



Asix.Evo - Asix Mobile

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ASKOM Sp. z o. o., ul. Józefa Sowińskiego 13, 44-121 Gliwice,
tel. +48 32 3018100, fax +48 32 3018101,
<http://www.askom.com.pl>, e-mail: office@askom.com.pl

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1. Introduction

Asix Mobile enables process data to be presented on mobile devices such as smart phones and tablets. Asix Mobile provides all types of process data, i.e. **current data, archived data** and **alarms**.

Asix Mobile application is a part of Asix Evo application. Asix Mobile provides the same process data as Asix Evo application.

2. Installation

Asix Mobile module is a part of Asix.Evo package and is installed along with this package.

Asix Mobile module server requires Windows Vista/2008 or later. It also requires .NET library version 4.5 or later.

Asix Mobile module Client requires Android or iOS operating system. It is also possible to launch the Client in the web browser run on Windows platform – the browsers supported are: Google Chrome and Mozilla Firefox.

3. Server Configuration

Configuration of Asix Mobile module option is done from Asix.Evo station settings menu (*Application Explorer > Stations Settings*), in the option group *Asix Mobile*.

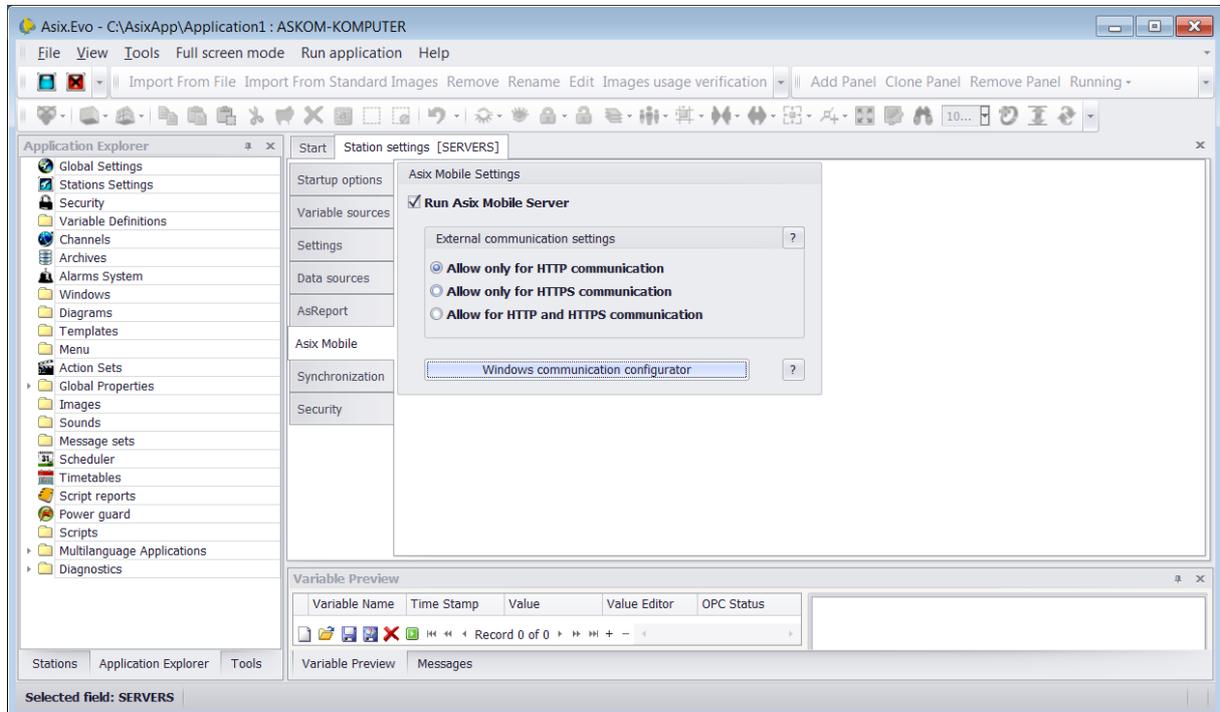


Fig. Station configuration panel - Asix Mobile options.

- First step involves launching of Asix Mobile module using option *Run Asix Mobile Server*.
- The second step is selecting available protocols: http, https or both, using the following options:
 - *External Communication Settings:*
 - *Allow only for HTTP communication,*
 - *Allow only for HTTPS communication,*
 - *Allow for HTTP and HTTPS communication.*

Also configuration of Asix.Evo server for Asix Mobile service is required. This configurations must be made just once and involves the following operations.

- *Windows Communication Configurator > window Asix.Evo Server Configurator:*
 - selecting the Windows User running Asix.Evo application;

- reserving HTTP and HTTPS paths for selected Windows User for AsixMobile service;
- Configuration of SSL certificate for HTTPS port of Asix Mobile service (generation of test SSL certificate for specified address or domain or using own preinstalled SSL certificate).

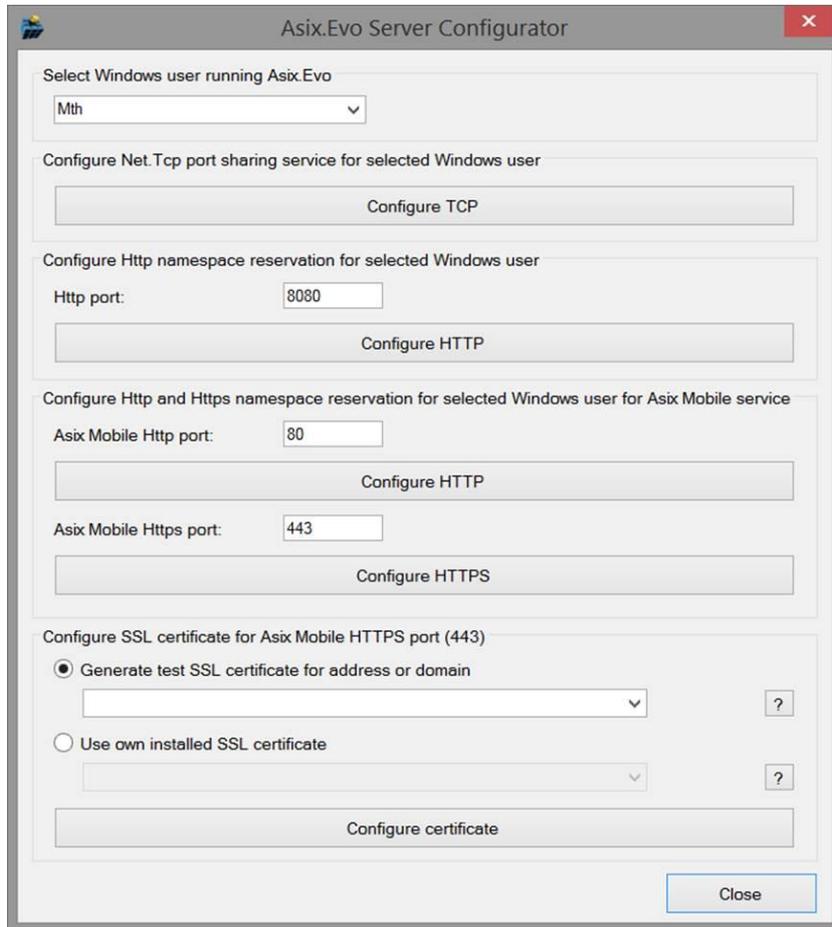


Fig. Windows Communication Configurator screen.

