SNMP Wrapper Settings Guide

ACFA PSIM 1.1

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1 Introduction into SNMP Wrapper Settings Guide

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1.1 Purpose of the document

The *SNMP Wrapper integration module settings guide* provides comprehensive setup and operational guidance for *SNMP Wrapper* module operators.
This Guide presents the following materials:

1. General information about the *SNMP Wrapper* module.
2. *SNMP Wrapper* module settings.
3. Working with the *SNMP Wrapper* module.

1.2 General information about the SNMP Wrapper integration module

SNMP Wrapper integration module enables data exchange and event receiving using SNMP traps v.1, v.2 and v.3.

Note

Furthermore, base *Axxon PSIM* allows configuring SNMP-service for resending messages about the registered events to SNMP-manager — see Configuring the SNMP-service section of the *Axxon PSIM* software package. Administrator's Guide. The most relevant version of this document is available at AxxonSoft documentation repository.

2 Licensing and systems supported by SNMP Wrapper

SNMP Wrapper is licensed for 1 channel.

> **Note**
>
> 1 channel corresponds to 1 SNMP trap sent by the device when an event occurs. As a rule, one event equals one SNMP trap, but some devices send several SNMP traps with different data per event. For example, the UPS generates a Power Failure event and sends two SNMP traps “No External Power” and “Current Charge Level”. Therefore, to determine the number of licenses, it is necessary to clarify the required list of SNMP traps in the official documentation of the device manufacturer.

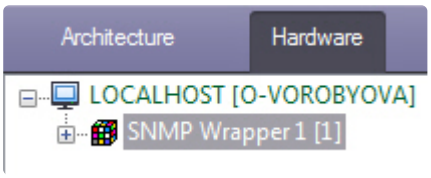
Systems which operation is guaranteed by *SNMP Wrapper* universal integration are as follows:

Name	Functionality in the Axxon PSIM software package	Comment
AVTECH - Room Alert 24E- Alarm Switch	Monitoring of the following events: • Humidity is out-of-bounds; • Humidity is within borders; • Cabinet open; • Cabinet close; • Temp is out-of-bounds; • Temp is within bounds; • Power loss; • Power connected.	The license is per sensor (e.g. Internal Humidity Sensor, Power Sensor, etc.)
MOXA Remote I/O Series cards of any type: Ethernet I/O, RS-485 I/O or Modular I/O (for the list of all cards which can be connected by the SNMP please refer here)	Receive the current state of connected sensors.	The license is per sensor connected to input, i,e, the number of licenses is equal to the number of inputs used.
NAG SNR-ERD	Receiving status and events from controller elements, for example, temperature sensors, relay status (on, off)	
TFortis	Device status poll.	

