VOLTAGE RELAY
PH-117

OPERATING MANUAL

♦♦♦♦♦

Quality control system on the development and production complies with requirements ISO 9001:2015

Review the Operating manual before using the unit.
Store the unit in the operating environment for 2 hours before switching to the mains.
Do not use abrasives or organic compounds for cleaning (spirit, gasoline, solvents, etc.).

⚠ NEVER ATTEMPT TO REMOVE AND REPAIR THE UNIT.
Some of the unit components may be live.
NEVER ATTEMPT TO OPEN AND REPAIR THE PROTECTED EQUIPMENT, IF SWITCHED TO THE UNIT SOCKET.

⚠ The electrical contact between the plug and the socket remains even in case of deactivated unit
NEVER ATTEMPT TO OPERATE THE UNIT WITH THE MECHANICAL DAMAGE OF THE HOUSING.
NEVER ATTEMPT TO OPERATE THE UNIT UNDER CONDITIONS OF HIGH HUMIDITY.
Do not let water into the unit.

⚠ WARNING! THE UNIT SHOULD BE OPERATED IN THE ELECTRIC MAINS PROTECTED WITH AUTOMATIC CIRCUIT BREAKER WITH THE BREAKING CURRENT OF 16 A OR MORE.
This unit is not designed for power-cut in event of a short circuit.

This unit is safe for use in case of compliance with operating rules.

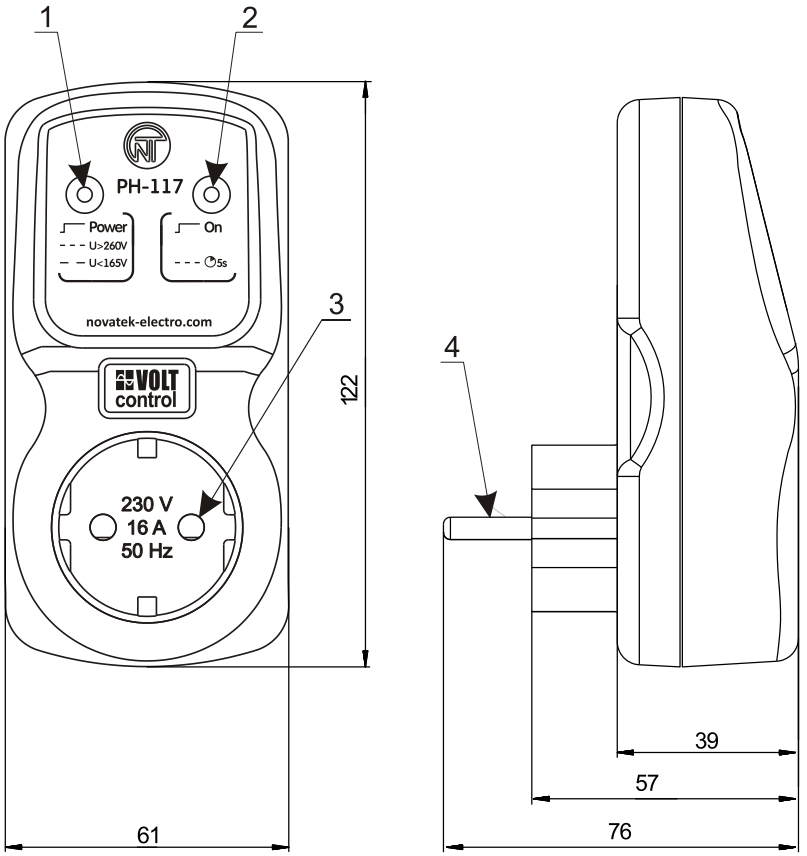
1 APPLICATION

The voltage relay PH-117 ”Volt Control " (hereinafter referred to as the “product” or PH-117) has been designed to protect household appliances (equipment) with a power of up to 3.6 kW (refrigerators, air conditioners, washing machines, TV and audio equipment, etc.) from unacceptable voltage fluctuations in the network and the consequences of the neutral failure.

PH-117:

– Provides for disconnection of the protected equipment, if the value of the network voltage exceeds the limits of 165-260 V (after the network parameters are restored, automatic re-activation will occur (hereinafter “AR”));

- Indicates the compliance of the electrical network voltage with the current standards, the state of the accident and the presence of voltage in the outlet of the product.



1 – is **POWER** indicator, which:
- is on continuously, if the mains voltage is within the range of 165-260 V;
- flashes at a high frequency, if the mains voltage value is greater than 260 V;
- flashes at a low frequency, if the mains voltage is less than 165 V;

2 - is **ON** indicator, which:
- Lights up when there is a voltage in the outlet of the product;
- Flashes when there is no voltage in the outlet of the product; the mains voltage is normal and the ARA time is counting down;
- Stays OFF when there is no voltage in the outlet of the product; the mains voltage goes beyond 165-260 V;

3 - is a socket for connecting the protected equipment;

4 - is a plug for connecting PH-117 to the electrical network.