Http protocol does not require any additional configuring operations. Its disadvantage is data transfer: user name, password and process data of application within the network using non-encrypted text.

Https protocol transmits all data in an encrypted form what makes it recommended method during normal operation. However, it requires the SSL certificate to be configured, required for transmission encryption.

The best method to become SSL certificate owner is to purchase it from one of many certificate suppliers. When purchased, the certificate must be saved in the certificate

repository of Windows system, according to the supplier instructions. The next step is linking the certificate with https protocol using Asix.Evo.

Prior purchase of SSL certificate it is possible to generate test SSL certificate with Asix.Evo application. When it is linked with https protocol, the transmitted data are encrypted the same way as for standard SSL certificate. However, browser of Asix Mobile module user will notify that transmission encryption uses not trusted certificate. This notification may be ignored or the main certificate of test SSL certificate may be installed for every Client. Since that moment the browser will recognize our test certificate as trusted certificate.

In order to install the main certificate of test SSL certificate for a Client, you must:

- launch Asix Mobile application in HTTPS mode;
- open the certificate details window by clicking on padlock icon displayed at the left of HTTPS address; (in Google Chrome the window is displayed after clicking on *Connection > Certificate information*; in Mozilla the window is opened with command *More information... > Security > View certificate*)
- in *Details* tab of the above mentioned window select *Copy to file.../ Export* (depending on the browser) option, which opens *Certificate export wizard / window* used to save certificate to file (depending on the browser); please follow the wizard instructions;
- when the certificate is exported to .CER file and saved locally on hard drive, open *Certificate* window by clicking on the created file;
- install the certificate using command *Install certificate* (the command may be found in *General* tab).

The above described certificate installation procedure is not required when the certificate purchased from supplier is used.

4. Permission Configuration

Configuration of Asix Mobile module permissions is done from Asix.Evo security settings menu (**Application Explorer > Security**), in the option group **Roles**. The following system permissions are available for each user:

- **Asix Mobile: Access right**

This permission must be granted to the user in order to allow use of Asix Mobile.

- **Asix Mobile: Edit diagrams and options**

This permission allows the user to edit the application diagrams, setting the start diagram and modify default layout of diagram. The user without this permission may only view the application diagrams.

- **Asix Mobile: Control variables**

The permission allows the user to open control window and change variable value. The user without this permission can't open control window.

- **Asix Mobile: Acknowledge alarm**

The permission provides access to alarm acknowledgement window and allows the user to send alarm acknowledgement. The user without this permission can't open acknowledgement window.

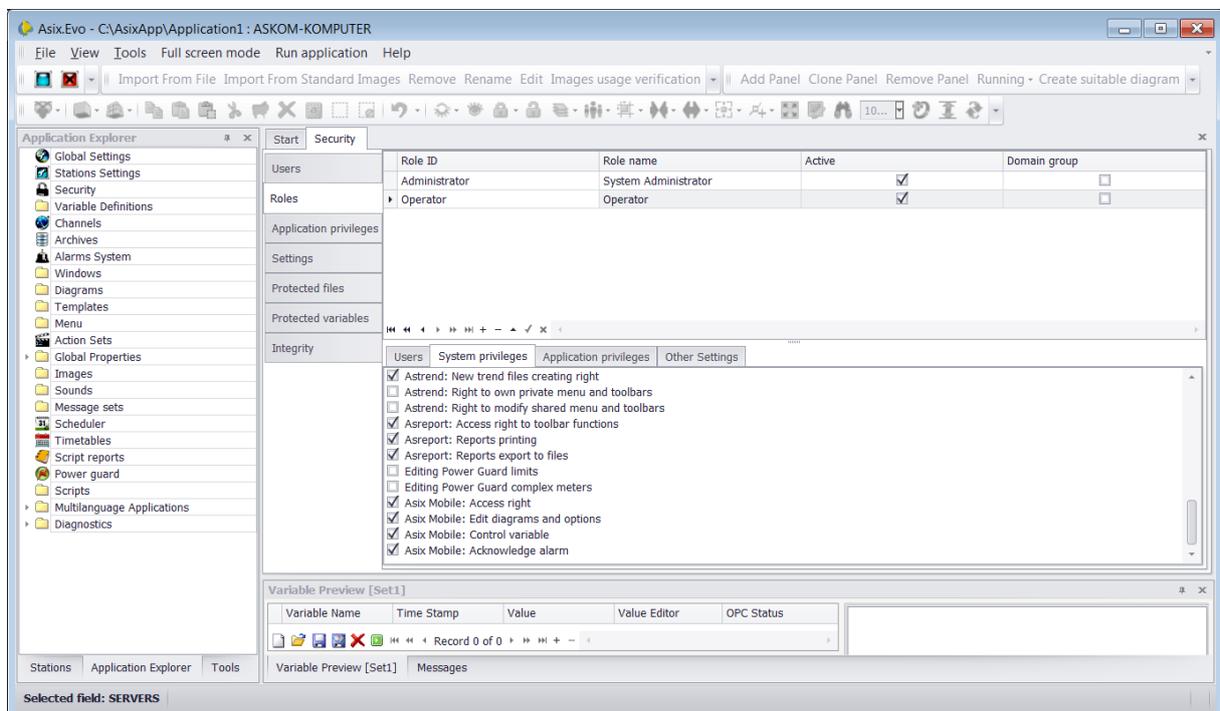


Fig. Window Used to Configure Asix Mobile Operation Permissions.

5. Launching the Application

5.1. Application Address

On the PC with running Asix Mobile server, the application may be accessed from the browser, by entering address *http://localhost/mobile*. Access from other PCs or mobile devices is possible by using HTTP or safe HTTPS protocol. Sharing the Application by HTTPS protocol requires the appropriate certificate to be configured.

Asix Mobile address is:

`https://address_of_asix_evo_server/mobile`

If http protocol is used, the address is:

`http:// address_of_asix_evo_server /mobile`

For example, if Asix.Evo server address is 10.10.2.3 than Asix Mobile address is:

<https://10.10.2.3/mobile>

If PC with Asix.Evo server has DNS address (e.g. turbina1.firma.pl) than the Asix Mobile address is:

`https://turbina1.firma.pl/mobile`

5.2. Running the Application in the Smartphone/Tablet Browser

Launch Chrome browser on phone with Android 4.1+ or Safari browser on iPhone. When the browser is launched enter correct address of Asix Mobile application in the browser address bar.

When loading finishes, Asix Mobile Application is ready to use. However, the browser toolbars limit the available space significantly. That's why one more operation must be done in order to have the application launched in full screen mode.

In Android system select **Add to homescreen** option from the browser menu. If this option is not present in the browser, please download update for Chrome from Google Play.

In iOS system select the option of going to homescreen from the browser menu. This command adds Asix Mobile icon to the browser home screen. Now, you don't need to launch the browser and enter the address, all you need to do is to click on the application icon.

