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5A Berezovaya Alley, Bldg.5, Moscow, Russia | [www.ipstreamlabs.com](http://www.ipstreamlabs.com) | Tel/Fax: +7 (495) 739-8242

# **USB-IO 16/8**

**Discrete inputs / outputs cards with galvanic  
isolation, universal power supply and Watchdog  
User Manual**

2010

Ver. 1

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## 1. 1. General Information

### 1.1. Device application

USBIO discrete inputs / outputs cards (hereinafter device) are designed to enhance video surveillance systems, and to supply the required number of discrete inputs / outputs with galvanic isolation.

The device is equipped with:

- 62-pin DB connector for discrete inputs / outputs connection;
- A group of jumpers for assigning the discrete inputs condition;
- USB-port for connecting USB-devices;
- Connector for connecting to a computer motherboard;
- Watchdog for monitoring the system condition.

### 1.2. Key functions

- Tracking the discrete inputs condition;
- Changing the condition of discrete outputs;
- Tracking the status of your computer and restarting it in the case of hanging.

### 1.3. Specifications

Interface	USB 2.0 connection to a computer motherboard
Alarm contacts	16 inputs (normally closed or open)
Relay contacts	8 outputs
Power	through USB port
Size (Height x Width x Depth)	150 mm x 200 mm x 21 mm
Weight	90 g

### 1.4. Package contents

- USBIO device;
- Mating part for DB62 connector;
- DB62 connector housing;
- CD-ROM with drivers;
- Cable for connecting the device to a computer motherboard.

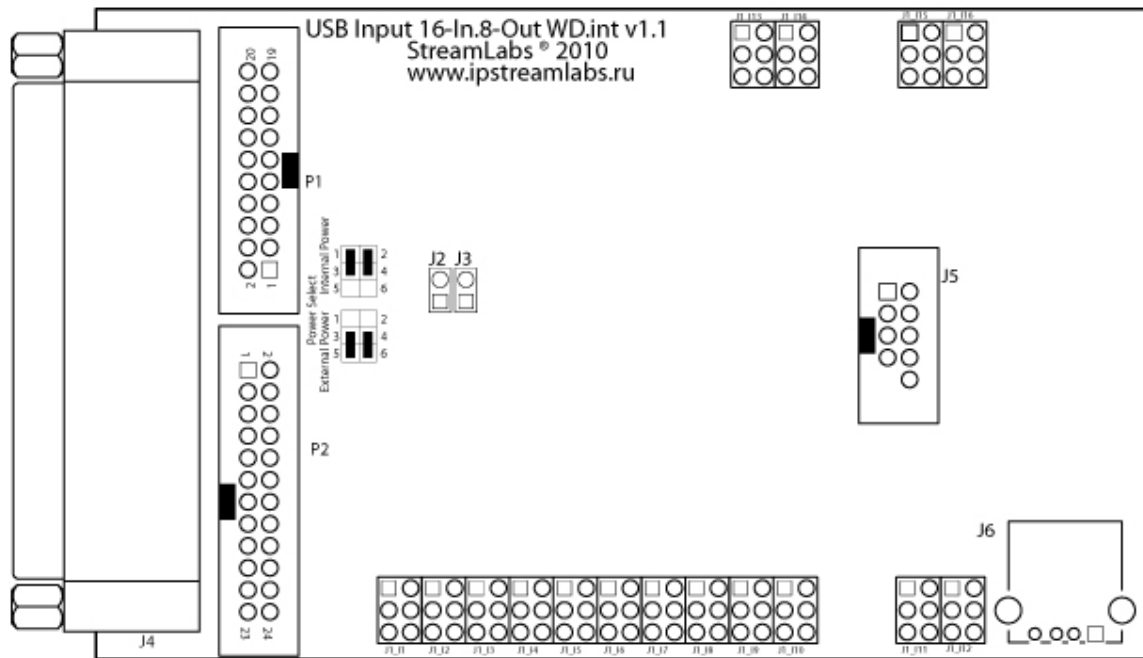
## **1.5. Operating conditions**

1. Execute procedures and precautions described in this Manual.
2. Comply with requirements for connecting cables (See Equipment Installation section (page 5)).
3. Working temperatures may range from 0°C to +50°C (inclusively).
4. Relative air humidity – from 20% to 80% (without condensation).
5. Perform correct work completion (shutdown) of the device.
6. Other requirements are consistent with the general rules for operating household electronic appliances.

## **1.6. Precautions**

1. Handle the device with care in order to avoid mechanical damages.
2. Avoid the device contact with foreign objects.
3. Do not expose the device to moisture.
4. Do not expose the device to direct sunlight.
5. Disconnect the computer power supply before connecting / disconnecting the device.
6. Protect the device from condensation. After transition from cold to warm environment, turn the device on not earlier than in 2 hours.
7. During transportation, use packaging which will adequately protect against possible damage.

## 2. Equipment Installation



**Figure 1. Connectors layout**

### Connectors:

1. **J1\_1xx** – A group of contacts which assigns the power management for each discrete input (where xx - corresponds to the number of alarm input from 1 to 24);
2. **J2, J3** – computer restart block contacts (Watchdog);
3. **J4** – DB connector for connection of discrete inputs and outputs to the device;
4. **J5** – Terminal for connecting the device to the motherboard via cable;
5. **J6** – USB port for connection of USB devices (e.g., USB key).

