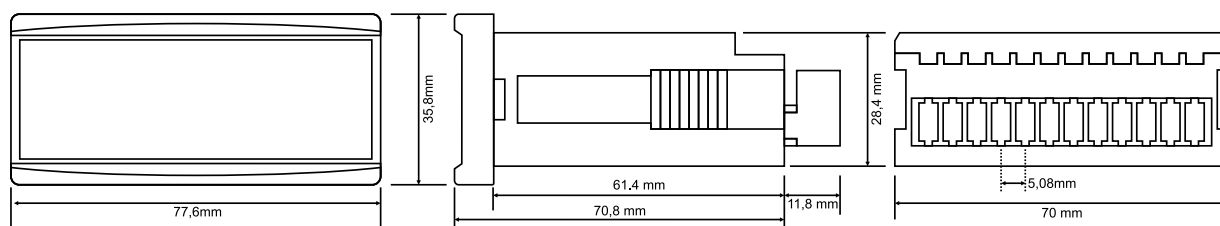
Use the 250A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 2A – 250A AC.

DA-300:

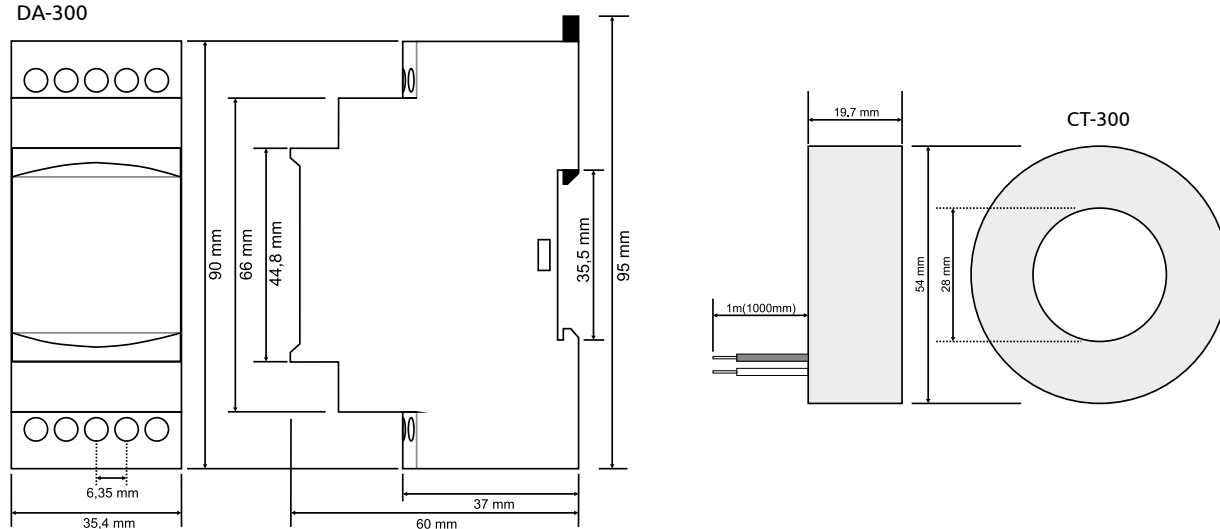
Use the 250A current transformer provided with the device. Connect the current transformer lead wires to input terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load is shown on the display. The device shows the current value between 2A – 250A AC.

TECHNICAL DIMENSIONS

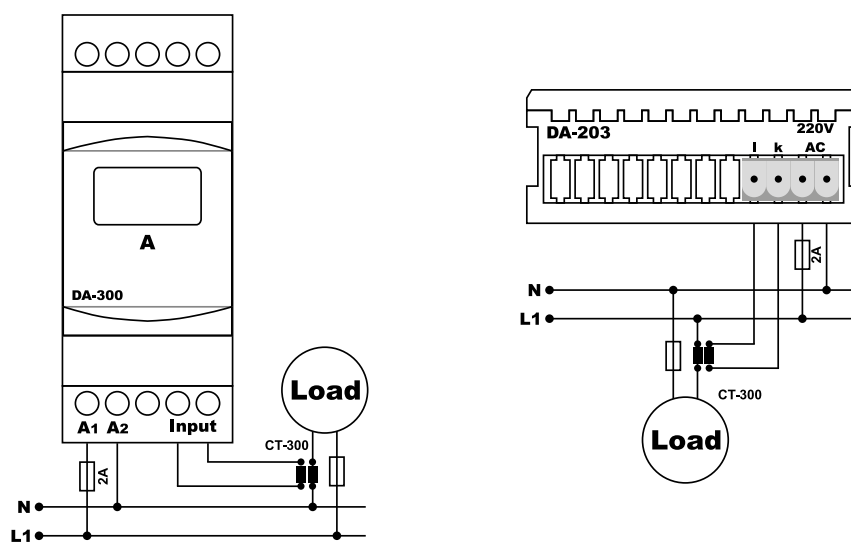
DA-203



DA-300



CONNECTION DIAGRAMS



↓ PICTURES



DAV-72



DAV-72D

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA - 5,5A AC (DAV-72), 1A - 100A AC (DAV-72D)
Current Transformer	: 10/5A - 995/5A (X5) (DAV-72), CT120 (DAV-72D)
Voltage Measurement Range	: 150V - 260V AC
Measurement Precision	: ±%1
Display	: 2 x 14mm 3 digit display
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 68mm x 68mm
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital voltmeters-ammeters are designed to monitor both AC current value drawn by the loads and the voltage value of the relevant phase continuously.

If the current value drawn by the load is below 5A, you can connect directly to the input terminals without current transformer. When the device is energized, firstly you need to enter the current transformer value in order to see the current values accurately. Press the menu button to enter the current transformer value and enter the value by pressing the Up or Down buttons. Then, the value is saved when you pressed the menu button and the current drawn by the load is shown on the display. It shows the phase-neutral supply voltage connected to A1 and A2 terminals on the device. Default value is set to 50/5A. If you make direct connection without current transformer under 5A, you need to ensure that the current transformer value is 5. The device shows the voltage value of 150V – 260V AC.

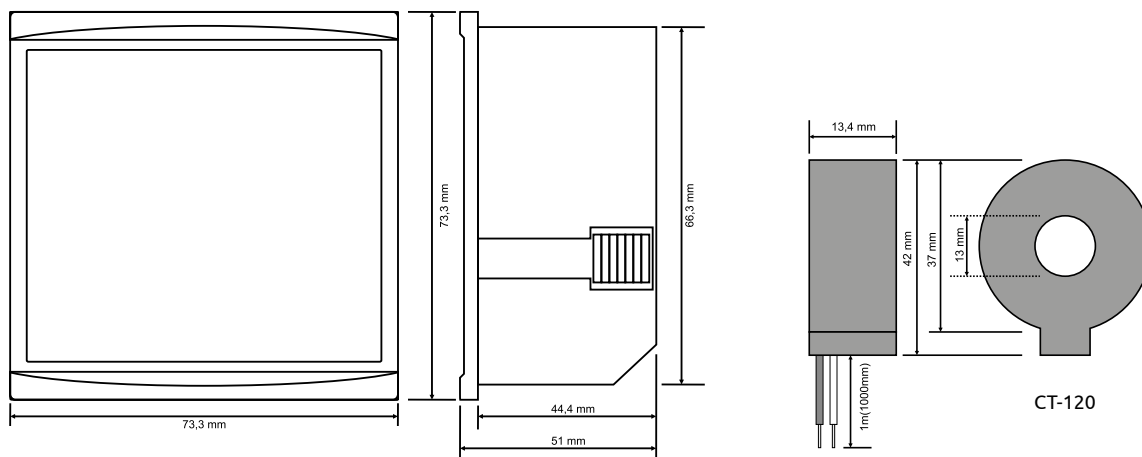
Example: Given that the current transformer value is 100/5A.

Energize the device. Press the menu button. Adjust the value to 100 on the display by pressing the Up and Down buttons. Press the menu button again. The current transformer value is adjusted as 100/5A in this way.

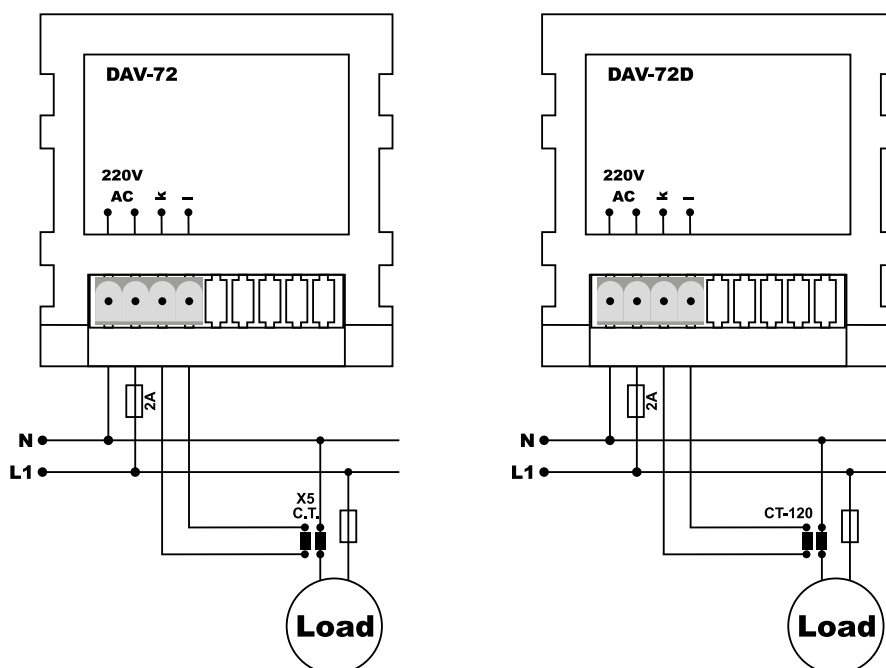
DAV-72D:

Use the 100A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it displays the current drawn by the load and the value of the phase-neutral supply voltage connected to A1 and A2 terminals. The device shows 150V – 260V AC voltage value and 1A - 100A current value.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DAV-DIN



DAV-120



DAV-300

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 100mA - 5,5A AC (DAV-DIN), 1A - 100A AC (DAV-120) 2A - 250A AC (DAV-300)
Current Transformer	: 10/5A - 995/5A (X5) (DAV-DIN) CT120 (DAV-120) CT300 (DAV-300)
Measurement Precision	: ±1%
Voltage Measurement Range	: 150V - 260V AC
Display	: 2 x 9mm 3 digit display
Connection Type	: Terminal connection
Cable Diameter	: 2.5mm ²
Weight	: <200gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital voltmeters-ammeters are designed to monitor both AC current value drawn by the loads and the voltage value of the relevant phase continuously.

DAV-DIN

Connect the current transformer output terminals to the inputs. When the device is energized, the current drawn by the load and phase-neutral supply voltage connected to A1 and A2 terminals are shown on the display. Make your order as adjusted according to the current transformer value that you want to use. The device shows the voltage value of 150V – 260V AC.

DAV -120

Use the 100 A current transformer provided with the device. Connect the current transformer lead wires to input terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, the current drawn by the load and phase-neutral supply voltage connected to A1 and A2 terminals are shown on the display. The device shows 150V – 260V AC voltage value and 1A - 100A AC current value.

DAV -300

Use the 250A current transformer provided with the device. Connect the current transformer lead wires to k-1 terminals of the device. The values of the device are adjusted based on the current transformer. So, don't use current transformers of different brands and models. When the device is energized, it displays the current drawn by the load and the value of the phase-neutral supply voltage connected to A1 and A2 terminals. The device shows 150V – 260V AC voltage value and 2A - 250A AC current value.

DC AMMETER

↓ PICTURES



DJ-A72DC



DJ-A48DC



DJ-A36DC

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 0mV - 60mV (60mV shunt)
Shunt Value	: 10A / 60mV - 990A/60mV
Measurement Precision	: ±%1
Display	: 14mm 3 digit display (DJ-A72DC) 9mm 3 digit display (DJ-A48DC) 14mm 3 digit display (DJ-A36DC)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <200gr.
Panel Hole Sizes	: 68mm x 68mm (DJ-A72DC)
Mounting	: 45mm x 45mm (DJ-A48DC)
Protection Class	: 30mm x 72mm (DJ-A36DC)
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

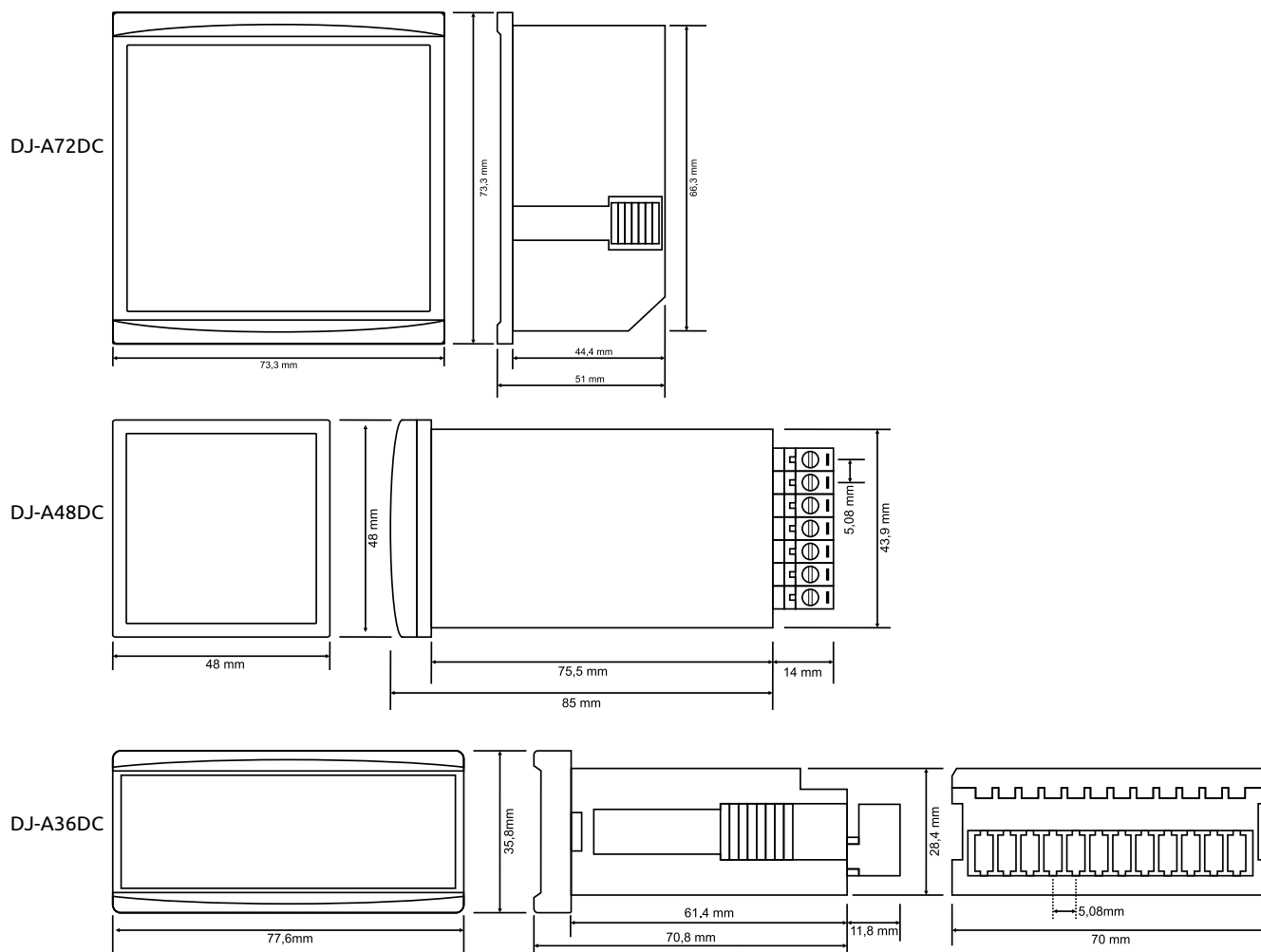
Digital DC ammeters are designed to monitor the DC current value drawn by the loads continuously.

When the device is energized, firstly you need to enter the shunt value in order to see the current value accurately. Press the menu button to enter the shunt value and enter the shunt value by pressing the Up or Down buttons. Then, the value is saved when you pressed the menu button and the current drawn by the load is shown on the display. Default value is set to 50/60mV.

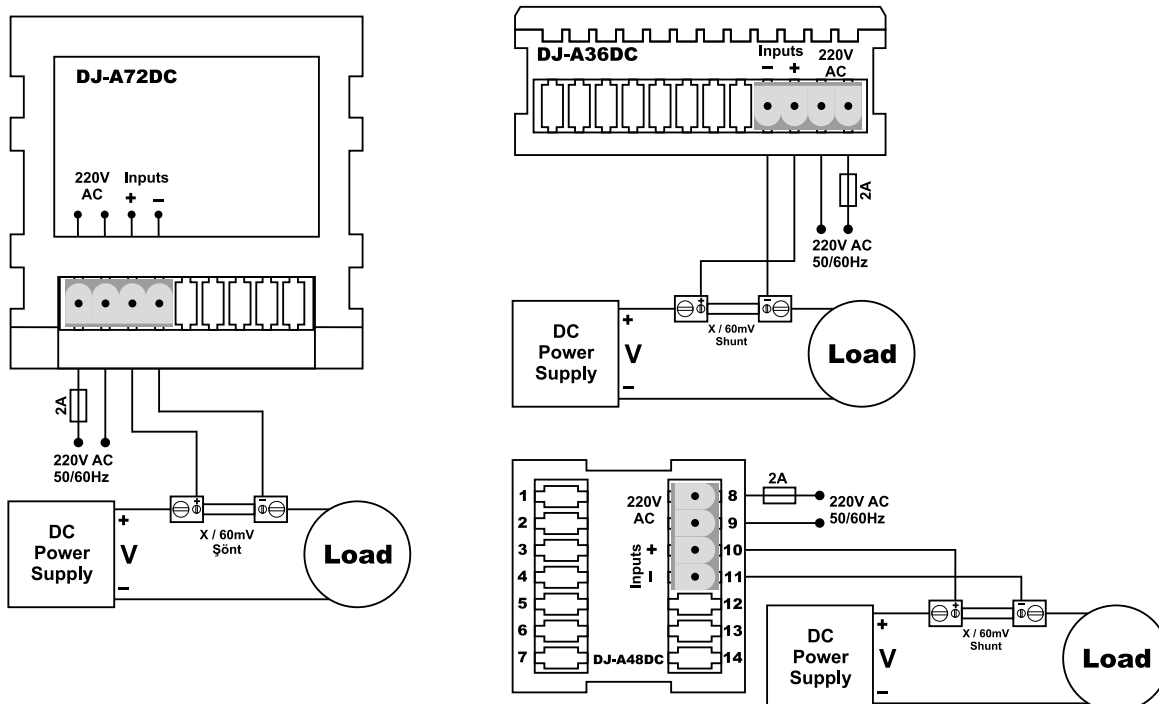
Example: Given that the shunt value is 100A/60mV.

Energize the device. Press the menu button. Adjust the value to 100 on the display by pressing the Up and Down buttons. Press the menu button again. The shunt value is adjusted as 100/5A in this way.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DJ-V96



DJ-V72



DJ-V48

↓ TECHNICAL PROPERTIES

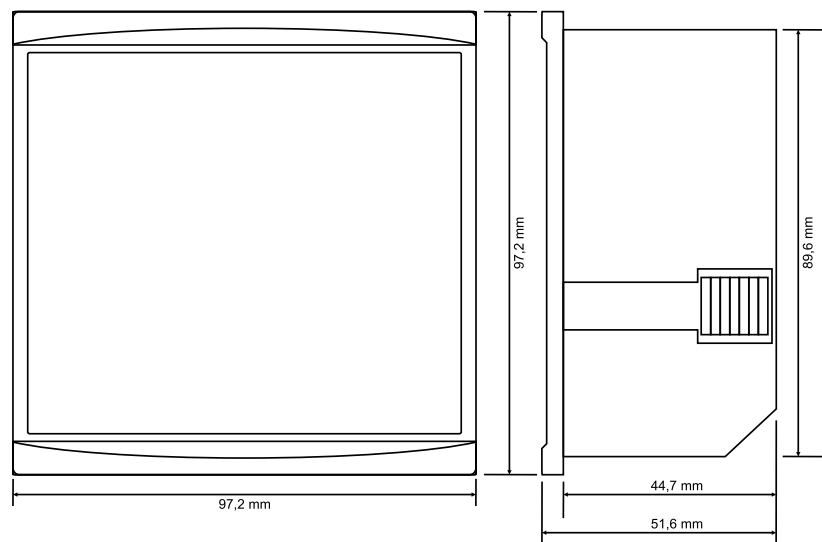
Operating Voltage(Un)	: 140V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Voltage Measurement Range	: 1V - 500V AC
Measurement Precision	: ±1%
Display	: 20mm 3 digit display (DJ-V96) 14mm 3 digit display (DJ-V72) 9mm 3 digit display (DJ-V48)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-V96) 68mm x 68mm (DJ-V72) 45mm x 45mm (DJ-V48)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital voltmeters are designed to monitor AC voltage value continuously. When the device is energized, it shows the value of the phase-neutral or phase-phase AC voltage coming to Vinputs constantly on the display. The voltage coming to Vinputs should be between 1V - 500 V.

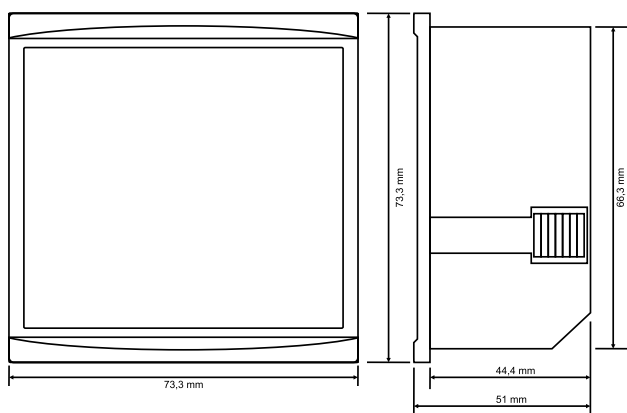
↓ TECHNICAL DIMENSIONS

DJ-V96

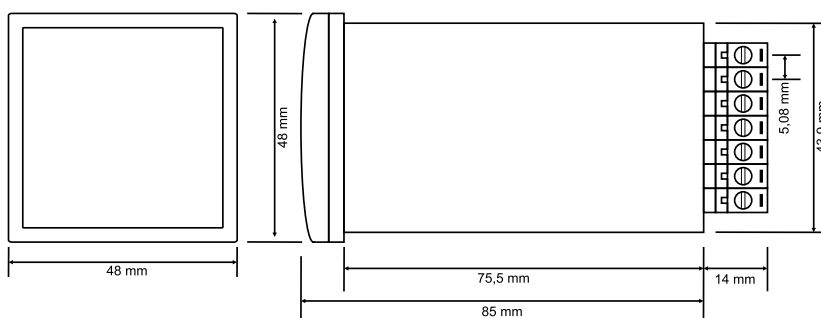


TECHNICAL DIMENSIONS

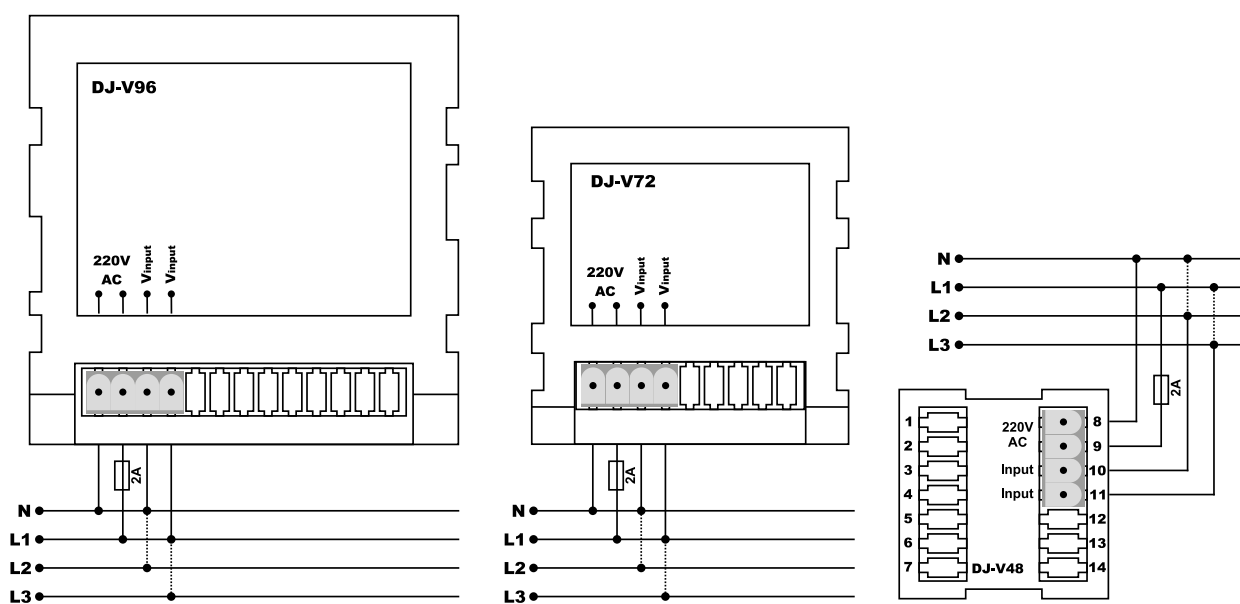
DJ-V72



DJ-V48



CONNECTION DIAGRAMS



↓ PICTURES



DJ-V36



DV-DIN

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Voltage Measurement Range	: 1V - 500V AC
Measurement Precision	: ±1%
Display	: 14mm 3 digit display (DJ-V36) 9mm 3 digit display (DV-DIN)
Connection Type	: Plug-in Terminal (DJ-V36) Terminal connection(DV-DIN)
Cable Diameter	: 1.5mm ² (DJ-V36), 2.5mm ² (DV-DIN)
Weight	: <220gr.
Panel Hole Sizes	: 30mm x 72mm (DJ-V36)
Mounting	: Front panel mounted (DJ-V36), Vertical assembled in the panel or assembled on the din rail (DV-DIN).
Protection Class	: IP20
Operating Altitude	: <2000 meter

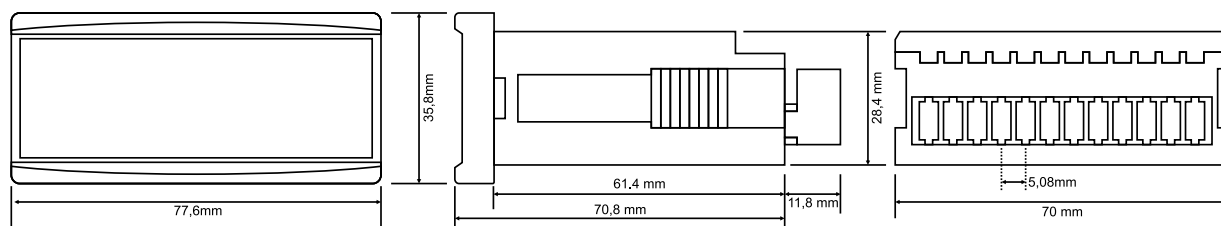
↓ DESCRIPTIONS

Digital voltmeters are designed to monitor AC voltage value continuously.

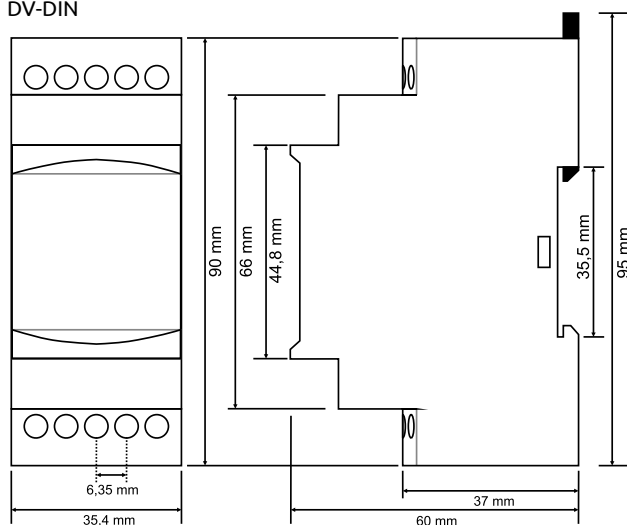
When the device is energized, it shows the value of the phase-neutral or phase-phase AC voltage coming to Vininputs constantly on the display. The voltage coming to Vininputs should be between 1V - 500 V.

TECHNICAL DIMENSIONS

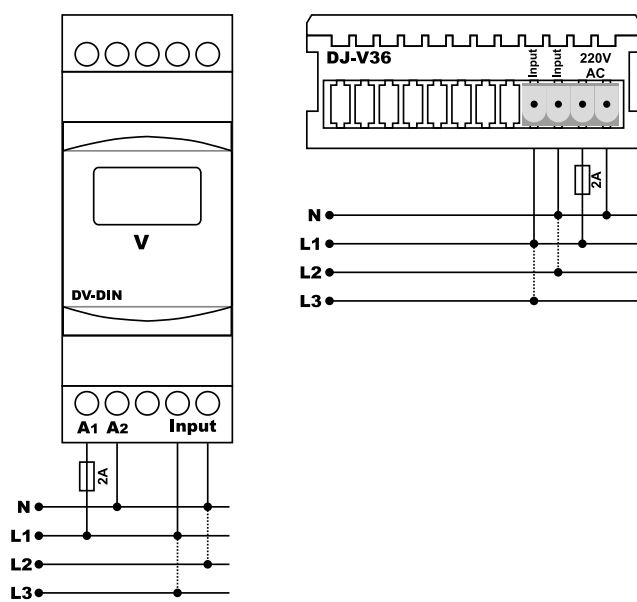
DJ-V36



DV-DIN



CONNECTION DIAGRAMS



↓ PICTURES



DJ-V72DC



DJ-V48DC



DJ-V36DC

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Current Measurement Range	: 1V - 300V DC
Measurement Precision	: ±%1
Display	: 14mm 3 digit display (DJ-V72DC) 9mm 3 digit display (DJ-V48DC) 14mm 3 digit display (DJ-V36DC)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <200gr.
Panel Hole Sizes	: 68mm x 68mm (DJ-V72DC) 45mm x 45mm (DJ-V48DC) 30mm x 72mm (DJ-V36DC)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

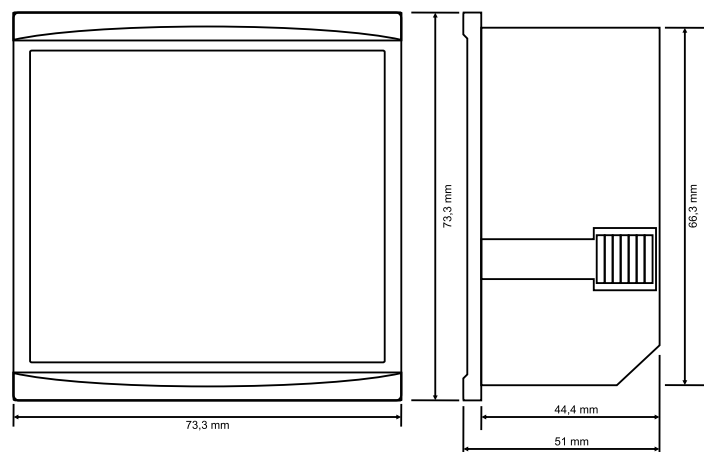
↓ DESCRIPTIONS

Digital DC voltmeters are designed to monitor the DC current value drawn by the loads continuously.

When the device is energized, DC voltages on the inputs are shown on the display.

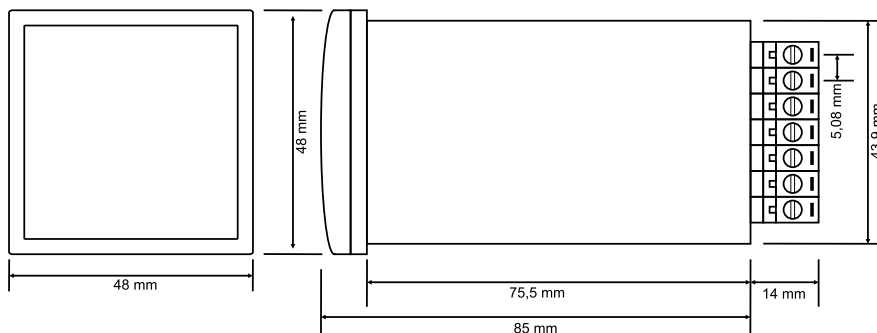
↓ TECHNICAL DIMENSIONS

DJ-V72DC

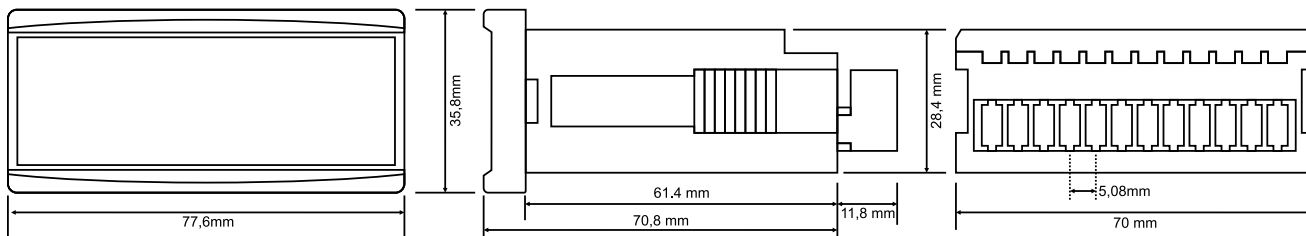


TECHNICAL DIMENSIONS

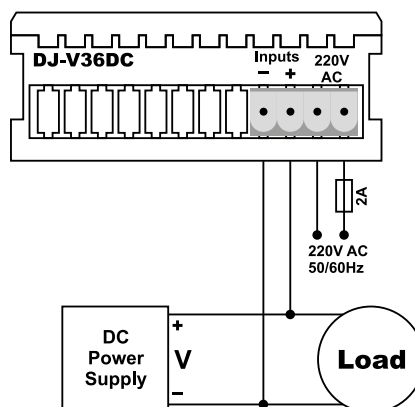
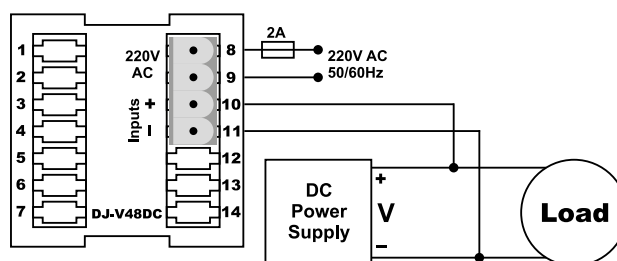
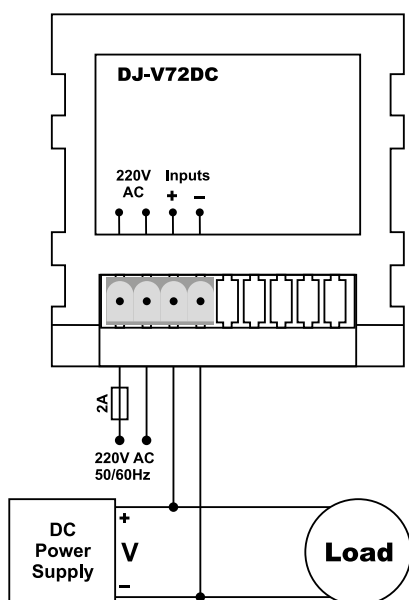
DJ-V48DC



DJ-V36DC



CONNECTION DIAGRAMS



↓ PICTURES



DJ-V96S



DJ-V72S

↓ TECHNICAL PROPERTIES

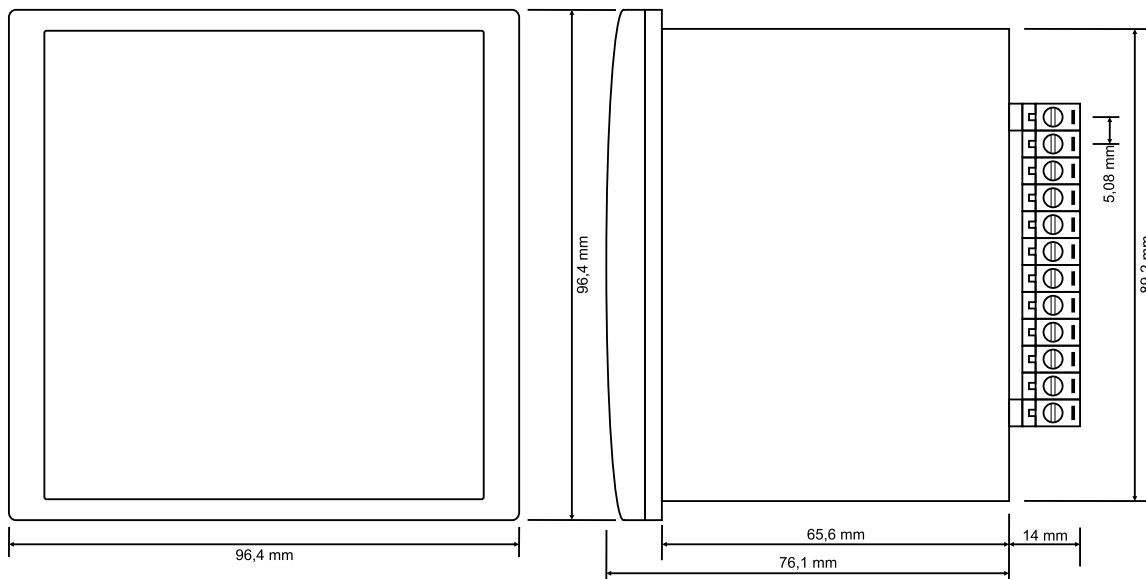
Operating Voltage(Un)	: 140V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Voltage Measurement Range	: 1V - 500V AC
Measurement Precision	: ±1%
Display	: 20mm 3 digit display, 3 x leds. (DJ-V96S) 14mm 3 digit display, 3 x leds. (DJ-V72S)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <220gr.
Panel Hole Sizes	: 91mm x 91mm (DJ-V96S) 68mm x 68mm (DJ-V72S)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

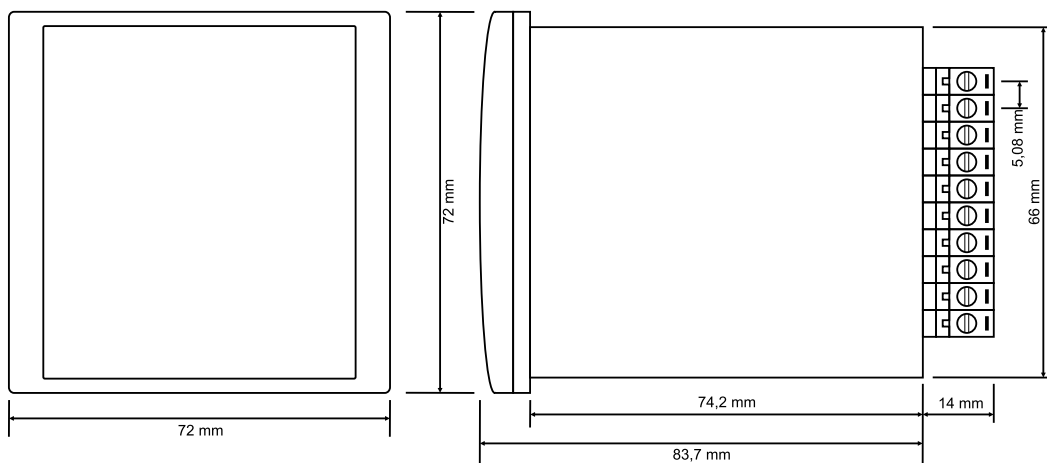
Digital optional voltmeters are designed to monitor AC voltage value of three-phase continuously. When the device is energized, it shows the voltage value between N - L1 at first and L1 led lights up. When the button is pressed, it shows the voltage value between N - L2 and L2 led lights up. When the button is pressed, it shows the voltage value between N - L3 and L3 led lights up. When the button is pressed, it shows the voltage value between L1 - L2 and L1 led and L2 led light up. When the button is pressed, it shows the voltage value between L2 - L3 and L2 led and L3 led light up. When the button is pressed, it shows the voltage value between L1 - L2 and L1 led and L3 led light up. When you press the button again, it shows the voltage value between N - L1. Adjust the voltage value to be monitored by pressing the button.

