SECURITY CODE

Sobol
Version 4

Getting Started

Administrator Guide

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General information

This document contains information on how to quickly start working with Hardware Trusted Boot Module Sobol. Version 4 (hereinafter Sobol).

Purpose

Sobol is designed to prevent unauthorized access to resources of a protected computer.

The core functions of Sobol are:

- user identification and authentication while logging on to the system using security tokens;
- protection from unauthorized boot using removable drives;
- software and hardware integrity check before OS startup;
- watchdog timer — blocks a computer if UEFI/BIOS is not in control after startup;
- control of RNG operation, volatile card memory and personal security tokens;
- registration of events related to information system security;
- interoperation with Secret Net Studio, Secret Net LSP.

Distribution kit

The Sobol distribution kit is shown in the table below.

Tab. 1 Sobol distribution kit

Component	Comment
CD with software and documentation	—
Sobol card in the following form factors: • PCI Express (hereinafter — PCIe); • Mini PCIe Half; • PCIe M.2 (hereinafter — M.2)	Form factor and quantity of Sobol cards are determined by the supply contract
Adapters for Mini PCIe Half and M.2 cards (types 1, 2, 3 and 4)	Presence, type and quantity of the adapters are determined by the supply contract
RST watchdog cable (see A) in Fig. 1 on p. **5**)	Presence and quantity are determined by the supply contract
ATX cable watchdog relay (see B) in Fig. 1 on p. **5**)	Presence and quantity are determined by the supply contract
PWR watchdog cable with two T-Tap connectors (see C) in Fig. 1 on p. **5**)	Presence and quantity are determined by the supply contract
Connectors to connect RST watchdog cable to Power button cable in parallel (see D) in Fig. 1 on p. **5**)	Presence and quantity are determined by the supply contract
iButton key	Presence and quantity are determined by the supply contract
iButton reader (external, internal)	Presence and quantity are determined by the supply contract
USB key (Rutoken, Rutoken RF, Rutoken Lite)	Presence and quantity are determined by the supply contract
Smart card (Rutoken Lite)	Presence and quantity are determined by the supply contract
USB smart card reader (Athena ASEDrive IIIe USB V2/V3)	Presence and quantity are determined by the supply contract. Sobol is compatible with CCID USB smart card readers

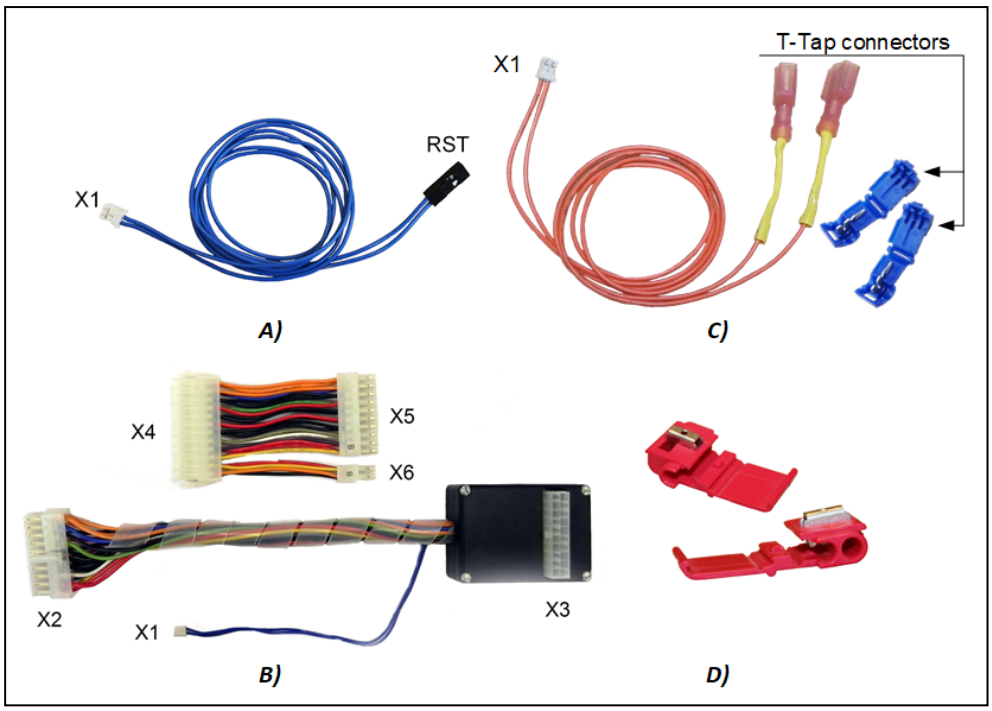


Fig. 1 Sobol watchdog components

System requirements

Your computer must meet the requirements shown in the table below.

Tab. 2 System requirements for Sobol

Component	Requirements
CPU	64-bit
System board	Available slots for at least one of the following bus standards: • PCIe version 1a or above; • Mini PCIe; • M.2
	Power supply slot: • must meet ATX requirements; • 20 or 24 pin
	For watchdog timer operation: • available Reset slot (while using RST watchdog cable); • available 20 or 24 pin ATX slot (while using ATX cable watchdog relay); • connectivity to standard cable wires of the Power button (while using the PWR watchdog cable or the RST watchdog cable with connectors)
Power supply unit	must meet ATX requirements
Screen resolution	1024x768 or higher
Operating system	Not provided
	For requirements for the Sobol software, see document [**2**]

Installation

Sobol installation is performed in the following order:

- install the Sobol software;

  Tip.
  The following components are installed with the Sobol software:
  - the integrity check templates management program;
  - Sobol card driver;
  - Sobol API library (snellock.dll).

