SECURITY code

Sobol
Version 4

Getting Started

Administrator Guide

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Table of contents

General information

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

There are the following Sobol types depending on the RNG used:

- type 1 and 3 — two-channel hardware RNG is used;
- type 2 and 4 — two-channel hardware RNG is not used.

For more details on how to work with Sobol, refer to the following documents:

1. Hardware Trusted Boot Module Sobol. Version 4. Administrator guide.
2. Hardware Trusted Boot Module Sobol. Version 4. Administrator guide. Sobol software.

Purpose

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

The core functions of Sobol are the following:

- 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;
- computer lockout if UEFI Option ROM is not in control after startup;
- control of RNG operation, non-volatile card memory and personal security tokens;
- registration of events related to information system security;
- interoperation with Continent, Continent-RA, 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
CDs with software and documentation (types 1,2)	Presence and quantity are determined by the supply contract
Sobol card in the following form factors: • PCI Express (types 1-4); • Mini PCIe Half (types 1,2); • PCIe M.2 (types 1-4)	Form factor and quantity of Sobol cards are determined by the supply contract
Adapters 1-4 for Mini PCIe Half, PCIe M.2 (M.2) (types 1, 2)	Presence, type and quantity of the adapters are determined by the supply contract
WD modules 1-6 for PCIe M.2 (M.2) (types 3, 4)	Presence and quantity 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**)	— " —
PWR watchdog cable with two T-Tap connectors (see C in Fig. 1 on p. **5**)	— " —
Connectors to connect the RST watchdog cable to the Power button cable in parallel (see D in Fig. 1 on p. **5**)	— " —
iButton key	— " —
SC iButton 92 key	— " —
iButton reader (external, internal, USB)	— " —

Component	Comment
USB keys: • eToken PRO (Java), eToken PRO; • Rutoken S (RF), Rutoken 2151 (RF), Rutoken Lite (RF), Rutoken ECP 2.0 (RF, Flash), Rutoken ECP 2.0 2100 (RF), Rutoken ECP 3.0; • JaCarta-2 GOST, JaCarta-2 PKI/GOST, JaCarta SF/GOST, JaCarta PKI, JaCarta PRO, JaCarta SF/GOST, JaCarta PRO/GOST; • Guardant-ID, Guardant-ID 2; • ESMART Token 64k; • vdToken; • FOROS R301	— " —
Smart cards: • eToken PRO, eToken PRO (Java); • Rutoken ECP SC, Rutoken Lite SC, Rutoken 2151, Rutoken ECP 2.0, Rutoken Lite SC; • JaCarta-2 GOST, JaCarta-2 PKI/GOST, JaCarta PKI, JaCarta PRO, Jacarta PRO/GOST; • PEK; • FOROS: • ESMART Token 64k	— " —
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

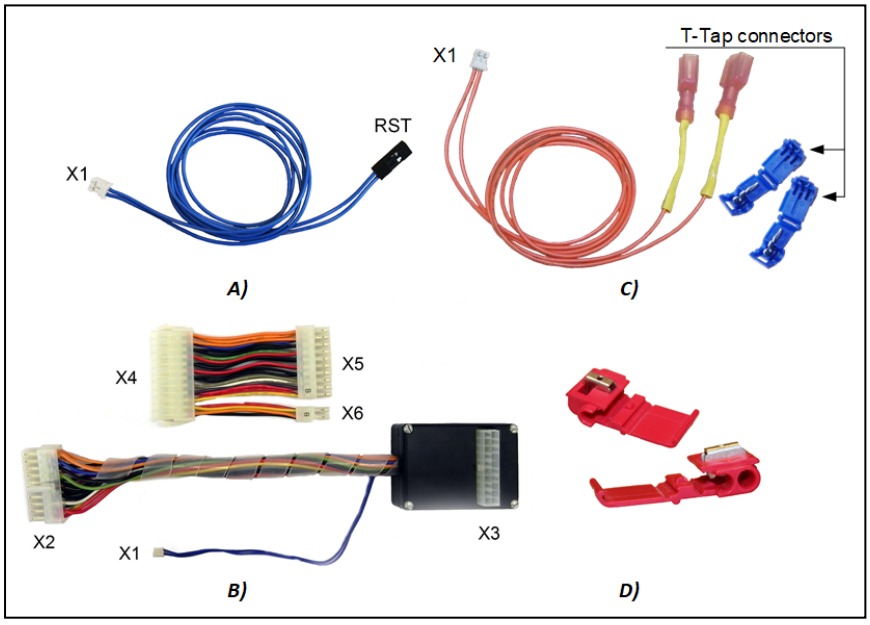


Fig. 1 Sobol watchdog components

System requirements

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

Tab. 2 System requirements for Sobol

Component	Requirements
CPU	64-bit
Hard drive	At least 50 MB of free space GPT partition layout

Component	Requirements
System board	Available slots for at least one of the following bus standards: • PCIe version 1.1 and above or • Mini PCIe or • 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 for PCIe cards); • ability to connect 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
Operating system	Not provided
	For requirements for Sobol software, see document [**2**]
Screen resolution	1024x768 or higher

Installation

Sobol installation is performed in the following order:

- install Sobol additional software (if necessary);

> **Note.**
> - In stand-alone mode, Sobol can operate both with and without the additional software.
> - For the correct functioning of Sobol in joint mode, it is necessary to install the additional software.
> - For detailed information on the installation and operation of the additional software, see document [2].

- install a Sobol card (see p. **7** for a PCIe card, p. **8** for a Mini PCIe Half card, p. **10** for a M.2 card);
- initialize Sobol (see p. **14**);
- put Sobol into operation (see p. **20**).

Install PCIe card

To install a PCIe card (type 1,2):

