Trezor (Drivers pack) Settings Guide

ACFA PSIM 1.1

Last update 05/06/2024

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1 Trezor Settings Guide. List of terms

The Perimeter Intruder Detection System (PIDS) is the hardware-software complex which is meant for the perimeter violation control.

The Axxon PSIM Server is the computer with an installed Server configuration of the *Axxon PSIM*.

The Signaling Fence (SF) is used to create a signaling fence; when it is trespassed, an alarm signal is received at the security control panel.

The Sensor Cable (SC) is a special cable that turns mechanical vibrations into electrical signals. It is mounted on the SF in a certain way.

The Shielded Sensor Cable (SSC) is a SC which has an optional protection layer serving as the shield from the environmental factor.

WWZP is a welded wire mesh with zinc and powder-polymer protective coating.

RW is a razor blade wire.

2 Introduction into Trezor Settings Guide

On the page:

2.1 Purpose of the Document

Trezor Settings Guide is a reference and information guide meant for *Trezor* configuration specialists.

The guide provides the following:

1. General information about *Trezor* integration module;
2. Configuring *Trezor* integration module;
3. Operating *Trezor* integration module.

2.2 General information about Trezor integration module

The *Trezor* integration module works as a part of the **Security equipment** which is included as a compound of *ACFA PSIM*. It is meant for checking up, configuring and operating the *Trezor* PIDS devices.

Attention!

For operation of the *Trezor* integration module one needs to have the following software installed:

- *Drivers pack* (You can download it in here: Drivers pack);
- Internet Explorer 11 or higher.

Before operating the *Trezor* integration module one needs to set the hardware on the guarded object and perform the initial configuration of *Trezor* PIDS devices.

Note

For more information about *Trezor* PIDS, please refer to the official documentation for this system (vendor: Trezor Ltd.).

3 Supported hardware and licensing of Trezor module

Vendor	Trezor Ltd. 31 Ibraghimov Str. bld.47, Moscow, Russia http://trezorrussia.ru
Integration type	Drivers Pack (Low-level protocol)
Hardware connection	RS-485

Supported hardware:

Hardware	Function
Trezor-B04	Vibration detector
All versions of Trezor-M	Two-way radio wave detector
All versions of Trezor-P	Radio wave detector
Trezor-BL	Line block

Module licensing

For 1 sensor.

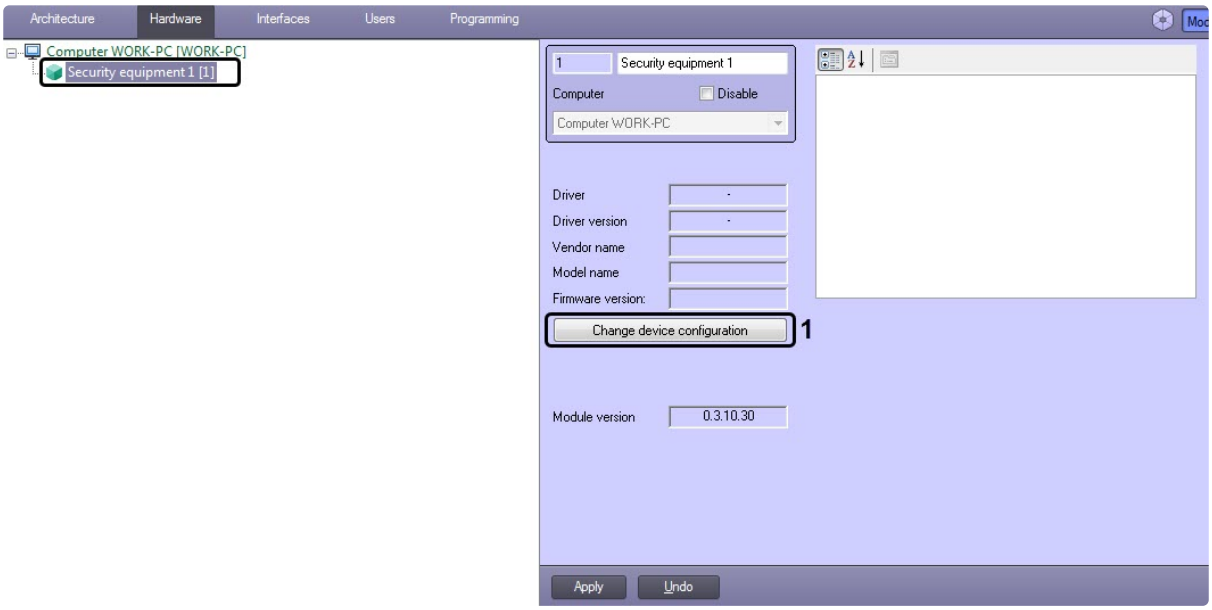
4 Configuring Trezor integration module

4.1 The Trezor PIDS connection setup to ACFA PSIM

> **Attention!**
>
> If the USB/RS-485 typical protocol converter is used for the Trezor PIDS connection, it should have the automatic information routing (for example, the 'BOLIDUSB-RS485' type) and have its own driver installed.

The *Trezor* PIDS connection setup to *ACFA PSIM* is performed in the following way:

1. Create the **Security equipment** object on the base of **Computer** object on the **Hardware** tab settings dialog box.

