

Installation Guide

1 General Information

Triple technology seismic vibration & tilt & gas detector «Shorokh-3V» (hereinafter, the Detector) is designed to detect intrusion, burglary and/or theft attempts to units such as ATMs, Deposit Safes, Vault Doors, Free Standing Safes and other valuables protection equipment.

Tree independent detection channels control construction break-in, tilt of monitored structure, as well as explosive gases (propane, methane, hydrogen, etc.) detection.

The Detector is resistant to EMI, to single blows delivered on monitored structure and to acoustic noises.

The Detector provides choosing of operation mode in accordance with secured structure material type as well as a possibility of sensitivity step adjustment.

The Detector generates an alarm message by opening (C «NC») contacts for a time not less than 2 sec and LED indication switching on (see Table 1).

Table 1

Message	Contacts					LED indicators		
	DISCHARGE	TILT	GAS	FAILURE	TAMPER	red	green	yellow
Norm	C	C	C	C	C	-	-	-
Destruction, break-in	O	X	X	X	X	●	X	X
Tilt alarm	X	O	X	X	X	●●●	X	X
Gas alarm	X	X	O	X	X	●●	X	X
Failure	X	X	X	O	X	●●	●●	●●
Cover or wall tamper	X	X	X	X	O	X	X	X
Switching ON	O	O	O	O	X	●	●	●
Vibration	X	X	X	X	X	X	●	X
Memory-destruction	X	X	X	X	X	X	X	●
Memory-tilt	X	X	X	X	X	X	X	●●●
Memory-failure	X	X	X	X	X	X	●●	●●
Memory-gas	X	X	X	X	X	X	X	●●

- - OFF;
X – has no effect;
O – contact is opened;
C – contact is closed;
● – LED is ON;
●● – infrequent LED blinking (once per second);
●●● – frequent LED blinking (5 blinks per second).

2 Specifications

Table 2

Parameter	Value
Detection area, not less than: - metal cabinet, door, ATM upper safe - safe, ATM lower cabinet	6 m ² 3 m ²
Detected concentration of flammable gases	10% of LEL* (for propane)
Tilt changing detection	5° and more
Voltage supply range	9 – 17 V
Maximum consumption current	80 mA
Detector contacts valid current	100 mA
Detector contacts valid voltage	72 V
Warm-up time, not more than	60 sec
Operating temperature	0 ... +50 °C
Permissible relative humidity at a temperature +25 °C	90 %
IP-rating	IP20
Dimensions	105 x 45 x 34 mm
Weight, maximum	150 g
Average service life	8 years

* LEL – lower explosive limit

3 The Detector Design

The Detector layout is shown in Figure 1.

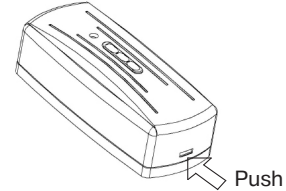
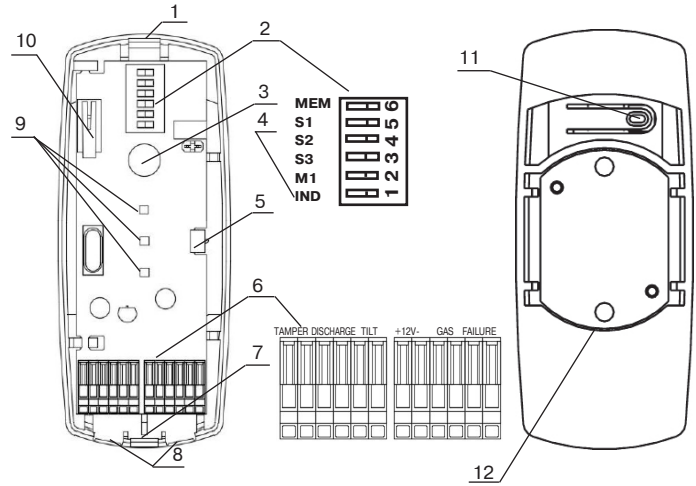


Figure 1

The base with the PCB is shown in Figure 2.

a) top view (without cover)

b) bottom view



- 1 – Hook on the cover;
- 2 – DIP-Switch;
- 3 – Gas sensor;
- 4 – Indication switch;
- 5 – PCB Latch;
- 6 – Terminal Blocks;
- 7 – Cover latch;
- 8 – Openable holes for wiring;
- 9 – Indicators;
- 10 – Tamper;
- 11 – Wall tamper pin;
- 12 – Sensor base.

Figure 2

4 Scope of Delivery

Each Detector unit package contains the items listed in Table 3.

Table 3

Name	QNT
Triple technology seismic vibration & tilt & gas detector «Shorokh-3V»	1 pc.
Tool set:	
Screw A.M4-6gx40.48.016	2 pcs.
Lockwasher 4.65F.029	2 pcs.
Superglue (Henkel) 3 g	1 pc.
Triple technology seismic vibration & tilt & gas detector «Shorokh-3V». Installation Guide	1 copy
Serial interface module «US-PI»	*
* – supplied optionally	

5 Gas Channel Testing

Energize the Detector and wait for 1 minute.

For testing the explosive gases detection channel, it is necessary to provide gas on the gas sensor (Figure 2, position 3). For this purpose household gas lighter can be used. The Detector should generate «GAS» message during 10 seconds (See Table 1).

Attention! The Detector must be checked at least twice a year in order to test its performance.

6 The Detector Adjustment and Mounting

The Detector mounting and sensitivity adjustment is fulfilled with the removed cover. To remove cover, loosen the latch by pressing it through the rectangular opening in the cover (See Figure 1).

