

Forward WatchDog BOX



Device For Monitoring of Video Servers
(Based on FD300 Board)

*Revision as of
February 18, 2011*

User's Guide

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Introduction

Forward WatchDog BOX (hereinafter WatchDog) is designed for monitoring of video servers based on the FD300 board. It allows controlling OS, FD300 board and broadcasting server (FDOnAir/FDTimeShift application) availability. WatchDog is a separate device that is plugged to PC via USB. It assists in solving of backup redundancy problems occurred in automation broadcasting systems based on one of the ForwardTA/TP/TP2 products.

In case of broadcasting server failure (hanging/failure either of FDOnAir or some other application) the device via external switcher (is purchased separately) automatically switches from input to passthrough signal or redundant server. Redundant server works simultaneously with the principle one.

There are 2 versions of WatchDog device. The document provides with an instruction on working with both devices.



General Information

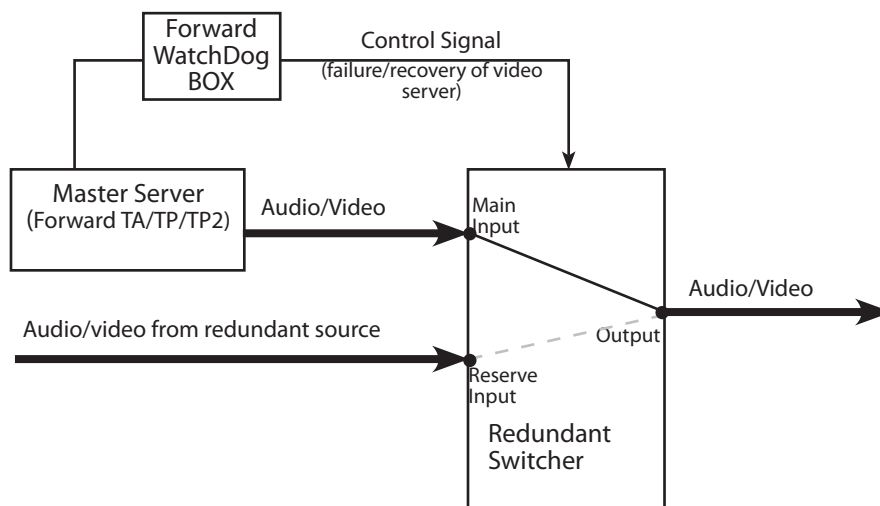
Description of Device

1. Usage of Device

Forward WatchDog BOX is used to monitor state of broadcasting server. The device responds when some failures appear during a work of:

- OS;
- FD300 board;
- FDO nAir/FDTimeShift application.

The device regularly receives messages from server. If there are no any new messages the device switches switcher to redundant source. When signal appears again the device switches switcher back to the main server.



Note: More detail on switcher requirements see in the section below.



2. Versions of Device

There are 2 types of the WatchDog device. Both of them have the same principle of operation but different sockets for plugging to switcher:

- WatchDog (version 1) has 2 BNC connectors (1 normally closed and 1 normally open contact). GPI signals are used for communication when you work with the device of this type;



- WatchDog BOX (version 2) has 3 connectors for communication with commutator: 2 BNC connectors (1 normally closed and 1 normally open contact) and 1 DE-9 plug. GPI signals are used for communication via BNC connectors, RS-232 protocol is used when dealing with DE-9 plug.



WatchDog BOX device of version 1 is taken out of production at the moment.

3. States of Device

The WatchDog device can be in one of the following states:

- Normal state is the state when broadcasting server works correctly and the device periodically receives signals;
- Alarm state is the state when broadcasting server failed and there are no signals.

Possible failures here can be:

- closing of the FDOAir/FDTimeShift application;
- stopping of the FD300 board work;
- OS failure.

Initial state of the device is Alarm.



The device is switched into the Normal state at the beginning of broadcasting via the FDonAir application (for example, at launching of schedule execution/at switching of a passthrough video on) or the FDTimeShift applicaiton (when clicking the Start button).

The device is automatically switched from one state into another one in the following cases:

- Normal → Alarm – if there are no signals during specified period of time (Normal → Alarm Timeout).
- Alarm → Normal – if signals from server are periodically received during specified period of time (Alarm → Normal Timeout).

At toggling the device transmits corresponding service messages to switcher (see the table below):

Used Connector	Action at changing of WatchDog BOX state	
	Normal → Alarm	Alarm → Normal
BNC, normally open contact	Contact becomes closed	Contact becomes opened
BNC, normally closed contact	Contact becomes opened	Contact becomes closed
DE-9 (RS-232)	Switcher receives a byte sequence* for command to switch to redundant server.	Switcher receives a byte sequence* for command to switch to the main server.

* The sequences are given in instruction to switcher or you may get them by appealing to device producer. Some producers supply with free software for determining necessary sequences. User enters a sequence in Hex format for commands to be sent when customizing WatchDog in the FDConfiguration application (for more information on this issue, see the «Forward WatchDog BOX (version 2)» section, the «Configuration of WatchDog in FDConfiguration» chapter).

✓ **Important:** The SoftLab-NSK support department consults only on domestic devices, for example, WatchDog BOX. We do not consult about use and configuration of switchers produced by other companies.



4. Requirements For Switchers That Interact With WatchDog Via RS-232

- ✓ **Important:** If switcher is plugged to WatchDog BOX via RS-232 (COM port) note its several requirements: switcher must support a single, one-way receiving of control sequence.

Some switchers plugged via RS-232 (COM port) have the following scheme of working:

1. Switcher receives initiating sequence.
2. Switcher transmits confirmatory sequence in response.
3. Control sequence is sent only after switcher responded. As the result switcher toggles into another state.

- ✓ **Important:** The WatchDog Box device does not support switchers with described above scheme of working at the moment.



Schemes of Redundancy

1. General Information

There are 3 schemes of redundancy:

- bypass;
- mirroring;
- mirroring with bypass.

✓ **Important:** Mirroring requires presence of the second video server identical to the master one. For example, if Forward TA is used on the main server then it is necessary to purchase the same product for the second server (the same is for Forward TP/TP2).

At mirroring all actions (loading of schedule, launching of titles, launching of video material, etc.) implemented on the first machine are automatically duplicated on the second one.

Schedule on the second server is completely the same as on the first server. Note that all used material (video clips, titles, etc.) must be kept in the same folders on both PCs.

In this case you can store all necessary material on the same disk, for example, «D:» and in folders with the same names. You can also store material on external file server. In this case you must identically specify both servers, for example, with «V:» symbol.

A process of copying of files to mirror servers is not automatical. To do this we recommend using the CopyDR utility (copying of files with specified maximal data rate) included into the Forward T software set.

✓ **Important:** Configure network connection between used machines for mirroring in FDO nAir. For more information on this issue see the «FDO nAir: Mirroring, Remote control» document.

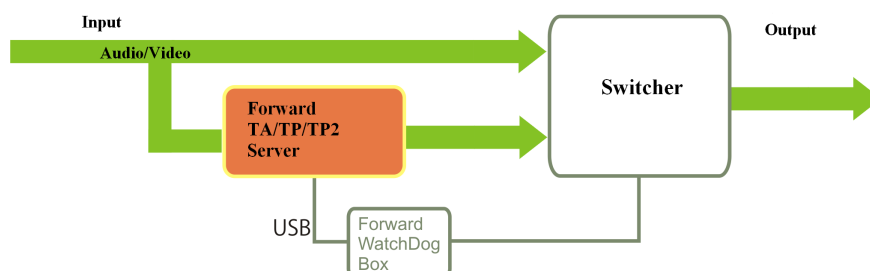
The following elements are present on schemes below:

- Server is a broadcasting automation server (Forward TA/TP/TP2);
- Switcher is a switcher of video/audio (2->1) signals (is purchased separately);
- Forward WatchDog BOX is a device for monitoring of video server state.



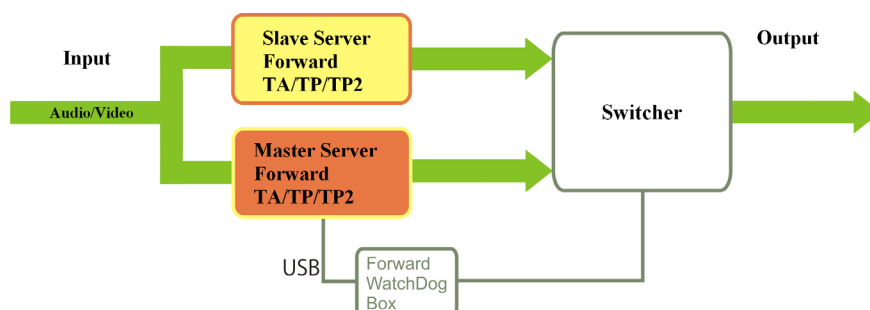
2. Bypass

Bypass enables automatic switching to passthrough signal in case of a failure on server.