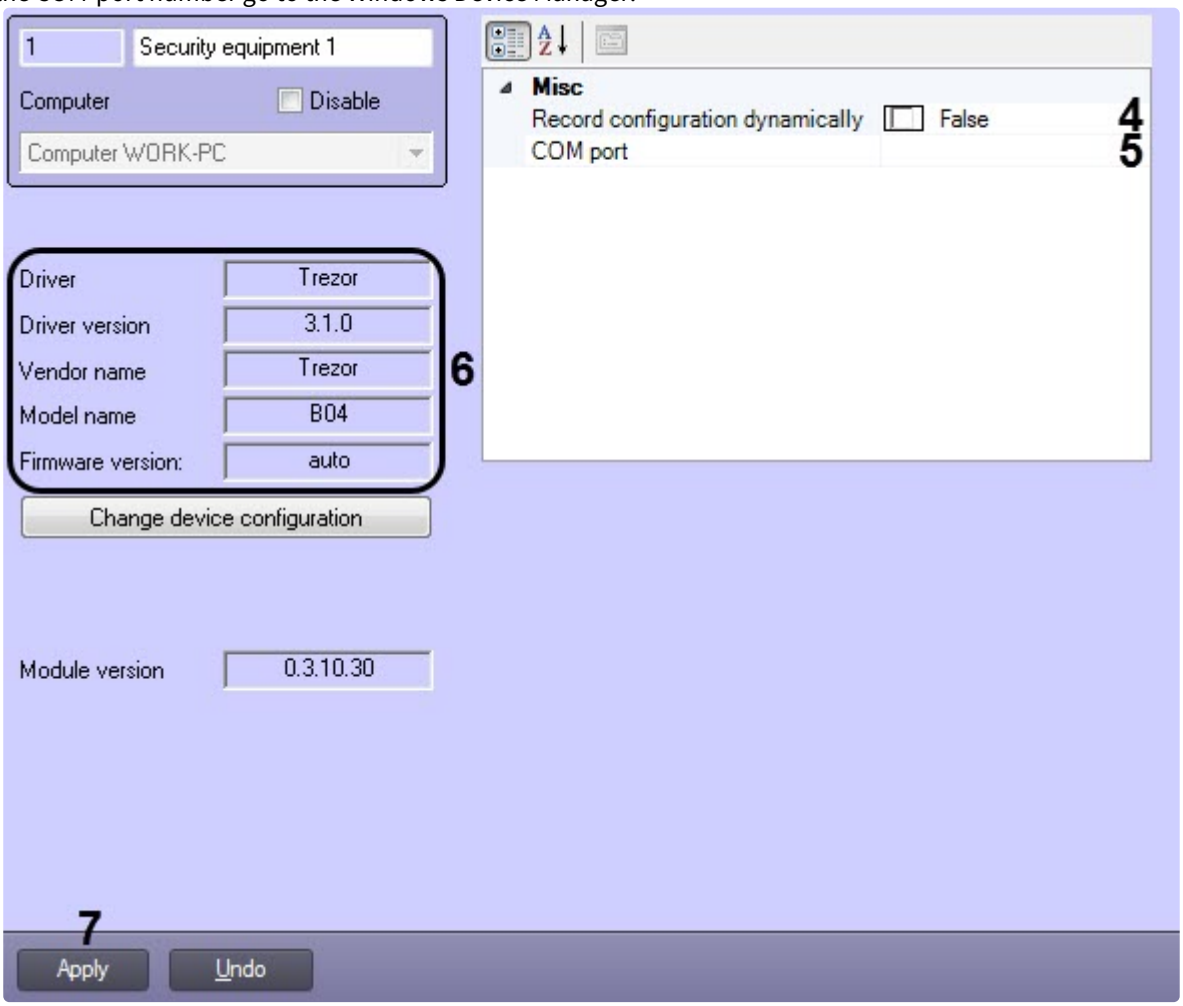


2. Click **Change device configuration** button (**1**).
3. Select **Trezor** from the **Vendor name** drop-down list (**2**).
4. Select a *Trezor* device model from the **Model name** drop-down list (**3**).

> **Note**
>
> **Firmware version** field is filled automatically.

5. Click **OK**
6. Set the **True** value for the **Record configuration dynamically** parameter (**4**), if required, so as any changes, which have been made in *ACFA PSIM* will be written in the controller, otherwise specify **False**.

7. Specify the COM-port for the **COM port** parameter (**5**) to which the *Trezor* controller is connected. To identify the COM-port number go to the Windows Device Manager.



> **Note**
>
> Device characteristics are automatically read and specified in the area (**6**).