TECHNICAL DIMENSIONS

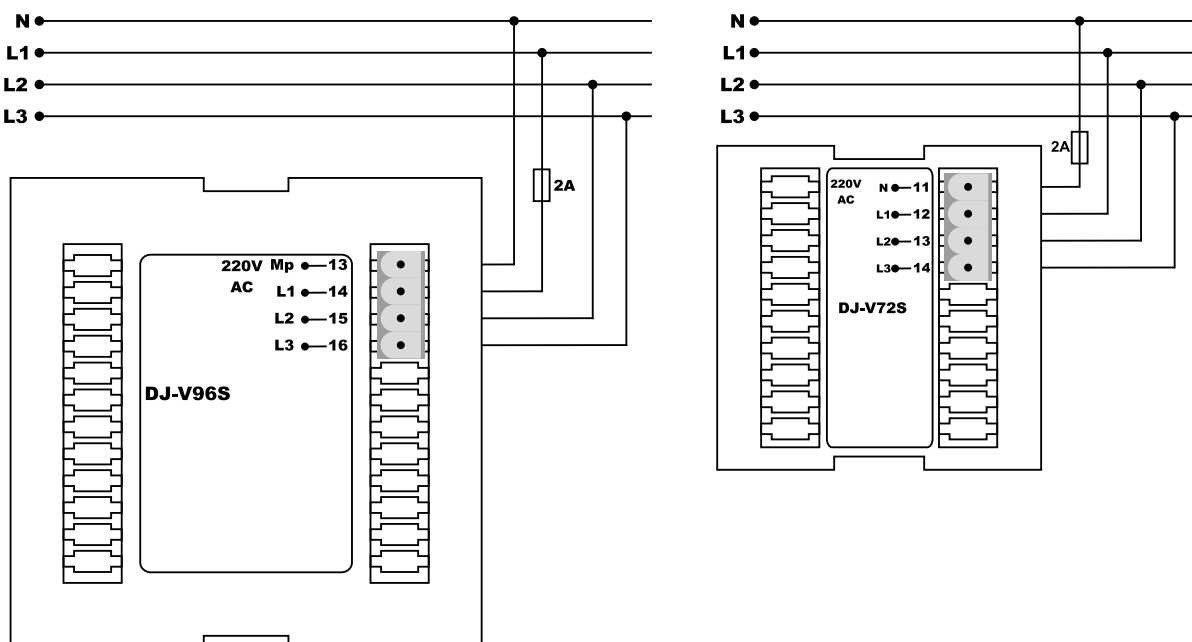
DJ-V96S



DJ-V72S



CONNECTION DIAGRAMS



VOLTMETER (FOR REGULATORS)

↓ PICTURES



RG-96



RG-72

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 130V – 280V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Voltage Measurement Range	: 1V - 300V AC
Measurement Precision	: ±%1
Display	: 20mm 3 digit display, 14mm 3 digit display (RG-96) 2 x 14mm 3 digit display (RG-72)
Connection Type	: Plug-in Terminal
Cable Diameter	: 1.5mm ²
Weight	: <200gr.
Panel Hole Sizes	: 91mm x 91mm (RG-96) 68mm x 68mm (RG-72)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

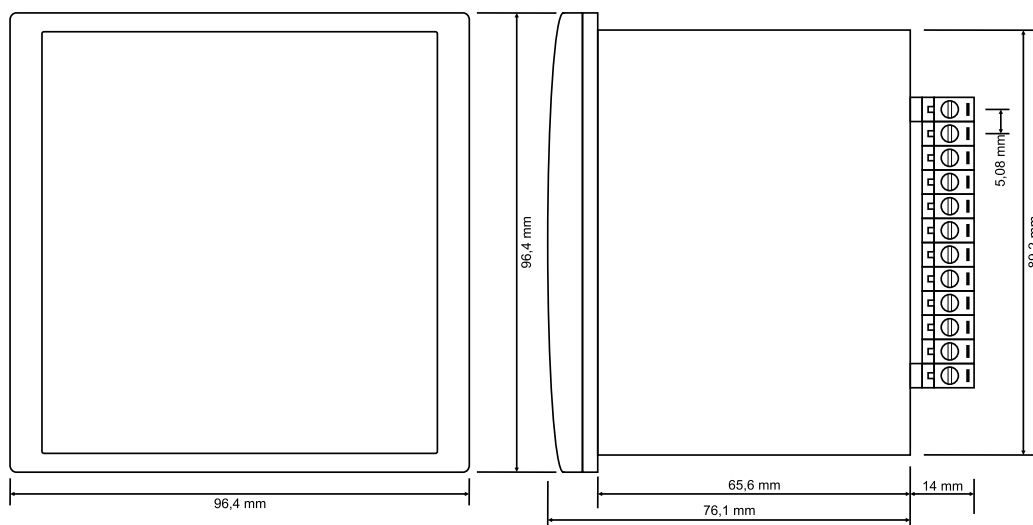
It is designed for the regulators to monitor the network input voltage and regulator output voltage continuously in the same time.

Vin: Network input voltage phase is connected

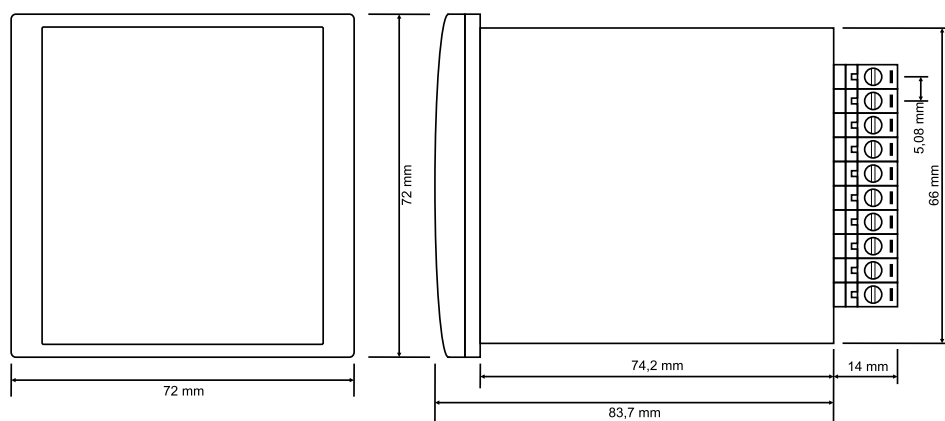
Vout: Regulator output voltage phase is connected.

TECHNICAL DIMENSIONS

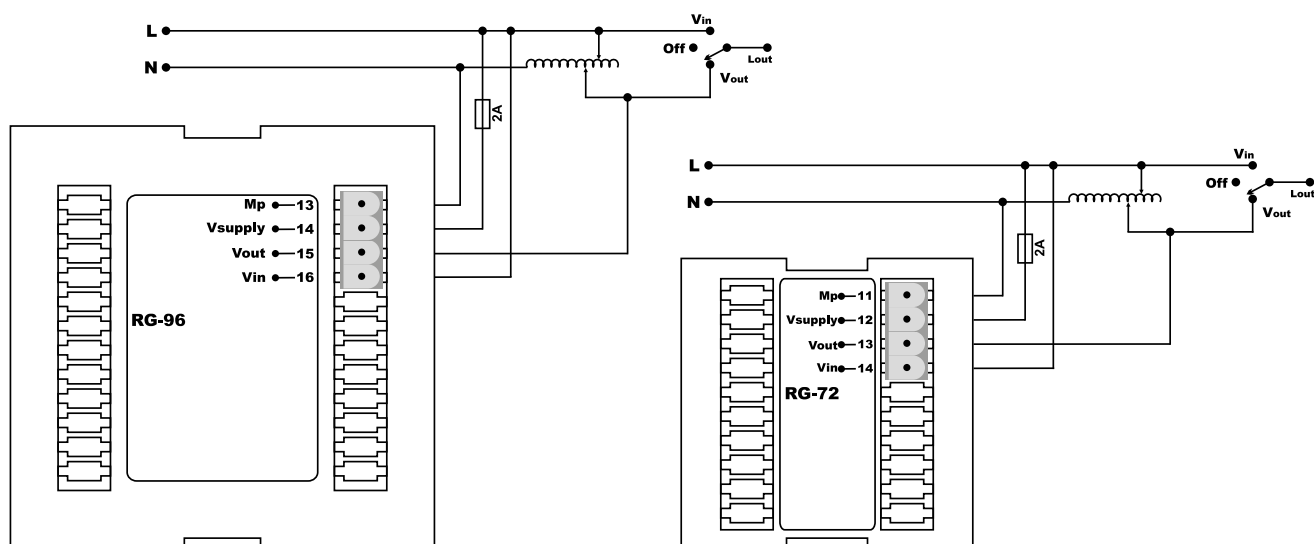
RG-96



RG-72



CONNECTION DIAGRAMS



↓ PICTURES



RG-96K



RG-72K

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 130V – 280V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Protection	: Pr1 + (10V - 70V)
Low Voltage Protection	: Pr1 - (10V - 70V)
Voltage Measurement Range	: 1V - 300V AC
Measurement Precision	: ±%1
Motor Output	: 12V - 24V / 2A DC
Display	: 20mm 3 digit display, 14mm 3 digit display (RG-96K) 2 x 14mm 3 digit display (RG-72K)
Connection Type	: Plug-in Terminal
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <250gr.
Panel Hole Sizes	: 91mm x 91mm (RG-96K) 68mm x 68mm (RG-72K)
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

It is designed for the regulators to monitor the network input voltage and regulator output voltage continuously in the same time and to obtain the desired output voltage value by performing servo control.

Regulator output voltage can be adjusted,

Regulator output voltage high and low hysteresis values can be adjusted.

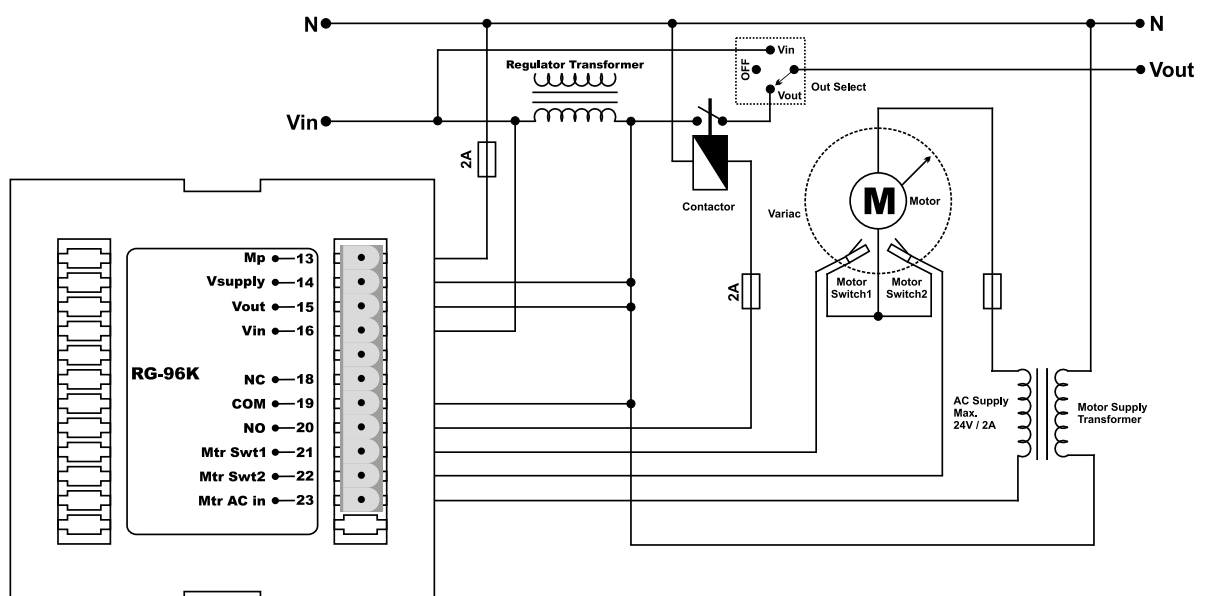
Regulator output upper and lower protection voltage values can be adjusted.

Protection start and end times of regulator output voltage can be adjusted,

Regulator output voltage motor slow motion area can be adjusted,

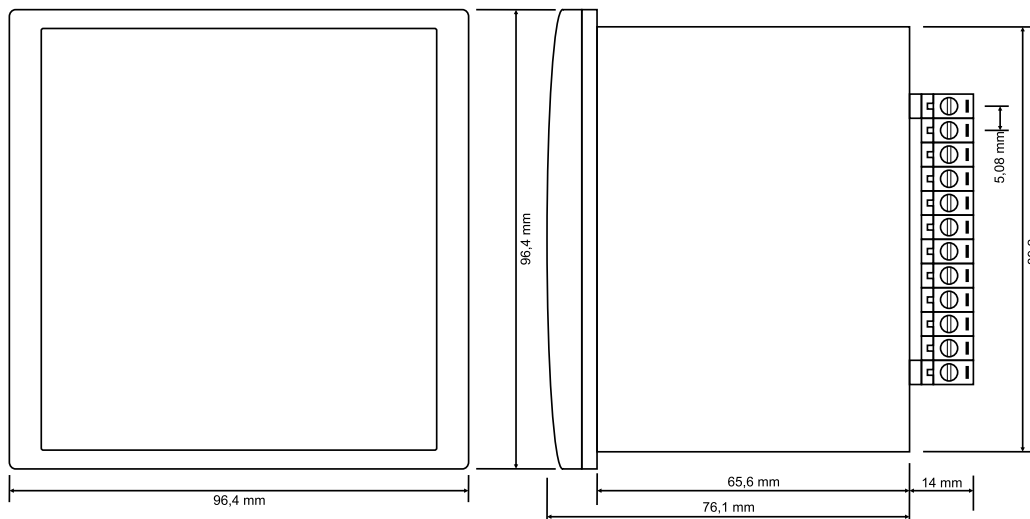
The speed value in regulator output voltage motor slow motion area can be adjusted.

↓ CONNECTION DIAGRAMS

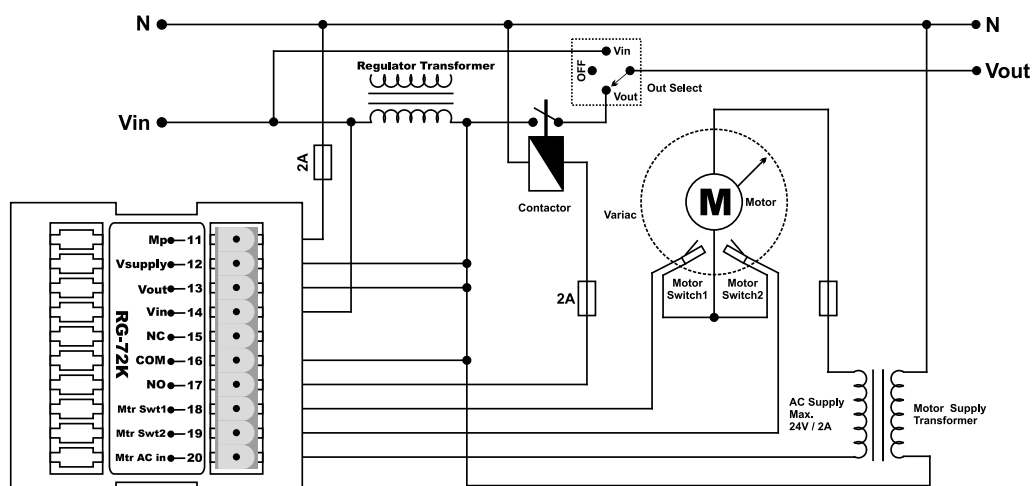
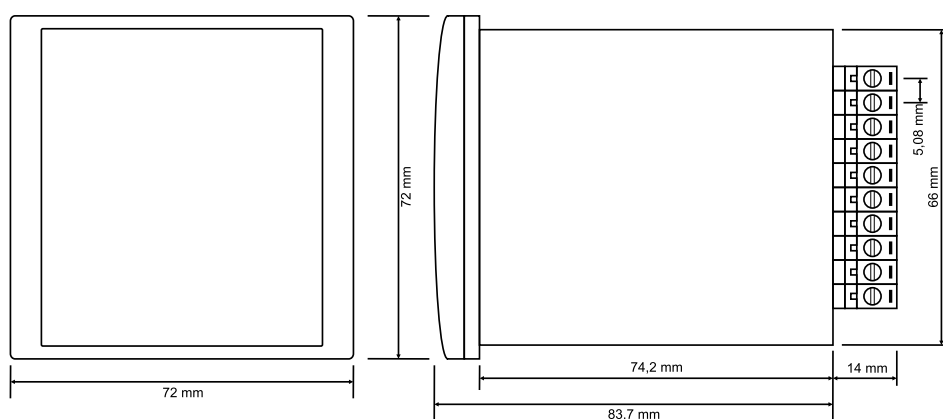


TECHNICAL DIMENSIONS

RG-96K



RG-72K



↓ PICTURES



DS-72A



DS-72



DS-48

↓ TECHNICAL PROPERTIES

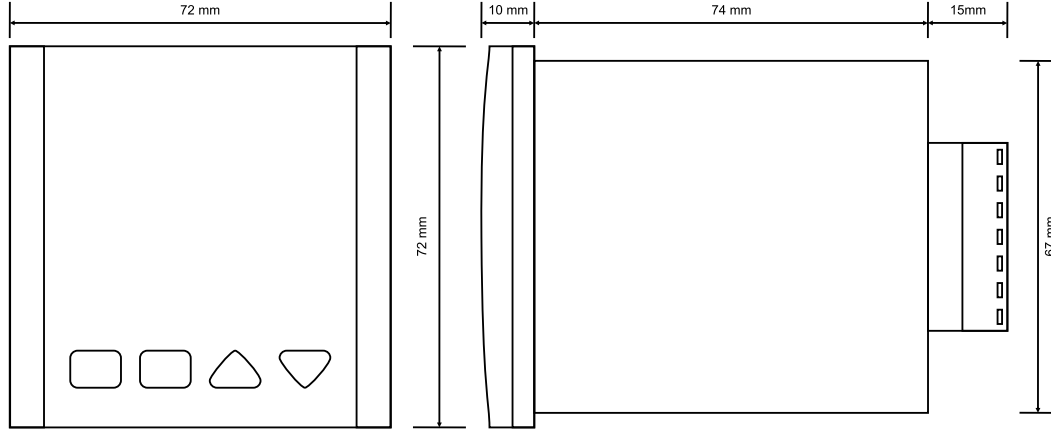
Display	: 2x4, 7 Segment (DS-72, DS-48) 2x6, 7 Segment (DS-72A)
Count Input	: 2 x (Max:7500 Hz, 5-30V)
NPN Selection	: Connect "npn select" to "+12V" to select NPN sensor for CP1 and CP2. Reset inputs is always PNP. For totem pole PNP type sensor "npn select" left unconnected.
Sensor Types	: PNP/NPN proximity switch - NPN/PNP/Totem-pole output encoder
Input Frequency	: 20, 500, 2500, 7500Hz selectable
Reset Input	: 10ms (min), Positive input (PNP Only) (5..30V)
Output (DS-72A, DS-72)	: Out1, Out2; 2 x Relay (O-NA-NC), 250VAC, 2A, Resistive load 2 x open collector (NPN), 30V, 100mA max.
Output (DS-48)	: Out; Relay (O-NA-NC), 250VAC, 2A, Resistive load 1 x open collector (NPN), 30V, 100mA max.
Sensor Supply	: 12VDC, 50mA(max), unregulated
Operating Voltage(Un)	: 230VAC +10%, -20%
Operating Frequency	: 50/60Hz.
Operating Power	: < 8VA
Operating Temperature	: 0 – 50 °C
Cable Diameter	: 1.5mm ²
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: < 2000m
Weight	: < 170 gr (DS-48), < 270 gr (DS-72 / DS-72A)
Panel Hole Sizes	: 69mm x 69mm (DS-72/ DS-72A) 46mm x 46mm (DS-48)

↓ DESCRIPTIONS

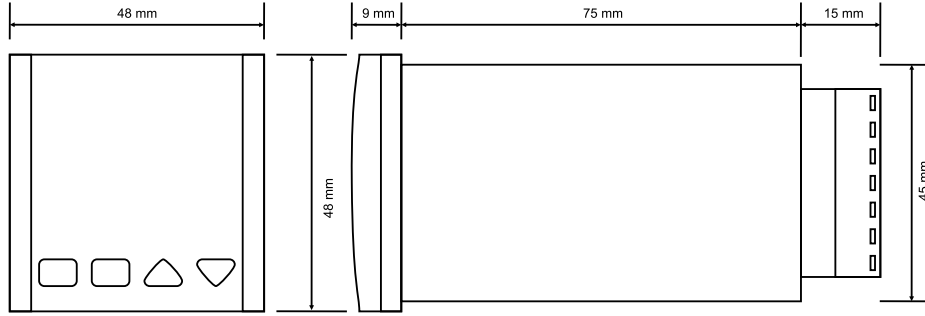
- 2x4 digit, single set, single output forward/backward counter (DS-48, DS-72)
- 2x6 digit, double set, double contact, forward/backward counter (DS-72A)
- Forward/backward counter with different phase input
- Password-protected
- Selectable counting frequency
- Calibration multiplier selectable between 0.001 and 9. 999 (DS-48, DS-72)
- Calibration multiplier selectable between 0.00001 and 9.99999 (DS-72A)
- Decimal point adjustable between the 1st and 3rd digit (DS-48, DS-72)
- Decimal point adjustable between the 1st and 5th digit (DS-72A)
- 7 different inputs / 9 different outputs options (DS-48, DS-72)
- 7 different inputs / 10 different outputs options (DS-72A)
- OFFSET feature
- Output contact; continuous output or 0.1..999.9 sec.
- When the device is re-started after it is de-energized, last counted value can be restored.
- Feature of RESETING on the panel
- Feature of monitoring the preset value on the display
- Keeping the control parameters continuously in the memory.

TECHNICAL DIMENSIONS

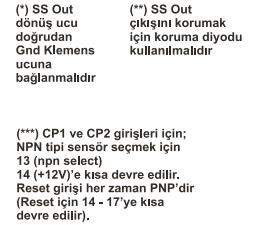
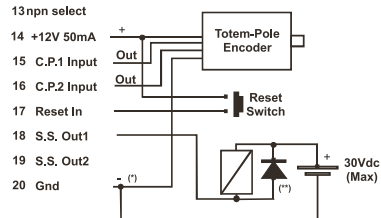
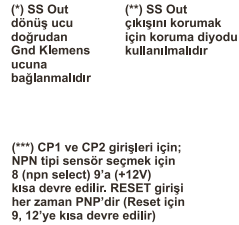
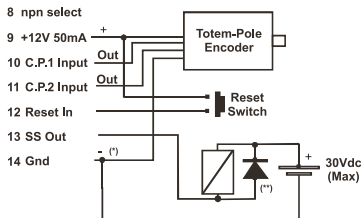
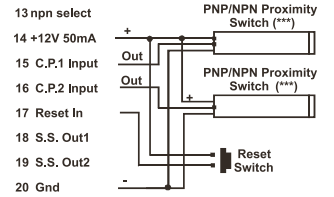
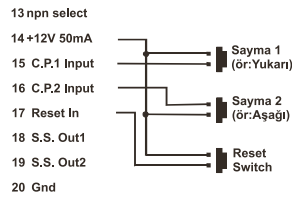
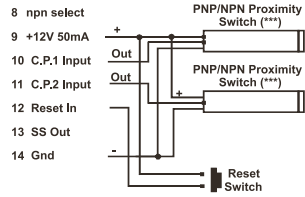
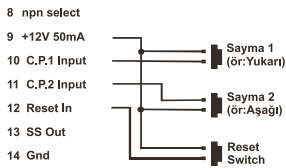
DS-72A - DS-72



DS-48



CONNECTION DIAGRAMS



↓ PICTURES



DTZ-96



DTZ-72



DTZ-48

↓ TECHNICAL PROPERTIES

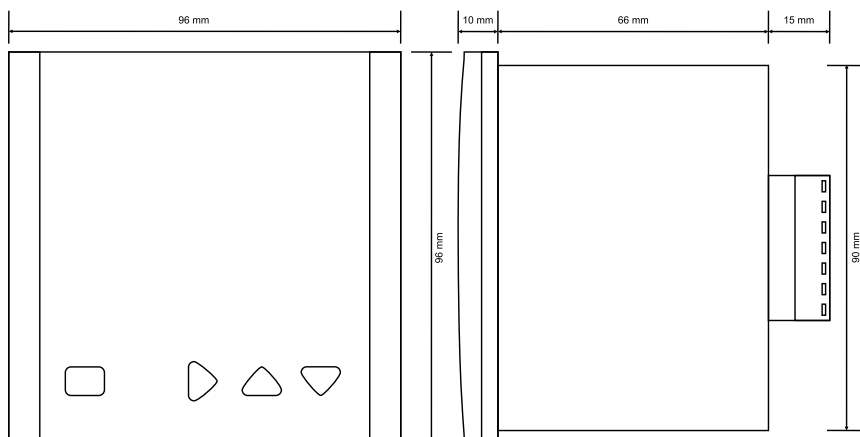
Display	: 4 digit 7 Segment PV, 4 digit 7 Segment SV
Input	: J,K,T,S,R tipi T/C, Pt100, seğmeli
Measuring Scale	: -100 .. 600 °C, J tip T/C, (Inpt=J) -100 .. 1300 °C, K tip T/C, (Inpt=k) -100 .. 400 °C, T tip T/C, (Inpt=t) 0 .. 1750 °C, S tip T/C, (Inpt=S) 0 .. 1750 °C, R tip T/C, (Inpt=r) -100 .. 600 °C, Pt100, (Inpt=Pt) -99.9 .. 600.0 °C, Pt100, (Inpt=Pt.0)
Resolution	: $\pm 1^{\circ}\text{C}$ veya $\pm 0.1^{\circ}\text{C}$
Accuracy	: $\pm \% 0.3$ (Over full scale)
Control Form	: ON-OFF or P,PI,PD,PID - selectable
OUT Output	: Relay (NO + NC), 250VAC, 2A, Resistive load, (optional SSR)
Alarm Output	: Relay (NO + NC), 250VAC, 2A, Resistive load (only NO for DT48)
Time Adjusting	: 00:00 .. 99:59 hours (t.SET)
Time Adjust Step	: 1 min. increase/decrease
Alarm ON Time	: If 00:00 .. 99:59 min. (A.Off). 00:00 wont be OFF. (latch)
Alarm ON Step	: 1 sec. increase/decrease
Time Linearity	: $\pm \% 1.5$ (t.SET or A.Off values)
Trigger Adjusting	: 1 .. 1250 / 1.5 .. 125.0 °C (t.Hys)
Heat Set Adjusting	: Lo.L .. U.P.L oC (H.Set)
Heat Hysteresis	: If 0 .. 50 / 0.0 .. 5.0 °C (H.Hys); 0 PID control should be choosen.
Proportional Band	: 1 .. 130 °C (Pb.C)
Integral Time	: 0 .. 30,0 min. (if 0 OFF)
Differentiation Time	: 0.. 10,0 min.. (if 0 OFF)
Control Period	: 4 .. 200 sn (Ct)
Offset	: -100..+100 °C / -10.0 .. +10.0 (oFFS)
Operation Temp.	: 0 .. 50 °C (T/C)
Line Comp.	: 10 Ohm max. (3 wired Pt100)
Operating Temperature	: 0 .. 50 °C
Operating Voltage	: 230VAC +10%, -20%
Operating Frequency	: 50Hz / 60Hz
Operating Power	: < 8VA
Weight	: < 0.5 kg
Panel Hole Sizes	: 92 mm x 92 mm(DTZ-96), 69 mm x 69 mm(DTZ-72), 46 mm x 46 mm(DTZ-48)
Operating Altitude	: < 2000 m
Failure	: ALARM output is always OFF, OUT output is active according to P.Err and Ct parameters in case of sensor failure, measurement out of range or hardware fails to measure input signal (OUT output is OFF if Perr is 0)

↓ DESCRIPTIONS

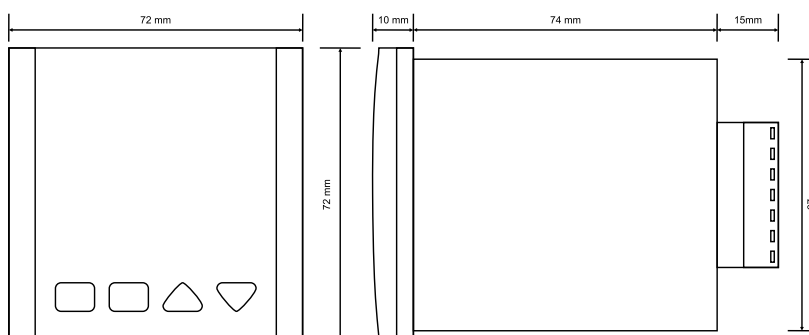
- PID temperature control device with internal time relay
- Automatic calculation of PID parameters through Auto-tune feature.
- Time setting up to 99:59
- ALARM ON time adjustable up to 99:59
- Automatic OFF feature selectable at the end of Timer T.SET duration for OUT terminal.
- Sensor type: T/C (J,K,T,S,R), Pt100, optional- multi input
- P, PI, PD, PID or ON-OFF control form - optional
- "Overshoot" prevention feature – PID mode
- "Anti-windup" feature
- Adjustable upper and lower limits for SET value
- Feature of monitoring the Set and Residual Time values intermittently.
- Ambient temperature compensation for T/C
- Line compensation for Pt100
- Curve adjustment through the conversion tables of 0C/mV and 0C/Ω stored in the memory
- Input "Offset" feature
- Password-protected
- High precision, accuracy
- Keeping the program and control parameters continuously in the memory.
- SSR output option
- Easy connection with socket clamp

TECHNICAL DIMENSIONS

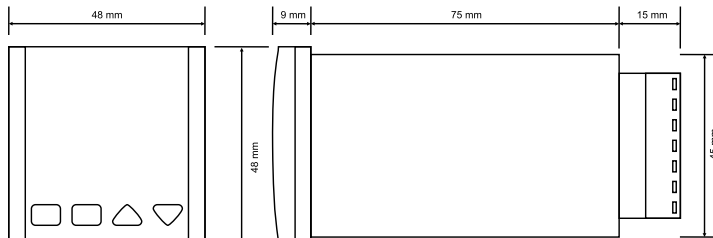
DTZ-96



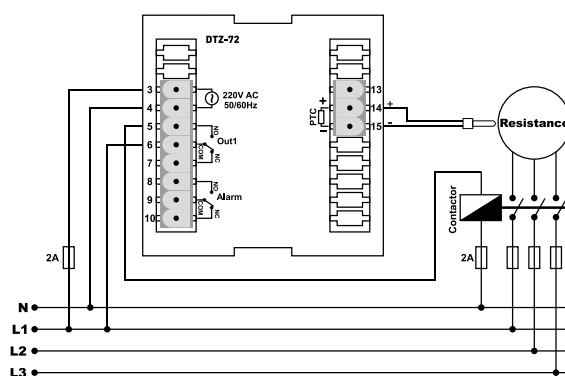
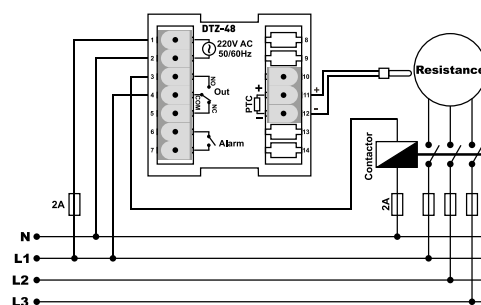
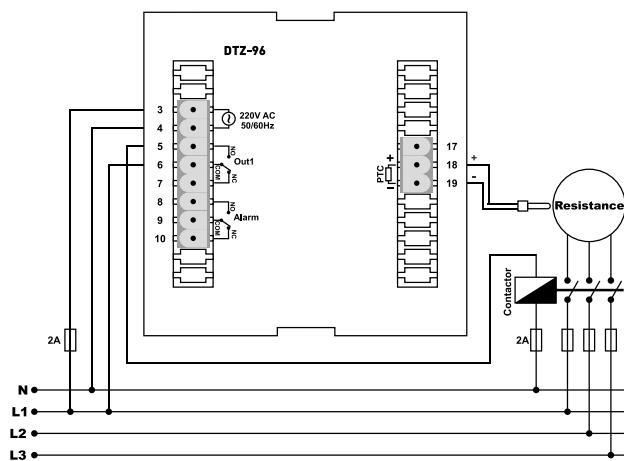
DTZ-72



DTZ-48



CONNECTION DIAGRAMS



↓ PICTURES



DT-96



DT-72



DT-48

↓ TECHNICAL PROPERTIES

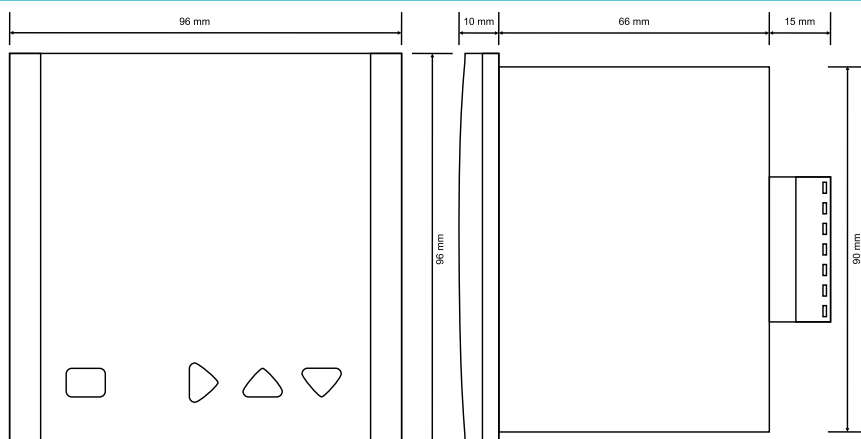
Display	: 4 digit 7 Segment PV, 4 digit 7 Segment SV
Sensor Type	: J,K,T,S,R type T/C, Pt100, selectable
Measuring Scale	: -100 .. 600 °C, J type T/C, (Inpt=J) -100 .. 1300 °C, K type T/C, (Inpt=k) -100 .. 400 °C, T type T/C, (Inpt=t) 0 .. 1750 °C, S type T/C, (Inpt=S) 0 .. 1750 °C, R type T/C, (Inpt=r) -100 .. 600 °C, Pt100, (Inpt=Pt) -99.9 .. 600.0 °C, Pt100, (Inpt=Pt.0)
Resolution	: ± 1 °C or ± 0.1 °C
Accuracy	: ± % 0.3 (Over full scale)
Control Form	: ON-OFF or P,PI,PD,PID - selectable
OUT Output	: Relay (NO + NC), 250VAC, 2A, Resistive load, (optional SSR)
Alarm Output	: Relay (NO + NC), 250VAC, 2A, Resistive load, (Only NO for DT-48)
Heat SET	: Lo.L .. UP.L °C (H.Set)
Alarm SET	: AL.tY = Abs,-Abs; Lo.L .. UP.L °C (A.Set) AL.tY = rel, -rel, bnd, -bnd, bn.i, -bn.i; -100 .. +100 / -10.0 .. +10.0 (Pt.0)
Heat Hysteresis	: 0 .. 50 / 0.0 .. 5.0 °C (H.Hys); PID is active if set to 0
Alarm Hysteresis	: 1 .. 50 / 0.1 .. 5.0 °C (A.Hys)
Proportional Band	: 1 .. 130 °C (Pb.C)
Integral Time	: 0 .. 30,0 min (OFF if set to 0)
Derivative Time	: 0.. 10,0 min. (OFF if set to 0)
Control Period	: 4 .. 200 sec (Ct)
Offset	: -100..+100 °C / -10.0 .. +10.0 (oFFS)
Heating/Cooling	: selectable (Only ON-OFF control form is active for cooling)
Cold. Junc. Comp.	: 0 .. 50 °C (T/C)
Line Comp.	: 10 Ohm max. (3 telli Pt100)
Operating Temperature	: 0 .. 50 °C
Operating Voltage	: 100...240VAC
Operating Frequency	: 50Hz / 60Hz
Operating Power	: < 6VA
Weight	: < 0.5 kg
Panel Hole Sizes	: 92 mm x 92 mm(DT-96), 69 mm x 69 mm(DT-72), 46mm x 46mm(DT-48)
Operating Altitude	: < 2000 m
Failure	: ALARM output is constantly OFF, OUT output is active according to P.Err and Ct parameters in case of sensor failure, measurement out of range or hardware fails to measure input signal (OUT output is OFF if Perr is 0)

