OPC Wrapper Settings Guide

ACFA PSIM 1.0

Last update 08/22/2022

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1 List of terms used in OPC Wrapper Settings Guide

OPC server – a server of OPC standard.

DataAccessServer – a server (is one of OPC-server standards) for data exchange with controllers, control systems and other devices in a real time.

Alarms & Events Server – a server (is one of OPC-server standards) for notification about events: alarm situations, operator actions, informational messages and other.

2 Introduction into OPC Wrapper Settings Guide

On the page:

2.1 Purpose of the document

The *OPC Wrapper integration module settings guide* provides comprehensive setup and operational guidance for *OPC Wrapper* module operators.

This Guide presents the following materials:

1. general information about the *OPC Wrapper* module;
2. *OPC Wrapper* module settings;
3. working with the *OPC Wrapper* module.

2.2 General information about the OPC Wrapper integration module

OPC Wrapper integration module is designed for connection to some OPC-server which is located on the local computer.

OPC Wrapper integration can perform the data exchange and receive events by Data Access and Alarms & Events standards. Also it can perform rules for elements of the OPC-server of Data Access standard. The following versions of the standards are supported:

1. DA 2.0
2. AE 1.0

3 Licensing and systems supported by OPC Wrapper

OPC Wrapper is licensed for 1 IP-address. Several OPC servers can be in one IP-address.

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

Name	Functionality in the Axxon PSIM software package
MOXA cards (list of all cards which can be connected by the Moxa MX-AOPC UA Server is presented here)	• control relay depending on type of card; • receive the current state of connected sensors.
Bosch FPA 1200/5000 and MAP-5000, as well as UGM2020, UEZ2000, Allegiant, VCS. etc. panels as part of a BIS subsystem. The ability to use the *OPC Wrapper* for other models should be checked with the manufacturer.	• monitoring, control.
FSA SIEMENS Cerberus-PRO	• receive the current state of object; • reset the objectin its default state; • arm/include the object in the controlled area; • disarm/exclude the object from the controlled area; • set the object in Test mode; • set the object in active state from quiet; • set the object in quiet state from active.
ACS Gallagher 6000	• receive events about passes; • door tampering; • exit by button.
Schrack Seconet (OPC server by TIGER-SOFT http://www.tiger-soft.com.pl)	• monitoring of the status of a zone or an element; • sending control commands to a group or an element; • internal acoustic off command; • external accoustic off command; • summary alarm reset command.

Name	Functionality in the Axxon PSIM software package
Honeywell Esser (OPC server by TIGER-SOFT http://www.tiger-soft.com.pl)	Monitoring: • status of a point or a zone; • status of an output; • status of a line; • status of a panel; • status of an acoustic signaling device; • status of an UE. Control: • connect/disconnect a point or a zone; • connect/disconnect an output; • send a command to a panel.
SICK Laser Detectors (LMS1xx, LMS5xx, TiM3xx, JEF300, JEF500)	• receiving intrusion alarms with positioning.
Bostex Door Access System (Bostex OPC server http://www.bostex.net/)	• door status monitoring; • door control.

4 Configuration of the OPC Wrapper integration module

4.1 Configuration procedure for the OPC Wrapper integration module

The *OPC Wrapper* integration module is configured as follows:

1. Activate the *OPC Wrapper* integration module.
2. Connect to OPC-servers.
3. Add the elements of OPC-server.
4. Configure the monitoring of OPC-server elements.
5. Configure rules for OPC-server elements of Data Access standard.
6. Configure the displaying of the OPC-server elements of the Data Access standard on the map.

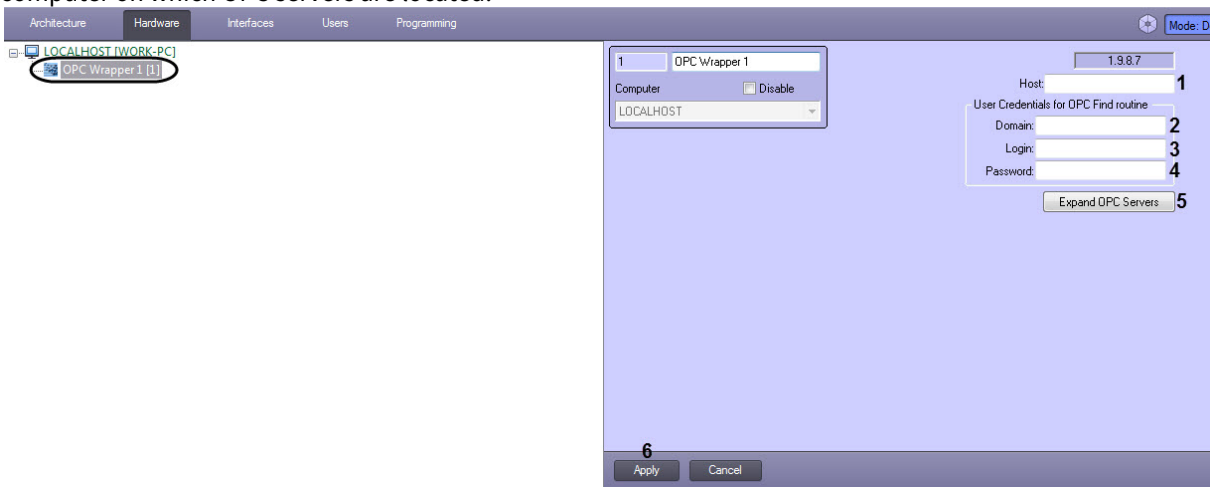
4.2 Activate the OPC Wrapper integration

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

4.3 Connection to the OPC server

To connect to the OPC server, do the following:

1. In the **Host** field (**1**) on the settings panel of the **OPC Wrapper** object enter the IP-address or name of computer on which OPC servers are located.