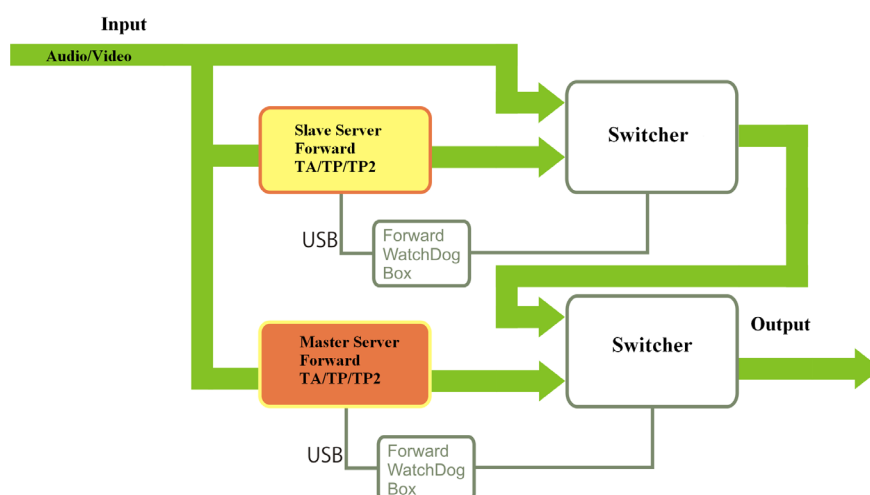
3. Mirroring

Mirroring enables an automatic switching to redundant server in case of a failure on the main broadcasting server.



4. Mirroring with Bypass

In case of a failure of the main server it enables automatic switching to redundant server. If redundant server is failed there is switching to passthrough signal.





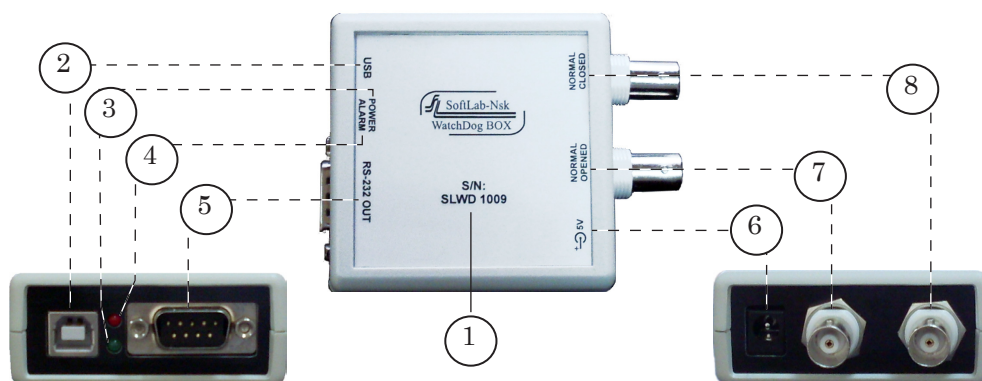
Forward WatchDog BOX (Version 2)

General Information

1. Appearance

Forward WatchDog is a device plugged to PC via USB port.

Each device has a unique index located on device front panel (1).



Sockets and indicators located on device side panels (see the picture above) with its specifications are listed in the table below:

Connector/indicator	Picture index	Specification
USB socket (is used for connection to PC)	2	USB
Power LED	3	POWER
Alarm LED (is lightened in Alarm state)	4	ALARM
DE-9 plug (is used for connection to switcher via RS-232)	5	RS-232 OUT
Power socket	6	⚡ 5V
BNC connector for plugging to switcher. Normally opened contact	7	NORMAL OPENED
BNC connector for plugging to switcher. Normally closed contact	8	NORMAL CLOSED



2. Plugging of WatchDog To Switcher

For connecting of WatchDog and switcher one of the following connectors can be used:

- BNC connector (normally opened contact);
- BNC connector (normally closed contact);
- RS-232.

3. Delivery Set

Delivery set includes the following items:

1. WatchDog device.
2. USB cable for plugging to PC.
3. Supply unit.
4. CD with drivers.



Preliminary Steps

1. General Workflow

1. Plug in WatchDog to PC used as a broadcasting server.
2. Complete the following steps on the machine:
 1. Install WatchDog drivers.
 2. Be sure that the WatchDog device is in the Device Manager list.
 3. Customize WatchDog parameters in the FDConfiguration application.
3. Plug in WatchDog to switcher.

✓ **Important:** First disconnect all devices. Then plug RS-232.

4. We recommend plugging an additional supply unit to WatchDog if connection with switcher is made via RS-232 port.
5. Check work of the system.

2. Installation of WatchDog Drivers

Drivers of the device are located on installation disc included into the WatchDog delivery set.

In case of installation disc absence download drivers on PC hard disk from the following line:

http://www.softlab-nsk.com/rus/forward/download/watchdog2_drivers.zip

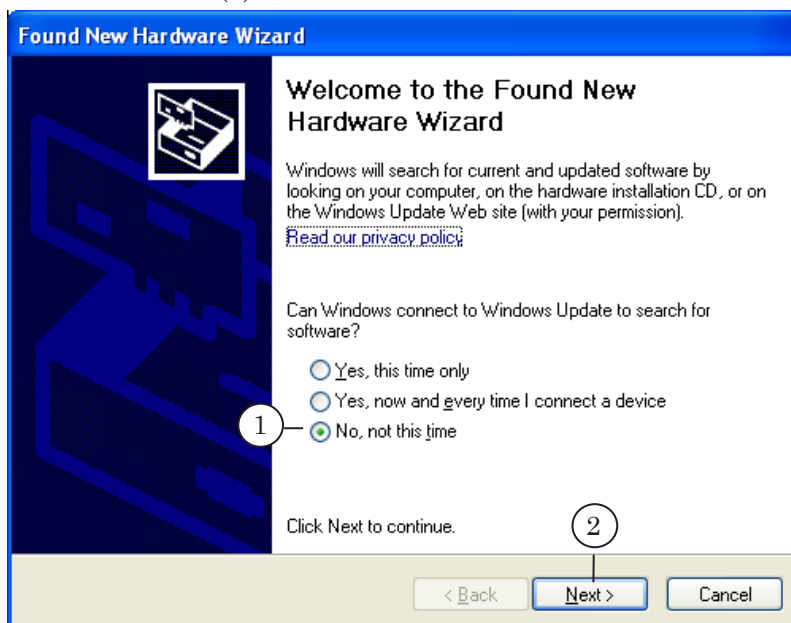
✓ **Important:** Be attentive: the WatchDog devices of version 2 and 1 require different drivers.

Workflow of installation:

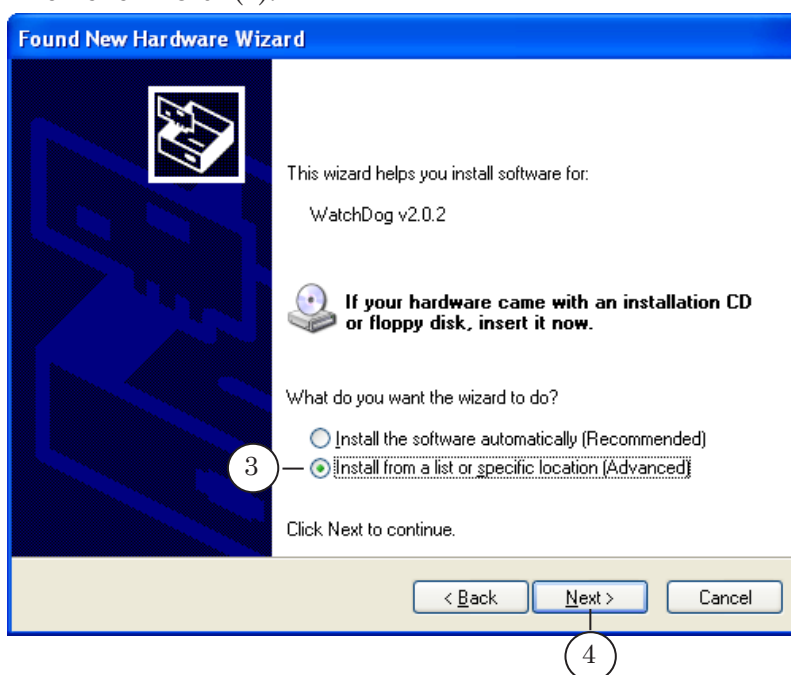
1. Plug WatchDog to PC USB port. New device is automatically found in the system. The Found New Hardware Wizard window appears.