8. Click **Apply** (**7**).

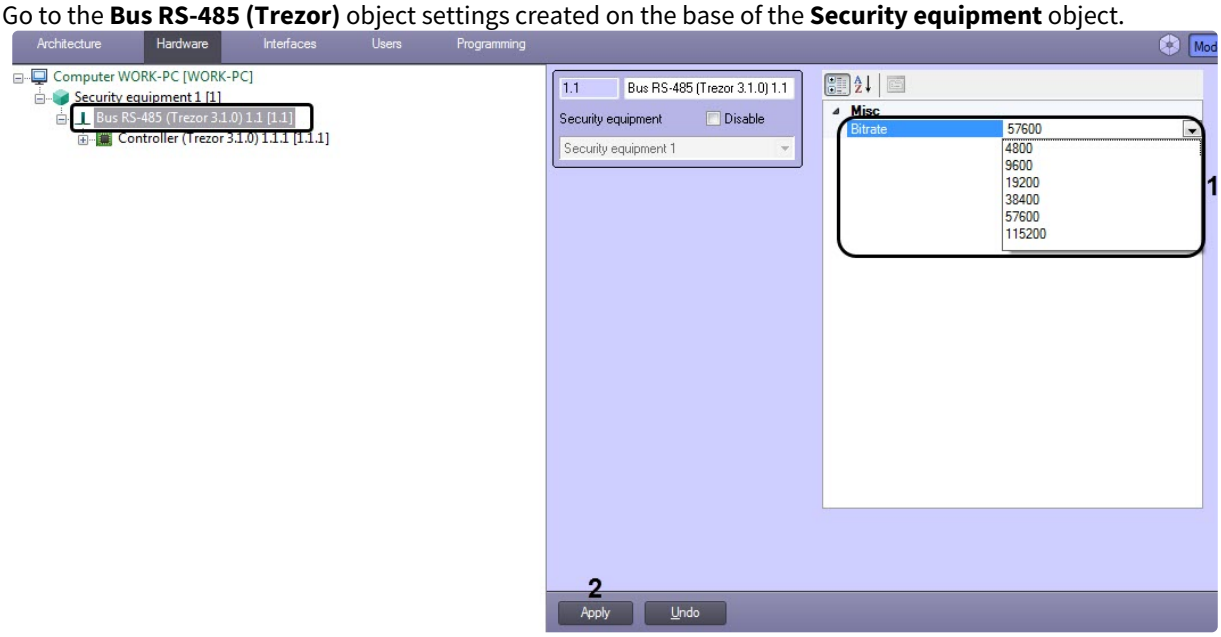
> **Note**
>
> After clicking the **Apply** button, an object tree will be created corresponding to the *Trezor PIDS* configuration.

The *Trezor* PIDS connection setup to *ACFA PSIM* has been finished.

4.2 Setting up the rate of the Trezor PIDS data exchange

Setting up the rate of the *Trezor* PIDS data exchange is performed in the following way:

1. Go to the **Bus RS-485 (Trezor)** object settings created on the base of the **Security equipment** object.



2. Specify the required data exchange speed (bit in seconds) between Computer COM-port and *Trezor* device from the **Bitrate** drop-down list (**1**).
3. Click **Apply** (**2**).

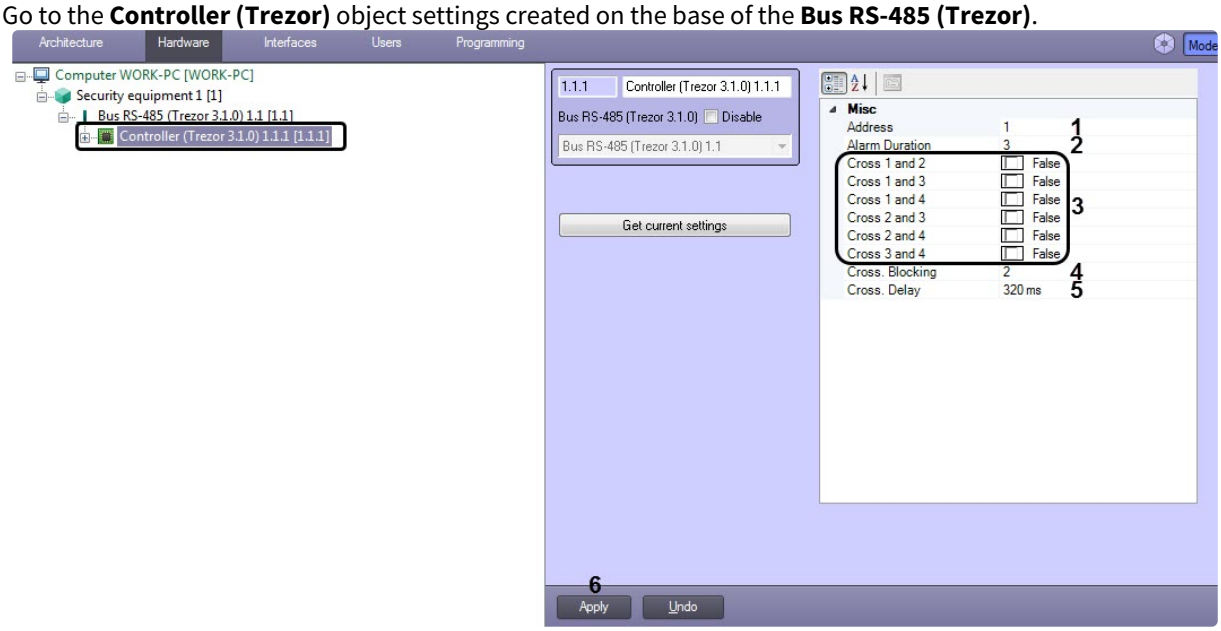
Setting up the rate of the *Trezor* PIDS data exchange has been finished.

4.3 The TREZOR-B04 and TREZOR-R setting

4.3.1 The TREZOR-B04 and TREZOR-R controller setting

Setting up the TREZOR-B04 and TREZOR-R controller is performed in the following way:

1. Go to the **Controller (Trezor)** object settings created on the base of the **Bus RS-485 (Trezor)**.



2. Specify the connected controller address for the **Address** parameter (**1**) within the limits of 0 to 255.

> **Note**
>
> The **Address** with a '0' value (or '00000000' in binary code) is meant for executing utility functions. The controller address is set up with the eight-bit switch on the controller circuit plate.

3. For the **Alarm Duration** parameter (**2**), specify the duration of the alarm signal (relay opening time) in the range from 1 to 5 seconds.
4. Specify the **True** value in the area (**3**) to enable the interchannel signal processing for selected channels. The **False** value disables the interchannel signal processing.