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

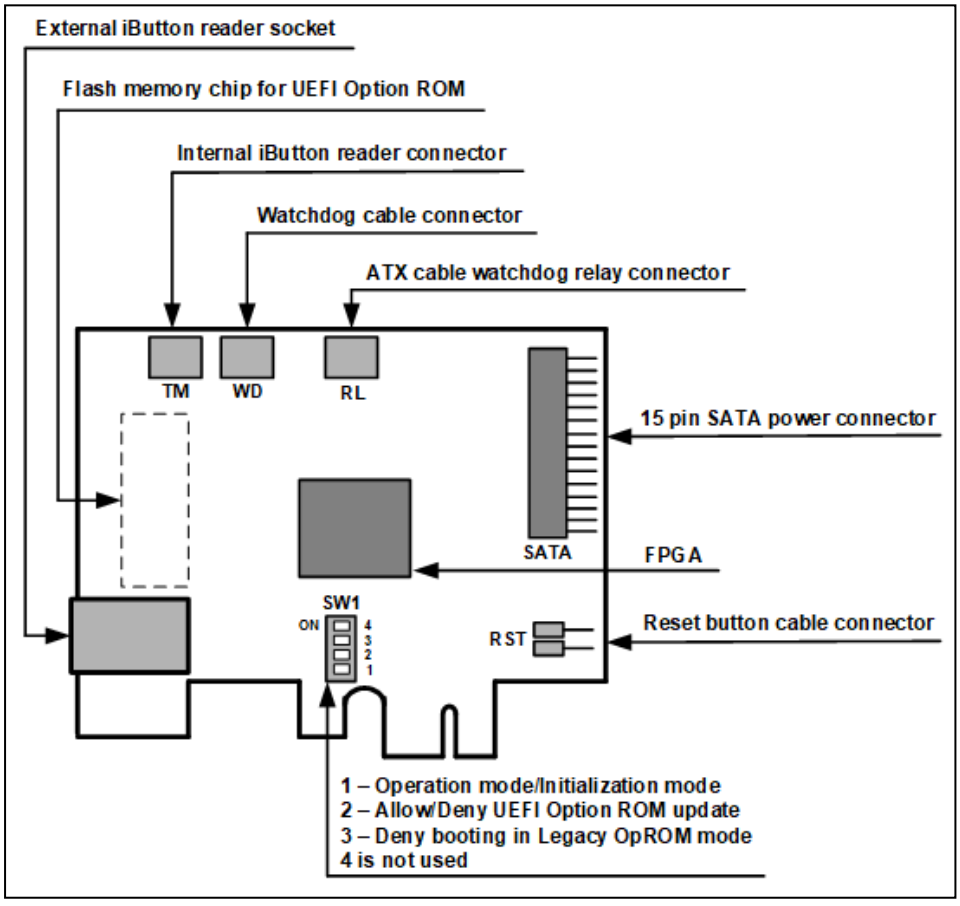


Fig. 2 PCIe card (type 1,2)

To install a PCIe card (type 3,4):

1. Shut down your computer. Remove the side panel.
2. Switch SA1-1 to the OFF position (see the figure below).

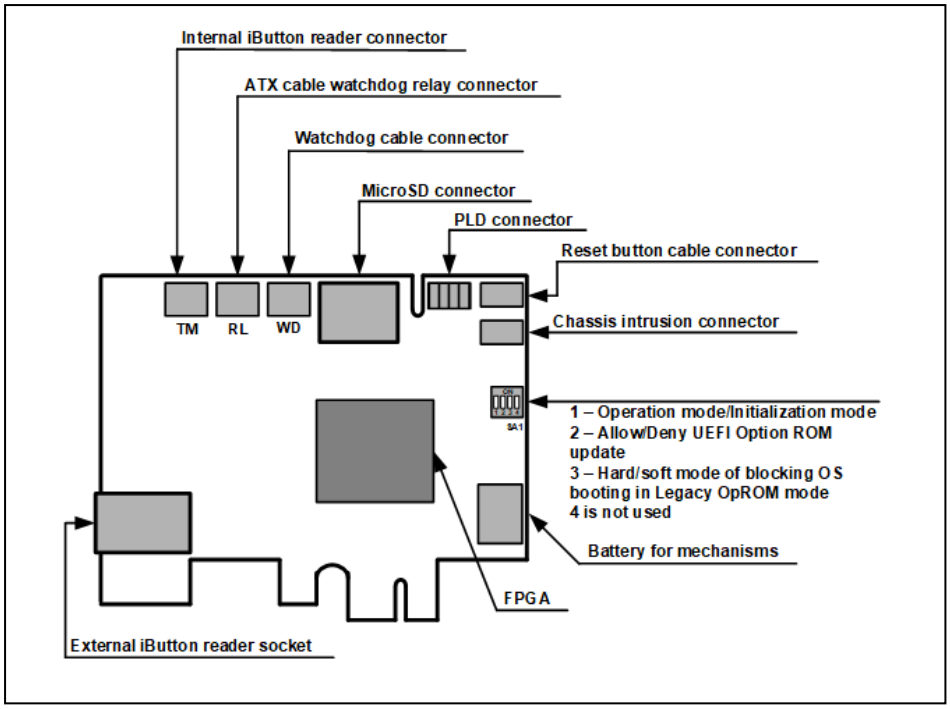


Fig. 3 PCIe card (type 3,4)

To use the Sobol watchdog timer:

1. Connect a RST watchdog cable, a PWR watchdog cable or an ATX cable watchdog relay.

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

2. Insert the PCIe card into a free PCIe slot.
3. If necessary, 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).
4. Put the side panel back.
5. If necessary, attach a USB smart card reader.

Install Mini PCIe Half card

A Mini PCIe Half card (see Fig. 4 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 the external or the internal iButton reader:

- adapter 1 (Fig. 5 on p. **9**) with the option of attaching the external or the internal iButton reader;
- adapter 2 (Fig. 6 on p. **9**) and adapter 3 (Fig.4 on p.**1**) with the option of attaching the external iButton reader;
- adapter 4 (Fig. 6 on p. **9**) with the option of attaching the external iButton reader.

