Operating principle and wiring diagram of alarm outputs/inputs on TRASSIR/ActiveCam cameras

Alarm outputs on CCTV cameras are designed to be able to interact with third-party equipment, such as: barriers, automatic gates, security alarm systems, etc.

There are two types of alarm output control on Trassir/ActiveCam cameras:

- active voltage between contacts "**OUT**" and "**GND**"
- dry contact - *The word "dry" means that there is no voltage at the dry contact terminals if the terminals are not connected to other equipment.*

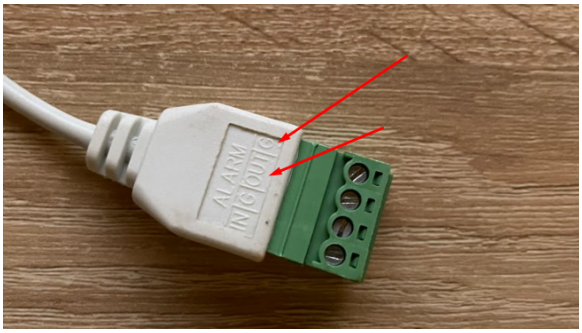
  It is assumed that, in addition to the absence of voltage sources in the dry contact circuit, the dry contact circuit is galvanically disconnected from other external electrical contacts of the device.

Connecting cameras with an active alarm output
List of camera models related to this type of alarm output:

TR-D2123IR6 v6	TR-D2253WDZIR7 (B)	TR-D8221WDCI	AC-D3143VIR2 rev.2
TR-D2153IR6v2	TR-D3223WDZIR3	TR-D8221WDIR3	AC-D9141IR2
TR-D2221WDC	TR-D3253WDZIR3	TR-D9151IR2v2	AC-D3123VIR2v2
TR-D2221WDCL4	TR-D8221WDC	AC-D2143IR3 rev.2	AC-D2123IR3v2 rev.2
AC-D2163IR3	AC-D2143IR3 rev.4	TR-D9141IR2	TR-D2163IR6
AC-D9161IR2	AC-D2163IR3 rev.2	TR-D2123IR6v3	TR-D2183IR6
AC-D2143IR3 rev.3	AC-D3123VIR2v2 rev.2	TR-D2123WDIR6	TR-D9161IR2
TR-D3143VIR2 rev.3	AC-D3143VIR2 rev.3	TR-D2143IR6	TR-D2143IR3 rev.4
TR-D3123VIR2v2 rev.2	TR-D2123IR6v4	TR-D8221WDIR3	TR-D8221WDIR3
TR-D2123IR3v2 rev.2	TR-D3223WDZIR3	TR-D2222WDZIR4	TR-D2251WDIR4
TR-D3123VIR2v2	TR-D2224WDZIR7	TR-D2221WDIR4	TR-D8221WDIR3 rev.2
TR-D2223WDIR7	TR-D2221WDIR4	TR-D8221WDIR3 rev.3	TR-D2252WDZIR4
TR-D2252WDZIR4 rev.2	TR-D3253WDZIR3	TR-D9251WDIR3	TR-D2223WDZIR7
TR-D8221WDIR3 rev.2	TR-D2221WDIR4 rev.2	TR-D8251WDIR3	TR-D8221WDIR3
TR-D2221WDIR4 rev.2	TR-D2221WDIR4 rev.3	TR-D2221WDIR4 rev.3	TR-D2153IR6
TR-D2222WDZIR4 rev.2	TR-D2221WDIR4 rev.2	TR-D2253WDZIR7	TR-D9151IR2
TR-D2251WDIR4 rev.2	TR-D2221WDIR4W	TR-D3221WDIR3W	TR-D3221WDIR3

Voltage between OUT and GND contacts: 3.3V (3mA)

The principle of operation of the active alarm output:
At the time of the alarm event (motion detection, sabotage, number recognition, etc.) on the camera output contacts(OUT) and on earth(GND) there is a voltage equal to **3.3 V** and a weak electric current equal to **3 mA. (**see pic.1)



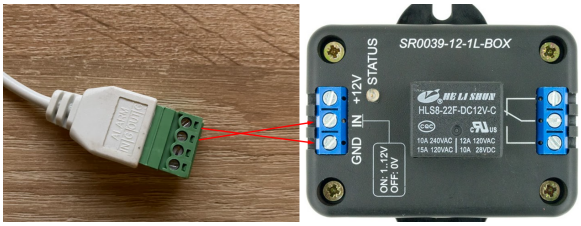
pic.1 Alarm output contacts OUT and GND

It is difficult to choose a relay module that will be able to close with such a weak electric current, as an alternative, relay modules that can close with such volt-ampere characteristics of the camera can be used.

Consider as an example the relay module **SR0039-12-1L-BOX** (pic.2)

(pic.2) Relay module SR0039-12-1L-BOX

Connection diagram of the active alarm output to the relay module:
The alarm output of the camera is connected to the relay module as follows (pic.3):
1. The contact of the camera "**OUT**" is connected to the contact of the relay module "**IN**".
2. The contact of the camera "**GND**" is connected to the contact of the relay module "**GND**".



(pic.3) Wiring diagram of the alarm output to the relay module

Thus, when an alarm event is triggered, voltage will be applied to the relay module from the camera.

The module, in turn, will close the power circuit into which any executive element is connected (barrier, gate, alarm system, etc.).

