

**TRF  
STEP-DOWN  
TRANSFORMER**

**USER MANUAL**





## WARNING

The present operation manual consisting of the technical details, operating instructions and technical specification applies to the step-down transformer and covers its installation as well as the regulations and warnings required for correct and safe operation of the product.

Disconnect the product from power mains prior to any connection, servicing and repair operations. Mounting and maintenance are allowed for duly qualified electricians with valid electrical work permit for electric operations at the units up to 1000 V after careful study of the present user's manual. The single-phase power mains must comply with the acting local electrical norms and standards. The fixed electrical wiring must be equipped with an automatic circuit breaker. The transformer must be connected to power mains through an automatic circuit breaker QF integrated into the fixed wiring system with the gap between the breaker contacts on all poles not less than 3 mm. Prior to connecting the product to the power mains check for visible damage as well as for any foreign objects in the unit casing.

### **RESTRICTIONS:**

The product may only be used as intended. No modifications or alterations are allowed; Do not use the product if the ambient air consists contains explosive or corrosive substances; Avoid moisture and splashes on the transformer casing; Do not block the ventilation holes in the casing; Do not position the transformer close to heating appliances.

The product is not to be used by children and persons with reduced physical, mental or sensory capacities, without proper practical experience or expertise, unless they are controlled or instructed on the product operation by the person(s) responsible for their safety. Do not leave children unattended and do not let them play with the product.



*Recycle at the end of the service life.*

*Do not dispose the product with unsorted municipal trash.*

**Read the present user manual carefully before proceeding with installation works. Compliance with the manual requirements ensures reliable operation and long service life of the product. Keep the user's manual available as long as you use the product as you may need to re-read the information on the product servicing.**

## **DELIVERY SET**

The delivery set:

1. Transformer - 1 item;
2. Screws and dowels - 2 items;
3. Plastic screwdriver - 1 item (only for the models with a timer);
4. Spare fuse 0.25 A/250 V - 1 item;
5. User's manual;
6. Packing box.

## **MAIN TECHNICAL DATA**

<b>Input voltage [V ~ 50/60 Hz]</b>	<b>220-240</b>
<b>Output voltage [V ~ 50/60 Hz]</b>	<b>12</b>
<b>Max. load power [W]</b>	<b>16</b>
<b>Max. load current [A]</b>	<b>2</b>
<b>Ingress protection</b>	<b>IP 30</b>
<b>Weight [kg]</b>	<b>0,85</b>

## **BRIEF DESCRIPTION**

The TRF-220/12-25 K transformer is designed for safe ~12 V voltage power supply to domestic fans.

**TRF-220/12-25 K** - basic model, fig. 3;

**TRF-220/12-25 KV** - modification with a pull-cord switch, fig. 3;

**TRF-220/12-25 KT** - modification with a run-out timer adjusted from 2 to 30 minutes, fig. 4;

**TRF-220/12-25 KTH** - modification with a run-out timer adjusted from 2 to 30 minutes and a humidity sensor with the set point adjusted from 60% up to 90%, fig. 4;

**TRF-220/12-25 KTP** - modification with a run-out timer adjusted from 2 to 30 minutes and a motion sensor with sensitivity area 1-4 meters and viewing angle up to 100° fig. 4.

Due to constant improvements the design of some models may slightly differ from those ones described in this manual.

## **OPERATION REQUIREMENTS**

The transformer is designed for connection to 220...240 V 50/60 Hz power mains and is rated for continuous operation always connected to power mains.

The product is rated for operation at the ambient temperature ranging from +1 °C up to +45 °C.

The product requires no grounding.

## **CONTROL LOGIC**

**TRF-220/12-25 KT** - the transformer supplies voltage to the connected fan after an external switch (i.e., light switch) supplies control signal to the input terminal LT. After control voltage is off, the transformer continues to supply voltage to the fan within the time period set with the timer.

**TRF-220/12-25 KTH** - the transformer supplies voltage to the connected fan after an external switch (i.e., light switch) supplies control signal to the input terminal LT or if indoor humidity exceeds the set point. After control voltage is off or after humidity drops down below the set point, the transformer continues to supply voltage to the fan within the time period set with the timer.