↓ DESCRIPTIONS

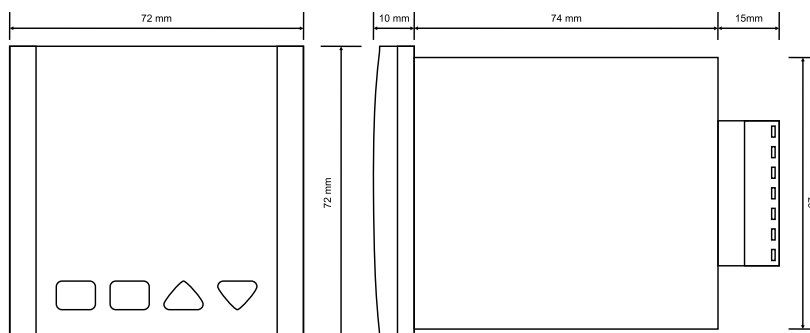
- Microprocessor-based, PID temperature control device
- Automatic calculation of PID parameters through Auto-tune feature.
- Sensor type: T/C (J,K,T,S,R), Pt100, optional - multi input
- P, PI, PD, PID or ON-OFF control form - optional
- "Overshoot" prevention feature – PID mode
- "Anti-windup" feature
- Adjustable upper and lower limits for Set and Alarm values
- Conditional, unconditional or band alarm options
- Cooling outlet compensation
- Concurrent monitoring of Set and Process values
- Ambient temperature compensation for T/C
- Line compensation for Pt100
- Curve adjustment through the conversion tables of C/mV and C/* stored in the memory
- Input "Offset" feature
- Password-protected
- High precision, accuracy
- Keeping the program and control parameters continuously in the memory.
- SSR output option
- Easy connection with socket clamp

TECHNICAL DIMENSIONS

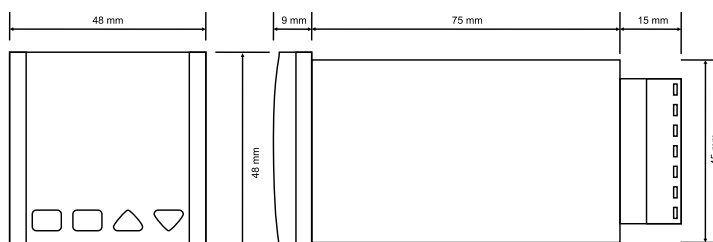
DT-96



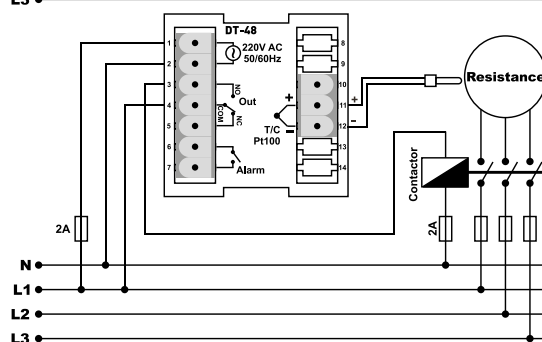
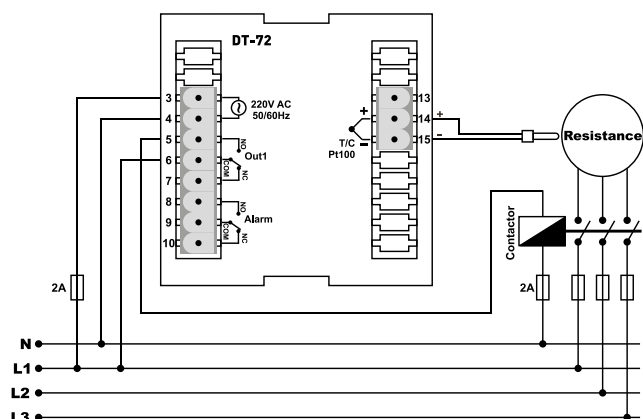
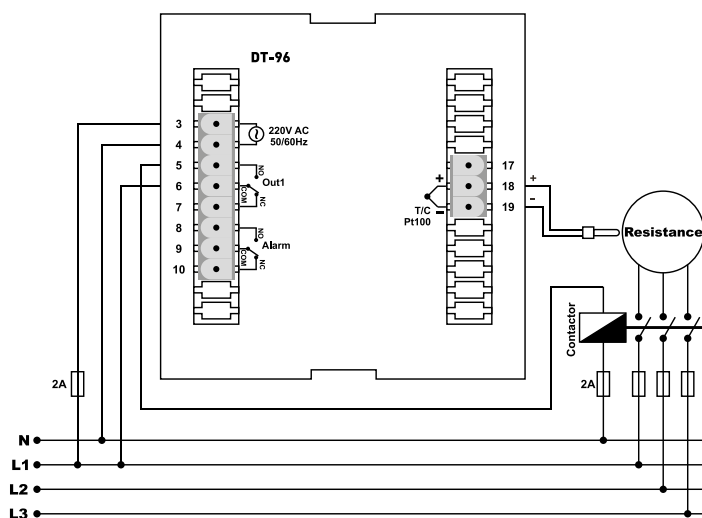
DT-72



DT-48



CONNECTION DIAGRAMS



↓ PICTURES



DT-Y



DT-D

↓ TECHNICAL PROPERTIES

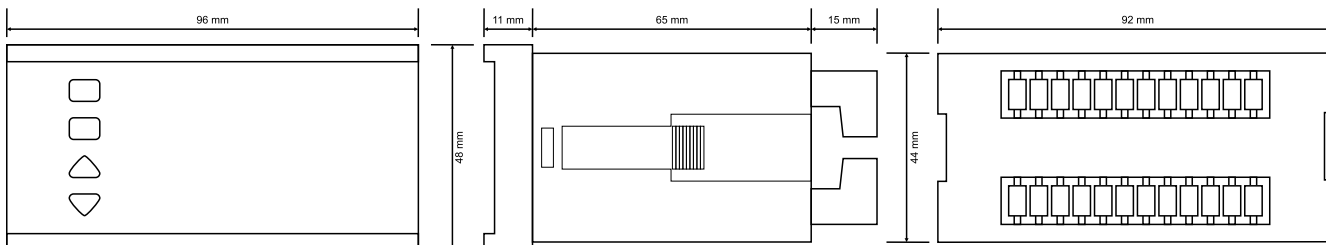
Display	: 4 digit 7 Segment PV, 4 digit 7 Segment SV
Sensor Type	: J,K,T,S,R tipi T/C, Pt100, seçmeli
Measuring Scale	: -100 .. 600 °C, J tip T/C, (Inpt=J) -100 .. 1300 °C, K tip T/C, (Inpt=k) -100 .. 400 °C, T tip T/C, (Inpt=t) 0 .. 1750 °C, S tip T/C, (Inpt=S) 0 .. 1750 °C, R tip T/C, (Inpt=r) -100 .. 600 °C, Pt100, (Inpt=Pt) -99.9 .. 600.0 °C, Pt100, (Inpt=Pt.0)
Resolution	: ± 1 °C veya ± 0.1 °C
Accuracy	: ± 0.3 (Over full scale)
Control Form	: ON-OFF veya P,PI,PD,PID - selectable
OUT Output	: Relay (NO + NC), 250VAC, 2A, Resistive load, (optional SSR)
Alarm Output	: Relay (NO + NC), 250VAC, 2A, Resistive load, (only NO for DT48)
Heat SET	: Lo.L .. UPL °C (H.Set)
Alarm SET	: AL.tY = Abs,-Abs; Lo.L .. UPL °C (A.Set) AL.tY = rel, -rel, bnd, -bnd, bn.i, -bn.i; -100 .. +100 / -10.0 .. +10.0 (Pt.0)
Heat Hysteresis	: 0 .. 50 / 0.0 .. 5.0 °C (H.Hys); PID is active if set to 0
Alarm Hysteresis	: 1 .. 50 / 0.1 .. 5.0 °C (A.Hys)
Proportional Band	: 1 .. 130 °C (Pb.C)
Integral Time	: 0 .. 30,0 min. (if 0 OFF)
Derivative Time	: 0.. 10,0 min. (if 0 OFF)
Control Period	: 4 .. 200 sec. (Ct)
Offset	: -100..+100 °C / -10.0 .. +10.0 (oFFS)
Heating/Cooling	: selectable (only ON-OFF control form is active for cooling)
Cold. Junc. Comp.	: 0 .. 50 °C (T/C)
Line Comp.	: 10 Ohm max. (3 telli Pt100)
Operating Temperature	: 0 .. 50 °C
Operating Voltage	: 100...240VAC
Operating Frequency	: 50Hz / 60Hz
Operating Power	: < 6VA
Weight	: < 0.5 kg
Panel Hole Sizes	: 45mm(h) x 93mm(v.) (DT-D) 93mm(h) x 45mm(v.) (DT-Y)
Operating Altitude	: < 2000 m
Failure	: ALARM output is always OFF, OUT output is active according to P.Err and Ct parameters in case of sensor failure, measurement out of range or hardware fails to measure input signal (OUT output is OFF if Perr is 0)

↓ DESCRIPTIONS

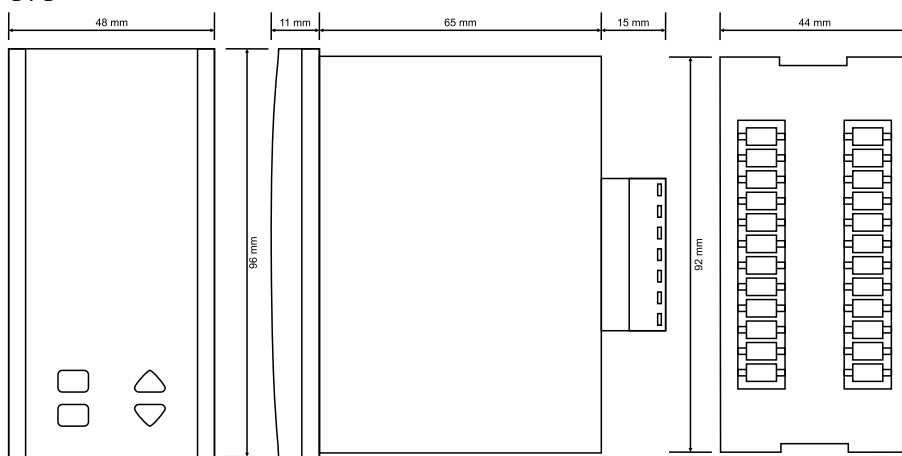
- Microprocessor-based, PID temperature control device
- Automatic calculation of PID parameters through Auto-tune feature.
- Sensor type: T/C (J,K,T,S,R), Pt100, optional- multi input
- P, PI, PD, PID or ON-OFF control form - optional
- "Overshoot" prevention feature – PID mode
- "Anti-windup" feature
- Adjustable upper and lower limits for Set and Alarm values
- Conditional, unconditional or band alarm options
- Cooling outlet compensation
- Concurrent monitoring of Set and Process values
- Ambient temperature compensation for T/C
- Line compensation for Pt100
- Curve adjustment through the conversion tables of 0C/mV and 0C/* stored in the memory
- Input "Offset" feature
- Password-protected
- High precision, accuracy
- Keeping the program and control parameters continuously in the memory.
- SSR output option
- Easy connection with socket clamp

TECHNICAL DIMENSIONS

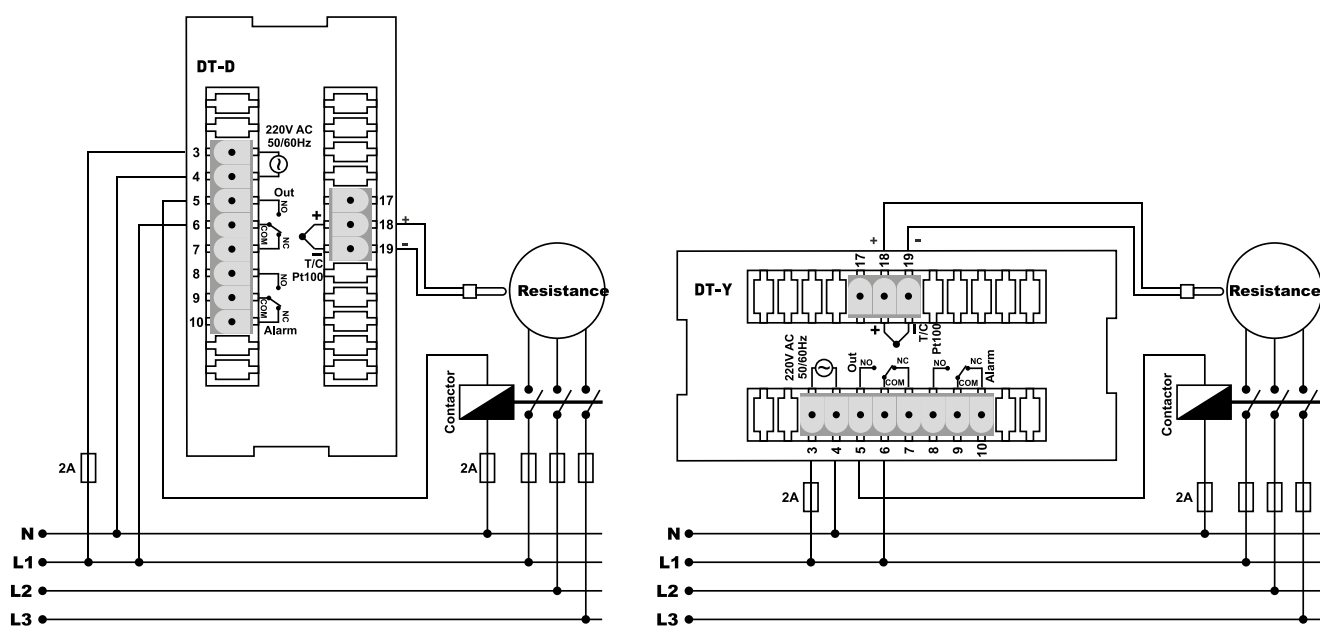
DT-Y



DT-D



CONNECTION DIAGRAMS



↓ PICTURES



DT-311



DT-312



DT-311DIN



SPR-311 (SIVI PROBU)

PR-311 (HAVA PROBU)

↓ TECHNICAL PROPERTIES

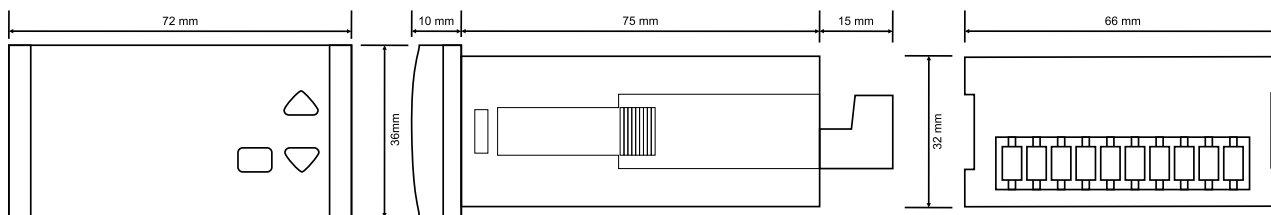
Display	: 14 mm 3 digit Display
Sensor Type	: PTC
Measuring Scale	: -50..+150 °C (DT-311), -19.9..+99.9 °C (DT-312)
Resolution	: ± 1 °C (DT-311), ± 0.1 °C (DT-312)
Accuracy	: ± % 1 (Tam Skalanın)
Control Form	: ON-OFF
Out Output	: Relay (NA + NK), 250VAC, 2A, Rezistif yük
Alarm output	: Relay (NA), 250VAC, 2A, Rezistif yük
Heat SET	: LoL .. UPL °C (HSt)
Alarm SET	: AtP = Abs, -Ab; LoL .. UPL °C (ASt) AtP = rEL,-rL; (HSt+rAL) , (HSt-20)..(HSt+20) °C
Heat Hysteresis	: 1 .. 20 °C (Hhs) (DT-311), 0.1 .. 20.0 °C (Hhs) (DT-312)
Alarm Hysteresis	: 1 .. 20 °C (Ahs) (DT-311), 0.1 .. 20.0 °C (Ahs) (DT-312)
Offset	: -20..+20 (oFS), (DT-311), -19.0..+20.0 (oFS) (DT-312)
Heating/Cooling	: H-C; Ht (ısıtma), CL (soğutma); seçmeli
Operating Voltage	: 100..240V AC
Operating Frequency	: 50 Hz / 60 Hz
Operating Power	: < 6VA
Operating Temp.	: 0 .. 50 °C
Panel Hole Sizes	: 33 mm x 68 mm (DT-311, DT-312)
Operating Altitude	: < 2000m
Failure	: ALARM output is always OFF, OUT output is active according to P.Err and Ct parameters in case of sensor failure, measurement out of range or hardware fails to measure input signal (OUT output is OFF if Perr is 0)
Weight	: < 0.5 kg

↓ DESCRIPTIONS

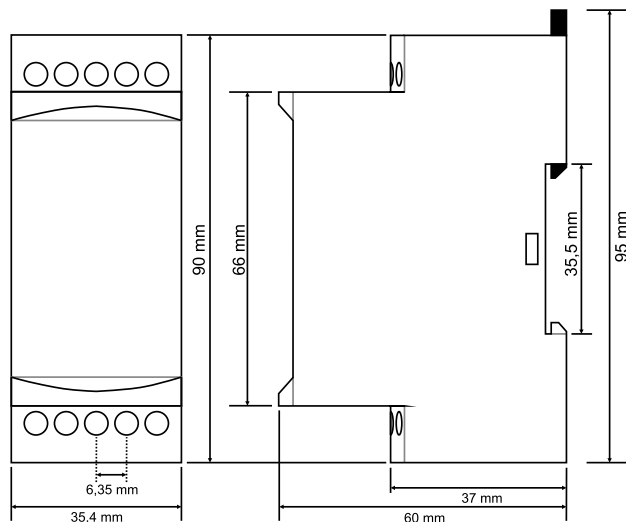
- Microprocessor based, temperature control device
- Sensor type: PTC
- Measurement and control scale: -50 °C ... +150 °C (DT-311) -19.9°C ... +99.9 °C (DT-312DIN)
- ON-OFF control form
- OUT and ALARM output (dry contact)
- Heating and Cooling functions; optional
- Adjustable upper limit for Set and Alarm values
- Adjustable lower limit for Set and Alarm values
- Individually adjustable hysteresis for Set and Alarm values
- Conditional, unconditional or "Sensor failure" alarm options
- Internal adjustable latency time relay before start-up for cooling function (compressor protection feature)
- Adjustable internal ON/OFF time relay for OUT terminal in case any sensor failure occurs (for heating and cooling function)
- Input "Offset" feature
- Curve adjustment through the conversion tables of oC/Ohm stored in the memory
- Password-protected
- High precision, accuracy
- Keeping the program and control parameters continuously in the memory.
- Easy connection with socket clamp

TECHNICAL DIMENSIONS

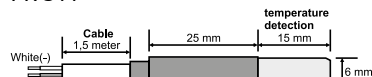
DT-311 - DT-312



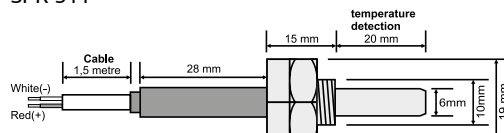
DT-311DIN



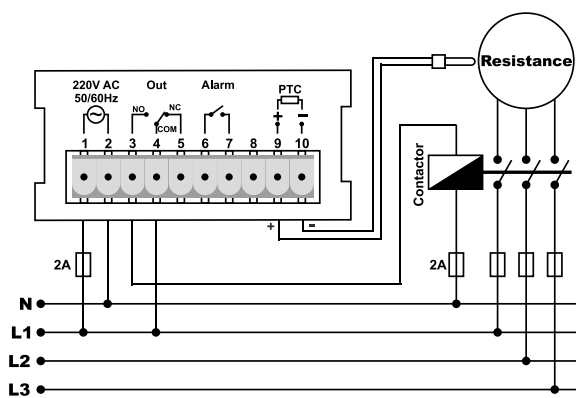
PR-311



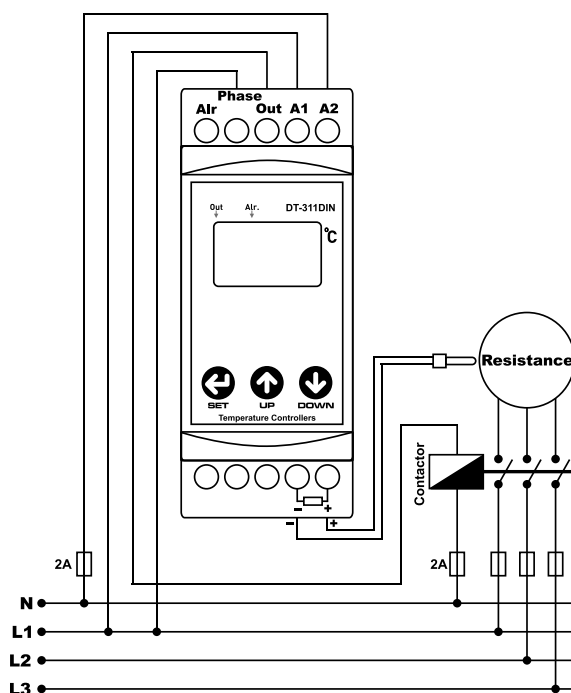
SPR-311



CONNECTION DIAGRAMS



DT-311 and DT-312



DT-311DIN

↓ PICTURES



DT-96E



DT-72E



DT-48E



DT-36E

↓ TECHNICAL PROPERTIES

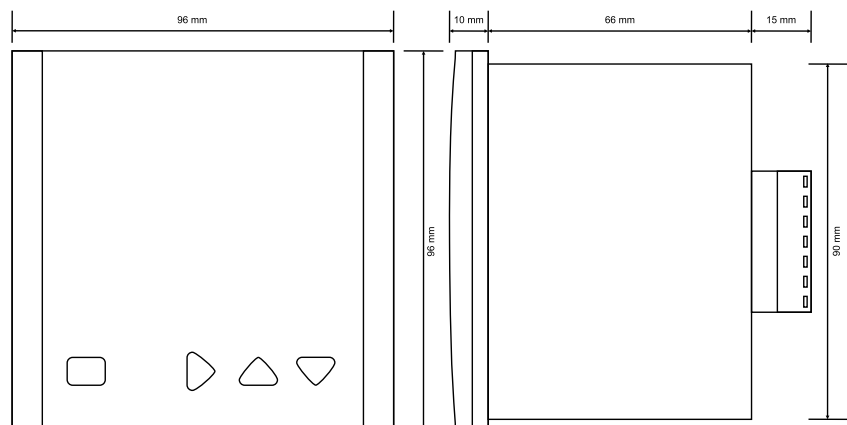
Display	: 1x3 digit 7 Segment
Measuring Scale	: 0 .. 600 °C
SET Adjusting	: 0 .. 600 °C (Up.L değeri ile sınırlanabilir)
Hysteresis Adjusting	: 0 .. 50 °C
Input	: Fe-Const, J tipi T/C
Resolution	: ± 1 °C
Accuracy	: $\pm \% 0.3$ (Over full scale)
Control Form	: ON-OFF
Out output	: Relay (NA + NK), 250VAC, 2A, Resistive load
Operating Voltage	: 100...240VAC
Operating Frequency	: 50Hz / 60Hz
Operating Power	: < 6VA
Operation Temp.	: 0 .. 50 °C
Operating Temp.	: 0 .. 50 °C
Operating Altitude	: < 2000m
Failure	: ALARM output is always OFF, OUT output is active according to P.Err and Ct parameters in case of sensor failure, measurement out of range or hardware fails to measure input signal (OUT output is OFF if Perr is 0)
Panel Hole Sizes	: 46 mm x 46 mm(DTE-48)
Weight	: < 0.5 kg

↓ DESCRIPTIONS

- Microprocessor based, single contact temperature control device
- Sensor type:T/C, Fe-Const, J type
- ON-OFF control form
- Adjustable Hysteresis value
- Adjustable Upper Limit Value for SET
- Monitoring of Set and Process values on the display
- T/C ambient temperature compensation
- Curve adjustment through the conversion tables of C/mV stored in the memory
- High precision, accuracy
- Keeping the program and control parameters continuously in the memory.
- Easy connection with socket clamp

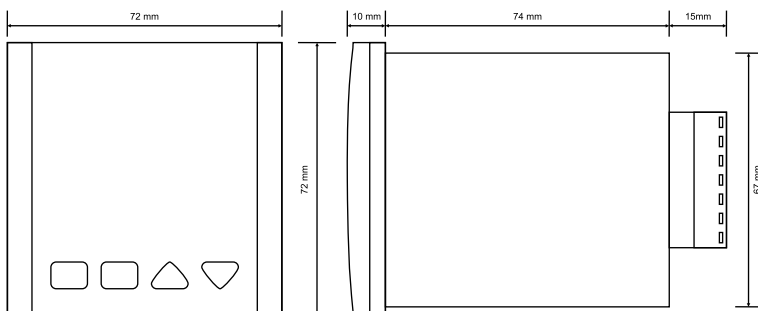
↓ TECHNICAL DIMENSIONS

DT-96E

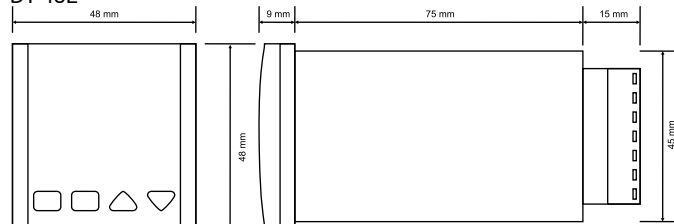


TECHNICAL DIMENSIONS

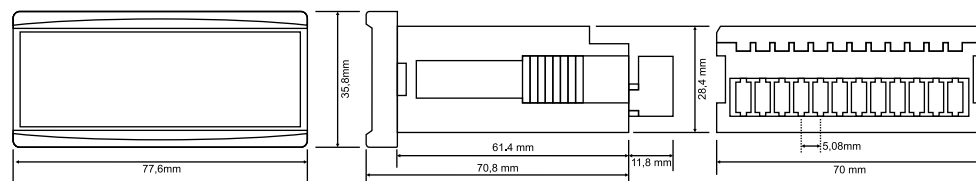
DT-72E



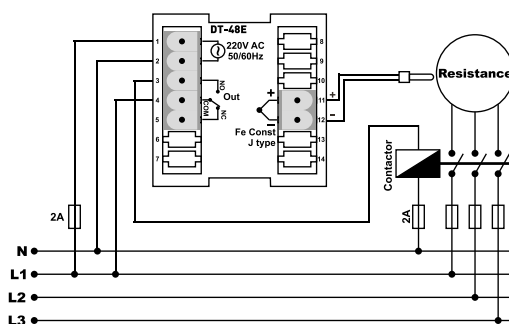
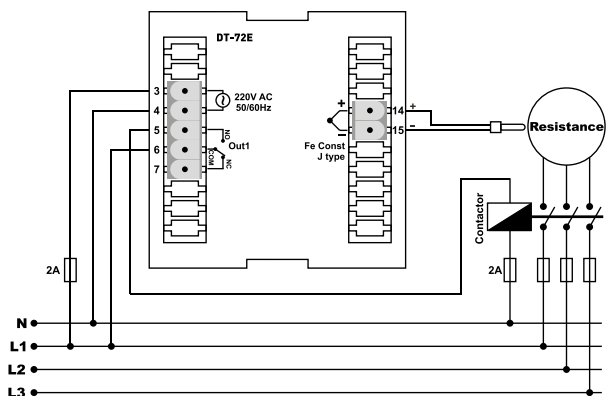
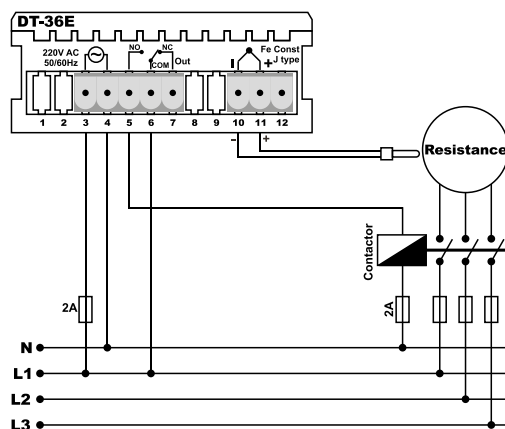
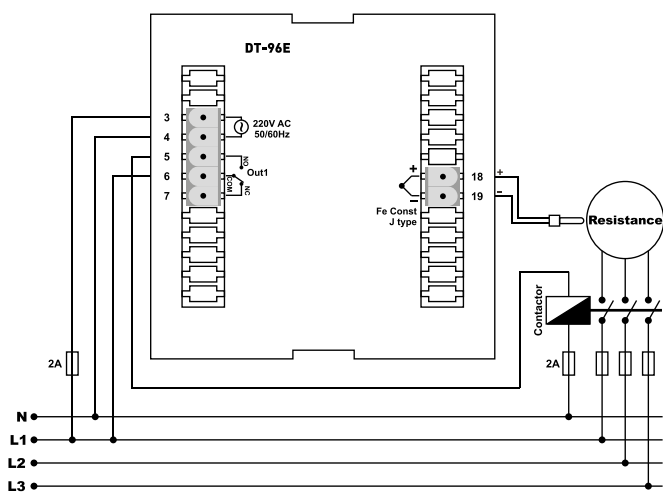
DT-48E



DT-36E



CONNECTION DIAGRAMS



↓ PICTURES



AD-96

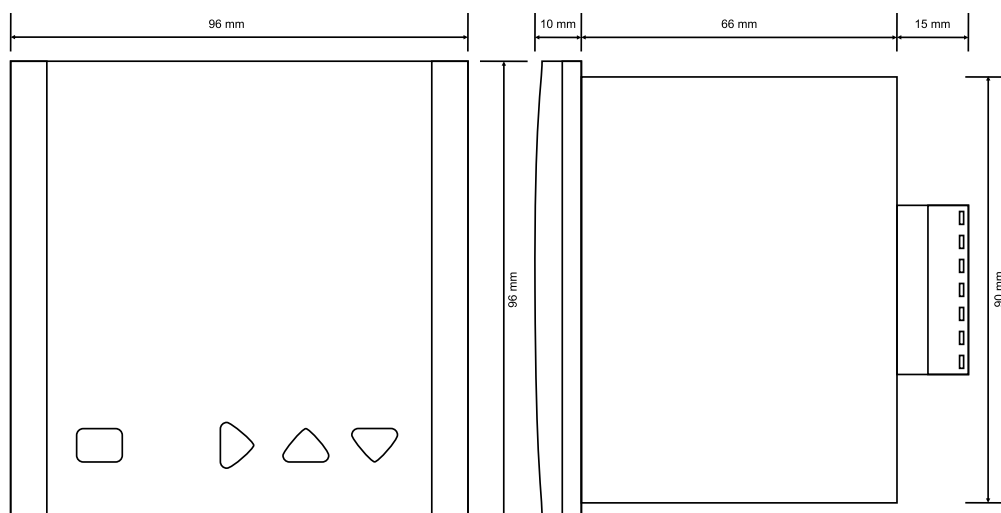
↓ TECHNICAL PROPERTIES

Display	: 3 digit 7 Segment
Input	: Fe-Const, J tipi T/C
Measuring Scale	: 0 – 400 °C
Resolution	: ± 1 °C
Accuracy	: ± % 1 (Over full scale)
Control Form	: ON-OFF, or programmable time ratio / ON-OFF Control form (optional)
Heat Output	: Relay (NA + NK), 250VAC, 2A, Resistive load.
Heat SET Adjusting	: 0 – 400 °C
Heat Hysteresis	: 1 – 20 °C
Proportional Band	: 1 – 30 °C
Proportional Time	: 10 – 240 sn
Ambiance Heat Comp.	: 0 .. 50 °C
Operating Temperature	: 0 .. 50 °C
Operating Voltage	: 100...240VAC
Operating Frequency	: 50Hz / 60Hz
Operating Power	: < 6VA
Weight	: < 0.5 kg
Panel Hole Sizes	: 92 mm x 92 mm
Operating Altitude	: < 2000 m
Failure	: Relay doesn't get energized if it gets out the scale or sensor and the sensor line breaks down.

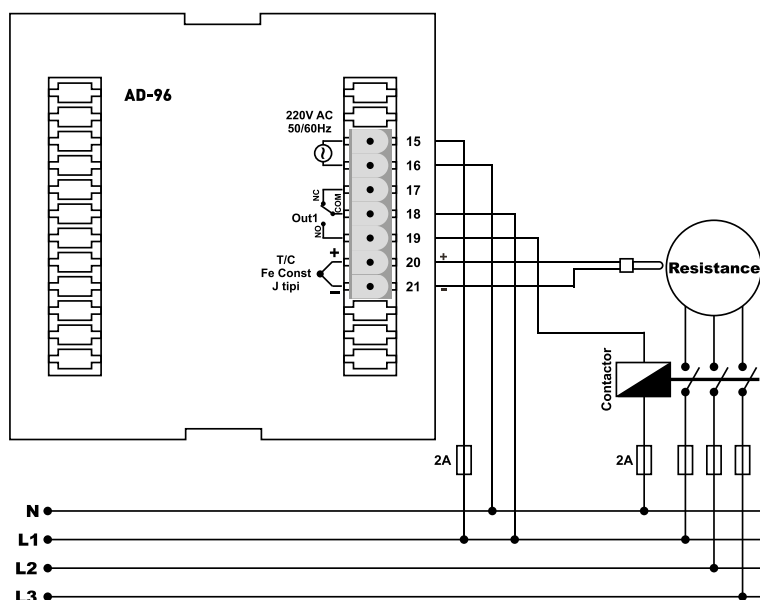
↓ DESCRIPTIONS

- Microprocessor based, analog SET operated single contact temperature control device
- Sensor type: Fe-Const, J type T/C
- Programmable Time Proportional and ON-OFF control form
- Monitoring of Set or Process values on the digital display
- T/C ambient temperature compensation
- Curve adjustment through the conversion table of C/mV stored in the memory
- Easy connection with socket clamp

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



ERD-96M



ERD-72M



ERD-48M

↓ TECHNICAL PROPERTIES

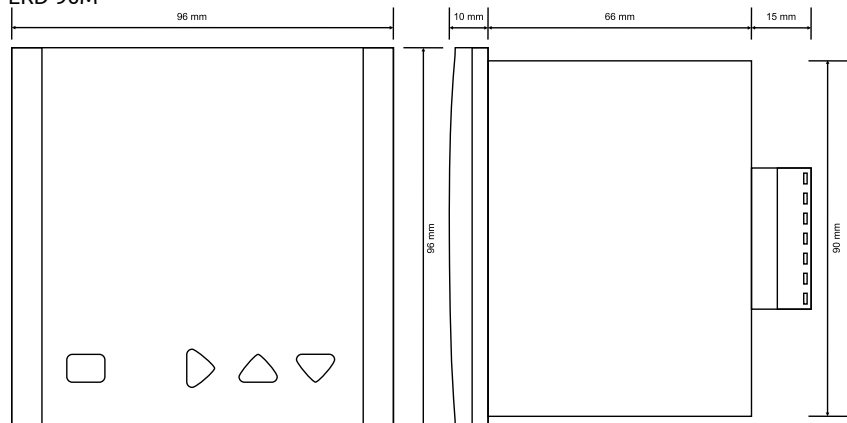
Display	: 2x4 7-Segment display
Input	: START / RESET / GATE input 3 x max. 32VDC (OFF:0..2VDC, ON:7..32VDC)
GATE Input	: If GATE ON, Time stops countdown.
Output	: Out1, Out2; 2 x Relay (NA-O-NK), 250VAC, 2A, Resistive load. SS Out; open collector (NPN çıkış), 30V, 100mA max.
Time Selection	: 99:59 hours / 99:59 min. / 599.9 sec.
Output Function	: 13 various (ERD-48M) optional. 8 various (ERD-96M, ERD-72M) optional.
Sensor Feeding Output	: 12VDC, 50mA max.
Operating Voltage	: 230VAC +10%, -20%, 50 - 60Hz
Operating Frequency	: 50 Hz / 60 Hz
Operating Power	: < 8VA
Operating Temperature	: 0 .. 50 °C
Operating Altitude	: < 2000m
Weight	: < 0.5 kg
Panel Hole Sizes	: 92mm x 92 mm (ERD-96M) 69mm x 69mm (ERD-72M) 46mm x 46mm (ERD-48M)

↓ DESCRIPTIONS

- START / RESET / GATE input, double output time relay
- 2x4 7 Segment LED display
- 8 different operation modes (ERD-96M, ERD-72M)
- 13 different operation modes (ERD-48M)
- Hour / Minute / Second counting option
- Feature of keeping the last counting value in the memory together with Out1 & Out2 positions in case of energy interruption (reserving feature)
- Keeping the control parameters continuously in the memory.
- 24VDC input (Proximity switch connection (ERD-72M, ERD-48M))