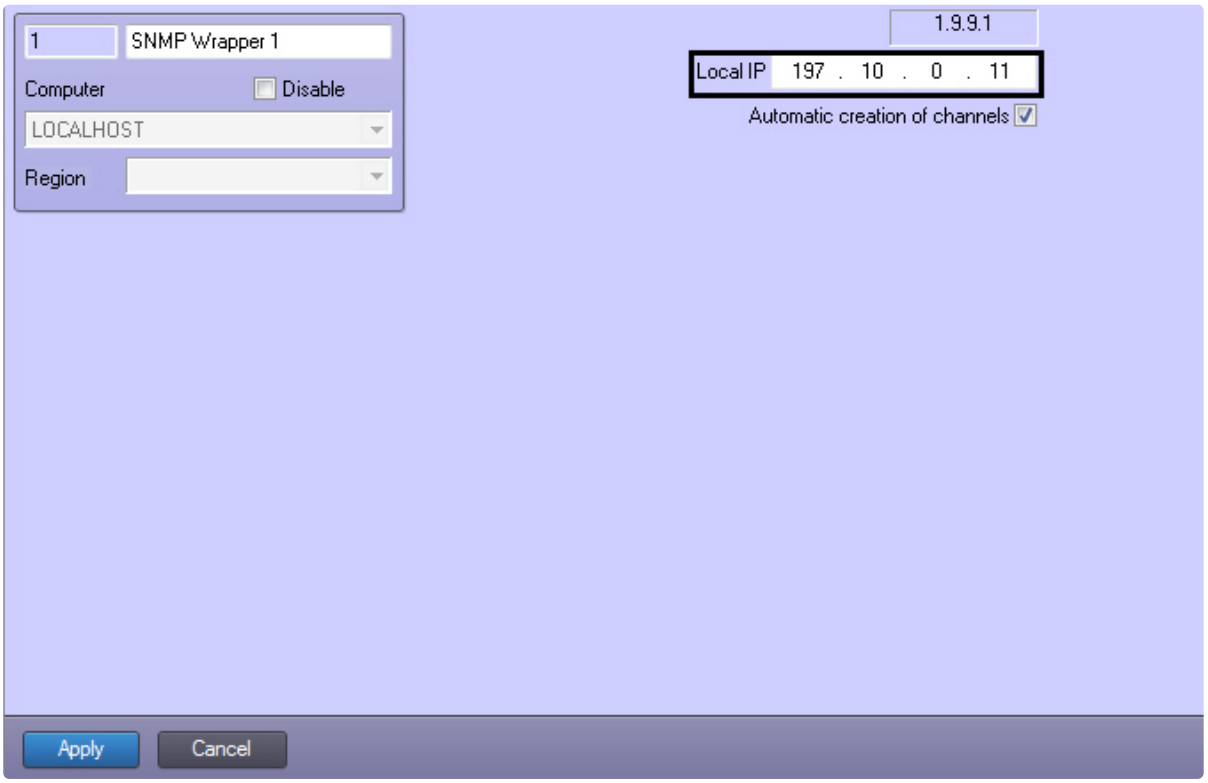
3 Configuration of the SNMP Wrapper integration module

3.1 Activate the SNMP Wrapper integration module

To activate the *SNMP Wrapper* module create the **SNMP Wrapper** object on the basis of **Computer** object on the **Hardware** tab of the **System settings** dialog box.

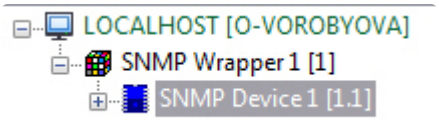


On the settings panel of the **SNMP Wrapper** object enter the local IP-address of the *Axxon PSIM* Server and click the **Apply** button.



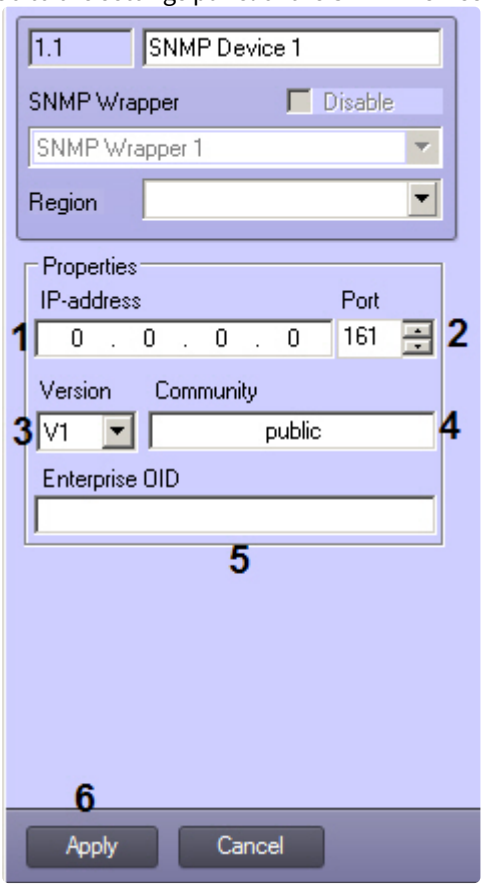
3.2 Connecting device via SNMP

Device connection via SNMP is configured on the settings panel of the **SNMP Device**. This object is created under the **SNMP Wrapper** object in the **Hardware** tab of the **System settings** dialog box.