> **Note**
>
> This option allows to logically combine the initially independent detection channels and lock alarm signals in case of their time correlation on marked channels. **Cross 1 and 2** comply with channel combining 1 and 2, **Cross 1 and 3** comply with channel combining 1 and 3 and so on.

5. For the **Cross. Blocking** parameter (**4**), specify the required time (in seconds) of impulse blocking time on specified channel crosses (for those where the **True** value is enabled) from the authorized bandwidth of 1 to 10 seconds .
6. For the **Cross. Delay** parameter (**5**), specify the required time (in milliseconds) of maximum delay between the impulses (on specified channel crosses) which are blocked from the authorized bandwidth of 80 to 520 milliseconds.

> **Note**
>
> The **Cross. Blocking** and **Cross. Delay** values are specified empirically in the result of experiments and interference environment monitoring on the guarded object.

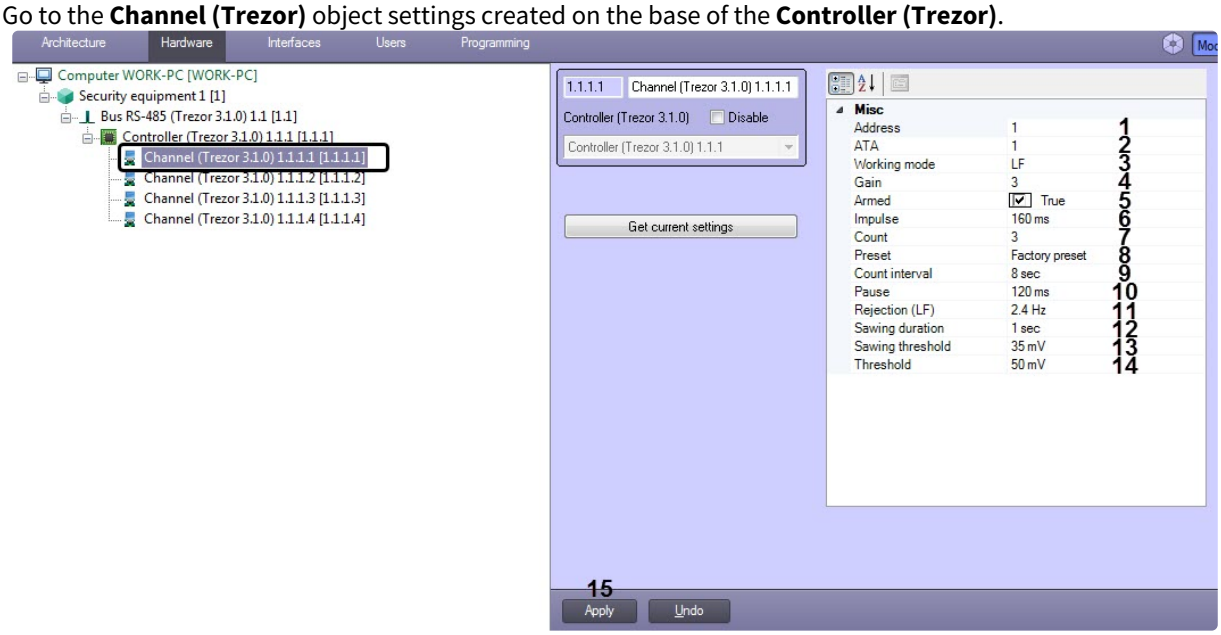
7. Click **Apply** (**6**).

The TREZOR-B04 and TREZOR-R controller setting has been finished.

4.3.2 The TREZOR-B04 and TREZOR-R channel setting

Setting up the TREZOR-B04 and TREZOR-R channel is performed in the following way:

1. Go to the **Channel (Trezor)** object settings created on the base of the **Controller (Trezor)**.



2. Specify the detection channel number (from 1 to 4) for the **Address** parameter (**1**).
3. Specify the amplification weight in the LF channel path (from 0 to 5) for the **ATA** parameter (**2**). The '0' ATA numeric value is conventional and designates the absence of this option.

> **Attention!**
>
> The ATA option works only if the **Working mode** has the **LF** value.

4. Specify the detection channel type or its switching-off for the **Working mode** parameter (**3**). The following values are available: **Off**, **HF**, **LF**.
5. Specify the optimum signal amplification level of HF or LF channel in the range of 1 to 8 for the **Gain** parameter (**4**). The '8' value complies with maximum sensitivity of this channel.
6. Specify the **True** value for the **Armed** parameter (**5**), if required, so as this channel is armed. Set the **False** value in order to make the channel inactive (disarmed).

> **Note**
>
> The **Armed** parameter can be set using the **Map** interactive window. For more details see Operating the TREZOR-B04 and TREZOR-R channel.

7. For the **Impulse** parameter (**6**), specify the value of the minimum impulse length of the valid signal in the range from 40 to 560 milliseconds. If the impulse length is less than the defined one, that impulse is not taken into account.
8. For the **Count** parameter (**7**), specify the number of allowed impulses of the valid signal in the range from 1 to 10, upon reaching which, within the time range of the **Count interval** parameter (**9**), an alarm is triggered.
9. From the **Preset** drop-down list (**8**), select the preset for the initial selection of groups of numerical values of all parameters of the signal processing algorithm for the LF channel.

> **Note**
>
> The preset is the aggregated sets of parameter numeric values which are saved in the device processing algorithm proceeding from the Signaling Fence type.

