Security Fog Generator
«Udar-T-2»

Installation Guide

1 Introduction

1.1 Security Fog Generator «Udar-T-2» (hereinafter, the Udar-T) is designed to prevent thefts by visibility level decrease (zero visibility) by means of generating of an artificial fog (mist spray) into the protected premises.

2 General Information

The Udar-T provides:

- fog generation by external commands;
- generation and sending status information;
- external light and sound alerters management;
- continuous around-the-clock operation.

3 Conditions of Use

3.1 The artificial fog is not toxic. It is safe for humans, pets and equipment. Presence in mist environment does not result in injuries if the Udar-T is being used in accordance with manufacturer recommendations.

3.2 Needlessly do not stay in a room filled with a fog for a long time.

3.3 The sleeve of the Udar-T generator is heated to a high temperature; touching it may cause a scald. While fog is generated, do not stay near the generator sleeve.

3.4 The Udar-T is intended for use in the closed premises.

3.5 Don't install the Udar-T in damp room.

3.6 Be sure of the Udar-T case grounding during installation.

3.7 Before introduction into service the generator and during periodic testing, check the insulation of the power cable. A damaged cable may result in electric shock.

3.8 Use the original package for transporting the generator.

4 Operation Concept

4.1 The Udar-T modes of operation:

- switching on;
- standby mode;
- fog generation mode.

4.2 In standby mode, Udar-T maintains readiness for launch and awaits a command to start fog generation. To ensure constant availability, Udar-T maintains the temperature of the evaporator in the operating range. When a start command is received, it begins to generate fog in accordance with a chosen tactics.