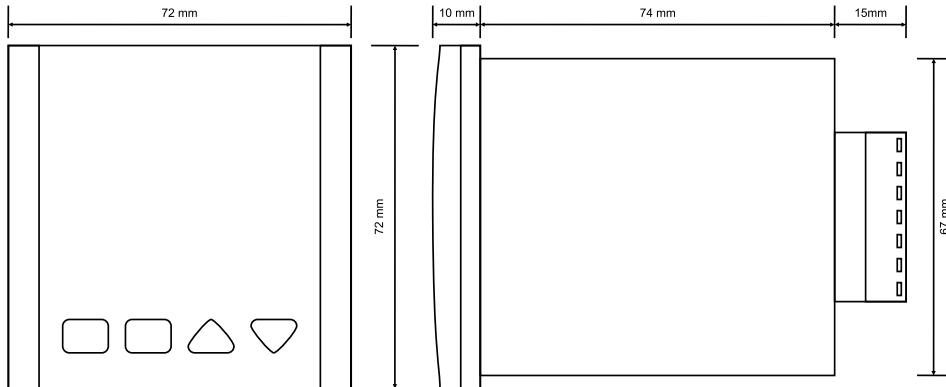
↓ TECHNICAL DIMENSIONS

ERD-96M

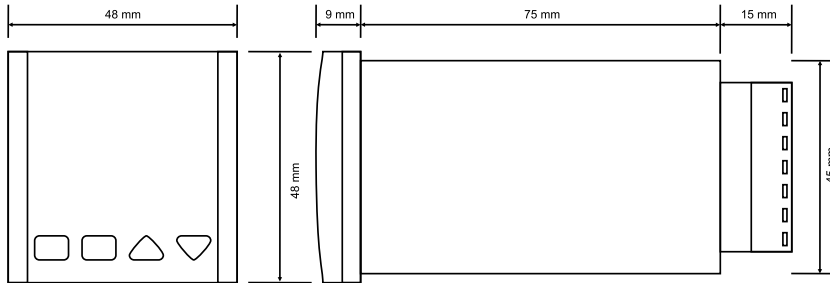


TECHNICAL DIMENSIONS

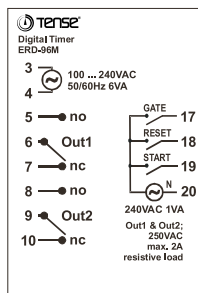
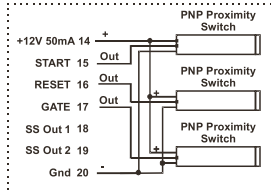
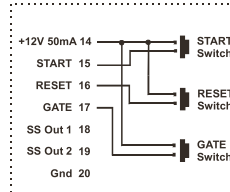
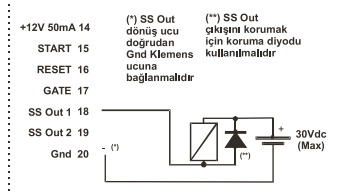
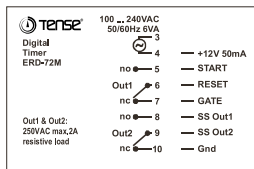
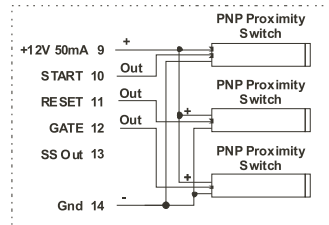
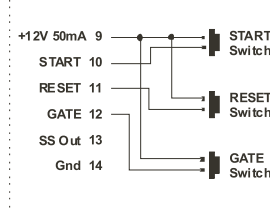
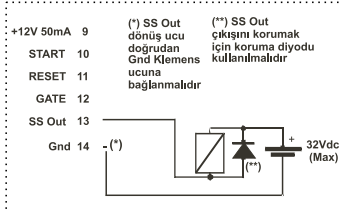
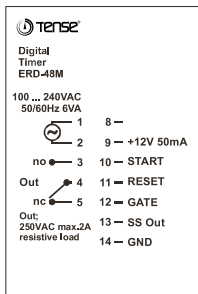
ERD-72M



ERD-48M



CONNECTION DIAGRAMS



↓ PICTURES



ERD-96



ERD-72



ERD-48

↓ TECHNICAL PROPERTIES

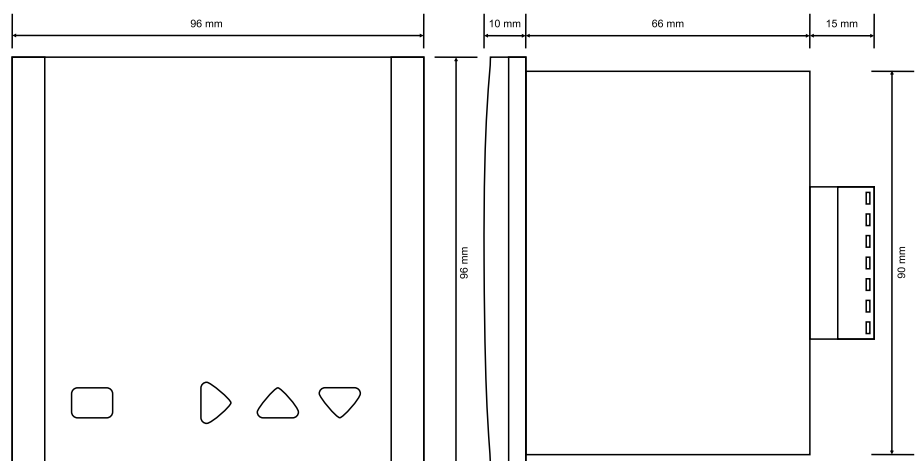
Display	: 20 mm 3 Digit (ERD-96) 14 mm 3 Digit (ERD-72) 9 mm 3 Digit (ERD-48)
START/RESET	: Feeding ON with instant contact and waiting or Flasher; Optional
Scale	: 99.9 sec., 999 sec., 99.9 min. veya 999 min. (Optional)
Resolution	: 0.1 sec. / 1 sec. / 0.1 min. / 1 min.
Error	: \pm % 1.5
Waiting Output	: Out1; Relay (NA + NK), 250VAC, 2A, Resistive Load
Instant Contact Output	: Out2; Relay (NA+NK), 250VAC, 2A, Resistive Load
Operating Voltage	: 100 ... 240V AC
Operating Frequency	: 50 Hz / 60 Hz
Operating Power	: < 5VA
Operating Temperature	: 0 – 50 °C
Panel Hole Sizes	: 92 mm x 92 mm (ERD-96) 69 mm x 69 mm (ERD-72) 46 mm x 46 mm (ERD-48)
Operating Altitude	: < 2000m
Weight	: < 0.3 kg

↓ DESCRIPTIONS

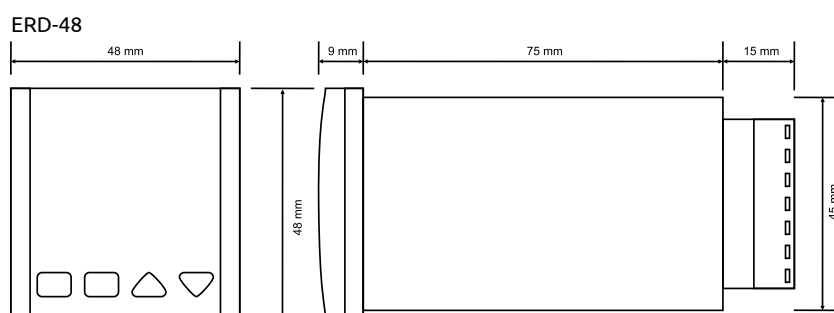
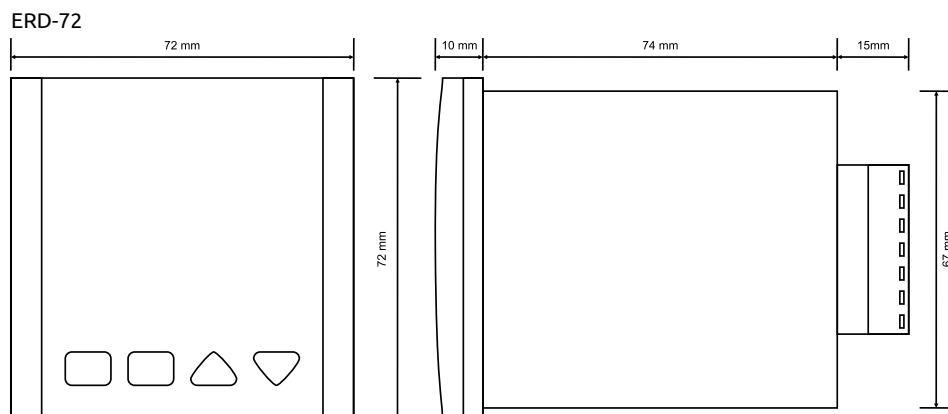
- Instantaneous contact and latency or Flasher with START ON; optional
- Feature of monitoring the Set and Residual Time values on the digital display
- 99.9 seconds, 999 seconds, 99.9 minutes, 999 minutes (optional)
- Easy connection with socket clamp

↓ TECHNICAL DIMENSIONS

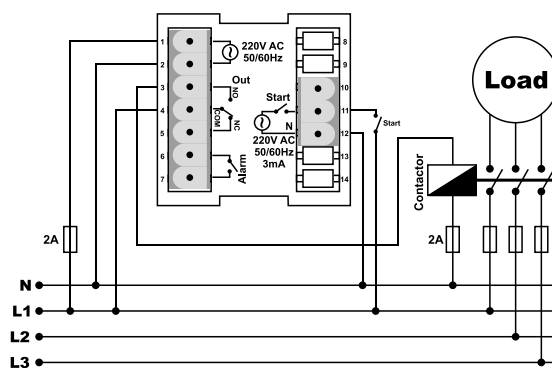
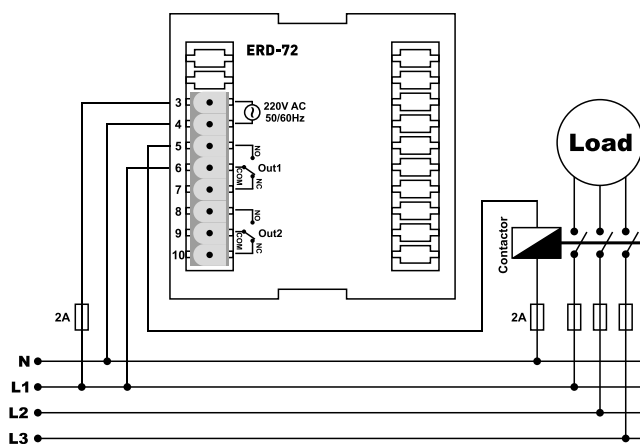
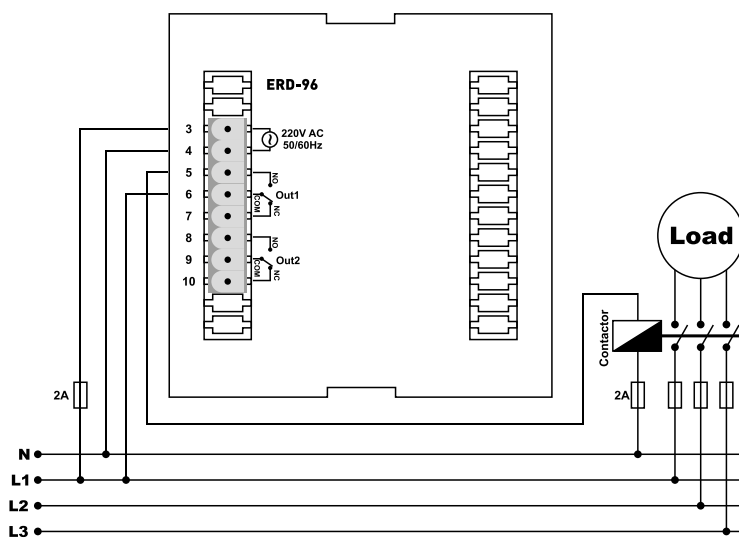
ERD-96



TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



ER-03 0,1 - 3 sec.

ER-12 0,1 - 12 sec.

ER-30 0,1 - 30 sec.

ER-60 0,1 - 60 sec.

ER-03D 0,1 - 3 min.

ER-12D 0,1 - 12 min.

ER-30D 0,1 - 30 min.

ER-60D 0,1 - 60 min.

↓ TECHNICAL PROPERTIES

Operating Voltage(Un) : 150V – 260V AC

Operating Frequency : 50/60Hz.

Operating Power : <4VA

Operating Temperature : 0°C – 55°C

Time : 0.1sec - 60 min.

Display : On led and Out led

Connection Type : Terminal connection

Contact : 5A/250V AC

Cable Diameter : 2.5mm²

Weight : <90gr.

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

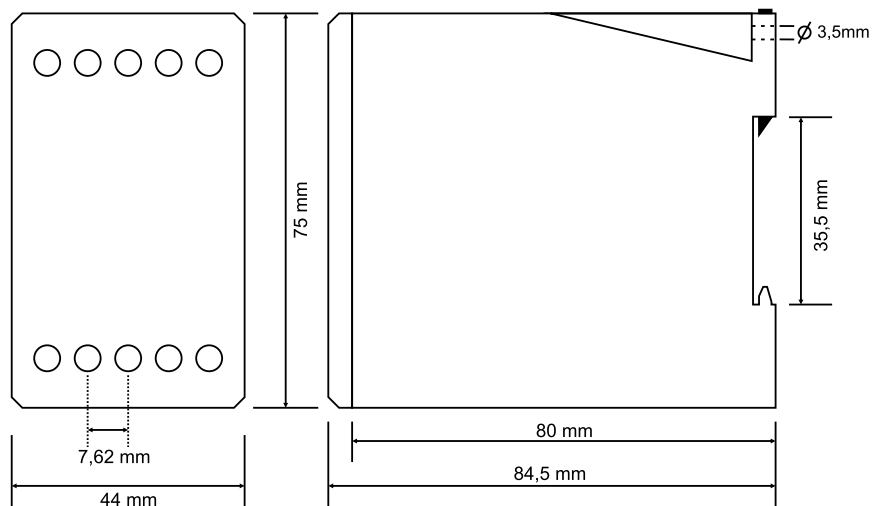
Protection Class : IP20

Operating Altitude : <2000 meter

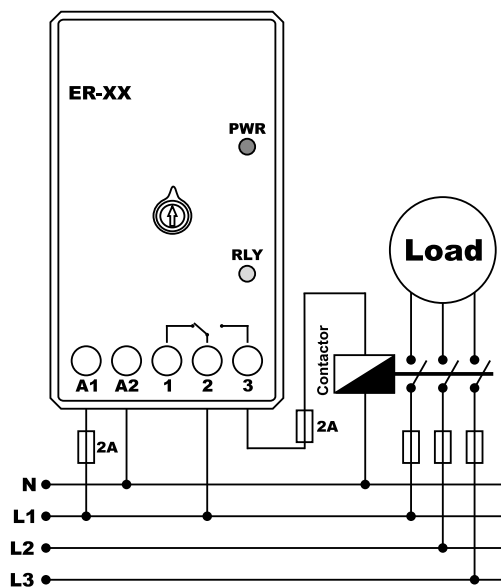
↓ DESCRIPTIONS

ER-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.

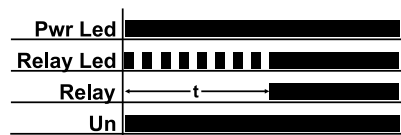
TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



ER-XX (ÇEKMEDE GECİKMELİ)



↓ PICTURES



ERV-03 0,1 - 3 sec.

ERV-12 0,1 - 12 sec.

ERV-30 0,1 - 30 sec.

ERV-60 0,1 - 60 sec.

ERV-03D 0,1 - 3 min.

ERV-12D 0,1 - 12 min.

ERV-30D 0,1 - 30 min.

ERV-60D 0,1 - 60 min.

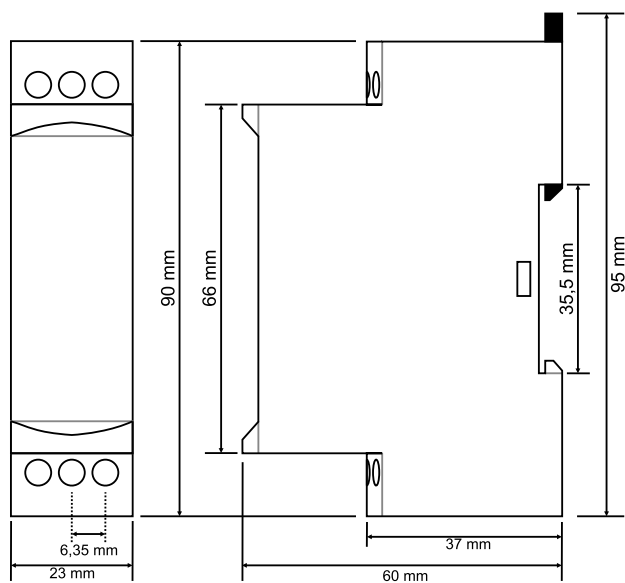
↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC(A1-A2), 24V AC/DC(A3-A2)
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Time	: 0.1sec - 60 min.
Display	: On led and Out led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <90gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

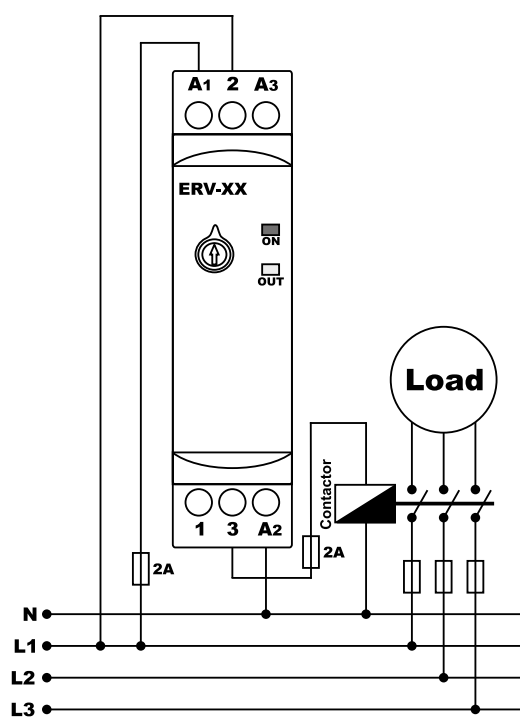
↓ DESCRIPTIONS

ERV-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.

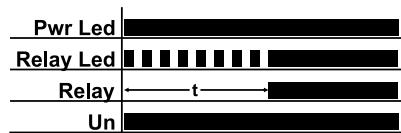
TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



ERV-XX (ÇEKMEDE GECİKMELİ)



↓ PICTURES



ERS-03 0,1 - 3 sec.

ERS-12 0,1 - 12 sec.

ERS-30 0,1 - 30 sec.

ERS-60 0,1 - 60 sec.

ERS-03D 0,1. - 3 min.

ERS-12D 0,1 - 12 min.

ERS-30D 0,1 - 30 min.

ERS-60D 0,1 - 60 min.

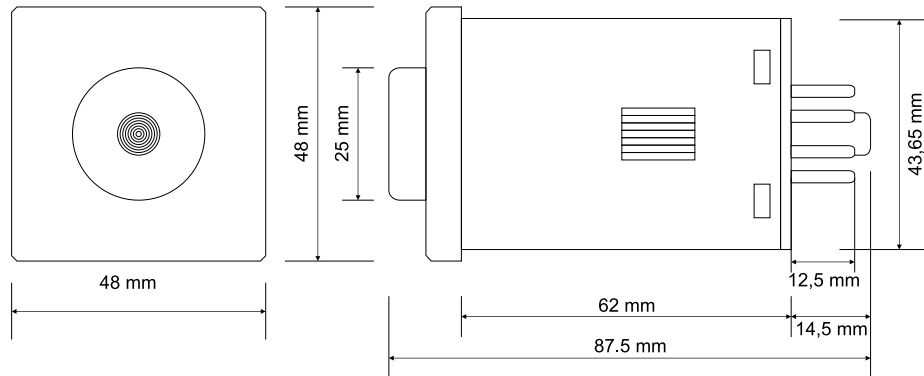
↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Time	: 0.1sec - 60 min.
Display	: On led and Out led
Connection Type	: 8 pin socket
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <90gr.
Mounting	: Front panel mounted
Protection Class	: IP00
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

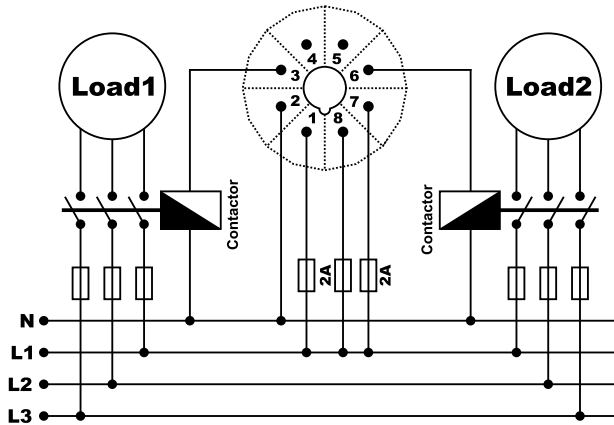
ERS-XXY is a time relay delayed in drawing and designed to be used where time based control is required (industry, house, factory etc.). Waiting time (t) is adjusted with button. When the device is energized, it starts counting the waiting time. While it is counting the time, ON led lights up and OUT led blinks. At this stage, 5(NC) and 8(COM) contacts become short-circuit. Relay led lights constantly after the time is up, 6(NO) and 8(COM) contacts become short-circuit. The device maintains its position until it is de-energized.

TECHNICAL DIMENSIONS

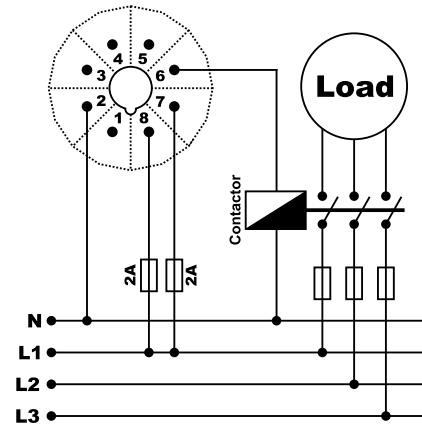


CONNECTION DIAGRAMS

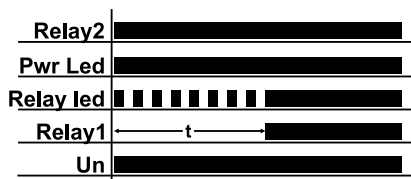
ERS-XXR (ANİ ContactLI)



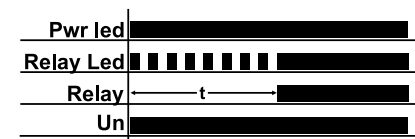
ERS-XXY



ERS-XXR (ÇEKMEDE GECİKMELİ)



ERS-XXY (ÇEKMEDE GECİKMELİ)



↓ PICTURES



ERP-03 0,1 - 3 sec.

ERP-12 0,1 - 12 sec.

ERP-30 0,1 - 30 sec.

ERP-60 0,1 - 60 sec.

ERP-03D 0,1 - 3 min.

ERP-12D 0,1 - 12 min.

ERP-30D 0,1 - 30 min.

ERP-60D 0,1 - 60 min.

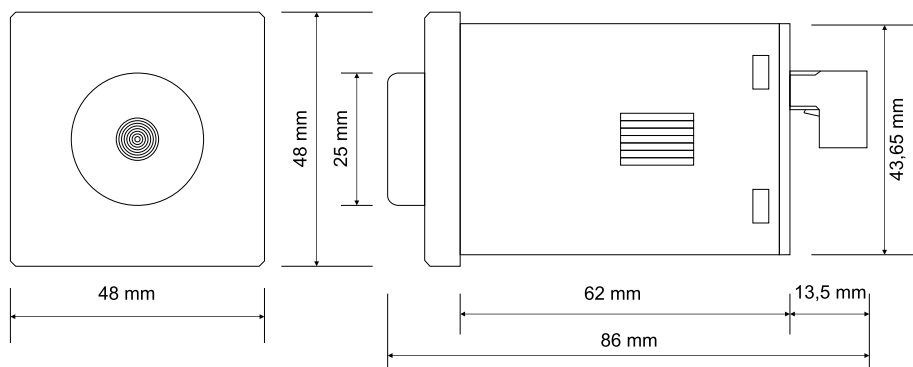
↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Time	: 0.1sec - 60 min.
Display	: On led and Out led
Connection Type	: Plug-in Terminal
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <90gr.
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

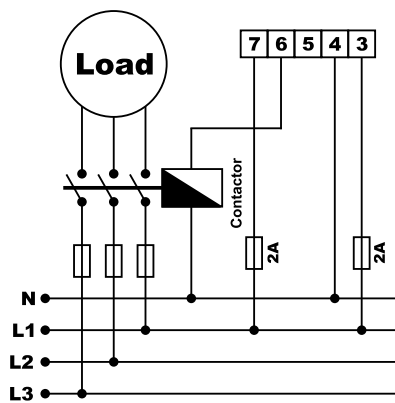
ERP-XX is a time relay delayed in drawing and designed to be used where time based control is required (industry, house, factory etc.). Waiting time (t) is adjusted with button. When the device is energized, it starts counting the waiting time. While it is counting the time, ON led lights up and OUT 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.

TECHNICAL DIMENSIONS

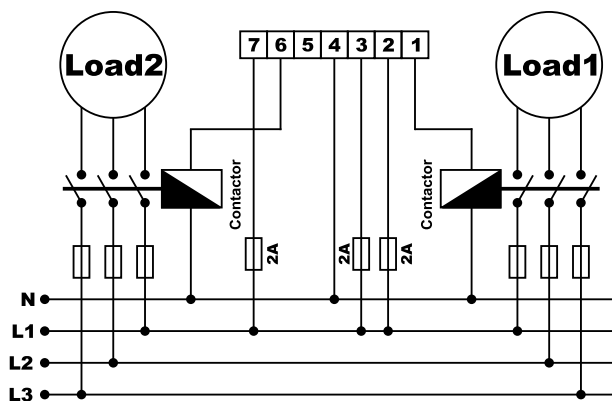


CONNECTION DIAGRAMS

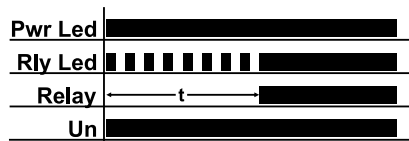
ERP-XXY



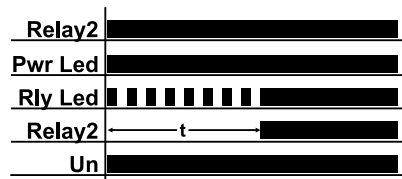
ERP-XXYR



ERP-XXY



ERP-XXYR



↓ PICTURES



ER-08



ERV-08

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC(A1-A2), 24V AC/DC(A3-A2)
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Time	: 0.1sec - 100hours
Display	: On led and Out led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <90gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

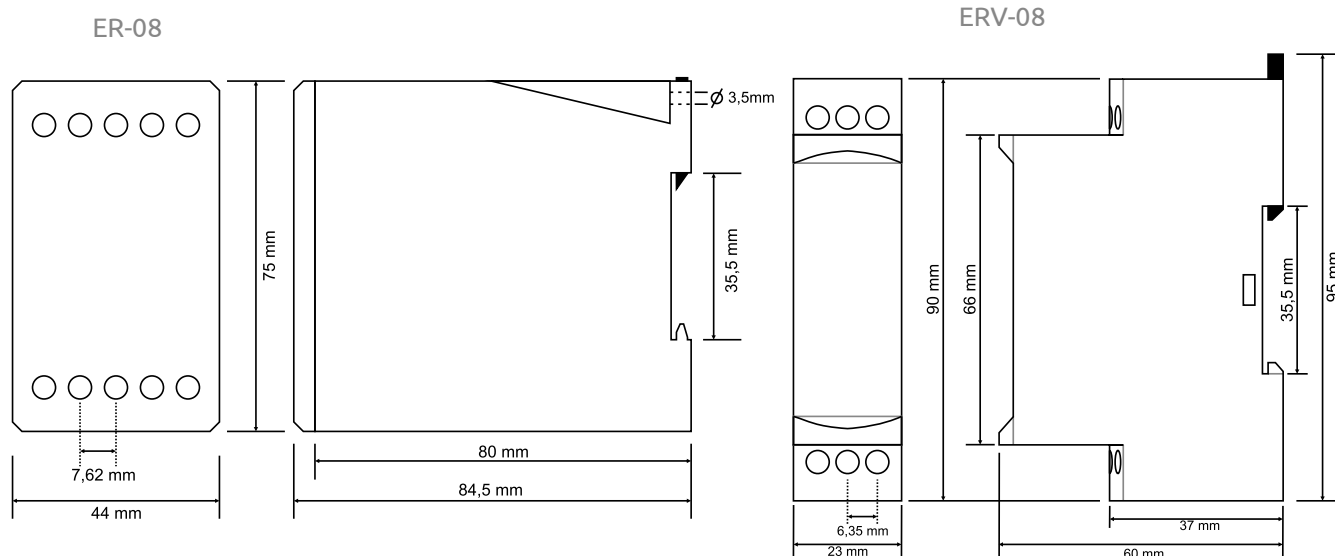
↓ DESCRIPTIONS

ERV-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.

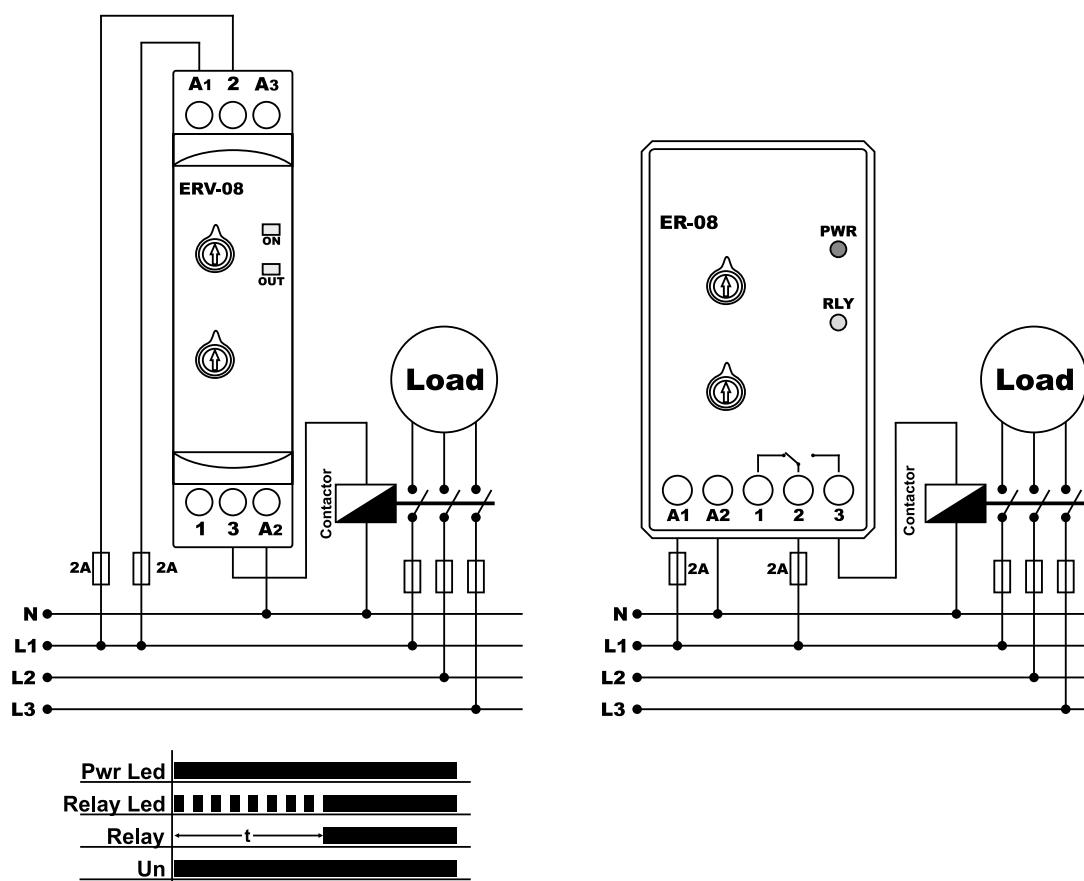
Example: Adjust to 30 seconds. Switch the level set button to B(100s=100saniye). When you switch the time set button to 3, set time value becomes 30 seconds. Time= (Level set button/10) x time set button.

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 are 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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



ERF-09



ERV-09

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
On Time	: 0.1sec - 100hours
Off Time	: 0.1sec - 100hours
Display	: Pwr led ,On led and Off led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <105gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

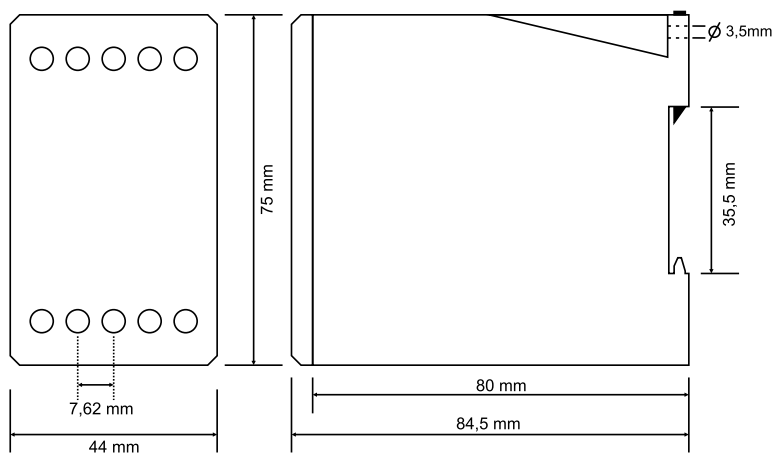
↓ DESCRIPTIONS

ERF-09 is a multi-time flasher relays and 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 (toff) 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.

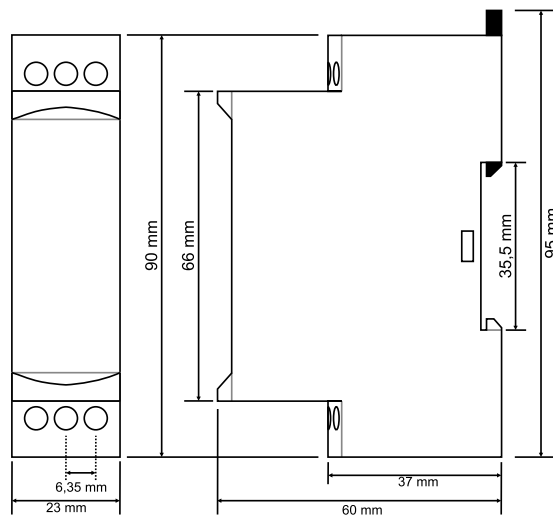
When the device is energized, power led lights up and its starts counting the operating time. While it is counting time, "on" led blinks, "off" led does not light up. At this stage, 2(COM) and 3(NO) contacts are short-circuit, 2(COM) and 1(NC) contacts are open-circuit. When the operating time is up, the device switches to waiting time. While it is counting the waiting time, "off" led blinks, "on" led turns off. At this stage, 2(COM) and 1(NC) contacts are short-circuit, 2(COM) and 3(NO) contacts are open-circuit. After the waiting time is up, the device switches to operating time and when this time is up too, it switches to waiting time. Until the device is de-energized, it operates in flasher mode this way.

TECHNICAL DIMENSIONS

ERF-09

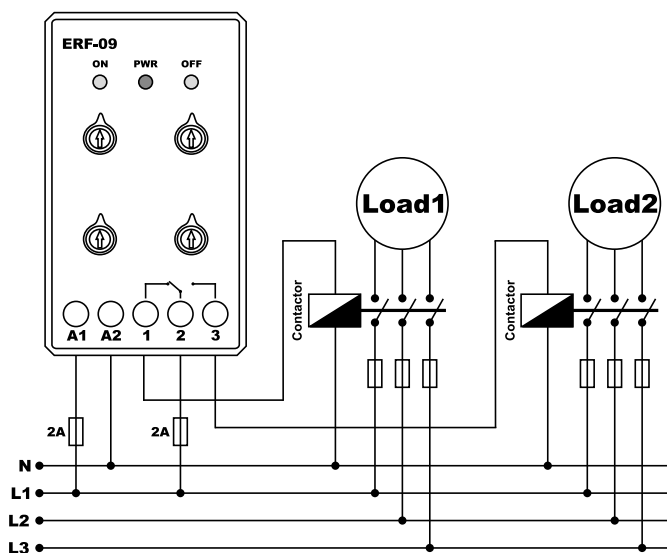


ERV-09

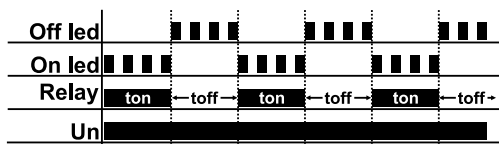
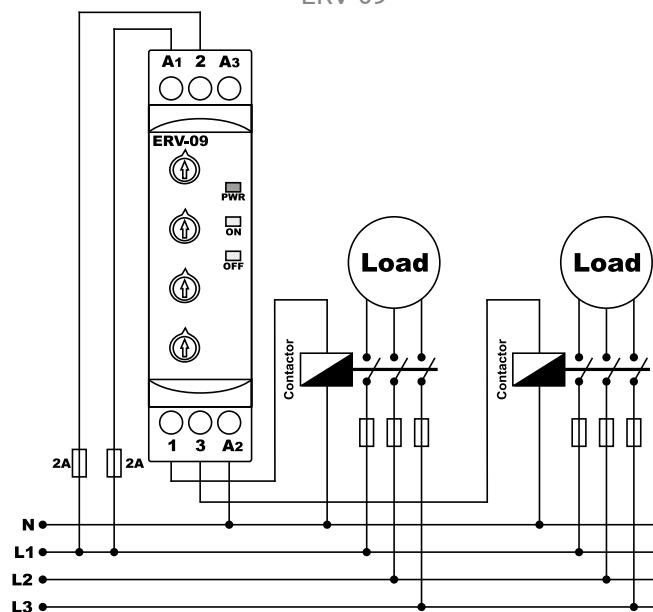


CONNECTION DIAGRAMS

ERF-09



ERV-09



↓ PICTURES



ERP-2F

↓ TECHNICAL PROPERTIES

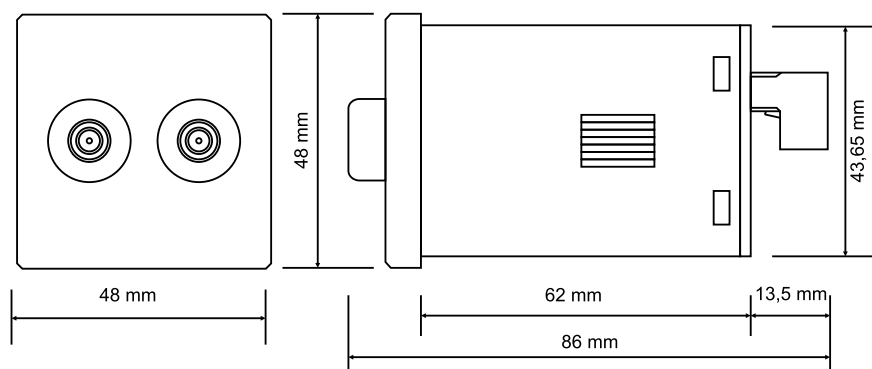
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
ON Time(ton)	: 0.1sec - 60 min.
OFF Time(toff)	: 0.1sec - 60 min.
Display	: On led and Off led
Connection Type	: Plug-in Terminal
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <100gr.
Panel Hole Sizes	: 45mm x 45mm
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

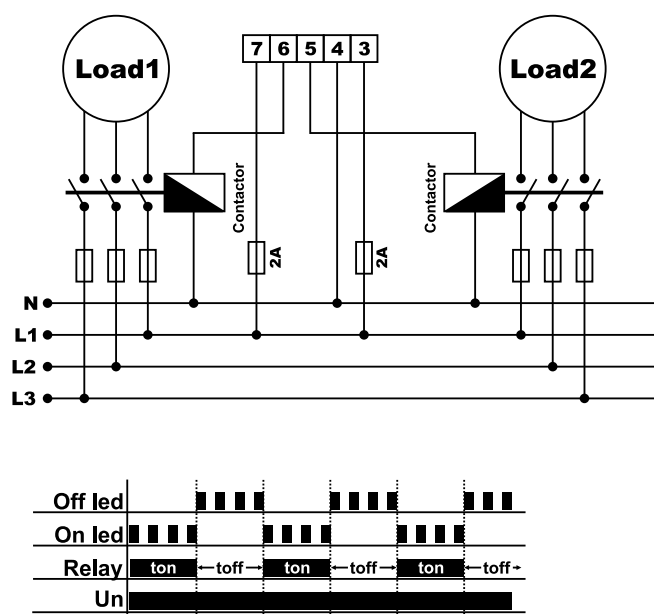
ERP-2F is panel type flasher relay with double adjustment option and designed to be used where time based control is required (industry, house, factory etc.). Operating time is adjusted with "ton" time set button and the waiting time is adjusted with "toff" time set button. Contact output of operating time is 6(NO) and contact output of waiting time is 5(NC).

