



Akıllı Kontrolde Teknoloji Devi

ViewPLUS SCADA

User Manual

DOCUMENT NAME	DATE	VERSION
ViewPLUS_Manual_EN	05 / 2017	1.0

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Preface



Mikrodev MP201 and MP211 PLC series are programmable control devices that are used in a wide range of applications from process automation to building automation, from machine automation to telemetry applications.

In this document, you can find information about the function block library components used to program Mikrodev MP201/MP211 series PLCs.

Please follow our website www.mikrodev.com for the up to date version of the document.

About Mikrodev



Since 2006, MIKRODEV has been developing and manufacturing industrial control and communication products. MIKRODEV serves the system integrators in the public and private sector, OEM and end users.

Our products are manufactured complying with the quality standards required by the industrial automation industry and the quality of our products are proved on the field for many years

MIKRODEV is one of the few companies in the world that has its own designed IEC 61131-3 compliant library for its programmable logic control devices. In addition, the open, flexible, programmable SCADA solution developed by MIKRODEV is also available to customers.

MIKRODEV products' performance and wide range of applications make them possible for customers to achieve faster, simplified and cost-effective results.

WARNING!



- ✓ Use the programming editor only for Mikrodev Certified devices
- ✓ When you change your physical hardware configuration, update your development to the appropriate version.
- ✓ The developed program should be tested separately before taking to field service and should be shipped to the field after the tests are successfully completed.
- ✓ Take all accident prevention measures and safety measures identified by local law



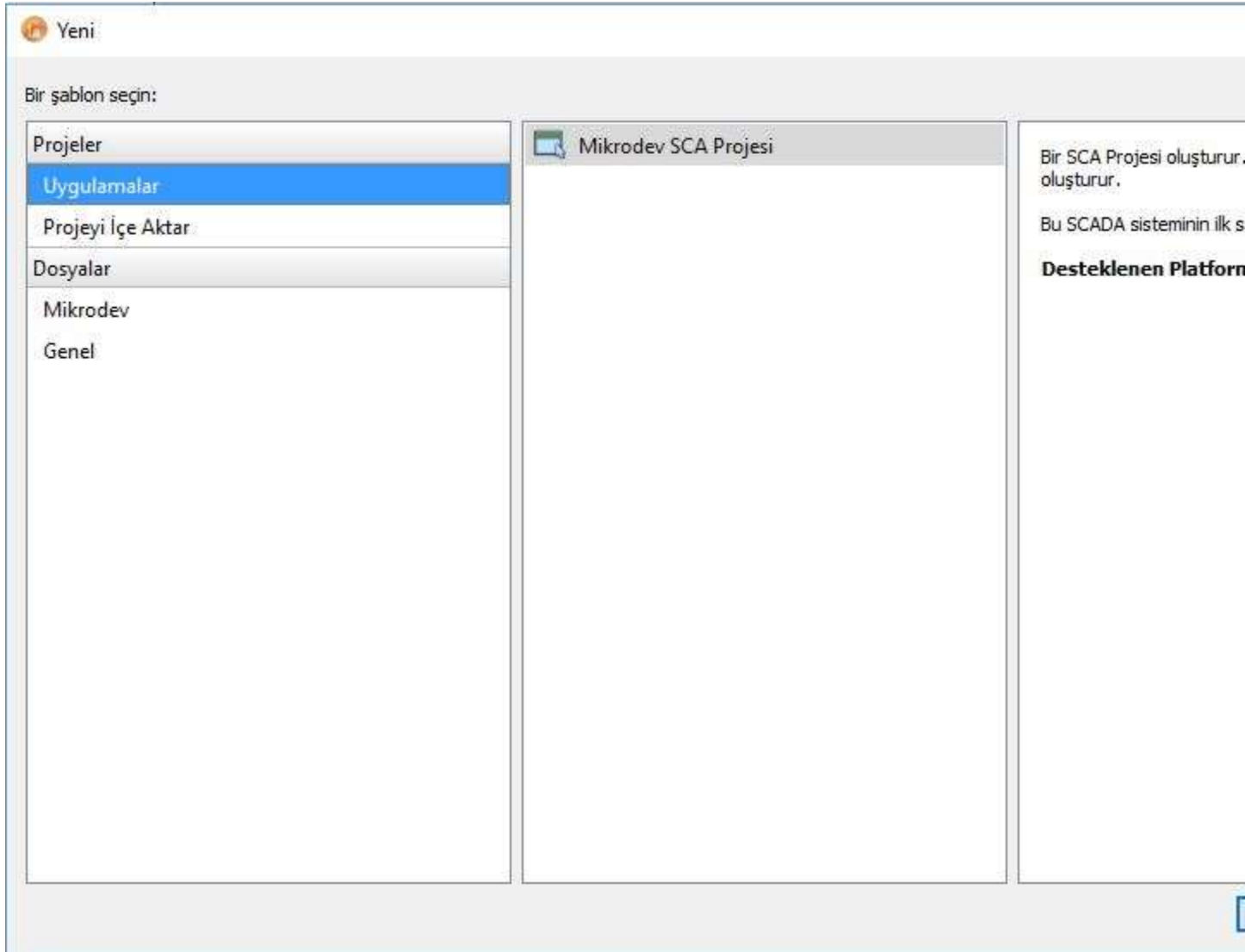
Failure to comply with these rules may result in death, serious injury or property damage

1 ViewPLUS Editor

1.1 Creating New Project

To create a new project:

- Select File>New File or Project > Mikrodev SCA Project



- Select project name and location.

Mikrodev SCA Projesi

Konum

Veritabanı Ayarları

Görünüm Ayarları

Özet

Giriş ve Proje Konumu

Bu sihirbaz bir Mikrodev SCA Projesi oluşturur.

İsim:

Oluşturma yeri:

Varsayılan proje konumu olarak kullan

- After entering the database username and password, you can verify the password by clicking the "Test Connection" button (if you will use PostgreSQL database and the PostgreSQL database is not installed on your system, you need to download and install the relevant version by clicking on "Download PgSQL" link. Likewise if you will use Oracle database, you need to install Oracle database on your system and download oracle runtime from [here](#).)