There are 8 presets:

Preset	Description
Factory	The initial set of algorithm parameter numeric values
SSCP cloth	The set of algorithm parameter numeric values for the standard full-height Signaling Fence represented by welded wire mesh with a rod 1-6 mm in diameter.
SSCP razor wire	The set of algorithm parameter numeric values for the standard Razor Wire Signaling Fence (1,2 m in height) represented by welded wire mesh with a rod 1-6 mm in diameter.
AKL cloth	The set of algorithm parameter numeric values for the standard full-height Signaling Fence represented by flat razor wire (AKL).
AKL razor wire	The set of algorithm parameter numeric values for the standard full-height Signaling Fence represented by cross razor wire (AKL).
Profiled sheeting	The set of algorithm parameter numeric values for the standard Signaling Fence represented by profiled metal sheet.
Wire mesh	The set of algorithm parameter numeric values for the standard Signaling Fence represented by wire mesh.
Underground	The set of numeric values when blocking undermine under fence and setting the Shielded Sensor Cable (SSC) in the ground.

Note

The preset parameter values (see the The presets table) are not guaranteed to be optimum, however they allow to simplify the configuring process and require some correction when customizing for a certain type of Signaling Fence on the device application place.

Attention!

The **Preset** option works only if the **Working mode** has the **LF** value.

10. Specify the time interval value for the **Count interval** parameter (**9**) in the range of 2 to 60 seconds in which the count of valid signal permitted impulses is performed.

Attention!

The **Count interval** and **Count** parameters are interrelated. When increasing the **Count interval** parameter value one should increase the **Count** parameter value.

11. Specify the permitted minimum interval between the two valid signal impulses for the **Pause** parameter (**10**) in the range of 40 to 400 milliseconds. If the set up pause is not maintained, the second received impulse following by the first one allowed does not count.

> **Attention!**
>
> The **Impulse** and **Pause** parameters are interrelated, their meanings should not differentiate more than twofold.

12. From the **Rejection (LF)** drop-down list (**11**), select the value of LF channel amplitude-frequency characteristic suitable rejection frequency. There are 18 rejection frequency values (in the decade band from 0 to 4,5 Hz). The '0 Hz' rejection frequency numeric value is conventional and means the absence of this option.

> **Note**
>
> The **Rejection (LF)** option works only if the **Working mode** has the LF value.

13. From the **Sawing duration** drop-down list (**12**), select the time interval in the range of 1 to 15 sec; when it is exceeded, the alarm on sawing will be initialized.

> **Note**
>
> The **Sawing duration** option works only if the **Working mode** has the **HF** value.

14. From the **Sawing threshold** drop-down list (**13**), select the value of sawing detection threshold in the range of 6 to 560 mV.
15. From the **Threshold** drop-down list (**14**), select the value of channel detection threshold in the range of 6 to 560 mV.
16. Click **Apply** (**15**).

The TREZOR-B04 and TREZOR-R channel setting has been finished.

4.3.3 The presets table

The presets table of signal processing algorithm in LF-channel is not used for HF-channel.

Parameters	**Type of lockable obstruction**						
	SSCP cloth	SSCP razor wire	AKL cloth	AKL razor wire	Profiled sheeting	Wire mesh	U
Impulse (duration is at least) ms	120	120	120	160	120	160	28
Pause (duration is at least) ms	160	160	160	160	120	160	20
Window, sec	10	8	10	8	10	10	4

Parameters	**Type of lockable obstruction**						
Count (the amount of counting impulses)	4	3	3	3	4	4	2
Alarm, sec (duration is at least) ms	3						
Adaptive Thresholding (AT) (Adjustment), relative	2	1	2	2	2	1	1
Threshold (Trigger), mV	50	50	50	50	50	50	50
Amplification (Adjustment), relative	2	2	2	2	2	2	2
Rejection Hz (LF)	3	3.6	1.6	2	2.4	1.4	0.
Cross Delay (channel), mc	320						
Cross Blocking	2						

Note

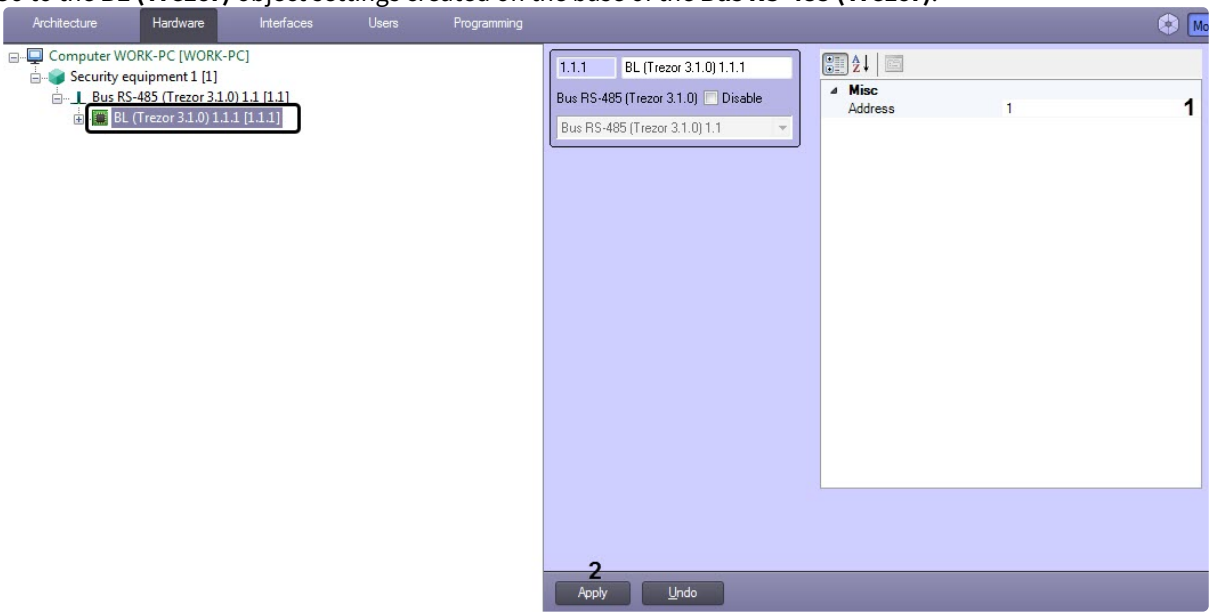
The preset values could be changed in the future versions of *Trezor* PID.