Figure 1 – Faceplate and overall dimensions

2 TECHNICAL SPECIFICATIONS

Table 1

Description	Unit of measurement	Value
Designation of the product	–	Control and distribution equipment
Typical operation	–	Long-continued
The product protection degree	–	IP 30
Class of protection against electric-shock hazard	–	I
Climatic version	–	УХЛ 3.1
Range of operating temperatures	°C	-20 – +45
Storage temperature	°C	-45 – +60
Permissible pollution degree	–	II
Overvoltage category	–	II
Insulation rated voltage	V	450
Rated impulse withstand voltage level	kV	2.5

Table 2

Description	Unit of measurement	Value
Rated voltage	V	230/240
Mains frequency	Hz	47 – 65
Voltage harmonic composition (unsinusoidality)		EN 50160
Protection response time at a voltage higher than 260 V	s	1
Protection response time at a voltage higher than 285 V	s	0.03
Protection response time at a pulse voltage increase for more than 420 V at a pulse duration of more than 1.5 msec., not over	s	0.02
Protection response time at a voltage lower than 165 V	s	7
Protection response time at a voltage lower than 145 V	s	0.12
Maximum switching current (of active load), not less than	A	16
Accuracy of determining the voltage response threshold, not over	V	3
The minimum voltage, at which the operation is maintained (the effective value)	V	120
The maximum voltage, at which the operation is maintained (the current value)	V	420
Voltage return hysteresis, not less than	V	4
Automatic re-activation time	s	5
Power consumption at unconnected load, not over	W	2
Switching resource of output contacts: - under a load of 16 A, not less than - under a load of 5 A, not less than	times times	100 000 1 million
Overall dimensions	mm	See Fig. 1
Weight, not over	kg	0.160

PH-117 complies with requirements:
EN 60947-1; EN 60947-6-2; EN 55011; EN 61000-4-2.

No harmful substances in excess of the maximum permissible concentration is available.

3 OPERATION OF PH-117

PH-117 can be in the following states:
- Normal operation and
- Voltage accidents.

3.1. PH-117 is in a state of normal operation, if the controlled voltage is within the specified limits of 165-260 V and the AR time of 5 sec. has elapsed.

In this state, the protected equipment is connected to the network and the **ON** and **POWER** indicators are lit.

3.2. If the value of the mains voltage exceeds 260 V for more than one second, PH-117 goes into a state of emergency at an increased voltage. With a significant increase in voltage (up to more than 285 V), PH-117 will enter the state of an accident at an increased voltage in 0.03 sec.

In this state, the protected equipment disconnects from the network, the **ON** indicator does not light up, and the **POWER** indicator flashes at a high frequency.

3.3. If the value of the mains voltage becomes less than 165 V for a time of more than 7 sec., then PH-117 goes into a state of an accident caused by low voltage. With a significant decrease in voltage (below 145 V), PH-117 will enter the state of an accident at a reduced voltage in 0.12 sec.

In this state, the protected equipment disconnects from the network, the **ON** indicator does not light up, and the **POWER** indicator flashes at a low frequency.

3.4. After the network voltage parameters are restored, the AR time counts down, while the **POWER** indicator lights up and the **ON** indicator flashes.

After the end of the AR time, PH-117 switches to the state of normal operation.

4. PH-117 CONNECTION

4.1. Connect PH-117 to a power outlet.
The product is ready to work.
4.2. Connect the protected equipment to the PH-117 outlet.

5 STORAGE AND TRANSPORTATION CONDITIONS

PH-117 should be stored in a factory package in enclosed rooms with ambient temperature from - 45 to +60 °C and exposed to not more than 80% of relative humidity. It should be no fumes in the air that may exert a deleterious effect on package and the PH-117 components. The Buyer must provide the protection of the relay against possible mechanical damages in transit.

6 WARRANTY AND CLAIMS CONDITIONS

6.1. The lifetime of the relay is 10 years. Upon expiration of the service life, contact the manufacturer.

6.2. Shelf life is 3 years.

6.3. Warranty period of the relay operation is 5 years from the date of sale.

During the warranty period of operation (in the case of failure of the relay) the manufacturer is responsible for free repair of the relay.

ATTENTION! IF THE RELAY HAS BEEN OPERATED WITH THE VIOLATION OF THE REQUIREMENTS OF THIS OPERATING MANUAL, THE USER WILL LOSE THE RIGHT TO WARRANTY MAINTENANCE.

6.4. Warranty service is performed at the place of purchase or by the manufacturer of the relay.

6.5. Post-warranty service of the relay is performed by the manufacturer at current rates.

6.6. Before sending for repair, the relay should be packed in the original or other packing excluding mechanical damage.

7 ACCEPTANCE CERTIFICATE

PH-117 was produced and accepted in accordance with the requirements of effective technical documentation and was recognized as suitable for operation.

Seal	Head of QCD	Date of manufacture
	_____	_____

8 DATA ON CLAIMS

Earnest request: *indicate the reason for return in the notice of faults field at the return of the relay or in case of submitting for warranty service or post-warranty service.*

_____
_____
_____
_____
_____
_____
_____
_____

With all questions, please, contact the manufacturer.

"Novatek-Electro" Ltd.
59, Adm. Lazarev Str.,
Odessa, Ukraine, 65007
Tel. +38 048 738-00-28, +38 0482 37-48-27
Tel/Fax (+38 0482) 34-36-73
www.novatek-electro.com

Sale date_____