

EXPLOSION-COUNTERACTING SYSTEM «UDAR-KB» Installation Guide

Introduction

Explosion-counteracting system «Udar-KB» (hereinafter, Udar-KB) is designed for counteracting gas-explosion attacks against ATMs and self-service machines (hereinafter, «Secured Objects»). Such attacks are undertaken by introducing domestic gases into a Secured Object and igniting the gas-air mixture. The resulting explosion can breach the Secured Object and allow theft of contents.

Product Overview

Udar-KB provides:

- initial detection of pre-explosive concentration of dangerous flammable gases (methane, propane, etc.) inside Secured Object;
- generation of an alarm message by «C NC» contacts opening;
- gas-air mixture explosion countering-action by introduction of phlegmatizing agent (hereinafter, the Phlegmatizer).

The Udar-KB Components

The Udar-KB design is shown in Figure 1.

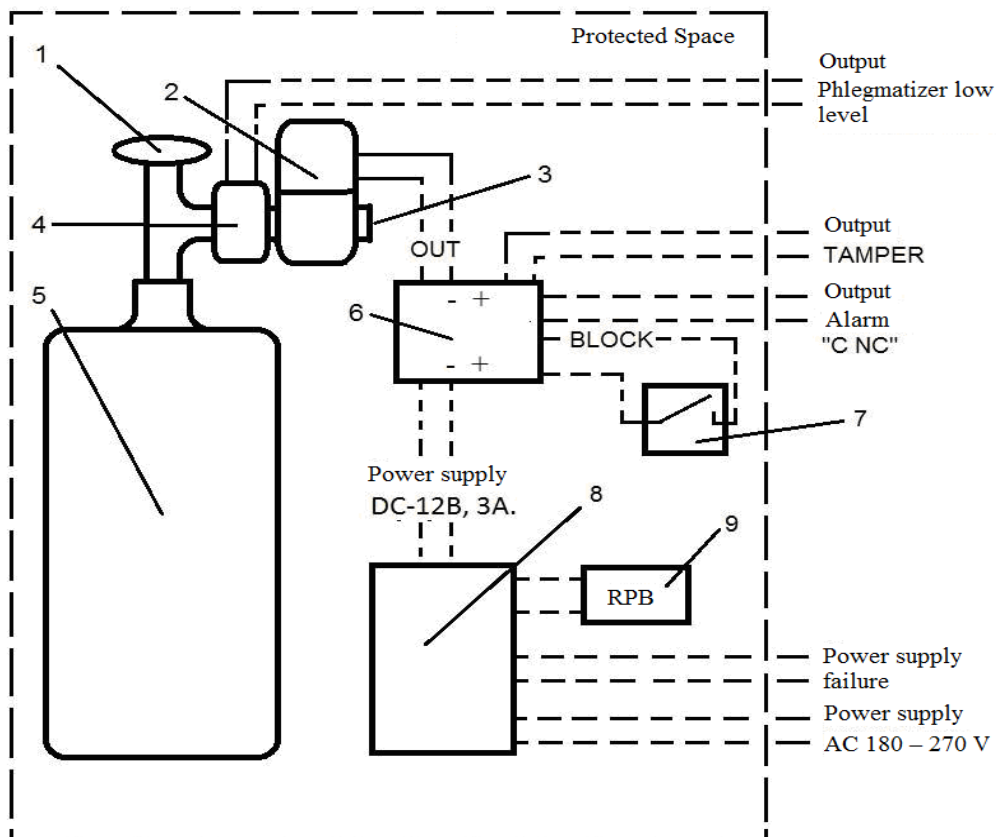


Figure 1

- 1- valve (should be opened after installation in the Secured Object);
- 2- tap;
- 3- opening for introduction of Phlegmatizer;
- 4- pressure sensor;
- 5- balloon charged with the phlegmatizing agent;
- 6- flammable gas detector «Udar-STG»;
- 7- magnetic contact;
- 8- backup power-supply unit;
- 9- rechargeable power-supply battery.