2. Select No, not this time (1) in the appeared window. Then click Next (2).



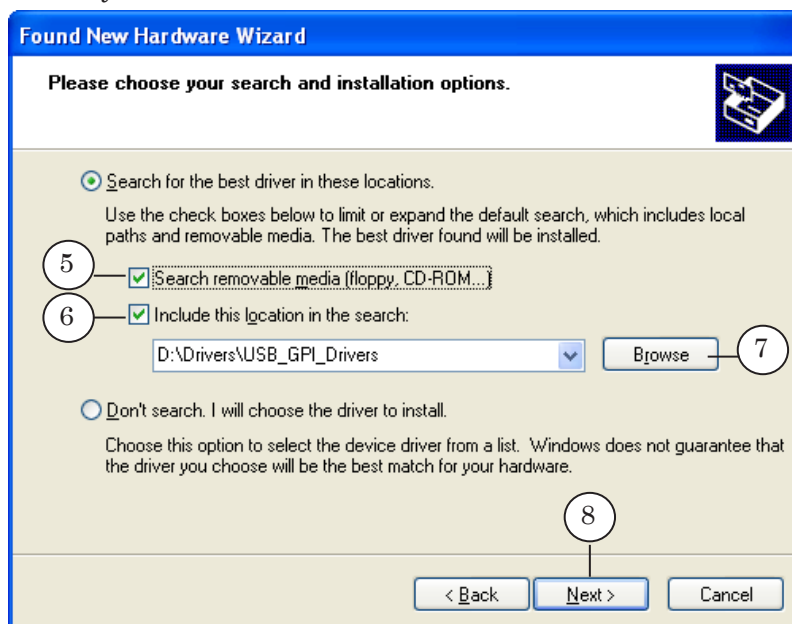
3. Select Install from a list or specific location (Advanced) (3). Then click Next > (4).





4. Specify locations for drivers search.

Put the Search removable media (floppy disk, CD-ROM...) check mark (5) to install drivers from disc supplied in WatchDog delivery set.



Complete the following steps if drivers are located on PC:

- put the Include this location in the search check mark (6);
- click Browse (7);
- select folder with drivers in the appeared window. Click OK.

5. Then click Next > (8).

6. Software installation starts.



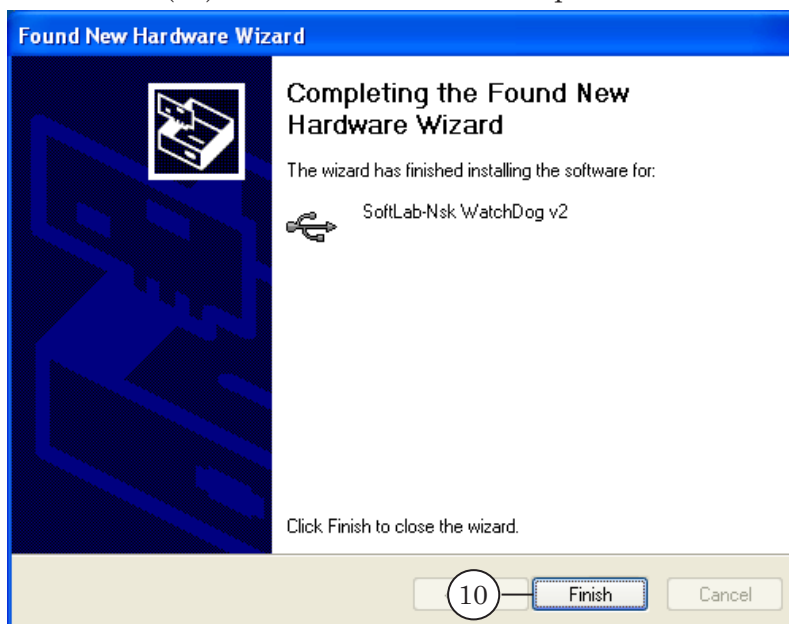


During installation service message appears. It informs that the device was not tested to verify its compatibility with Windows XP.



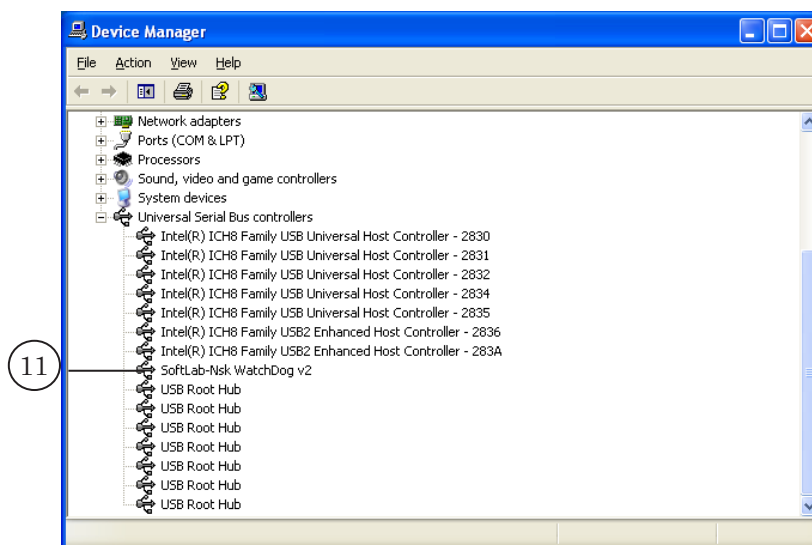
Click Continue Anyway (9). Installation continues.

7. Click Finish (10) when installation is complete.





When the drivers are installed SoftLab-Nsk WatchDog v2 appears in the Device Manager window, in the Universal Serial Bus controllers group (11).

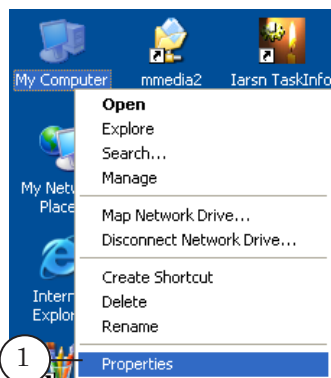




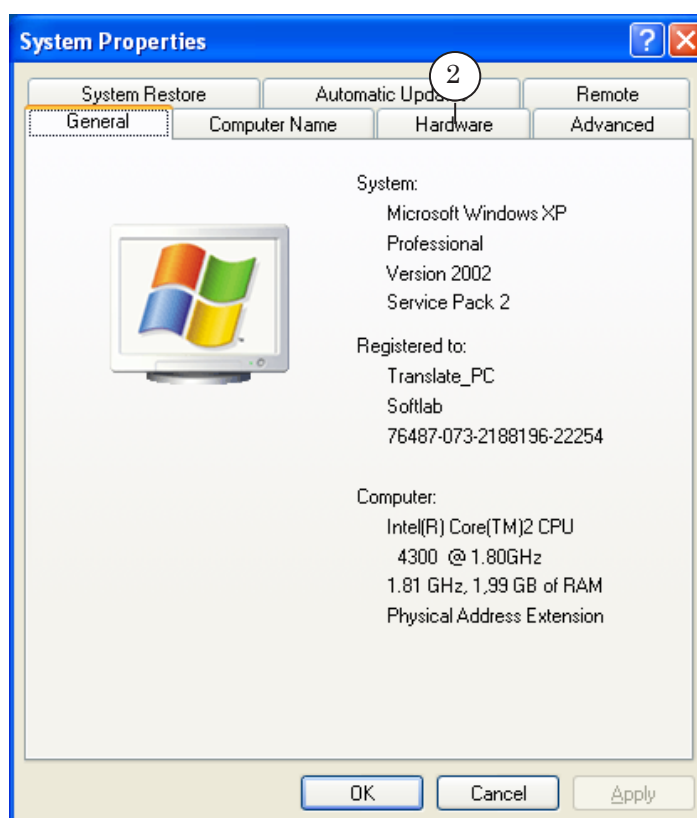
3. WatchDog in Device List

Complete the following steps to be sure that WatchDog is added to the Device Manager list:

1. Open context menu of My Computer by right-clicking the icon. Select Properties... .

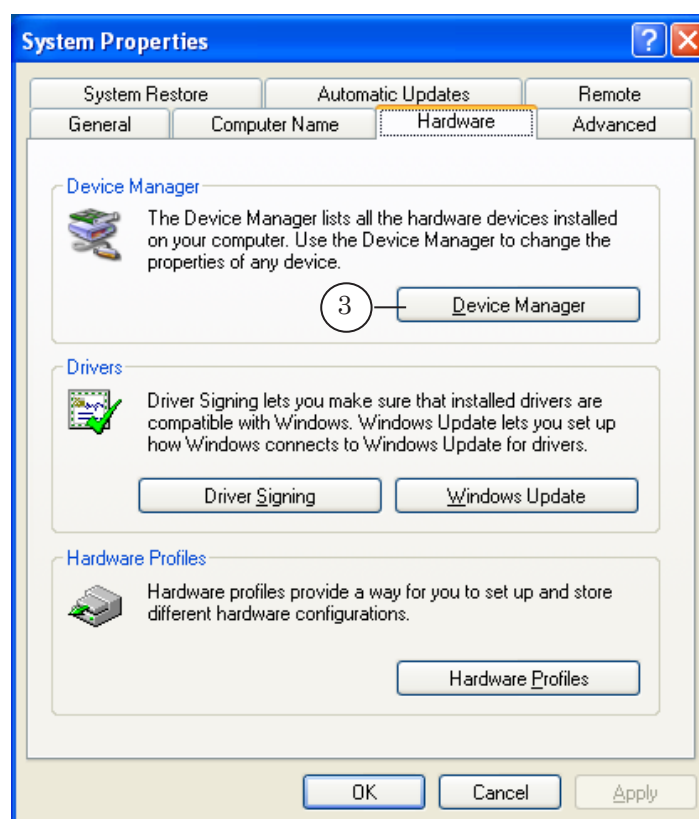


2. Pass to the Hardware tab in the System Properties window.

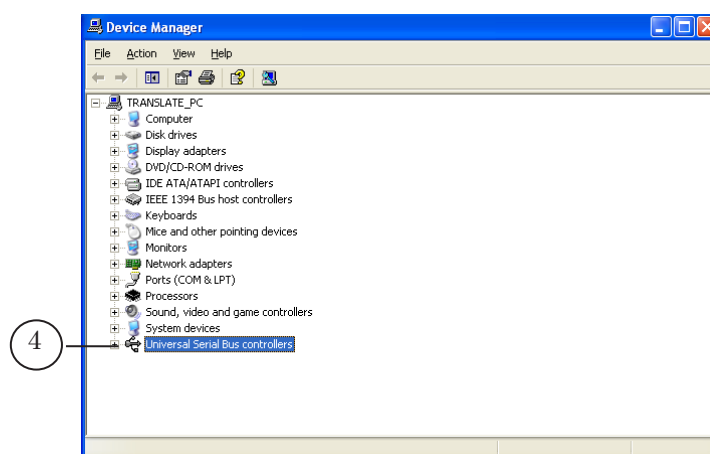




3. Click the Device Manager button (3).

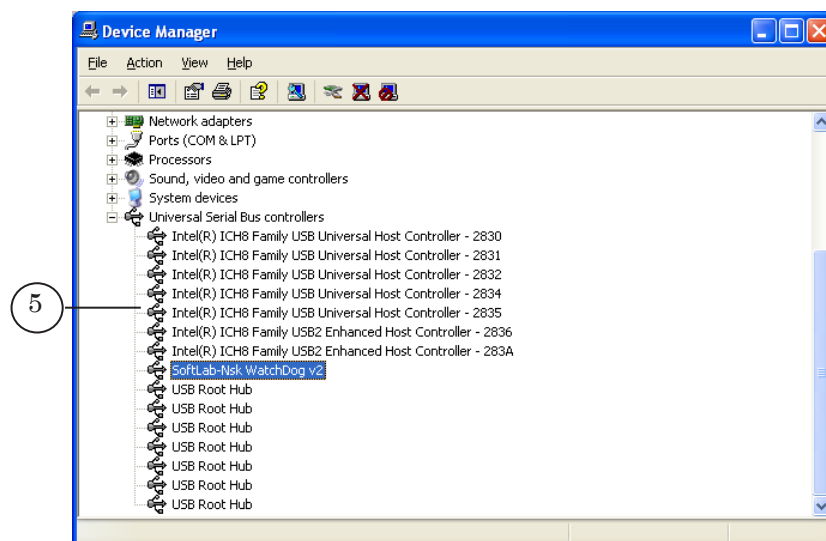


4. Find and open the Universal Serial Bus controllers (4) group in the Device Manager window.





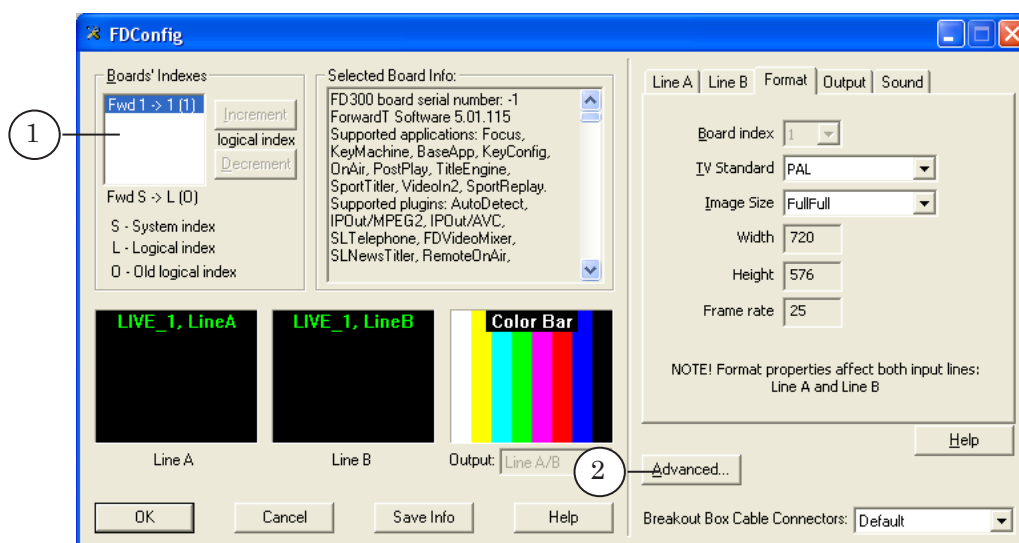
5. Find the SoftLab-Nsk WatchDog v2 device in the list.



6. Close the Device Manager window.

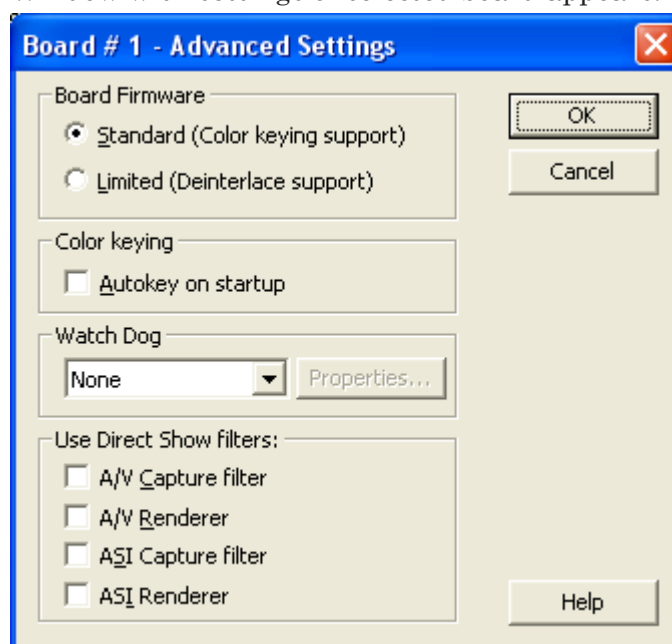
4. Customizing of WatchDog in FDConfiguration

1. Launch the FDConfiguration application in one of the following ways:
 - via desktop shortcut;
 - via the Start menu: Programs > ForwardT Software > Board Setup > FD300 Configuration;
 - via the Advanced... > FD300 Configuration command from the FDPPostPlay Indicator context menu.
2. If several FD300 boards are installed select in the Boards' Indexes group a board that will be used at broadcasting by clicking a corresponding line (1).
3. Click Advanced... (2).

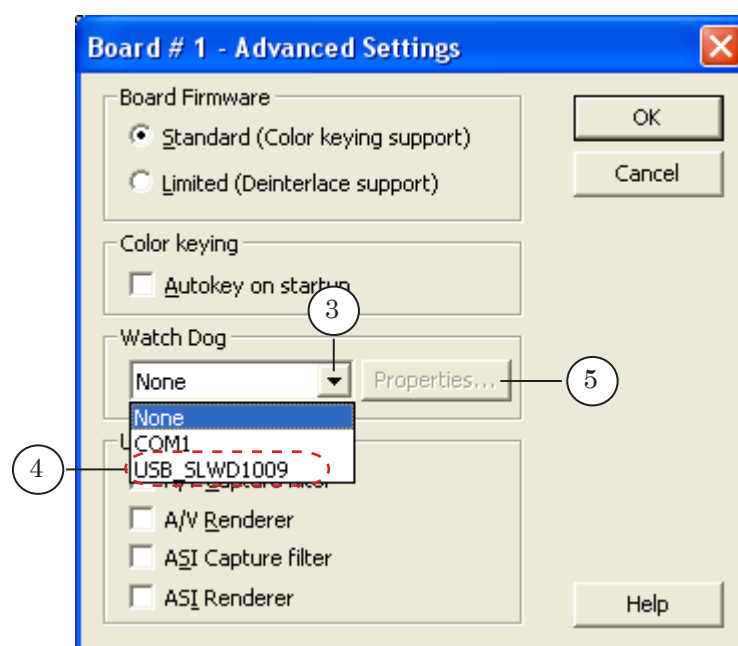




Window with settings of selected board appears.