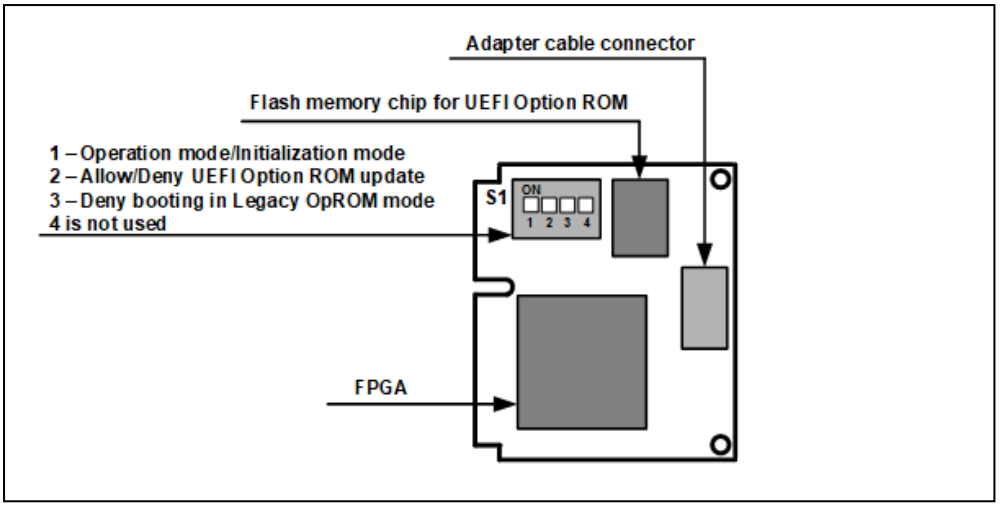


Fig. 4 Mini PCIe Half card

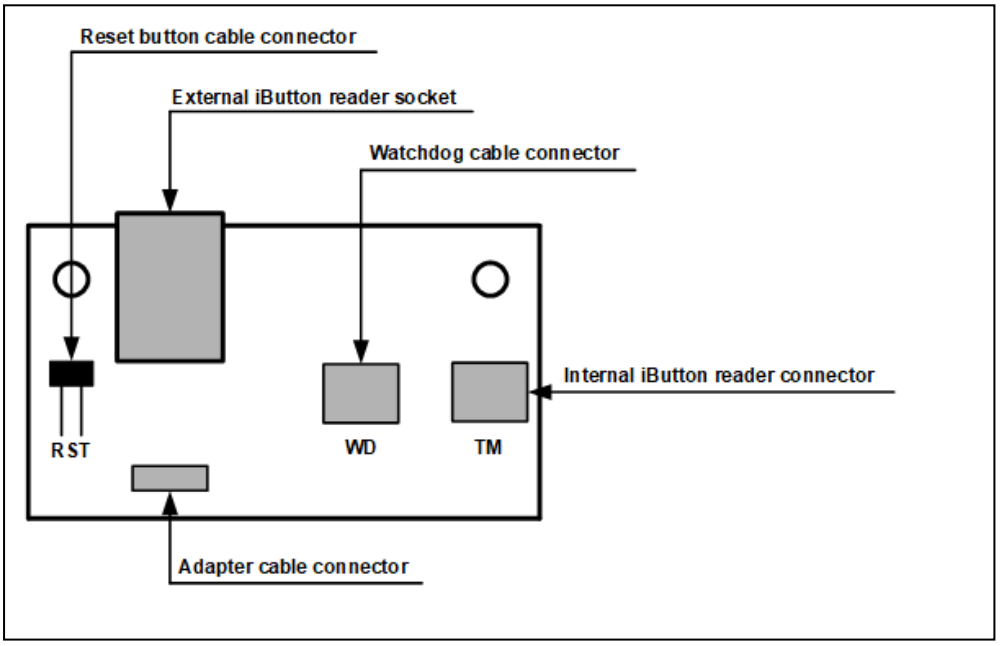


Fig. 5 Adapter 1 for Mini PCIe Half and M.2 cards

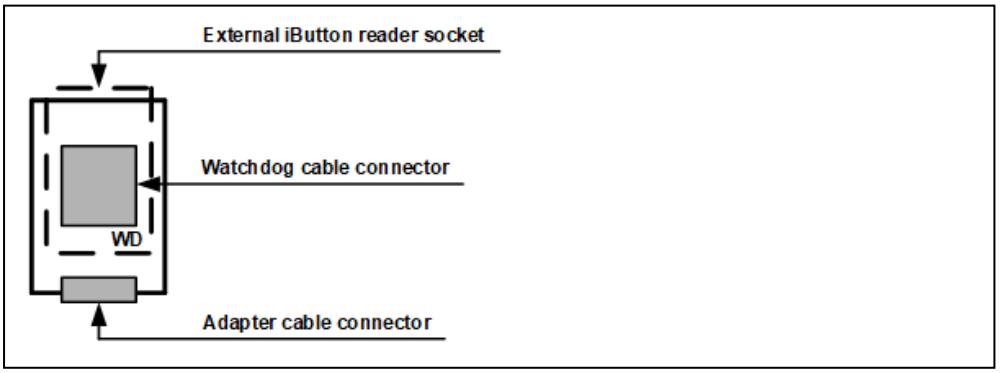


Fig. 6 Adapter 2 for Mini PCIe Half and M.2 cards

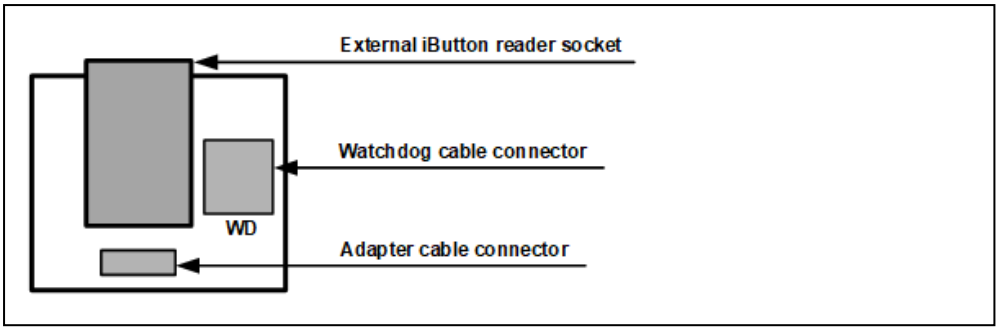


Fig. 7 Adapter 3 for Mini PCIe Half and M.2 cards

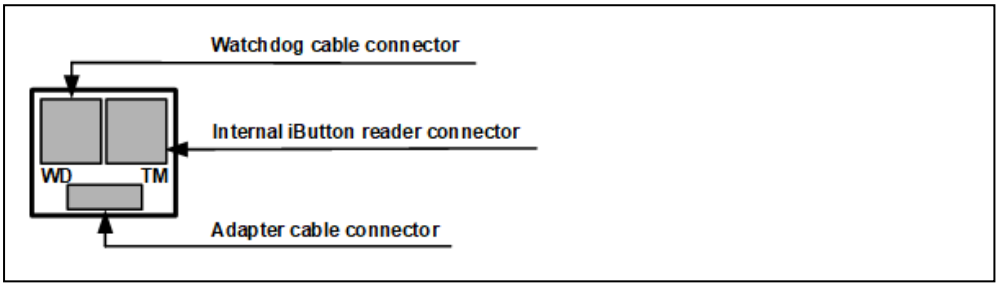


Fig. 8 Adapter 4 for Mini PCIe Half and M.2 cards

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. 4 on p. **9**).
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.

   Note. For detailed information on how to connect the Sobol watchdog components, see document [**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, 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 Mini PCIe Half card autonomously:

1. Shut down your computer. Remove the side panel.
2. Switch S1-1 to the OFF position (see Fig. 4 on p. **9**).
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 (type 1,2) (see Fig. 9 on p. **11**) can be installed autonomously or using an adapter depending on a protected computer form factor. You can use four adapter types for M.2 card (type 1,2) which differ in terms of size and ability to attach either the external or the internal iButton reader (see Fig. 5 on p. **9**, Fig. 6 on p. **9**, Fig. 7 on p. **10**, Fig. 8 on p. **10**). For M.2 cards (types 3, 4), you can use six WD module types (Fig. 11 on p. **11**, Fig. 12 on p. **12**, Fig. 13 on p. **12**, Fig. 14 on p. **13**, Fig. 15 on p. **13**, Fig. 16 on p. **13**).

