



overvoltage protection
for professionals

ZUBR Dt

with thermal protection

D25t, D32t, D40t, D50t, D63t



Indicator
of the voltage
supply to
the load

Button of the
upper limit and
increasing of the
parameter

Functional menu

Button of the
lower limit and
decreasing of the
parameter

Technical passport

Installation and operation manual

Low Voltage Directive 2014/35/EU
EMC Directive 2014/30/EU



Purpose

Before the installation and operation of the device, please read by the end of this document. This will help to avoid possible danger, mistakes and misunderstandings.

The quality of circuit voltage must meet the state standards and equal to 230 V with minor deviations. At this voltage oriented manufacturers of home appliances during designing and manufacturing. But real supply voltage does not always correspond to this standards. May occur surges from 160 to 380 V, caused by a number of factors including the following:

- break and getting zero wire on one of the phases of overhead power lines (most common in the private sector, where dominated overhead power lines);
- a skew phases, caused by overload of one of the phases of some powerful customer;
- outdated equipment substations that doesn't meet the consumers power that increased.

The list of protected electrical and electronic equipment, is next: Current domestic consumers such as refrigerators, televisions, video and audio, computers and other electrical equipment that could be sensitive to deviations of supply voltage.

Technical data

№	Parameters	Value
1	Voltage limit	upper 220–280 V lower 120–210 V
2	Power Volt	not less than 100 V not more than 420 V
3	Device weight	0,21 kg ±10 %
4	Overall dimensions	66 × 85 × 53 mm
5	Connection	not more than 16 mm ²
6	IP to GOST 14254	IP20

№	Parameters	ZUBR D25t	ZUBR D32t	ZUBR D40t	ZUBR D50t	ZUBR D63t
7	Rated load current	25 A (max 30 A in 10 minutes)	32 A (max 40 A in 10 minutes)	40 A (max 50 A in 10 minutes)	50 A (max 60 A in 10 minutes)	63 A (max 80 A in 10 minutes)
8	Rated power	5 500 VA	7 000 VA	8 800 VA	11 000 VA	13 900 VA
9	Break-time at increasing	0,01–0,03 sec		not more than 0,04 sec		
10	Break-time at lower: > 120 V < 120 V	not more than 1,2 sec 0,01–0,03 sec		not more than 1,2 sec not more than 0,04 sec		
11	The number of operating cycles under load of not less cycles	100 000 cycles		10 000 cycles		
12	The number of operating cycles without load of not less cycles	1 000 000 cycles		500 000 cycles		
13	Relay type	electromagnetic		polarized		

Warning! It is forbidden to use voltage relay to protect equipment, which runs from the sources of modified sine, uninterruptible power supply output voltage sinusoid are not Long operation (more than 5 minutes) from the following sources voltage may damage ZUBR and lead to not warranty repair.

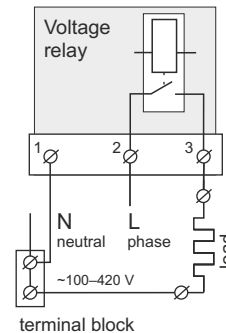
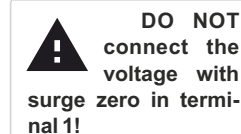
Supply package

Voltage relay ZUBR Dt with thermal protection	1 piece
Guarantee certificate and card	1 piece
Technical passport, manual	1 piece
Shipping box	1 piece

Connection scheme

Supply voltage (100 – 420 V, 50 Hz) served on terminals 1 and 2, while phase (L) is determined by the indicator and activated on terminal 2 and neutral (N) — terminal 1.

The connecting voltage wires connected to terminal 3 and neutral terminal block (not included).