> **Note.**
>
> Correct DCOM configuration is required to connect to and search for remote OPC servers.

2. Click the **Apply** button (**6**).

3. Go to another object and then come back to the settings panel of the **OPC Wrapper** object.
   Server address is saved and can't be changed.
   

4. Set the authentication parameters to search for Servers:
   a. Specify the name of domain the user, who has rights to search for Servers, belongs to (**2**).

   > **Note**
   >
   > If there is no domain in the system or the user who does not belong to any domain is to be selected, then the **Domain** field is to be left blank.

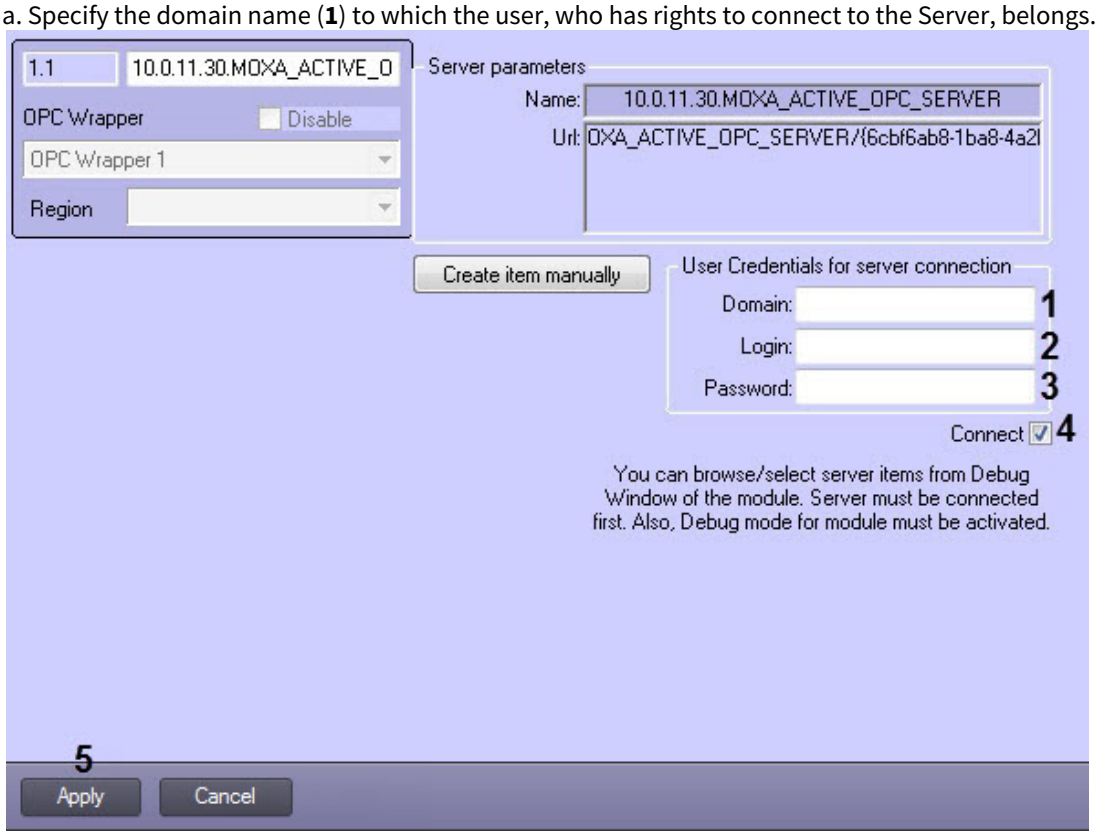
   b. Specify the login (**3**) and password (**4**) of the user who has rights to search for Server.

   > **Important!**
   >
   > If the authentication parameters are not set, then the current user performs search for Servers.

5. Click the **Expand OPC Servers** (**5**) button.
   Objects corresponding to found Servers will be created after the search completion.
   

   AE servers objects group is OPC servers of Alarms & Events standard, **DA servers** is OPC servers of Data Access standard.
6. Go to the OPC server to which connection is required.
7. Set the authentication parameters to connect to the Server:

a. Specify the domain name (**1**) to which the user, who has rights to connect to the Server, belongs.



> **Note.**
>
> If there is no domain in the system or the user who does not belong to any domain is to be selected, then the **Domain** field is to be left blank.

b. Specify the login (**2**) and password (**3**) of the user who has rights to connect to the Server.

> **Important!**
>
> If the authentication parameters are not set, then the current user connects to the Server.

8. Set the **Connect** (**4**) checkbox to establish the connection to the Server.
9. Click the **Apply** button (**5**).