  Sobol can be used both with the Sobol software and without it. For detailed information about the purpose of the Sobol software, and how to install and work with it, see document [2].

- install a Sobol card (see p. **6** for a PCIe card, p. **7** for a Mini PCIe Half card, p. **9** for a M.2 card);
- initialize Sobol (see p. **10**);
- put Sobol into operation (see p. **15**).

Install PCIe card

To install a PCIe card:

1. Shut down your computer. Remove the side panel.
2. Switch SW1-1 to the OFF position (see the figure below).

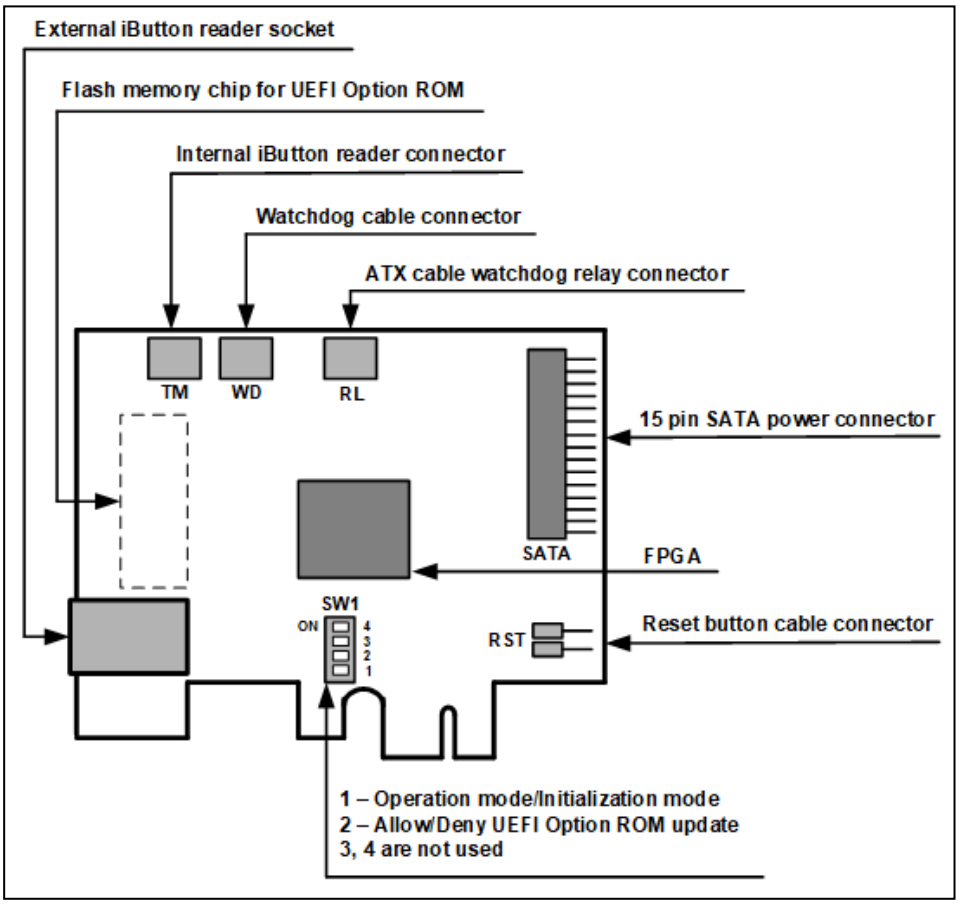


Fig. 2 PCIe card

3. To use the Sobol watchdog timer, connect a RST watchdog cable, a PWR watchdog cable or an ATX cable watchdog relay.

   Tip. For detailed information on how to connect the Sobol watchdog components, see document [1].

4. Insert the PCIe card into a free PCIe slot.
5. If nesessary, attach the iButton reader to the PCIe card:
   - for the external iButton reader, attach it to the respective socket (see the figure above);
   - for the internal iButton reader, attach it to the TM connector (see the figure above).
6. Put the side panel back.
7. If nessesary, attach a USB smart card reader.

Install Mini PCIe Half card

A Mini PCIe Half card (see Fig. 3 on p. **7**) can be installed autonomously or using an adapter depending on a protected computer form factor. You can use four adapter types which differ in terms of size and ability to attach either the external or the internal iButton reader (see Fig. 4 on p. **7**, Fig. 5 on p. **8**, Fig. 6 on p. **8**, Fig. 7 on p. **8**).