When the device is energized, it starts counting the operating time. While it is counting the operating time, "on" led blinks, "off" led does not light up. At this stage, 7(COM) and 6(NO) contacts are short-circuit, 7(COM) and 5(NC) contacts are open-circuit. When the operating time is up, the device switches to waiting time. When it is counting the waiting time, "off" led blinks and "on" led turns off. At this stage, 7(COM) and 5(NC) contacts are short-circuit, 7(COM) and 6(NO) contacts are open-circuit. After the waiting time is up, the device switches to operating time and when this time is up too, it switches to waiting time. Until the device is de-energized, it operates in flasher mode this way.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



ER-2F2

↓ TECHNICAL PROPERTIES

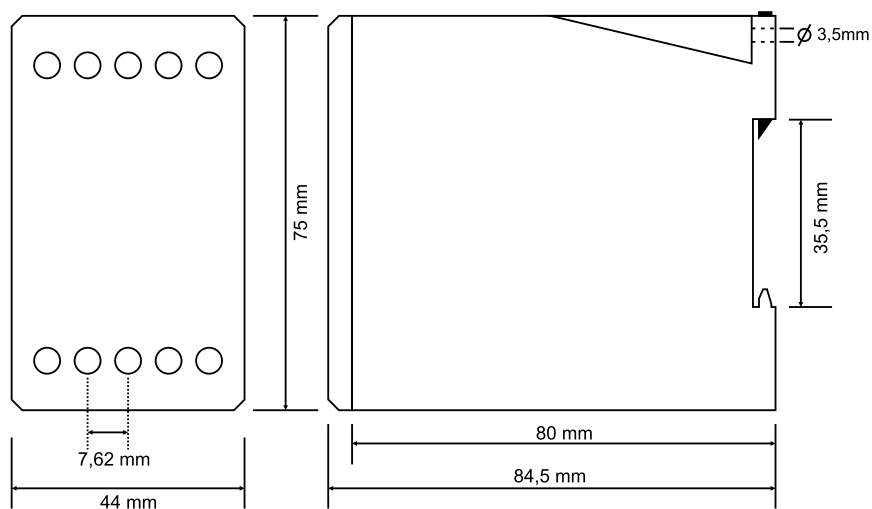
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
ON Time(on)	: 0.1sec - 60 min.
OFF Time(off)	: 0.1sec - 60 min.
Display	: Power, On and Off led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <100gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

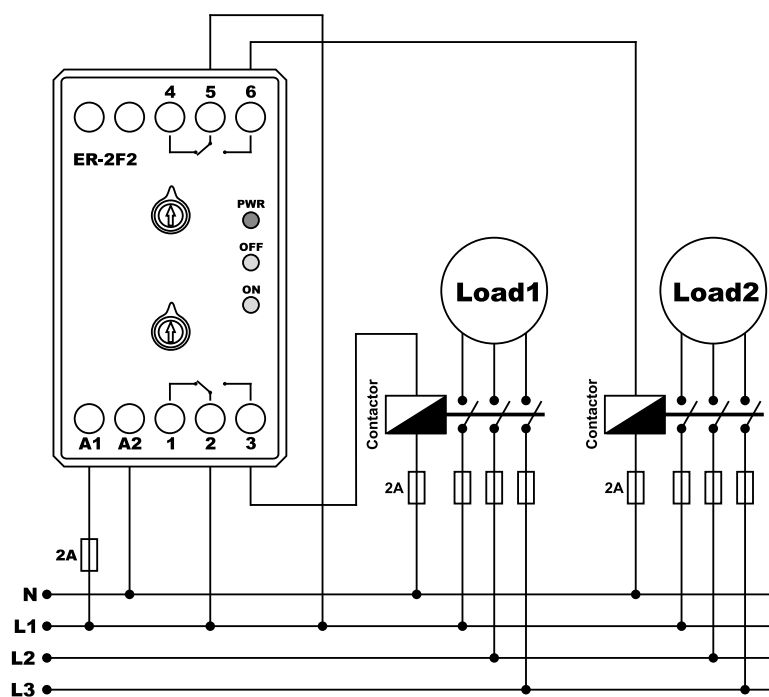
ER-2F2 is a flasher relay with double adjustment option and designed to be used where time based control is required (industry, house, factory etc.). Operating time is adjusted with "ton" time set button and the waiting time is adjusted with "toff" time set button.

When the device is energized, it starts counting the operating (ON) time. While it is counting the operating time, "on" led lights up; 2(COM) and 3(NO) contact terminals as well as 5(COM) and 6(NO) contact terminals become short-circuit. When the operating time is up, the device switches to waiting (OFF) time. When it is counting waiting time, "off" led lights up; 1(NC) and 2(COM) contact terminals as well as 4(NC) and 5(COM) contact terminals become short-circuit. After the waiting time is up, the device switches to operating time and when this time is up too, it switches to waiting time. Until the device is de-energized, it operates in flasher mode this way.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



MULTI FUNCTIONAL RIGHT-LEFT RELAY WITH DOUBLE-ADJUSTMENT

↓ PICTURES



ERS-07

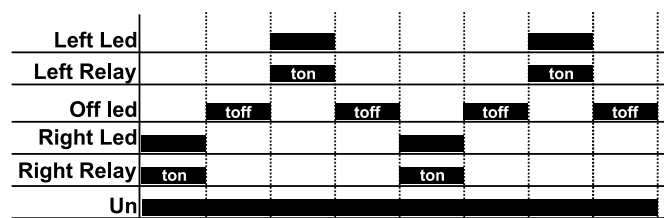
↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
ON Time	: 0.1sec. - 100 min.
OFF Time	: 0.1sec. - 100 min.
Display	: Off led , Right led and left led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <125gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

ERS-07 is a multi-time right/left relay with double-adjustment and designed to be used where time based control is required (industry, house, factory etc.). There are 4 different time levels (10s, 100s, 10m and 100m). Operating (ton) time is applied for both right and left contacts. 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 set button under this is the level set button of the operating time. "toff" is written under the time set button of the waiting (toff) time. The set button under this is the level set button of the waiting time.

When the device is energized, right (Right Rly) contact terminals become short-circuit and it starts counting the right operating (ton) time. At this stage, "right" led lights up and "Left Rly" contact terminals become open-circuit. After the right operating time is up, it starts counting the waiting time. While it is counting the waiting (toff) time, right contact terminals become open circuit, right led turns off and the waiting time led (off) lights up. After the waiting time is up, it starts counting the left operating (ton) time. While it is counting the left operating time, left contact terminals become short-circuit, the waiting (off) led turns off and left led lights up. After the left operating time is up, it switches to the waiting time. After the waiting time is up, it switches to right operating time. The device continues this way until it is de-energized.



↓ PICTURES



ER-2S

↓ TECHNICAL PROPERTIES

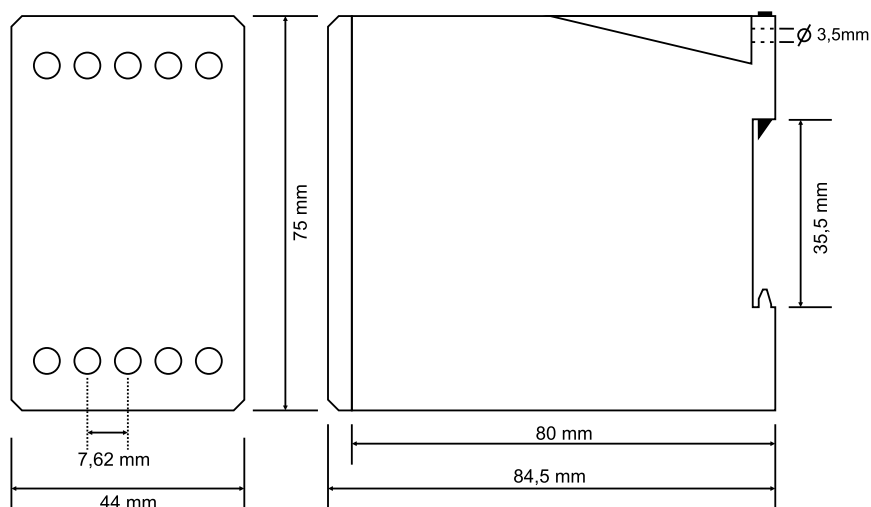
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
ON Time	: 1sec. - 90sec.
OFF Time	: 1sec. - 90sec.
Display	: Right led and left led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <125gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

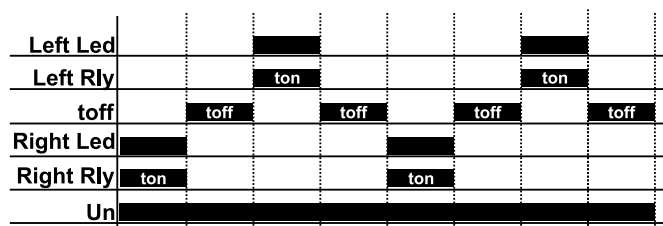
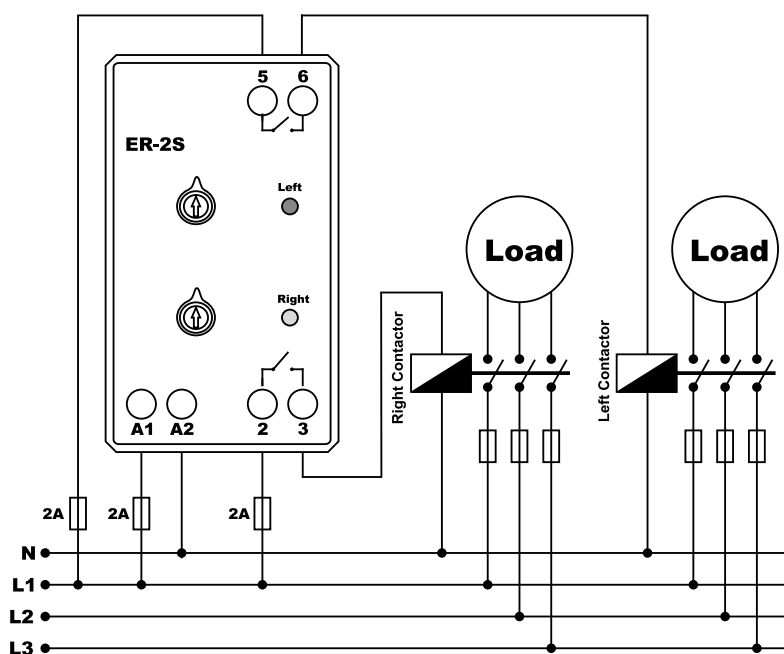
ER-2S is right/left relay with double-adjustment and designed to be used where time based control is required (industry, house, factory etc.). Operating (ton) time is applied for both right and left contacts. "ton" is written on the right side of the time set button of the operating time. "toff" is written on the right side of the time set button of the waiting (toff) time.

When the device is energized, right contact terminals no 2(COM) and 3(NO) become short-circuit and it starts counting the right operating (ton) time. At this stage, right led lights up and left contact terminals no 5(COM) and 6(NO) are open-circuit. After the right operating time is up, it starts counting the waiting time. While it is counting the waiting (off) time, right contact terminals become open circuit and the right led turns off. After the waiting time is up, it starts counting the left operating (ton) time. While it is counting the left operating time, left contact terminals become short-circuit and the left led lights up. After the left operating time is up, it switches to the waiting time. After the waiting time is up, it switches to right operating time. The device continues this way until it is de-energized.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



RIGHT-LEFT RELAY

↓ PICTURES



ER-S

↓ TECHNICAL PROPERTIES

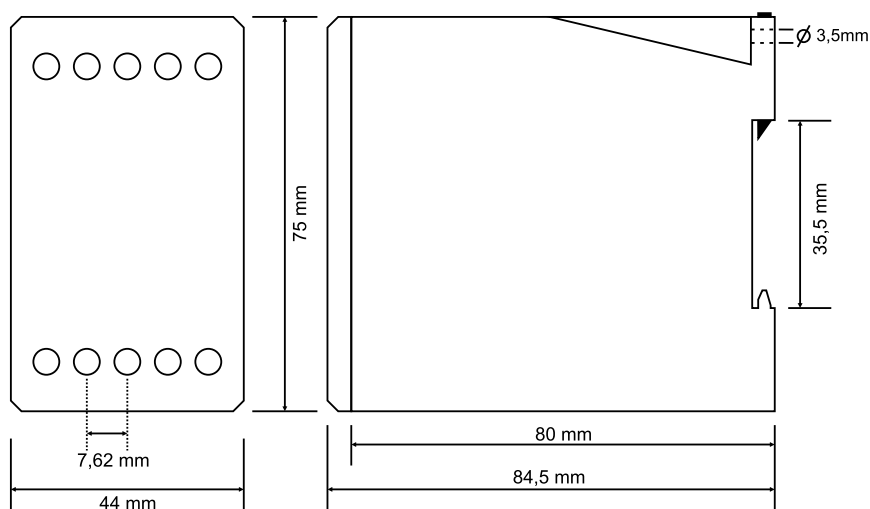
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
ON Time	: 1sec. - 90sec.
OFF Time	: 4sec.(fixed)
Display	: Right led and left led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <125gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

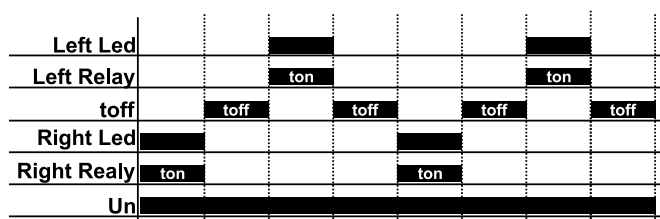
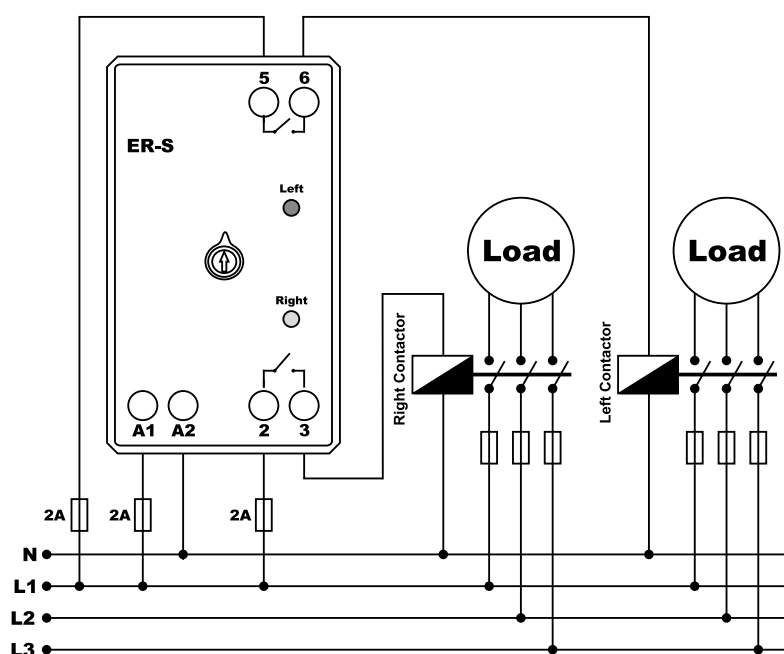
ER-S is adjustable right/left relay and designed to be used where time based control is required (industry, house, factory etc.). Operating (ton) time is applied for both right and left contacts. There is a single adjusting button and it adjusts the operating time. Waiting time is fixed and about 4 sec.

When the device is energized, it starts counting the waiting time. While it is counting the waiting time, right contact terminals no. 2(COM) and 3(NO) as well as left contact terminals no. 5(COM) and 6(NO) are open-circuit. After the waiting time is up, it starts counting the right operating time. While it is counting the operating time, right contact terminals no. 2(COM) and 3(NO) become short-circuit, right led lights up and left contact terminals no. 5(COM) and 6(NO) are open-circuit. After the operating time is up, it starts counting the waiting time. While it is counting the waiting (off) time, the right and left contact terminals become open circuit and the right led turns off. After the waiting time is up, it starts counting the left operating (ton) time. While it is counting the left operating time, left contact terminals become short-circuit and the left led lights up. After the left operating time is up, it switches to the waiting time. After the waiting time is up, it switches to right operating time. The device continues this way until it is de-energized.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



STAR DELTA RELAY

↓ PICTURES



ERV-YU

↓ TECHNICAL PROPERTIES

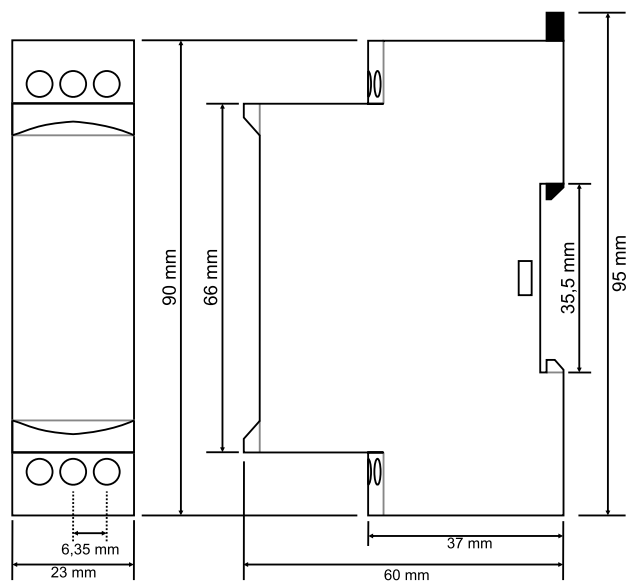
Operating Voltage(Un)	: 150V – 260V AC(A1-A2), 24V AC/DC(A3-A2)
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Star Waiting Time	: 0.1sec - 30sec.
Star to Delta Transition Time	: 10msec - 500msec.
Display	: On led, star led and delta led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

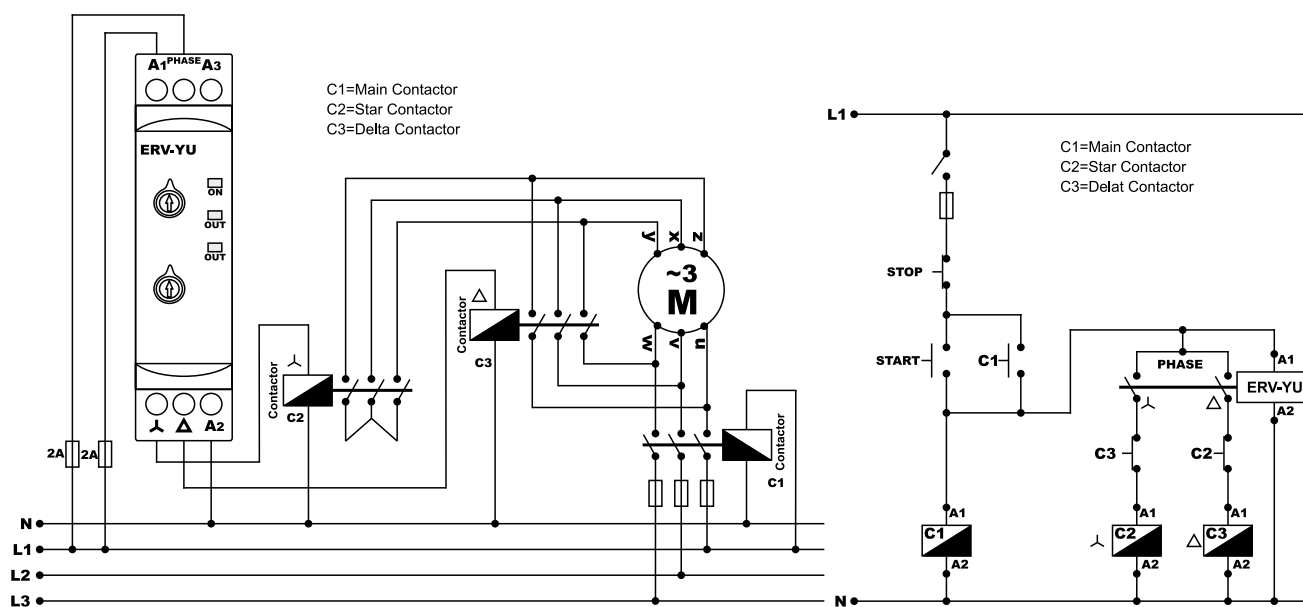
ERV-YU star delta relay is designed to control the three-phase motor take-offs. There are star contact waiting time set button (1sec.– 30sec.) and the time set button for drawing the delta contact after releasing the star contact (10msn.– 500msn.)

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 light 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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



Delta Led		
Delta Relay		
Waiting Time		
Star Led		
Star Relay		
Un		

START-STOP RELAY

↓ PICTURES



ER-ST

↓ TECHNICAL PROPERTIES

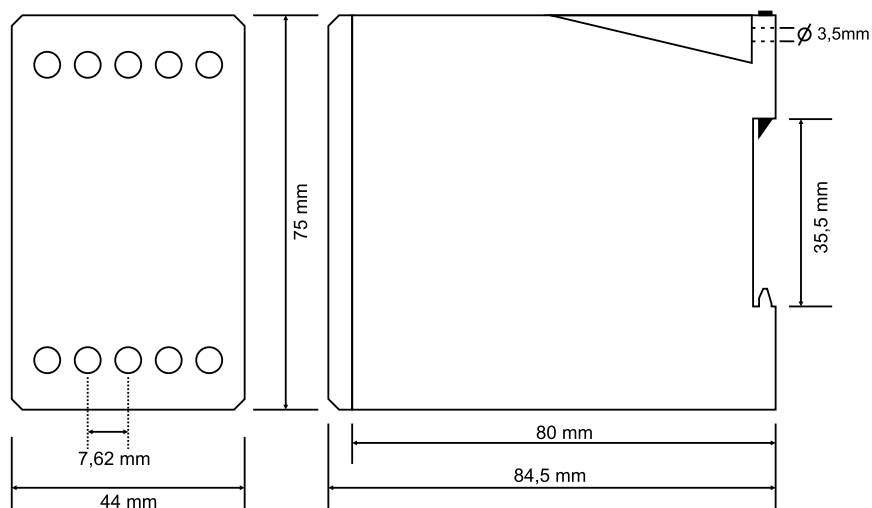
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Display	: Power led and relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <90gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

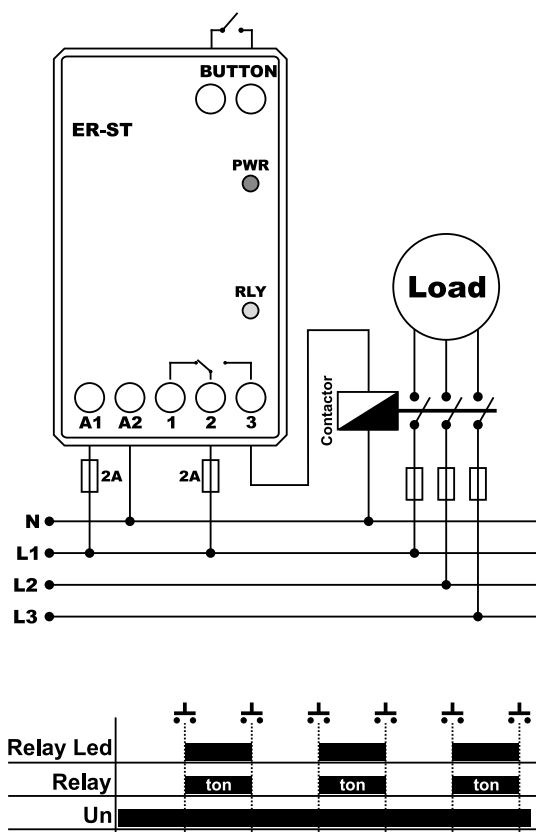
ER-ST start stop relay is designed to control the loads by electronic sealing with a single button.

When the device is energized, "on" led lights up, the contact terminals no. 2(COM) and 1(NC) are short-circuit and the contact terminals no. 2(COM) and 3(NO) become open-circuit. When the button is pressed, the relay led lights up, contact terminals no. 2(COM) and 3(NO) become short-circuit and contactor terminals no. 2(COM) and 1(NC) become open-circuit. Whenever the button is pressed, the contact terminals switches and it maintains the contact position in this way until the next button is pressed.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



IMPULSE DELAYED TIME RELAY

↓ PICTURES



ER-DG

↓ TECHNICAL PROPERTIES

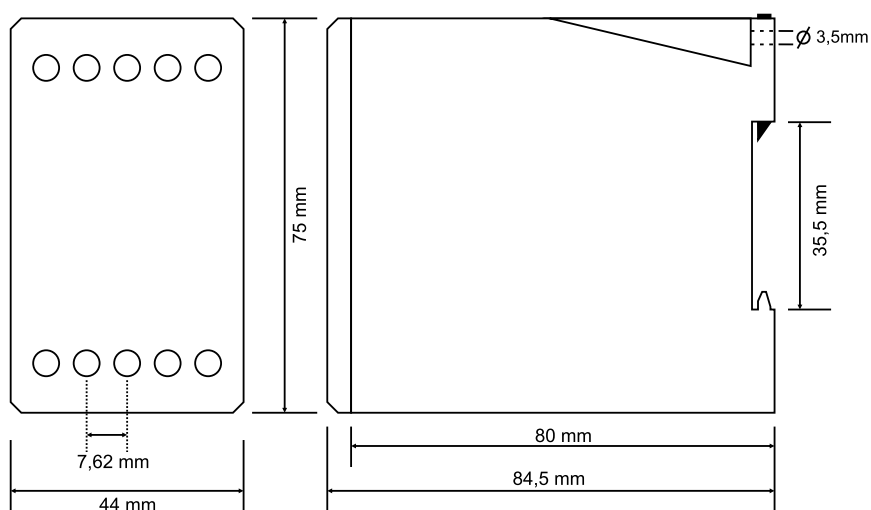
Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Display	: Power led and relay led
Waiting Time	: 0,1sec. - 6sec.
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <150gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

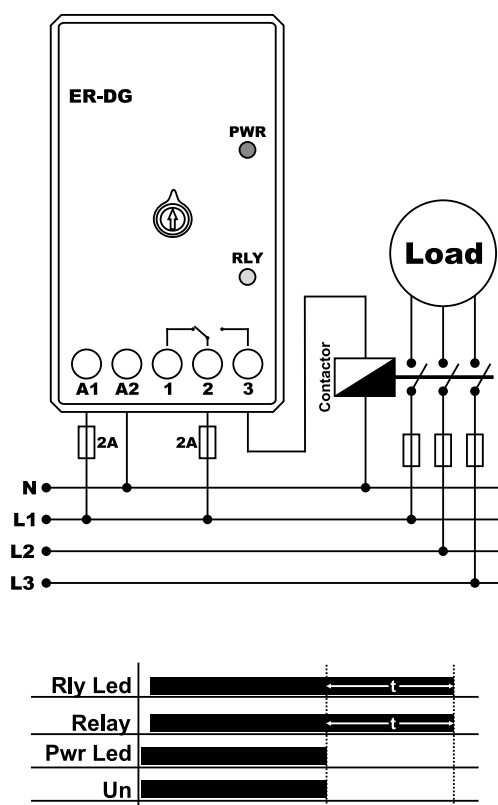
ER-DG impulse delayed time relay is designed to control the loads to engage after de-energizing.

When the device is energized, "on" led lights up, the contact terminals no. 2(COM) and 1(NC) are short-circuit and the contact terminals no. 2(COM) and 3(NO) become open-circuit. After about 1-2 seconds, the relay led lights up, the contact terminals no. 2(COM) and 1(NC) are open-circuit and the contact terminals no. 2(COM) and 3(NO) become short-circuit. While the device is de-energized, "on" led turns off and the device starts counting the adjusted latency time. After the latency time is up, the relay led turns off, the contact terminals no. 2(COM) and 1(NC) are short-circuit and the contact terminals no. 2(COM) and 3(NO) become open-circuit.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



TBM-50

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Washing Time	: 30sec. (Tm1), 60sec. (Tm2), 90sec. (Tm3) 120sec. (Tm4), 180sec. (Tm5)
Rinse Time	: 1sec. - 30sec.
Waiting Time	: 3sec.(fixed)
Display	: Washing Time, washing and rinse leds
Connection Type	: Terminal connection
Contact	: 7A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <300gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Adjust the rinsing time that you want with the set button available on the cover of the device.

In order to determine the washing time, short out with one of the terminals Tm1(30s.), Tm2(60s.),Tm3(90s.),Tm4(120s.) or Tm5(180s.) by using Tout terminal according to the time you selected.

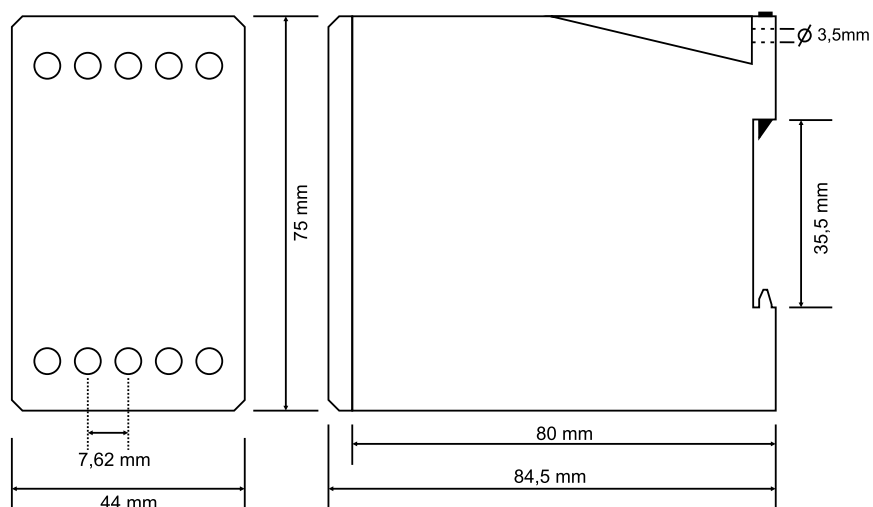
When the device is energized, the led related to the time value that you selected and the washing led light up at first and the washing motor (A1 input phase) output is opened. After the washing time is up, the washing led turns off and the washing motor output is shut. After the device counts the waiting time of 3 sec, it starts counting the adjusted rinsing time. When it switches to the rinsing time, the rinsing led lights up and the rinsing motor (A1 input phase) output is opened. After the rinsing time is up, the rinsing led turns off and the rinsing motor output is shut.

Note: If the washing time has not been adjusted (time terminal has not been shortened) when the device is energized, it shuts the output and waits the washing time to be set.

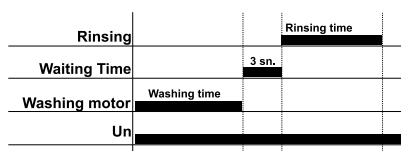
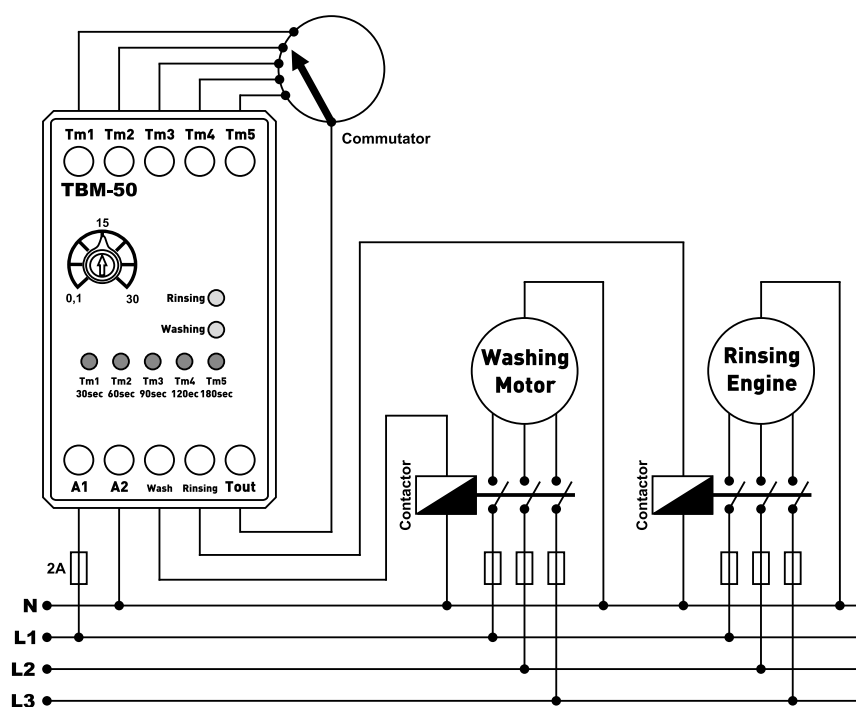
Note: Do not externally energize the Tout, Tm1,Tm2,Tm3,Tm4 and Tm5 terminals of the device.

Note: The washing and motor outputs are supplied by A1 phase input.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DHM-DIN



DHM-48

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Max. Time	: 99.999 hours
Precision	: 1/10.000sec.
Display	: 9,2mm 2x3digit display
Connection Type	: Plug-in Terminal(DHM-48)
Cable Diameter	: 1.5mm ² (DHM-48), 2.5mm ² (DHM-DIN)
Weight	: <100gr.
Panel Hole Sizes	: 48mm x 48mm (DHM-48)
Mounting	: Front panel mounted (DHM-48) Vertical assembled in the panel or assembled on the din rail (DHM-DIN)
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Operating time counter is designed to calculate the operating duration between a certain time of period (max.99.999hours) of a load operating with a network.

Connect the device to the load the operating time of which you want to measure. When the device is energized first, it starts counting the time from hour(3 digits), minute (2 digits) and seconds (1 digit) 0

When the device is de-energized, it saves its latest time. When the device is re-energized, it counts starting from its latest time. The device counts up to 99.999 hours at maximum. After this time is up, it counts the section of second.

The second section increases by one every 6 seconds under 1000 hours.

The second section increases by one every 10 minutes over 1000 hours.

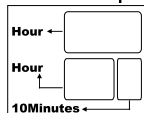
DHM-DIN:

Hold down the reset button for about 5 seconds by using the non-conductive bar through the electric terminal screw hole where "reset" is written to reset the time of the device and see the values on the display are reset.

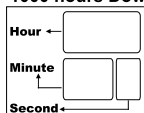
DHM-48 :

Hold down the reset button for about 5 seconds to reset the time of the device and see the values on the display are reset.

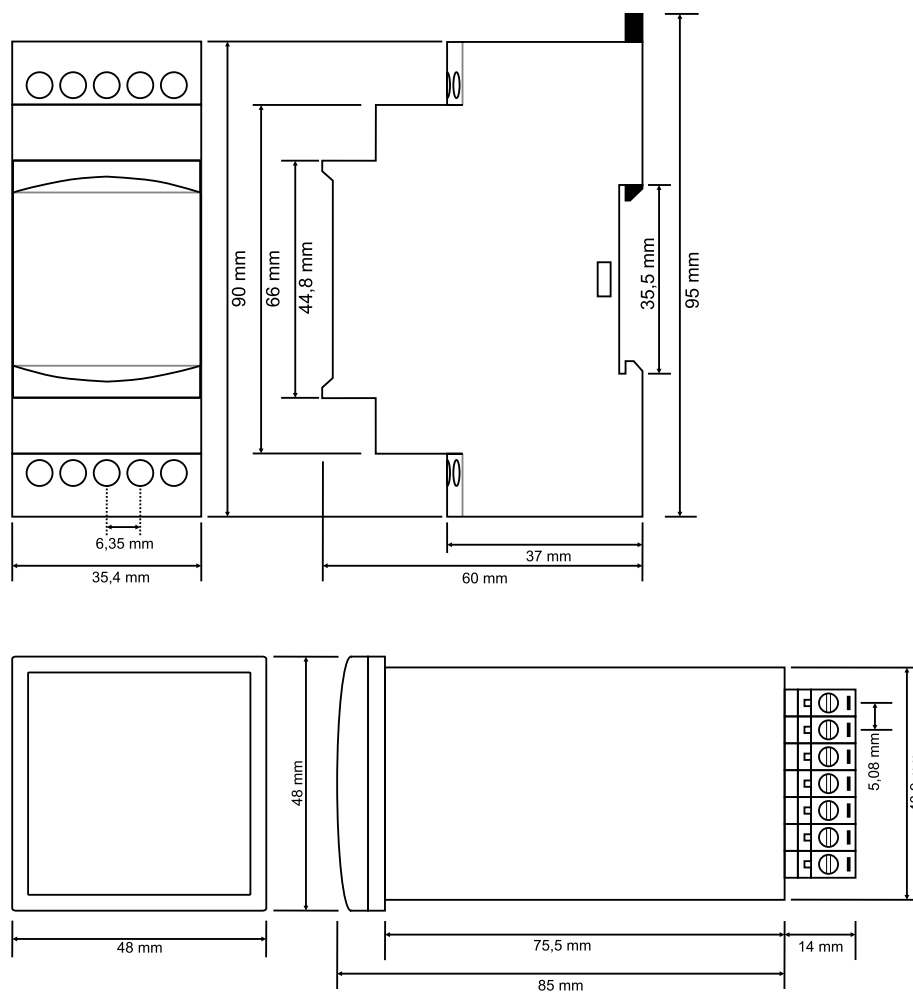
1000hours Up



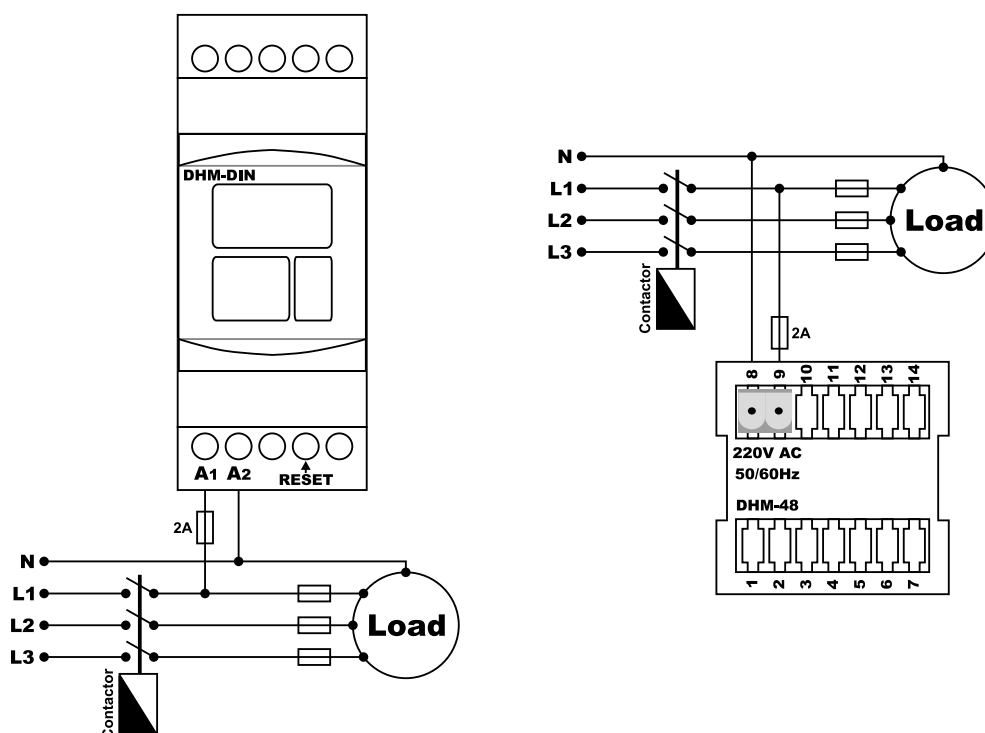
1000 hours Down



TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



FT-04



FT-GR



FT-G

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V - 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Lux Measurement Range	: 1 - 10 Lux (FT-04), 10 Lux fixed (FT-GR)
Waiting (t)	: 15sec.(fixed)
Connection Type	: Terminal connection
Contact	: 5A/250V AC (FT-04), 7A/250V AC (FT-GR)
Cable Diameter	: 2.5 mm ² (FT-04), 1mm ² 3x15 cm (FT-GR)
Weight	: <100gr.
Mounting	: Vertical wall mounting.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

FT-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 open-circuit. 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.