4.4 The TREZOR-BL setting

4.4.1 The TREZOR-BL controller setting

Setting up the TREZOR-BL controller is performed in the following way:

1. Go to the **BL (Trezor)** object settings created on the base of the **Bus RS-485 (Trezor)**.



2. Specify the connected controller address for the**Address** parameter (**1**) within the limits of 0 to 255.

> **Note**
>
> The **Address** with a ‘0’ value (or ‘00000000’ in binary code) is meant for executing utility functions. The controller address is set up with the eight-bit switch on the controller circuit plate.

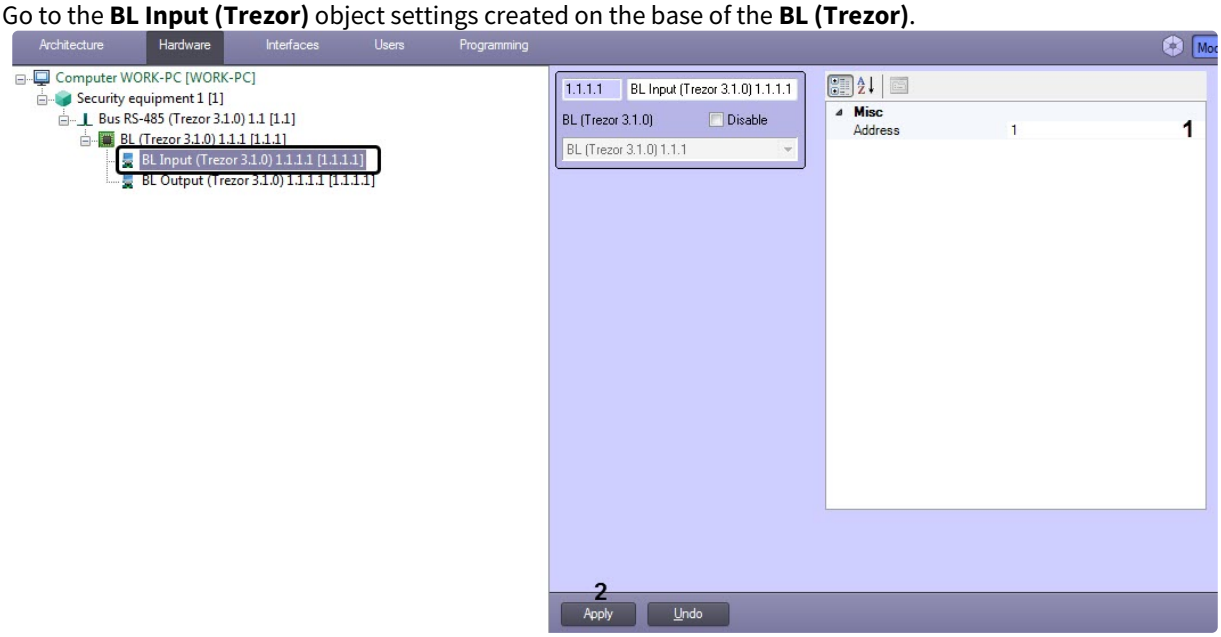
3. Click **Apply** (**2**).

The TREZOR-BL controller setting has been finished.

4.4.2 The TREZOR-BL input board setting

Setting up the TREZOR-BL input board is performed in the following way:

1. Go to the **BL Input (Trezor)** object settings created on the base of the **BL (Trezor)**.



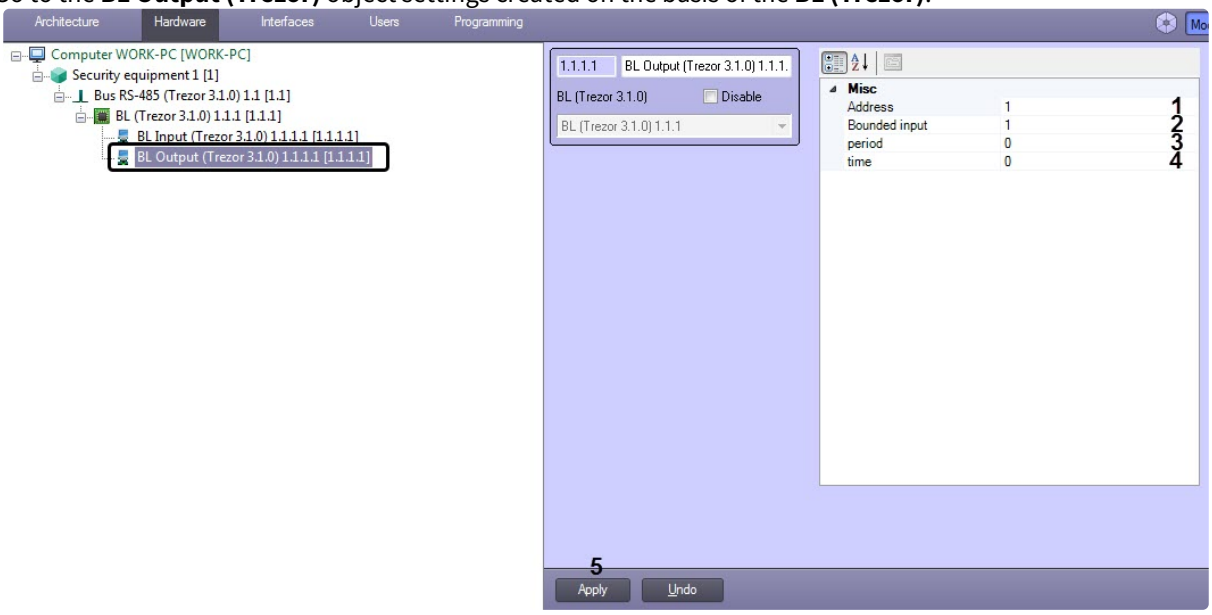
2. Specify the input number (from 1 to 4) for the **Address** parameter (**1**).
3. Click **Apply** (**2**).