5.3. Running the Application in the browser on Windows

In order to run the application on Windows you may use Google Chrome or Mozilla Firefox browser. Internet Explorer and Microsoft Edge browsers are not supported.

When the browser is launched enter the address of Asix Mobile application in the browser address bar. If the browser is run on the same PC station as Asix.Evo server, you may enter the address:

`http://127.0.0.1/mobile`

6. Logging in

After first launch of Asix Mobile application the login window appears. Enter user name and password defined in Asix.Evo application. The user must have permission to log in Asix Mobile module.

The last option is *Keep me signed in*. If it is enabled, next time you launch the application, the login screen will not be displayed and the first diagram of the application will be loaded.

7. Navigation

Once logged in, the default diagram is displayed which enables the user to switch to other diagrams (if configured) by clicking the linked icon .

Switching back to a previous diagram may be done with the use of the button  on the upper bar of the application. For this purpose never use the navigation options of the Internet browser.

The list of all available diagrams may be displayed by clicking the [Show list of all diagrams](#) in the hamburger menu  on the upper bar of the application.

8. Application Development

The application development involves diagram creation, selection of the default diagram and customization of the segment default style (if needed). In order to execute these operations the user must have the *Asix Mobile: Edit diagrams and options* permission.

All diagrams and settings of the Asix Mobile application are stored on the Asix.Evo server. The Asix.Evo application directory contains an AsixMobile subdirectory in which all data is stored. There is no data of the Asix Mobile application stored in the browser.

8.1. Diagram Creation

In order to create a new diagram, select the option **Create New** in the application menu.

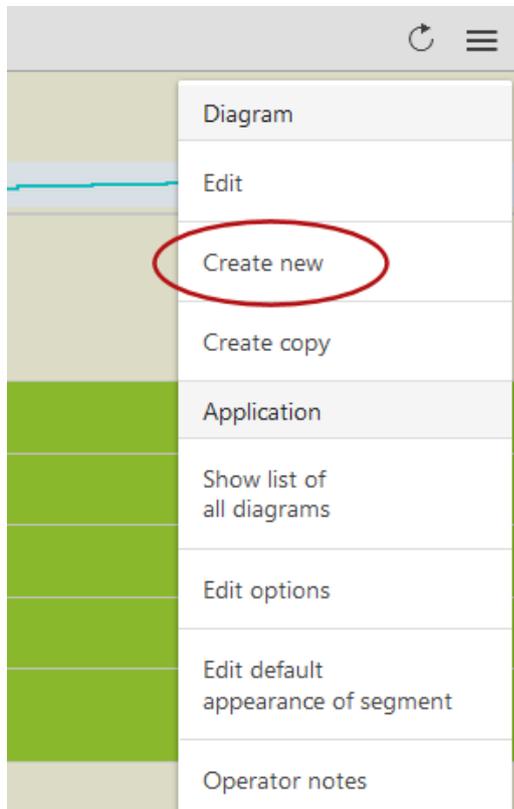


Fig. Application Main Menu - New Diagram Creation Command.

This command opens the diagram editor. It contains two tabs: **Properties** and **Segments**. **Save** and **Cancel** buttons are also available.

Clicking the **Save** button will finish editing the diagram and save it on the server. Clicking the **Cancel** button will close the editor without saving the diagram.

In the **Properties** tab the user has to fill the **Diagram Name** box. The diagram will be saved on the server under this name. This name will also appear in the diagram title box. The user can also fill the **Diagram Title** box in order to specify a title different from the diagram name.

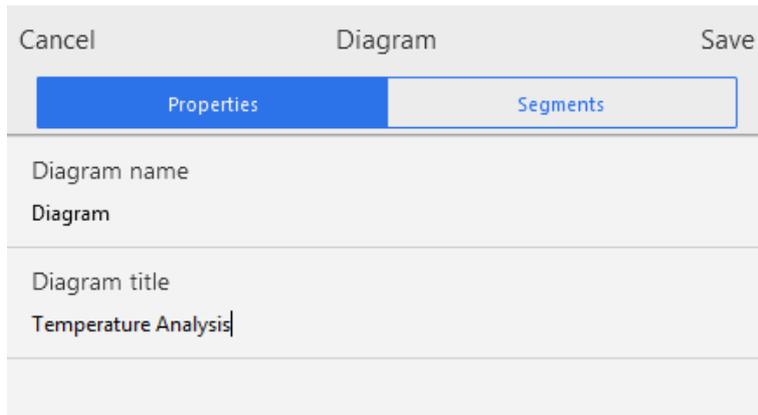


Fig. Edit Diagram Window - Properties Tab.

The content of the diagram is edited in the **Segments** tab. When you switch to this tab, three tools will appear. The "Minus" tool  activates the segment remove mode, the "Plus" tool  adds a new segment to the diagram, the „stack” tool  is used to enable the segment sequence change mode.

Click this button after adding a new segment in order to go to the segment editor.

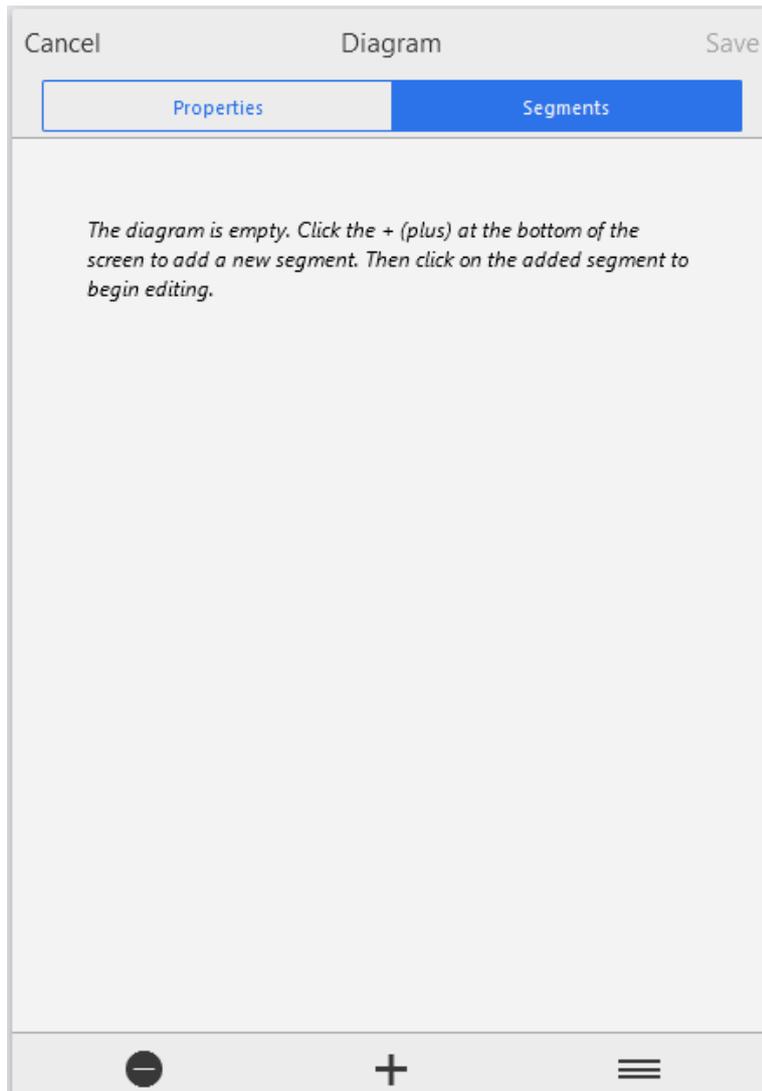


Fig. Edit Diagram Window - Segment Tab.