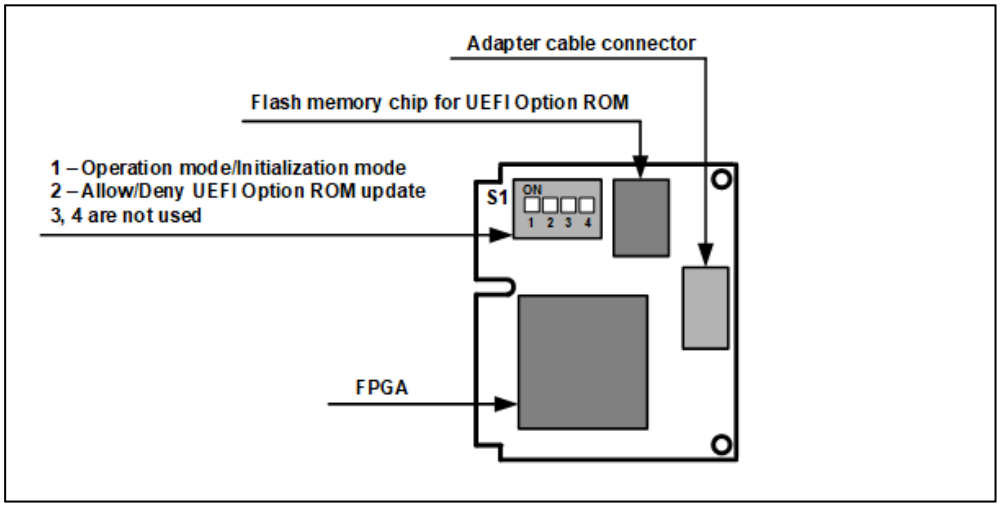


Fig. 3 Mini PCIe Half card

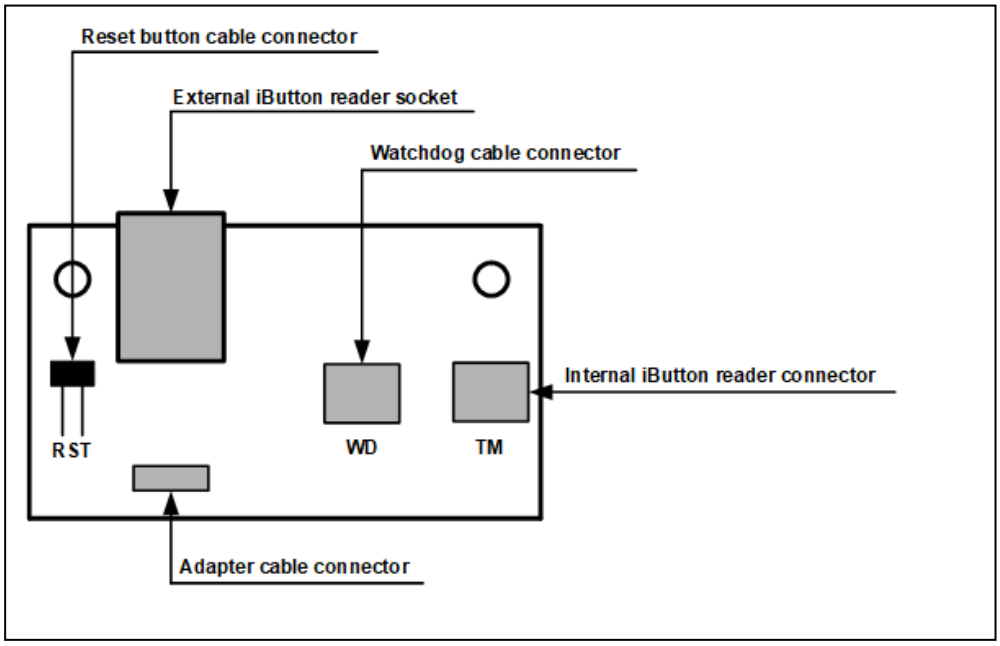


Fig. 4 Adapter for Mini PCIe Half and M.2 cards (type 1)

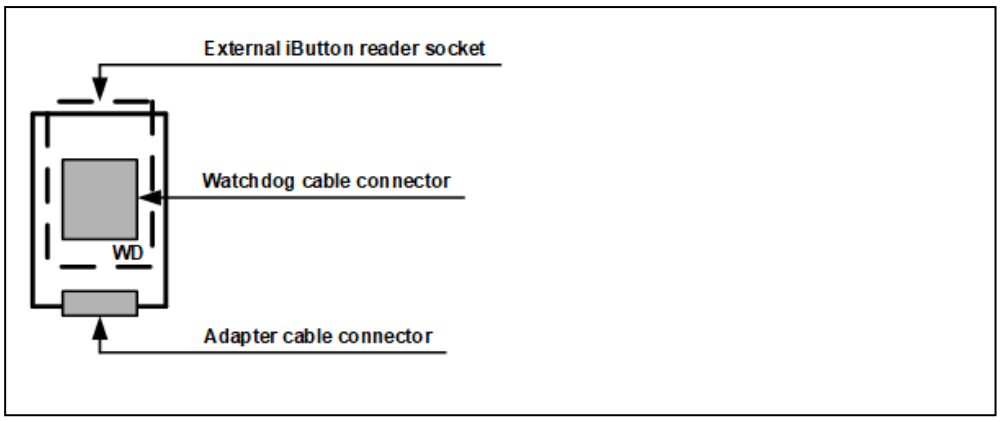


Fig. 5 Adapter for Mini PCIe Half and M.2 cards (type 2)

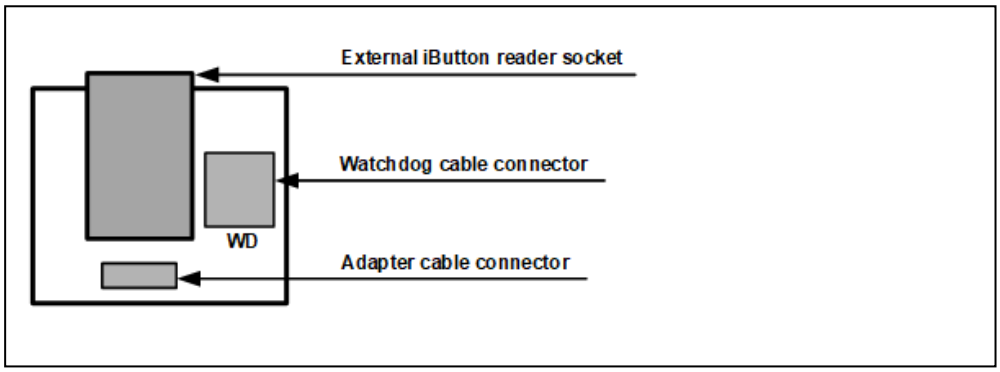


Fig. 6 Adapter for Mini PCIe Half and M.2 cards (type 3)