The TREZOR-BL input board setting has been finished.

4.4.3 The TREZOR-BL output board setting

Setting up the TREZOR-BL output board is performed in the following way:

1. Go to the **BL Output (Trezor)** object settings created on the basis of the **BL (Trezor)**.



2. For the **Address** parameter (**1**), specify the input number (from 1 to 4).
3. For the **Bounded input** parameter (**2**), specify the number of the input board to which the output board will be linked (from 1 to 4).
4. For the **period** (**3**) and **time** (**4**) parameters, specify the values in accordance with the table below:

Output board operating mode	time parameter	period parameter	Note
Single switch	0 s	0 s	In case of alarm on the input board, the relay switches the contacts from the “C-NC” position to the “C-NO” position. To return to the initial state, use the “Switch” button or the **Switch relay** command (see Operating the TREZOR-BL output board)
Single switch for a time period	0...300 s	0 s	Switching the relay once to the opposite state for the time period specified in the **time** parameter and returning to the initial state.
Repeated switch for a time period	0...300 s	0...120 s	Repeated switching of the relay to the opposite state during the time specified in the **time** parameter with intervals equal to the value of the **period** parameter.

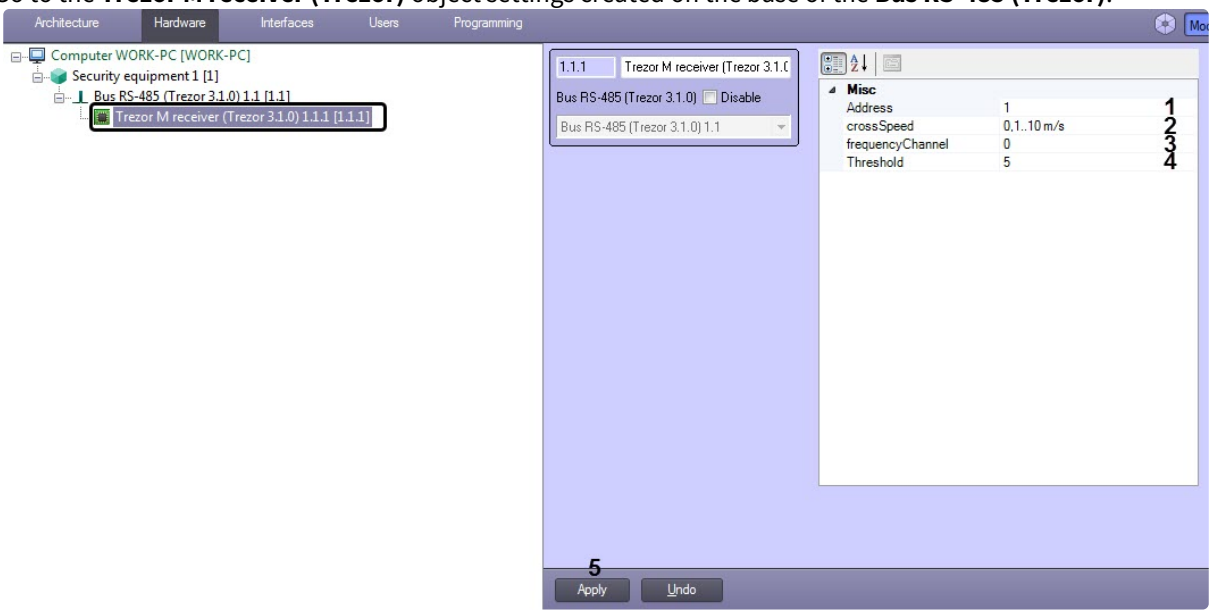
5. Click **Apply** (**5**).

The TREZOR-BL output board is configured.

4.5 The TREZOR-M setting

Setting up the TREZOR-M receiver is performed in the following way:

1. Go to the **Trezor M receiver (Trezor)** object settings created on the base of the **Bus RS-485 (Trezor)**.



2. For the **Address** parameter (**1**), specify the address of the connected receiver (from 0 to 255).

   > **Note**
   >
   > The **Address** with a '0' value (or '00000000' in binary code) is meant for executing utility functions. The receiver address is set up with the eight-bit switch on the receiver circuit plate.

3. For the **crossSpeed** parameter (**2**), specify the speed at which the trespasser intersects the detection zone.
4. For the **frequencyChannel** parameter (**3**), specify the frequency character of the receiver.
5. For the **Threshold** parameter (**4**), specify the receiver threshold.
6. Click **Apply** (**5**).

The TREZOR-M receiver is configured.