Scheme 1.
The simplified internal circuit and connection scheme

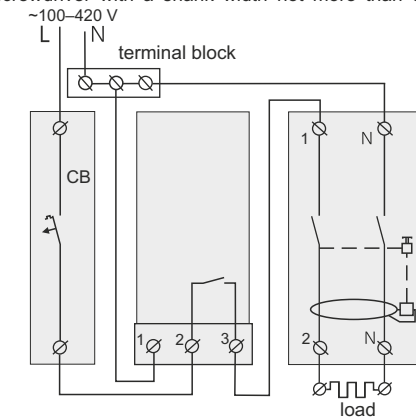
Installation

The appliance is intended for installation inside residences. The risk of moisture or humidity in the installation site should be minimal. When installing in the bathroom, toilet, kitchen, pool appliance must be located in a shell with protection degree not below IP55 per GOST 14254 (partial protection from dust and waterproof in any direction). The ambient temperature during installation should be within –5...+45 °C. The appliance is installed in a special box, which allows to conduct the easy installation and operation. Cabinet should be equipped with standard mounting rail 35 mm width (DIN rail). The appliance takes in width of three standard module on 18 mm. The height of the appliance should be in the range 0,5...1,7 m from the floor. The appliance is installed and activated after installation and inspection of the voltage. For protection against short circuit and excess capacity in circuit load necessarily need to set in front of the appliance, the automatic circuit-breaker (CB). The automatic switch off is established in the open-phase fault wire, as shown at the scheme 2. It shall be calculated upon the rated load current. To protect person from electric shock leak is set SSD (safety shutdown device).

To connect your device:

- fix the appliance on the mounting rail (DIN);
- take a wire;
- make the connection according to the passport.

Terminals of the device designed for wire cross section up to 16 mm². To reduce mechanical load on the terminals it is desirable to use soft wire. Clean the end wires of 10 ±0,5 mm. If end is longer, it can cause a short circuit, and if short — cause unreliable connection. Use the cable lugs. Undo the screws of the terminals and insert tipped end of the wire in terminal. Tighten terminal with derived average 2,4 H·m. Low tight may lead to low contact and overheating terminals and wires and over tight — damage terminals and wires. Wires protracted in terminals with a screwdriver with a shank width not more than 6 mm.



Scheme 2. Connection of the circuit breaker and SSD (safety shutdown device)

Screw with shank width more than 6 mm may apply mechanical damage to terminals. This could result in loss of warranty.

Cutting wires of wiring to which connects voltage relay should meet the value of electric current, which consumes voltage.

It is also necessary to take into account that the load power of 3 000 VA at 220 V will be 4 400 VA at 270 V. Therefore, please, do not allow the relay power handling to exceed its certified value at the maximum voltage deviation to the upper limit. If the relay power handling exceeds its certified value use the electric contactor (magnetic starter, power relay) which is designed for this power capacity.

Exploitation

Enabling



When you turn on the appliance, it immediately begins to indicate the main voltage. If the voltage is within acceptable limits, turns on loading and green indicator.

The value of voltage that has exceeded the limit will flash alternating with «U₋», if the lower limit is exceeded, and with «U₊», if the upper limit is exceeded.

The upper / lower limit (factory setting 242 V / 198 V)



To view the upper limit, press the «+», button, to view the lower limit, press the «-» button. Then use the «+» and «-» buttons to change the limit as necessary. In 5 sec after the last pushing buttons relay return to indication of main voltage.



When setting the voltage limits use the protected equipment technical documentation.

Function menu (table 1)



Use the middle button to navigate through the menu.
Use the «+» and «-» buttons to change the parameters. After pressing the button for the first time the parameter will flash, after pressing it for the second time the parameter will change.

In 5 sec after the button was pressed the indicator will return to displaying the system voltage.