FT-GR:

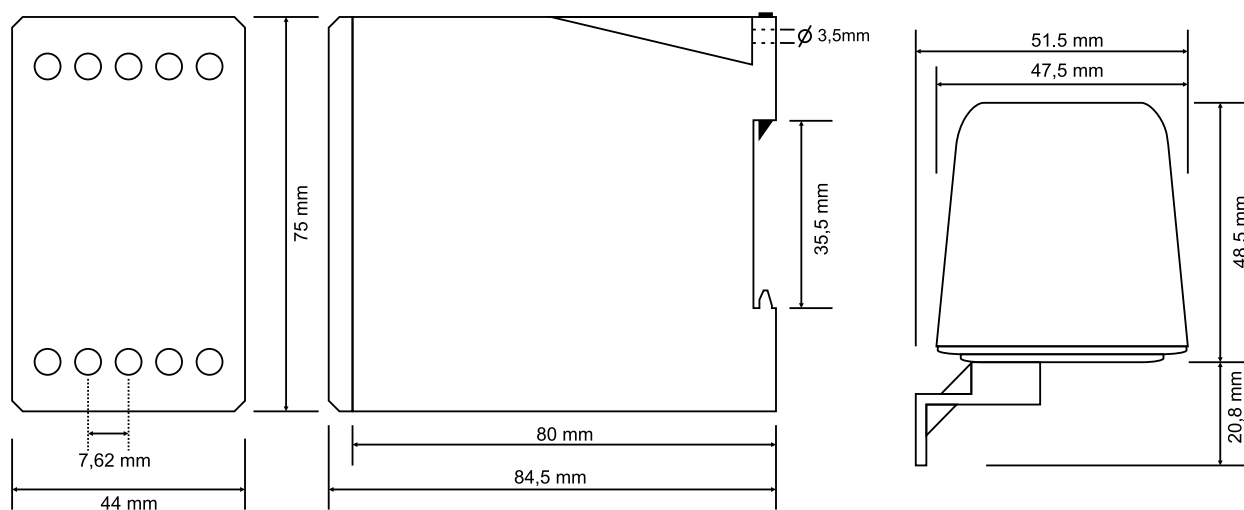
It has been designed for the systems requiring control depending on the light intensity.

When the device is energized for the first time, it does not conduct the energy on the phase input (blue) to the phase output (brown). If the lux value of the area where the photocell element is mounted is lower than 10 lux, the device counts for about 15 seconds and the energy on the phase input (blue) is conducted to the phase output (brown).

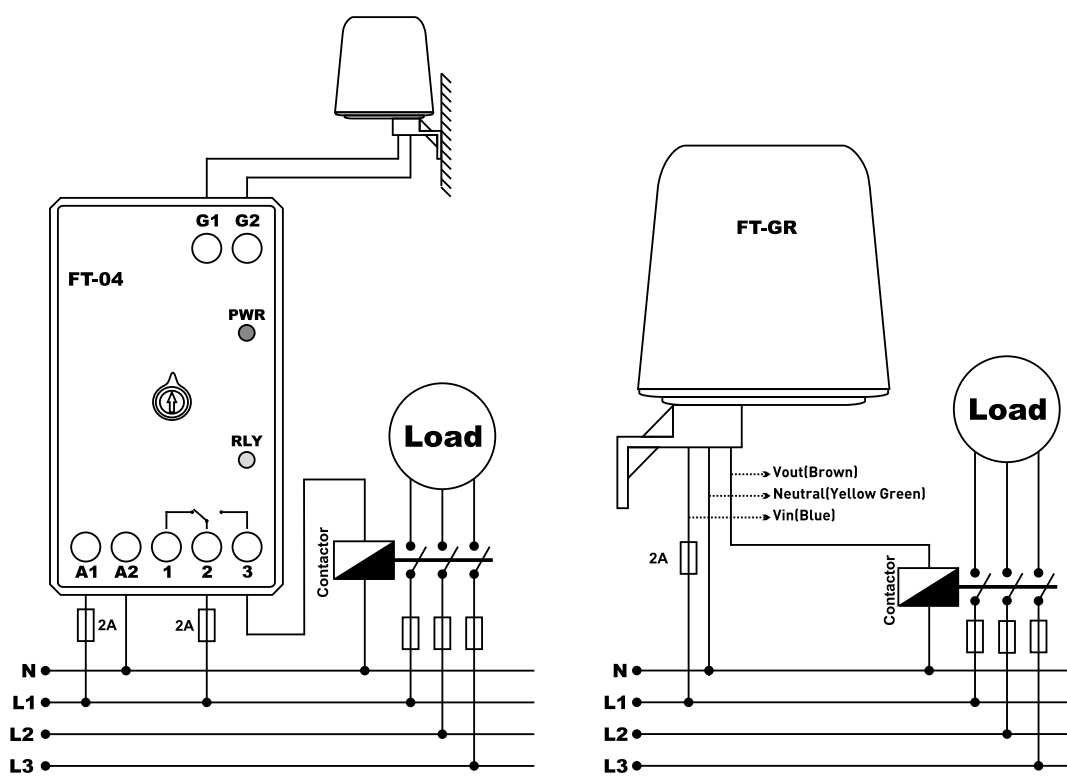
If the lux value of the area where the photocell element is mounted is higher than 10 lux, the device counts for about 15 seconds and the energy on the phase input (blue) is not conducted to the phase output (brown).

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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



HSR-D3

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V – 260V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set	: 220V - 300V
Low Voltage Set	: 140V - 230V
Hydrophore Working Time	: 1min. - 850min.
Switch Protection Time	: 1min. - 850min.
Number of Pressure Switch	: 2, 3
Number of Hydrophore	: 2, 3
Display	: 2x16 LCD
Connection Type	: Plug-in Terminal
Contact	: 3A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <310gr.
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

HSR-D3 hydrophore sequencing relay is designed for adjusting the hydrophore number according to the pressure ratio on installations operated with hydrophores having precise operation voltage.

Operation with 2 pressure switches and 2 hydrophore.

Operation with 3 pressure switches and 3 hydrophore.

If the pressure on the installation is lower than the low pressure value set on the pressure switch, the switch contactor is closed.

If the pressure on the installation is higher than the high pressure value set on the pressure switch, the switch contractor is opened.

High and low voltage can be adjusted,

Voltage asymmetry can be adjusted,

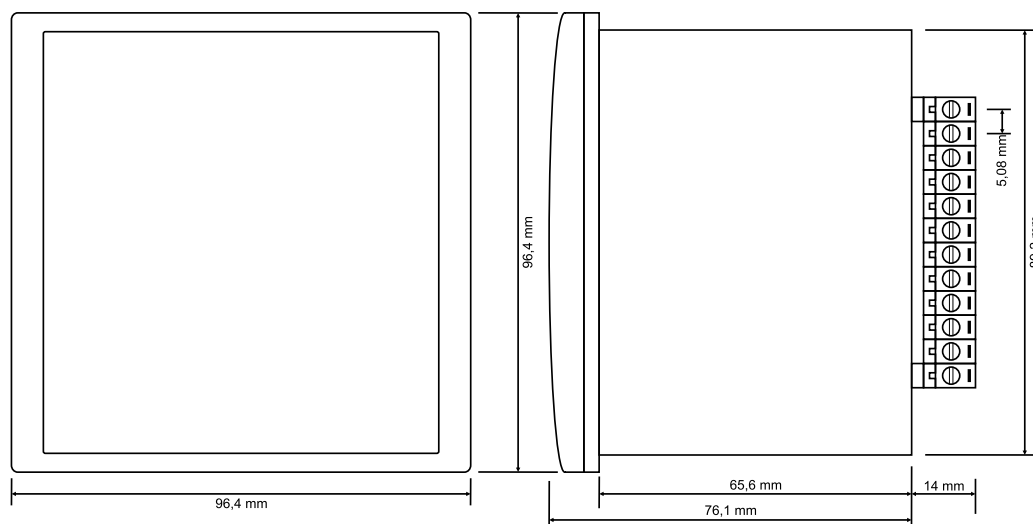
Hydrophore operation time can be adjusted,

Switch protection time can be adjusted,

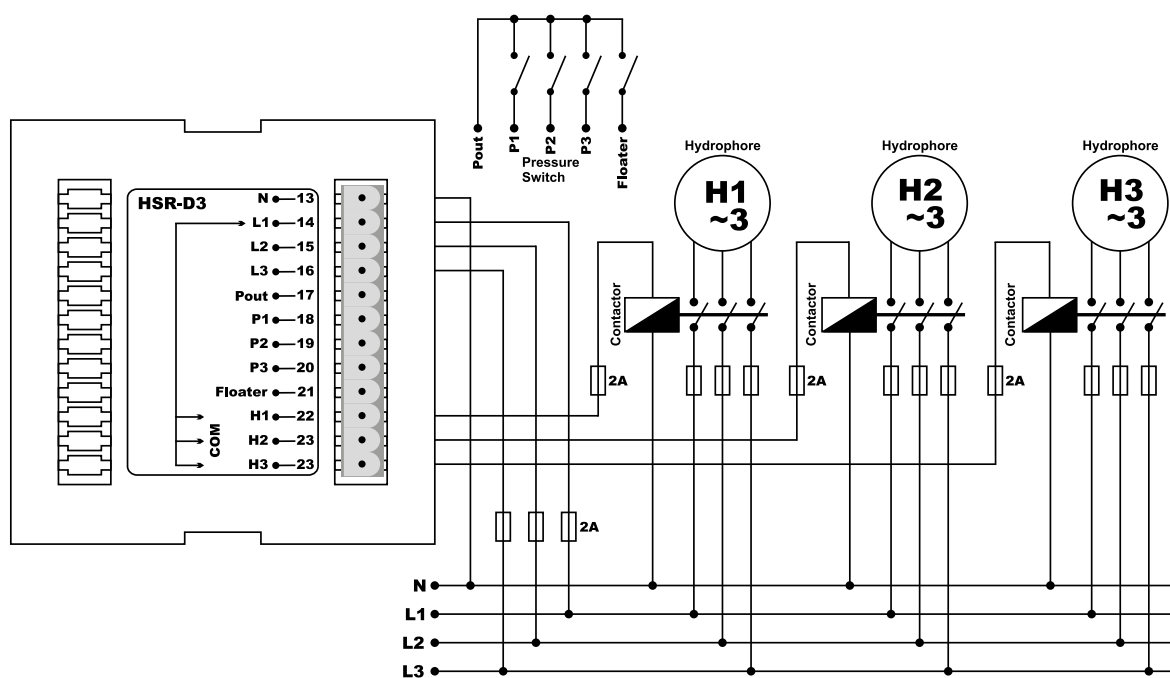
Start-up time can be adjusted.

Hydrophore number can be adjusted.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



HSR-02



HSR-03

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Time(t)	: 10min.(fixed)
Number of Pressure Switch	: 2 (HSR-02), 3 (HSR-03)
Number of Hydrophore	: 2 (HSR-02), 3 (HSR-03)
Display	: Power led, input and output leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Hydrophore sequencing relay is designed for adjusting the number of hydrophores on the installations operated with hydrophores and providing that the hydrophores are operated for equal time periods and in sequence.

HSR-02

Operation with 2 pressure switches and 2 hydrophore.

If the pressure on the installation is lower than the low pressure value set on the pressure switch, the switch contactor is closed.

If the pressure on the installation is higher than the high pressure value set on the pressure switch, the switch contractor is opened.

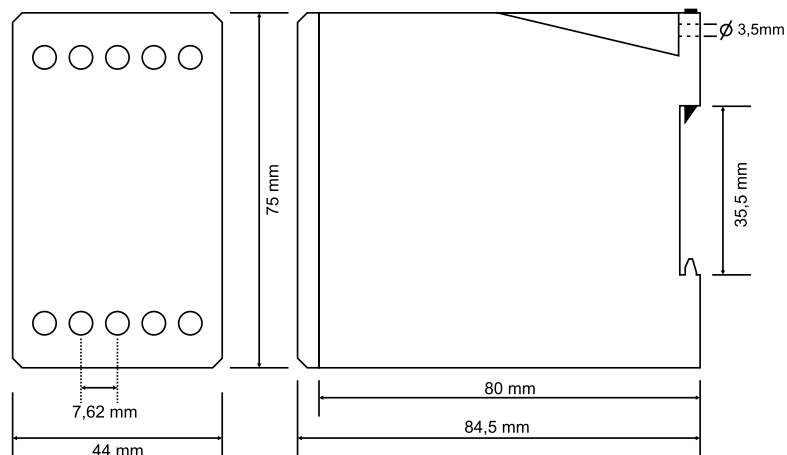
HSR-03

Operation with 3 pressure switches and 3 hydrophore.

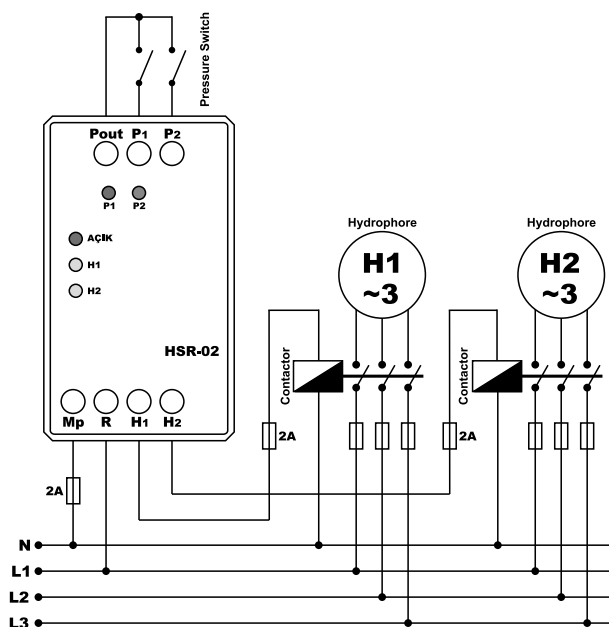
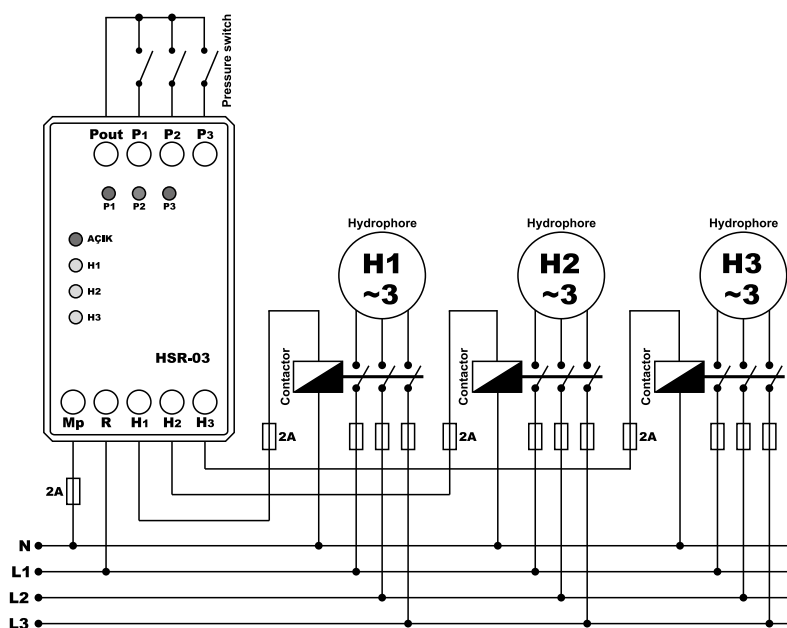
If the pressure on the installation is lower than the low pressure value set on the pressure switch, the switch contractor is closed.

If the pressure on the installation is higher than the high pressure value set on the pressure switch, the switch contractor is opened.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



TDK-01



TDK-02

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 260V – 470V AC
Operating Frequency	: 50Hz.
Operating Power	: <8VA
Operating Temperature	: 0°C – 55°C
High Voltage Set	: 390V - 500V AC
Low Voltage Set	: 260V - 370V AC
High Current Set	: 1A - 120A (TDK-01), 2A- 300A (TDK-02)
Low Current Set	: 1A - 120A (TDK-01), 2A- 300A (TDK-02)
Precision	: <50KΩ
Display	: 4x20LCD display and 2 x leds
Connection Type	: Plug-in Terminal
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <850gr.
Panel Hole Sizes	: 140mm x 140mm
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

TDK-01 three-phase relays for controlling motor pumps are designed for protecting motor pumps and water motors against failure likely to arise from dry operation and also current and voltage fluctuations. When you energize the device by connecting it according to the connection diagram, you should make required adjustment in terms of voltage and current values. Default settings may not be suitable for the pump to be used.

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

-While the pump is draining water within the well, do not directly contact (using, drinkin or swimming) with water. Otherwise, if the material isolating water from energy is damaged, serious injuries or even death may occur.

-High and low voltage can be adjusted,

-High and low current can be adjusted,

-Demurrage (starting) Multiplier and time can be adjusted,

- Current auto reset time and current auto reset number can be adjusted,

- Current error waiting time can be adjusted,

- Motor maintenance time can be adjusted,

- It can be operated in flasher mode,

-High and low cosine can be adjusted,

-Liquid conductivity level can be adjusted,

It can be used with star-delta contactor terminals,

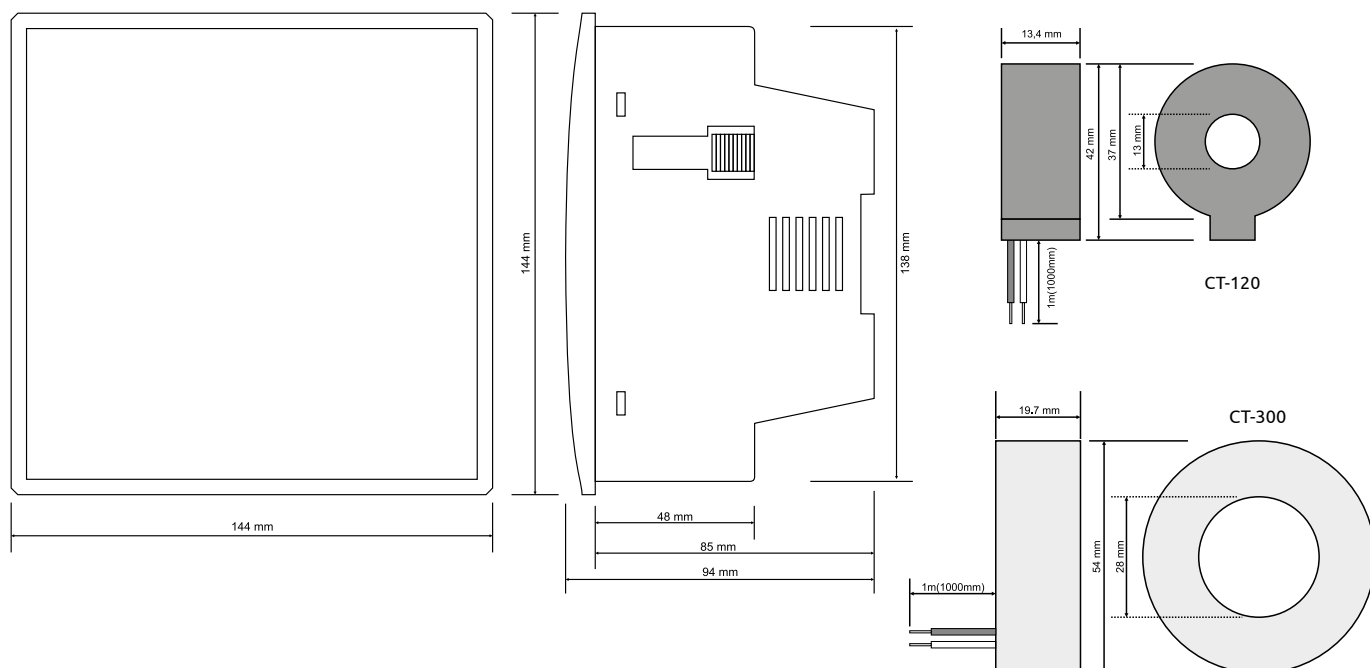
It can be operated without electrode,

- It prolongs the life of electrodes,

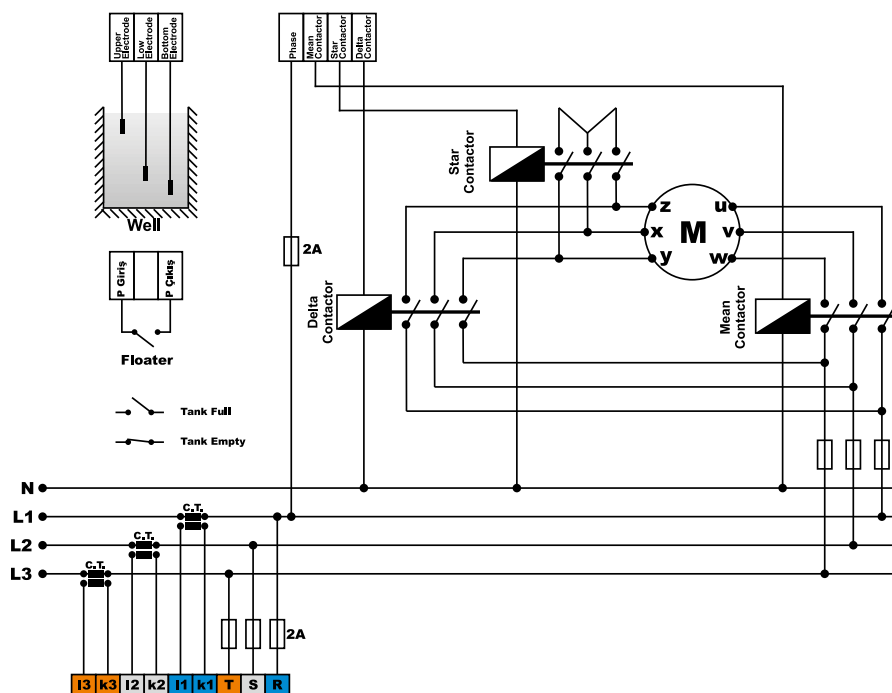
- Upper electrode waiting time can be adjusted,

- It controls wells via electrode and controls tanks via float.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



MDK-02

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V – 280V AC
Operating Frequency	: 50Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set	: 150V - 210V AC
Low Voltage Set	: 230V - 270V AC
High Current Set	: 1A - 60A
Low Current Set	: 1A - 60A
Precision	: <50KΩ
Display	: 14mm 2x3digit display and leds
Connection Type	: Plug-in Terminal
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <325gr.
Panel Hole Sizes	: 91mm x 91mm
Mounting	: Front panel mounted
Protection Class	: IP20
Operating Altitude	: <2000 meter

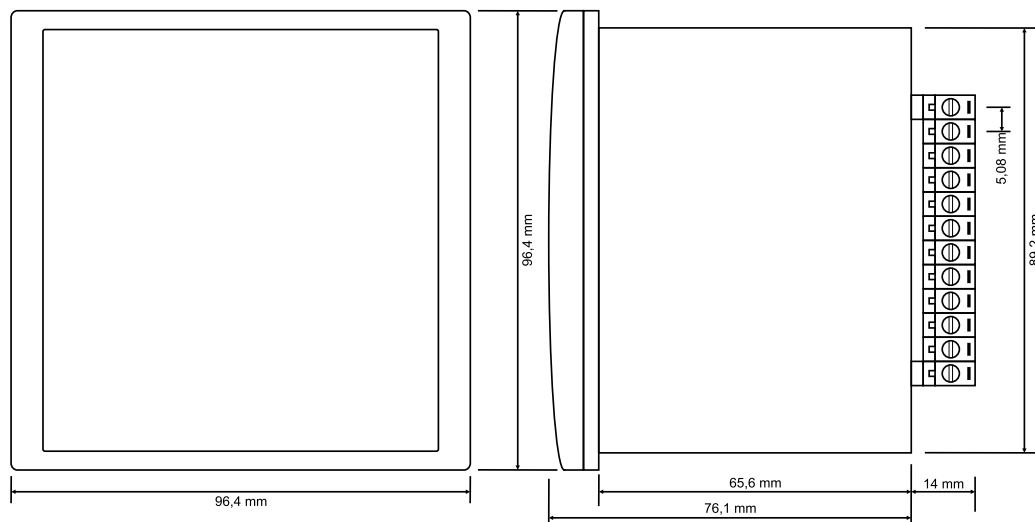
↓ DESCRIPTIONS

MDK-02 mono-phase relays for controlling motor pumps are designed for protecting motor pumps and water motors against failure likely to arise from dry operation and also current and voltage fluctuations. When you energize the device by connecting it according to the connection diagram, you should make required adjustment in terms of voltage and current values. Default settings may not be suitable for the pump to be used.

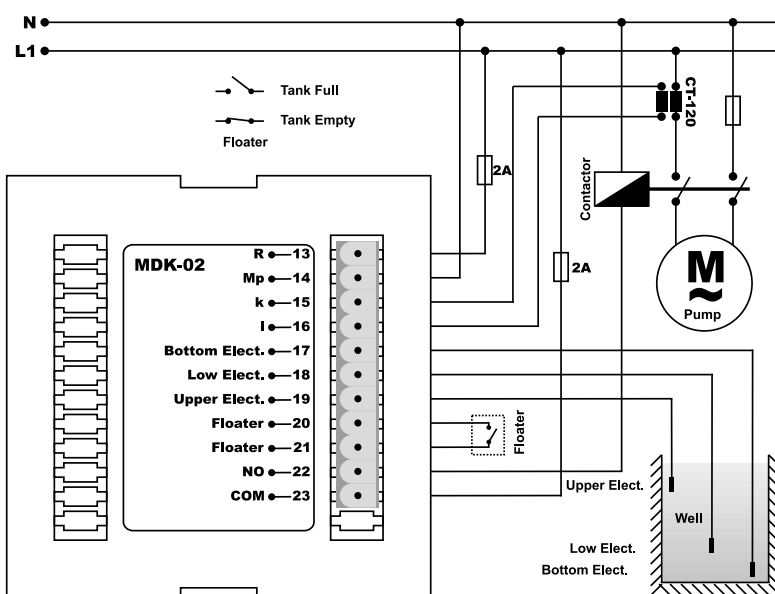
Thanks to stop-start memory feature, when the device is restarted after it is de-energized, last values can be restored. For this feature, the value on the start-stop memory menu should be 1.

- Do not use electrode liquid level relays with flammable and explosive liquids.
- While the pump is draining water within the well, do not directly contact (using, drinking or swimming) with water. Otherwise, if the material isolating water from energy is damaged, serious injuries or even death may occur.
- High and low voltage can be adjusted,
- High and low current can be adjusted,
- Demurrage (starting) Multiplier and time can be adjusted,
- Current auto reset time and current auto reset number can be adjusted,
- Current error waiting time can be adjusted,
- It prolongs the life of electrodes,
- Upper electrode waiting time can be adjusted.
- It controls wells via electrode and controls tanks via float.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



SSR-05



VSR-05



SSE-10

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Precision	: <100KΩ
Display	: Power led and relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ² (SSR-05), 1.5mm ² (VSR-05)
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

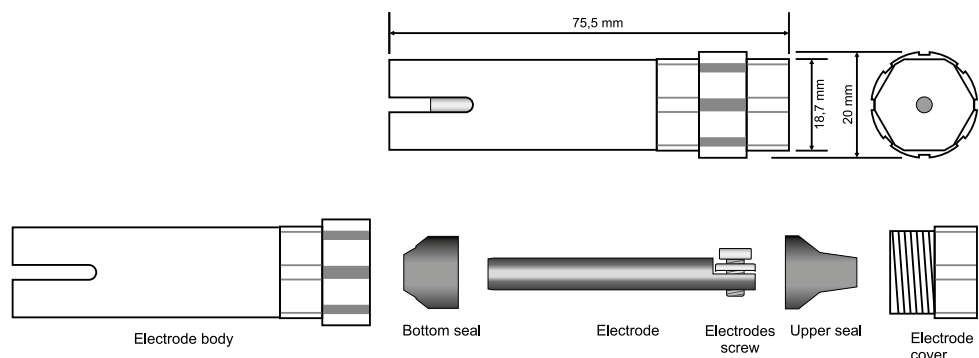
SSR-05 and VSR-05 liquid level relays are designed for controlling drainage of tanks and wells including conductive liquids. The adjusting knob on the device is used to adjust the liquid conductivity level (kΩ) in order to enable the electrodes to detect each other when liquid contact with one electrode.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

After connecting the device according to the connection diagram, energize the device. While adjusting the liquid conductivity, make sure that there is liquid (electrodes contact with liquid) within the well. Turn the adjusting knob to the clockwise direction (maximum 100kΩ) until the correct relay led lights up. When the relay led lights up, turn the adjusting knob a bit more and keep it in that position. By this way, liquid conductivity level is adjusted.

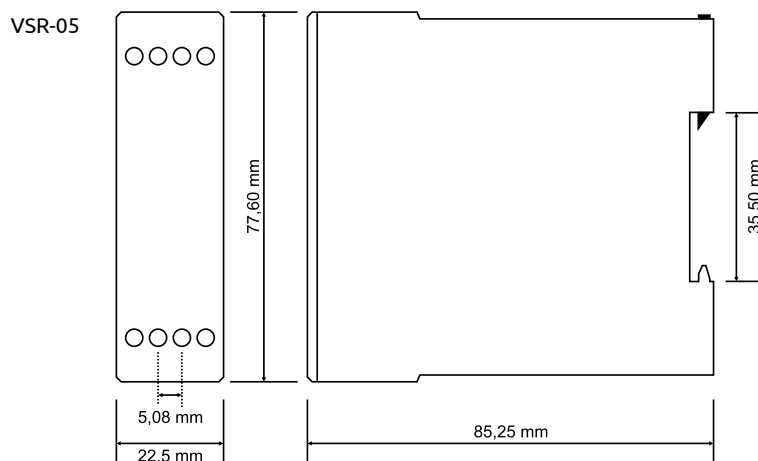
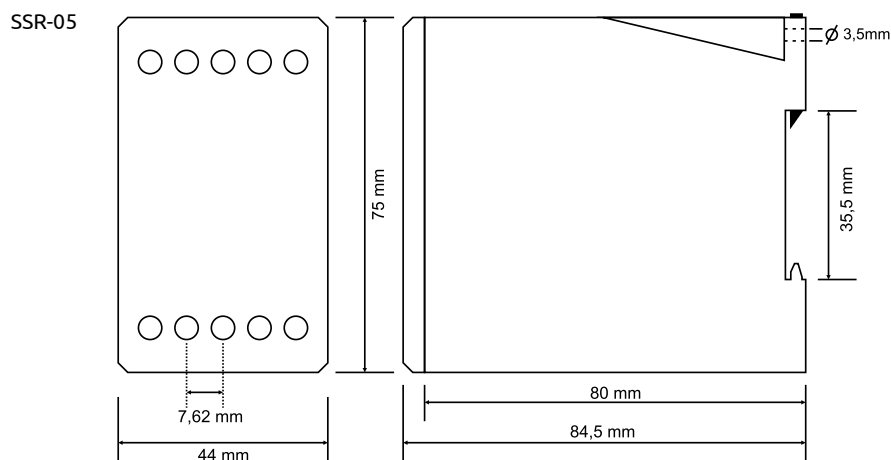
Use upper and lower electrodes for two-electrode usages.

-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.

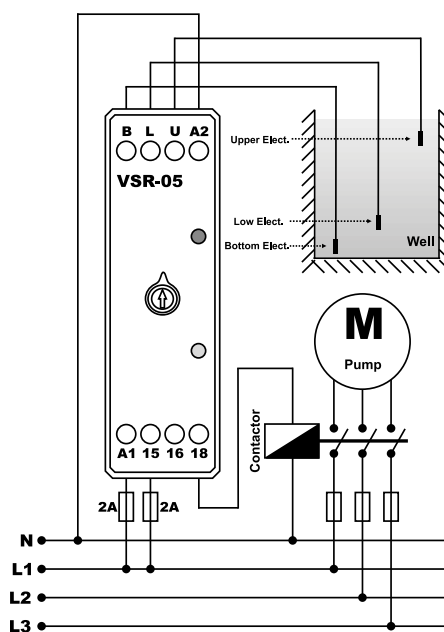
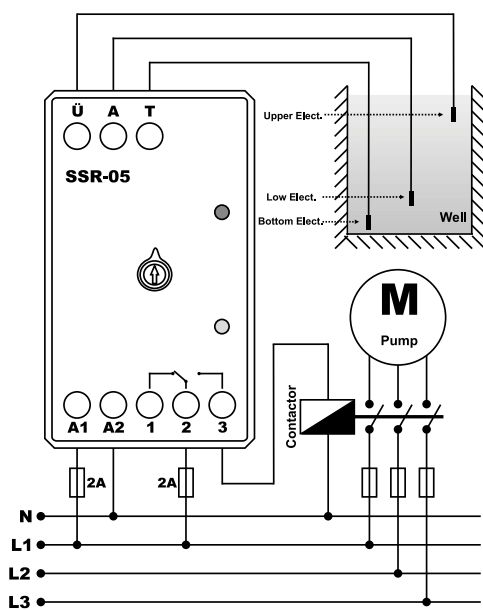
↓ SSE-10 TECHNICAL DIMENSIONS



TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



	Wells is losing		Wells is losing		Wells is losing	
	Bottom Level	Low Level	Upper Level	Upper Level	Low Level	Bottom Level
Relay Led						
Relay						
Liquid Level						
Un						

↓ PICTURES



SSR-05D

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 150V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Upper Electrode Waiting	: 2sec - 10 min.
Precision	: <100KΩ
Display	: Bottom led, low led, Up led and Relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <250gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

SSR-05D liquid level relays are designed to control drainage of wells and tanks including conductive liquids and to prolong the life of electrodes. There are two adjusting knobs on the device. The adjusting knob with a symbol of "kΩ" 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. The other adjusting knob with a symbol of "dk." (minute) is used to adjust the electrode waiting time. Only if the liquid conductivity level is lower than the value set by the adjustment button, electrodes detect each other.

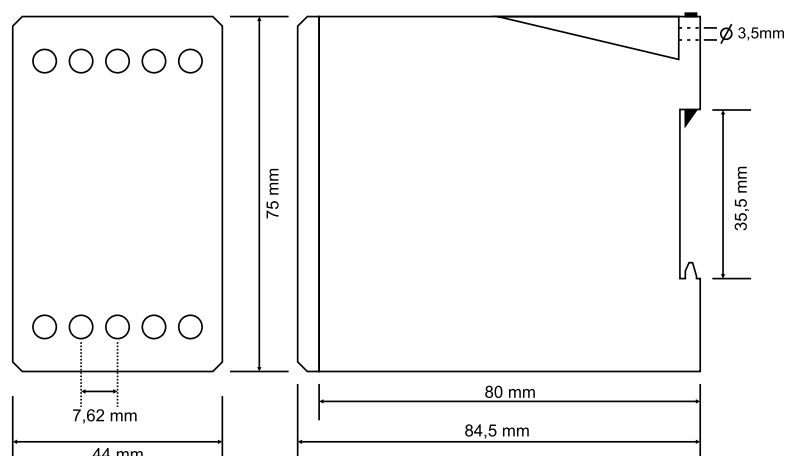
After connecting the device according to the connection diagram, energize the device. While adjusting the liquid conductivity, make sure that there is liquid (electrodes contact with liquid) within the well. Turn the adjusting knob to the clockwise direction (maximum 100kΩ) until the correct relay led lights up. When the relay led lights up, turn the adjusting knob a bit more and keep it in that position. By this way, liquid conductivity level is adjusted.

Upper electrode waiting time is used to adjust the time during which the upper electrode will stop operating when the liquid level exceeds it. By this way, the pump drain more water at once and it delivers higher performance.