Configure device connection as follows:

1. Go to the settings panel of the **SNMP Device** object.



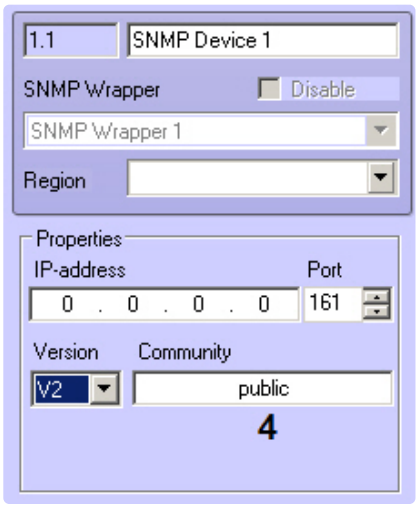
2. Specify the device IP address (**1**).
3. Specify device ID in the **Enterprise OID (trap v.1 only)** (**2**) field.
4. Select the version of SNMP protocol supported by the connected device from the Version drop-down list (**3**).

> ⚠ The SNMP version is selected according to the device specifications (see official reference guides for the device).

   a. For **V1** version:
      i. In the **Community** field, enter group affiliation password (**4**).

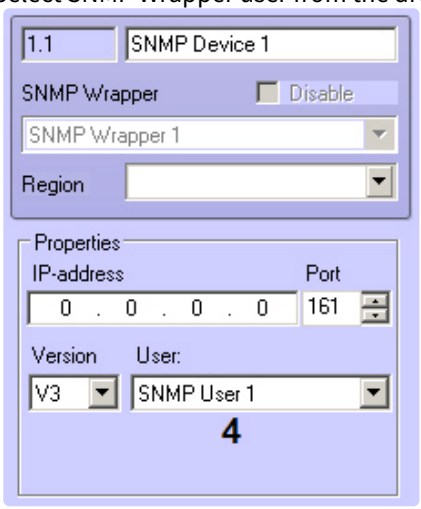
      > ⓘ **Note.**
      >
      > Standard community values are public or private for read or read and write permissions accordingly.

      ii. Enter the device identification number into the **Enterprise OID** field (**5**).
   b. For **V2** version:
      i. Just enter group affiliation password in the **Community** (**4**).



c. For **V3** version:

i. Select SNMP Wrapper user from the drop-down list (**4**, see also Configuring of users).



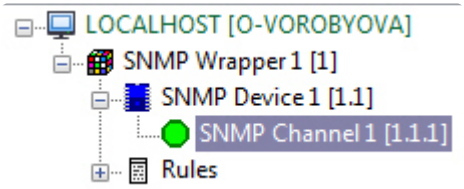
5. To save changes click the **Apply** button (**6**).

Device connection via SNMP is now completed.

3.3 Configuring device channels

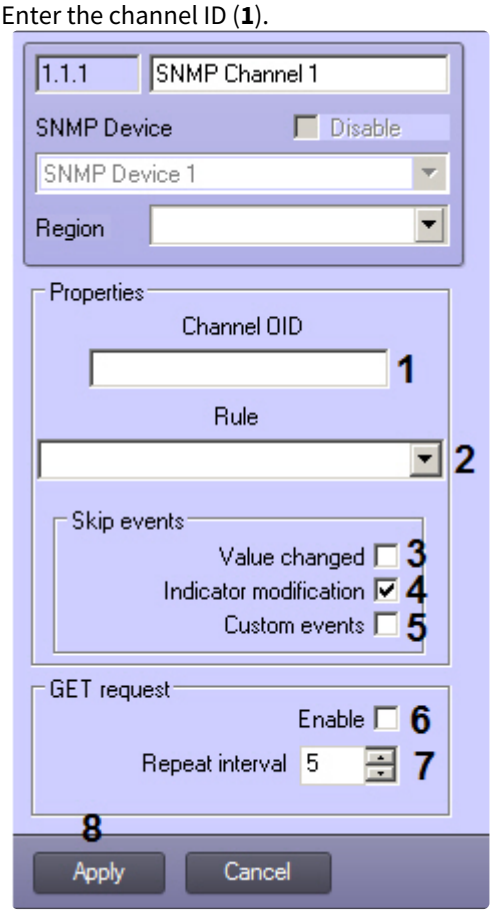
The device state is described by specific number of variables - channels. The channel can have both digit and string values.