8.2. Segment Editing

The segment editor consist of three tabs: *Contents*, *Elements* and *Appearance*, *Ok* and *Cancel* buttons are also available.

Cancel		Segment		OK
Contents		Elements		Appearance
Segment kind				Variable ▾
				Variable
Variable				Alarm
				Link
				Text
Name	Required			
Type				Number ▾
Attributes				
Title				
Description				
New segment				
Unit				
Minimum	0			▴ ▾
Maximum	100			▴ ▾
Number of decimal				

Fig. Edit Segment Window - View of the 'Contents' Tab.

Clicking the *Ok* button will finish editing the segment and return to editing the diagram. Clicking the *Cancel* button brings the user back to diagram editing and will discard any changes made in the segment.

The *Contents* tab contains basic options defining the segment contents. The first one is *Segment Kind*. The following segment data types are available:

- Text,
- Link,

- Alarm,
- Variable.

Further options are available depending on the selected segment type.

The *Elements* tab allows parameterization of the content and appearance of the segment visualization elements.

The *Appearance* tab enables parameterization of the background appearance, title and segment description. You can change the background colour, colour and size of the fonts and turn on bold fonts.

8.2.1. Text Segment

Text segment is the simplest type of segment. Its content is composed only of two elements: **Title** and **Description**. The Text segment is used to place in the diagram additional text information for the user or for visual grouping of segments that display process data.

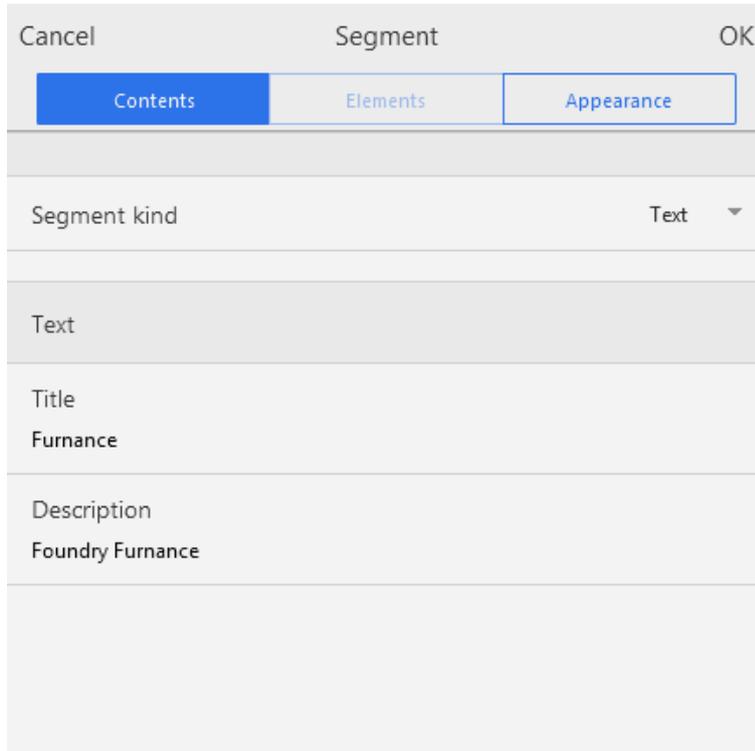


Fig. Edit Segment Window for the Text Data Type.

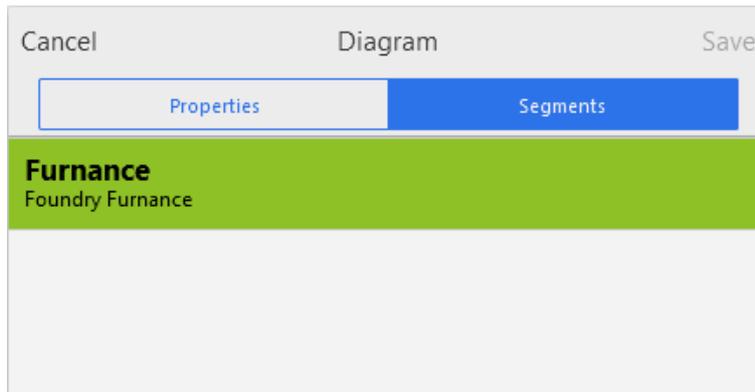


Fig. View of the Text Segment.

8.2.2. Link Segment

Link segment allows you to navigate from the current to the next diagram. It is used to create distribution diagrams, leading the user to the next diagrams that display information from the selected section of the Asix.Evo application.

Apart from the elements: *Title*, *Description*, the segment requires to specify a name of the destination diagram in the *The name of the diagram the link goes to* box. As a result, an arrow appears on the right side of the diagram on which the segment of a Link type will be placed, indicating the possibility to move to another diagram.

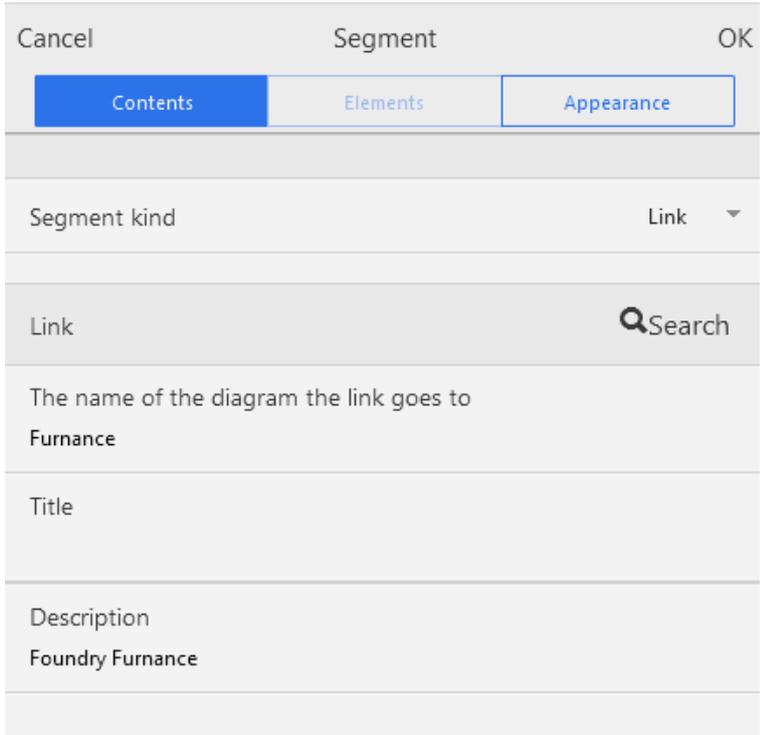


Fig. Edit Segment Window for the Link Data Type.