**TRF-220/12-25 KTP** - the transformer supplies voltage to the connected fan after motion detection at the distance from 1 to 4 m with the horizontal viewing angle of 100°. After no more motion is detected, the transformer continues to supply voltage to the fan within the time period set with the timer.

To adjust the power voltage supply turn-off delay time from 2 to 30 minutes, turn the control knob T clockwise to increase and counter-clockwise to decrease the turn-off delay time respectively, fig. 16.

To adjust the humidity set point from 60% up to 90%, turn the control knob H clockwise to increase and counter-clockwise to decrease the humidity threshold respectively, fig. 16.

**Warning!** *The transformer circuit is under mains voltage. Disconnect the product from power mains prior to any adjustment operations. The delivery set includes a specially designed plastic screwdriver for the transformer settings adjustments. Use the screwdriver to change the turn-off delay time or the humidity set point.*

*Do not use a metal screwdriver, knife, etc. for adjustment operations not to damage the circuit board, fig. 16.*

## **MOUNTING**

The transformer is designed for wall surface mounting and is fixed with screws and dowels supplied with the product. Do not install the transformer in humid environments.

The transformer and domestic fan mounting example is shown in fig. 2.

The transformer mounting sequence is shown in fig. 5-10.

The wiring diagram is shown in fig. 11-15.

The TRF 200/12-25 KV model is shown in fig. 15.

## **MAINTENANCE**

Clean the product from any dust and dirt which may accumulate on the surfaces once in 6 months, fig. 17-19.

Disconnect the transformer from power mains prior to any maintenance operations.

To clean the transformer use a soft cloth and a brush wetted in a neutral detergent solution.

Avoid water dripping on the electric components, fig. 20. Wipe the surfaces dry after cleaning.

## **TRANSPORTATION AND STORAGE RULES**

Transportation is allowed with any vehicle provided that the product is protected against mechanical and weather damage.

Store the delivered product in the manufacturer's original packing box in a dry ventilated premise.

The storage environment must not contain dust, acid or alkali vapours that may cause corrosion of the product parts.

## **MANUFACTURER'S WARRANTY**

The product is manufactured at the factory of "Ventilation systems" PrJSC (hereinafter referred to as the Manufacturer).

By purchasing this product the customer confirms to have read and agreed to the terms, rules and requirements related to operation, storage, transportation, mounting, adjustment, connection, maintenance and repair as well as warranty obligations with respect to this product as set forth in the manufacturer's accompanying documentation to the product.

The manufacturing company sets forth the warranty period (service life) of the product as 12 months following the sale date via retail network subject to the customer's ensuring compliance with the rules of transportation, storage, mounting and operation of the product.

In case of any malfunction of the product through the fault of the Manufacturing company within the warranty period (service life), the customer shall have the right to elimination of the manufacturing defects by means of warranty servicing performed free of charge.

The warranty servicing implies performance of activities related to elimination of defects in the product aimed to provide intended use of the product by the customer. The defects are eliminated either by replacing or repairing such a product or a part (component) thereof.

**NOTE: with the purpose of performing warranty servicing you please produce User Manual or other relevant substituting document and the payment document as an evidence of the purchase with indication of the sale date. The product model shall comply with that one specified in the User Manual or other relevant substituting document.**

With the purpose of performing warranty servicing please contact the trade company where you purchased the product. If warranty servicing on the spot proves impossible, you will be provided with the necessary information regarding rendering of this service.

### **Manufacturer's warranty shall not apply in the following cases:**

in case the customer fails to provide the product in complete according to the package contents specified in the User Manual or other relevant substituting document, including any components disassembled by the customer;

in case of incompliance of the model or marking of the product with data specified on the product packaging and in the User Manual or other relevant substituting document;

in case of non-timely technical maintenance of the product by the customer (dust, mud, oil condensate, foreign particles);