Mikrodev SCA Projesi

Konum

Veritabanı Ayarları

Görünüm Ayarları

Özet

SQLite

PostgreSQL

Sunucu Ayarları

SunucuAdresi

Veritabanı Kullanıcı Adı

Veritabanı Kullanıcı Şifresi

PgSQL 9.4 (Win x86-32)
yüklemeniz gerekli

[Download PgSQL](#)

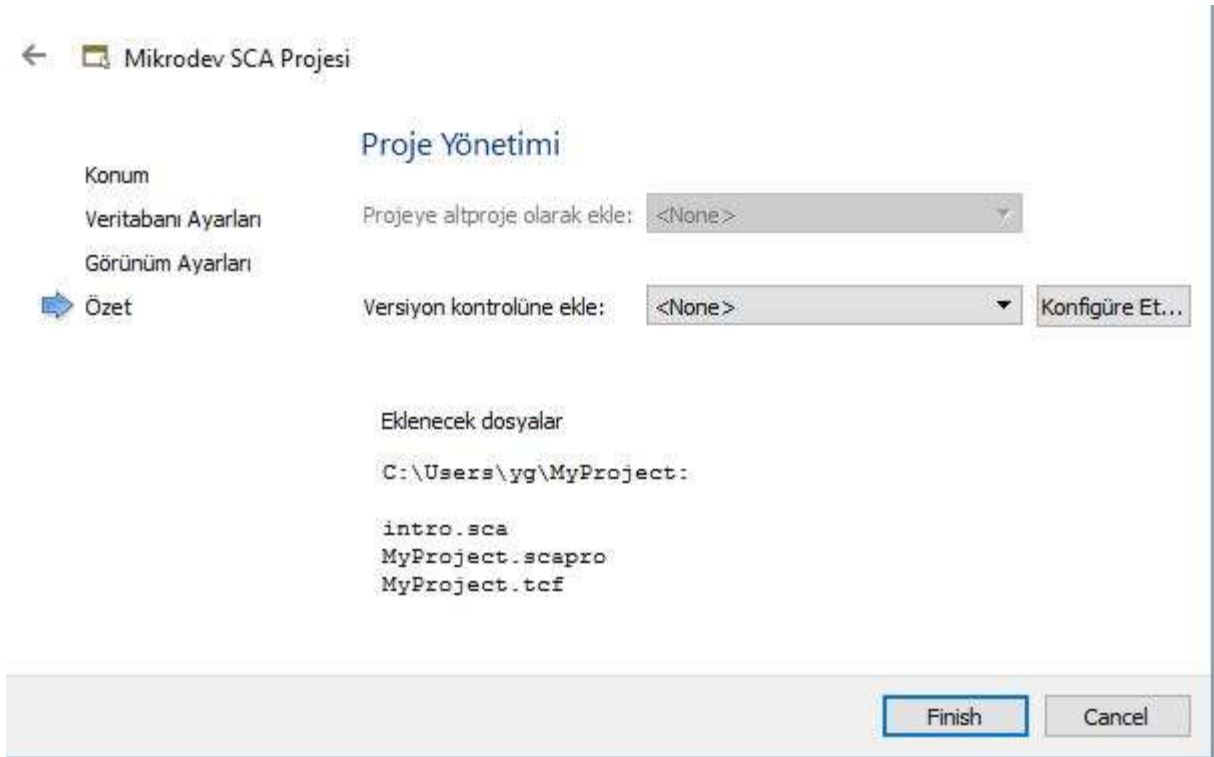
- The visual parameters such as screen color, default page size are set.

The screenshot shows the 'Mikrodev SCA Projesi' settings window. The 'Görünüm Ayarları' (Appearance Settings) section is active. It includes the following options:

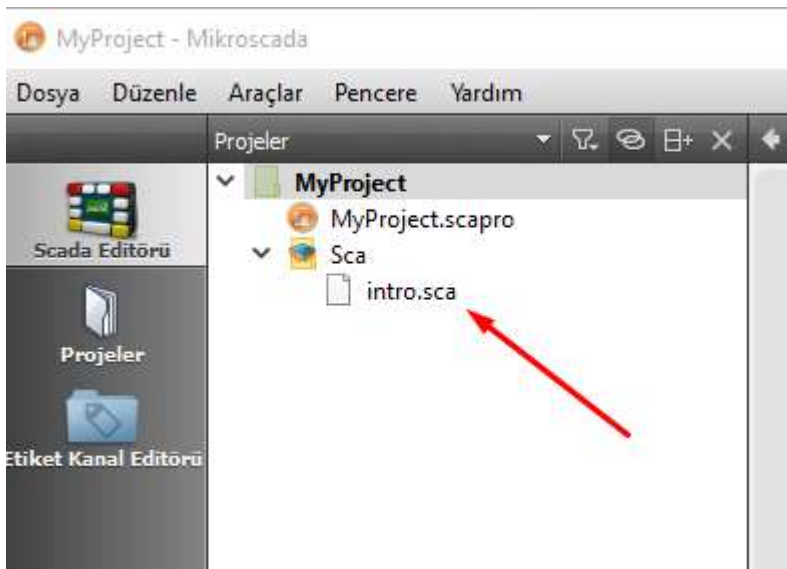
- Varsayılan Ekran Boyutu** (Default Screen Size):
 - Genişlik: 1280
 - Yükseklik: 1024
- Arkaplan Rengi** (Background Color):
 - Renk Seç: #ffffff
 - Sıfırla
- Görünüm** (Appearance):
 - Blok Numarasını Göster
 - Etiket Adını Göster
 - Tam Ekran Göster

At the bottom right, there are 'Next' and 'Cancel' buttons.

- If you are going to use the SVN version control tool on the next page, the settings will be adjusted accordingly.



- A new project is created by pressing the "Finish" button. The newly created project consists of 2 files. These are the files with the extension "scapro" where the project configuration parameters are stored. You do not need to make any changes to this file. The other file that is automatically created is the file named "intro.sca". You can design the main screen on this page.



- On the far left is navigation buttons that allow you to navigate through the editor's basic interfaces. Using these buttons, you can switch between the SCADA Editor view, Projects view and the Tag/channel Editor view. At the bottom of the navigation

buttons is the project selector. If more than one project is open at the same time on the editor, this button can be used to switch between projects



1.2 SCADA Editor View

1.2.1 Sidebar

The sidebar is available in the SCADA Editor view. Use the sidebar to browse projects, files and insert components.




Project files and components are controlled using panes on the left side of the editor. You can also filter and search the project files via the search box at the bottom of this panel. At the bottom left of the panel is a button that allows you to hide and show panels.



You can select the content of the sidebar in the sidebar menu:

- Projects shows a list of projects open in the current session.
- Open Documents shows currently open files.
- File System shows all files in the currently selected directory.

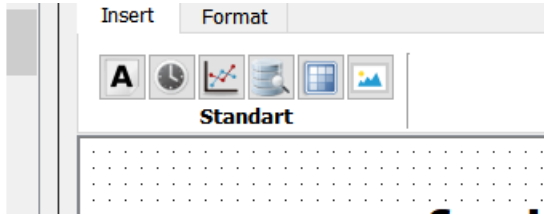
You can change the view of the sidebar in the following ways:

- To toggle the sidebar, click  (Hide Sidebar/Show Sidebar) or press Alt+0 (Cmd+0 on macOS).
- To split the sidebar, click  (Split). Select new content to view in the split view.
- To close a sidebar view, click  (Close).