5 Operating Trezor integration module

5.1 General information about Trezor module

The following interface objects are used to work with the *Trezor* integration module:

1. **Map**.
2. **Event Viewer**.

For a detailed description of configuring these interface objects, refer to the Axxon PSIM Administrator's Guide.

For a detailed description of using these interface objects, refer to the Axxon PSIM Operator's Guide.

5.2 Operating the TREZOR-B04 and TREZOR-R

5.2.1 Operating the TREZOR-B04 and TREZOR-R controller

Operating the TREZOR-B04 and TREZOR-R controller is performed in the **Map** interactive window using the **Controller (Trezor)** object function menu.

Commands to operate the TREZOR-B04 and TREZOR-R controller are given in the table:

Function menu command	Function
Distance control	Initializes the working capacity check of the controller

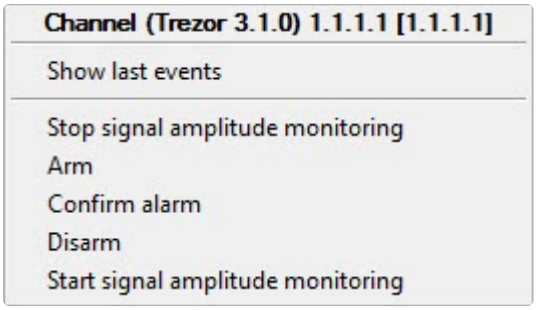
The following TREZOR-B04 and TREZOR-R controller displays are possible:

Controller (Trezor 3.1.0) 1.1.1 [1.1.1] 	Device opened
Controller (Trezor 3.1.0) 1.1.1 [1.1.1] 	Controller failure

Controller (Trezor 3.1.0) 1.1.1 [1.1.1] 	Normal
Controller (Trezor 3.1.0) 1.1.1 [1.1.1] 	Distance control

5.2.2 Operating the TREZOR-B04 and TREZOR-R channel

Operating the TREZOR-B04 and TREZOR-R channel is performed in the **Map** interactive window using the **Channel (Trezor)** object function menu.



Commands to operate the TREZOR-B04 and TREZOR-R channel are given in the table:

Function menu command	**Function**
Stop signal amplitude monitoring	Stopping signal amplitude monitoring
Arm	Arms the channel
Confirm alarm	Alarm confirmation by Operator
Disarm	Disarm the channel
Start signal amplitude monitoring	Starting signal amplitude monitoring

The following TREZOR-B04 and TREZOR-R channel displays are possible:

Channel (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Armed

	Alarm
	Inactive alarm
	Normal
	Channel failure Cable break Cable short
	Channel disabled
	Confirmed alarm

5.3 Operating the TREZOR-BL

5.3.1 Operating the TREZOR-BL controller

Operating the TREZOR-BL controller is not performed.

Commands to operate the TREZOR-BL controller are given in the table:

	Device opened

BL (Trezor 3.1.0) 1.1.1 [1.1.1] 	Failure
BL (Trezor 3.1.0) 1.1.1 [1.1.1] 	Normal

5.3.2 Operating the TREZOR-BL input board

Operating the TREZOR-BL input board is performed in the **Map** interactive window using the **BL Input (Trezor)** object function menu.

Commands to operate the TREZOR-BL input board are given in the table:

Function menu command	Function
Confirm alarm	Alarm confirmation by Operator

The following TREZOR-BL input board displays are possible:

BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Normal
BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Alarm

BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Inactive alarm
BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Channel failure Cable break
BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Channel disabled
BL Input (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Confirmed alarm

5.3.3 Operating the TREZOR-BL output board

Operating the TREZOR-BL output board is performed in the **Map** interactive window using the **BL Output (Trezor)** object function menu.

Commands to operate the TREZOR-BL output board are given in the table:

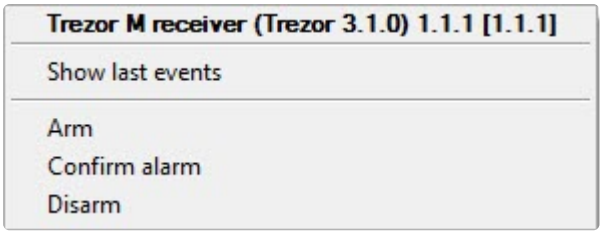
Function menu command	Function
Switch relay	Switching relay

The following TREZOR-BL output board displays are possible:

BL Output (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Normal
BL Output (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Relay triggered
BL Output (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Channel failure
BL Output (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Channel disabled

5.4 Operating the TREZOR-M

Operating the TREZOR-M receiver is performed in the **Map** interactive window using the **Trezor M receiver (Trezor)** object function menu.



Commands to operate the TREZOR-M receiver are given in the table:

Function menu command	Function
Arm	Arms the channel
Confirm alarm	Alarm confirmation by Operator

Function menu command	Function
Disarm	Disarm the channel

The following TREZOR-M receiver displays are possible:

Trezor M receiver (Trezor 3.1.0) 1.1.1 [1.1.1] 	Normal
Trezor M receiver (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Alarm
Trezor M receiver (Trezor 3.1.0) 1.1.1.1 [1.1.1.1] 	Inactive alarm
Trezor M receiver (Trezor 3.1.0) 1.1.1 [1.1.1] 	Channel failure Cable break
Trezor M receiver (Trezor 3.1.0) 1.1.1 [1.1.1] 	Channel disabled
Trezor M receiver (Trezor 3.1.0) 1.1.1 [1.1.1] 	Confirmed alarm

Trezor M receiver (Trezor 3.1.0) 1.1.1 [1.1.1] 	Device opened