Connecting cameras with dry contact
List of camera models related to this type of alarm output:

TR-D5124	TR-D6254	TR-D6254IR15	AC-D1120SWD
AC-D1140S	AC-D5124	AC-D6024	AC-D6034
AC-D6124IR10	AC-D6124	AC-D6124IR10v2	AC-D6144
AC-D6144IR10	AC-D6124IR15	AC-D3123WDZIR3	AC-D2143ZIR6
AC-D3143ZIR3	AC-D2123WDZIR6	AC-D1120SWDv2	AC-D1140Sv2
AC-D6124v2	AC-D2163WDZIR5	AC-D2183WDZIR5	AC-D3163WDZIR5
AC-D3183WDZIR5	AC-D5124v2	AC-D2143ZIR6 rev.2	AC-D3123WDZIR3 rev.2
AC-D2123WDZIR6 rev.2	AC-D1120SWDv2 rev.2	AC-D1140Sv2 rev.2	AC-D3143ZIR3 rev.2
TR-D6224IR10	TR-D6254IR15 rev.2	TR-D1250WD	TR-D1140
TR-D1120WD	AC-D1140	TR-D1120WD	TR-D1250WD
TR-D9251WDIR3v2	TR-D8251WDIR3v2	TR-D8251WDCL3	TR-D8251WDCL

TR-D8221WDIR3v2	TR-D3253WDZIR3v2	TR-D3251WDIR3Wv2	TR-D3251WDIR3v2
TR-D3223WDZIR3v2	TR-D3221WDIR3Wv2	TR-D3221WDIR3v2	TR-D2B5v2 (B)
TR-D2253WDZIR7v2	TR-D2253WDZCL7	TR-D2253WDIR7v2	TR-D2252WDZIR4v2
TR-D2251WDIR4Wv2	TR-D2251WDIR4v2	TR-D2251WDCL4	TR-D2251WDCL
TR-D2224WDZIR7v2	TR-D2223WDZIR7v2	TR-D2223WDIR7v2	TR-D2222WDZIR4v2
TR-D2221WDIR4Wv2	TR-D2221WDIR4v2	TR-D1250WDv2	TR-D2221WDIR4Wv2 (rev.2
TR-D8251WDC	TR-D2251WDC		

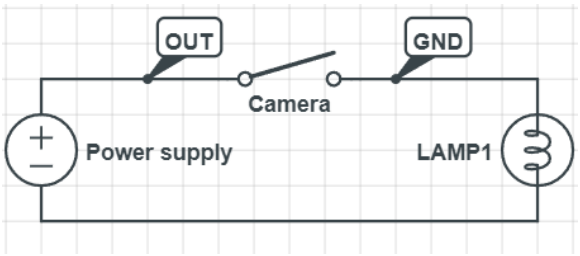
The maximum permissible values of current and voltage for power supplies, when connected to a dry contact: 12V (DC), 300mA

TR-D2281WDIR4	TR-D2283WDZIR7	TR-D3283WDZIR4	TR-D2183ZIR6v3
TR-D2183IR6v2	TR-D3281WDIR4	TR-D4281WDIR2	TR-D3283WDZIR3
TR-D2183ZIR6v2	TR-D3183ZIR3v2	TR-D8281WDIR4	TR-D3183ZIR3v3

⚠ The maximum permissible values of current and voltage for power supplies, when connected to a dry contact: 30v (DC), 1A or 12V (AC) 0.3A

The principle of operation of the dry contact:
In the case of a dry contact, the camera acts as a relay (key). That is, when the camera receives an event to which a reaction should occur, the contacts "OUT" and "GND" close together inside the camera.

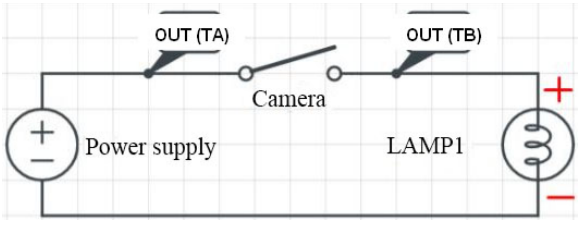
Wiring diagram of alarm outputs on cameras with dry contact:



(Pic.4) Connection diagram of the alarm output of the camera with a dry contact, with a performing element in the role of a light bulb

In this scheme (pic.4), a light bulb is used as an executive element. When the camera detects an event, a short circuit occurs inside the camera between the "**OUT**" and "**GND**" contacts, as a result of which voltage is applied to the actuator from the power supply unit.

If Alarm OUT 1 and Alarm Com 1 or **OUT(TA)** and **OUT (TB)** pins are present on the external connector, the connection diagram will look like this:



Any other elements can be used as an executive segment, such as: a siren; a barrier; an electric gate; a light bulb, etc.

Alarm inputs.

Alarm inputs are designed to connect external sensors that are more highly specialized than the built-in camera sensors (for example, a motion sensor), or sensors that are not used at all in the built-in camera functionality (for example, a leak sensor).
Sensors are divided into two types **Active** and **Passive**, depending on the type of sensor, its connection scheme to the camera will change.

In passive sensors (for example, reed switch), no additional power is required, and accordingly, sensors of this type are connected immediately with one contact to the camera contact "**IN**", and with the other contact to the camera contact "**GND**".

As for active sensors, they implement more complex functionality, as a result of which they need to connect additional power. As a rule, such sensors have a separate power connector or power supply, and the connection scheme to the camera itself does not differ from the connection scheme of a passive sensor.

Volt-ampere characteristics of active sensors when connected to the alarm input:

For the first list of cameras **with active alarm output: 3-24V (DC), 5mA**
For the second list of cameras **with dry contact: 3-5V (DC), 5mA**

For the third list of dry **contact cameras: 0~12v, 0.3~1A**

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