A channel is configured on the settings panel of the **SNMP Channel** created under **SNMP Device**.



Configure a channel as follows:

1. Enter the channel ID (**1**).



   The value of channel ID is to be specified without the value of device ID (see Connecting device via SNMP). For instance, the full channel ID is **1.3.6.1.4.1.318**.1.1.12.1.6.0 where device ID is in bold.
2. If required select a rule the channel is to comply with (**2**, see Configuring rules).
3. Set the **Value chaged** (**3**) checkbox checked if events about changed channel value are not to be displayed in the *Event log*.
4. If the channel value is to be presented as text on the map set the **Analog params** (**4**) checkbox unchecked.

   > **Attention!**
   >
   > Changed values of this parameter are applied after *Axxon PSIM* Server restart.

5. Set the **Custom events** (**5**) checkbox checked if events are not to be displayed in the *Event log* when the rule triggers.
6. Set the **Enable** checkbox in the **GET Request** group to enable SNMP GET requests (**6**)
7. In the **Repeat interval** field specify time period in seconds to repeat GET requests (**7**).
8. Click the **Apply** button (**8**).

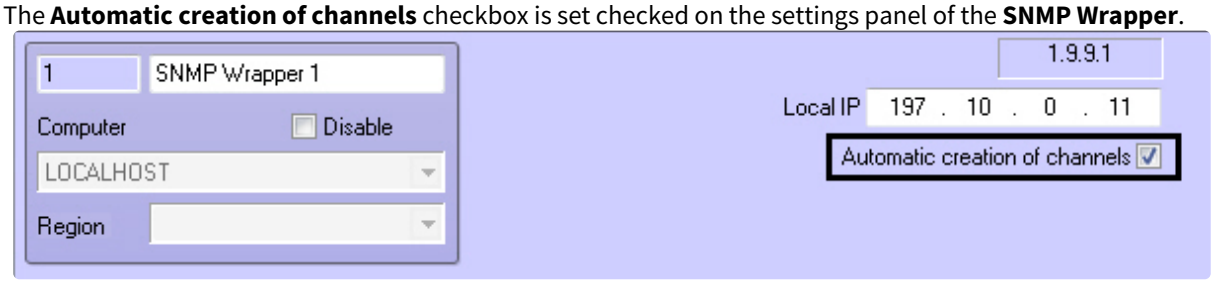
Device channel configuration is now completed.

3.4 Auto-creation of channels in Axxon PSIM

After receiving a SNMP trap channels described by the trap can be created automatically in *Axxon PSIM*.

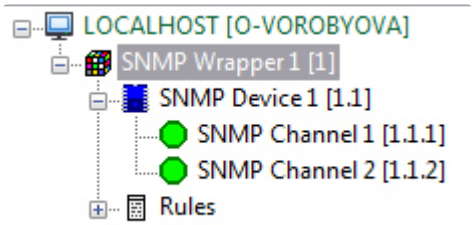
These conditions are to be met:

1. The **Automatic creation of channels** checkbox is set checked on the settings panel of the **SNMP Wrapper**.



2. Connection with a device is set (see Connecting device via SNMP).

If the conditions are met the corresponding channels are created after receiving a SNMP trap.



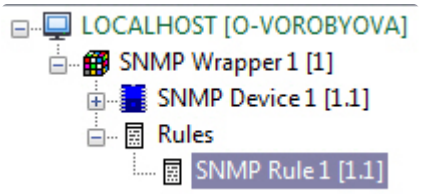
3.5 Configuring rules

Rules change channel states on the map depending on their values and/or generate an event.