The Udar-KB comprises the following components:

- The flammable gas detector «Udar-STG» designed for detection of pre-explosive concentration of dangerous flammable gases (methane, butane, propane, etc.) inside Secured Object, alarm message generation, phlegmatization process monitoring and external magnetic contact control (as an example, MK-Ex vers.1);
- The phlegmatizing unit, containing:
 - Tank (of volume in accordance with the product version), for Phlegmatizer storage for the phlegmatizing agent storage;
 - pressure sensor, for generation of message about tank pressure lower than permissible level by means of output contacts opening;
 - valve plug, for the tank closure during service and transportation;
- Backup power-supply unit and rechargeable battery, designed to provide backup power supply to the modules of the system;
- Security magnetic contact, intended to disable the introduction of Phlegmatizer when the Secured Object door is opened.

Operation Concept

Udar-KB provides the following operation tactics:

- The flammable gas detector «Udar-STG» continuously analyses the gaseous environment inside the Secured Object space for presence of dangerous flammable gases and status of external magnetic contact;
- If 10% gas concentration is detected, the detector opens relay contacts and generates starting pulse for the tank electric valve opening;
- In accordance with the detector operation tactics, phlegmatizing of the dangerous flammable gas mixture begins. Appropriate Phlegmatizer concentration is maintained during the time required for a squad of police officers to arrive at the scene;
- In case the magnetic contact detects door opening, the detector generates the signal for valve closure irrespective of dangerous flammable gas mixture presence;
- The system transmits information about the following failures:
 - phlegmatizing agent deficiency;
 - flammable-gas Detector case tampering;
 - rechargeable power-supply battery failure;
 - main power-supply failure (220V).

Choosing the Detector Version Depending upon the Secured Object Dimensions

Depending upon the inside volume of the Secured Object requiring explosion protection, choose the minimum-sized suitable Phlegmatizer tank in accordance with Table 1.

Table 1

Version	Secured Object volume, l	Tank volume, l	Dimensions* Phlegmatizer release station, mm
Udar-KB-1	up to 150	1	90x150x260
Udar-KB-2	150-300	2	110x170x340
Udar-KB-5	300-500	5	150x210x490
Udar-KB-5-2-1	150-300	1+1	90x240x460

*) – the dimensions may vary depending on the Udar-KB versions contents of delivery