1.2.2 Components

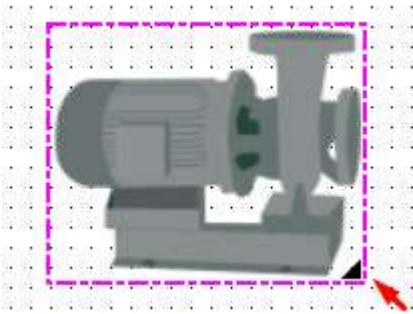
ViewPLUS SCADA offers components in different types for visualization of the displayed data. These are; basic components, timers, graphics, database query and text components.

The basic components are located in the "SCADA Components" pane in the left panel of the Editor. The other components can be created using the "components toolbar" on top of the editor window.



1.2.2.1 Basic Components

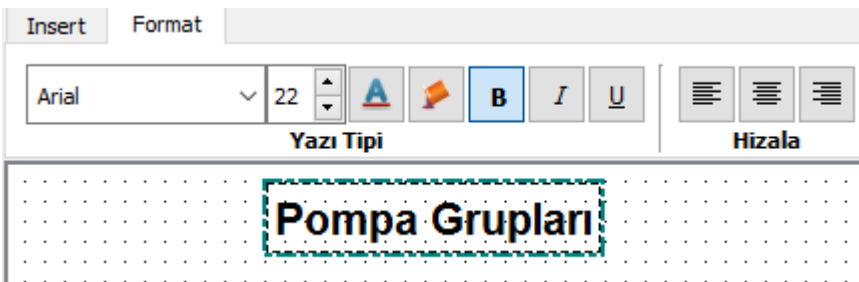
Using the "Component Manager", different objects that the user has defined can be added. To insert a component to the current page, press the left mouse button on one of the components in the panel, then press the desired position on the scene with the left mouse button again and the component is added.



To change the size of the added component, you can move the triangle icon in the lower right corner of the component with the mouse. "Object Properties Panel" is used to change the advanced properties of the component.

1.2.2.2 Text Component

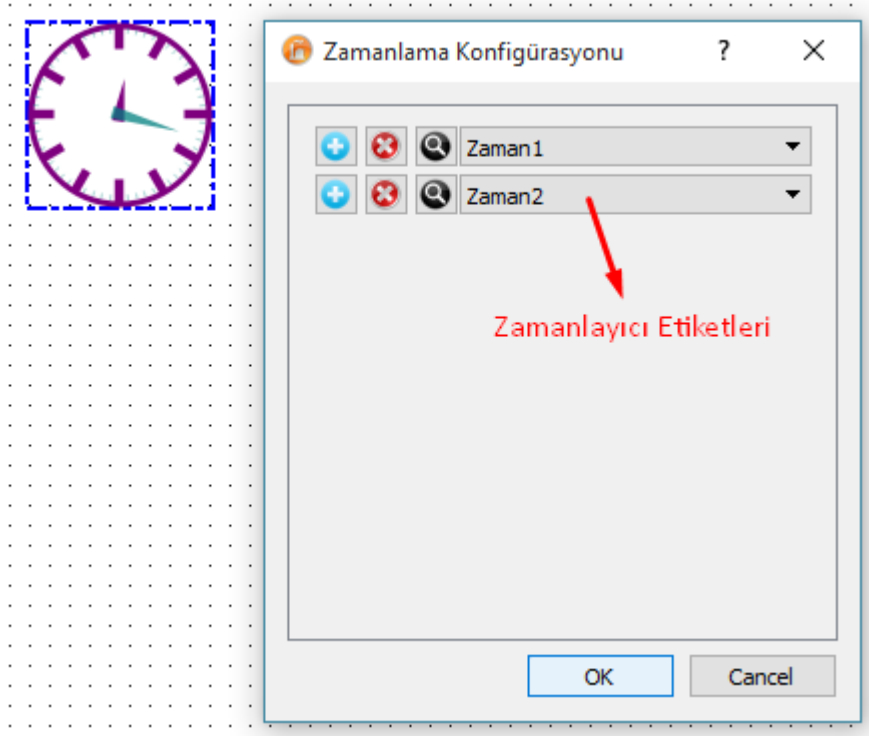
The text component is used to display text in different fonts, colors, and formats. Used for fixed text. You can change the formatting of the text in the "Format" tab in the toolbar.



You can show dynamic content on text component. Please refer to [Basic Scripting](#).

1.2.2.3 Timer Component

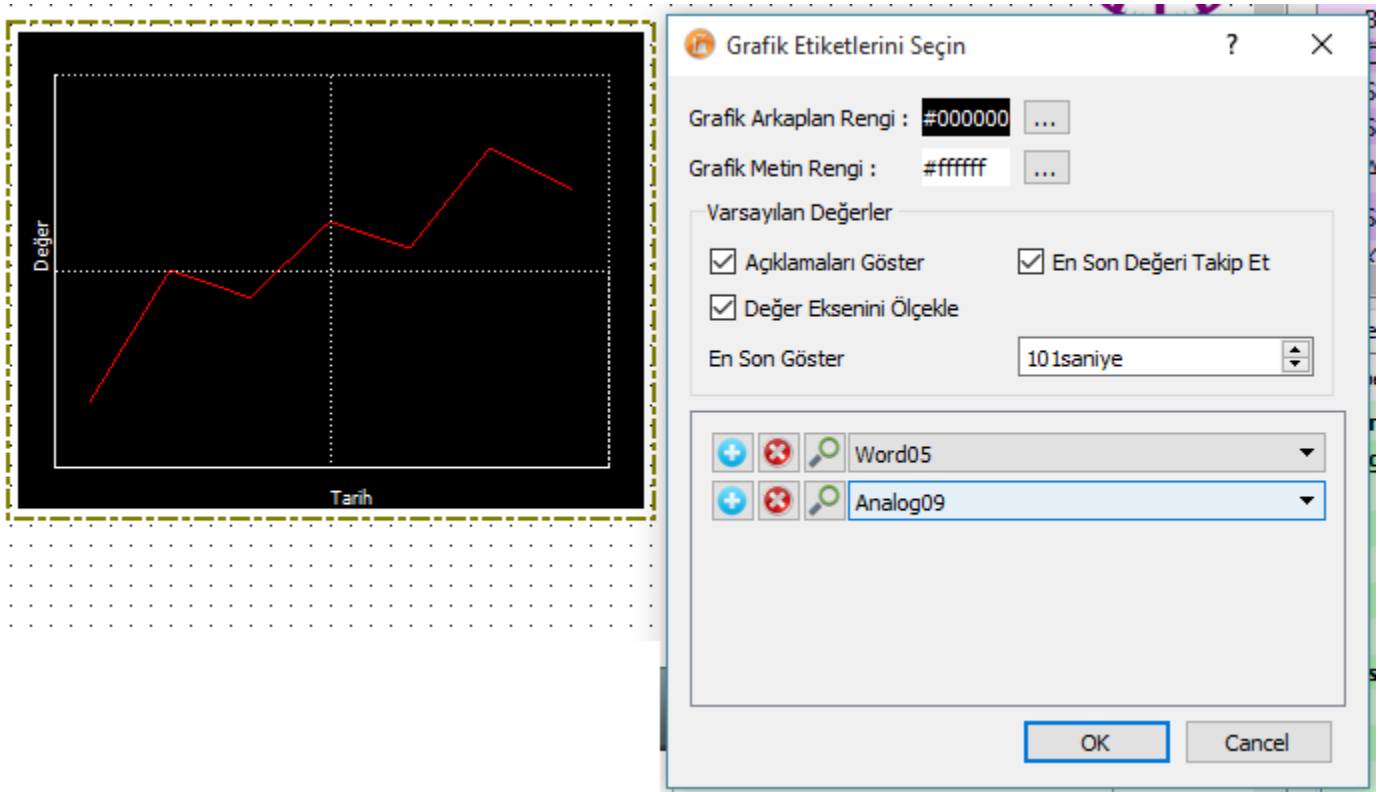
You can control the "Timer Blocks" that you have added to the PLC project with Mikrodiagram software via the "Timer" component. By adding "Timer Tags" you have defined in the Tag/Channel Editor to the timer component, users can change the timing settings through the client software.



