7. Storage, transportation and operation conditions

Devices in the manufacturer's packaging must be stored in enclosed spaces with natural ventilation. Climatic factors of storage conditions:

- air temperature: -50°C... +50°C;
- relative average annual humidity: 75% at +15°C.

The device is operational in any location in space.

The device is not intended for operation in conditions of vibration and shocks, as well as in explosive environments.

Do not allow moisture to enter the input contacts of the terminal clamps and internal elements of the device. It is prohibited to use it in aggressive environments containing acids, alkalis, oils, etc. in the atmosphere.

The correct operation of the device is guaranteed at ambient temperatures from -25°C to +50°C and relative humidity from 30 to 80%.

To operate the device at subzero temperatures, it is necessary to install it in a moisture-proof housing to avoid the formation of condensation due to temperature changes.

Service life is 10 years.

8. Warranty

The warranty period for the device is 5 years from the date of sale.

During the warranty period, the manufacturer will repair the device in the event of a malfunction, provided that the consumer has followed the rules of storage, connection, and operation.

Warranty servicing of the device is carried out with the presence of a marking from the selling organization.

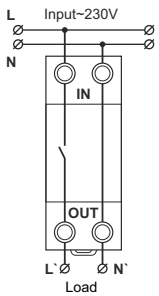
The device is not eligible for warranty servicing in the following cases:

1. Expiry of the warranty period.
2. Operating conditions and electrical connection do not comply with the "**Operating manual**" provided with the device.
3. User-performed self-repair.
4. The presence of signs of mechanical damage (violation of seals, unauthorized appearance, scorching of power terminals from the external side).
5. The presence of signs of exposure to moisture, foreign objects, dust, dirt inside the device (including insects).
6. Lightning strike, fire, flooding, lack of ventilation, and other causes beyond the manufacturer's control.

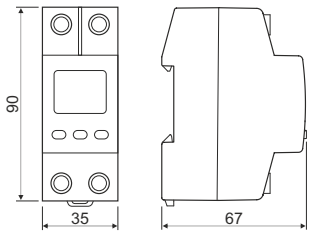
Warranty and post-warranty service is provided by
DIGITOP ELECTRIC sp. z o.o. NIP: 6772469881
ul. Świętokrzyska 12/323 , 30-015 Kraków, Poland
Tel (+48) 794 267 868, e-mail: info@digitopelectric.pl

Acceptance certificate
The device has passed acceptance tests.

Batch number_____ Release date_____



Wiring diagram



Dimensions

DigiTOP®

Voltage monitoring relay DigiTOP series V-protector 16A, 20A, 25A, 32A, 40A, 50A, 63A

single-phase, digital

Operating manual

1. Purpose

The voltage monitoring relay **DigiTOP** of the **V-protector** series (hereinafter referred to as the device) is designed to protect consumers from overvoltage or undervoltage.

2. Technical specifications

Operating voltage, V	50-400
Operating frequency, Hz	45-65
Upper voltage threshold, V	210-270
Lower voltage threshold, V	120-200
Disconnect time at upper threshold, sec	0,02
Disconnect time at lower threshold, sec, no more than	1(120-170V) 0,02(<120V)
Voltmeter accuracy, %, no more than	1
Power consumption, W, no more than	**VP-16/20/25/32A** 2,5 **VP-40/50/63A** 1,5
Permissible pollution	II
Electric shock protection class	II
Degree of device protection	IP20
The moment of tightening the screws of terminals, Nm	2,2±0,2
Operating temperature, °C	-25... +50
Overall dimensions, mm	90x35x67

Model	VP-16	VP-20	VP-25	VP-32	VP-40	VP-50	VP-63
Nominal current* I nom, A	16	20	25	32	40	50	63
Maximum current* I max, A	20	25	32	40	50	60	80
Nominal power*, kW	3,5	4,4	5,5	7,0	8,8	11,0	13,9
Max. wire cross section, mm^2	6	6	6	6	10	16	16

**- under active load*

User-configurable parameters:

- Upper voltage threshold (step 1V)	210-270V (250**)
- Lower voltage threshold (step 1V)	120-200V (170**)
- Switch-on delay time (step 5 sec)	5-600 sec (15**)
- *Indicator* ***brightness level***	1-9 (7**)
- Automatic button lock	On/OFF (OFF**)
- Frequency control mode selection	50Hz/Auto (50Гц**)
- Disconnect delay time at upper threshold ("Auto" mode), ms	0-900 (200**)

***- factory settings*

3. Supply kit

- Voltage monitoring relay **DigiTOP**
- Operation manual
- Packaging

4. Design and principle of operation

The device is controlled by a microcontroller, which analyzes the mains voltage and displays the current effective value on a digital display. The load is switched by an electromagnetic relay. The device can work both with 50Hz household power grid and with voltage sources with unstable frequency (generators, etc.). To do this, select the appropriate operating mode in the settings menu.