Connection Diagram

Connection diagram is shown in Figure 2
Figure 2

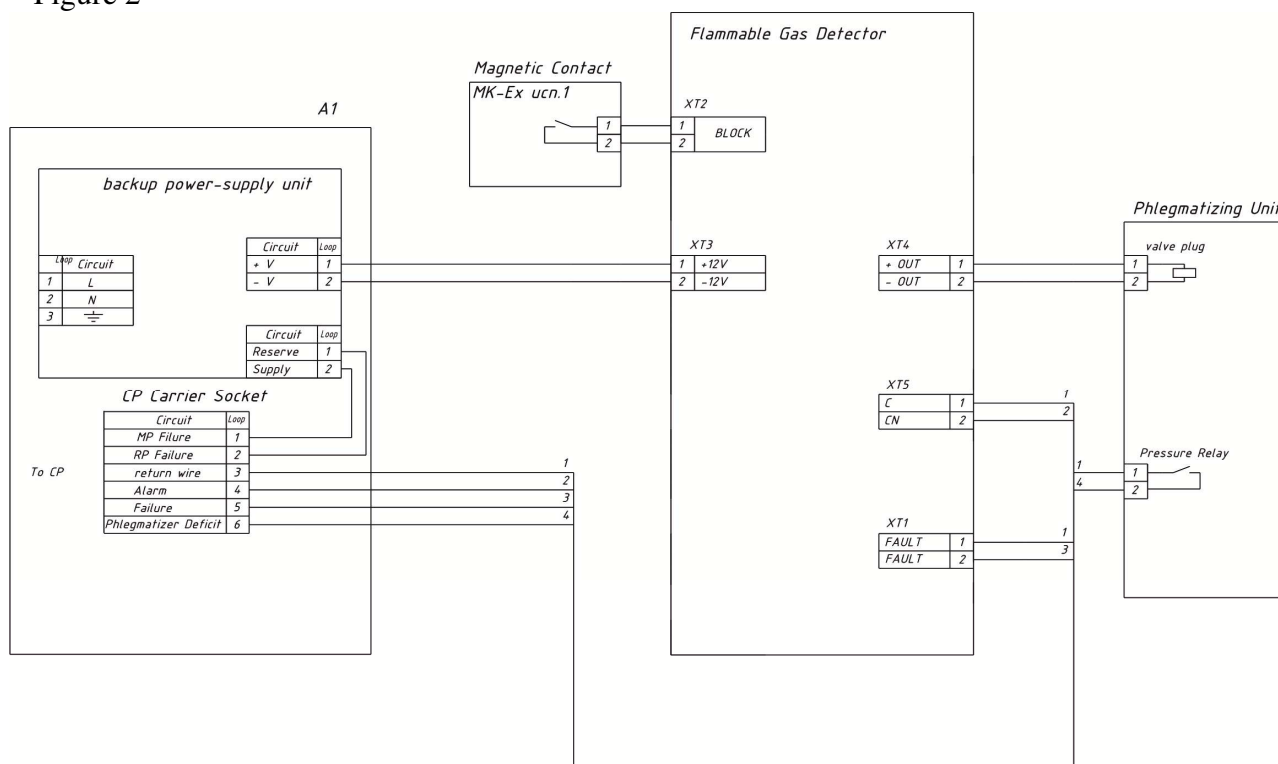


Figure 2

Principal Technical Characteristics

Principal Technical Characteristics are listed in Table 2.

Table 2.

Parameter	Value
Detected flammable gas concentration (methane, propane, hydrogen, etc.), not more than	10 % LEL * (0.2 % propane volume in the air)
Delayed activation, not more than	10 s
Phlegmatizing agent feeding response time after flammable gas detection, not more	2 s
Secured Object maximal volume	See Table 1
Power supply voltage range, DC	187 ... 242 V
Consumed power operated from DC mains, not more than	50 VA
Rechargeable power-supply battery capacity 12 V	1.2 Ah
Back-up time under main power-supply absence	24 hours
Duration of alarm and failure messages, not less than	2 s
Maximal commutated current at the information exchange under the voltage 36V, not more than	30 mA
Operating temperature, °C	0 ... +50
Permissible relative humidity under +25 °C, not more than	93%
Ambient environment class (background temperature 15 - 35 °C, relative humidity 25 - 75%, air-pressure 86-106 kPa)	Boreal Climate
Operation pressure inside the tank, not less than	150 atm
Weight, not more than	10 kg

* LEL – lower explosive limit

Udar-KB is designed for continuous and uninterrupted operation.

The level of industrial interference generated by the Detector does not exceed the norms established for the technical equipment operated in residential buildings or connected to the mains of residential buildings.

Udar-KB ensures safe operation under the impact of sinusoidal vibration with the acceleration of $0,981 \text{ m/s}^2$ within 10 – 55 Hz frequency range

Udar-KB operational stability ensures absence of alarm message under the following conditions:

- a) Ethylic alcohol vapors presence in the air;
- b) Impulse interferences in the feed network;
- c) Electrostatic discharge;
- d) Electromagnetic interferences induced by electromagnetic fields.

Udar-KB average service life is not less than 5 years.

Installation and Functional Testing

Make sure that the valve on the tank is in «Closed» position.

It is recommended to install the flammable gas detector «Udar-STG» near the bottom of the Secured Object (e.g. ATM) at the distance not less than 5 cm from its walls.

Attention! Masking of the detector entry port by materials preventing phlegmatizing agent expansion (ethylene polymer, rubber, etc.) is prohibited. The tank should be installed in a position, where no elements of the protected space are in the way of the phlegmatizer blowpipe (as they can be damaged by the gas flow under pressure).

It is permissible to incline the flow diffuser towards the Secured Object wall if the distance to it is more than 2 cm. In advance, choose the Udar-KB units places of location. Then define the method of their fixation and length of the connecting cable. The system installed should not prevent Secured Object full-time operation.

Phlegmatizing unit should be fastened by the wrappers or ties to the interior elements of the secured object.

The detectors «Udar-STG» and magnetic contact can be fastened by a double-sided tape or a universal glue. (The surfaces should be cleaned of the dirt, dust and grease stains.)