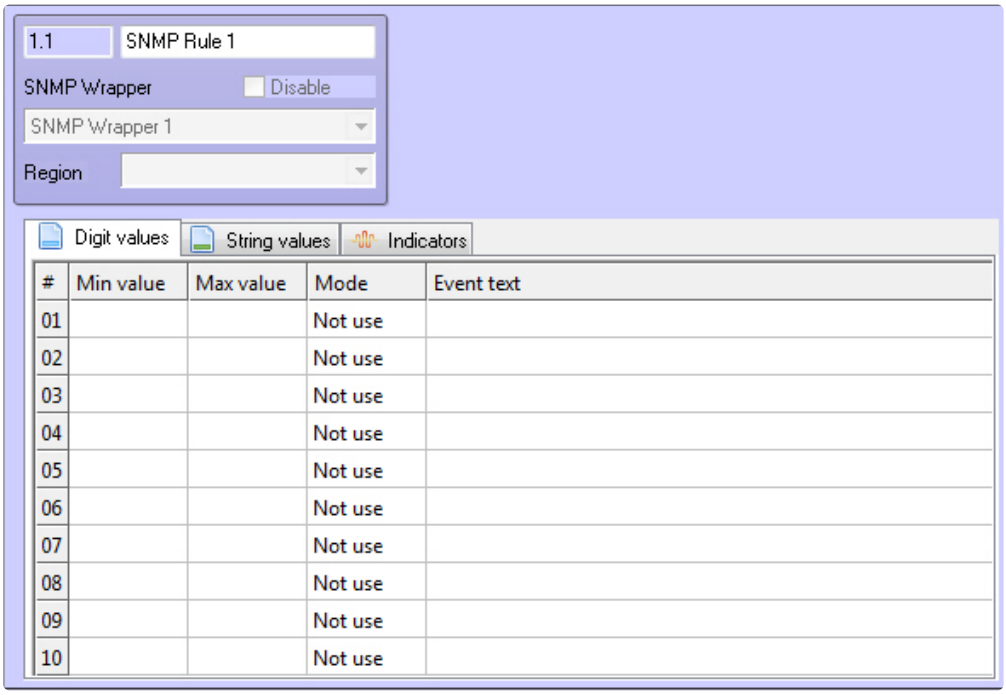
If the channel is with the digit value, then indicator state can be changed when the channel possesses the value from the specific range.

Up to 10 conditions can be set in each rule. Each condition corresponds to one state on the map (see Working with device channels on the map).

Rules are configured on the settings panel of the **SNMP Rule** created under **SNMP Wrapper**.



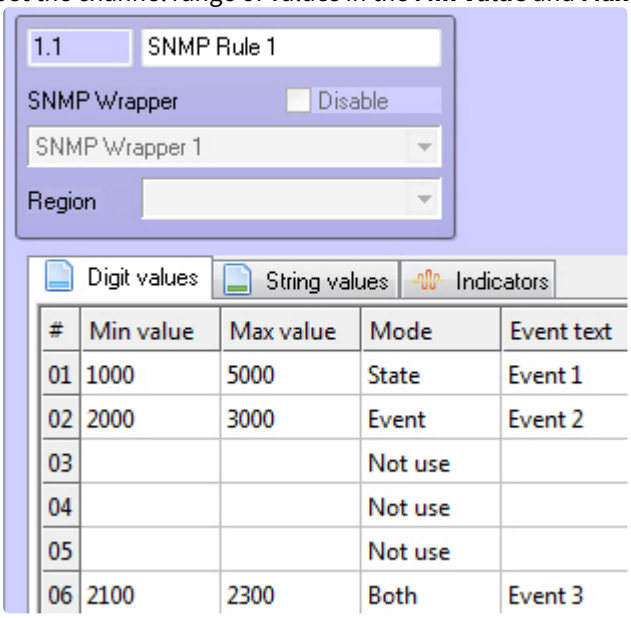
Conditions for digit values are configured in the **Digit values** tab and conditions for string values are configured in the **String values** tab. Conditions for indicator state change are configured in the **Indicators** tab.



3.5.1 Setting conditions for channels with digit values

Conditions for channels with digit values are set in the **Digit values** tab**:**

1. Set the channel range of values in the **Min value** and **Max value** columns.



> **Attention!**
>
> If the value of channel gets into multiple intervals, then the channel is in multiple states (multistate) and/or multiple events are received.