Depending on type and material of secured construction, the Detector is mounted either by screws through the base openings (the distance between the openings is 35 mm) or by means of superglue. It is very important to ensure firm contact with the surface of protected construction.

For the Detector mounting on metal construction, it is recommended to use screw connection (screw M4) with washers via openings or connection (screw M4) through closed holes with preliminary cut thread. In these conditions it is recommended to ground metal construction with mounted Detector.

The Detector installation inside safes or lower ATM cabinet should be fulfilled by means of M4 screws or superglue in accordance with supporting documentation or application notes listed on its package. The glue joint is also recommended for others metal constructions without possibility to fulfill a screw connection.

Attention!

The operating conditions of the Detector in a controlled environment must exclude the presence of substances that reduce the catalytic activity of sensitive elements and corrosive substances: acid and alkali vapors, halogens, fumes of silicon, phosphorus, silicone lubricants, varnishes, sealants, etc.

7 Connection

The Detector connection to data transmission system (DTS) or control panel (CP) terminal device (TD) should be fulfilled in accordance with connection pattern contained in relevant TD, DTS or CP exploitation documents as per the Detector terminal blocks marking (see Figure 2, position 6). Two openable holes (see Figure 2, position 8) are available for wiring.

8 The Detector Controls

The IND DIP-switch is used for the Detector LED indication switching ON.

The M1 DIP-switch is intended for choosing the signal processing algorithm depending on type of secured construction (See Table 4).

Table 4

Secured construction	M1 switch position
Safe or metal construction (cabinet, door, lattice)	OFF
Automated Teller Machine (ATM)	ON

DIP-switches S1, S2, S3 are intended for adjustment of destruction channel sensitivity (see Table 5).

Table 5

DIP-switches			Sensitivity	
S1	S2	S3		
ON	ON	ON	Maximum	
OFF	ON	ON		
ON	OFF	OFF		
OFF	OFF	ON		
ON	ON	OFF		
OFF	ON	OFF		
ON	OFF	OFF		
OFF	OFF	OFF		Minimum
OFF	OFF	OFF		User-operating mode (see Cl. 10)

9 Adjustment Procedure

Remove the housing cover and set the IND DIP-switch to ON position. Set switch M1 to the position corresponding to the material of the protected structure (see Table 4).

Switches S1, S2, S3 – in position ON, ON, ON (maximum sensitivity level).

Switch on the power supply and check the formation of the LED indication «Power on» and the «Normal» message. The presence of the indication «Vibration» in the standby mode and the absence of the effects listed in Table 4 display too high level of interference on the protected object. If possible, eliminate the source of interference.

Set the MEM switch to ON position, switches S1, S2, S3 to ON, OFF, OFF (minimum sensitivity level).

At the boundary of the protected area, apply a simulating impact corresponding to the type of the protected structure (see Table 6). If the «Destruction» message is generated and after it the «Memory-destruction» LED indication (see Table 1) is ON, the sensitivity adjustment can be considered completed.

In the absence of the notice «Destruction» – perform a step-by-step sensitivity increase (see Table 5) until «Destruction» message is generated after imitating impact.

When the sensitivity level is set, the Detector should not generate a «Vibration» indication in the absence of any effects on the protected structure.

After adjustment fulfillment, it is necessary to set the IND and MEM switches in accordance with the security tactics chosen for the object.

Table 6

Methodic of a simulating impact applying during sensitivity adjustment	Supplementary technical data
Apply a steel plate to the surface of the protected structure at the outermost point of the controlled area. Drill several holes in the plate with a depth of 2 – 3 mm. For each drilling, observe the LED indication «Vibration», and after the third one – «Destruction» LED indication.	Cordless drill, drill $\varnothing (4 \pm 0,5)$ mm, the time of one drilling is not less than 10 sec. Pause between drilling not more than 10 sec.
	Electric drill, drill $\varnothing (4 \pm 0,5)$ mm, the time of one drilling is not less than 10 sec. Pause between drilling not more than 10 sec.

10 User-operating mode

The user-operating mode, activated by DIP-switches (see Table 5), is designed to adapt the Detector to a severe interference conditions on a secured object by means of individual sensitivity adjustment to different types of attacks.

In this mode, sensitivity adjustment is carried out by means of a personal computer connected to the Detector via the serial interface module «US-PI» (supplied by «RIELTA» JSC on a special order).

The procedure of the Detector adjustment in User mode is given in the accompanying documentation for «US-PI».

11 Storage and Transportation

11.1 During the transportation the Detector in the package withstands:

- transport jolting with acceleration up to 30 m/sec² at impacts frequency range from 10 to 120 per minute or 15.000 impacts with the same acceleration;

- ambient temperature from minus 50 to plus 50 °C;

- relative air humidity up to 100 % at temperature plus 25 °C.

11.2 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.

11.3 After transportation under the conditions different to exploitation conditions the Detector shall be ready for operation after a maximum of six hours.

11.4 The storage package shall be free from silica gel.

12 Manufacturer's Guarantees

12.1 The Manufacturer guarantees conformity of the Detector to the requirements of Specifications provided the transportation, storage, installation and operation conditions are observed.

12.2 The guaranteed storage term of the Detector is 63 months since the date of manufacture.

12.3 The guaranteed useful life is 60 months since the day of putting into operation within the storage term guaranteed.

12.4 If non-conformity of the Detector to technical requirements is detected during the guaranteed period if rules of operation are observed, it shall be repaired by the Manufacturer.

13 Packing Certificate

Detector «Shorokh-3V» has been manufactured in compliance with the active technical documentation and classified as fit for operation and packed by «RIELTA» JSC.

Packing date _____ month, year