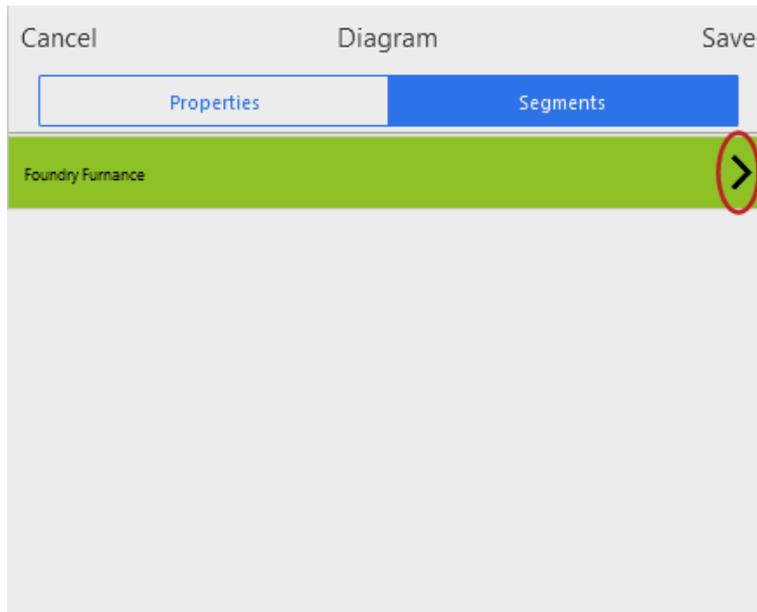


Fig. View of a Link to Another Diagram.

8.2.3. Alarm Segment

Alarm segment allows you to view the state of one alarm. The most important segment options are the **Alarms Domain Name**, to which the alarm and the **Alarm Name** belong. The other options are: **Title** and **Description** of the segment.

The simplest way to carry out segment parameterization is by pressing the key **Search**. An alarm selection window featuring the alarms from the alarm definition database is displayed. The search box is at the top of the window. After entering there part of the name or description of the alarm, the database is searched and returns a list of matching alarm definitions. Clicking a line of the list will close the window and fill in the option segment with data from the selected alarm line.

The screenshot shows a mobile application window titled "Segment" with "Cancel" on the left and "OK" on the right. Below the title bar are three tabs: "Contents" (highlighted in blue), "Elements", and "Appearance". The main content area contains several rows of data:

- Segment kind: Alarm (with a dropdown arrow)
- Alarm: (with a search icon and the text "Search")
- Alarms domain name: EVO_Factory
- Alarm name: Alarm no. 001
- Title: Alarm no. 001
- Description: TRZAH-17a The flue gas temperature before demister - MAXK

Fig. Edit Segment Window for the Alarm Data Type.

The screenshot shows a mobile application window titled "Boiler K7" with a back arrow on the left and refresh and menu icons on the right. Below the title bar is a dark notification card with the following text:

- Alarm no. 001**
- TRZAH-17a The flue gas temperature before demister - MAXK

A bell icon is visible on the right side of the notification card.

Fig. View of the Alarm Segment.

8.2.3.1. Alarm State

This segment displays as icons one of the three states in which an alarm can be:

-  Inactive
-  Active and unacknowledged
-  Active and acknowledged

Clicking the alarm segment opens the alarm state window which displays detailed information about the alarm.

Alarm	
Alarm no. 001 TRZAH-17a The flue gas temperature before demister - MAXK	
State	
Active	No
Description	
End	
Detection	
Acknowledgement	
Acknowledged	No I want to acknowledge
<div style="display: flex; justify-content: space-around;">  Application  My diagrams  Serwer </div>	

Fig. Alarm state information window.

8.2.3.2. Alarm Acknowledgement

The acknowledgement window is used to confirm the alarm. It is available after opening the alarm state window and clicking the *I want to acknowledge* button. The following conditions must be met in order to make this button available:

- the user must have the permission to acknowledge alarms;
- the alarm must be active and unacknowledged.

In the acknowledgement window you can optionally enter a note in the *Note* box. Pressing the *Acknowledge* button will send a confirmation to the Asix.Evo application. After a while, a message informing about sending an acknowledgement or an error message, if unsuccessful, appears below.

Acknowledging an alarm	
Alarm no. 001 TRZAH-17a The flue gas temperature before demister - MAXK	
Acknowledgement	
User	admin
Station	Asix Mobile
The note is not obligatory	
Note	
Close	Acknowledge
The operation was completed successfully	

Fig. Alarm Acknowledgement Window Including a Message that the Acknowledgement Operation Has Been Made.

8.2.4. Variable Segment

Variable Segment enables to display the status of a single variable.

The major option of the segment is the name of the variable **Name**. It is also necessary to specify the type of the variable **Type**, depending on which additional variable attributes requiring parameterization will be displayed. The available variable types include:

- Number,
- Binary value,
- Bits,
- Text.

The options available for each variable type are the segment title **Title** and segment description **Description**.

The simplest way to carry out segment parameterization is by pressing the key **Search**. A variable selection window featuring the variables from the variable definition database is displayed. At the top of the window a search bar is displayed. Enter part of the name or description into it - on the basis of this criterion the database will be searched and a list of matching variable definitions will be returned. Clicking a line of the list closes the window and fills in the segment options.

Cancel		Segment		OK	
Contents		Elements		Appearance	
Segment kind		Variable		▼	
Variable		Search			
Name		A084			
Type		Number		▼	
Attributes					
Title		A084			
Description		Poziom w zbiorniku cyrkulacyjnym kwasu			
Unit		%			
Minimum		10		↕	
Maximum		100		↕	
Number of decimal places		1		↕	
Control					
You can control the variable				<input checked="" type="checkbox"/>	
Control another variable				<input checked="" type="checkbox"/>	
Controlled variable		Search			
Name		A084			
Type		Number		▼	
Minimum		0		↕	
Maximum		100		↕	

Fig. Edit Segment Window for Data Type - Variable.

8.2.4.1. Number Type Variable

The available visualization methods for a Number type variable include:

- Value,
- Gauge,
- Bar,
- Chart.

In addition to the standard attributes of a variable segment, the edit segment window of a Variable of Number type enables to edit the following attributes typical for the Number type:

- **Unit,**
- **Minimum,**
- **Maximum,**
- **Number of Decimal Places.**

The visualization methods for a Number type variable are defined in the tab **Elements**.