Connection to the OPC server is completed. Message about successful connection will be displayed in the *Events protocol*.

4.4 Add the elements of OPC server

4.4.1 Adding the OPC server elements in Debug mode

The debug mode allows you to conveniently add the OPC server elements, to activate the monitoring of the selected elements and to assign the rules.

To activate the debug mode, do the following:

1. Enable the *Axxon PSIM* debug mode (see Selecting and enabling the debug mode of Intellect software).

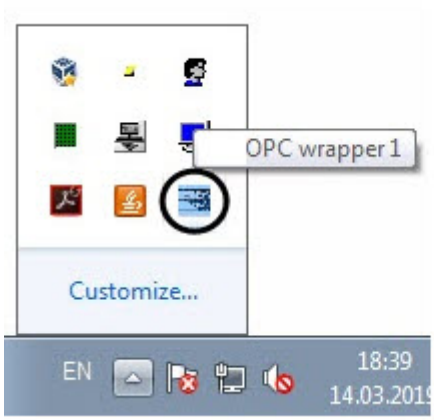
2. Set the **1** value for the **Debug** parameter (see Registry keys reference guide, for information about working with the registry, see Working with Windows OS registry).

> **Note**
>
> If there is no **Debug** parameter, it is necessary to create it.

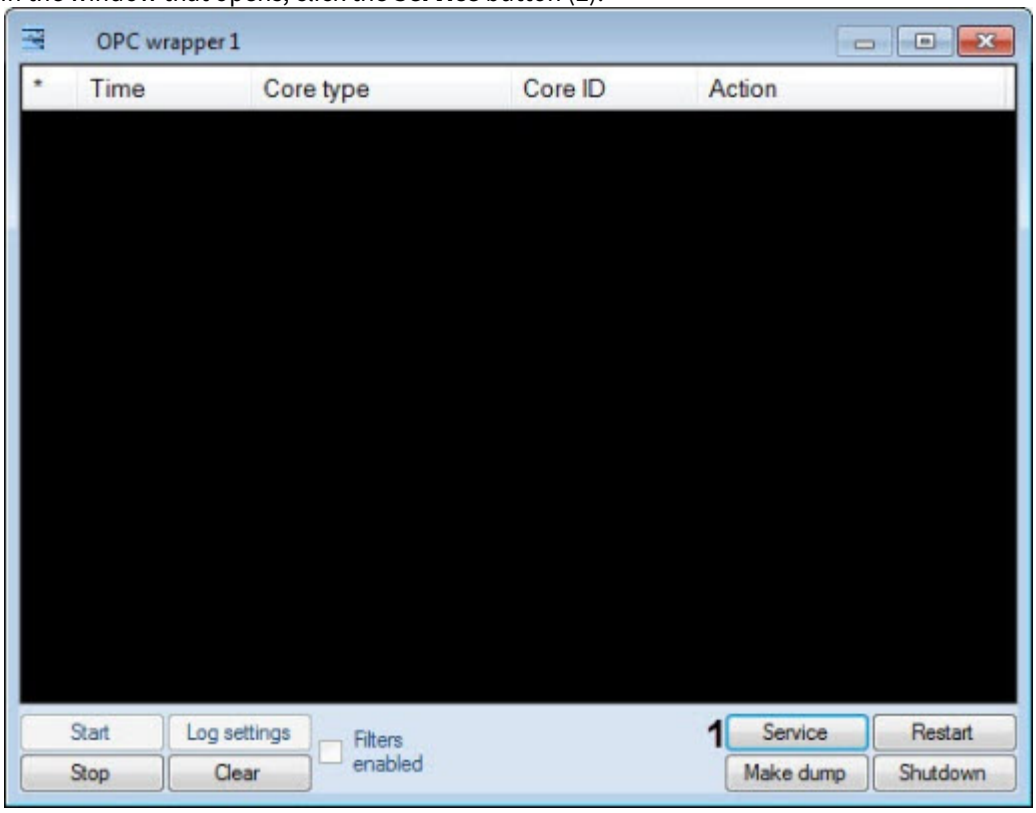
3. Restart *Axxon PSIM* to apply the settings.

To add the OPC server elements in debug mode, do the following:

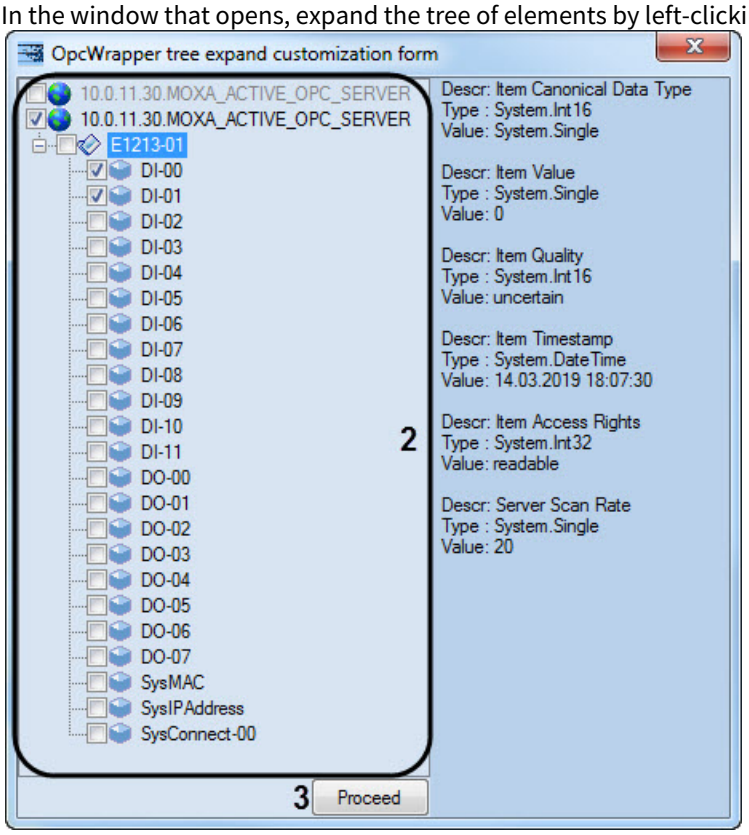
1. Double left-click the AxxonSoft OPC wrapper module icon in the Windows notification tray.



2. In the window that opens, click the **Service** button (**1**).



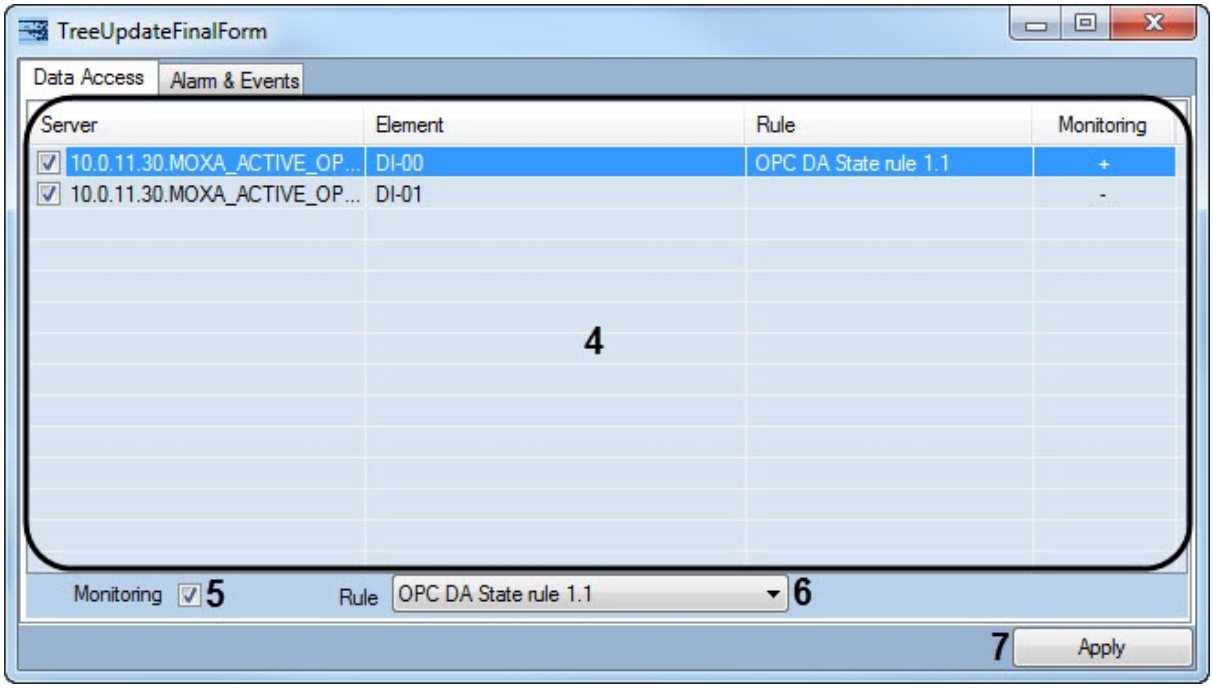
3. In the window that opens, expand the tree of elements by left-clicking the OPC server and the device (**2**).



4. Set the checkboxes for the required OPC server elements (**2**).

> **Note**
>
> You can set the checkbox for the OPC server or for the device. In the first case, all elements of all OPC server devices will be checked, in the second case, all elements of the selected devices will be checked.

5. Click **Proceed** (**3**).
6. In the window that opens, set the checkboxes for the OPC server elements that should be added to the equipment tree (**4**).



7. The following settings can be applied to the selected OPC server elements:
   a. If it is necessary to monitor the OPC server elements status, set the **Monitoring** checkbox (**5**).

      Note

      You can activate the monitoring of the OPC server element states later (see Configure the monitoring of OPC-server elements).