## 2.1. Mounting the device

Mounting the device is performed in the following order:

1. Make sure that the computer where you're going to install the device is turned off.
2. Open the computer case and make sure that there is a free slot to install the device.
3. Make sure that there is a free connector for USB devices on the motherboard.
4. Insert the device into the free slot on the computer and affix it with a screw to the case.
5. Connect the cable to the J5 terminal on the device and to the free USB port on the computer motherboard.
6. If necessary, connect the wires from the computer RESET button to J2 contacts, and from J3 contacts to RESET contacts on the motherboard.
7. If necessary, connect USB device to J6 USB port.
8. Close the computer cover and turn it on for further installation of device drivers.

## 2.2. Connecting cables

Connect the device to your computer by using the USB cable that came with the device.

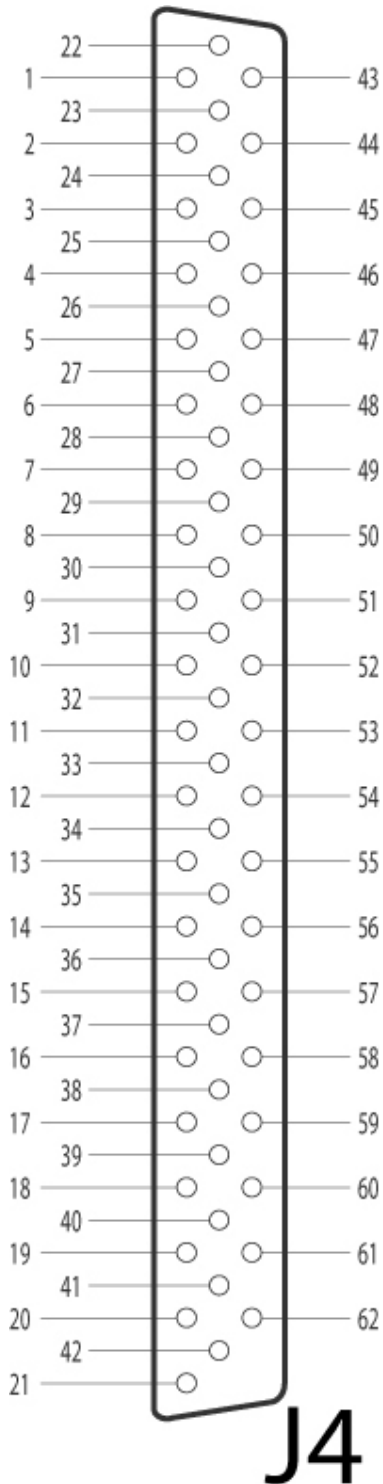


*If the connection to the USB connector on the motherboard is not possible, use an AA type USB cable to connect the device to an external USB port. To do this, disconnect the USB cable from the device and close all the contacts on J5 terminal with jumpers. Connect the AA type USB-cable to J6 USB connector on the device and to the external USB port.*

To connect the discrete inputs and outputs, use insulated wires.

## 2.3. Connectors

### 2.3.1. DB62 connector for connecting discrete inputs and outputs



Contact	Assignment	Contact	Assignment
1	Input 1	32	Input 14
2	Input 1	33	Input 14
3	Input 2	34	Input 15
4	Input 2	35	Input 15
5	Input 3	36	Input 16
6	Input 3	37	Input 16
7	Input 4	38	Not used
8	Input 4	39	Not used
9	Input 5	40	Not used
10	Input 5	41	Output 3 (+)
11	Input 6	42	Output 3 (-)
12	Input 6	43	Not used
13	Input 7	44	Not used
14	Input 7	45	Not used
15	Input 8	46	Not used
16	Input 8	47	Not used
17	Not used	48	Not used
18	Output 1 (+)	49	Not used
19	Output 1 (-)	50	Not used
20	Output 2 (+)	51	Output 5 (+)
21	Output 2 (-)	52	Output 5 (-)
22	Input 9	53	Output 6 (+)
23	Input 9	54	Output 6 (-)
24	Input 10	55	Output 7 (+)
25	Input 10	56	Output 7 (-)
26	Input 11	57	Output 8 (+)
27	Input 11	58	Output 8 (-)
28	Input 12	59	Not used
29	Input 12	60	Not used
30	Input 13	61	Output 4 (+)
31	Input 13	62	Output 4 (-)

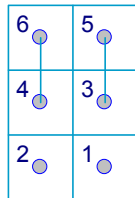
The connectors are located on the device front panel.

### 2.3.2. J1\_lxx connector. Discrete inputs power management.

J1\_lxx contact group consists of 16 pairs of three-row contacts. The “xx” value specifies the serial number of discrete input.

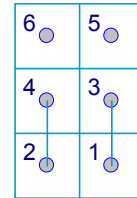
Set the parameters of the signals and select the operating modes for each discrete input.

#### Discrete input powered from the device power source



#### Discrete input powered from an external power source

*(polarity of the external voltage is not important)*



**Attention!** The numbering of the contacts begins from the center of the card, i.e., on the top connectors the pin numbers go from the bottom upwards (as shown in the picture above) and on the lower contacts – from the top downward.

#### Electrical parameters of the signals at the inputs and outputs.

##### Input parameters

- Galvanic isolation – **500 V**;
- Peak current – **10 mA**;
- External power source peak voltage – **24 V**.

##### Output parameters

- Output – open collector
- Peak voltage – **250 V**;
- Peak current – **150 mA**;
- Power dissipation rating – **150 mW**.