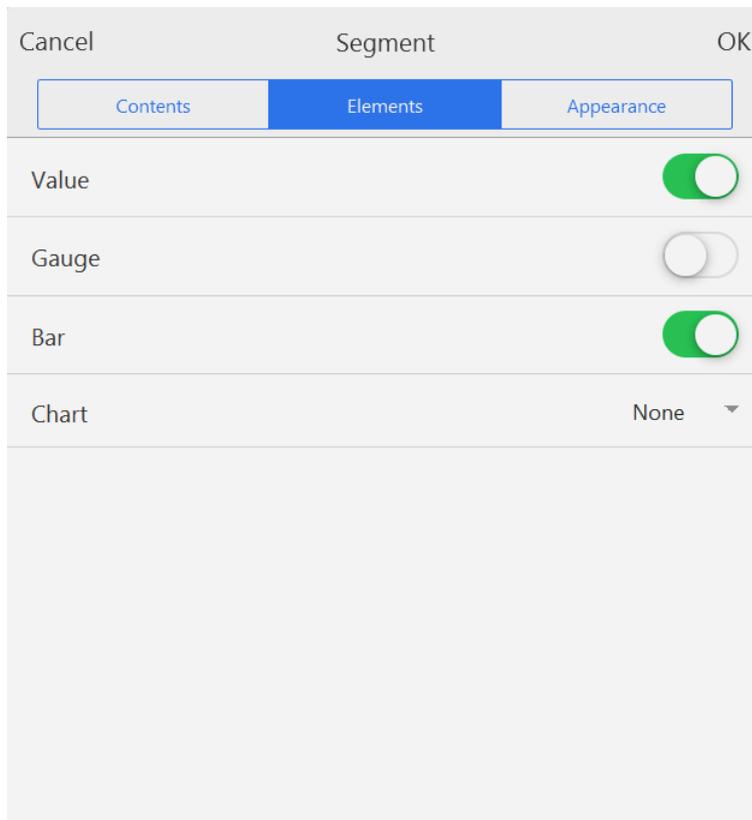


Fig. Definition Window of the Number Type Variable Segment - Selection of Visualization Method.

Value displays the numerical value of a variable rounded to the specified number of decimal places. The unit is displayed under the numerical value.

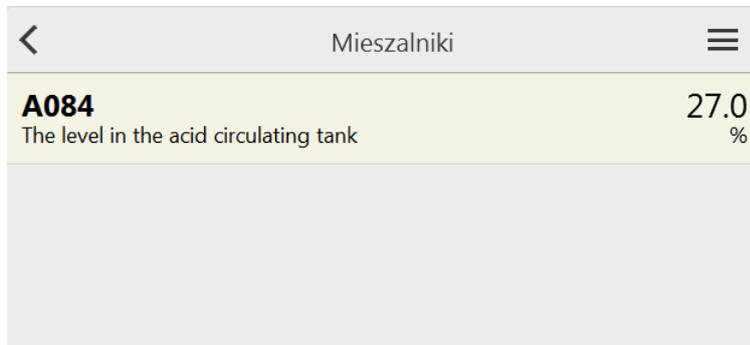


Fig. View of the Number Type Variable Segment - in the Form of Values.

Gauge displays the variable value in the form a gauge scale reading. The range of the gauge scale is specified by the options **Minimum** and **Maximum**. Additionally, if alert and alarm thresholds are specified in the variable definition database, then the gauge scale is coloured in a way reflecting the alert and alarm values.

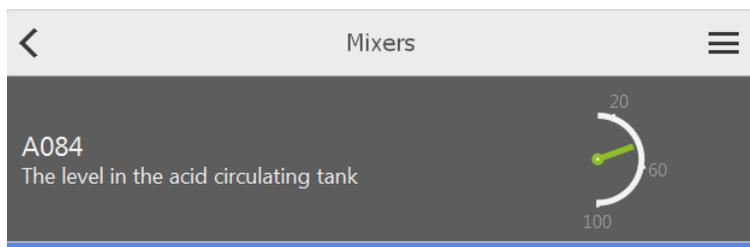


Fig. View of the Number Type Variable Segment - in the Form of a Gauge.

Bar displays the variable value in the form of indication on the horizontal bar graph scale. The range of the bar graph scale is specified by the options **Minimum** and **Maximum**. Additionally, if alert and alarm thresholds are specified in the application, then the bar graph scale is coloured in a way reflecting the alert and alarm values.



Fig. View of the Number Type Variable Segment - in the Form of a Bar Graph.

Chart displays the history of the recent variable values in the form of a chart. It can be a complete chart featuring the axes and grid in addition to the values presented, or a mini chart illustrating the values only.

The form of the chart requires defining the following attributes:

- **Chart Type** (Line, Area, Line stairs, Area stairs),
- **Data Type**,
- **Data Period**.

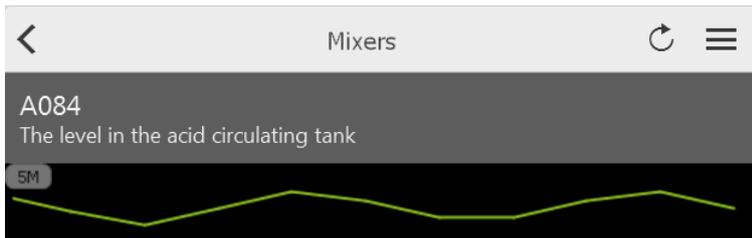


Fig. View of the Number Type Variable Segment - in the Form of a Mini Chart.

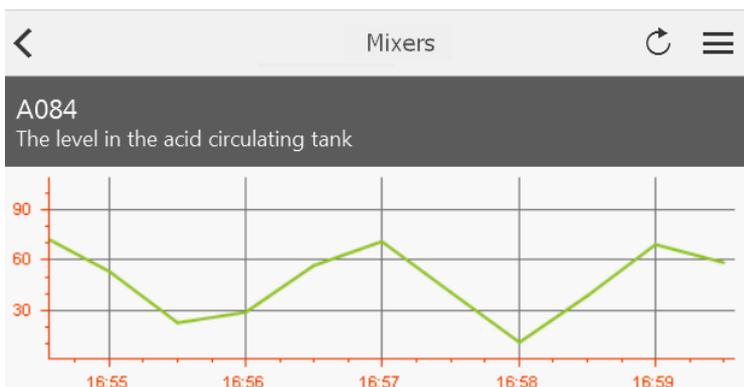


Fig. View of the Number Type Variable Segment - in the Form of a Complete Chart.

8.2.4.2. Binary Value Type Variable

The available visualization methods for a Binary value type variable include:

- Value,
- Value as a switch,
- Chart.

In addition to the standard attributes of a variable segment, the edit segment window of a Variable of Binary value type enables to edit the following attributes typical for the Binary value:

- **Label 0**,
- **Label 1**.

The visualization methods for a Binary value type variable are defined in the tab **Elements**.

This value displays the numerical value of the variable, that is 0 or 1. Providing the values of the options for **Label 0** and **Label 1** it is possible to replace the 0/1 values with user defined labels.

The value presented in the form of a switch displays the measurement value as a switch icon, where 0 is represented as the switch open and 1 is represented as the switch closed.

The chart displays the history of the recent variable values in the form of a chart. It can be a complete chart featuring the axes and grid in addition to the values presented, or a mini chart illustrating the values only.



Fig. View of the Binary Value Type Variable Segment - in the Form of a Value.



Fig. View of the Binary Value Type Variable Segment - in the Form of a Switch.



8.2.4.3. Bit Type Variable

The available visualization methods for a Bit type variable include:

- state text,
and/or
- state image.

In addition to the standard attributes of a variable segment, the edit segment window of a Variable of Bit type requires defining a list of bit states. The active state is established through matching the current variable value with one of the states. The active state specifies what is to be displayed in the segment as the current variable value.