1.2.2.4 Chart Component

Using the chart component, you can graphically view the data of the desired tags. Chart object displays graphs as lines or bar graphs. In the chart settings window, the chart's appearance, behavior, and parameters for the tags to be displayed can be set.

While only the last values of the tags added are shown on the bar chart; historical values of tags can be displayed on the line chart.



- **Chart View Type:** Sets how the chart will work.

Chart Component : Graphical representation of the added component.

Link to Chart : The added component only acts as a button. A separate window chart display is shown when pressed.

- **Chart Type:** Selective type for chart type

Line Grid : The trend data of the defined labels are drawn with different colors on the same chart . With new data read from the field, the chart is updated once in a second. Bar Chart: Defined tags are displayed in bar chart format. The chart is updated once in seconds.

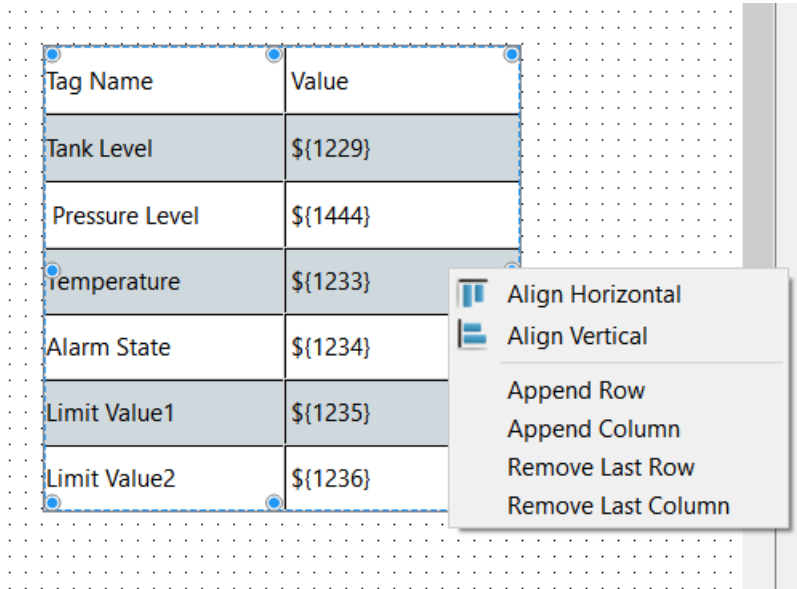
1.2.2.5 Database Query Component

This component allows the client to retrieve some specific queries from the database. In the Database query settings window, parameters related to the tag to be queried, query type, range, update frequency, and component visibility can be set.