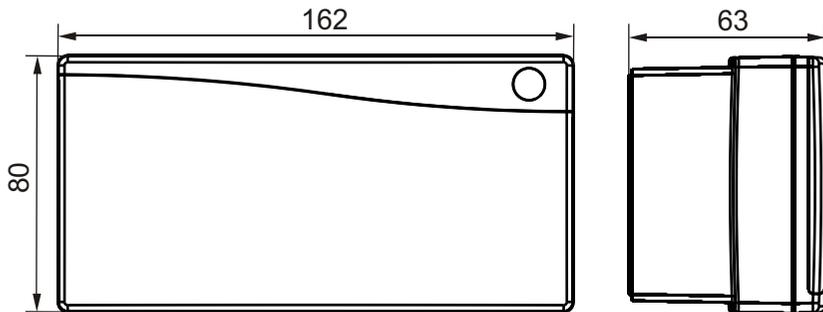
in case of causing external damage to the product by the customer ('damage' shall not apply to external changes of the product required for the product mounting);

in case of altering the product design or further reworking of the product;  
in case of replacing and using parts, units and components of the product not prescribed by the manufacturing company;  
in case of other use of the product other than intended use;  
in case of the customer's violating product operation rules;  
in case of connecting the product to electric mains of voltage exceeding voltage value specified in the user's manual;  
in case of step voltage that resulted in the product failure;  
in case of the customer's performing unauthorised repair of the product;  
in case of performing repair of the product by third persons unauthorized by the manufacturing company;  
in case of warranty period (service life) expiry;  
in case of the customer's violating transportation rules assuring prevention of damaging and/or destruction of the product;  
in case of the customer's violating product storage rules;  
in case of performing unlawful actions by third persons with respect to the product;  
in case of force majeure (fire, flood, earthquake, war, hostilities of any kind, blockade);  
in case of absent seals, provided such seals are prescribed by the User Manual or other relevant substituting document;  
in case of unavailable warranty card;  
in case of unavailable payment document to confirm the purchase with indication of the sale date.

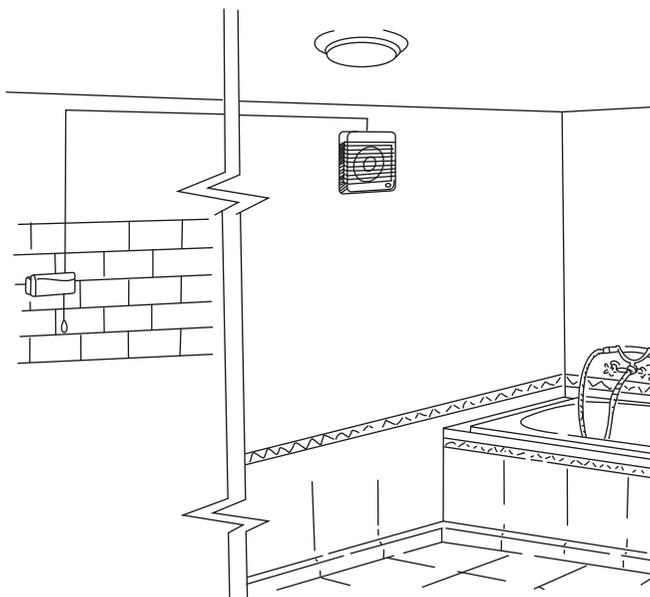
The manufacturing company shall be responsible for defects arising through its fault prior to the moment of transferring the product to the ownership of the customer.

The manufacturing company shall not be responsible for defects arising after transferring the product to the customer and caused by the customer's violating the rules of transportation, storage, assembly and operation of the product, or by actions of third persons, an accident or force majeure circumstances.

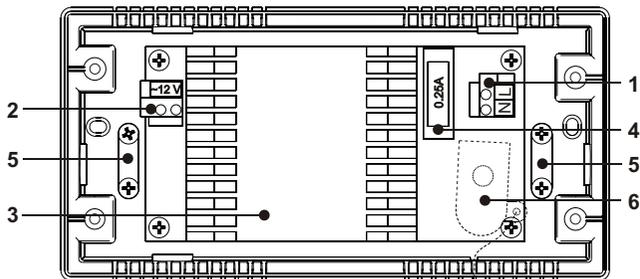
The manufacturing company shall not be responsible for damage to health and property of the customer caused by the customer's violating the User Manual or other relevant substituting document; other use of the product by the customer other than its intended use, or by failure of the customer to comply with warnings and other information on the product specified in the User Manual or other relevant substituting document, or by the customer's violating the rules of transportation, storage, mounting, maintenance and operation of the product.