4.3 Schematic view of the Udar-T is shown in Figure 1.

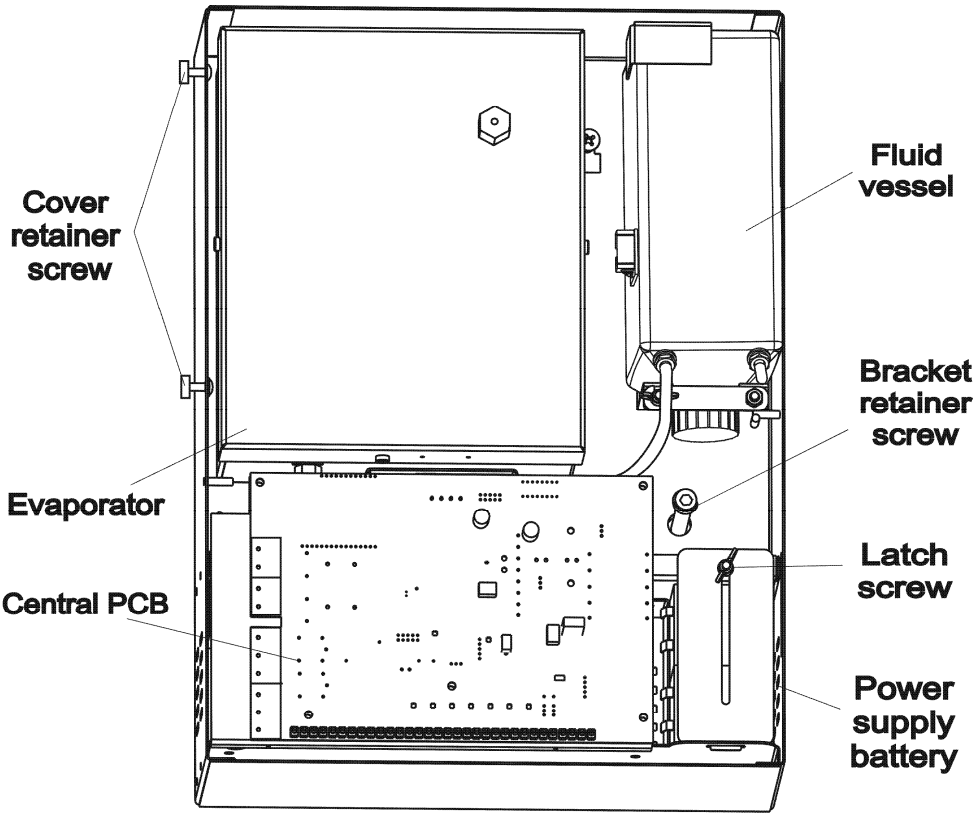


Figure 1 – Schematic view of the uncovered Udar-T

4.4 Outside view of central printed circuit board (PCB) with designated outputs is shown in Figure 2.

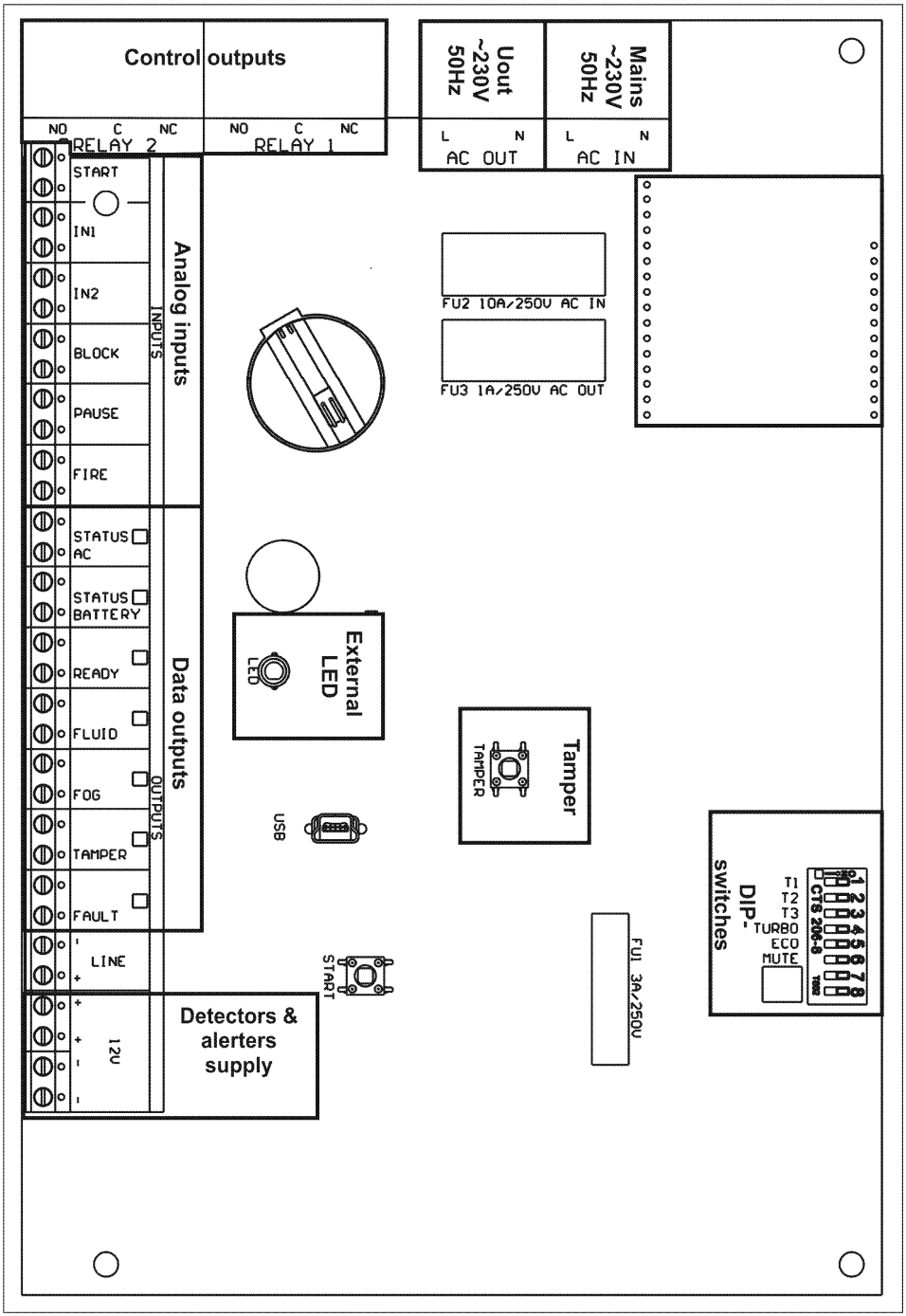


Figure 2 – Central PCB

5 Behavior

5.1 Analog control inputs of the Udar-T:

- START;
- IN1;
- IN2;
- BLOCK;
- PAUSE;
- FIRE.

5.2 Analog inputs control

The Udar-T analog inputs are controlled by the resistance in the following way:

Table 1

State	Circuit resistance
«Inactive» («Norm»)	3 … 4 kΩ
«Active» («Alarm»)	from 800 Ω to 2,5 kΩ from 5 kΩ to 11 kΩ
«Failure – short circuit»	500 Ω and less
«Failure-disconnection»	15 kΩ and more

Input state changing is provided by connected circuit resistance changing for the time more than 1 s.

Attention!

If one of the inputs is not engaged, connect EOL-resistor to avoid "Failure" message generation

5.3 Tactics of analog alarm loops operation (herinafter, AL)

- AL START:

- Fog generation starts during turnover of AL from «Inactive» to «Active» state, and it does not depend on other ALs state;
- Fog generation is finished after AL transfer to «Inactive» or «Failure» state;
- If operation of the input START is not necessary, it must be set in «Inactive» mode by connecting 3.3 kΩ resistor;

- ALs IN1, IN2, BLOCK and PAUSE provide joined operation:

- fog is generated during the time preset by the DIP-switches configuration under the following conditions:

a) simultaneous or alternate (with maximum interval 15 s) transfer AL inputs IN1 and IN2 from «Inactive» to «Active» state for the time not less than 1 s.

b) ALs BLOCK, PAUSE and FIRE are in «Inactive» state;

- fog generation interrupts after AL PAUSE is turned to «Active» state. Input PAUSE is intended for external fog sensor switching (not included, supplied optionally).

«Inactive» state of the AL PAUSE indicates fog insufficiency in the room. AL PAUSE usage provides dosed filling of the room and supports preset fog density;

- fog generation finishes in the event of:

a) upon the expiry of preset operation time;

b) in case of AL BLOCK transfer to «Active» state;

c) under one or several ALs transfers to «Failure» state.

Restart is possible only after all ALs return to their normal states.

If it is necessary to use the Udar-T with one IN1 with blocking capability, then IN2 should be transferred to continuous mode «Active» by hooking up 1 kΩ resistor on AL terminals.

If inputs BLOCK, PAUSE or FIRE don't take part in operation logic, then they should be transferred to the «Inactive» mode by connecting 3.3 kΩ resistor.

5.4 Data Inputs

Udar-T comprises the following data inputs:

- READY – input is closed at the time of readiness to fog generation. Evaporator is heated and ready to start (analog inputs are in «Inactive» state, case is closed);

- FOG – input **is closed during the fog generation,** connection pattern is shown in Figure 13;

- FLUID – input is closed if amount of fluid for generation of the fog is sufficient (remaining residue more than 30 %);

- FAULT – is closed under the absence of the Udar-T internal malfunctions (short-circuit of «12V» input, pump disconnection, clock battery discharge);

- TAMPER – is closed if the Udar-T case is closed
- STATUS AC – is closed if mains 230 V is supplied;
- STATUS BATTERY – is closed if rechargeable power supply battery is operating properly.

5.5 Supply Outputs

Udar-T comprises 2 outputs «+12V-» for detectors and alerters power supply. Maximum load carrying capability is 12V and 300mA for both outputs.

5.6 Indication

External LED indicator operation:

- is blinking green during evaporator heating;
- is lighting green continuously under failures absence and Udar-T readiness to fog generation;
- is lighting red continuously in case of any failure.