In order to edit bit states it is necessary to add a bit state line in the tab *Elements* using the button **+**, and then to open the window *State Editor*, launched by double clicking the bit state line or using the button .

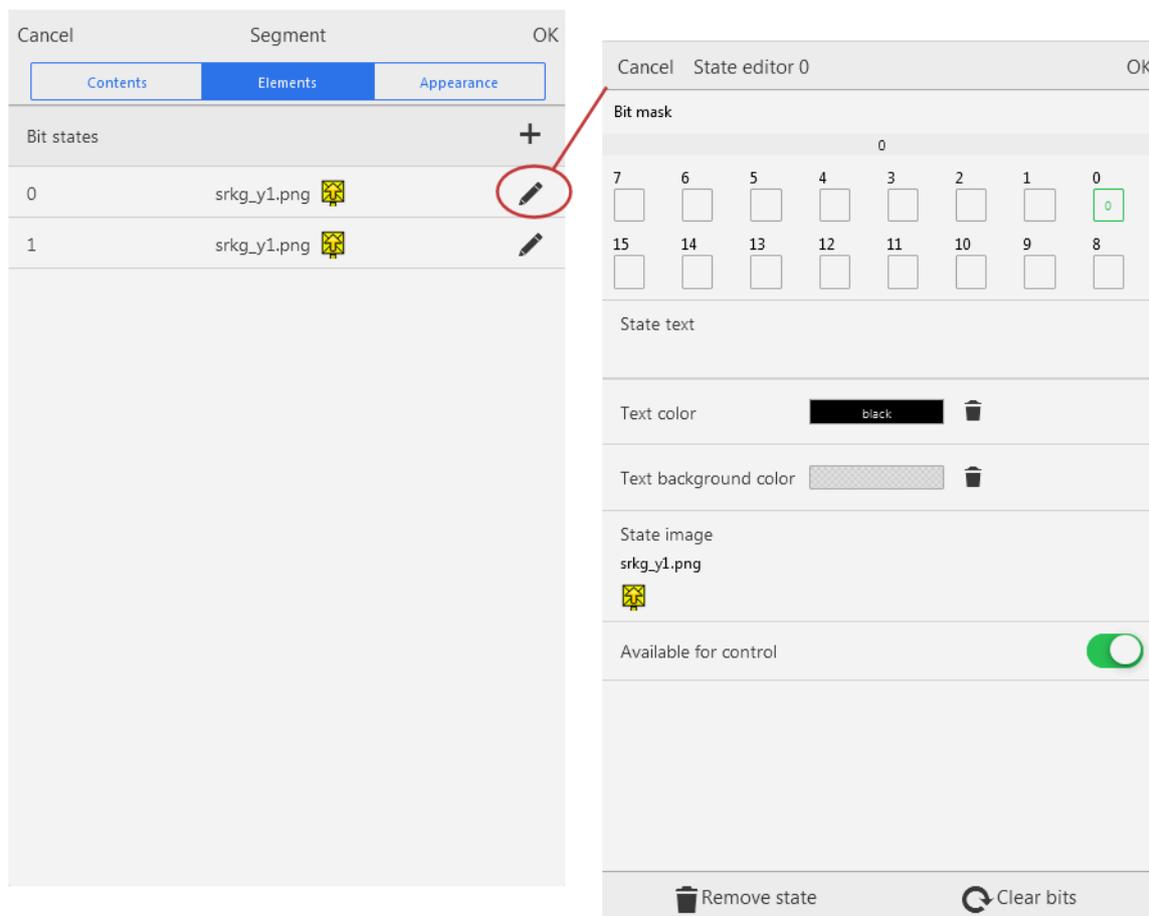


Fig. Bit State Edit Window.

The definition of each state includes a Bit mask, *State Text* and/or *State Image*.

The image is defined by entering a file name in the box *State Image*.

It is also possible to define *Text Color* and *Text Background Color*.

The Bit mask is a string of characters specifying the required bit state which must occur in the variable value so that a state becomes the active state. The available mask characters include:

- - bit value is of no importance,

1 - bit must be set,

0 - bit must be reset to zero,

State text is the text displayed in the segment when the state is active.

If the option *Available for Control* is enabled for a state, then the state can be sent to a variable in the control window.

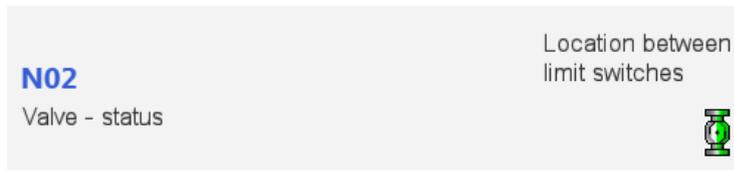


Fig. View of the Bits Value Type Variable Segment.

8.2.4.4. Text Type Variable

The only visualization method available for a Text type variable is the Variable value in the tab *Elements*.

The main difference between a Text and Number variable is, apart from a limited number of visualization components available, a different way the variable control panel operates, which is described below.



Fig. View of the Text Type Variable Segment.

8.2.4.5. Variable Control

Variable control is carried out using the control window. It is displayed by clicking a diagram segment. In order for the control window to be available, the following conditions must be met:

- the user must have the control rights,
- the option *You can control the variable* must be enabled for the segment.

If these conditions are met, the segment features a special control background (yellow by default) to indicate that a control window for this segment is available.

The control window features different properties for each variable type. To a Number type variable any numerical value from the specified variable range can be assigned. The value can also be selected using the slider. Pressing the button *Acknowledge* sends the new variable value to the Asix.Evo Application. After a while, a message informing about sending a control signal or an error message, if unsuccessful, appears below.

For a Text type variable any text can be entered and sent.

For a Binary value type variable two buttons for the values 0 and 1 are displayed, used to select the value to be sent.

For a Bit type variable as many buttons are displayed as there are states available to be controlled.

8.2.4.6. Control Variable Other than Basic Variable

By default, control is exercised over the variable whose value is displayed in the segment. Yet, if the segment option *Control Other Variable* is enabled, then other options allowing to select another variable whose value is to be controlled are displayed.

The name of the variable *Name* and its type *Type* must be defined for the control variable. For a Number type variable the variable range can be specified. For a Binary value type variable the state labels 0/1 can be specified.

The Bit type variable is available only when the basic variable is of the Bit type, too. For control, the states defined for the basic variable are available.

8.2.5. Operator Notes Segment

Operator Notes window is used to view recent notes and create new ones by the application users. Each note consists of:

- Text - any content entered by the user,
- Location - every note is linked to a specific part of the application (installation),
- Flags of activity - used to mark new notes.

Notes created in Asix Mobile can be viewed in the desktop version of the Asix application. In particular, the notification mechanism about active notes is available.

In order to create a new note, select the option **Operator Notes** in the application menu.