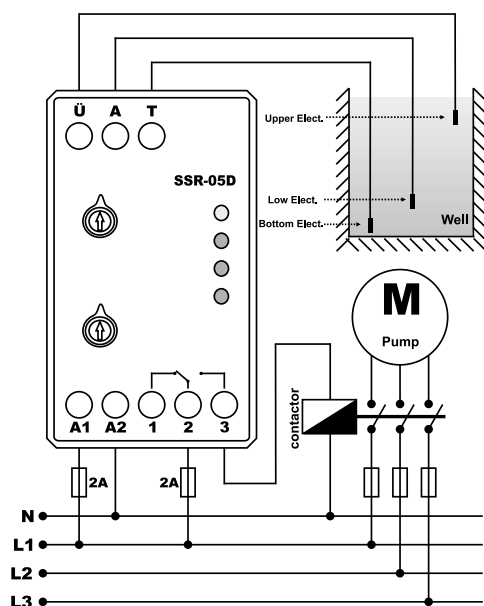
For two-electrode usages, form single electrode by shorting-out the upper and lower electrodes and use this electrode as the base electrode.

-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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



	Wells is losing			Wells is losing		
	Bottom Level	Low Level	Upper Level	Upper Level	Low Level	Bottom Level
Relay Led			t	t		
Relay			t	t		
Liquid Level						
Un						

↓ PICTURES



SMK-03



SMK-03F

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 160V – 260V AC
Operating Frequency	: 50Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Low-High Voltage Set	: 165V - 255V AC (fixed)
Asymmetry Set (%)	: 20 (fixed)
Precision	: <50KΩ
Display	: Phase error led, no water led, water led and relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <225gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

SMK-03 liquid level controller and motor protection relays are designed to prevent failures likely to arise from draining of the tanks and wells including conductive liquids and to protect water motors against voltage fluctuations.

When the device is energized, besides the water level, the voltage value also effects on the operation of the pump.

Asymmetry ratio is calculated by dividing the voltage difference between the phases which have the highest (MaxL) and the lowest (minL) values to the highest value and multiplying the result with 100.

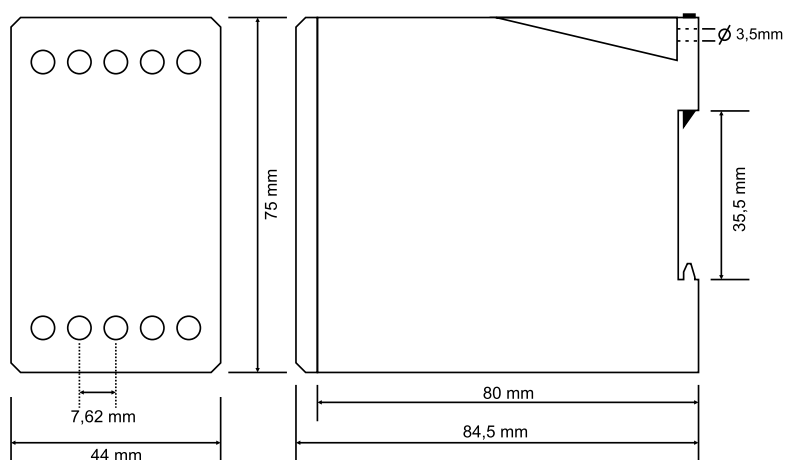
Example: Assume that R=200V S=210V and T=235V. R is the phase with the lowest value and T is the phase with the highest value. In this case, asymmetry ratio=((235V-200V)/235V)x100=14,89. The asymmetry ratio is about 15%.

When the phase sequence is wrong in SMK-03F model, the phase error 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. When the phase sequence is corrected, the phase error led turns off, 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.

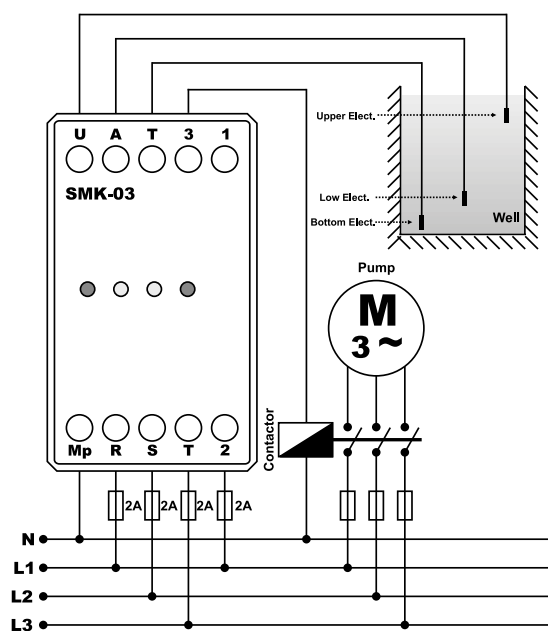
-Do not use electrode liquid level relays with flammable and explosive liquids.

-While the pump is draining water within the well, do not directly contact (using, drinkin or swimming) with water. Otherwise, if the material isolating water from energy is damaged, serious injuries or even death may occur.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



SSR-09 (Deposuz)



SSR-19 (Depolu)

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 170V – 260V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <4VA
Operating Temperature	: 0°C – 55°C
Precision	: <50KΩ
Display	: Power led, motor led and resistance led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <150gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail.
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

SSR-09 liquid level relay is designed for controlling the steam boiler irons. A common resistance and boiler electrode are connected to the steam boiler.

After connecting the device according to the connection diagram, energize the device. The phase (R) on the supply input of the device and the motor output are shorted out, motor led lights up and the water pump starts to pump water to the tank. If the water within the tank contact with only the common electrode, phase (R) and “no water” output are shorted out. The system continues to fill water into the tank. When the water contact with the resistance electrode, phase (R) and the resistance output become short-circuit, the resistance led lights up and phase (R) and “no water” output become open-circuit. The resistance starts to heat water and produces steam. System continues to fill water into the tank and when water contacts with the electrode of the tank, phase (R) and motor output become open-circuit and water pump stops pumping water and motor led turns off. As steam is being used, the water level inside the tank decreases by time and the electrode of the tank does not contact with water. In this situation, the phase (R) and the motor output become short-circuit again, motor led lights up and the water pump continues to pump water. When the water level drops below the resistance electrode, phase (R) and the resistance output become open-circuit, the resistance led turns off and phase (R) and “no water” output become short-circuit.

SSR-19 liquid level relay is designed for controlling the steam boiler irons. A common electrode is connected to the tank. A common resistance and boiler electrode are connected to the steam boiler.

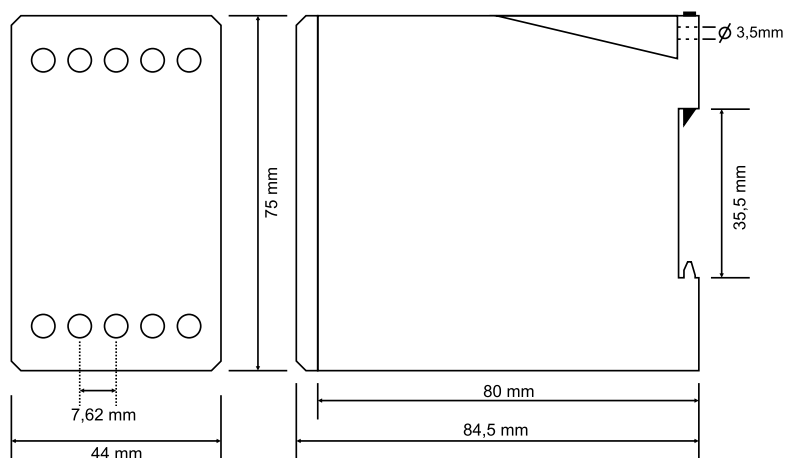
After connecting the device according to the connection diagram, energize the device. When the water contact with the electrode of the tank, the phase (R) on the supply input of the device and the motor output are shorted out, motor led lights up and the water pump starts to pump water to the tank. If the water within the tank contact with only the common electrode, phase (R) and “no water” output are shorted out. The system continues to fill water into the tank. When the water contact with the resistance electrode, phase (R) and the resistance output become short-circuit, the resistance led lights up and phase (R) and “no water” output become open-circuit. The resistance starts to heat water and produces steam. System continues to fill water into the tank and when water contacts with the electrode of the tank, phase (R) and motor output become open-circuit and water pump stops pumping water and motor led turns off. As steam is being used, the water level inside the tank decreases by time and the electrode of the tank does not contact with water. In this situation, the phase (R) and the motor output become short-circuit again, motor led lights up and the water pump continues to pump water. When the water level drops below the resistance electrode, phase (R) and the resistance output become open-circuit, the resistance led turns off and phase (R) and “no water” output become short-circuit.

If the water inside the tank contacts with only the common electrode, phase (R) and motor output become open-circuit and motor led turns off. When the water contact with the electrode of the tank, the phase (R) and the motor output become short-out, motor led lights up and the water pump starts to pump water to the tank.

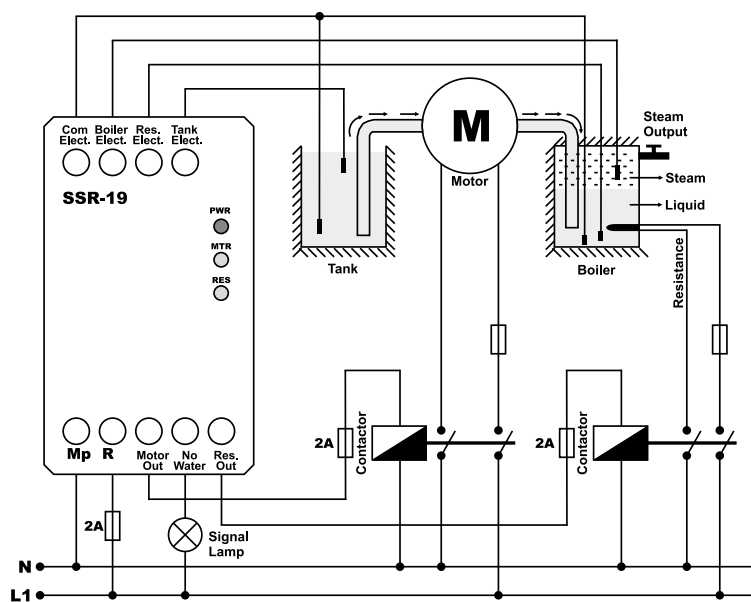
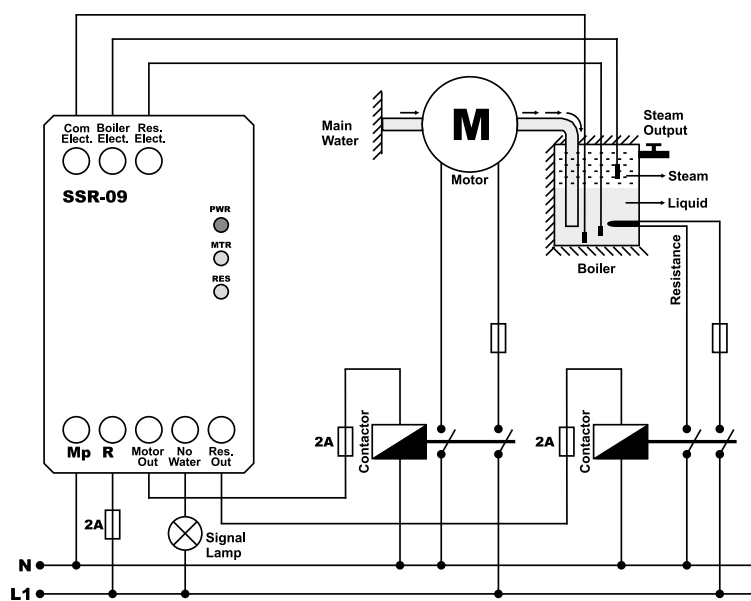
-Do not use electrode liquid level relays with flammable and explosive liquids.

-Suitable for using together with residual current relays.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



FKD-01



FKD-01F



FKD-72



FKD-72F

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3x380V AC (FKD-01/01F), 3x220V AC and Neutral (FKD-72/72F)
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Low-High Voltage Set	: 270V-440V AC(FKD-01/01F), 155V- 255V AC(FKD72/72F)
Asymmetry Set	: %20 (fixed)
Waiting (t)	: 2 sec.
Display	: 3 x 3 digit display and led
Connection Type	: Terminal connection(FKD-01/01F) Plug-in Terminal(FKD-72/72F)
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ² (FKD-01/01F), 1.5mm ² (FKD-72/72F)
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail (FKD-01/01F) Front panel mounted (FKD-72/72F)
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

FKD-01/01F

Digital phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. The device has 20% constant asymmetry set, 270V AC constant low voltage, 440V AC constant high voltage and approximately 2 seconds long constant error latency time.

Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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 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.

FKD-72/72F

Digital phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. The device has 20% constant asymmetry set, 155V AC constant low voltage, 255V AC constant high voltage and approximately 2 seconds long constant error latency time.

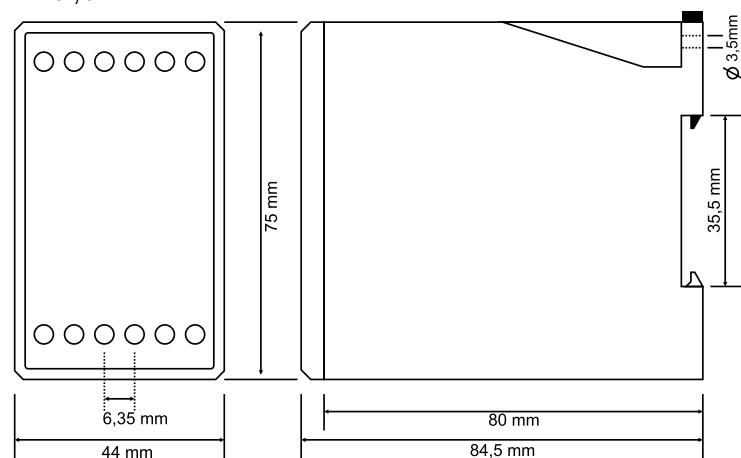
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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.

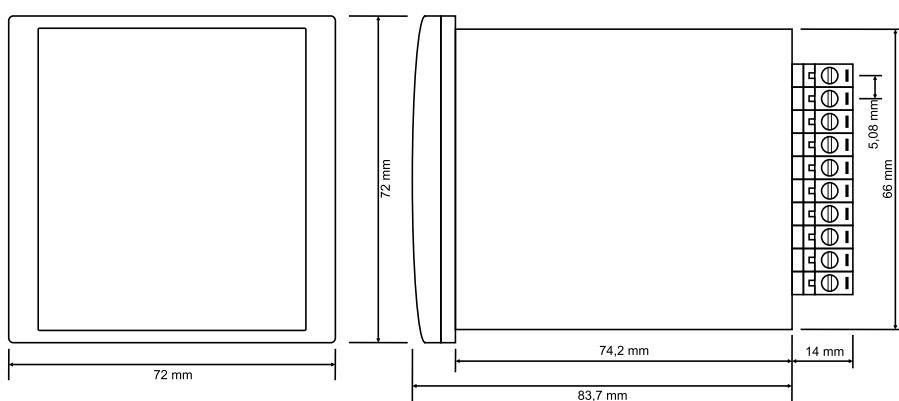
If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals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

TECHNICAL DIMENSIONS

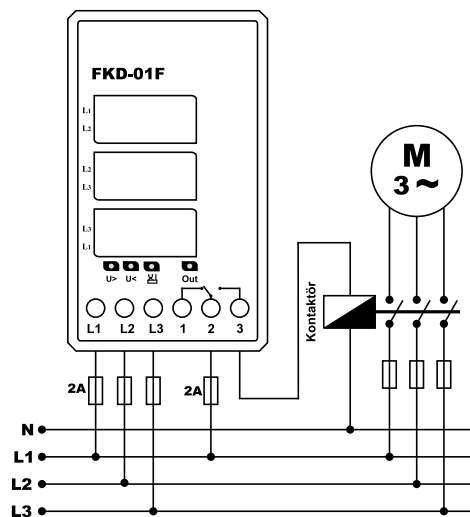
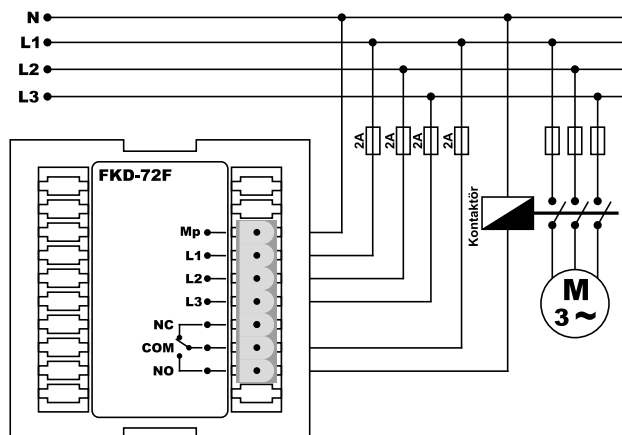
FKD-01/01F



FKD-72/72F



CONNECTION DIAGRAMS



DIGITAL PHASE PROTECTION RELAYS WITH ADJUSTABLE ASYMMETRY

↓ PICTURES



DFK-05



DFK-05F



DFK-05PF

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Operating Voltage	: 170V - 470V AC
Low-High Voltage Set	: 180V - 460V AC(fixed)
Asymmetry Set	: %5 - %25
Waiting (t)	: 0,1sec. - 10sec.
PTC opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Display	: 3 x 9mm 3 digit display and 5 x leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Digital phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There is asymmetry set (Asm%) button and error latency time (t) set button on the device.

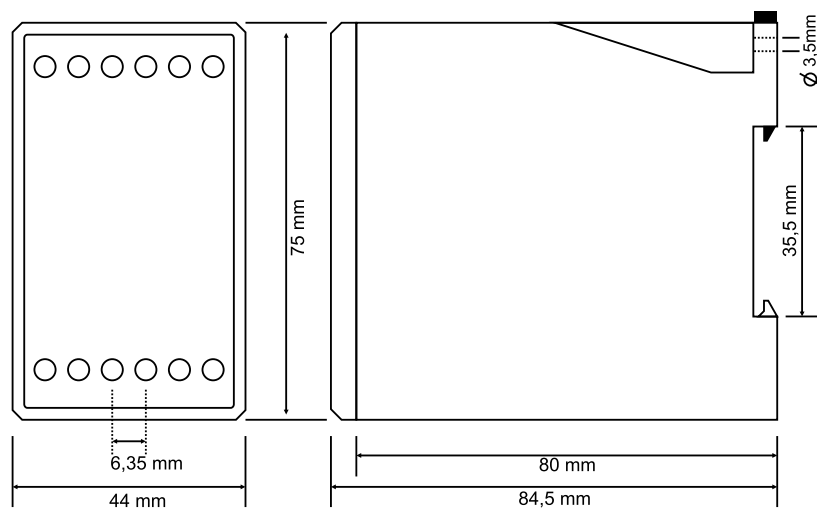
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

In formula; asymmetry set = (maximum difference between the voltage values / 380) x 100

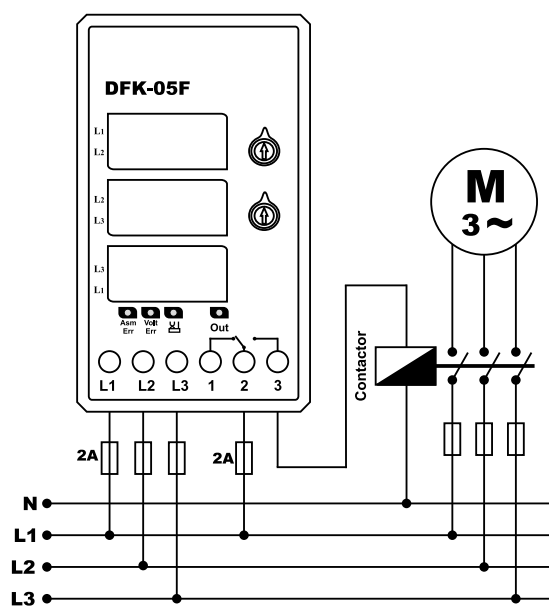
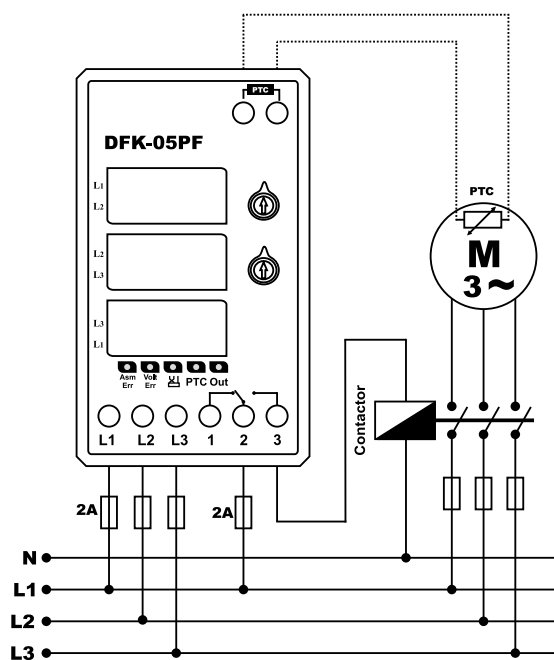
By putting the value of maximum voltage difference suitable for your load in its place on the formula, you can calculate the asymmetry set value.

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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



FK-01



FK-01P



FK-02

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30 (FK-01, FK-01P), ~%40 (FK-02)
Display	: Power and relay led
Connection Type	: Terminal connection
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage and motor temperature. The device has 30% constant asymmetry.

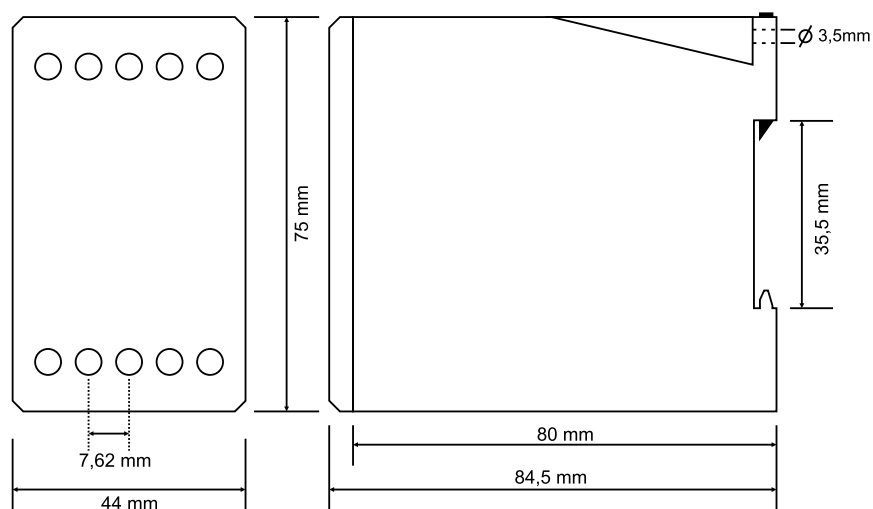
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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.

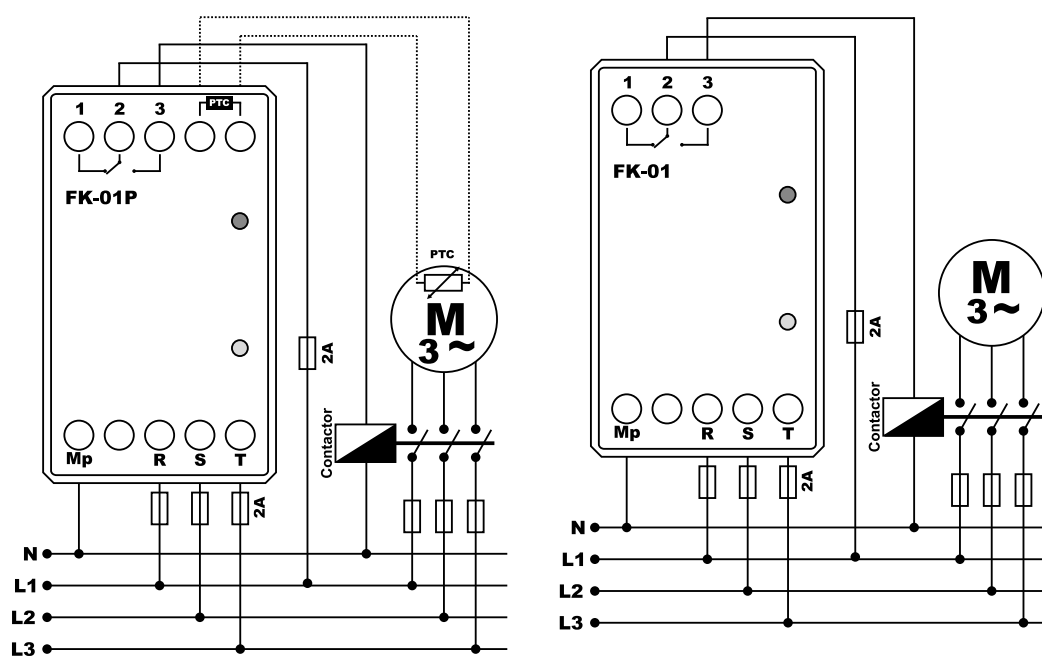
When the difference between the voltage values exceeds 30%, the relay led turns off in about 1 seconds and contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the difference between voltage values decreases by 5V, the relay 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 motor temperature value is within the range of normal values (<1400Ω), 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 motor temperature value exceeds the normal value (<1600Ω), ptc error led lights up; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. If you do not use PTC, short out the ptc terminals.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



FK-11



FK-12

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30(FK-11), ~%40(FK-12)
Display	: Power and relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

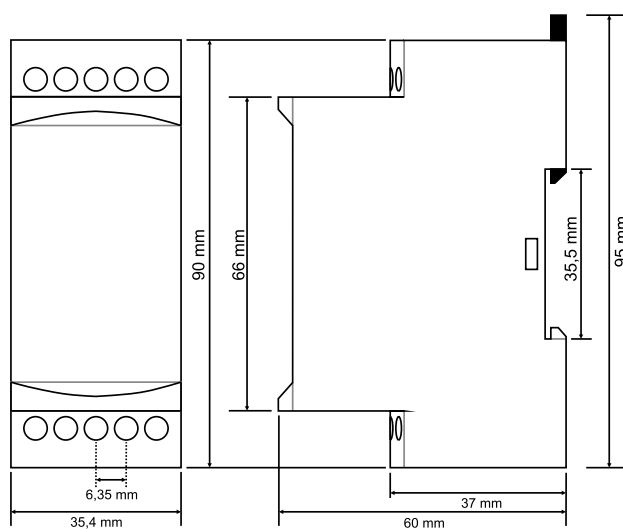
↓ DESCRIPTIONS

Phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. The device has 30% constant asymmetry.

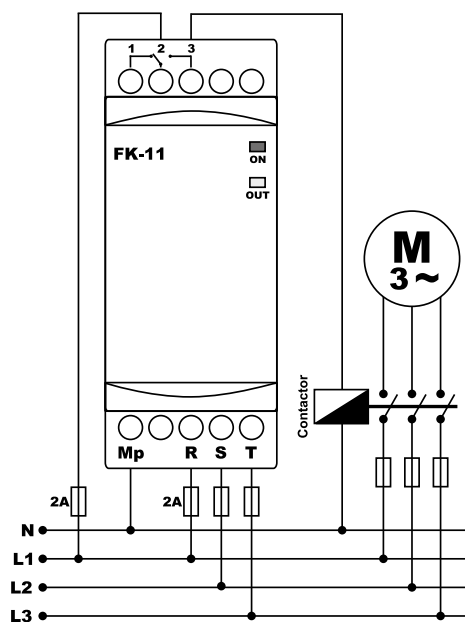
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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 short-circuit 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.



↓ CONNECTION DIAGRAMS



↓ PICTURES



FKV-11



FKV-12



FKV-01P

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30 (FKV-11, FKV-01P), ~%40 (FKV-12)
Display	: Power and relay led
Connection Type	: Terminal connection
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ² (FKV-01P), 2.5mm ² (FKV-11, FKV-12)
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Phase protection relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage and motor temperature. The device has 30% constant asymmetry.

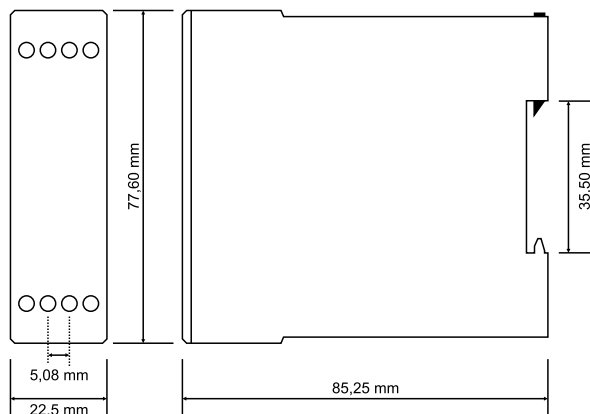
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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.

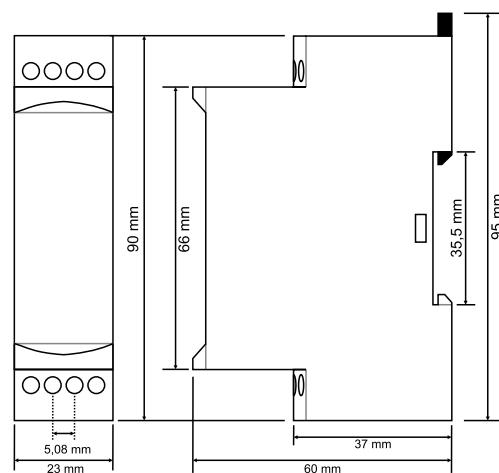
When the difference between the voltage values exceeds 30%, the relay led turns off in about 1 seconds and contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the difference between voltage values decreases by 5V, the relay 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 motor temperature value is within the range of normal values (<1400Ω), 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 motor temperature value exceeds the normal value (<1600Ω), ptc error led lights up; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. If you do not use PTC, short out the ptc terminals.

TECHNICAL DIMENSIONS

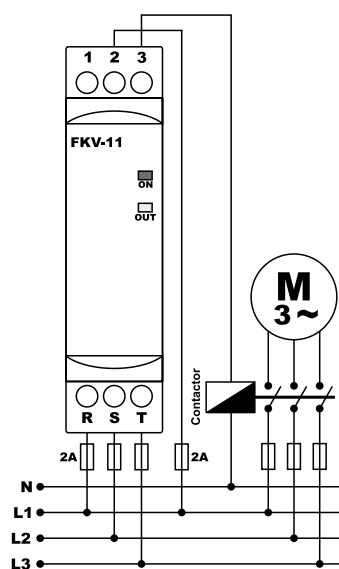
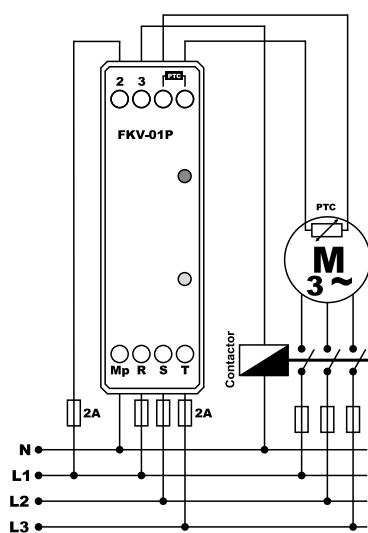


FKV-01P



FKV-11 - FKV-12

CONNECTION DIAGRAMS



↓ PICTURES



FK-04



FK-04P



FS-R

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30 (FK-04, FK-04P), none (FS-R)
Display	: Power, phase sequence and relay led
Connection Type	: Terminal connection
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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 and motor temperature. The device has 30% constant asymmetry.

Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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 short-circuit 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.

If motor temperature value is within the range of normal values (<1400Ω), 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 motor temperature value exceeds the normal value (>1600Ω), ptc error led lights up; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. If you do not use PTC, short out the ptc terminals.

↓ PICTURES



FK-14P



FK-14

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30
Display	: Power, phase sequence and relay led
Connection Type	: Terminal connection
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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 and motor temperature. The device has 30% constant asymmetry.

Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

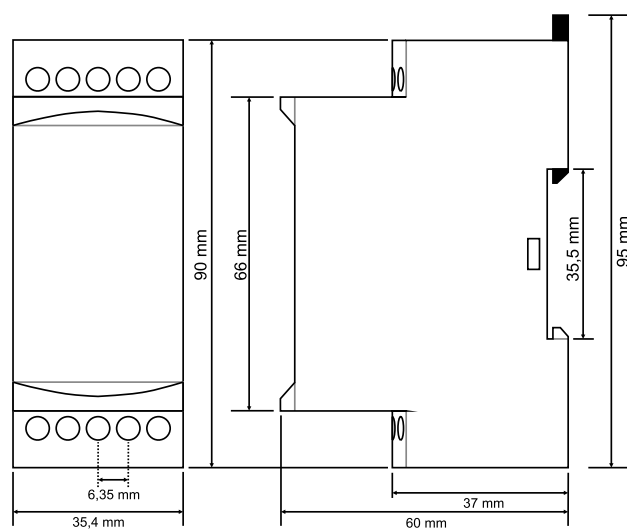
When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are open-circuit. If the voltage values are within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM)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

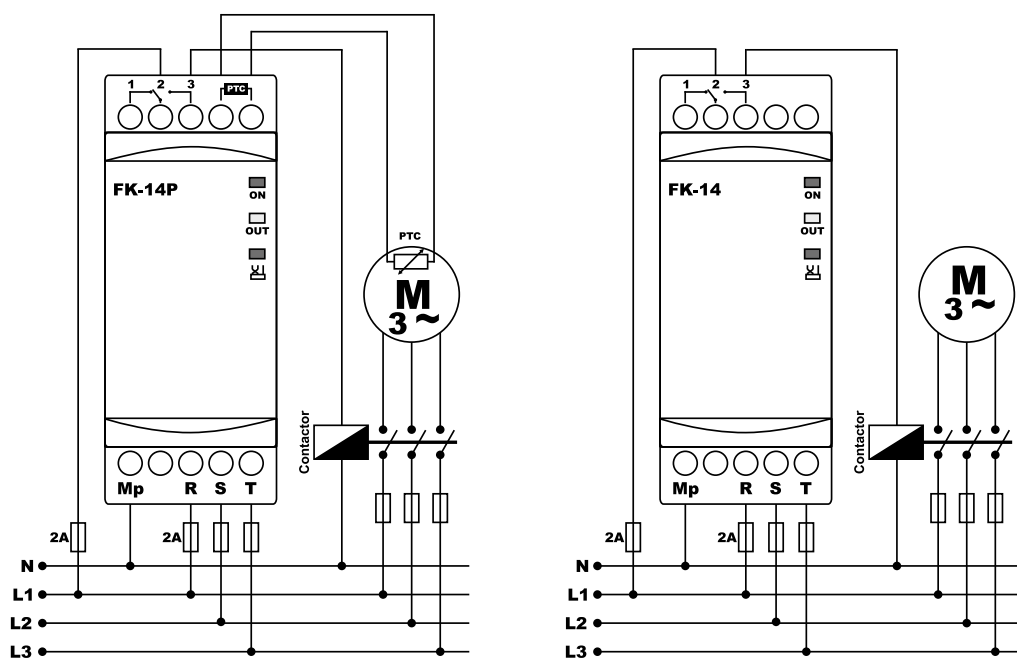
If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals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

If motor temperature value is within the range of normal values (<1400Ω), 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 motor temperature value exceeds the normal value (<1600Ω), ptc error led lights up; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. If you do not use PTC, short out the ptc terminals.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



FKV-14



FKV-14P

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%30
Display	: Power, phase sequence and relay led
Connection Type	: Terminal connection
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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 and motor temperature. The device has 30% constant asymmetry.

Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

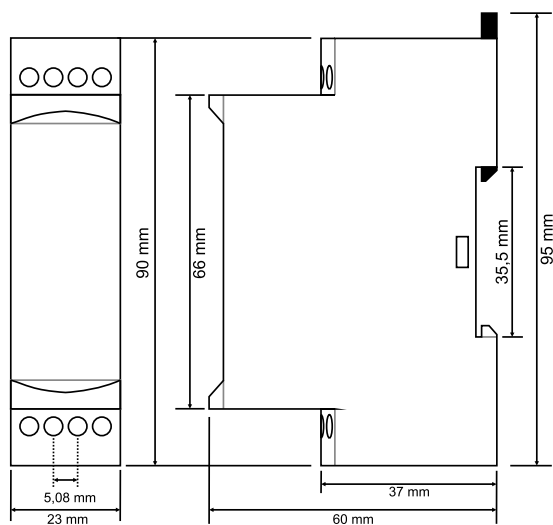
When the device is energized for the first time, contactor terminals no. 1(NC) and 2(COM) are short-circuit and contactor terminals no. 2(COM) and 3(NO) are open-circuit. If the voltage values are within the range of normal values, the relay led (OUT) lights up; contactor terminals no. 1(NC) and 2(COM)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

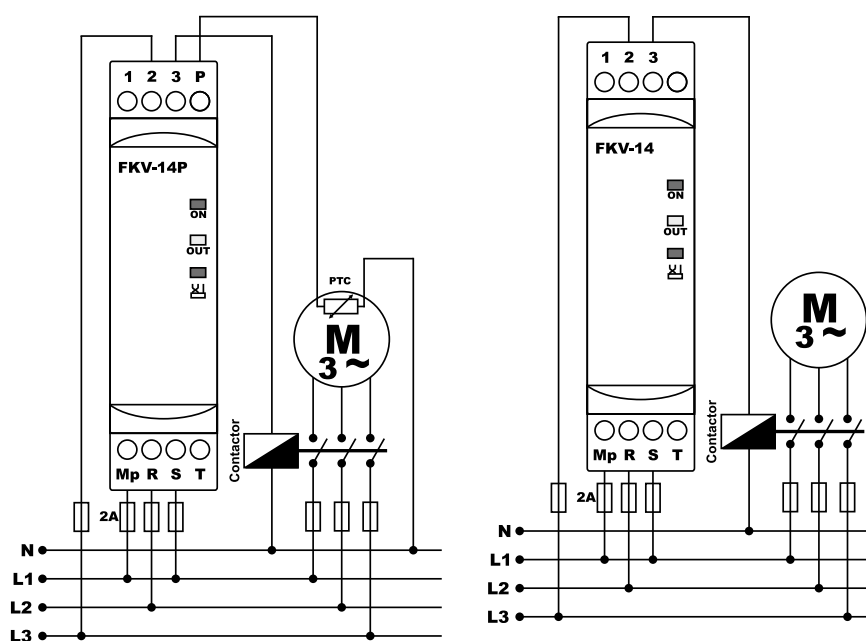
If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals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

If motor temperature value is within the range of normal values (<1400Ω), 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 motor temperature value exceeds the normal value (<1600Ω), ptc error led lights up; contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. If you do not use PTC, short out the ptc terminals.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



PHASE SEQUENCE PROTECTION RELAY WITH CONSTANT ASYMMETRY

↓ PICTURES



FKV-03

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC + Neutral
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Asymmetry	: ~%40
Display	: Power and relay led
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 1.5mm ²
Weight	: <110gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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.