Internal green LED indicators operation:

- STATUS AC – LED is lighting if mains supply 230V is fed, and LED is switched off under its absence;
- STATUS BATTERY – is lighting in case of rechargeable battery normal state, and is switched off under failure or rechargeable battery discharge;
- READY – is lighting displaying Udar-T readiness to fog generation (evaporator is heated till operating temperature, failures and lockouts are absent, case is closed with a cover, fluid pump is free of short circuit);
- FLUID – is ON when amount of fluid for generation of the fog is sufficient. The LED is switched OFF in cases: if remaining fluid volume is less than 30% or failure in the level PCB;
- FOG – is ON during fog generation;
- TAMPER – is ON if the cover is closed, is OFF if it is opened;
- FAULT – is ON if failures are absent (there are no internal failures, «+12V-» input is free of shorts, fluid pump has no open fault, as well as clock power supply battery is properly operating).

Sound state indication:

- short sound signal goes up after energizing,
- turnover to evaporator heating mode is followed by 2 short signals,
- in case of failure, single signal every minute is fed.

5.7 Configuring

Configuring by means of DIP-switches:

DIP-switches T1,T2,T3 provide possibility of fog generation adjustment depending on recommended volume of premises.

Table 2

DIP- switch position			Maximum visual range		Number of starts from filled up vessel
T1	T2	T3	1 m	3 m	
OFF	OFF	ON	less than 50 m^3	less than100 m^3	15
OFF	ON	OFF	50-100 m^3	100-200 m^3	8
OFF	ON	ON	100-150 m^3	200-300 m^3	5
ON	OFF	OFF	150-200 m^3	300-400 m^3	4
ON	OFF	ON	200-250 m^3	400-500 m^3	3
ON	ON	OFF	250-300 m^3	500-600 m^3	3
ON	ON	ON	more than 300 m^3	more than 600 m^3	2

After the Udar-T installation is completed, it is recommended to fulfill test start and correct the fog generation time if it is necessary.

DIP-switch TURBO in ON position transfers the Udar-T to accelerated fog generation mode. This mode provides excess fluid flow rate.

DIP-switch ECO in ON position transfers the Udar-T to energy-safe mode. Upon that the evaporator temperature goes down. If at the same time AL BLOCK is in ACTIVE state (is customary used when the protected object is disarmed), it leads to energy consumption decrease.

If DIP-switch MUTE in set in ON position, it disables internal sound indication of the Udar-T.

6 Main Parameters and Characteristics

6.1 Main Parameters and Characteristics are listed in Table 3.

Table 3

Parameter	Value
Maximum volume of protected room (visual range 1 m, time period 60 sec)	300 m^3
Maximum period of uninterrupted fog generation	2 min
Response time of the fog generation after relevant command delivery, not more than	10 s
Volume of the fluid vessel	1 l
Restoration time after start	10 min
Fluid shelf life	2 years
Warm-up time (period of evaporator heating)	15 min
AC voltage supply	187 … 253 V
Standby power consumption, not more than	70 Wt
Maximum power consumption, not more than	1700 Wt
Rated battery capacity 12 V	2 pcs. 1,2 A*h
Battery life (fully charged) with following fog generation, not less than	2 h
FAILURE and ALARM messages duration, not less than	2 s
Event log capacity	2000 events
Maximum current commutated by data outputs	30 mA
Maximum voltage commutated by data outputs	36 V
Operating temperature	0 … +50 °C
Permissible relative humidity at a temperature +25 °C, not more than	95 %
IP rating	IP20
Dimensions (with bracket), not more	420x310x145 mm
Weight, not more than	18 kg
Average service life, not less than	5 years

6.2 The Udar-T is equipped with changeable cutout fuses, which are located on the central PCB:

a) in the mains supply circuit – 10A/250V;

b) in the high-power output circuit – 1A/250V;

c) in the rechargeable battery circuit – 3A/250V.

6.3 The Udar-T is designed for continuous operation around the clock.

6.4 The Udar-T does not cause any interference to consumer radio equipment.

6.5 The Udar-T remains operative under the impact of sinusoidal vibration with the acceleration of 0.981m/sec^2 (0.1g), within the frequency range 10 … 55 Hz.

6.6 The Udar-T is resistant to electromagnetic interference.

Attention! *It is recommended* ***to provide control of all Udar-T outputs*** *via the control panel. Absence of control can result in malfunction of the equipment, as the Udar –T can be in Failure mode or fog generation can be blocked!!!*

7 Scope of Delivery

7.1 Each Udar-T item unit package contains the items listed in Table 4.

Table 4

Name	QNT
Security Fog Generator «Udar-T-2»	1 pc.
Security Fog Generator «Udar-T-2». Installation Guide	1 pc.
Fluid vessel «Udar-T-F». Volume – 1 liter	1 pc. *
Rechargeable batteries 12 V1.2 Ah	2 pcs.*
Direct sleeve	1 pc.
Angled sleeve	1 pc.**
Ringbolt M8 DIN 580	1 pc.
Ceiling frame ring	1 pcт.
Bracket retention screw	1 pc.*
Resistor 3.3 κΩ ±5%	12 pcs.
Resistor 1 κΩ ±5%	6 pcs.
Cable tie 2.5x100 mm	4 pcs.
Bracket	1 pc.
* - installen inside the Udar-T case; ** - supplied optionally	

Factory-manufacturer reserves the right to introduce changes in the product design that does not influence the Udar-T quality without preliminary notice.

8 Security Requirements

8.1 Electrical resistance of the circuits between power supply terminals should be not less than:

- 20 MΩ – in normal climatic conditions;
- 5 MΩ at elevated ambient temperature +50 °C;
- 1 MΩ – in conditions of ambient humidity 95 % and at a temperature +25 °C.

8.2 Input terminals «Mains ~ 230V/50Hz» and «Uout ~ 230B/50Hz» carry high dangerous voltage.

8.3 The work on installation, installation, testing, maintenance and exploitation of Udar-T is permitted for persons with relevant qualifications who gained familiarity with this passport and who have been instructed in safety procedures for working with voltages up to 1000 V.

8.4 It is recommended to work with the open-covered device only with killed mains power.

8.5 When carrying out work, it is forbidden to touch the case of the evaporator, the sleeve and the copper tube connected to it.