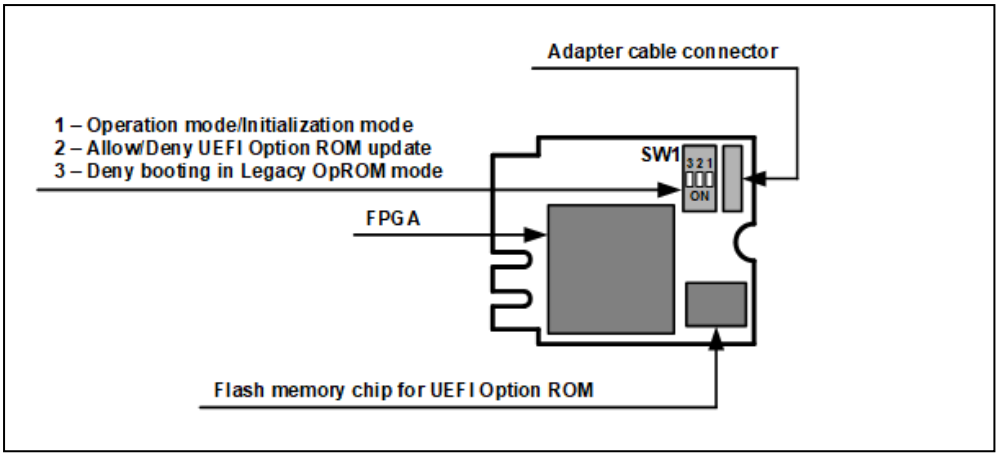


Fig. 9 M.2 card (type 1,2) connector layout

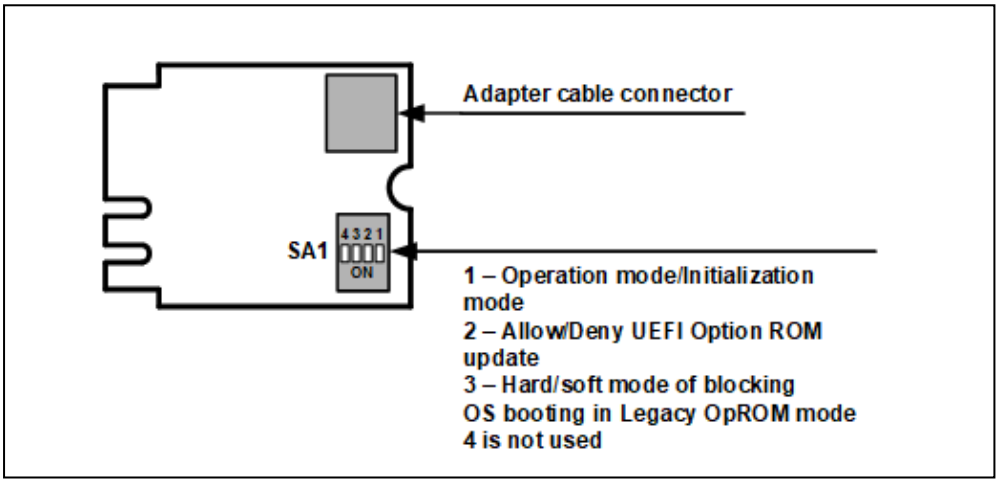


Fig. 10 M.2 card (type 3,4) connector layout

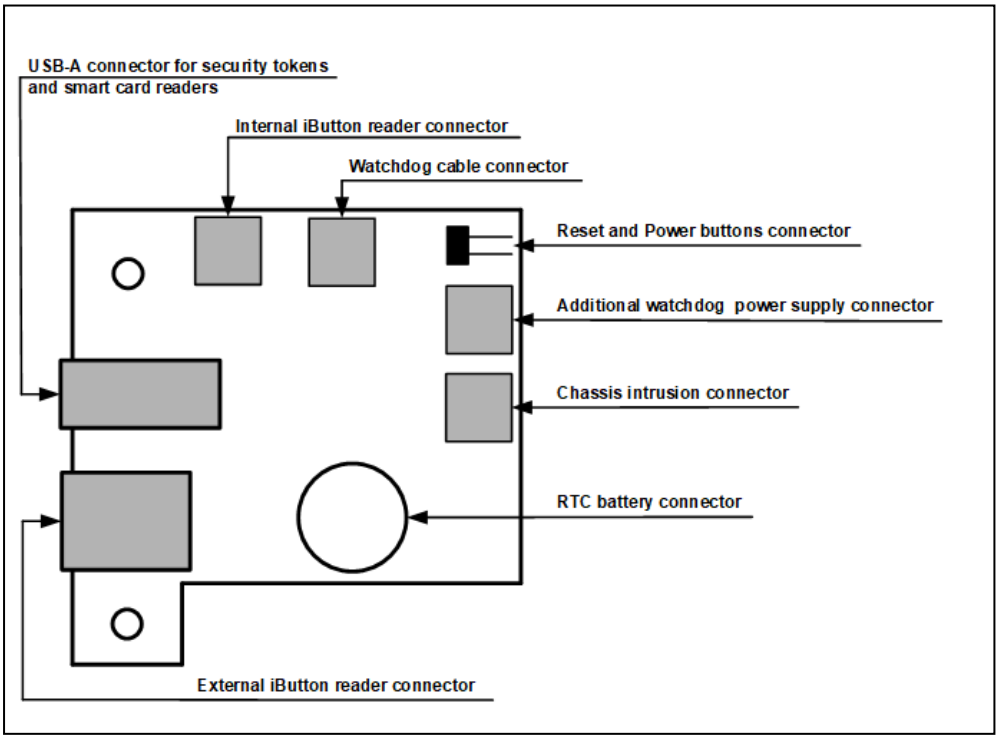


Fig. 11 WD module – 2 for M.2 cards (types 3, 4) connector layout

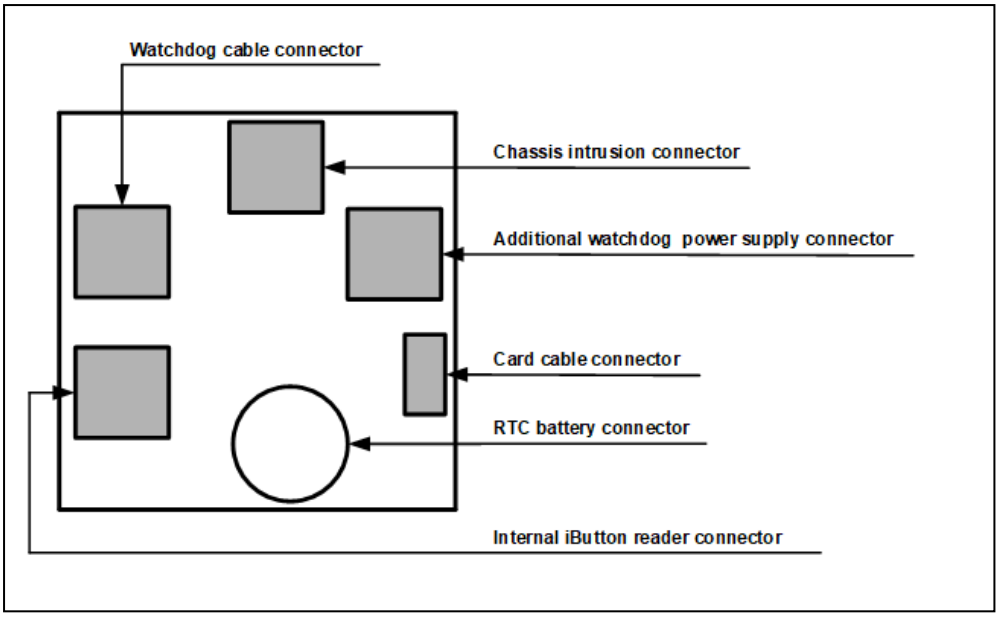


Fig. 12 WD module – 2 for M.2 cards (types 3, 4) connector layout

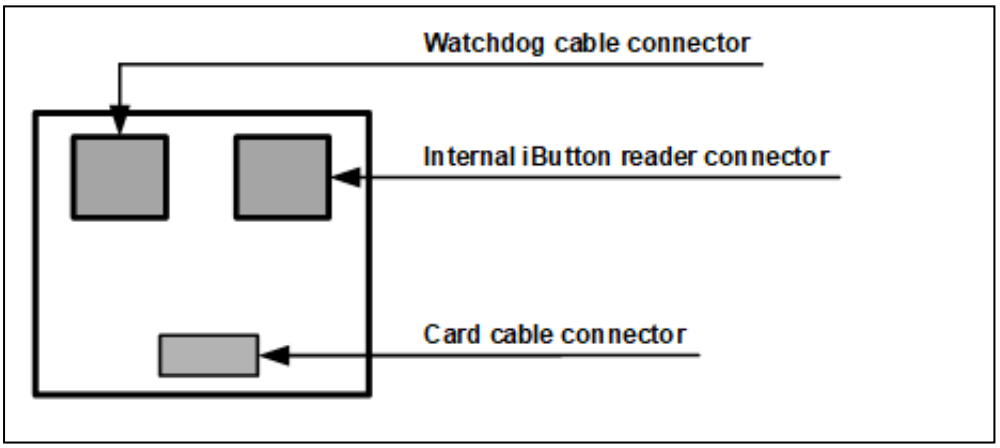


Fig. 13 WD module – 3 for M.2 cards (types 3, 4) connector layout

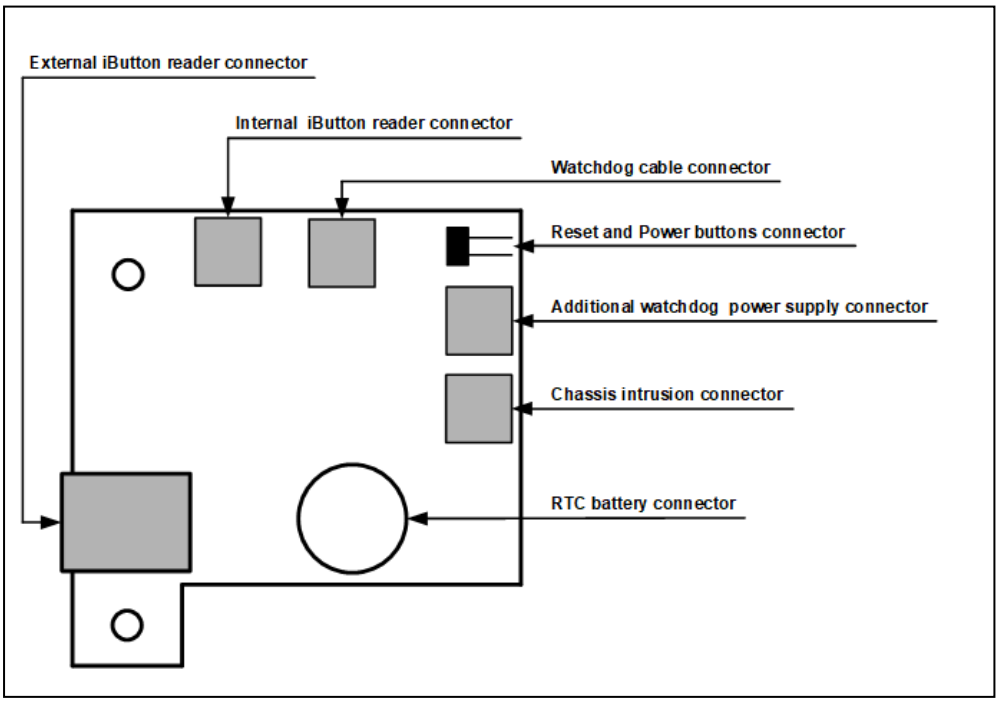


Fig. 14 WD module – 4 for M.2 cards (types 3, 4) connector layout

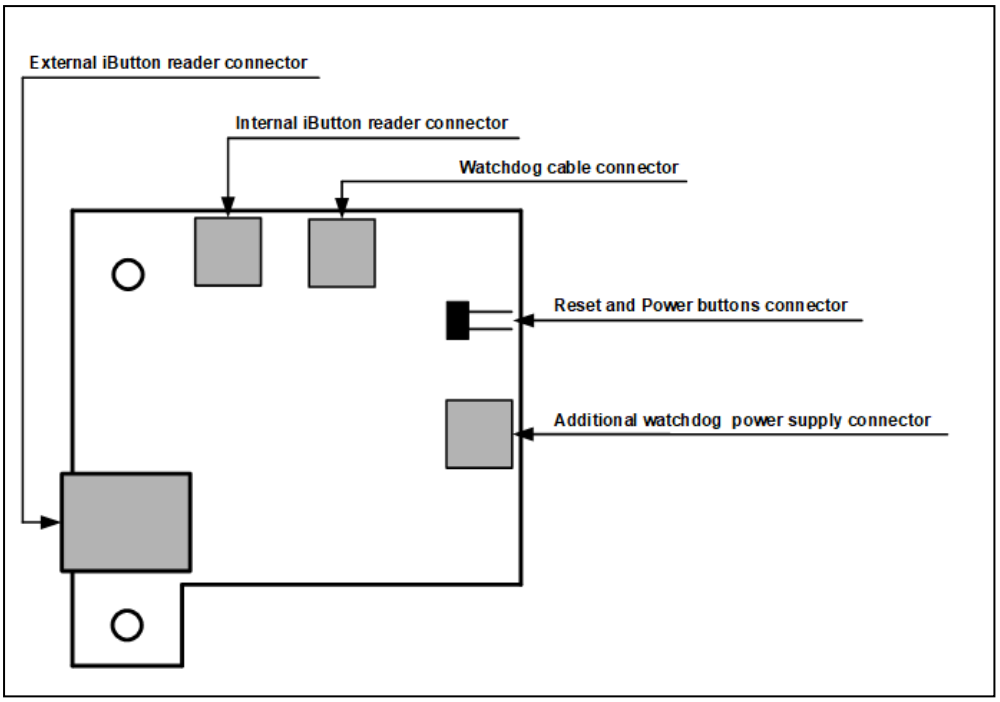