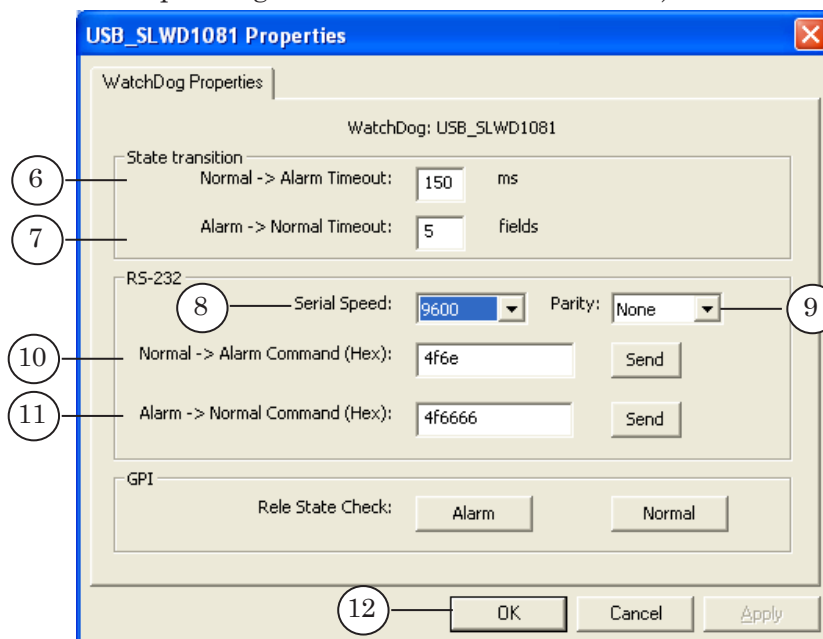
3. Select USB_SLWDxxxx (4) (xxxx denotes serial number of a corresponding device) in the Watch Dog drop-down list (3).





- Click Properties... (5);

The USB_SLWDxxx Properties window appears (xxx is a corresponding serial number of used device).



- Specify timeout (in ms) in the Normal ->Alarm Timeout field (6). If WatchDog is in the Normal state and during specified period of time (timeout) does not receive signals from server it toggles to the Alarm state. Recommended value here is 100 ms.
- Specify timeout (in fields (half-frames)) in the Alarm -> Normal Timeout field (7). If WatchDog is in the Alarm state and starts receiving signals again from server that are coming during specified period of time (timeout) it toggles to the Normal state. Recommending value here is 5–10 fields.
- Pass to step 8 if WatchDog is plugged to switcher via GPI.

Complete the following steps if the device is plugged via RS-232:

Specify values given in supplied with switcher instruction in the Serial Speed (speed of data transmitting) (8) and the Parity (parity) fields (9).

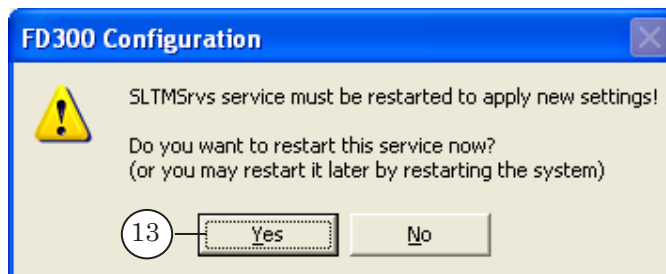
Specify byte sequence in Hex format for a command sent to switcher when WatchDog switches from Normal to Alarm state in the Normal ->Alarm Command (Hex) field (10).

Specify byte sequence in Hex format for a command sent to switcher when WatchDog switches from Alarm to Normal state in the Alarm -> Normal Command (Hex) field (10).

- Click OK (12).



9. Click OK in the main application window to exit the FDConfiguration application and to apply the settings.
10. Service message appears. Click Yes (13) to restart SLTM service and activate made configuration.

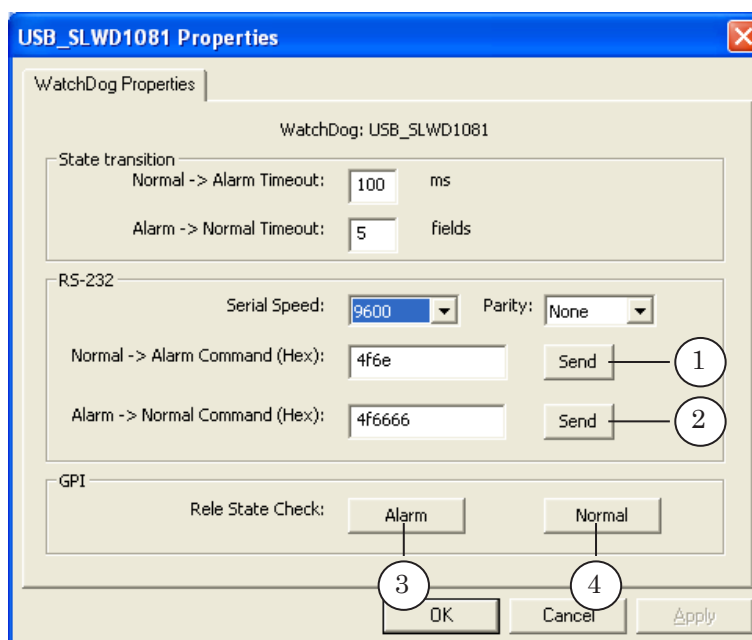


After this the device will be ready for working.

5. Check of Interaction Among WatchDog and Switcher

You may check work of device in the FDConfiguration application window on the WatchDog Properties tab.

When checking WatchDog must be plugged to PC and switcher.



The 1–4 buttons are used to change WatchDog state and to send a corresponding signal to switcher:

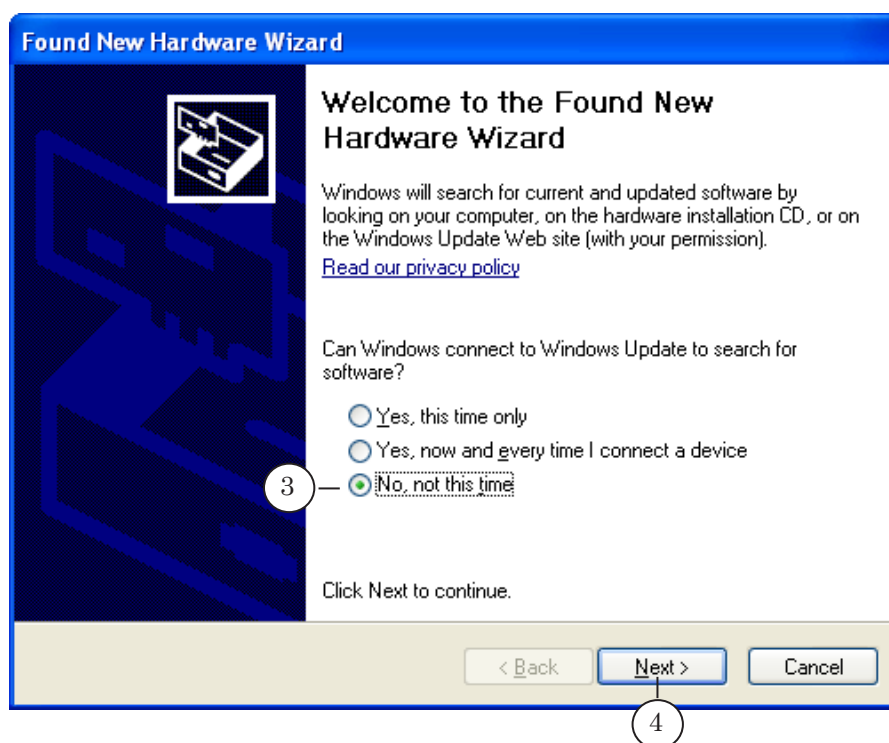
- via RS-232:
 - (1) – Normal → Alarm;
 - (2) – Alarm → Normal.
- via GPI:
 - (3) – Normal → Alarm;
 - (4) – Alarm → Normal.