9 The Udar-T Installation

To install the Udar-T proceed as follows:

9.1 Open package, make yourself sure in mechanic damages absence.

Attention! *To avoid sleeve damages* ***don't turn the Udar-T facedown.***

9.2 Withdraw the Udar-T from the package, untighten 2 screws and open the case (Figure 1)

If it is necessary, it is allowed to disconnect the ground wire and remove the cover completely.

9.3 Withdraw a pack with an assembly set and check scope of delivery in accordance with Table 4 of this Installation Guide.

9.4 Untwist bracket retention screw of (Figure 1) and release the bracket.

9.5 Open battery compartment latch by screw untwisting (Figure 1). Withdraw batteries and connect those in-series observing polarity (Figure 3). Install the batteries back in compartment, fit it by latch and tighten the screw (Figure 1).

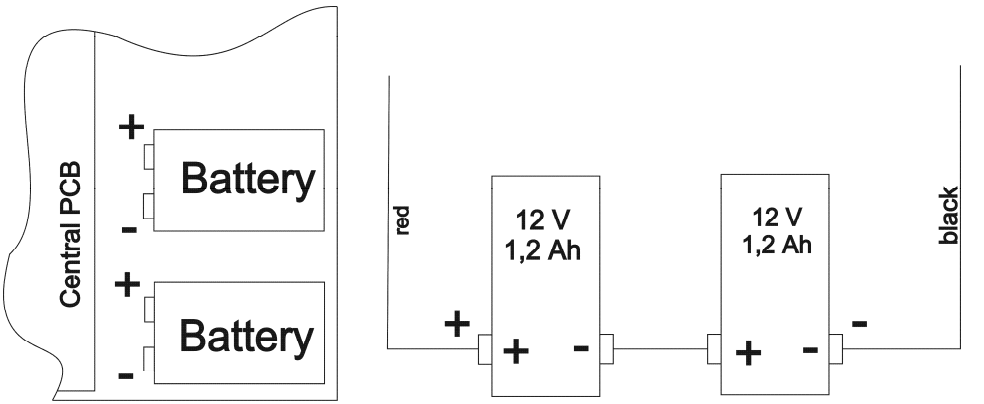
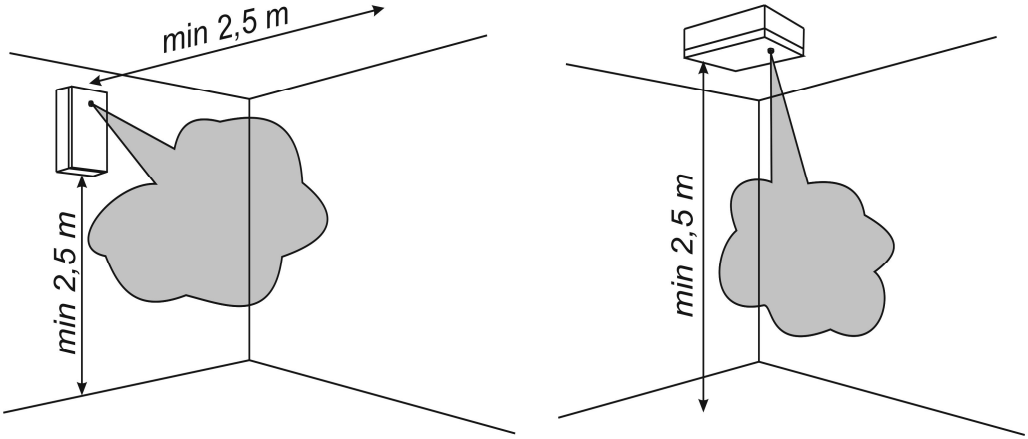


Figure 3 – Installation and connection of the rechargeable batteries

9.6 Choose a place of installation (Figure 4). Variants of the Udar-T installation **with a tilt or in inverted position are not permitted!**

Attention! *When choosing a place for installation, mind that* ***the sleeve shutdown is forbidden!*** *In order to avoid injuries and inadequate performance, it is recommended to install The Udar-T at a height not less than 2.5 m.*

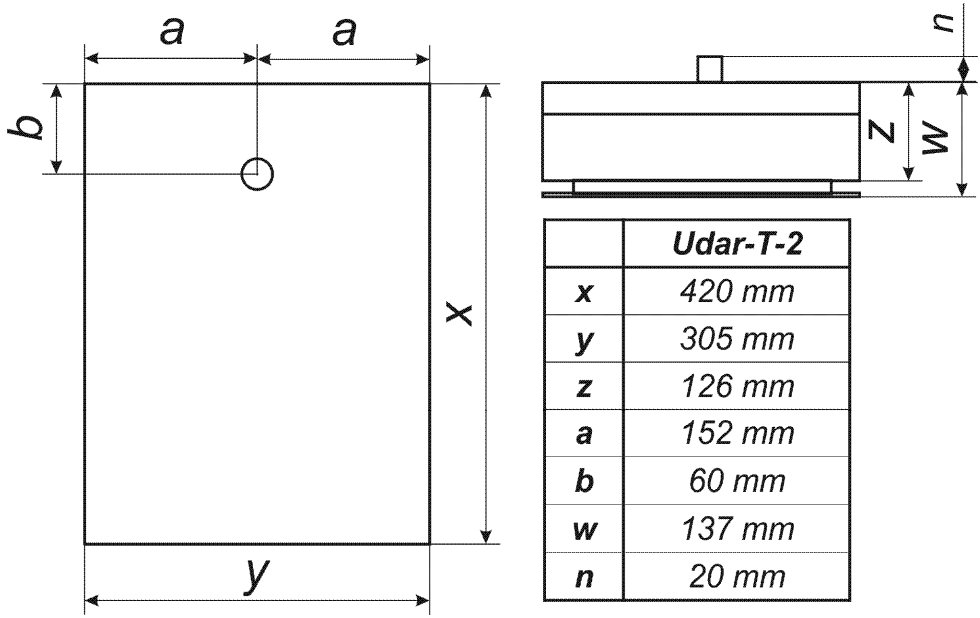


a) angular sleeve *b) straight sleeve*

Figure 4 – Variants of Installation

9.6.1 Hanging Ceiling Mounting

9.6.1.1 Remove ceiling panels and choose the Udar-T place of installation taking account of basic dimensions (Figure 5).



	Udar-T-2
x	420 mm
y	305 mm
z	126 mm
a	152 mm
b	60 mm
w	137 mm
n	20 mm

Figure 5 – Basic Dimensions

Attention! *Ceiling battens and ceiling profiles should not cause any difficulties in the Udar-T installation.*