Fig. 15 WD module – 5 for M.2 cards (types 3, 4) connector layout

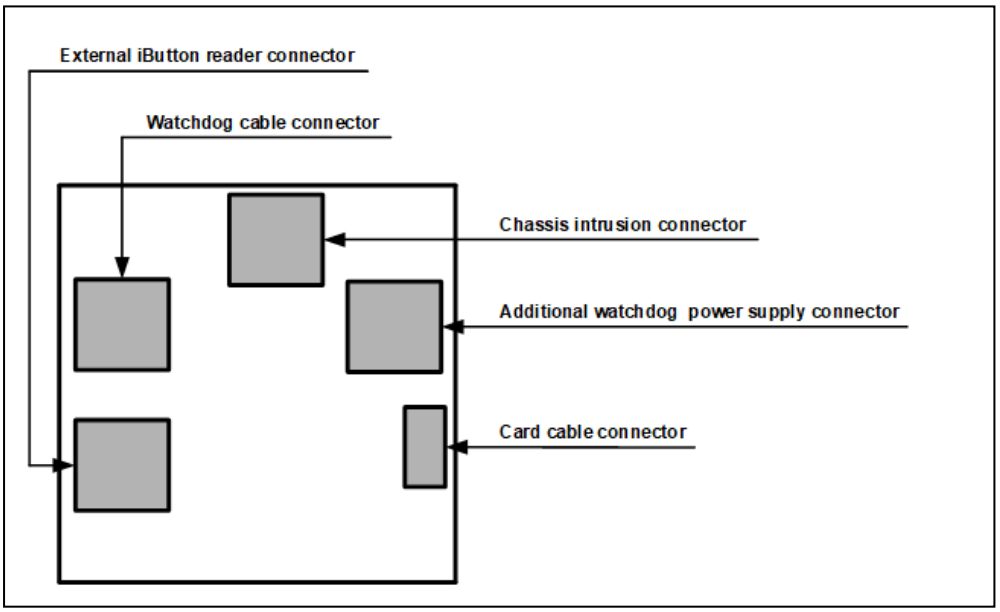


Fig. 16 WD module – 6 for M.2 cards (types 3, 4) connector layout

To install a M.2 card (type 1,2) 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.

   Note. For detailed information on how to 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.

   Note. The adapter can be used with the Standard/Low Profile bracket, inserted into a free slot of the protected computer system unit or attached differently.

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 (type 1,2) 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.