Database Query Component

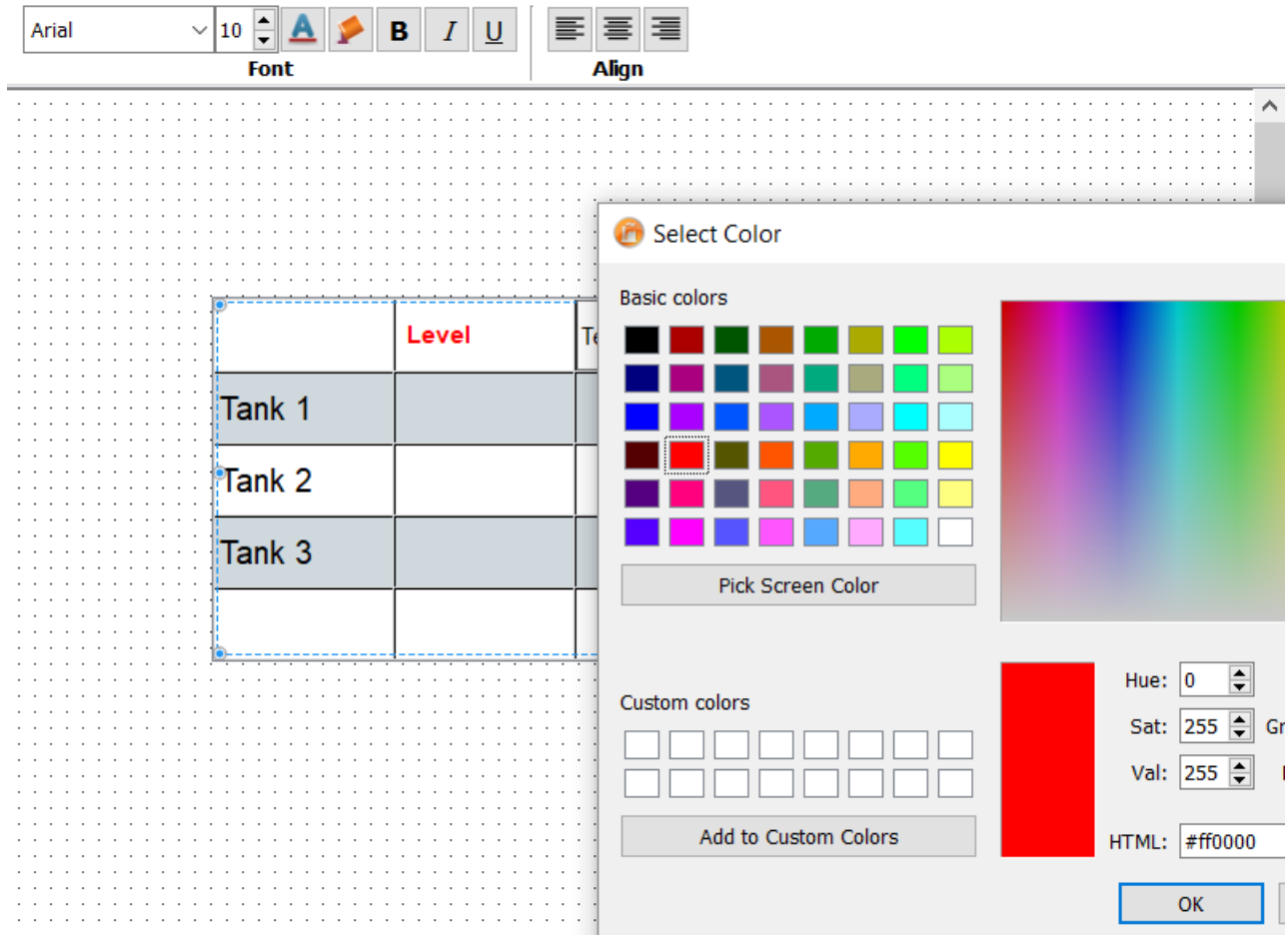
1.2.2.6 Table Component

You can display the data in tabular form on the table component. You can add and remove new columns / rows to table via the table menu .



1.2.2.6.1 Styling Table

You can set font and color for cell text using the format toolbar on the top of the editor:



You can also change the appearance of the table itself using stylesheets. Here is a sample stylesheet for changing row colors:

```
alternate-background-color:#ACA98;
background-color: #D3E3D0;
```

1.2.2.6.2 Formulas on Table

You can use excell like formulation on table cells. Please refer to [Basic Scripting](#) for inserting tag values into formulas

Supported functions are:

SIN
 COS
 TAN
 COT
 FABS
 LOG
 LOG10
 SQRT
 POW
 ROW
 COLUMN

PI
 SUM
 PRODUCT
 MIN
 MAX
 AVERAGE
 MEDIAN
 MODE

1.2.2.7 Image Component

You can add images into your view by using image component. You can resize, rotate and flip the added image.

1.2.3 Page Properties Panel

Page Properties		Layers	GIS Objects
Property	Value		
PageName	intro page		
PageID	3		
PageOrder	2		
PageType	ScadaTab		
GeoView	<input checked="" type="checkbox"/>		
GeoCenter	50.8962522,-1.3946777,12		
ScaleOnStart	Visible		
CustomPage...	<input checked="" type="checkbox"/>		
PageWidth	2500		
PageHeight	1500		
BgImage		<input type="text"/>	
PageIcon		<input type="text"/>	
Add Scroll T...	<input type="checkbox"/>		
Access Rights	...		

The basic settings for the page are set via this panel

Page Name

The name you want to appear for the page in the left panel on the client screen for pages set as tabs.

PageID

System-assigned unique ID for each page.

PageOrder

Sets the order in which the page will appear in the left panel on the client screen for pages set as tabs.

PageType

There are three different page types. "Tab" type pages appear as full screen on the client. At the same time, a button is created in the left-hand navigation panel that provides access to this page. Unlike the "Tab" for the "Linked Page" type, there is no button on the navigation panel. "Dialog" type pages are pages that are configured as popups to be opened in an action repository.

GeoView

Enables Google Maps api and shows the map. You should provide a map API key to be able to use this feature. First login to Google, go to [Google API Key Console](#) and select "Google Maps JavaScript API". After you get the key insert this into "Projects > Project File Paths > Map API Key"

GeoCenter

This option determines the initial position and zoom level of map when opened. It should be in that format : " Longitude,Latitude,ZoomLevel"

Scale at startup

Set how to scale scaling when the page is first opened on the client screen.

CustomSize

This option is checked if a different size will be used in the project settings instead of the default page size.

Page Width

Width for custom page size

Page Height

Height for custom page size

BackgroundImage

An image to be displayed on the client screen for the page in the left panel is displayed for the pages set as tabs.

Add Scroll Text

Adds a slip at the bottom of the page that allows you to show informative messages.

AccessRights

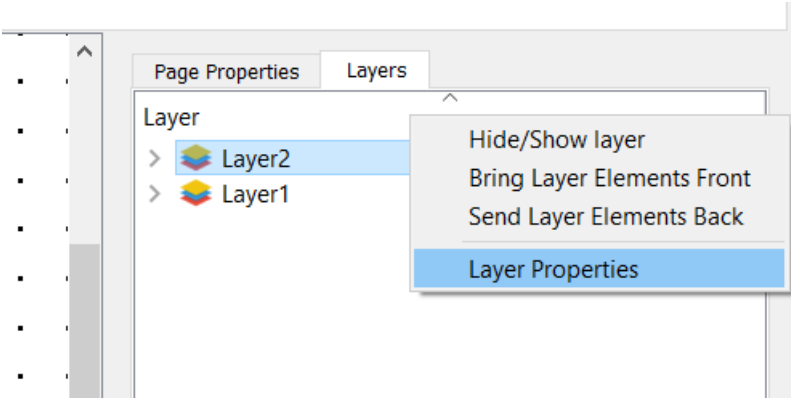
Different access rights can be defined to restrict access to the page. For users who do not have these rights, the page is not displayed.

1.2.4 Layers Panel

You can create or delete a new layer on the Layers panel. You can create a hierarchical layout on the page by creating components on the layers you create. You can make complex designs easier by hiding / showing layers. Another benefit provided by the layers is that the visibility of the layers at different zoom levels can be changed.

1.2.4.1 Hide / Show Layers

You can hide / show the layers you have added using the "Hide / Show Layer" option on the right-click menu of the mouse.