9.6.1.2 Mark out and drill openings for studbolts M8 fastening (Figure 6).

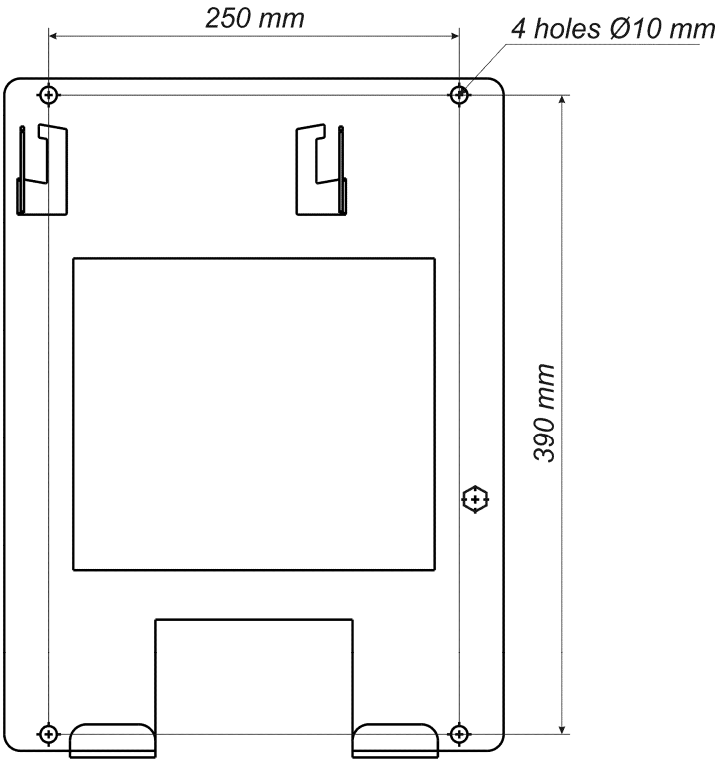


Figure 6 – Bracket

9.6.1.3 Start a collet sleeves on the studbolts ends and insert them into drilled holes. Fasten studbolts securely until tight.

9.6.1.4 Adjust studbolts length for placing a bracket in such a position at which a distance between the Udar-T and hanging ceiling should be in 15 … 30 mm limits (Figure 7).

9.6.1.5 Fasten the bracket on studbolts by means of nuts M8 using all 4 holes (Figure 6)

Attention! *When mounting the bracket on ceiling it is necessary* ***to fix it by nuts on both sides of each hole*** *(Figure 7).*

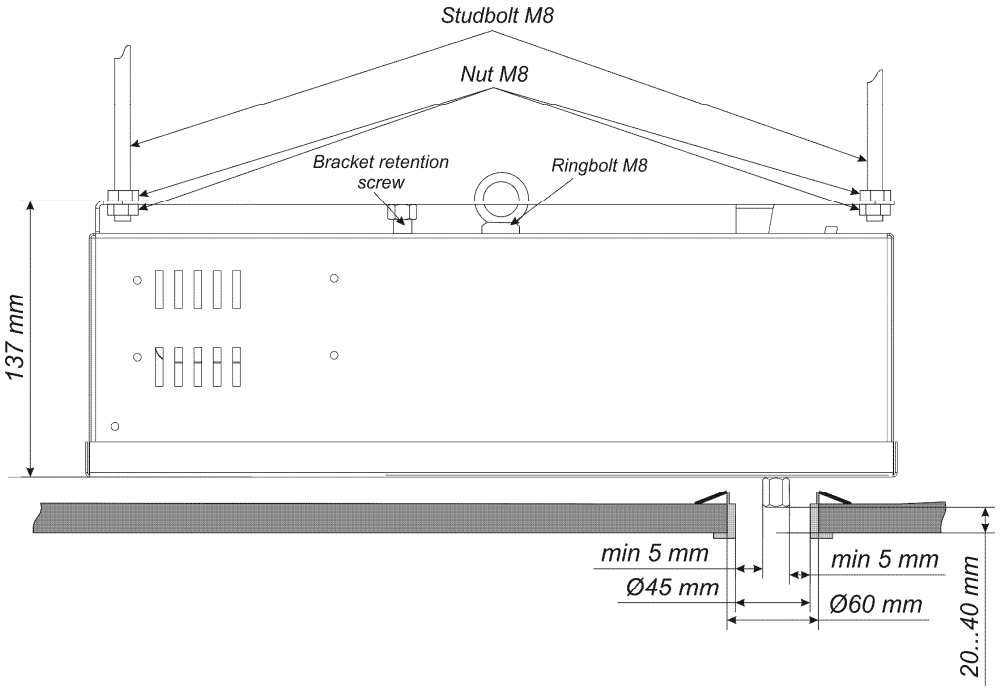


Figure 7 – Installation over hanging ceiling

Attention! ***It is recommended to use safety cable*** *preventing the Udar-T drop.*

9.6.1.6 Place the Udar-T on its side and tighten the supplied ringbolt (Figure 7).

9.6.1.7 Insert a safety cable through the ringbolt.

9.6.1.8 Carefully raise the Udar-T on the desired height using a safety cable and holding by hands; install it into the bracket.

9.6.1.9 Make sure that all the bracket hooks are inserted into the Udar-T case openings. Fasten the Udar-T by means of retention screw. (Figure 7).

9.6.1.10 Mark and cut out Ø 60 mm opening in the removed ceiling panel for the ceiling frame ring mounting

Attention! *The distance between Udar-T sleeve and edge of the ceiling frame ring* ***should not be less than 5 mm*** *(Figure 7).*

9.6.1.11 Push up the frame ring hooks and insert the frame into the hole. Make sure that there are no obstructions opposite to the Udar-T sleeve.