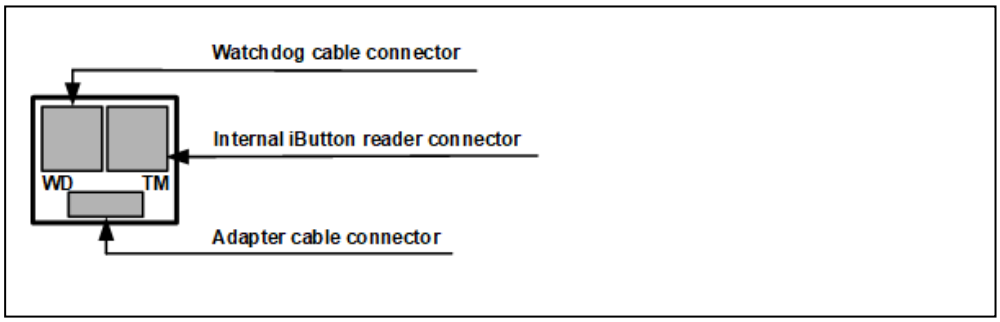


Fig. 7 Adapter for Mini PCIe Half and M.2 cards (type 4)

To install a Mini PCIe Half card using an adapter:

1. Shut down your computer. Remove the side panel.
2. Switch S1-1 to the OFF position (see Fig. 3 on p. **7**).
3. Connect the adapter cable to the respective card and adapter connectors.
4. To use the Sobol watchdog timer, connect a RST watchdog cable or a PWR watchdog cable.

   Tip. For detailed information on how to connect the Sobol watchdog components, see [1].
5. Insert the Mini PCIe Half card into a free Mini PCIe slot.
6. Insert the adapter into a free slot.
7. If necessary, attach the iButton reader to the adapter:
   - for the external iButton reader, attach it to the respective socket on the adapter of types 1, 2 or 3 (see figures above);
   - for the internal iButton reader, attact it to the TM connector on the adapter of types 1 or 4 (see figures above).
8. Put the side panel back.

9. If necessary, attach a USB smart card reader.

To install a Mini PCIe Half card autonomously:

1. Shut down your computer. Remove the side panel.
2. Switch S1-1 to the OFF position (see Fig. 3 on p. **7**).
3. Insert the Mini PCIe Half card into a free Mini PCIe slot.
4. Put the side panel back.
5. If necessary, attach a USB smart card reader.

Install M.2 card

A M.2 card (see Fig. 8 on p. **9**) can be installed autonomously or using an adapter depending on a protected computer form factor. You can use four adapter types which differ in terms of size and ability to attach either the external or the internal iButton reader (see Fig. 4 on p. **7**, Fig. 5 on p. **8**, Fig. 6 on p. **8**, Fig. 7 on p. **8**).

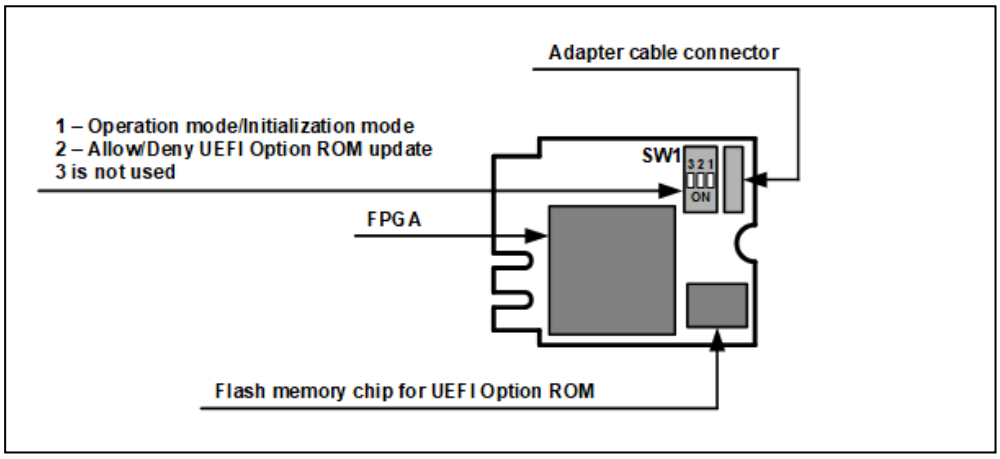


Fig. 8 M.2 card

To install a M.2 card using an adapter:

1. Shut down your computer. Remove the side panel.
2. Switch SW1-1 to the OFF position (see the figure above).
3. Connect the adapter cable to the respective card and adapter slots.
4. To use the Sobol watchdog timer, connect a RST watchdog cable or a PWR watchdog cable.

   Tip. For detailed information on how connect the Sobol watchdog components, see document [1].
5. Insert the M.2 card into a free M.2 slot.
6. Insert the adapter into a free slot.
7. If necessary, attach the iButton reader to the adapter:
   - for the external iButton reader, attach it to the respective socket on the adapter of types 1, 2 or 3 (see figures above);
   - for the internal iButton reader, attach it to the TM connector on the adapter of types 1 or 4 (see figures above).
8. Put the side panel back.
9. If necessary, attach a USB smart card reader.

To install a M.2 card autonomously:

1. Shut down your computer. Remove the side panel.
2. Switch SW1-1 to the OFF position (see the figure above).
3. Insert the M.2 card into a free M.2 slot.
4. Put the side panel back.
5. If necessary, attach a USB smart card reader.

Initialize Sobol

To initialize Sobol, take the following steps:

1. Configure system settings (see p. **10**).
2. Configure general settings (see p. **11**).
3. Configure password settings (see p. **12**).
4. Configure log settings (see p. **12**).
5. Create and configure an administrator account (see p. **13**).
6. Configure integrity check settings and calculate checksums (see p. **14**).