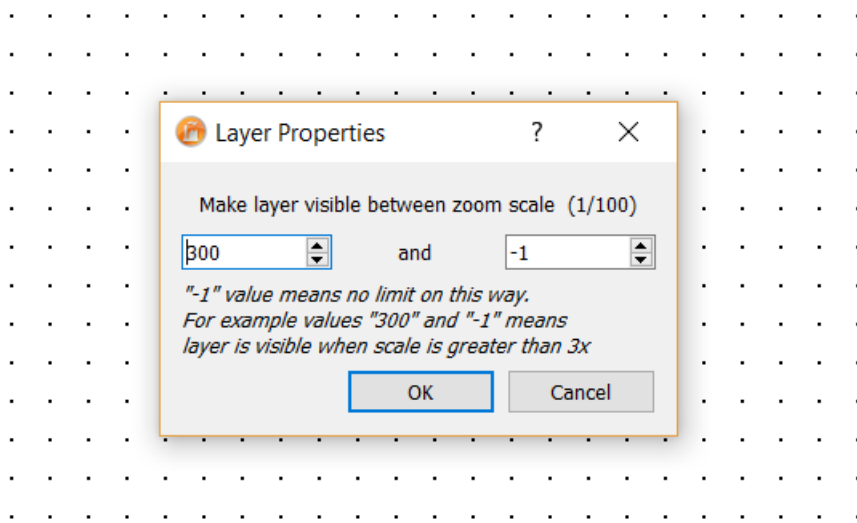
1.2.4.2 Changing the Order of the Components in the Layer

You can change the order of the layers that you have added using the "Bring Layer Components Front" or "Send Layer Components Back" options on the right mouse button menu.

1.2.4.3 Hide / Show Layers According to Scale Level

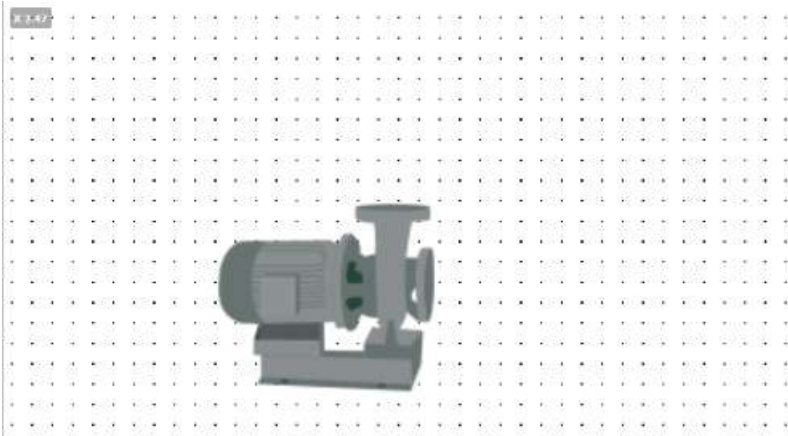
You can hide and show the layers defined on the page according to the scale level of the screen. On this scale, you can display more detailed information components when the scale level increases, but you can reduce the complexity of the design and make it easier to use by showing fewer components when the scale level increases. To do this, first select "Layer Properties" in the "Layers Panel"

In the dialog that appears, there are two fields showing scale level parameters.

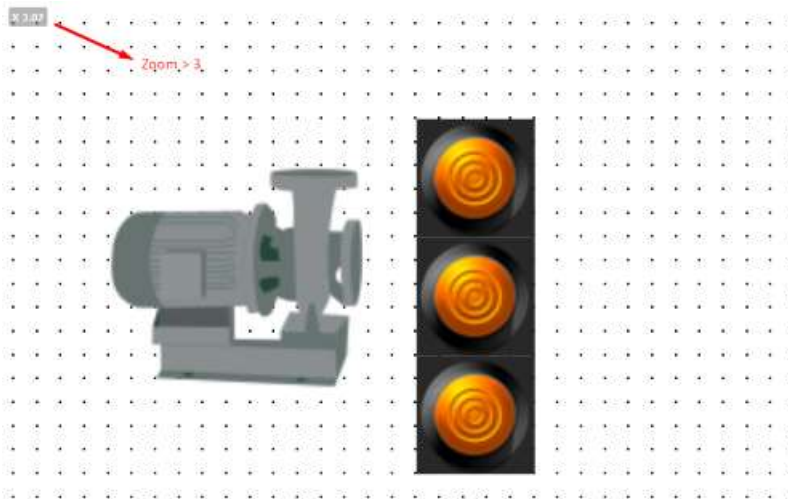


The layer will be visible between the two scale values to be entered here. If you define one of the values as "-1", the layer will be continuously visible in this direction regardless of the scale. For example, if values of "300" and "-1" are considered, the result will be like that: "Make the layer visible if the scale is greater than 3"

The scale is smaller than '3':

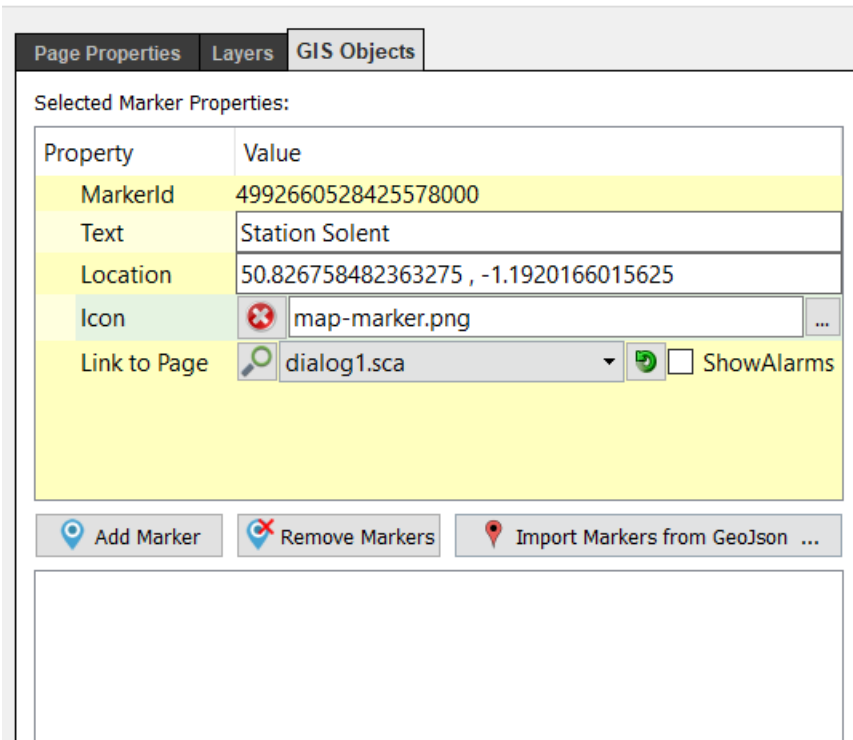


The scale is higher than '3':



As you can see in the picture, when the scale value goes up to '3', the layer with the buttons becomes visible.

1.2.5 GIS Objects Panel



You can edit your maps using this panel.

