

**STUDYING TECHNIQUES OF ALARM LOOP MONITORING AND OBSTACLES AFFECTING
ITS NORMAL FUNCTIONING. DEVELOPMENT OF A DEMONSTRATION STAND
«STUDYING OF ALARM LOOP» FOR TRAINING SPECIALISTS AND TEACHING STUDENTS**

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**ИССЛЕДОВАНИЕ МЕТОДОВ КОНТРОЛЯ ШЛЕЙФА СИГНАЛИЗАЦИИ И ПОМЕХ,
ВЛИЯЮЩИХ НА ЕГО НОРМАЛЬНОЕ ФУНКЦИОНИРОВАНИЕ. РАЗРАБОТКА
ДЕМОНСТРАЦИОННОГО СТЕНДА «ИССЛЕДОВАНИЕ ШЛЕЙФА СИГНАЛИЗАЦИИ»
ДЛЯ ПОДГОТОВКИ СПЕЦИАЛИСТОВ И ОБУЧЕНИЮ СТУДЕНТОВ**

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***Аннотация.** Шлейф сигнализации является одной из необходимых и «уязвимых» составных частей объектовой системы охранно-пожарной сигнализации. Он представляет собой проводную линию, электрически связывающую выносной элемент, выходные цепи охранных, пожарных и охранно-пожарных извещателей с входом приемно-контрольного прибора. Одной из основных причин неустойчивой работы приборов на объекте являются нарушения шлейфа сигнализации. Они представляют собой отказ в виде обрыва или короткого замыкания в шлейфе. В данной работе был разработан демонстрационный стенд, на котором изучается и демонстрируется шлейф сигнализации и все помехи, которые влияют на работу шлейфа и вызывают ложное срабатывание сигнализации.*

The security and fire alarm systems are the most widely used, nowadays. Their application effectively solves the problem of security by technical means. Due to the wide use of modern security systems to protect facilities one requires an appropriate approach to teaching students and training of personnel able to professionally and competently design and carry out installation and commissioning works, exploit and quickly fix the appearing troubles. In this regard, the need to develop a demonstration stand was identified.

Demonstration stand completely simulates security - fire alarm, which allows demonstrating the connection and operation of an annunciator, and the work of the alarm control panels and sound sirens. Using the stand we can study and demonstrate an alarm loop and all the obstacles affecting the operation of the loop and the cause of a false alarm.

The demonstration stand is intended to demonstrate: connection of any annunciators, alarm control panels, sirens and other equipment of security and fire alarm.

On this stand "a test section of loop" is specially selected that clearly demonstrates the such leakages as: change of resistance in the loop alarm, short circuit and break alarm loops, leakage between conductors and the

impact at the alarm loop factors such as - moisture, connectors and other interference that affect the performance of the entire system of security and fire alarm.

Two multimeters for control are connected to the devices: one is used to control the current, the second - to control resistance and voltage. The annunciator is closed and the alarm loop is tested on short circuit, break, and effect of moisture and change of resistance. Resistance is not constant, but variable.

Therefore, after installation on object the personnel must carry out technical inspection on a monthly basis, as in the process of wear the contacts, where annunciators are connected, are affected by high humidity, extreme temperatures and sometimes chemically aggressive substances for a long period of time. In the contact connection of copper an oxide film is formed, which is an insulator, thereby increasing the contact resistance and leakage resistance - current in AL falls, leading to the signal "Alarm".

Table 1

Completion of demonstration stand

№	Element	Number
1.	The control panel "Signal-VK"	1 item
2.	Light siren (bulb)	1 item
3.	Sound siren (buzzer)	1 item
4.	Toggle-switch	2 items
5.	Optical-electronic passive annunciator	1 item
6.	Connecting box	4 items
7.	Terminal device	3 items
8.	Wire KSPV 2x0.5	1 item
9.	Wire for «test section of loop»	1 item