Attention! Before starting the initialization, disconnect all USB Mass Storage devices from your computer (USB, CD and DVD drives, etc).

To start the initialization:

1. Power on your computer. The computer is controlled by Sobol. RNG and memory testing begins.

   After the tests are completed, the window appears as in the figure below.

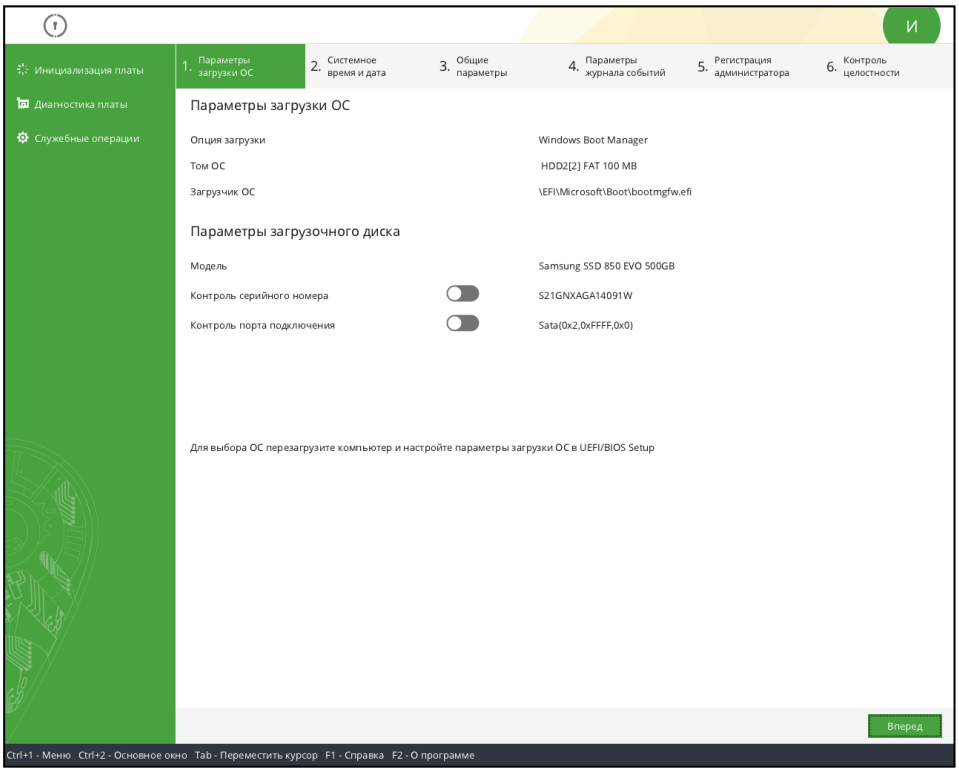


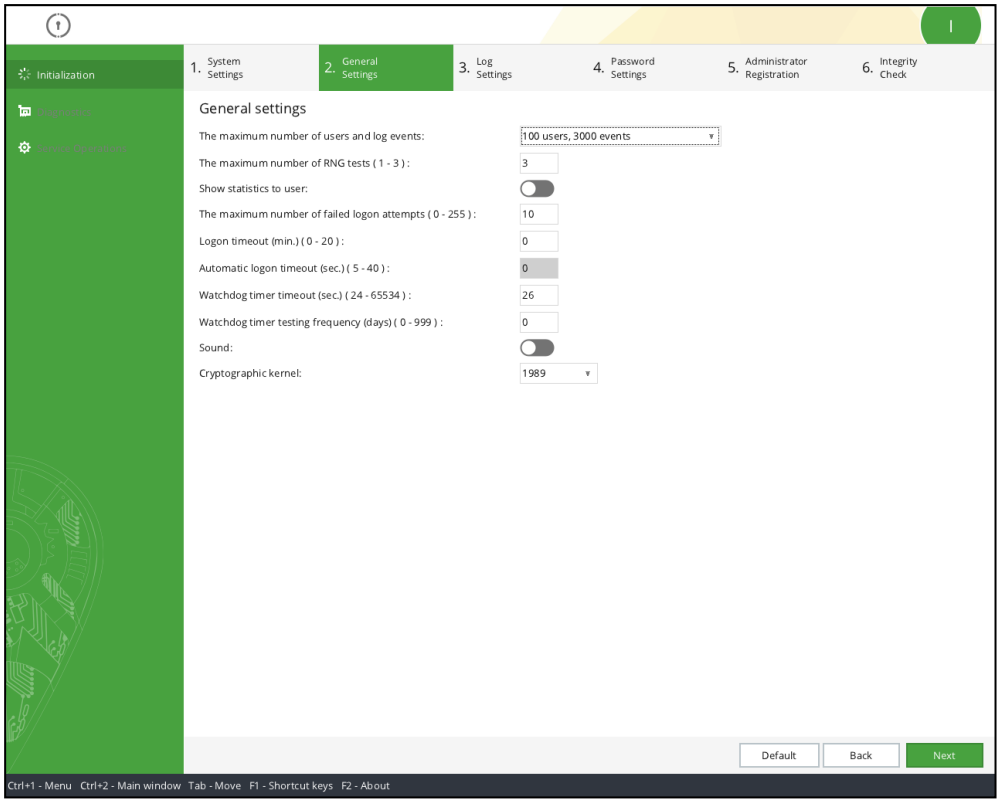
Fig. 9 Sobol initialization section

2. On the navigation panel, select **Card initialization**.

Step 1. Configure system settings

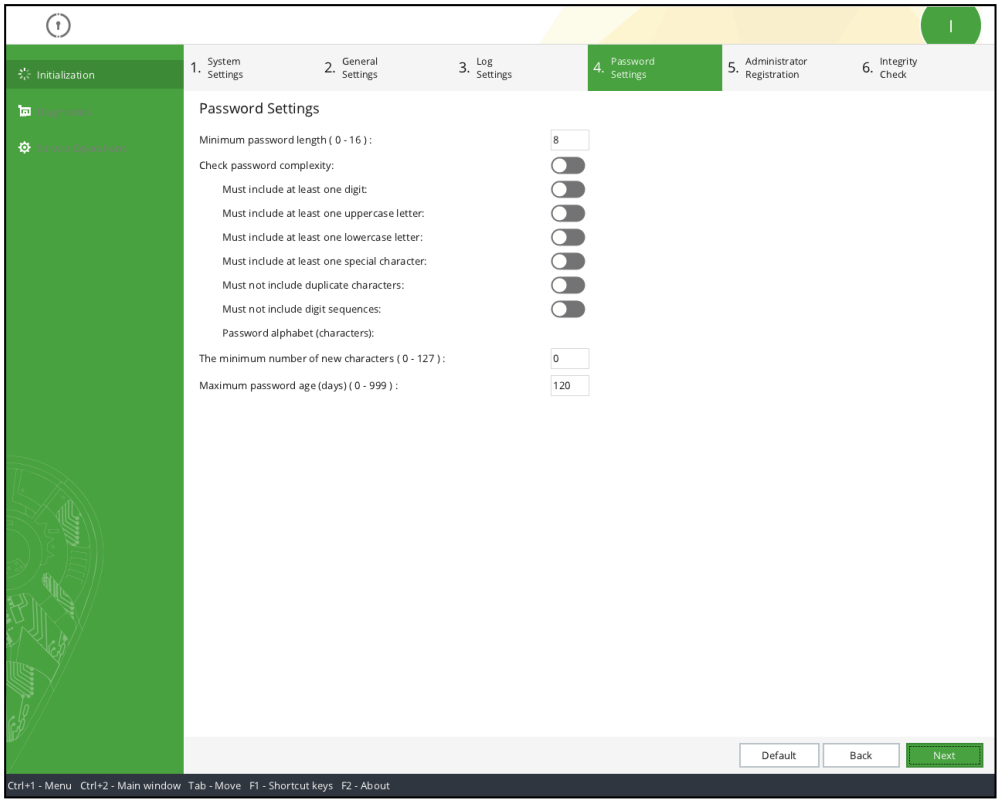
1. In the **System Settings** window (see the figure above):
   - Check boot parameters. To change the parameters, restart you computer and configure boot parameters using UEFI/BIOS Setup;
   - Configure the **Control serial number** and **Control connection port** parameters.