Forward WatchDog BOX (Version 1)

Installation of USB Drivers for WatchDog

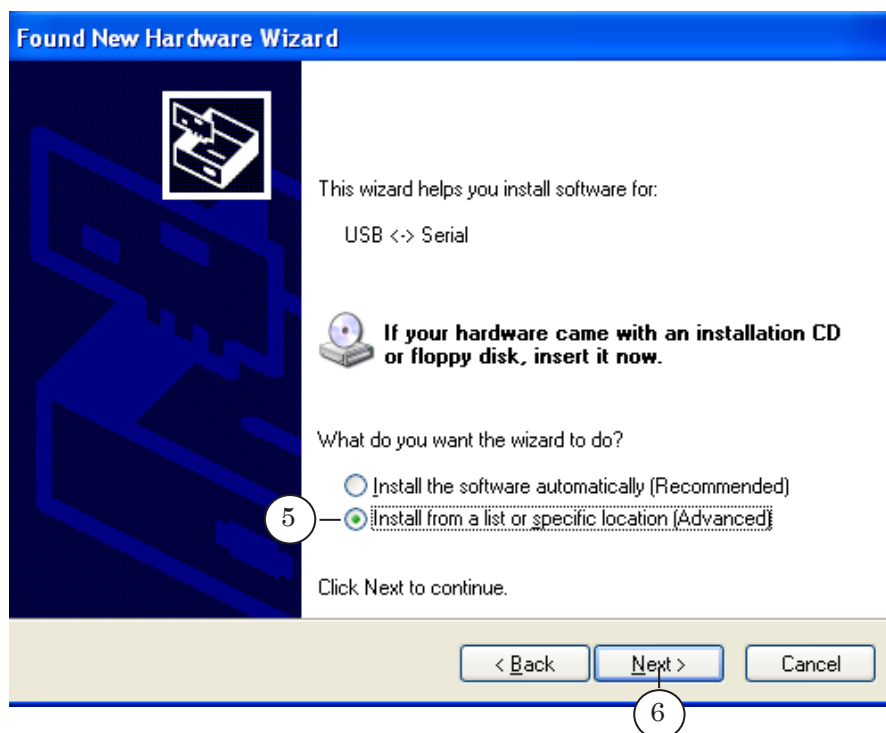
1. Copy a folder with drivers to PC hard disk.
2. Plug WatchDog to PC USB port.
3. Select No, not this time in the appeared window.



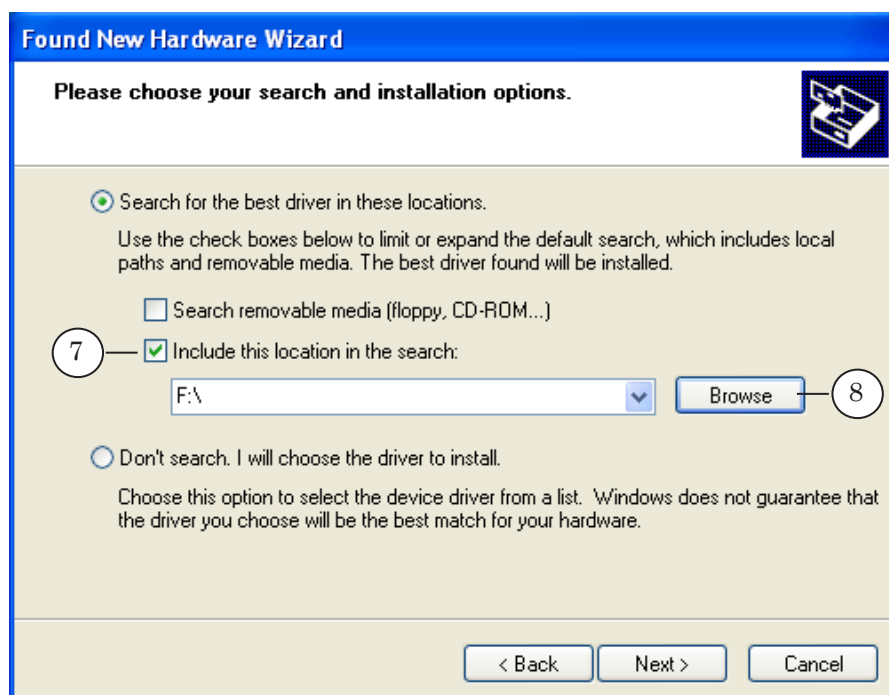
4. Click Next >.



5. Select Install from a list or specific location (Advanced).



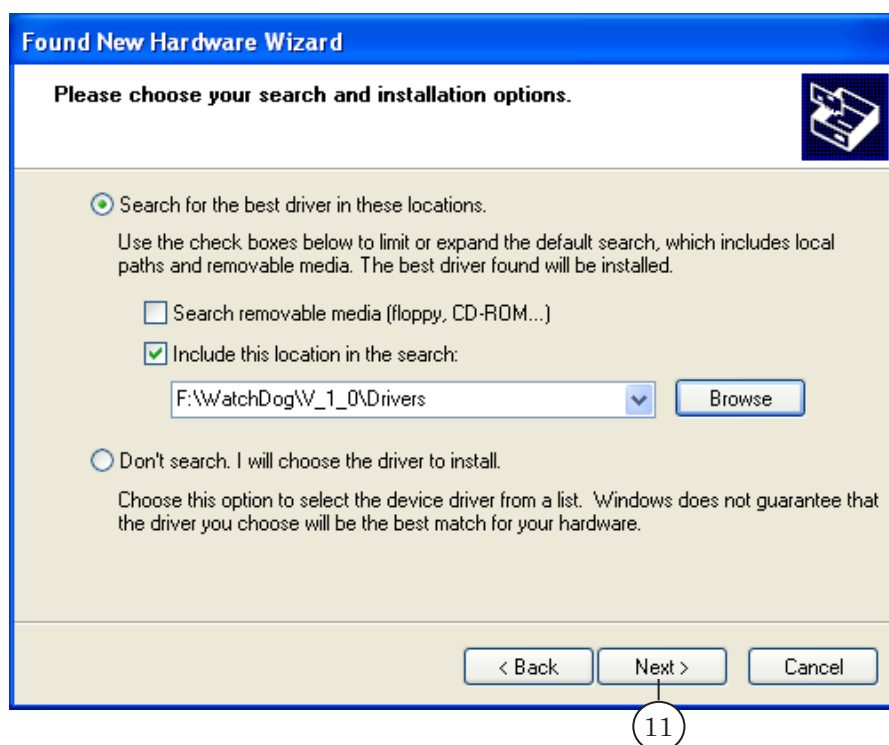
6. Click Next >.
7. Put the Include this location in the search check mark.



8. Click Browse.



9. Select folder with drivers in the appeared window and click OK.
10. Then click Next >.

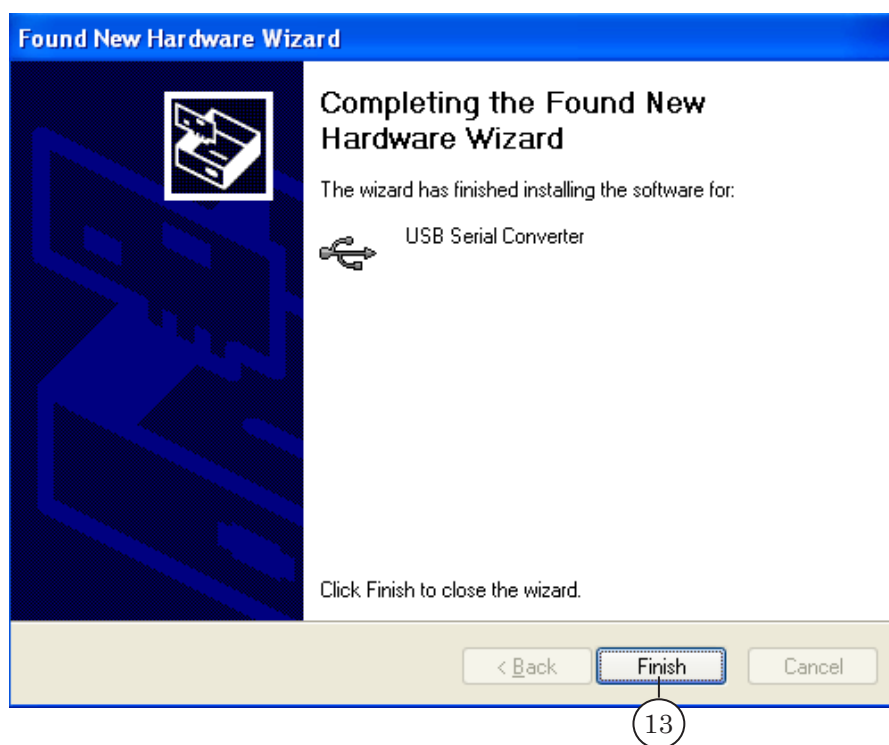


11. The system finds new hardware and starts installation.





12. Click Finish when installation is complete.



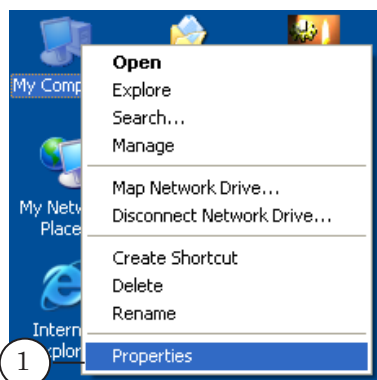
13. The system identifies a new device. Repeat steps 3–13.