2. In the **Mode** column select an action that will be happen when a channel possesses the value from the set range.

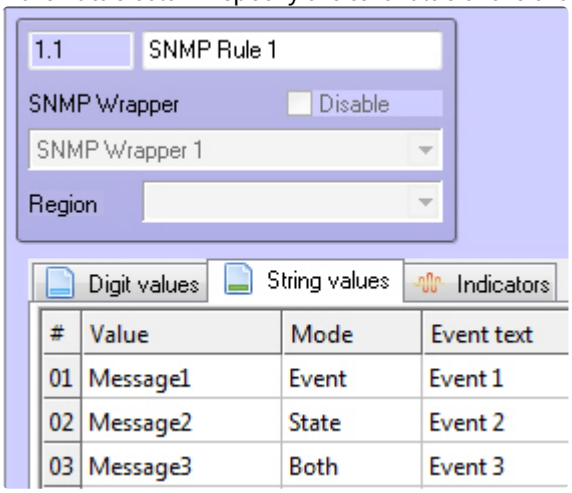
State	Channel state change on the map
Event	Event generation
Both	Channel state change and event generation

3. In the **Event text** column specify the message that will appear when the channel possesses the value from the set range.
4. Click the **Apply** button.

3.5.2 Setting conditions for channels with string values

Conditions for channels with **string** values are set in the **String values** tab:

1. In the **Value** column specify the text value of the channel.



2. In the **Mode** column select an action that will be happen when a channel possesses the value from the set range.

State	Channel state change on the map
Event	Event generation
Both	Channel state change and event generation

3. In the **Event text** column specify the message that will appear when the channel possesses the value from the set range.
4. Click the **Apply** button.

3.5.3 Conditions of indicator state change

Conditions of changing indicator state are set in the **Indicators tab** of the settings panel of **SNMP Rule**. Description of parameters is presented in the following table. It is possible to specify not more than 10 states of indicator.

Parameter	Description
Rule #	Condition order
V. min , V. max	Range of channel values for condition
S. min, S. max	Range of values which indicator will take according to the rule
Usage	Activate the interval
Red, Green, Blue	Specify the color of indicator by the RGB model

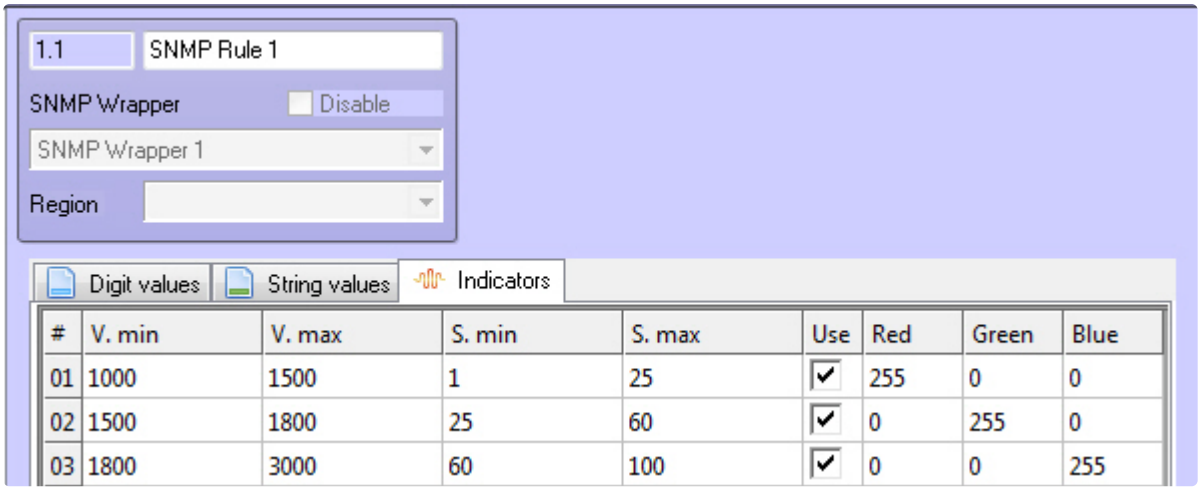
Attention!