To install a M.2 card with WD module:

1. Shut down your computer. Remove the side panel.
2. Switch SA1-1 to the OFF position (see the figure above).
3. Connect the WD module 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.

   Note. For detailed information on how to connect the Sobol watchdog components, see document [1].
5. Insert the M.2 card into a free M.2 slot.
6. Insert the WD module into a free slot.

   Note. The adapter can be used with the Standard/Low Profile bracket, inserted into a free slot of the protected computer system unit or attached differently.
7. If necessary, attach the iButton reader to the adapter:
   - for the external iButton reader, attach it to the respective socket on the WD module of types 1, 4 or 5 (see figures above);
   - for the internal iButton reader, attach it to the TM connector on the adapter of types 2,3 or 6 (see figures above).
8. Put the side panel back.
9. If necessary, attach a USB smart card reader.

To install a M.2 card (type 3,4) autonomously:

1. Shut down your computer. Remove the side panel.
2. Switch SA1-1 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

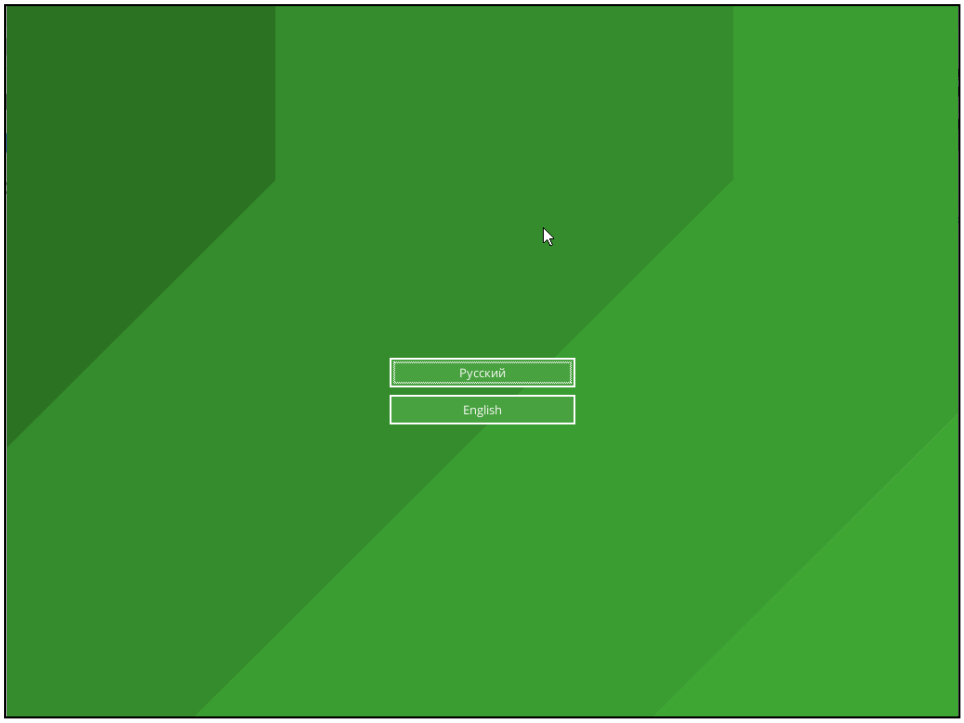
To initialize Sobol, take the following steps:

1. Configure system settings (see p. **15**).
2. Configure general settings (see p. **16**).
3. Configure log settings (see p. **17**).
4. Configure password settings (see p. **17**).
5. Create and configure an administrator account (see p. **18**).
6. Configure integrity check settings and calculate checksums (see p. **19**).

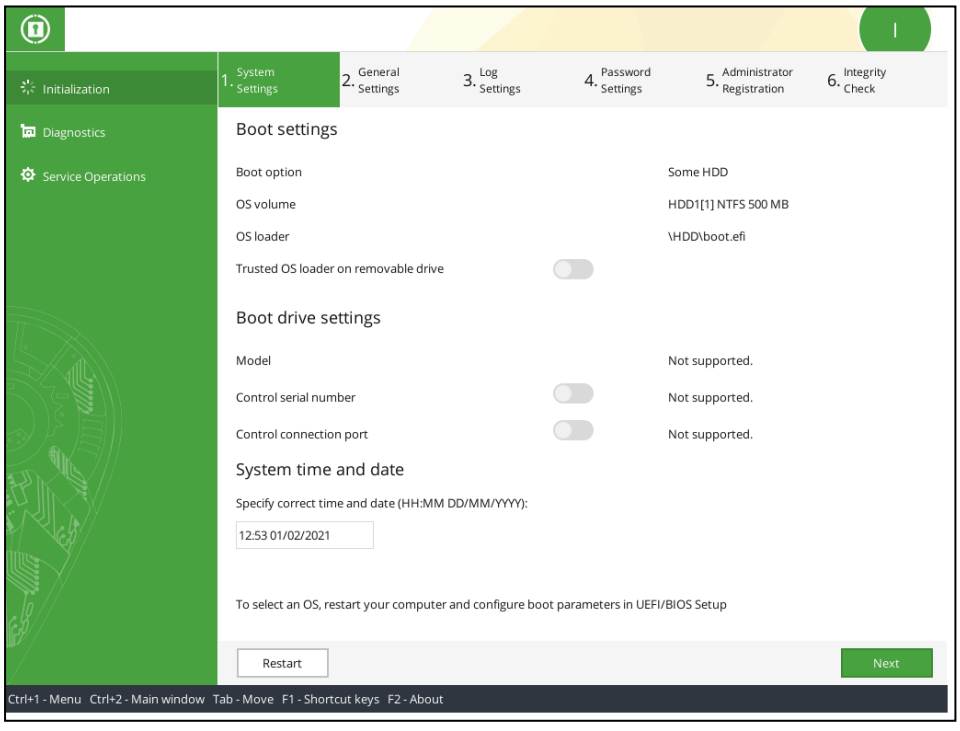
Attention! Before starting the initialization, disconnect all USB Mass Storage devices from your computer (USB, CD and DVD drives, etc).

To start the initialization:

1. Power on your computer. The computer is controlled by Sobol.
   The window prompting you to select the interface language appears.



2. Specify the required interface language.
   The window appears as in the figure below.



3. On the navigation panel, select **Initialization**.

The initialization procedure will start.