9.6.2 Wall Mounting

9.6.2.1 Mark out and drill holes in the wall for the bracket fastening.

9.6.2.2 Fasten a bracket by means of 4 ringbolts M8 (Figure 6)

9.6.2.3 Carefully raise the Udar-T on the desired height and install it into the bracket.

9.6.2.4 Make sure that all the bracket hooks are inserted into the Udar-T case openings. Fasten the Udar-T by means of retention screw (Figure 7).

9.7 Insert a power cable through the opening in the back case wall.

9.8 Hook up the power cable in accordance with connection pattern (Figure 12) and ground the Udar-T case to the marked ground contact. Fasten the cable by means of cable tie.

9.9 Connect The Udar-T data outputs to the control panel (hereinafter, the CP) for the Udar-T state information transmitting.

9.10 Hook up ALs for automatic start of the Udar-T, also connect alerters to the required voltage supply (See cl.19 «Detection patterns of external detectors and analog control inputs»).

Attention!

*If **any analog input is not used**, it is necessary to **install EOL resistor** for exclusion of FAILURE message generation.*

*It is recommended **to control all Udar-T outputs via the CP**. Control absence may cause the Udar-T false alarm or failure to operate.*

9.11 **Put off safety cup from a sleeve on a container lid** (Figure 8).

9.12 Fix cable and all others wires by cable ties 2.5 x 100 mm.

10 Putting into Operation

10.1 In accordance with a protected premises volume by means of DIP-switches, choose and set mode of a fog generation (Table 2).

10.2 Execute testing startup. For this purpose:

- supply mains power 230V to the Udar-T;
- push and fix tamper contact;
- make sure that all the ALs are in «Inactive» state;
- wait for evaporator heating (approximately 15 min), upon heating completion the Udar-T generates READY signal by switching relevant green LED on the PCB and by 2 short-term sound signals;

Attention!

If the Udar-T cover is opened *(tamper contacts are opened)****, fog generation is impossible.*** *Pay attention to the fact that the evaporator sleeve and inlet pipes* ***run temperature.***

- transfer AL START to «Active» state, after 2 sec pump should begin operation, and fog generation starts;

Attention! *During fog generation* ***the evaporator sleeve feeds hot vapor****.*

- transfer AL START to «Inactive» state, fog generation should stop;
- return tamper contact to normal position;
- put on the cover, connect ground wire to it, close the cover and fasten it by screws in 2 places. Pay attention to tamper actuation!

Attention!

Make sure that the cover ***does not obstruct the Udar-T sleeve.***
To be on the safe side it is recommended ***to fulfill a complete test of the Udar-T.*** *Transfer security detectors to «Alarm» state, wait for the preset operation time of evaporator finish.* ***In case of insufficient fog density*** *it is recommended* ***to increase the evaporator time of operation****.*

11 Renewal of Fluid Vessel

Attention! *Renewal of the fluid vessel should be* ***fulfilled only if the Udar-T is deenergized!***

11.1 Untighten retainer screw on the frame (Figure 8) and turn the frame.

11.2 Draw out a vessel by pulling on a vessel neck.

11.3 Turn a vessel with the neck upwards. Disconnect fluid supply pipe and loop from the level PCB.

11.4 Put off shipping protecting cup from the sleeve. Connect fluid supply pipe to sleeve of the new vessel and fasten it by cable tie.

Attention! The pipe *rising from the vessel* ***should not have excessive bends.***

11.5 Hook up the loop to the level PCB located on the vessel wall.

11.6 Insert vessel into the fitting location, turn the frame and tighten the screw.

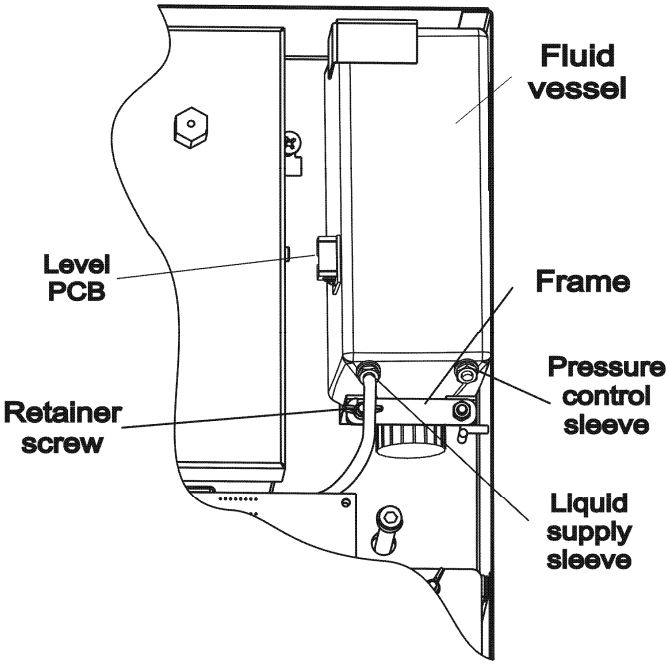


Figure 8 – Vessel Installation

Attention! *Used-on fluid vessels* ***should be sent to manufacturer*** *for the further filling.*

12 Maintenance

12.1 Maintenance is recommended twice a year with complete Udar-T blackout.

12.2 While carrying out maintenance pay attention to reliability of contacts in electrical conductors of socket connectors. Clean them by alcohol.

12.3 Make sure that the connections of the pipes and adapters are reliable and there is no damage to the vessel and fluid leaks inside the case.

13 Preparation for Storage

The Udar-T before transportation or storage does not need in rust-preventive treatment, as it made of corrosion-proof materials.

14 Storage and Transportation

14.1 Factory-packed Udar-T is resistant to:

a) transport jolting with the acceleration of 30 m/s^2 and with impact frequency rate from 10 to 120 impacts/sec or 15000 impacts with the same acceleration;

b) the ambient temperature minus 223 … +323 K (minus 50…+50 °C);

c) relative air humidity (95 ± 3) % at ambient temperature 308 K (+35 °C)

14.2 Udar-T warm-up time after transportation in conditions different to operational environment should be not less than 6 h.