   - Check the system time and date. Set the required time and date, if necessary.
2. Select **Next**.

Step 2. Configure general settings



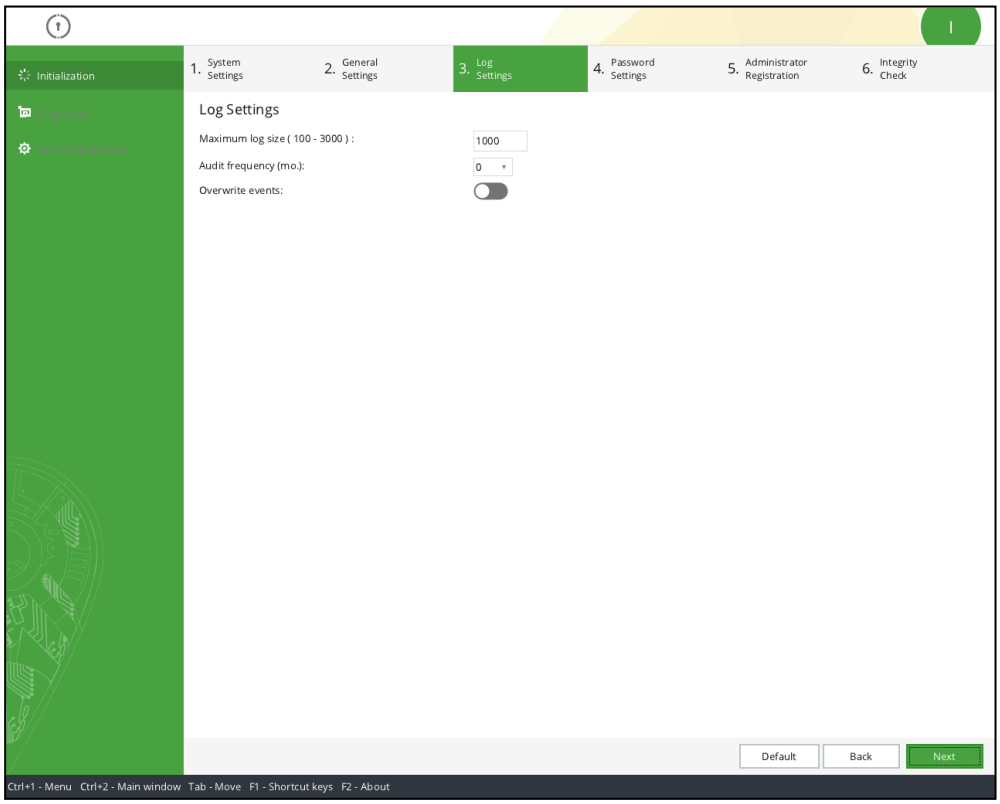
1. Configure the following parameters which cannot be configured when Sobol is in operation:
   - **The maximum number of users and log events** — select the appropriate value.
   - **Cryptographic kernel**:
     - to ensure compatibility with previous versions of the product, select the **1989** (GOST 28147-89 in MAC Generation Mode);
     - in other cases, select the **2015/2018** (the Magma algorithm (GOST R 34.12-2015, GOST 34.12-2018) in MAC Generation Mode (GOST R 34.13-2015, GOST 34.13-2018)).
2. Use default values for other parameters. You can edit them when Sobol is in operation using document **[1]**.
3. Select **Next**.