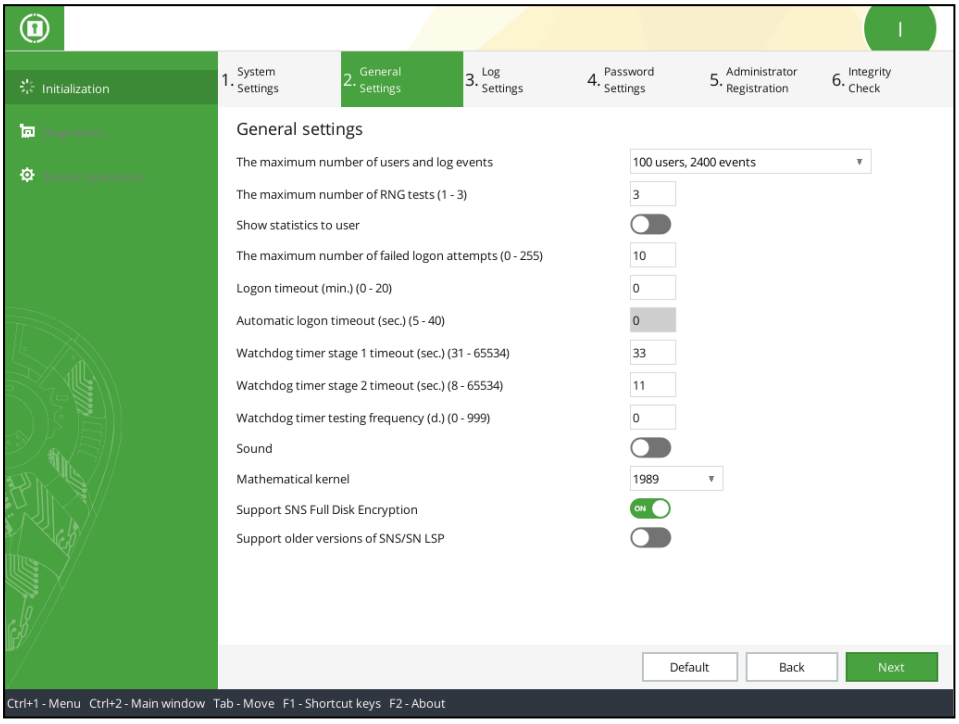
Step 1. Configure system settings

1. In the **System Settings** window (see the figure above):

- Check **Boot settings**. To change the parameters, restart your computer by clicking the **Restart** button in the bottom-left corner 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.

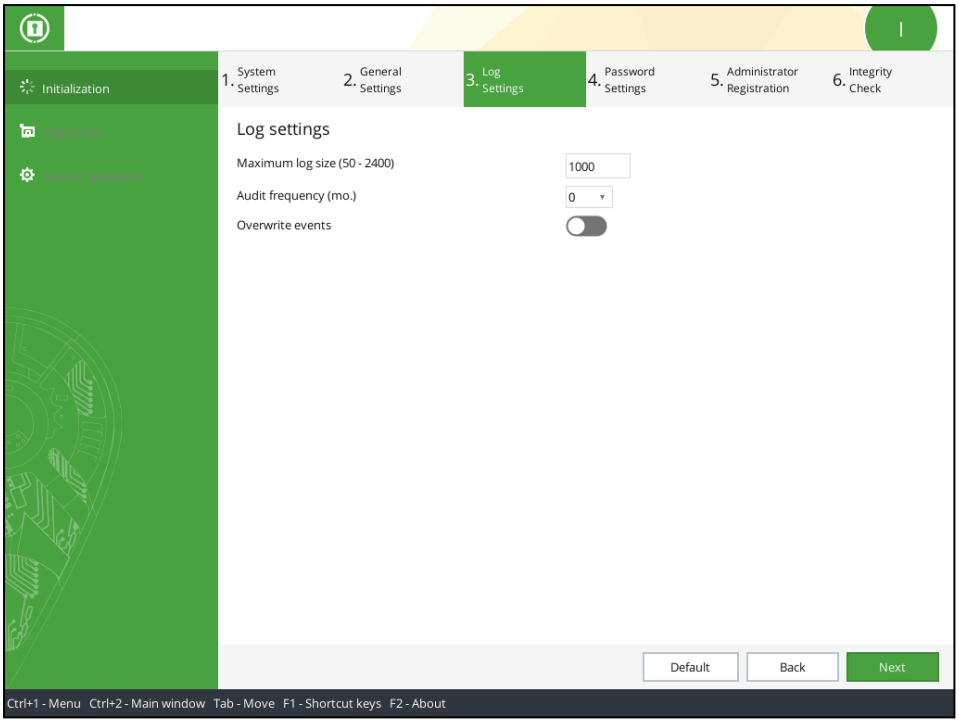
2. Click **Next**.

Step 2. Configure general settings



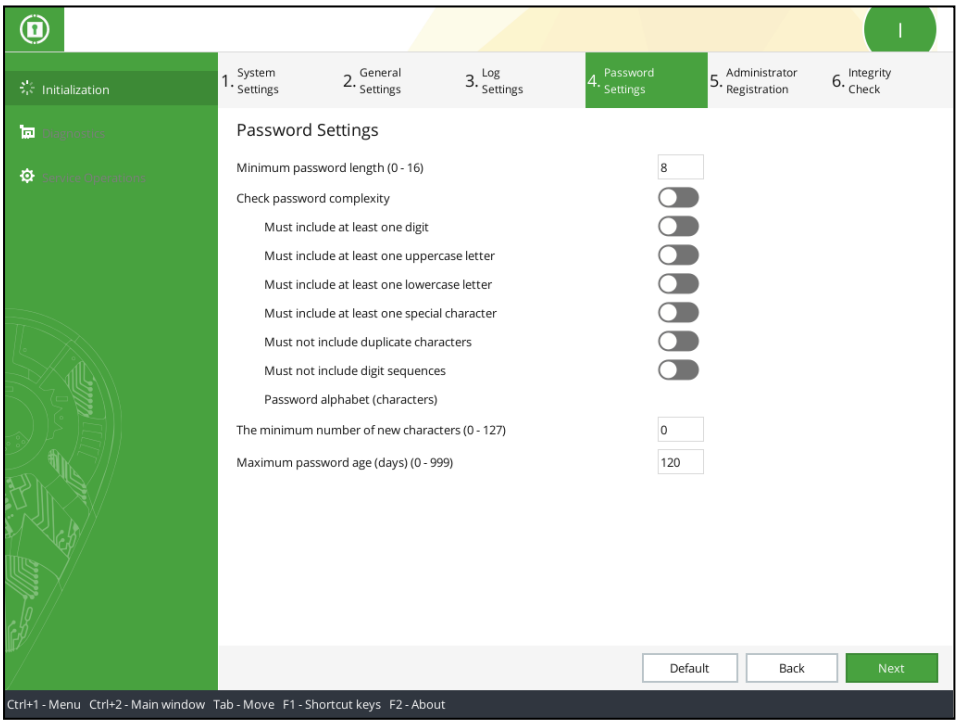
1. Configure the following parameters which cannot be configured when Sobol is in operation:
   - **The maximum number of users and log events** — specify the required value;
   - **Mathematical kernel**:
     - to ensure compatibility with previous versions of the product, select the **1989** (GOST 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, see document [**1**]
3. Click **Next**.