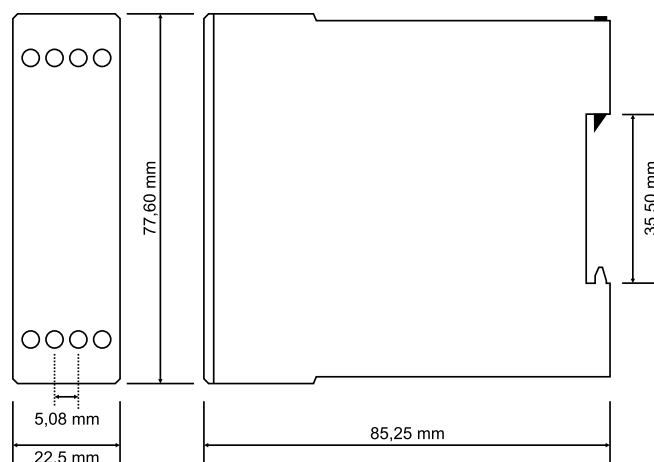
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

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 open-circuit. 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.

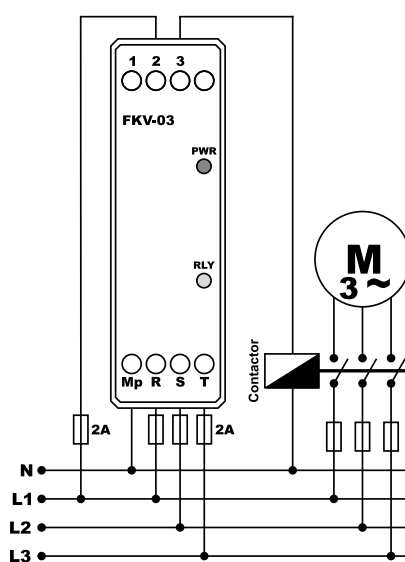
When the difference between the voltage values exceeds 30%, the relay led turns off in about 1 seconds and contactor terminals no. 1(NC) and 2(COM) become short-circuit and contactor terminals no. 2(COM) and 3(NO) become open-circuit. When the difference between voltage values decreases by 5V, the relay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

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



PHASE (MOTOR) PROTECTION RELAY WITH ADJUSTABLE ASYMMETRY

↓ PICTURES



FK-05



FK-05F

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Operating Voltage	: 140V - 470V AC
Low-High Voltage Set	: 150V - 460V AC(fixed)
Asymmetry Set	: %5 - %25
Waiting (t)	: 0,1sec. - 10sec.
Display	: Power, Asymmetry error, phase sequence and relay leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Phase protection relays with adjustable asymmetry are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There is asymmetry set (Asm%) button and error latency time (t) set button on the device.

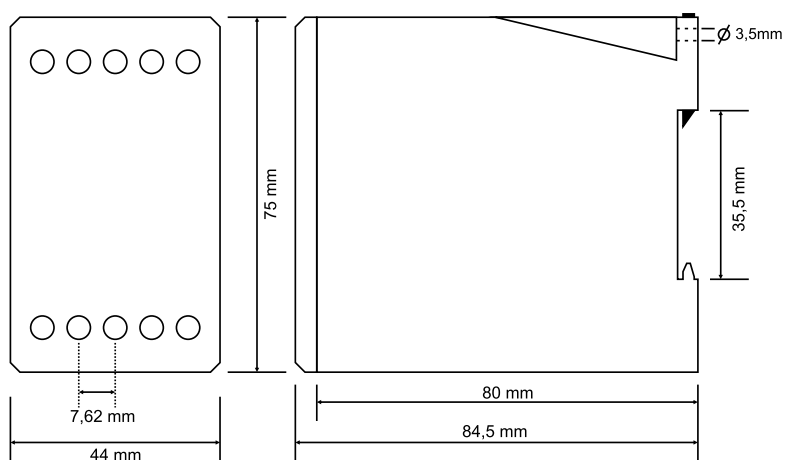
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

In formula; asymmetry set = (maximum difference between the voltage values / 380) x 100
By putting the value of maximum voltage difference suitable for your load in its place on the formula, you can calculate the asymmetry set value.

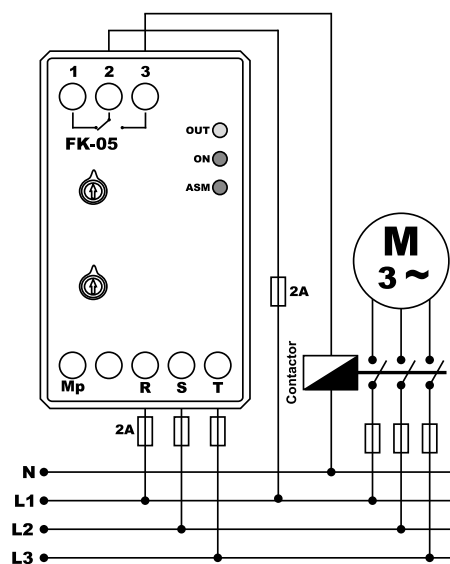
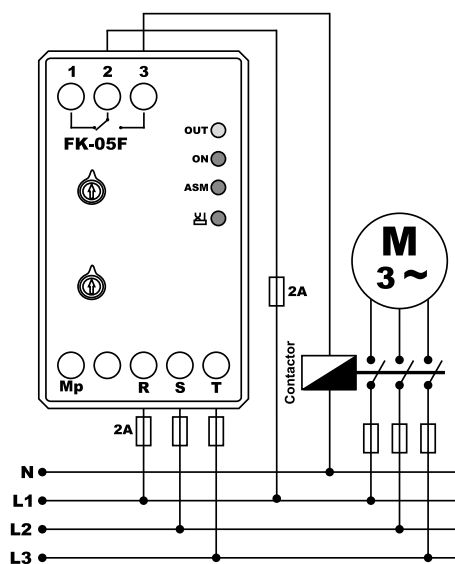
FK-05F

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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



PHASE (MOTOR) PROTECTION RELAY WITH ADJUSTABLE ASYMMETRY

↓ PICTURES



FK-15



FK-15F

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
Operating Voltage	: 140V - 470V AC
Low-High Voltage Set	: 150V - 460V AC(fixed)
Asymmetry Set	: %5 - %25
Waiting (t)	: 0,1sec. - 10sec.
Display	: Power, Asymmetry error, phase sequence and relay leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

Phase protection relays with adjustable asymmetry are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There is asymmetry set (Asm%) button and error latency time (t) set button on the device.

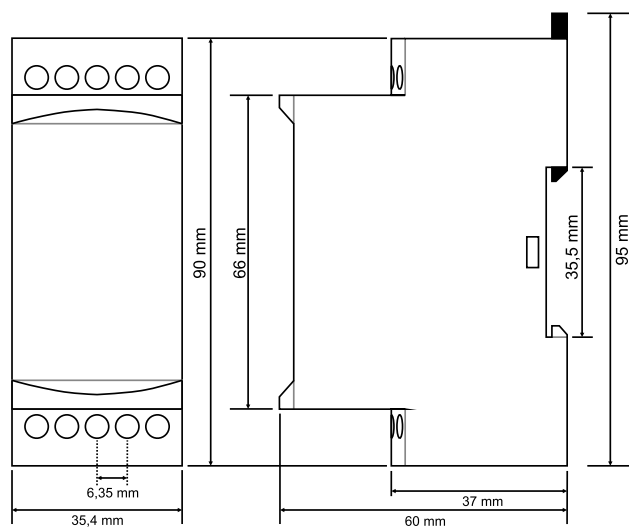
Asymmetry means the difference between the voltage values. Especially on three-phase loads such as motors, the high-voltage coil draws high current and the low-voltage coil draws low voltage. Therefore, they operate imbalancedly and the coils get damaged by time.

In formula; asymmetry set = (maximum difference between the voltage values / 380) x 100
By putting the value of maximum voltage difference suitable for your load in its place on the formula, you can calculate the asymmetry set value.

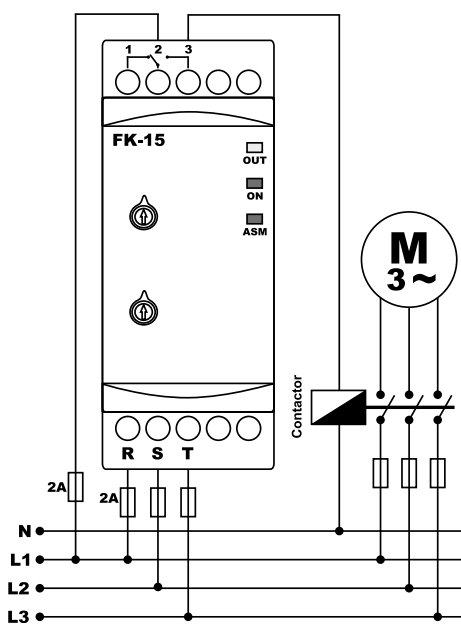
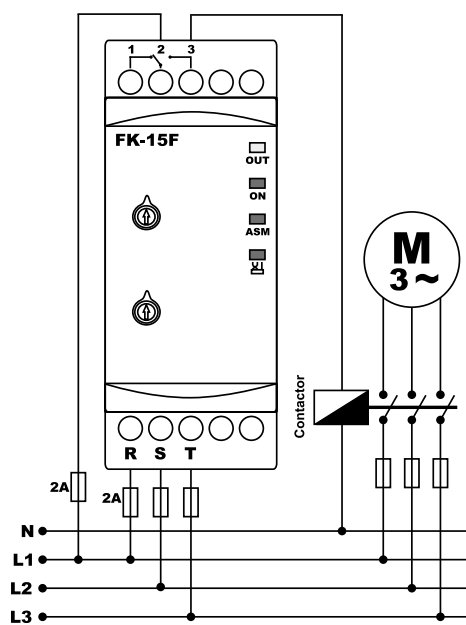
FK-15F

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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



GK-01



GK-11

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 140V – 290V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 230V - 270V AC
Low Voltage Set (U<)	: 150V - 210V AC
Waiting (t)	: 0,1sec. - 10sec.
Display	: High, low, relay and power leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

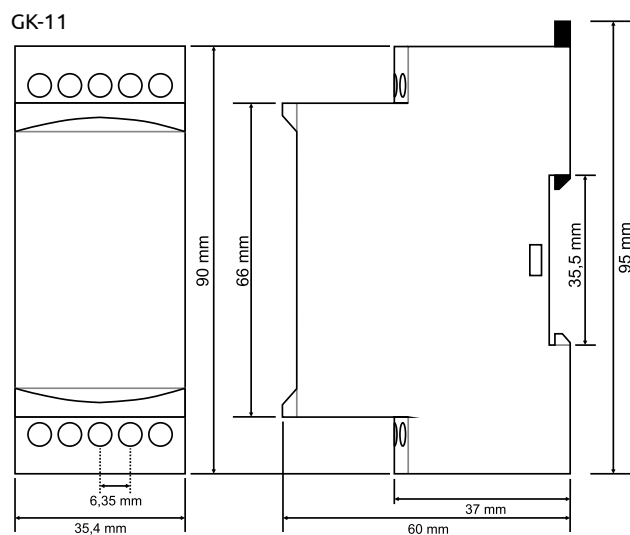
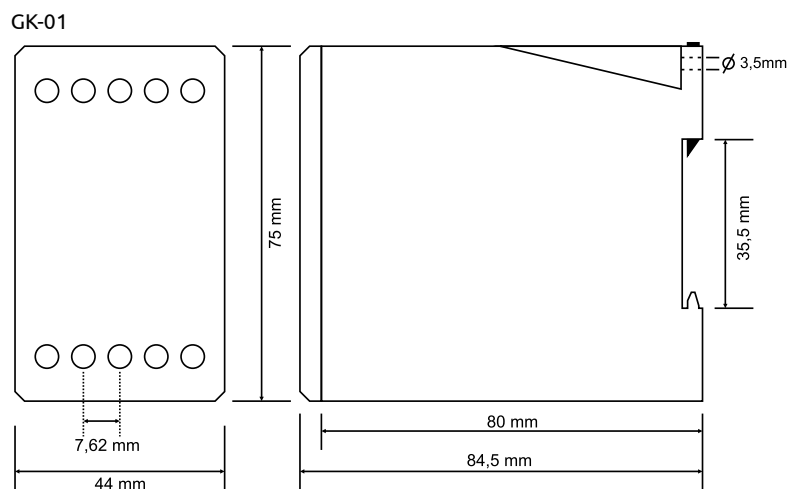
Voltage control relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage.

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.

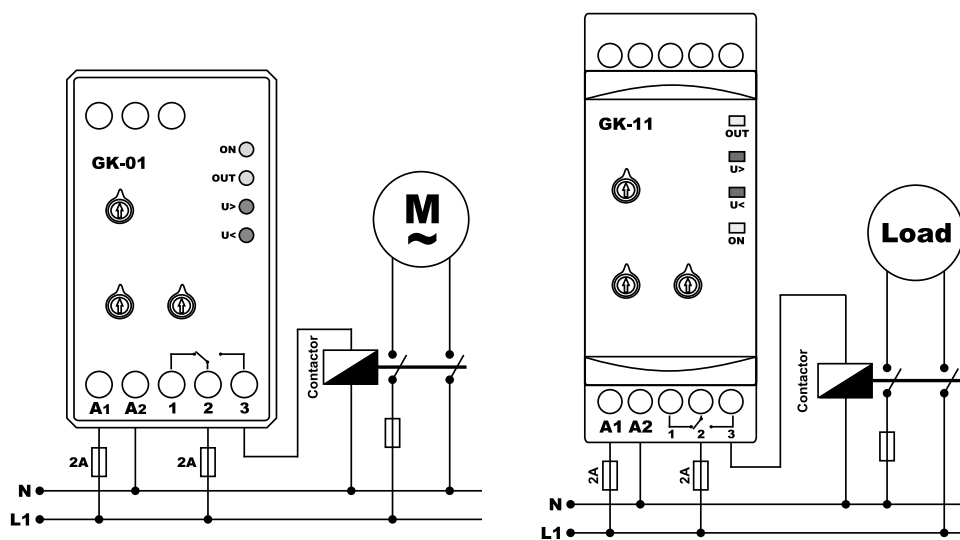
If the voltage value exceeds the high voltage set value, the high voltage (U>) error led lights up and if the voltage value does not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this position, the relay led turns off, contactor terminals no. 1(NC) and 2(COM) become 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 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 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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



GK-03



GK-13

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 400V - 460V AC
Low Voltage Set (U<)	: 95V AC fixed
Waiting (t)	: 0,1sec. - 10sec.
Display	: High, relay and power leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

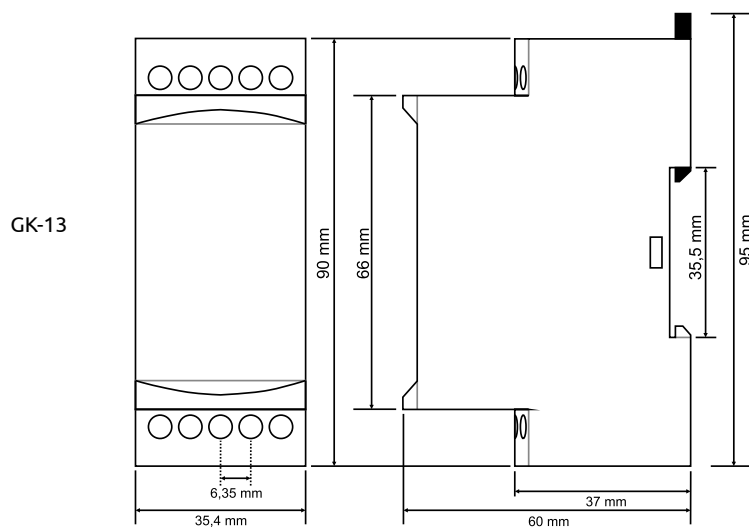
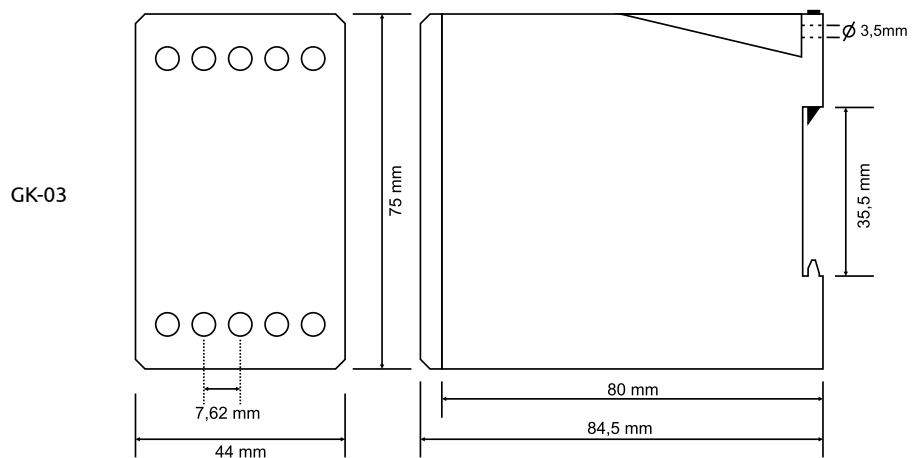
Voltage control relays are designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage.

Please make the connection of the device according to the diagram. Adjust the high voltage(U>) 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 phase-to-phase 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.

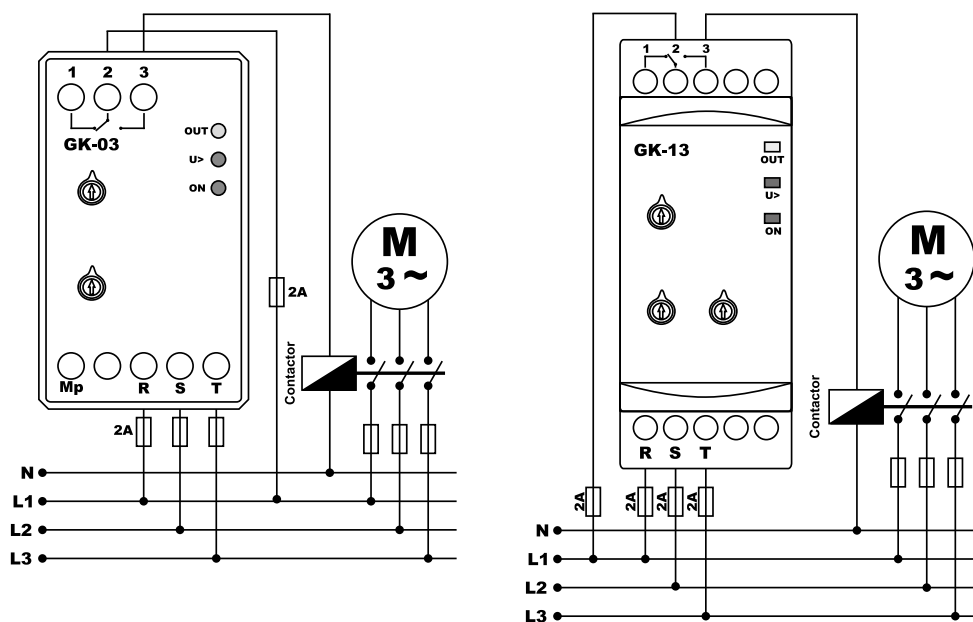
If one of the phase-to-phase voltage values exceeds the high voltage set value, the high voltage (U>) error led lights up and if the voltage value does not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this position, the relay led turns off, contactor terminals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

When one of the phase-to-phase voltage values drops below 95V, if the voltage value does not exceed the normal value within the error latency time, low voltage error occurs. 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 phase-to-phase voltage value exceeds 150V, the device starts to count the error latency 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.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



GK-04



GK-04F



GK-14



GK-14F

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 400V - 460V AC
Low Voltage Set (U<)	: 260V - 360V AC
Waiting (t)	: 0,1sec. - 10sec.
Display	: High, low, relay, phase sequence, power and phases leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <210gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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 phase-to-phase 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 one of the phase-to-phase voltage values 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 phase-to-phase voltage values drop below the high voltage set value by 5V, the high voltage error led turns off and the device starts to count the error latency 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.

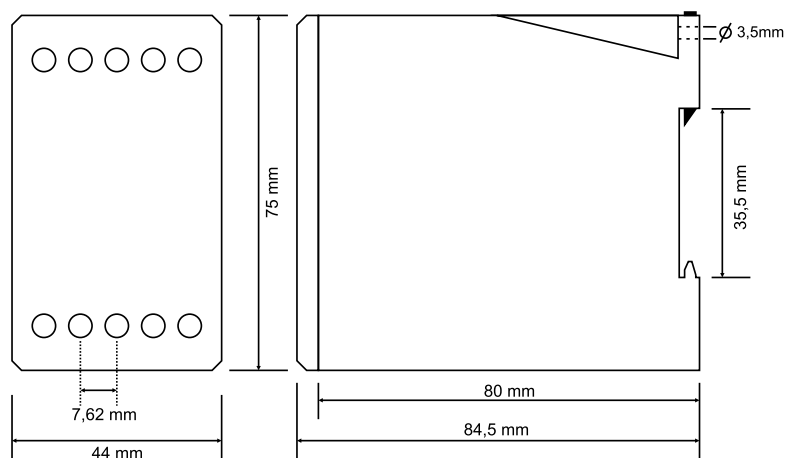
If one of the phase-to-phase voltage values drops below the low voltage set value, the low voltage (U<) error led lights up and if the voltage values do not increase to the normal value within the error latency time, low voltage error occurs on the device. In this position, the relay led turns off, contactor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

GK-04F/14F

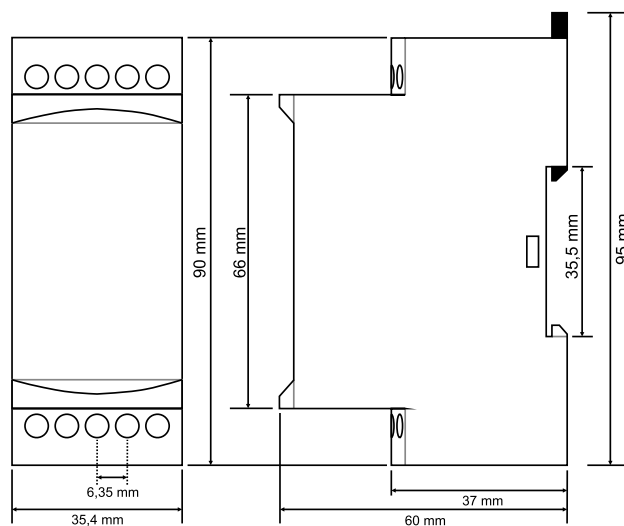
If the phase sequence is correct, the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. If the phase sequence is wrong, the phase sequence led lights up, the relay led turns off and contactor terminals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

TECHNICAL DIMENSIONS

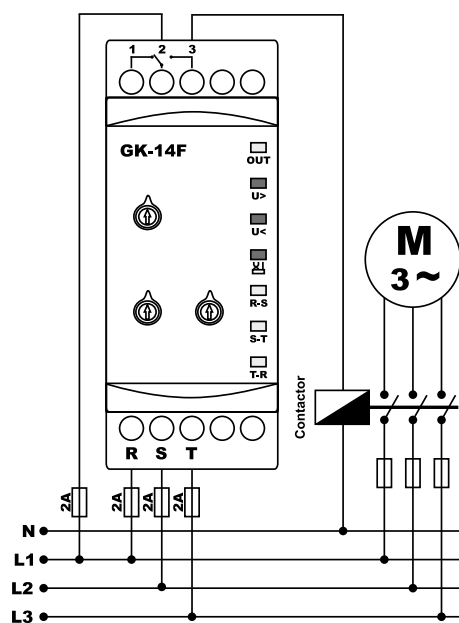
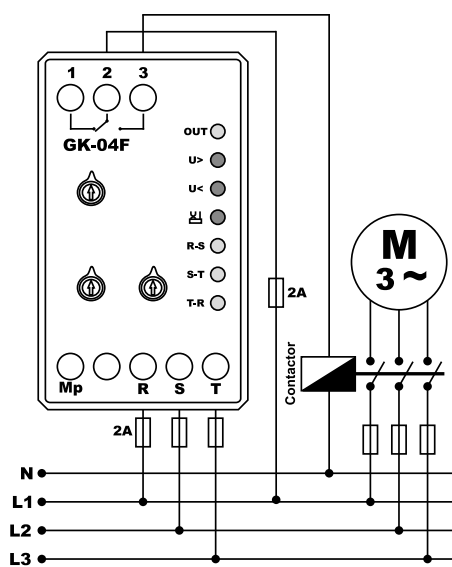
GK-04
GK-04F



GK-14
GK-14F



CONNECTION DIAGRAMS



↓ PICTURES



DGK-01

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 130V - 270V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 230V - 260V AC
Low Voltage Set (U<)	: 140V - 210V AC
Waiting (t)	: 0,1sec. - 10sec.
Display	: 9mm 3 digit display and 3 x leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

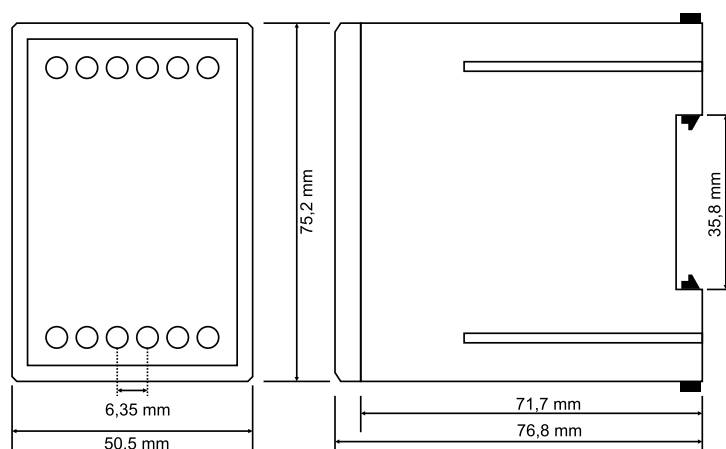
DGK-01 is designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There are high (U>) voltage set button, low (U<) voltage set button and error latency (t) time set button on the device.

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 open-circuit. 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.

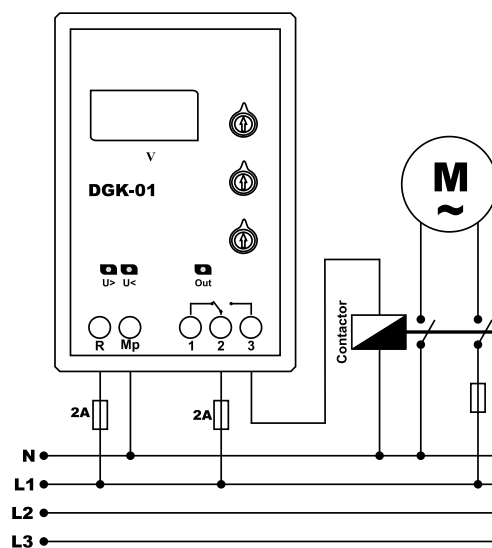
If the voltage value exceeds the high voltage set value, the high voltage (U>) error led lights up and if the voltage value does not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this position, the relay led turns off, contactor terminals no. 1(NC) and 2(COM) become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

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DGK-03

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 400V - 460V AC
Low Voltage Set (U<)	: 95V fixed
Waiting (t)	: 0,1sec. - 10sec.
Display	: 3 x 9mm 3 digit display and 2 x leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

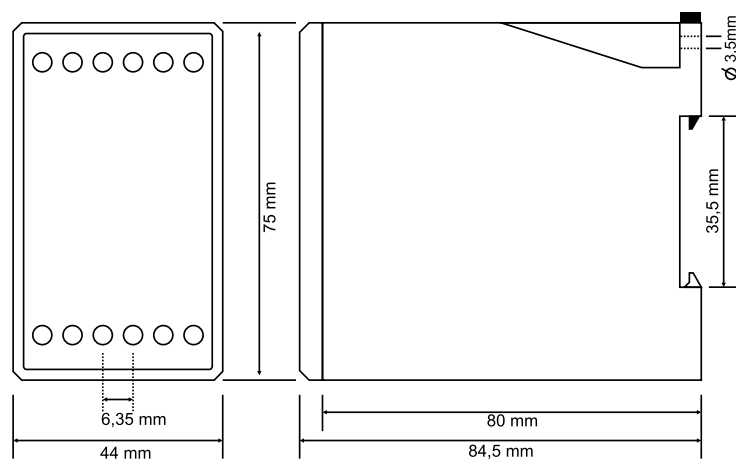
DGK-01 is designed to protect the devices having precise operating voltage values against errors likely to arise from mains voltage. There are high voltage (U>) set button and error latency time (t) set button on the device. Low voltage set value is constant at 95V.

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 open-circuit. Adjust the high 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.

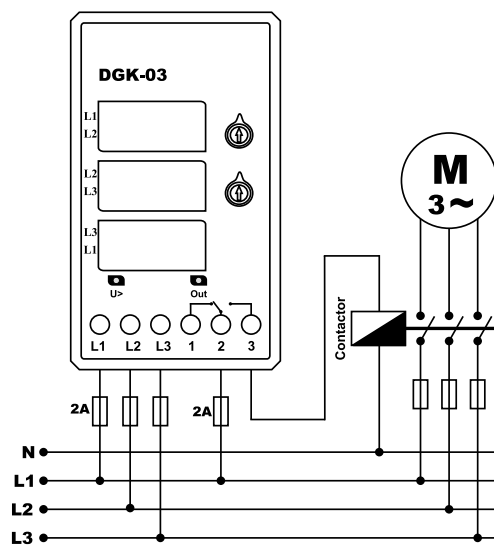
If the voltage values exceed the high voltage set value, the high voltage (U>) error led lights up and if the voltage values do not drop below the normal value in 2 seconds, high voltage error occurs on the device. In this situation, the relay led turns off; the relevant display blinks depending on which 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 open-circuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

When the voltage values drops below 95V and if the voltage values do not exceed the normal value within the error latency time, low voltage error occurs. 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 170V, 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 open-circuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS



↓ PICTURES



DGK-04



DGK-04F



DGK-04PF

↓ TECHNICAL PROPERTIES

Operating Voltage(Un)	: 3 x 380V AC
Operating Frequency	: 50/60Hz.
Operating Power	: <6VA
Operating Temperature	: 0°C – 55°C
High Voltage Set (U>)	: 400V - 460V AC
Low Voltage Set (U<)	: 230V - 260V AC
Waiting (t)	: 0,1sec. - 10sec.
PTC Opening	: 1600Ω- 2000Ω
PTC Closing	: 1000Ω- 1400Ω
Display	: 3 x 9mm 3 digit display and 5 x leds
Connection Type	: Terminal connection
Contact	: 5A/250V AC
Cable Diameter	: 2.5mm ²
Weight	: <220gr.
Mounting	: Vertical assembled in the panel or assembled on the din rail
Protection Class	: IP20
Operating Altitude	: <2000 meter

↓ DESCRIPTIONS

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 open-circuit. 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 open-circuit 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 open-circuit and contactor terminals no. 2(COM) and 3(NO) are short-circuit.

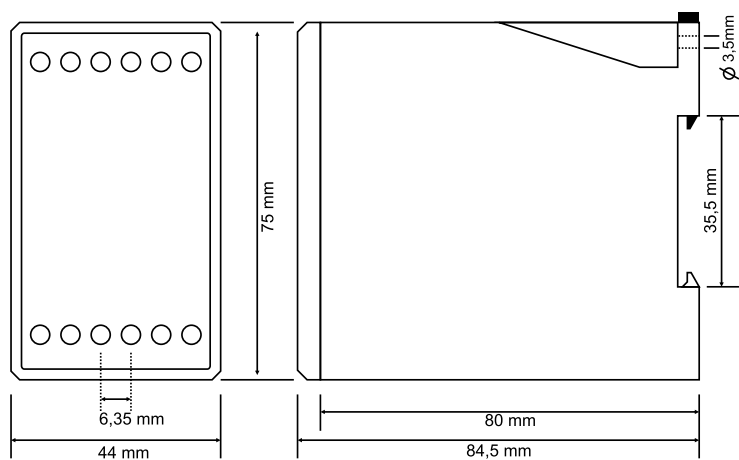
DGK-04F/04PF

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.

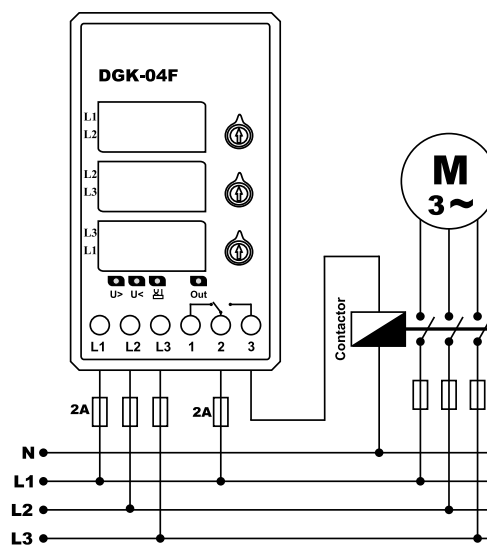
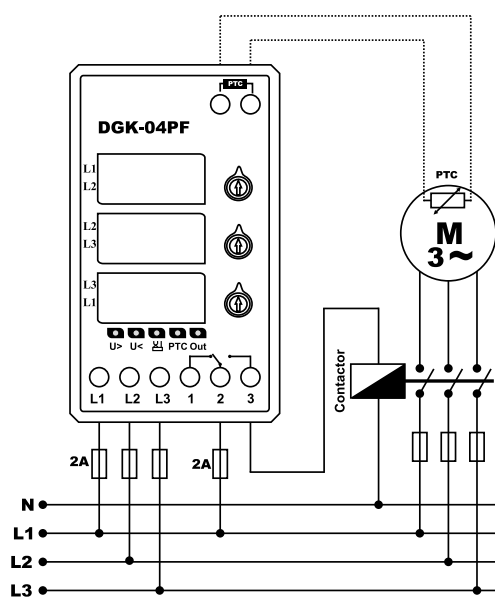
DGK-04PF

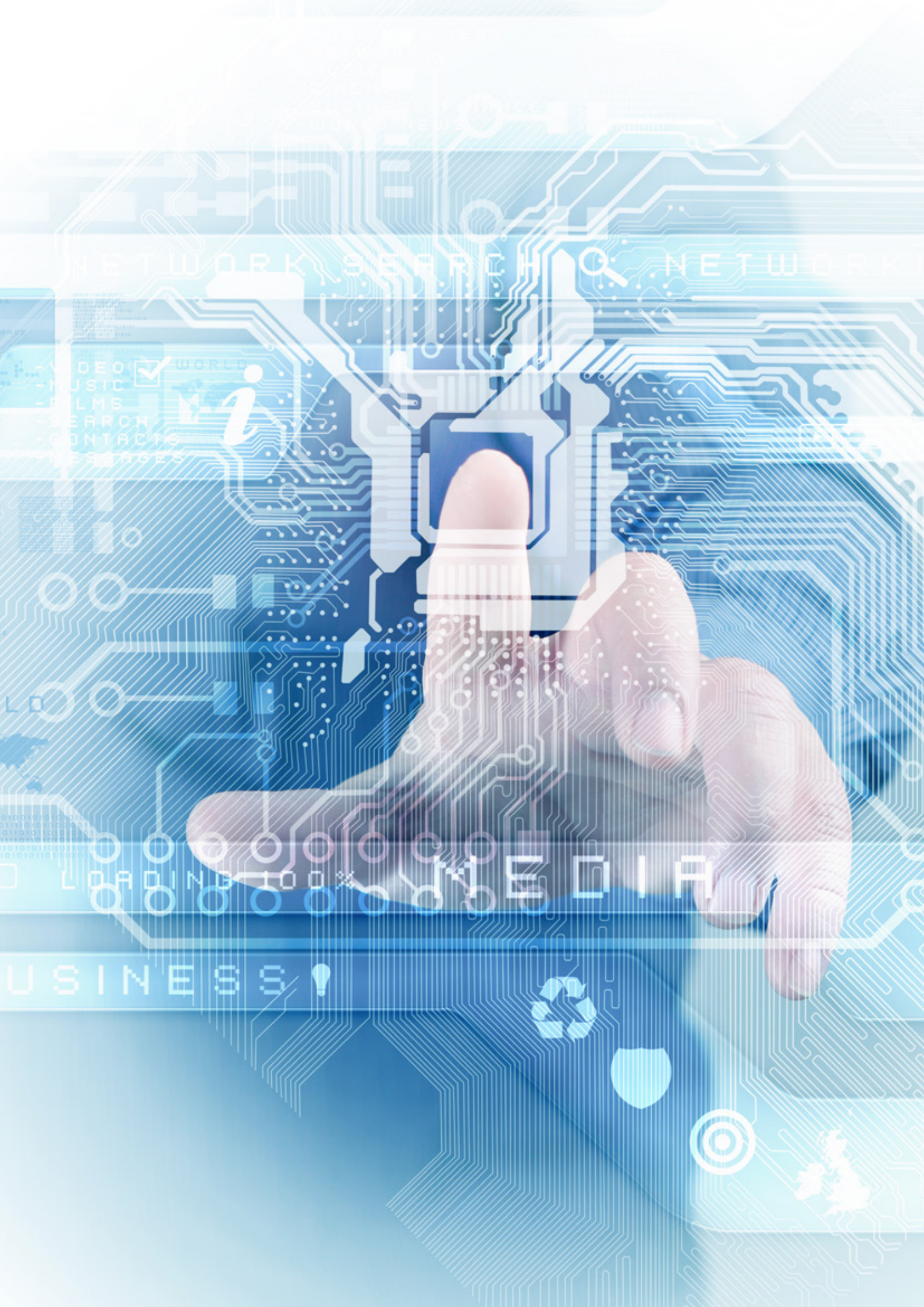
If motor temperature value is within the range of normal values (<1400Ω), the relay led lights up; contactor terminals no. 1(NC) and 2(COM) become open-circuit and contactor terminals no. 2(COM) and 3(NO) become short-circuit. When the motor heats up and the temperature value exceed the normal value (>1600Ω), the ptc error led lights up (this model has PTC feature). If you do not use PTC, short out the ptc terminals.

TECHNICAL DIMENSIONS



CONNECTION DIAGRAMS







- Our company reserves the right to make changes on the product specifications without any prior notice.
- For technical information and drawings on the catalogue, please refer to the manuals delivered with the product.
- Our company is not responsible for typography and printing errors.



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