Table 1. Navigating through the Function menu

Menu section	Enter by pressing the middle button	Screen	Factory setting	Change with «+» and «-»	Notes
View the latest emergency voltage	click 1 time	380. n 0	The log is capable of storing the last 50 emergency or overheat alarms. Log entries are displayed in order from the last to the oldest («n 0» is the last entry, «n 1» is the penultimate one, and «n99» is the oldest). To move through the log use the «+» or «-» buttons. When viewing the emergency voltage, the relay will briefly display the emergency alarm number in 1 second. To reset the log, while viewing it, hold down the middle button for 6 seconds until «rSt.» message appears. After releasing the button, the log will be cleared and the screen will display:«---».		
Load delay (delay time to on)	click 2 times	t on	3	3–600 sec, step 3 sec	It is used for compressor equipment protection.
Models of time off when the output voltage limits (professional)	click 3 times	Pro off	off	on off (see table 2)	Professional model is not off load at safe in magnitude and duration of voltage deviations. The curve taken «TIC (SVEMA) Curve» (see fig. 1).
Correction of screen reading	click 4 times	Cor	0	±20 V	If necessary adjust the voltage indication.
Firmware version	hold the button for 6 sec	t57	to view		Attention! The manufacturer reserves the right to modify the firmware to enhance the device technical characteristics.

Delay time of load turning on



Viewing and controlling the delay are described in the function menu table.
The countdown always will be accompanied by flashing dot in the rightmost discharge indicator is set at 3 sec and more than 100 sec, and when the time remaining is less than 100 sec the display will show a countdown in seconds to the turning on of the load. If the set delay time is more than 3 seconds, in a short-term voltage jump the screen will display the maximum voltage, then the current voltage and the countdown.

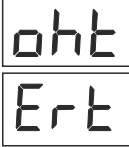
For protection of refrigeration equipment, where there is a compressor, it is recommended to set a delay of turning on load 120–180 sec. It will allow to increase the service life of the compressor.

Resetting to the factory settings



To reset the factory settings, hold the three buttons at the same time for more than 12 s. until «dEF» message appears on the screen. After release, reset to factory settings and reboot will take place.

Protection from inner overheating



In case if the temperature inside the exceed 80 °C, will be emergency lockout of loading. On the screen 1 time/s (overheat) will be displayed. At this time, pressing the middle button will display the temperature of the thermal protection sensor. The device will be unlocked in case if the temperature inside will decrease to 60 °C.

If the protection trips more than 5 times within 24 hours, the voltage relay is blocked until the temperature inside the case drops to 60 °C («oht» stops blinking) and one of the buttons is pressed.

At breakout or short circuit of temperature sensor, device continues to operate normally, but every four seconds the message «Ert», indicating the problem with sensor. In this case, control over inner overheating will not be done.

Table 2. Models shutdown exit time voltage beyond

Model	Limit	Limit of power, V	Offline time, sec
The usual default Pro off	Upper	220–280	see Technical data table
	Lower	120–210	1
		less 120	see Technical data table
Professional Pro on	Upper	more 264	see Technical data table
		220–264	0,5
	Lower	176–210	10
		164–176	0,5
		less 164	see Technical data table, item 10, at < 120 V

POSSIBLE PROBLEMS, CAUSES AND WAYS TO OVERCOME THEM

At turning on neither indicator nor screen do not shine.

Possible cause: There is no power supply voltage.
It is necessary to: Ensure supply voltage presence.

After turning on the screen normal voltage level, but load is not turning on.

It is necessary to: Check the detention. In other cases, please, address to a service centre.

Safety instructions

Carefully read and become aware of yourself these instructions.

Connection of the device must be done by a qualified electrician.

Before the installation (dismantling) and connection (disconnection) of the device, turn off voltage supply and also act according to the «Rules of an arrangement of electric installations».

Turning on and off or and configure the device should be with dry hands.

Do not connect the device to the network disassembled. Avoid hitting of water or moisture to the device.

Do not expose the device to extreme temperatures (higher than 40 °C or below -5°C) and high humidity.

Never clean the device with the use of chemicals such as benzene, solvents.

Do not store the device and do not use it in areas with the dust.

Do not attempt to disassemble and repair the device. Do not exceed the landmarks value adaptor and power.

To protect against overvoltage caused by lightning discharges, use a lightning protector.

Protect the children from games with the working device, it is dangerous.

Do not fire and do not throw away the device with the household waste.
Device used must be taken in accordance with current legislation.

Transportation of goods carried in the package, ensuring the safety of the product.

The device is transported by any kind of transport (rail, sea, motor, air transportation).

Date of manufacture is on the back side of device.

If you have any questions call the Service centre the telephone number listed below.