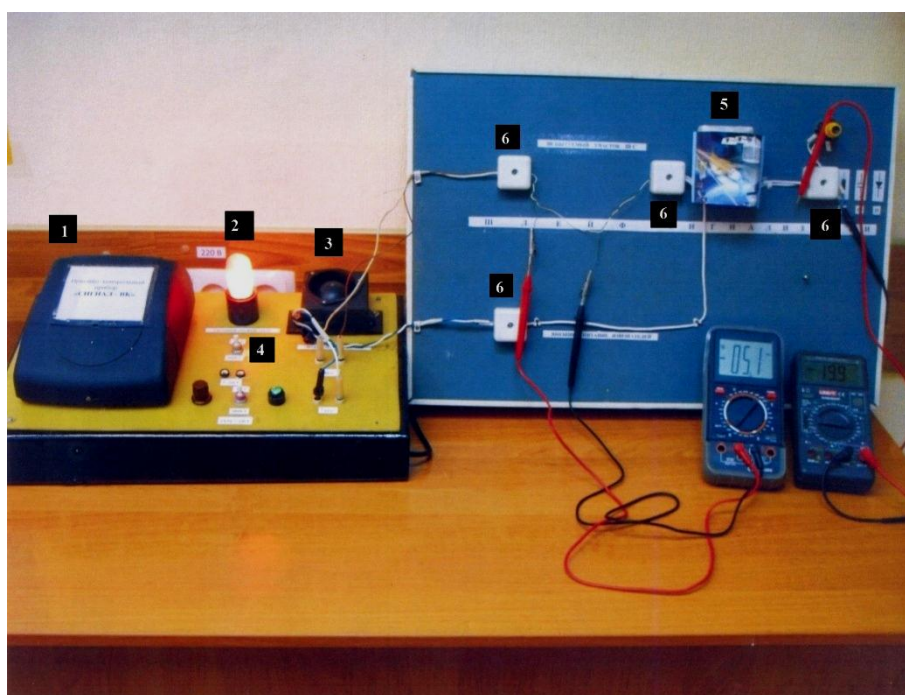


Figure 1. Demonstration stand «Studying loop of the alarm system»

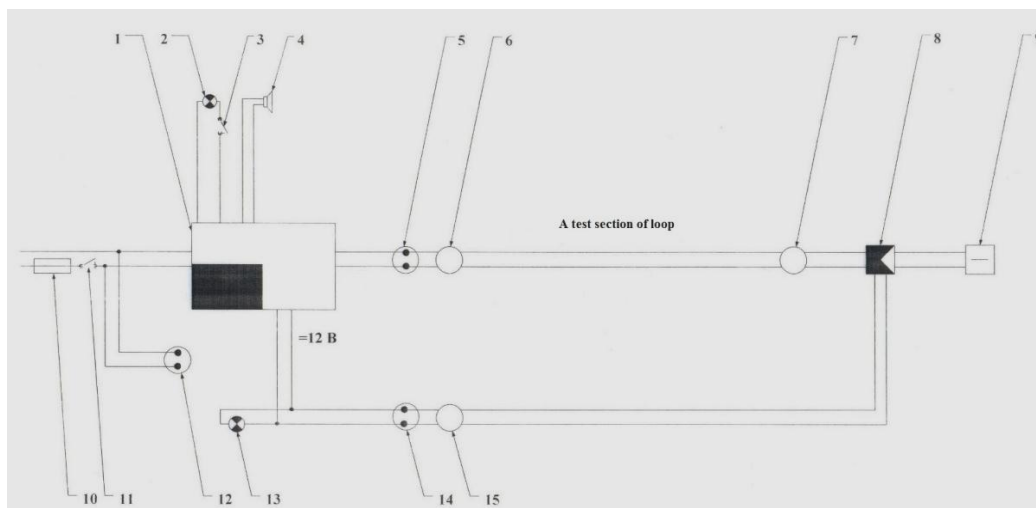


Figure 2. Schematic diagram

Table 2

Schematic diagram

№	Element
1	The control panel "Signal-VK"
2	Light siren
3,11	Toggle-switch
4	Sound siren
5	Rosette (loop alarm)
6,7,15	Connecting box
8	Optical-electronic passive annunciator
9	Terminal device
11	Fuse
12	Rosette (=12V)
13	Signal lamp
14	Rosette (220V)

CONCLUSION

The developed stand is very useful for training specialists and teaching students. In the course of laboratory practical works it is possible to consolidate practically gained theoretical knowledge, and also to train skills of servicing the security and fire alarm system.

LIST OF REFERENCES

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