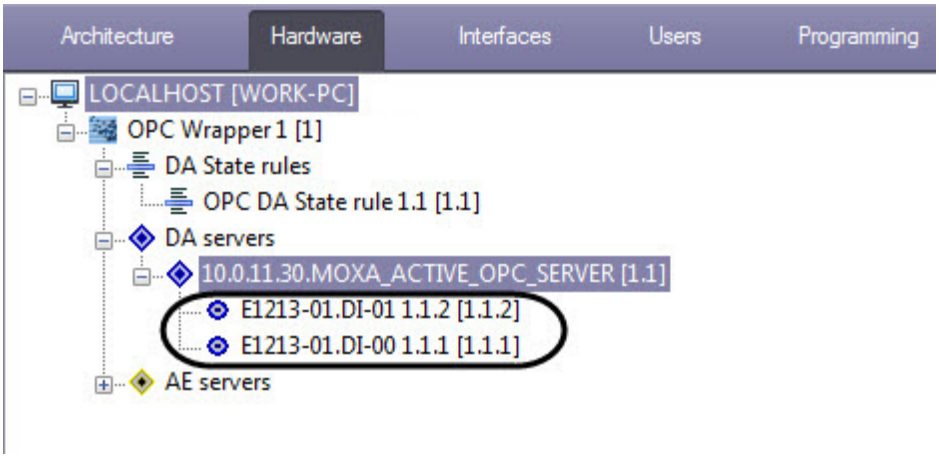
   b. If it is necessary to assign the Data Access rules for the OPC-server elements, select the corresponding rule in the **Rule** drop-down list (**6**) (see Configure rules for OPC-server elements of Data Access standard).

   Note

   You can select several OPC server elements at once using the hotkeys, for example:
   "Ctrl" + "a" — selecting all elements.
   "Shift" + left-click on the specified element — selecting all elements starting from the currently selected one to the one specified with the mouse click.
   "Shift" + keyboard arrows "down" or "up" — selecting the elements one by one going up or down from the currently selected one.

8. Click **Apply** (**7**) to add the OPC server elements to the equipment tree.

As a result, the objects that correspond to the OPC server elements, will be created.

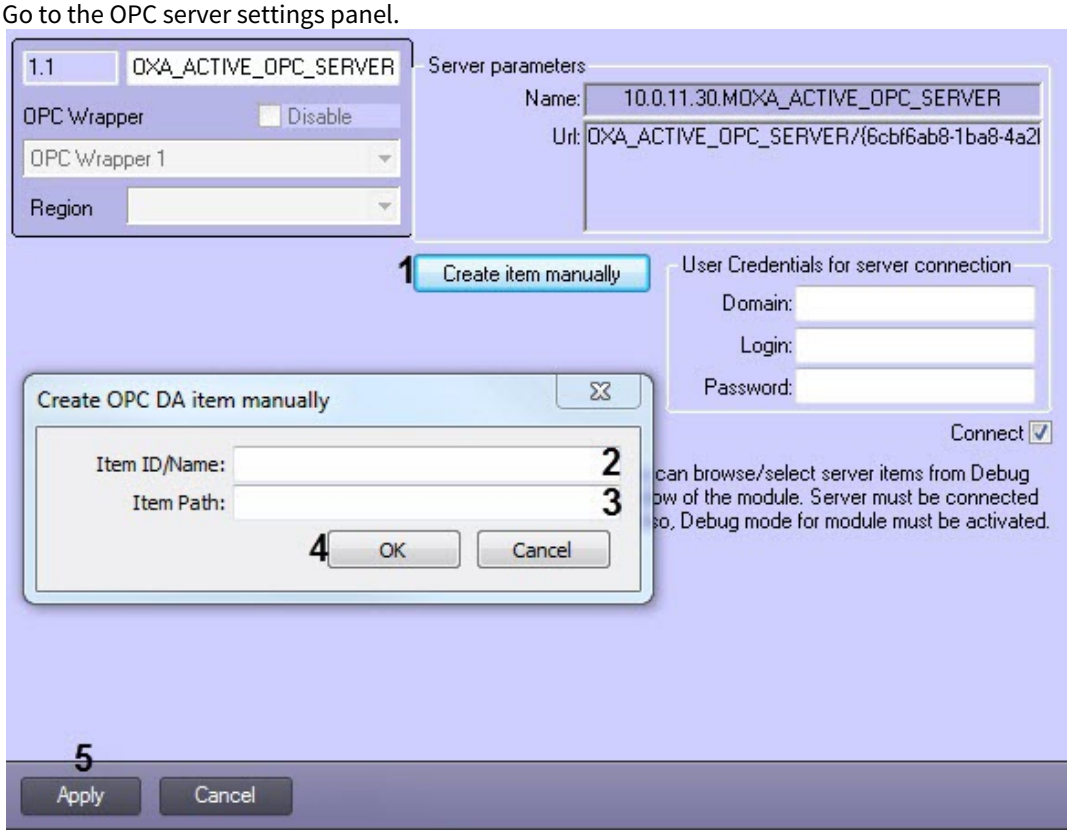


Adding the OPC server elements in Debug mode is complete.