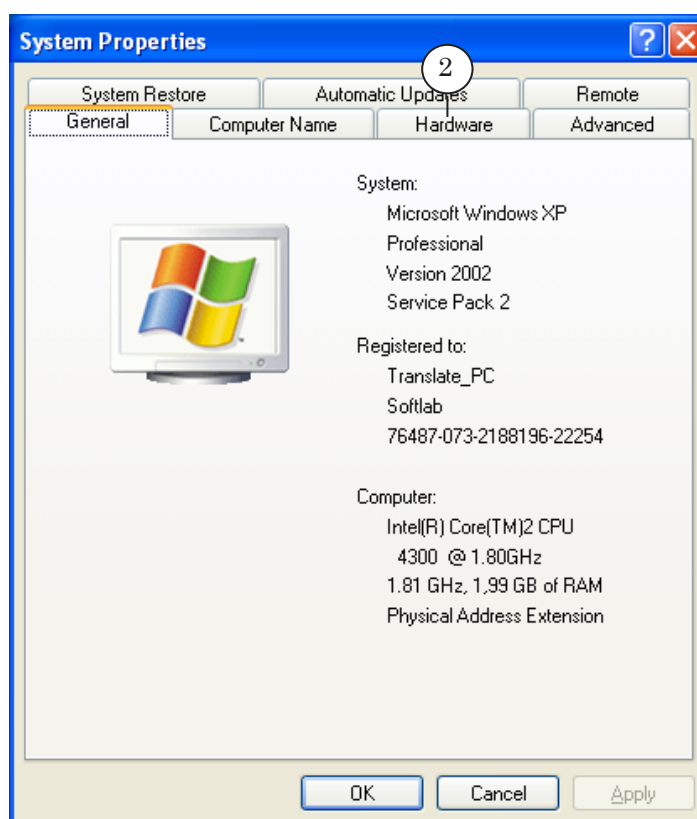
Customizing of WatchDog in FDConfiguration

Be sure that the WatchDog device is identified as USB Serial Port in the list of system devices by completing the following:

1. Right-click My Computer and select Properties in the appeared context menu.

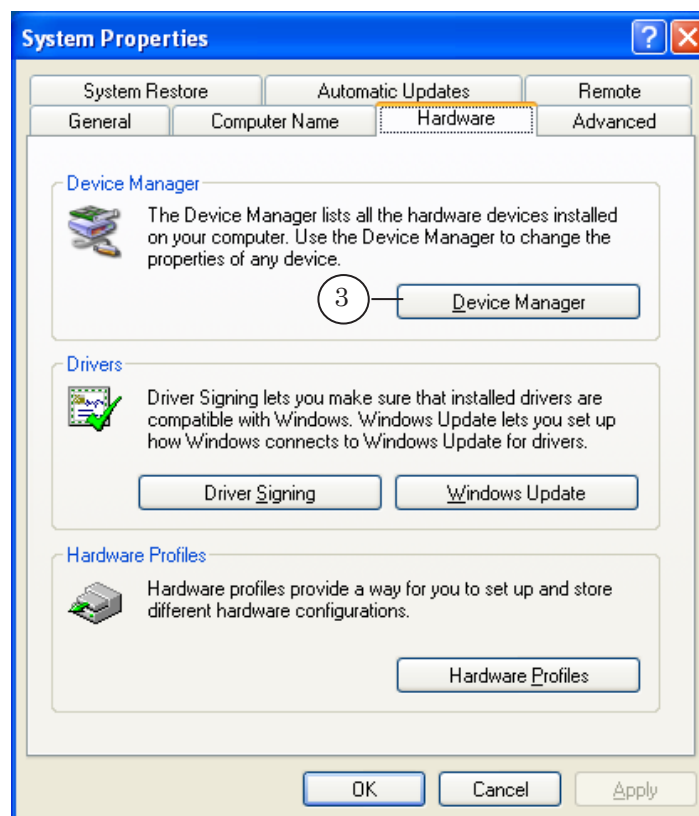


2. Pass to the Hardware tab in the System Properties window.

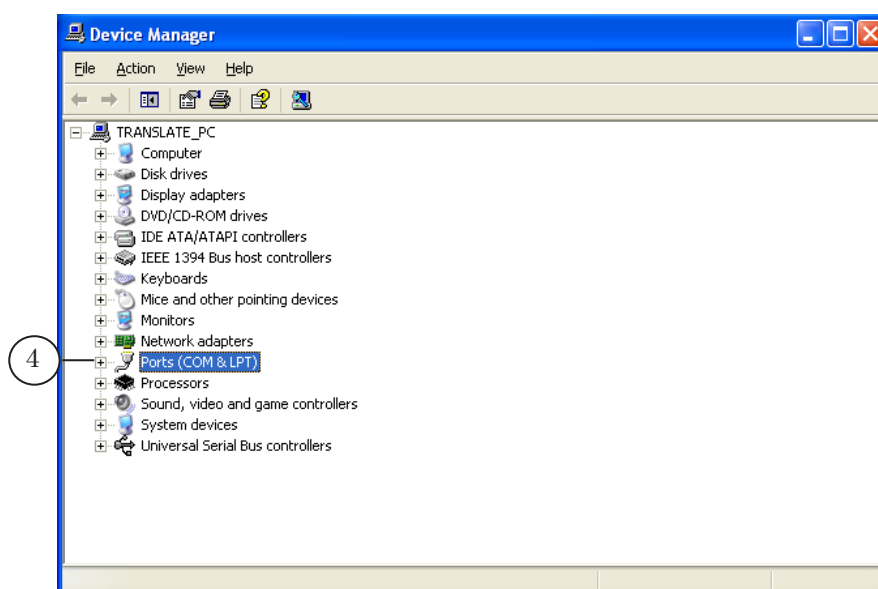




3. Click Device Manager.

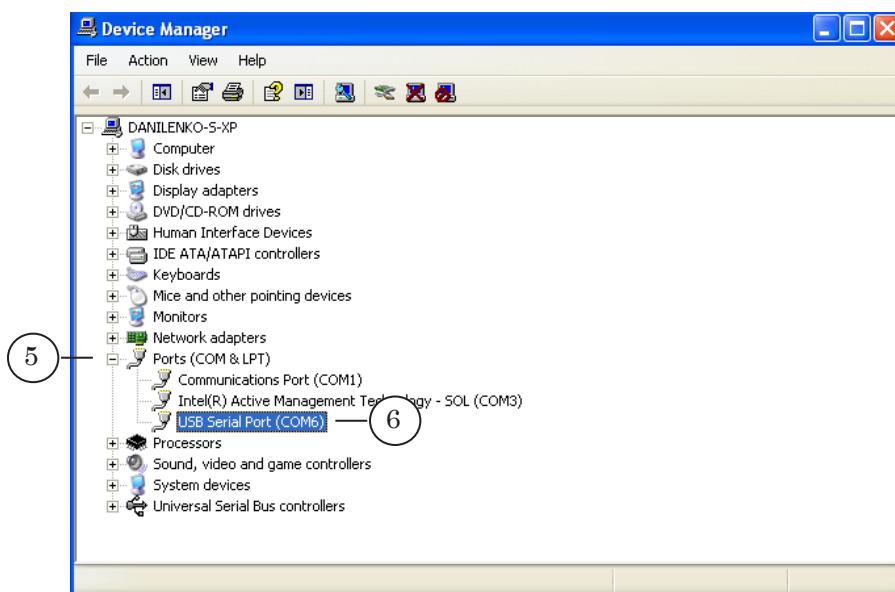


4. Find Ports (COM & LPT) (4) in the Device Manager window.





5. Open the Ports (COM & LPT) group.

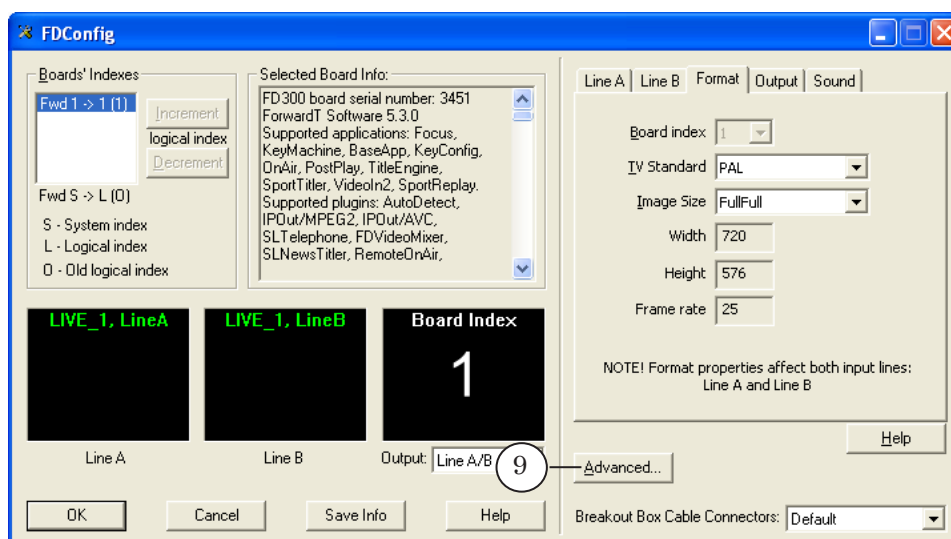


6. Find new COM device, USB Serial Port (COM6) is in our case.

7. Close the Device Manager window.

Customize WatchDog in the FDConfiguration application by completing the following steps:

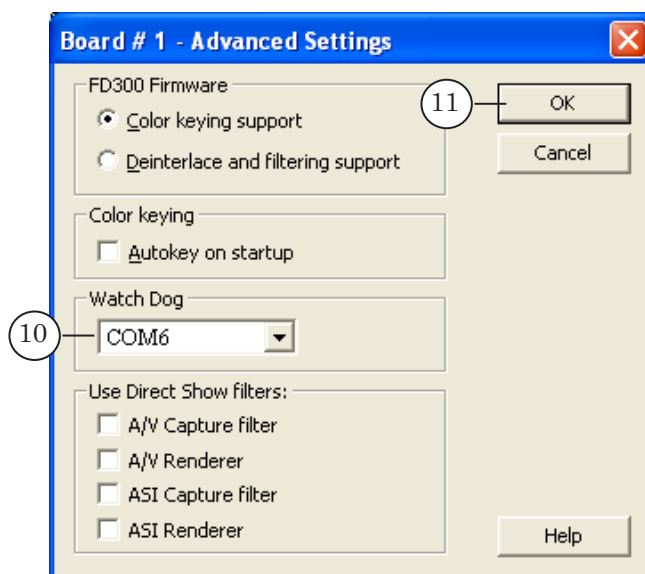
8. Launch FDConfiguration either via desktop shortcut or via Start: Programs > ForwardT Software > Board Setup > FD300 Configuration. You may also launch the application via the Advanced... > FD300 Configuration command of the FDPstPlay Indicator context menu.



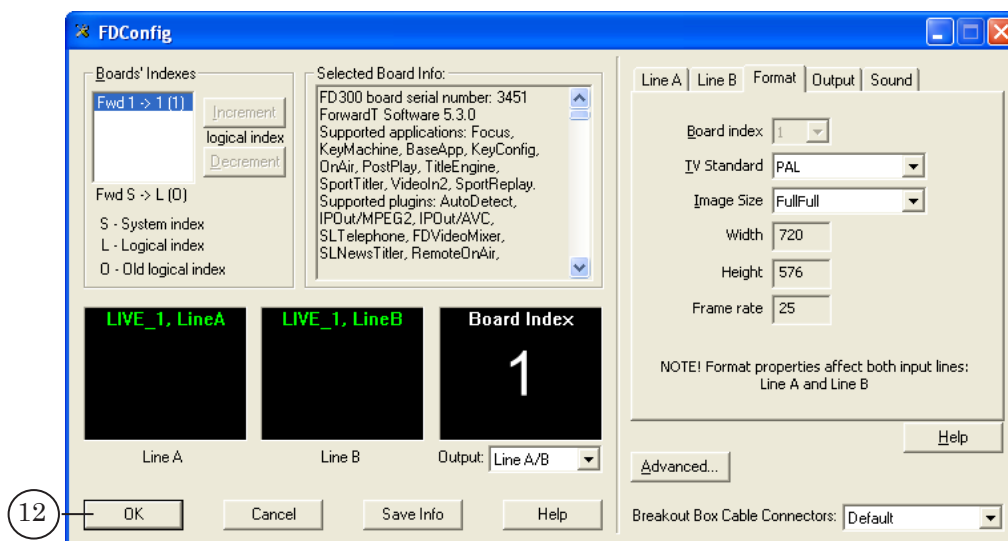
9. Click Advanced... .



10. Select port to which WatchDog is plugged (see step 6) in the Watch Dog drop-down list of the Board # 1 – Advanced Settings window, COM6 is in our example.

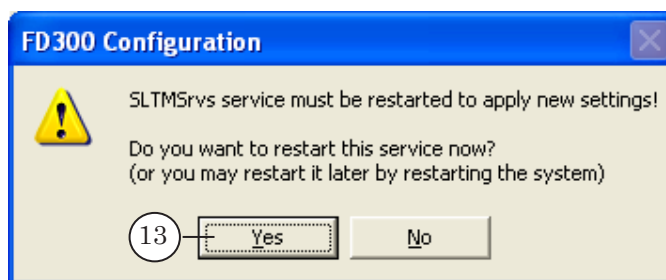


11. Click OK.
12. Then click OK (12) in the main application window to apply settings and quit the FDConfiguration application.





13. Service message appears. Click Yes (13) to restart SLTM service and activate made configuration.



The device is ready for working.



Examples of WatchDog Plugging to External Switchers via GPI

General Information

The WatchDog device has 2 BNC connectors for plugging of external switchers via GPI:

- Normal open denotes normally open contact that in case of the main server failure is closed;
- Normal closed denotes normally closed contact that in case of the main server failure is opened.

Choice of a socket depends on used switcher. If switching is implemented at closing of corresponded contacts plug switcher to the Normal open socket, if at opening of contacts – to the Normal closed socket.

Prepare a cable to plug WatchDog to external switcher. Way of connecting depends on construction of switcher.

✓ **Important:** Before dealing with the device we recommend examining documentation supplied with device. At preparing of a cable follow directly the instruction.

Let us consider the order of WatchDog plugging to external switchers on the example of 2 devices:

- redundant switcher (SW-212VAS2) – manufactured by «LES-TV» (www.les.ru);
- bypass replay module (PRB-097) – manufactured by «PROFIT» (http://www.profit.ru/index_e.html).

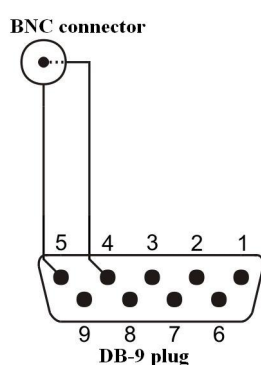


Redundant Switcher (SW-212VAS2)

DB-9 (EXT) socket is used in SW-212VAS2 redundant switcher for a remote control. Switching to reserve is implemented at closing of contact 4 to contact 5 («ground»). This information is taken from the «LES-TV» web-site.

Prepare connection cable to plug WatchDog to switcher via GPI. On the one end of the cable there is BNC connector, on the other end there is DB-9 plug for plugging of SW-212VAS2 reserve.

A scheme of connecting of BNC connector and DB-9 plug is given below.



Connecting of SW-212VAS2 and the WatchDog device is implemented via Normal open contact. Normal state of the SW-212VAS2 device is when contacts 4 and 5 are open. This information is taken from the «LES-TV» company web-site.

✓ **Important:** Information of this section is taken from web-page of manufacturer company. This is not directly a user's guide on plugging of SW-212VAS2. That's why we insistently recommend working according to instructions supplied to the concrete device because manufacturer can vary construction of switcher.

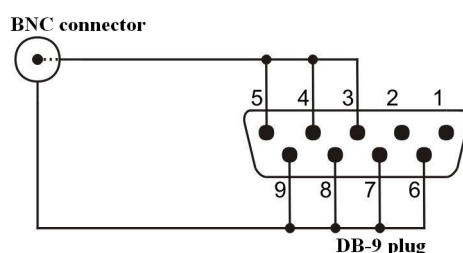


Bypass Replay Module (PRB-097)

DB-9 type socket is used in PRB-09 bypass replay module for a remote control (GPI). Switching to reserve is made at shorting of a corresponding contact (signal) with the «ground» one (GND).

Prepare connection cable to plug WatchDog to the module via GPI. On the one end of the cable there is BNC connector, on the other one there is DB-9 plug for plugging to PRB-097 replay module.

A scheme of connecting of BNC connector and DB-9 plug is given below. In this case when failure appears all channels will be simultaneously switched to reserve.



Connecting of PRB-097 and WatchDog is implemented via Normal open contact. Normal state is when corresponding contacts are open. Information was taken at http://www.profit.ru/ENGLISH/prb097_e.html.

For more information see the «PROFIT» company web-site.

- ✓ **Important:** Information of this section is taken from web-page of manufacturer company. This is not directly a user's guide on plugging of PRB-097. That's why we insistently recommend working according to instructions supplied to the concrete device because manufacturer can vary construction of switcher.



Useful Links

Forward T Product Line: Description, Software Delivery, Documentation, Ready Solutions

<http://www.softlab-nsk.com/forward/index.html>

TechSupport

e-mail: forward@sl.iae.nsk.su

forward@softlab-nsk.com

Forum

<http://www.softlab-nsk.com/forum> (currently available in Russian only)

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