Text

The marker's name that will show up on map.

Location

The marker's location on map. It should be in "Longitude, Latitude" format

Icon

Custom marker icon to be used on map

Link to Page

Select a page link to go when the marker is clicked.

Add Marker Button

Click on the map after selecting this button to insert a new marker

Remove Markers Button

Click on the map after selecting this button to remove markers

Import Markers from GeoJson Button

You can import markers from a geoJson file using this button. Go to <http://geojson.io> for more information.

1.2.6 Object Properties Panel

It is a panel that allows you to adjust the SCADA objects added to the page.

Nesne Özellikleri	Etiketler	Diğer
Property	Değer	
nesneAdı	İsimlik(cm)_0	
objeTipi	İsimlik(cm)	
geometri		
X	160	
Y	120	
Genişlik	298	
Yükseklik	76	
Rotasyon	0	
sabitler		
Yazı X Of...	50	
Yazı Y Of...	20	
Yazı İçeriği	%3f	
Yazı Stils...	font: 22px "Arial";	...
Metin Ge...	298	
olaylar		
Olay Tipi	FareTuşunaBasıldı	
Olay Aksi...	DEĞERİYÜKLE	
Hedef Ol...	tag4	
Sayfaya Git	dialog1.sca	<input checked="" type="checkbox"/> Alarmları Göster

Object Name

A name that makes it easy to distinguish the object.

ObjectType

Represents the component type of the object.

Geometry

The position of the object on the screen is the parameters related to the scale and rotation. The top leftmost point of the page is positioned by accepting the point (0,0). Position value increases down and to the right.

Constants

Contains some settings related to the appearance of the object.

Font X Offset : Used to add a horizontal offset to the position of the text to be printed on the object, relative to the upper left corner of the object.

Font Offset : Used to add a vertical offset to the position of the text to be printed on the object, relative to the upper left corner of the object.

Text Content : It is the field in which the display format of the "Text Label" defined in "Feature Tags" is configured. The "formatted" text entered here is printed on the component. The text to be entered must be in "printf text format". The following examples can be used for formatting:


```
Integer           :% d    => "1977"
Add leading spaces :% 10d => "1977"
Add a leading zero :% 010d => "0000001977"
Float numbers     :% 4.2f => "3.14"
```

You can also display date/time values read from a 'seconds' source in desired format. To achieve this you can use "%dt(...)" notation. "%dt(...)" notation assumes that the tag value is in seconds:

Date is : %dt(dd.MM.yyyy / hh:mm) will be displayed as:

Date is : 13.05.2017 / 12:24

For different formatting styles please refer to [Date/Time Formatting](#) section [Font Style Sheet](#) : By setting the style sheet for the "Font Content" to be displayed, you can make settings such as font, font size and color [-generator.html](#) Here some examples can be found.

[Text Width](#) : The maximum width of the text to be displayed on the component.

- **Events:** Contains user interaction settings.

[Event Type](#) : The parameter that determines when the event will be fired.

MousePressed: Left mouse button press event

MouseReleased: Left mouse button release event Keystroke: Keyboard push event

[Event Action](#) : When "Event Type" is triggered, the function to be operated is selected.

SET : Sets the value of "Target Event Tag" to "1". CLEAR: Makes the value of "Target Event Tag" "0".

CHANGE : Makes "0" if "Target Event Tag" is "1" and "1" if it is "0".

LOADVALUE : If this function is selected, users will have a dialogue page in the client software where they can right-click on this component mouse to change the value of "Target Event Tag".

NEXTPAGE

PREVIOUSPAGE

GOPAGE : The page that was selected in "Go to Page" opens on the screen.

GOLINK : The link defined in "WebLink" is executed.

[Target Event Tag](#) : Defines the tag that is the target of the "Event Action"

[Go to page](#) : Page selection for "Go to page" action

1.2.7 Tags Panel

The values read from the labels selected from this panel are constantly updated according to the values read from the field.

The labels defined here can also be used in macros. For each label, there are predefined "i, o, s, w" values. (Such as i1, i2, o1, o2 ..). You can see the default variable names of the tags by hovering over them with the mouse.

Özellikler	Etiketler	Diğer
Property	Değer	
▼ özellik etiketleri		
Resim Index Etiketi		-1 ▼
Yazı Etiketi		Basınç Değeri ▼
X Konumu		-1 ▼
Y Konumu		-1 ▼
Genişlik		-1 ▼
Yükseklik		-1 ▼
Döndürme Açısı		-1 ▼
Metin Rengi		-1 ▼
Maske Rengi		-1 ▼
Maske Saydamlığı		-1 ▼
▼ özel etiketler		
Özel Nitelik 1		-1 ▼
Özel Nitelik 2		-1 ▼
Özel Nitelik 3		-1 ▼
Özel Nitelik 4		-1 ▼
Özel Nitelik 5		-1 ▼
Özel Nitelik 6		-1 ▼
Özel Nitelik 7		-1 ▼