4.4.2 Adding the OPC server elements manually (not recommended)

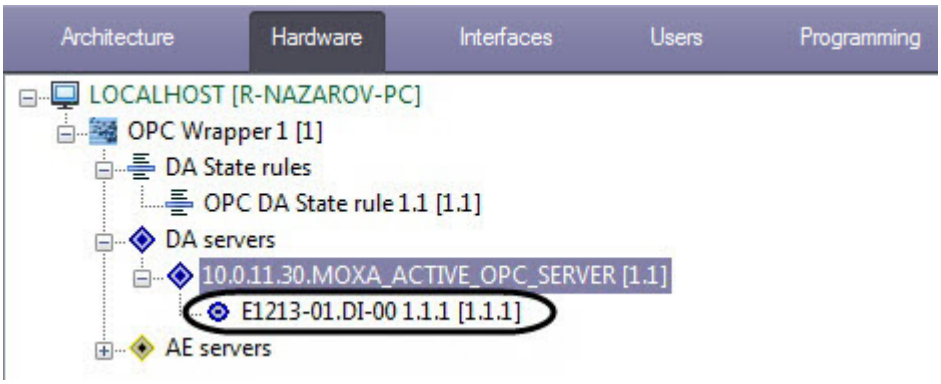
To add an OPC server element manually, do the following:

1. Go to the OPC server settings panel.



2. Click the **Create item manually** button (**1**). As a result, the **Create OPC DA item manually** window will open.
3. In the **Item ID/Name** field (**2**) enter the identification number or name of the element.
4. In the **Item Path** field (**3**) enter the path to the element.
5. Click **OK** (**4**).
6. Click **Apply** (**5**).

As a result, an object that corresponds to the OPC-server element will be created.

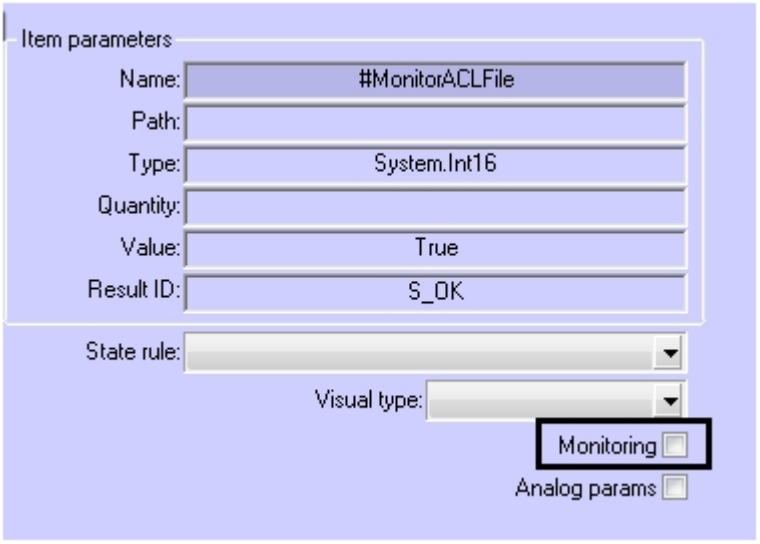


Manual adding of an OPC server element is complete.

4.5 Configure the monitoring of OPC-server elements

State of OPC-server element is not monitored on default. To monitor event states in the *Events protocol*, do the following:

1. Go to the settings panel of corresponding object.
2. Set the **Monitoring** checkbox.



3. Click the **Apply** button.
4. Restart the *ACFA PSIM* software package.

Monitoring of the element will be activated after the *ACFA PSIM* restart.

4.6 Configure rules for OPC-server elements of Data Access standard

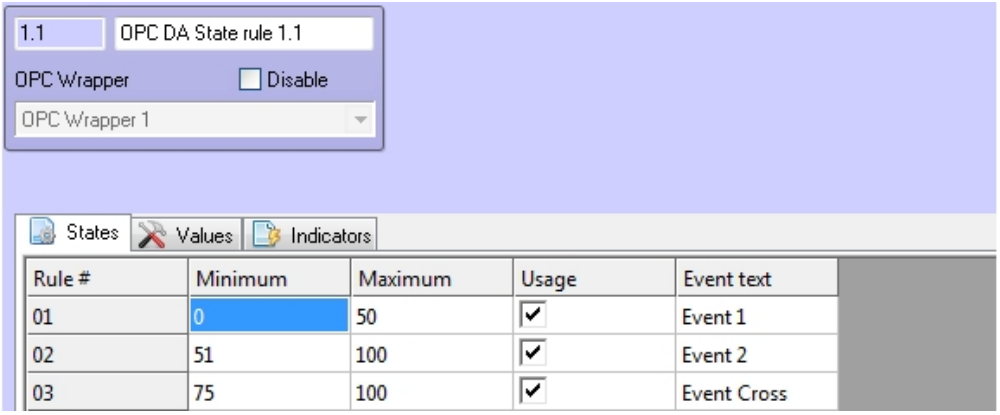
There are 3 types of rules for OPC-server elements of Data Access standard:

1. Change of element state while taking the element a value from the specified range.
2. Set the specified card value to the element (see the Working with OPC-server elements of Data Access standard on the map section).
3. Change of indicator state while taking the element a value from the specified range (see the Working with OPC-server elements of Data Access standard on the map section).

Configuring of rules is performed on the basis of the **OPC DA State rule** object which is created on the basis of the **OPC Wrapper** object. This object is a group of rules in which rules of all types can enter. Only one group of rules can be specified to each OPC-server element of Data Access standard.

4.6.1 Configure the rule of changing the element state

To configure this rule specify the following parameters on the **States** tab of the **OPC DA State rule** object's settings panel: in the **Minimum** column specify the start of interval, in the **Maximum** column – the end of interval, set the **Usage** checkbox to activate the interval, in the **Event text** column enter the message which will be displayed while taking the element a value from the specified range. It is possible to specify at most 10 intervals.