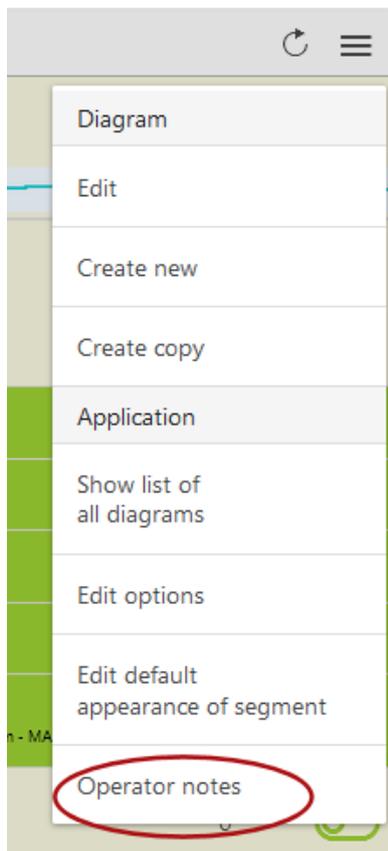


Fig. Application Main Menu - New Operator Notes Creation Command.

This command opens the list of created notes which can be viewed by the user. Then, the **New Note** command is available from the "hamburger" menu  located on the application upper window bar.

In the new note editor the user has to select **Segment** . Don't confuse the concept of a segment. In this usage it is the term of location of note onto the synoptic diagram, defined in the Asix desktop application (Asix.Evo.exe > *Security* > *Settings* > *Note Segments Definition*), only if *Central Security System* is used (Asix.Evo.exe > *Security* > *Settings* > *Mode*).

To enter the note text, use the **Note Content** box.

The **Active** switch is used to mark active notes.

Save and **Cancel** buttons are also available.

Clicking the **Save** button will finish editing the note and save it on the server. Clicking the **Cancel** button will close the editor without saving the note.

8.3. Start-up Diagram

After the user's login, the first diagram to be displayed is the diagram whose name is specified in the application option launched by the command *Edit options* from the "hamburger" menu  located on the application upper window bar, in the box *The name of the initial diagram*. If this option is empty, then after the user's login a list of diagrams is displayed. This option is available only to users having the "Asix Mobile: Edit diagrams and options" rights.

8.4. Customization of Default Segment Style

The command *Application > Edit Default Appearance of Segment* is available in the application menu. On selecting it, an edit window appears, allowing to change the following: segment background, control background, segment title and description font attributes, font attributes for displaying a normal variable value, error variable, variable thresholds, appearance of the switch, gauge and bar, colours of the chart and mini chart and colours of the alarm condition icons.

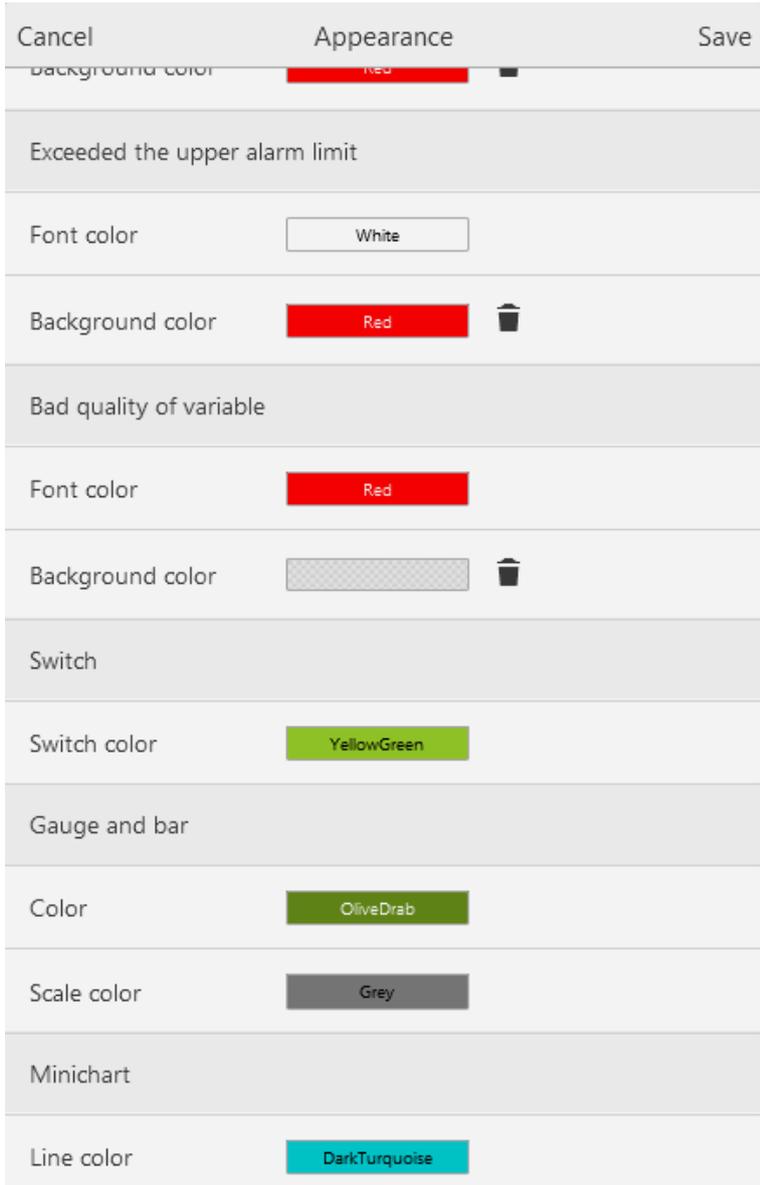


Fig. Default Segment Style Edit Window.

8.5. Diagram Refresh

The current values and alarms displayed in the diagram are periodically refreshed by default. It should be remembered while launching the application on a device which is connected to the Asix.Evo server through a GSM link. Opening a diagram causes a continuous transmission of small portions of data.

It is different in the case of charts, where historical data is visualized. After opening a diagram, charts displaying recently selected data are downloaded once. In order to refresh the charts, the refresh button  located in the upper right hand side corner of the screen should be pressed each time. This button is only visible when the diagram includes at least one chart.

9. Creating User-Defined Diagrams

The section of the Asix Mobile application available after pressing the button *My Diagrams*



in the bottom part of the screen is used to preview and manage the diagrams created by the user.

The diagrams available in this part of the application are different for each user, and no special rights are required to create them. User-defined diagrams, similar to the application diagrams, are stored on the server. This is why, independently from the device the user logs in from, he has access to the same set of diagrams.

Although diagrams can be created by the user, yet they can only display this process data which is available in the application diagrams.

9.1. List of Diagrams

The main window of the user's diagram section is a list of diagrams. The list is sorted alphabetically in line with the diagram names. Clicking a diagram name opens the diagram.

The menu of the list of diagrams enables to edit the list in order to either remove the diagrams that are no longer needed or create new ones.

The diagram menu features commands necessary to edit the current diagram, create a new diagram or copy the current diagram.

10. Server Information

The section of the Asix Mobile application available after pressing the button **Server**  in the bottom part of the screen is used to display information about the server to which the user is logged. The server name **Server Address** and logged user's name **User** are displayed. A button for the user's logout from the server is available.

Additionally, the button **Reload Application** enables to reload the application. The function should be used when the application diagram or the application settings have been modified from another computer.

In the upper section of the screen the current Asix Mobile version and the button **More** are displayed. Pressing the button opens a screen displaying detailed information about the Asix Mobile server and client.