Step 3. Configure log settings



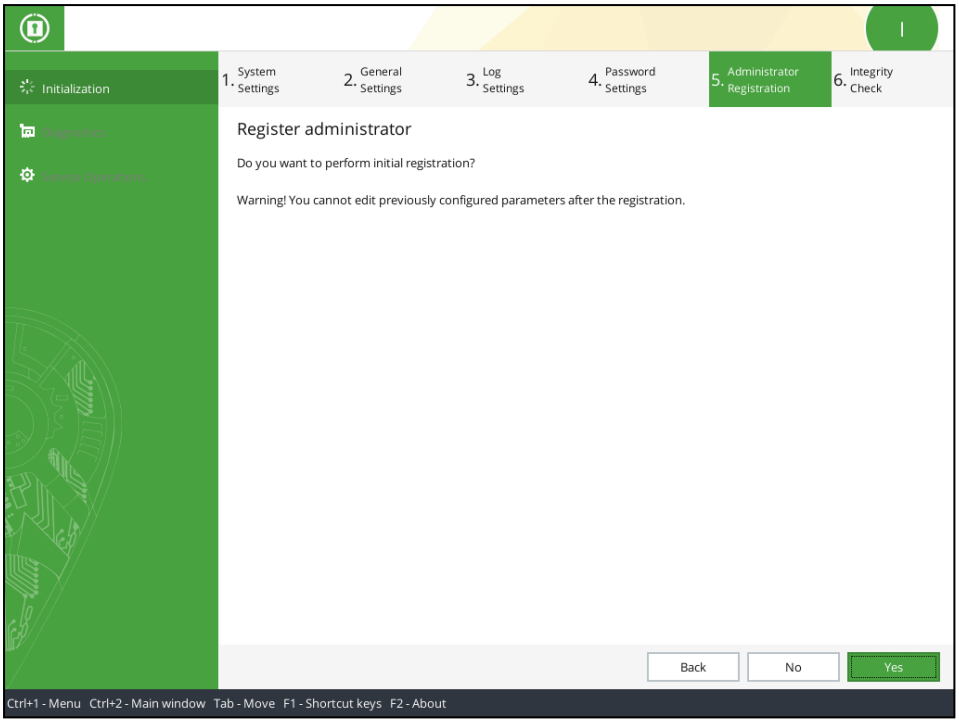
1. Use default log parameters. You can edit them after initialization, see document [**1**].
2. Click **Next**.

Step 4. Configure password settings



1. Use the default password parameters. You can edit them after initialization, see document [**1**].
2. Click **Next**.

Step 5. Create and configure an administrator account



Note. You can use one security token on several computers if the values of the **Mathematical kernel** parameter are the same on these computers. To do so, perform the initial registration on the first computer, then perform registration on other computers. The initial registration is described below. To reregister the administrator, see document [**1**].

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

   A dialog box for entering and confirming the administrator's password appears.

2. In the **Enter password** text box, specify 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 — digits;
   - abcdefghijklmnopqrstuvwxyz — lowercase Latin letters;
   - ABCDEFGHIJKLMNOPQRSTUVWXYZ — uppercase Latin letters;
   - _$!@#;%^:&?*)(-+=/|.,<>`~"\ — special characters.

3. In the **Confirm new password** text box, enter the password again.
4. Click **Next**.

   Note. If an error occurs, you receive a message with an error description. Select **OK** and enter the valid 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**. PIN codes are given in document [**1**]
   - 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**.

   Note. We recommend creating at least one security token backup. To do so, you need an additional security token.

6. If necessary, create a backup copy of an administrator security token. To do so, click **Back up**. Otherwise, click **Next** and go to **Step 6** (see p. **19**).

   You are prompted to present the security token.

7. Present the required security token.

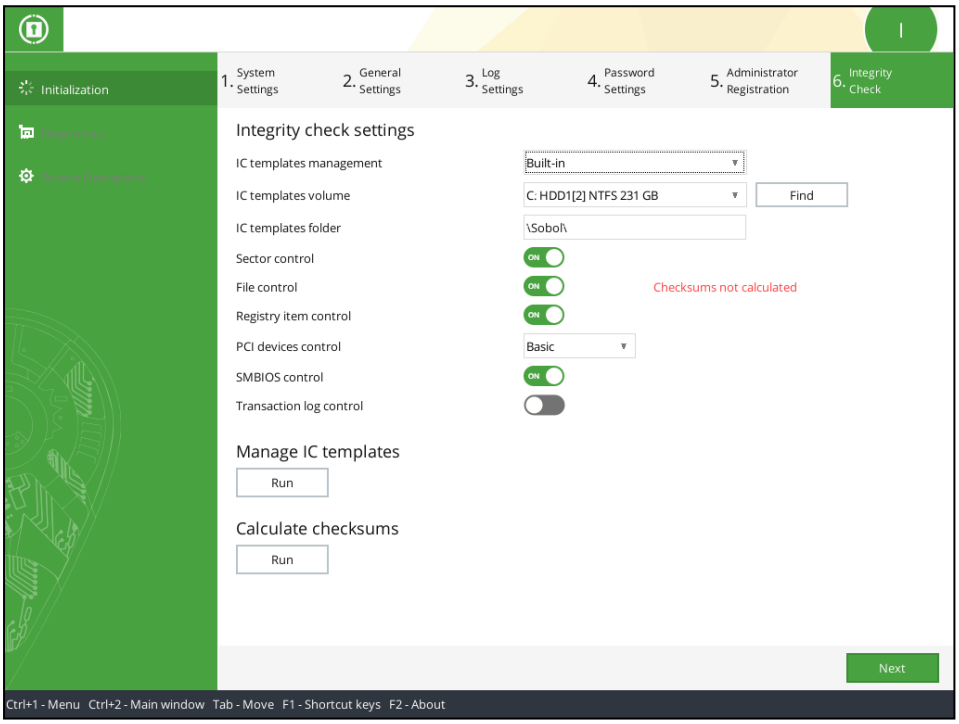
Note.
- If a security token is already presented (iButton is in contact with the reader / USB key is attached / smart card is in contact with the reader), Sobol automatically reads it.
- If several security tokens are presented, Sobol reads the first one being detected.
- If you present a security token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

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, click **Next**.

Step 6. Configure integrity check settings and checksum calculation



Attention!
- If there are encrypted disks on your computer created using Secret Net Studio and **Support SNS Full Disk Encryption** is enabled, you will be prompted to enter a password to access the encrypted volumes.
- IC settings can be configured when Sobol is in operation; that's why you can skip this step if you want.
- Before configuring IC settings, IC templates must be created (see document [1]

1. Specify the values of **IC templates volume** of **IC templates folder** in one of the following says:
   - Click **Find**. Sobol searches for integrity check templates on your computer. If there are templates in the standard folders, the parameter values will be set automatically.
   - If the IC templates are created in the other folders, specify the volume with integrity check templates manually in the **IC templates folder** field and specify the path to the folder in the **IC templates folder** field.

   If the required folder is found and the required templates are valid, the integrity check parameters will be set automatically. Other IC parameters will become available for editing.

   Note. If the required folder is not found or the templates are not valid, you will receive the respective message, see document [1]

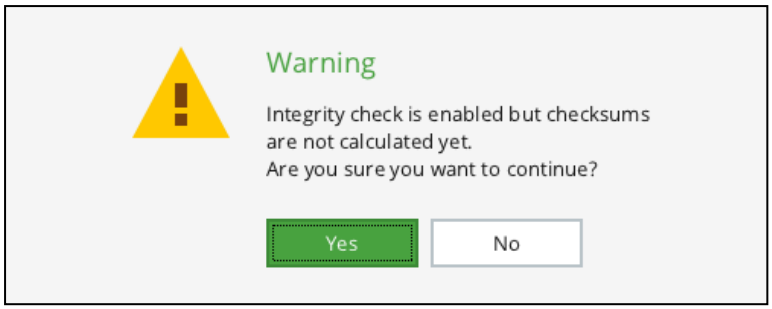
   If the required folder is not found or the templates are not valid, you will receive the respective message.
2. To calculate checksums, click **Start**.

   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, click **Finish**. The **Integrity check** window appears on the screen.
3. Click **Next**.

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



Click **Yes**.

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

Click **OK**. Your computer is shut 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. **7**).
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. 4 on p. **9**).
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. 9 on p. **11**).
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. Sobol Software.
2. Hardware Trusted Boot Module Sobol. Version 4. User guide. Basic Operations.