If the value of channel gets into multiple intervals, then indicator possesses the value according to the condition with the smallest serial number from the relevant.

To save changes click the **Apply** button.

Indicator and its value are displayed in the map (see the Working with the OPC-server elements of the Data Access standard on the map section).

Consider the working of this rule through the example.



#	V. min	V. max	S. min	S. max	Use	Red	Green	Blue
01	1000	1500	1	25	✔	255	0	0
02	1500	1800	25	60	✔	0	255	0
03	1800	3000	60	100	✔	0	0	255

There are three rules of element values depending on which the indicator takes the defined proportional value and color. To count the correct value of the indicator use the following formula: $S = \frac{(V - V.min)(S.max - S.min)}{V.max - V.min} + S.min$ where V – exact value of the element.

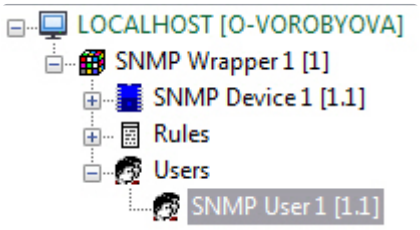
For example, if V=1300 then the indicator value $S = \frac{(1300-1000)(25-0)}{1500-1000} + 0 = 15$, the color will be red.

If V=2200 then the indicator value $S = \frac{(2200-1800)(100-60)}{3000-1800} + 60 = 73$ (approximated), the color will be blue.

3.6 Configuring of users

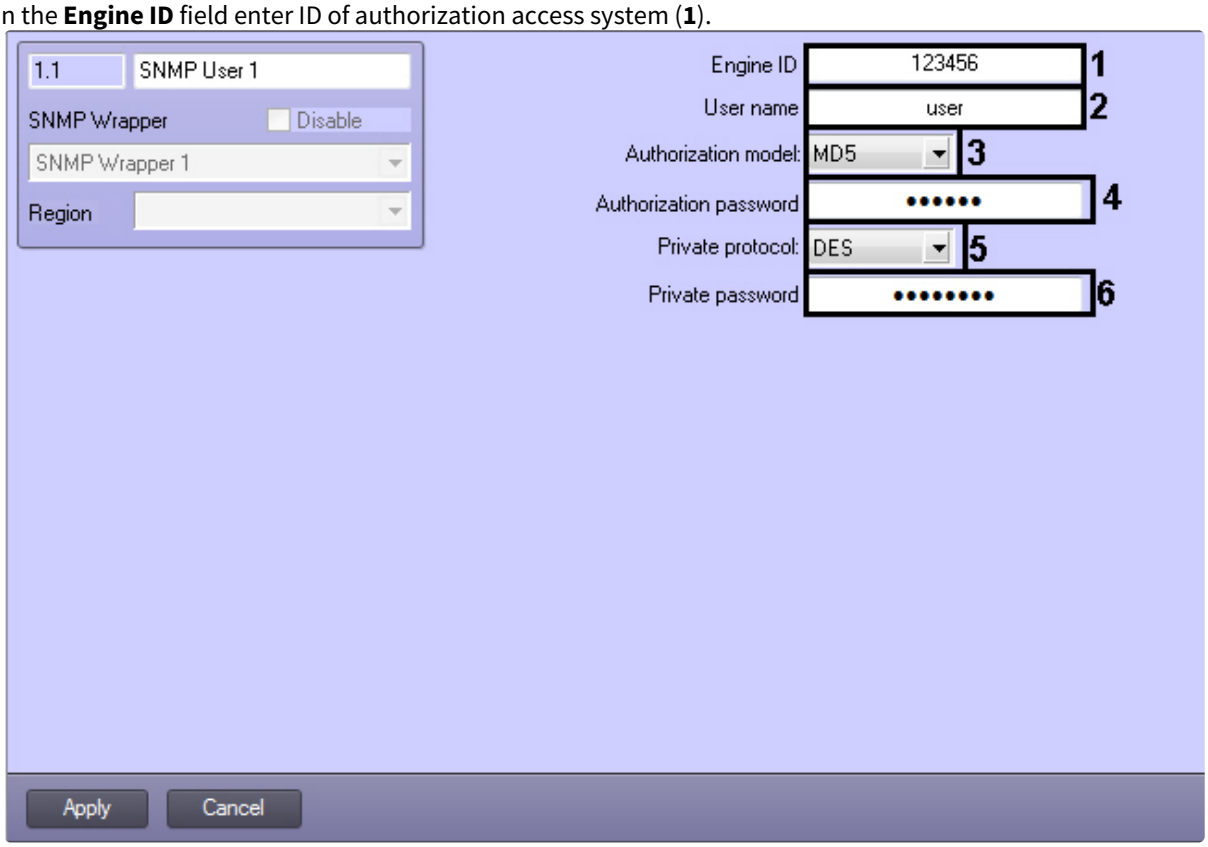
It's required to configure users for using SNMP-traps v.3.