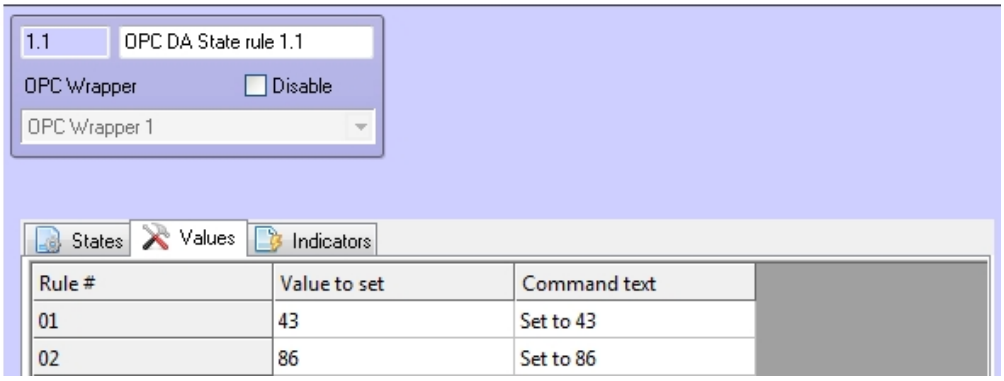
Attention!

If the value of element is involved into several intervals then it will have several states (multistate).

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

4.6.2 Configure the command to set value to the element

To configure this rule specify the following parameters on the **Values** tab of the **OPC DA State rule** object's settings panel: in the **Value to set** column enter the value which is to be set by command, in the Command text enter the name of command. It is possible to specify at most 10 intervals.



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

Commands are applied from the map (see the Working with OPC-server elements of Data Access standard on the map section).

4.6.3 Configure the rule of changing the indicator state

To configure this rule go to the **Indicators** tab of the **OPC DA State rule** object's settings panel. Description of parameters is given in the table. It is possible to specify at most 10 indicator states.

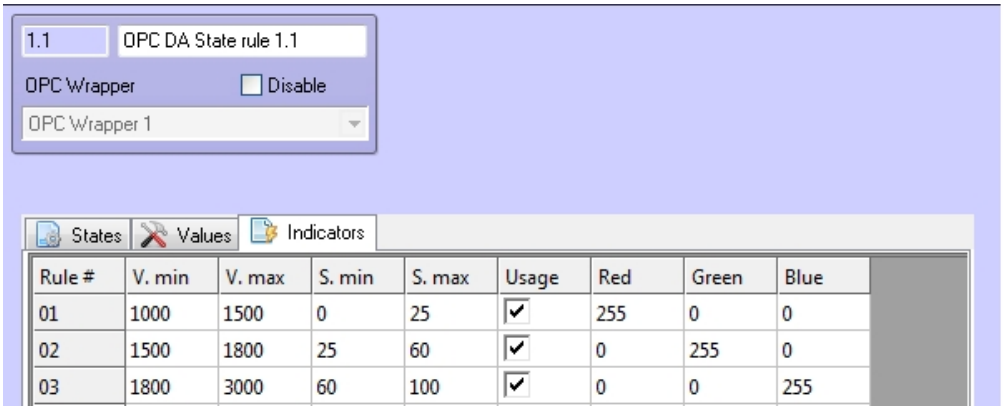
Parameter	**Description**
Rule #	Number of rule
V. min , V. max	Range of element values for the rule
S. min, S. max	Range of values which indicator will take according to the rule
Usage	Activate the interval
Red, Green, Blue	Specify the color of indicator by the RGB model

> **Attention!**
>
> If the value of element is included in several intervals at once the indicator takes a value corresponding to the rule with the smallest number.

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

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

Consider the working of this rule through the example.



Rule #	V. min	V. max	S. min	S. max	Usage	Red	Green	Blue
01	1000	1500	0	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:

$$S = \frac{(V - V.min)(S.max - S.min)}{V.max - V.min} + S.min$$

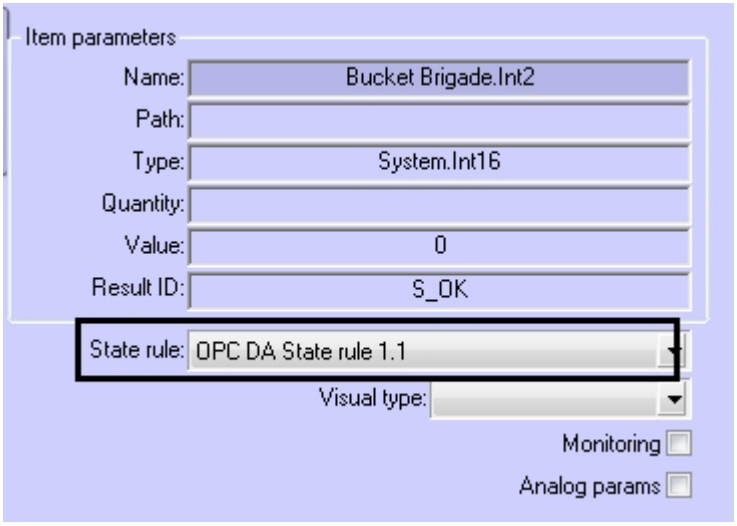
where V – exact value of the element.