1



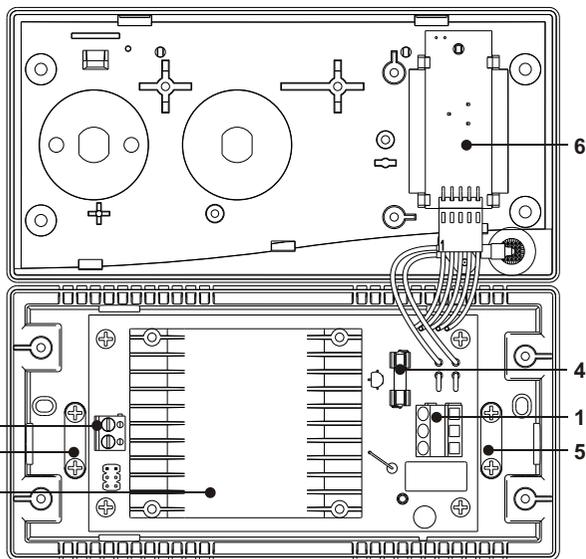
2



- 1 - input terminal block;
- 2 - output terminal block;
- 3 - step-down transformer;
- 4 - fuse;
- 5 - wire clamp.
- 6 - built-in switch  
(only for TRF-220/12-25 KV)

**TRF-220/12-25 K**  
**TRF-220/12-25 KV**

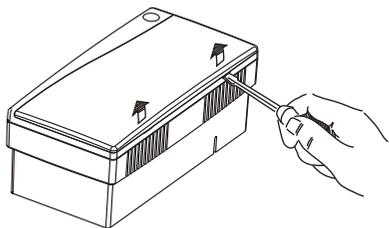
**3**



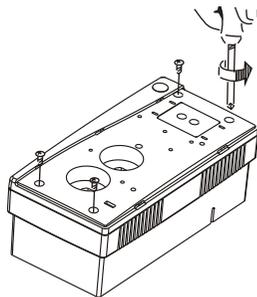
- 1 - input terminal block;
- 2 - output terminal block;
- 3 - step-down transformer;
- 4 - fuse;
- 5 - wire clamp.
- 6 - circuit diagram.