14.3 The Udar-T in their original packing may be shipped by any transport means in closed vehicles that assume transportation of pressurized gas cylinders over any distances in compliance with the existing shipping rules concerning the respective means of transportation.

14.4 The storage premises should not contain any current-conducting dust, acid and alkali fumes, or corrosive or destroying insulation gases.

15 Manufacturer's Guarantees

15.1 The manufacturer guarantees conformity of the Udar-T to its Technical Specifications provided that the transportation, storage, installation and operation conditions are observed.

15.2 The guaranteed shelf life of the Udar-T is 24 months since the date of manufacture.

15.3 The guaranteed useful life is 12 months since the day of putting into operation within the guaranteed shelf life.

15.4 The «Udar-T» that is found non-conforming to the Technical Specifications shall be repaired by the manufacturer, provided the installation and operation rules have been complied with.

15.5 If you experience difficulties while installing and operating Udar-T, we recommend to contact technical support by phone: +7 (812) 233-29-53, 703-13-57 or by e-mail: support@rielta.com.

16 Recycling

16.1 Recycling of Udar-T is possible as it contains no toxic components.

16.2 Recycling of batteries should be performed according to the rules of disposal of batteries

16.3 Used-on fluid vessels should be sent to the manufacturer for regeneration.

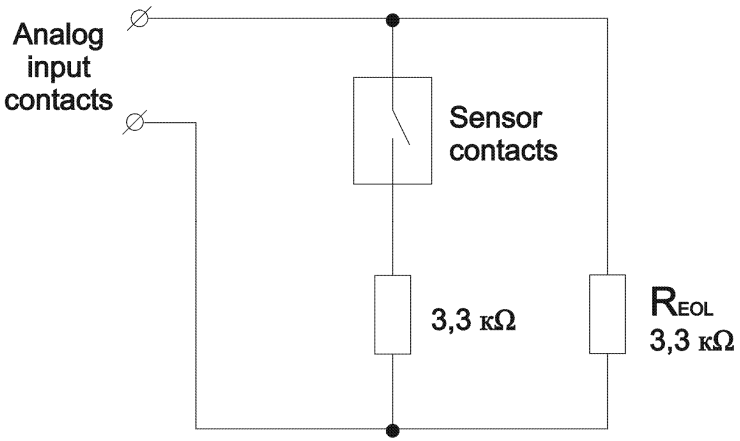
17 Packing Certificate

17.1 Security Fog Generator «Udar-T-2» has been manufactured in compliance with the active technical documentation, classified as fit for operation and packed by «RIELTA» JSC.

Packing date _____

18 External Sensors and Analog Inputs Connection Patterns

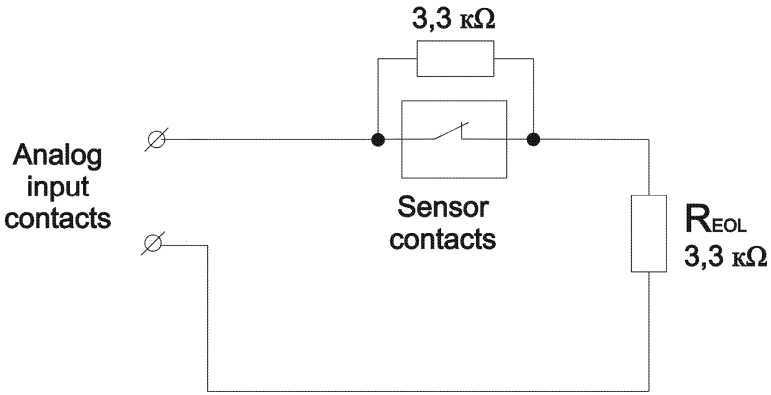
18.1 Normally-opened sensor:



R_{EOL} – terminal resistor

Figure 9

18.2 Normally-closed sensor:



R_{EOL} – terminal resistor

Figure 10

The simultaneous connection of up to 3 sensors of normally-opened type and up to 2 sensors of normally-closed type is allowed.

18.3 External alerter powered by ~230 V 50 Hz connection pattern

Total current is not more than 1 A.