Fasten the units of the system, fulfill connections of the connector cables in accordance with the Connection diagram (as shown in Figure 2).

If the interior free space of the Secured Object is confined (resulting in lack of access to the units and connecting elements), then it is advisable to fulfill cable connection before fastening the units at the chosen places.

Energize the detector «Udar-STG» and wait for its warm-up time expiration (not less than 130 s).

Once the «BLOCK» contacts are closed, temporarily feed gas from a cigarette lighter close to the detector sensing element entry port. At that time the «Udar-STG» indication should display ALARM, and the valve should produce distinctive sound – click indicating the valve opening.

Ventilate the room and re-energize the detector «Udar-STG». Wait for the detector to change to standby operating mode. Verify the absence of the red indication lighting, thus conforming that the detector operation in «NORM» mode. Open the tank valve. The system is ready for operation after the «BLOCK» contacts closure.

In case of «phlegmatizing agent deficiency» message generation, it is necessary to check equipment for leakage and change the Tank.

Scope of delivery

Each Udar-KB unit package contains the items listed in Table 3.

Table 3

Name	Quantity for each version				Note
	Udar-KB-1	Udar-KB-2	Udar-KB-5	Udar-KB-2-1	
Flammable gas detector «Udar-STG»	1 pc.	1 pc.	1 pc.	1 pc.	
Phlegmatizing agent release station 1 liter	1 pc.				
Phlegmatizing agent release station 2 liters		1 pc.			
Phlegmatizing agent release station 5 liters			1 pc.		
Phlegmatizing agent release station 1 + 1 liters				1 pc.	
Backup power-supply unit 12V, 3A	1 pc.	1 pc.	1 pc.	1 pc.	
Rechargeable power- supply battery 12V, 1,2 Ah	1 pc.	1 pc.	1 pc.	1 pc.	
Magnetic contact «MK-Ex» vers. 2	1 pc.	1 pc.	1 pc.	1 pc.	
Pressure sensor	1 pc.	1 pc.	1 pc.	1 pc.	*)
Tool set for installation	1 pc.				
Tool set for installation		1 pc.			
Tool set for installation			1 pc.		
Tool set for installation				1 pc.	
Tool set for installation					1 pc.
Explosion-counteracting System «Udar-KB». Installation Guide	1 copy	1 copy	1 copy	1 copy	

*) – supplied optionally

Storage and Transportation

During transportation, the factory-packed explosion-counteracting system of ATM strongboxes «Udar-KB» is resistant to:

- transport jolting with the acceleration up to 30 m/s² at impact frequency range from 10 to 120 per minute or 15 000 strikes with the same acceleration;
- ambient temperature range from minus 50 to 50 °C;
- relative air humidity (95 ± 3) % at a temperature +35 °C.

The detector in original package may be transported by any means of transportation in closed vehicles over any distances in compliance with the existing shipping rules concerning the respective means of transportation.

After transportation under the conditions different to exploitation conditions, the detector shall be ready to operate after a maximum of six hours.

The storage package shall be free from silica gel.

Attention! The operation conditions shall **exclude** harmful substances, which decrease catalytic reactivity of the sensing elements.

Presence of aggressive agents (such as acid, silicones, phosphorus vapors, halogens, as well as silicone lubricants, lacquers, hermetics) in the controlled environment **is unacceptable!**

Manufacturer's Guarantees

1. The Manufacturer guarantees conformity of the «Udar-KB» to the requirements of specification if conditions of transportation, storage, assembling and operation are observed. The guaranteed shelf life is 39 months since the date of the detector manufacturing.
2. The guaranteed period of operation is 36 months since the date of commissioning within the storage period guaranteed.
3. If non-conformity of the «Udar-KB» to technical requirements is detected during the guaranteed period if rules of operation are observed, it shall be repaired by the Manufacturer.

Packing Certificate

explosion-counteracting system of ATM strongboxes «Udar-KB» manufactured in accordance with current technical documentation is classified as fit for operation and is packed by «RIELTA» JSC.

Packing date _____
month, year

Rev 0 of 06.10.16
№00259

Made in Russia

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