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.

4.6.4 Set the rule to the element

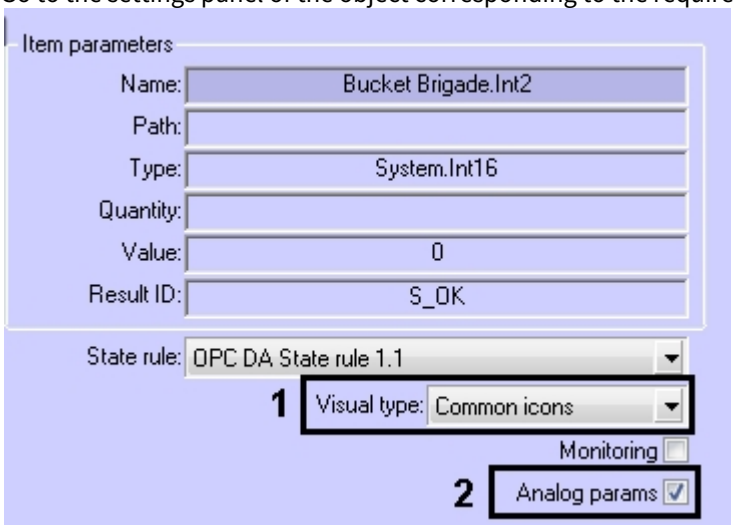
To set the rule to the element, select the defined group of rules in the **State rule** list on the settings panel of the corresponding object (the **OPC DA state rule** object).



4.7 Configure the displaying of the OPC-server elements of the Data Access standard on the map

To configure the elements displaying on the map, do the following:

1. Go to the settings panel of the object corresponding to the required element.



2. From the **Visual type** list select the set of element state icons (**1**). Icons of the *ACFA PSIM* software package are corresponding to the **Common icons** value.

> **Note.**
>
> It is possible to create and apply own icons. To get the corresponding instructions refer to the support team of the AxxonSoft company.

3. Set the **Analog params** checkbox if it is required to allow displaying of element value on the map (**2**).
4. Click the **Apply** button.

Configuring of elements displaying on the map is completed.

5 Working with OPC Wrapper integration module

5.1 General information on Working with OPC Wrapper integration module

Events of elements of OPC-servers are sent to the *Events protocol*.

Information about configuring the **Events protocol** and **Map** interface objects is given in details in *Axxon PSIM* software package. Administrator's Guide document.

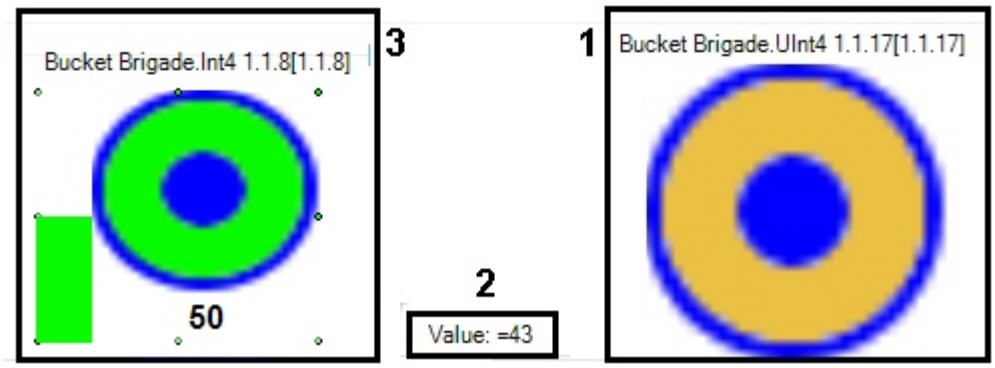
Working with **Events protocol** and **Map** interface objects is given in details in *Axxon PSIM* software package. Operator's Guide document.

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

5.2 Working with OPC-server elements of Data Access standard on the map

It is possible to add OPC-server elements of Data Access standard 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**).

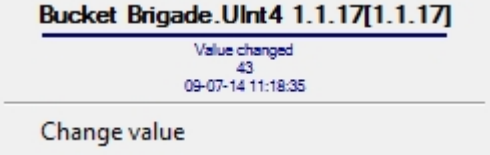


Note.

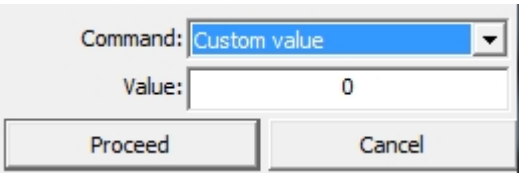
View of object displaying on the map is selected while the object adding (see *Axxon PSIM* software package. Administrator's Guide).

It is possible to change the value of corresponding element by means of any object on the map.

For this purpose open the context menu by double clicking the right mouse button and select the **Change value** item.



Select one of created commands from the **Command** list (see the Configure the command to set value to the element section) or the **Custom Value** item which allows specifying of any element value in the corresponding **Value** field.



To accept command of changing the element value click the **Proceed** button.

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

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