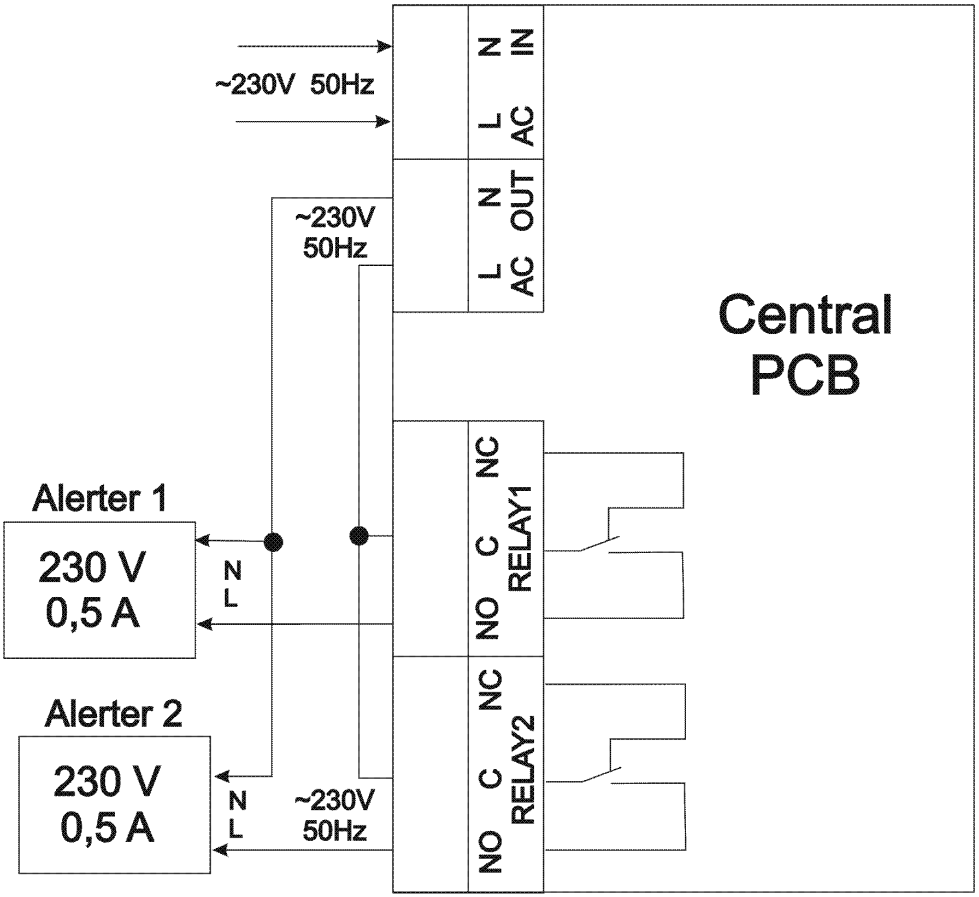


Figure 11

18.4 External alerter powered by 12 V connection pattern.

Total current is not more than 0.3 A.

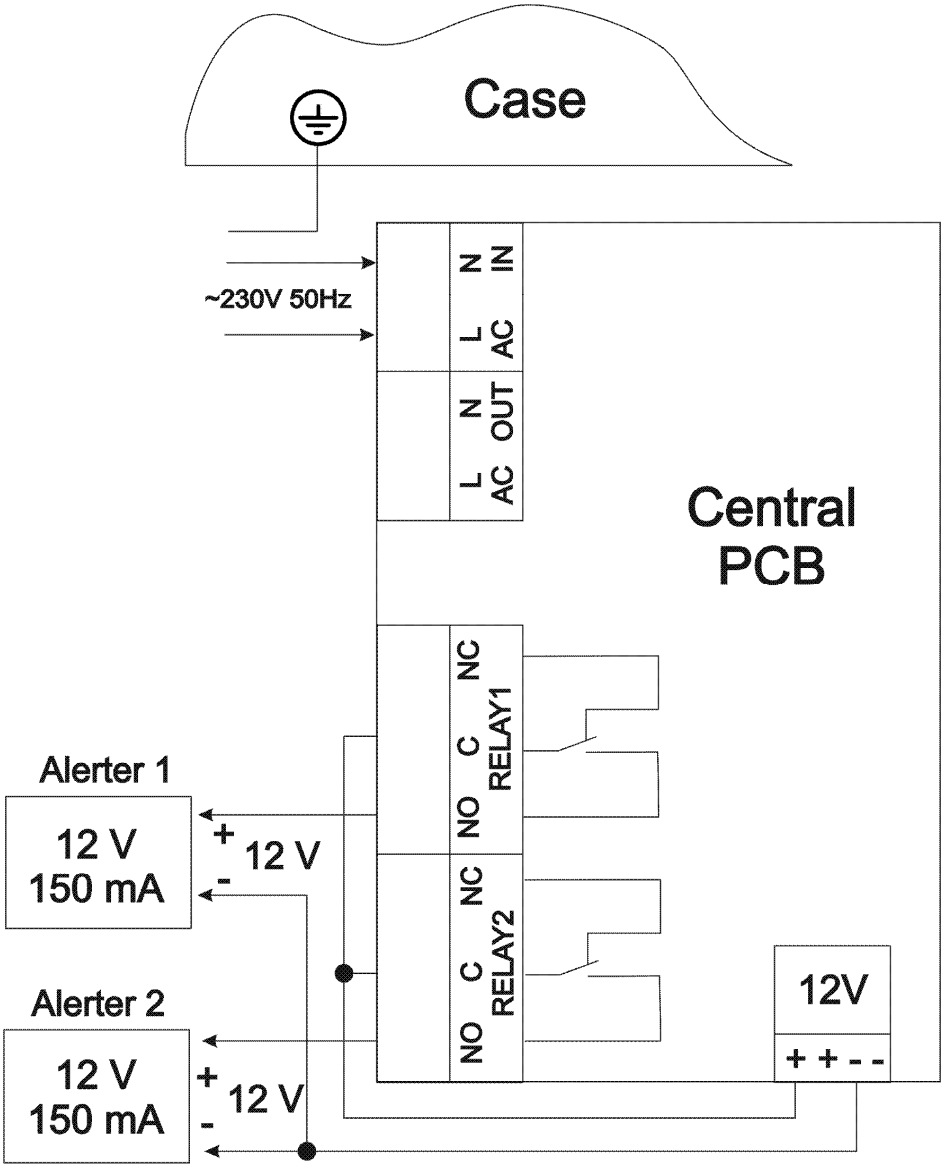
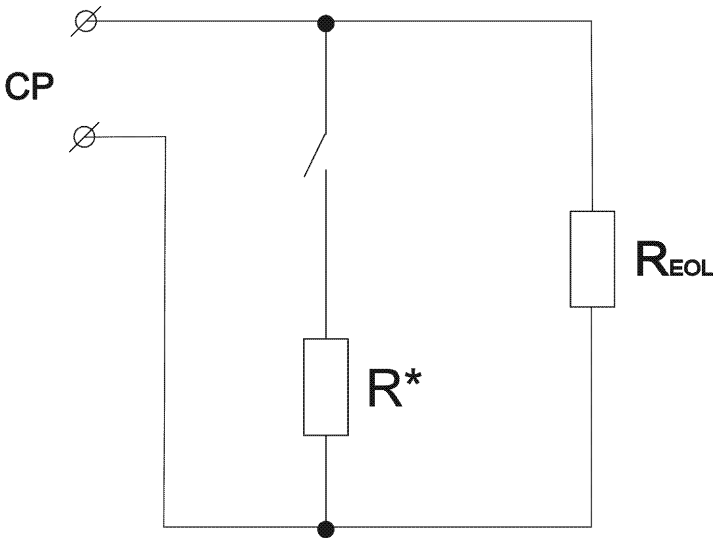


Figure 12

18.5 FOG output and CP AL connection pattern

Connection is fulfilled in accordance with CP adjustment sheet



R_{EOL} – terminal resistor
R* – limiting resistance

Figure 13

Under complete Udar-T blackout (main and backup power supply is OFF) «FOG» output remains opened.

Note

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