Users are configured on the settings panel of the **SNMP User** object created under **SNMP Wrapper** object.



Configure user as follows:

1. In the **Engine ID** field enter ID of authorization access system (**1**).



2. Enter user name for authorization (**2**).
3. From the **Authorization model:** drop-down list select the required hashing algorithm (**3**).
4. Enter password for authorization (**4**).
5. From the **Private protocol:** drop-down list select select the hashing algorithm of sending data (**5**).
6. Enter the password for encryption of sending data in the **Private password** field (**6**).
7. Click **Apply** button to save changes.

User configuration is now completed.

4 Working with SNMP Wrapper integration module

4.1 General information on Working with SNMP Wrapper integration module

Events of *SNMP Wrapper* elements are sent to the *Events protocol*.

Icon, value and indicator of the channel state can be displayed on the map.

Information on how to configure the **Events protocol** and **Map** interface objects is given in details in the *Axxon PSIM* software package. Administrator's Guide document.

Information on how to work with **Events protocol** and **Map** interface objects is given in details in the *Axxon PSIM* software package. Operator's Guide document.

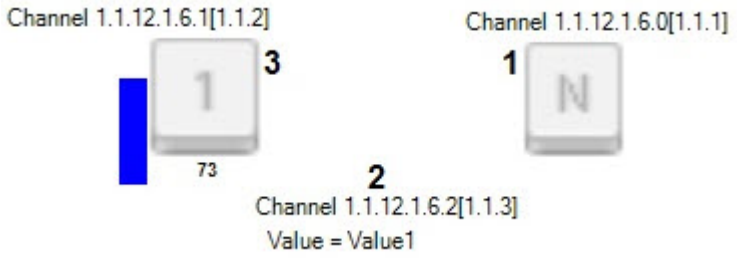
It is possible to configure reactions to some values of elements with the help of scripts and macros. Information on how to work with scripts and macros is given in details in *Axxon PSIM* software package. Guide for creating scripts (programming) and *Axxon PSIM* software package. Programming Guide (Jscript) documents.

4.2 Working with device channels on the map

Device channels connected via SNMP can be added to the map in three views (perhaps simultaneously):

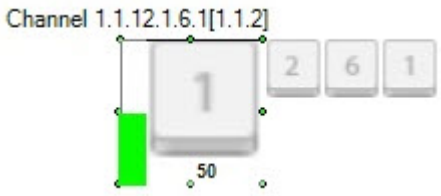
- As sign of state (**1**).
- As sign of state and indicator (**3**).
- In the text view (value of element, **2**).

> **Note**
>
> View of object displaying on the map is selected while the object adding (see *Axxon PSIM* software package. Administrator's Guide).



The element indicator takes a value and color in accordance with the rule (see Configuring rules). If the new value doesn't get into some rule, it will disappear.

If the element value gets into several states (see Configure the rule of changing the element state) then its state sign will change running all states and while clicking it smaller signs of all element states are displayed.



Note

1. Channel state icon shows the corresponding condition number in the rule.
2. Custom state icons can be created and used. To get the instructions contact AxxonSoft support.