Step 3. Configure password settings



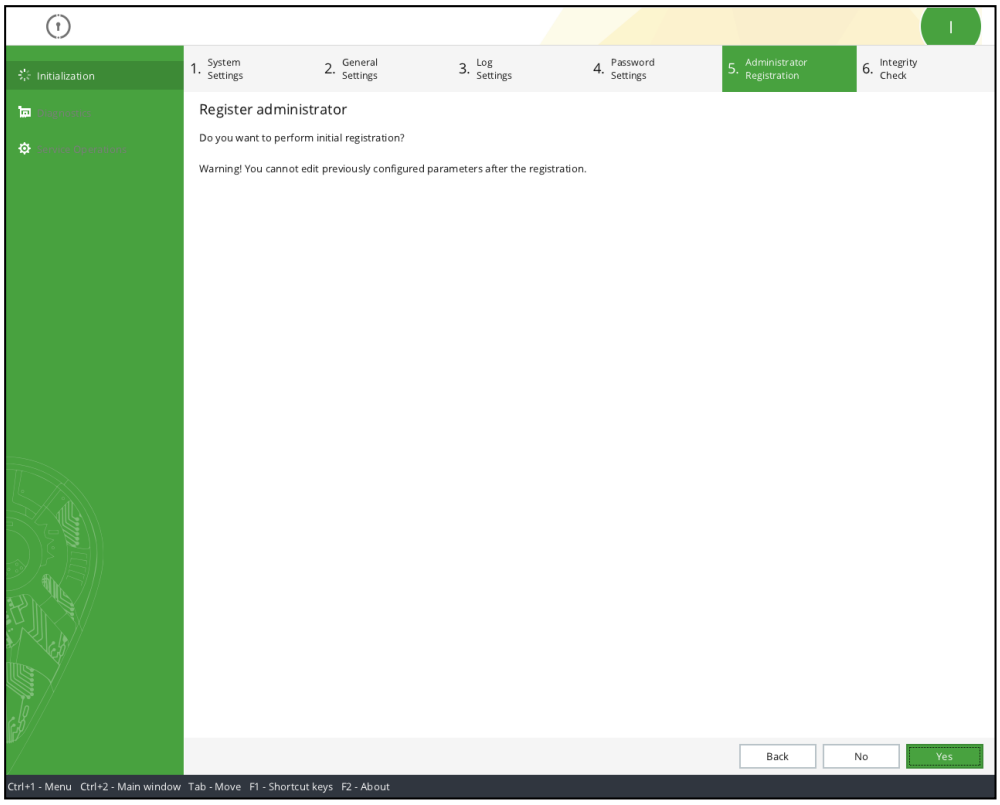
1. Use default password parameters. You can edit them after initialization using document [**1**].
2. Select **Next**.

Step 4. Configure log settings



1. Use default log parameters. You can edit them after initialization using document [**1**].
2. Select **Next**.

Step 5. Create and configure an administrator account



Note. You can use a single security token for several computers. To do so, perform the initial registration on the first computer, then perform registration on other computers. The initial registration is described below. For detailed information about registration procedures, see document [**1**].

1. To start the initial registration, select **Yes**.

   A dialog box for entering and confirming a password appears.
2. In the **Enter new password** text box, type a new password that meets the requirements (see below) or select **Generate** (press **<F8>**) to create a random password automatically.

   Attention!
   - A password must contain only the following characters:
     - 1234567890 — numerals;
     - abcdefghijklmnopqrstuvwxyz — lowercase Latin letters;
     - ABCDEFGHIJKLMNOPQRSTUVWXYZ — uppercase Latin letters;
     - _$!@#;%^:&?*)(-+=/|.,<>`~"\ — special characters.
   - A password generated by Sobol automatically meets the requirements;
   - If the complexity check is enabled, make sure the password you entered meets the requirements.
3. In the **Confirm new password** text box, type the password again.
4. Select **Next**.

   Note. If an error occurs, you receive a message with an error description. select **OK** and enter your password.

   After you enter the password, you are prompted to present a security token.
5. Present a security token to be assigned to an administrator.

Note.
- If a security token is already presented (iButton is in contact with the reader / USB key is attached / smart card is in contact with the reader), Sobol automatically reads it.
- If several security tokens are presented, Sobol reads the first one being detected.
- If you present a security token with a PIN code, the window prompting a PIN code appears. Type the PIN and click **OK.**
- If you receive warning messages, see document [**1**].

After an administrator is assigned with a personal security token, you receive the respective message. To create a security token backup, select **Back up**.

Tip. We recommend creating at least one backup.

6. Select **Back up**.

   You are prompted to present the security token.