**TRF-220/12-25 KT**  
**TRF-220/12-25 KTH**  
**TRF-220/12-25 KTP**

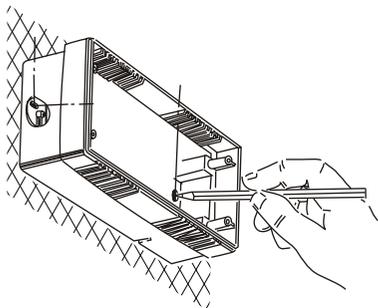
**4**



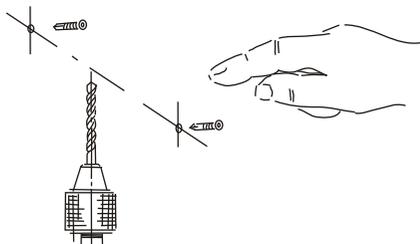
5



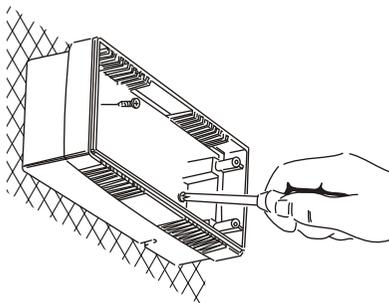
6



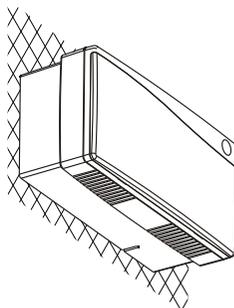
7



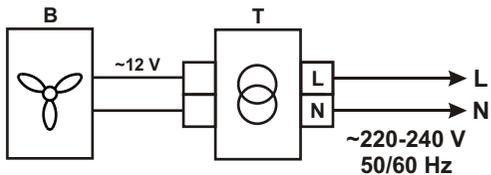
8



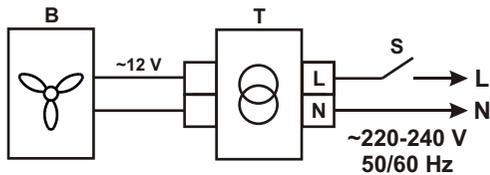
9



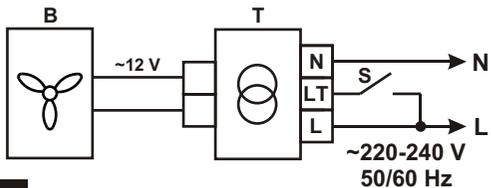
10



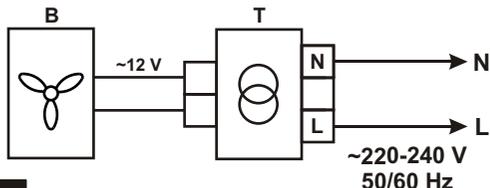
**11** TRF-220/12-25 K



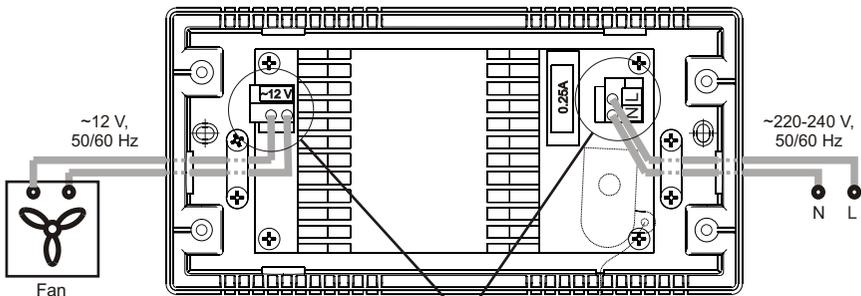
**12** TRF-220/12-25 KV



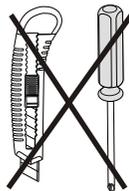
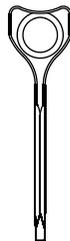
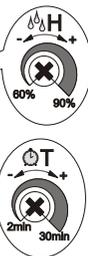
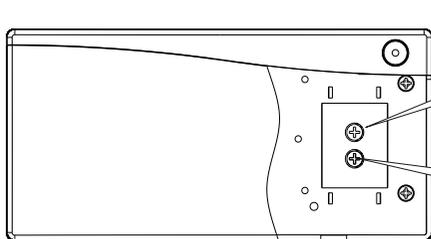
**13** TRF-220/12-25 KT/KTH



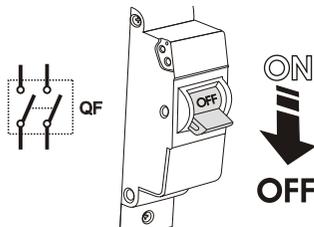
**14** TRF-220/12-25 KTP



**15**

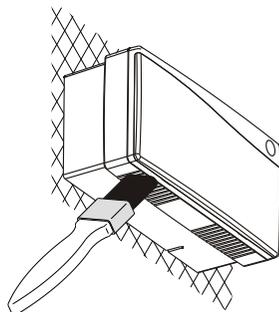


16

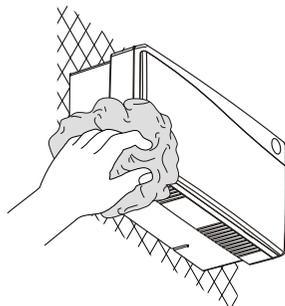


17

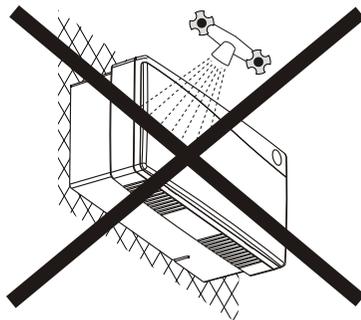
18



19



20









# ACCEPTANCE CERTIFICATE

The product is duly recognized as serviceable.

TRF-220/12-25

K

KV

KT

KTH

KTP

Approval mark

Manufacturing date

Sold  
(name and stamp of the trade company)

Date of sale

*(mark the proper model only)*