The device disconnects the load if the voltage goes out of the set range. The load is switched on automatically when the voltage returns to the set range.

When the device is connected to the mains, the indicator will show the current value of the mains voltage and will blink. Flashing of the indicator means that there is no voltage at the device output. If the mains voltage is within the set range (factory setting 170-250V), after a switch-on delay (factory setting 15 sec) the load will be switched on and the indicator will stop blinking. If the voltage is not in the set range (less than 170V or more than 250V), the load will not be connected to the mains until it returns to normal.

Allowable shutdown limits, switch-on delay time, frequency control mode selection and digital display brightness level are set by the user using the buttons located on the front panel of the device. All set parameters are stored in non-volatile memory.

The device has an internal temperature control function that protects against overheating. The load is switched off when it reaches 70°C and the indicator shows "**Hot**". The load is automatically switched on when the device cools down to 60°C.

The manufacturer has the right to make changes in the design and wiring diagrams of the device that do not deteriorate its metrological and technical characteristics.

5. Device installation and configuration

The device is mounted on the TS-35 mounting profile (DIN rail). The device body occupies two 17.5 mm modules. Connect the wires according to the diagram (see below). When using stranded wire, cable lugs must be used.

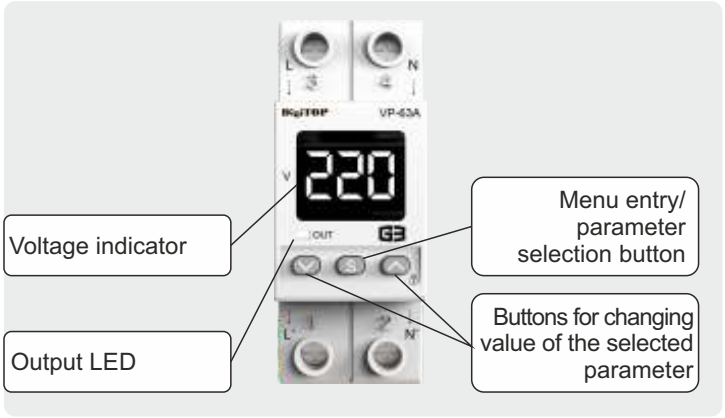
When installing the device in wet areas (bathroom, sauna, swimming pool, etc.), it is necessary to place it in a mounting box with a degree of protection of at least IP55 (partial protection against dust and protection against splashing in any direction).

To change the default parameters, select the appropriate parameter in the menu using the buttons located on the front panel of the device.

The sequence of parameter setting is shown in the figure below.

The selection of the parameter for setting is carried out by the (S) button , changing the value - by the (∨) (∧) buttons.

In the setting mode the set value flashes.All set values are stored in the non-volatile memory of the instrument.



To configure protection against voltage surges, you need to set the values of the upper and lower voltage thresholds and the switch-on delay time.

The brightness of the indicator can be selected from nine values - "**br.1**" - "**br.9**".

The device can operate with voltage sources with unstable frequency, such as generators. For this purpose, there is a function for selecting the frequency control mode: "**50.H**" or "**Auto**". The "**50.H**" mode is intended for operation in a household electrical network, the "**Auto**" mode is an automatic adjustment of voltage measurement when operating from sources with an unstable frequency. However, stable operation is not guaranteed with significant deviations (below 45 Hz or above 65 Hz) frequency.

In "**Auto**" mode, you can set the disconnect delay time "**Fr.d**": "**000**"-"**900**". This may be necessary when operating with generators, where large differences in engine speed occur when switching large loads. When set to "000" there is no delay (off time 20 ms).

The device has automatic button locking, which locks the buttons 30 seconds after the last push of the button: "**Loc. On**" - blocking is enabled, "**Loc. OFF**" - blocking is disabled. Removing the lock is a long press on the (∧) button.

The device has a memory function for the last event (load disconnection). Its value can be viewed in the menu.

In the next menu item you can see the current temperature inside the device in the format "**r.13 in_28ºC**", where **r.13** is the firmware version, **in_28ºC** is the internal temperature of the device.

Resetting values to factory settings is performed by the "**rESEt**" function, you need to press and hold the (∨) button in this menu item until the device reboots (the indicator will display a countdown).

6. Safety precautions

Installation and maintenance of the device must be carried out by qualified specialists who have studied this operating manual. During operation and maintenance, it is necessary to adhere to the requirements of regulatory documents:

- Rules for the technical operation of users' electrical installations.
- Safety rules for the operation of electrical installations of users.
- Occupational safety during the operation of electrical installations.

The device uses dangerous voltage -

DO NOT CONNECT THE DEVICE DISASSEMBLED!!!

Parameter setting sequence