7. Present the required security token.

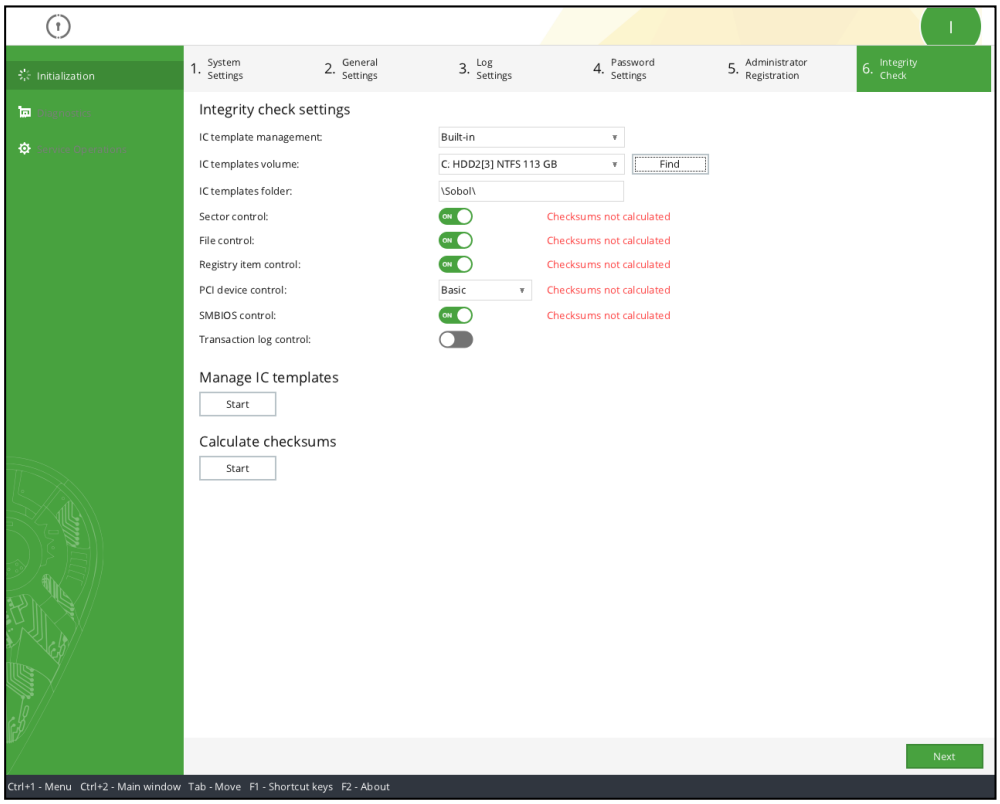
Note.
- If a security token is already presented (iButton is in contact with the reader / USB key is attached / smart card is in contact with the reader), Sobol automatically reads it.
- If several security tokens are presented, Sobol reads the first one being detected.

When the backup copy is created, you receive the respective message.

8. To create one more backup, repeat steps **6, 7**.

   When the required number of backups has been created, select **Next**.

Step 6. Configure integrity check settings and checksum calculation



1. Select **Find**. Sobol searches for integrity check templates on your computer.

   If the required folder is found and the required templates are valid, the integrity check parameters will be set automatically. Go to step **2**.

   If the required folder is not found or the templates are not valid, you will receive the respective message. Go to step **3**.

Note. For detailed information on how to edit the integrity check parameters, see documents [**1**] and [**2**].

2. To calculate checksums, select **Start**.

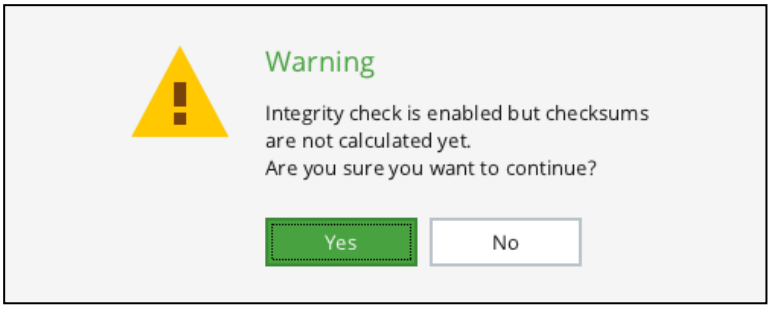
Checksums are being calculated. The progress is shown in the respective window.

If an error occurs, you receive a respective message. Select **Continue**.

When the procedure is completed, select **Finish**.

3. Select **Next**.

   If an error occurs while calculating checksums, you receive a message as in the figure below.



   Select **Yes**.

When the initialization is finished, you receive the respective message, which also informs you about your computer shutdown.

Select **OK**. Your computer is shutting down.

Then, put Sobol into operation (see the section below).

Put Sobol into operation

Take the required steps according to your card form factor.

PCIe card:

1. Shut down your computer. Open the side panel.
2. Disconnect the iButton reader from the card:
   - for the external reader, disconnect it from the respective socket;
   - for the internal reader, disconnect it from the TM connector.
3. Remove the Sobol card from the PCIe slot.
4. Switch SW1-1 to the ON position (see Fig. 2 on p. **6**).
5. Attach the Sobol card to the PCIe slot.
6. If necessary, attach the iButton reader:
   - for the external reader, attach it to the respective socket;
   - for the internal reader, attach it to the TM connector.
7. Put the side panel back.

Mini PCIe Half card:

1. Shut down your computer. Open the side panel.
2. Switch S1-1 to the ON position (see Fig. 3 on p. **7**).
3. Put the side panel back.

M.2 card:

1. Shut down your computer. Open the side panel.
2. Switch SW1-1 to the ON position (see Fig. 8 on p. **9**).
3. Put the side panel back.

Then, power on your computer and start Sobol operation.

Documentation

1. Hardware Trusted Boot Module Sobol. Version 4. Administrator guide.
2. Hardware Trusted Boot Module Sobol. Version 4. Administrator guide. Sobol software.
3. Hardware Trusted Boot Module Sobol. Version 4. User guide.
4. Hardware Trusted Boot Module Sobol. Version 4. Getting Started.