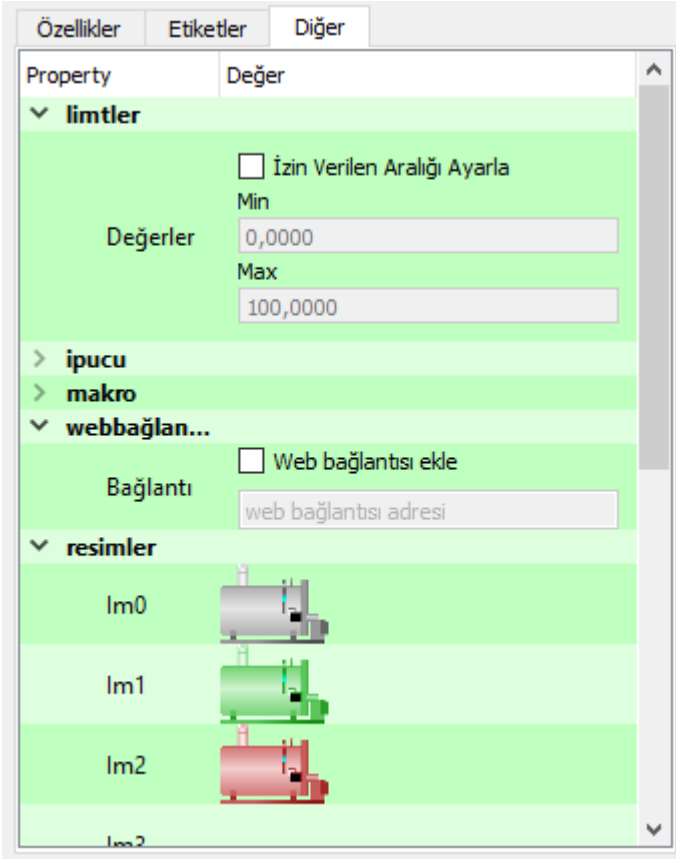
Feature Tags

- **Image Index Tag:** Shows the image index of the component to display instantly. Which images is in which index can be changed using the "Component Manager" or can be viewed under "Other Tab".
- **Text Tag:** The value of the selected tag here is displayed on the component according to the form specified in "Text Content".
- **X Position:** The horizontal position coordinate of the component is taken from this parameter. The top left corner of the page is the (0,0) coordinate. As you go to the right, the X value increases.
- **Y Position:** The vertical position coordinate of the component's screen is taken from this parameter. The top left corner of the page is the (0,0) coordinate. The Y value increases as it goes down.
- **Width:** The width value of the component is read from this label.
- **Height:** The height value of the component is read from this label.
- **Rotation Angle:** Rotation angle of the component with X axis. Gets value in degrees.
- **Text color:** The color of the text to be displayed on the component is taken from this parameter. *
- **Mask color:** The color of the mask that will be applied on the component is taken from this parameter. *

*Hex value of "112233" of the RGB color value defined as # 112233 is taken as the integer counter value. You can find some sample hex color values [here](#). And you can use [this](#) tool to convert the color value to integer.

- **Mask transparency:** A value from 0-255 is taken from this label for the transparency value of the masquerade to be displayed.
- **Custom Labels:** The 7 labels you select here will be available to the macros.

1.2.8 Other Settings Panel



- **Limits:** The maximum and minimum values by which users can change the "Target Event Tag" value through the client software are set using these parameters.
- **ToolTip:** Adjust the content that will be shown when users bring the mouse over the component in the client software. You can show dynamic content on tool-tips . Please refer to [Basic Scripting](#).
- **Macro:** The script for the component is written in this box . For more information about macros, see the corresponding section.
- **Web link:** If this field is defined as a web link, a menu entry will be created to access the related page from the right-click menu of the component.
- **Images:** The images and index numbers defined for the selected component are displayed in this area. Index number expresses which image to show according to the data value read from the tag value of "Image Index Tag" at "Tags Panel". You can change the index display order of components from this panel



You can move up or down image indexes from the context menu opened by right clicking on the images.

1.3 Projects View

1.3.1 SCADA Pages

List of all pages created on the project. This view gives detailed information about the created pages for the project.



SCADA Pages

Details ▲

Project Pages List

Sort By: File Name ▼

File Name	Page Name	Page Type	Page ID	Page Order
/GES_1.sca	GES 1	Tab	011	1
/GES_10.sca	GES 10	Page Link	005	-1
/GES_2.sca	GES 2	Tab	006	2
/GES_3.sca	GES 3	Tab	007	3
/GES_4.sca	GES 4	Tab	008	4
/GES_5.sca	GES 5	Tab	009	5
/GES_6.sca	GES 6	Tab	010	6
/GES_7.sca	GES_7.sca	Tab	012	7
/GES_8.sca	GES_8.sca	Tab	020	8
/GES11.sca	GES 11	Tab	002	10
/GES12.sca	GES 12	Tab	004	11
/GES9.sca	GES 9	Tab	015	9
/intro.sca	Ana Sayfa	Tab	000	0
/tasarim_yedek.sca	tasarım_yede...	Page Link	003	-1

1.3.2 Project File Paths

Here are some important folder paths related to the SCADA project

SCADA Pages | **Project File Paths** | View Configuration | Client Options

Project File Paths

GIS Settings

Map API Key
[Click here to get an API key](#)

Tag Channel File:

File Name: ...

Output Folder Path

Path: ...

Components Library Folder

Path:

1.3.3 View Configuration

Default settings for SCADA pages are configured using this menu

Database Management | SCADA Pages | Project File Paths | **View Configuration** | Client Options

View Configuration

Default Screen Size

Width: Height:

Background Color

View

Show Block Number
 Show TagName
 Show FullScreen

1.3.4 Client Options

Various settings related to Client view can be done on this menu

Database Management | SCADA Pages | Project File Paths | View Configuration | **Client Options**

Client Options

Reset Defaults

Connection Fault Timeout	30 seconds	Sample
Connection Fault Bg Color	#ff0000	
Connection Fault Text Color		
Access Denied Bg Color	#000080	
Access Denied Text Color	#ffffff	
Custom Icons/Texts		

Reports	<input type="text"/>	...	Raporlar
Alarms	<input type="text"/>	...	Alarmlar
Webview	<input type="text"/>	...	WebGörünümü

1.4 Tag and Channel Editor View

Channels and tags are special definitions that enable the SCADA software to access the data on the field devices. Channels include protocol definitions to provide communication with the device on the field and specific settings for this protocol. Tags consist of address definitions for the registers on the connected device. Alarm management is also done under this view.

1.4.1 Channels

Channels containing connection definitions can be created with a device in the field, as well as special channels defined by virtual connections such as macros or database queries.

To create a new channel, open the "Tag Channel Editor" tab, press the right mouse button on any channel, and select "New Channel" from the popup menu.

In the dialog that is opened, necessary adjustments can be made about the new channel.

1.4.1.1 Modbus TCP Channel

You must create a new Modbus Channel to communicate with field devices over TCP using ModBus protocol.

Select "Modbus TCP" as the "Protocol Type" in the dialog for creating a new channel

- **Channel Parameters**

- Server Adress

The IP address of the device you want to connect to

- Server Port

Modbus connection port information of the device

- Response Timeout

It is time value, the Modbus slave waiting for the device to respond after each modbus request, in milliseconds. If no response is received from the slave device during this time, a new request is sent.

- Connection Timeout

It is the time value in milliseconds to wait until a new connection attempt is made after the request to connect to the device is sent. Typically in GPRS or 3G networks this time may be slightly longer than TCP.

- Frame Timeout

It is the time value in milliseconds to be waited until the next request is sent, after receiving a response from a Modbus request.

For detailed information on Modbus configuration check [here](#).

- **Tag Parameters**

- Function Code

The IP address of the device you want to connect to

- Device Address

Modbus protocol device address

- Variable Address

Modbus variable address

- Variable Size

The size of the variable in the identified address

- Variable Type

The type of the variable in the identified address

1.4.1.2 IEC 104 Channel

You must create a new IEC 104 Channel to communicate with the field devices over TCP using the IEC 104 protocol.

- **Channel Parameters**

- W

ACK(acknowledge message) sending frequency(sends ACK after W packets)

- K

The maximum allowed number of unacknowledged packets

- T1

ACK timeout duration for ASDU packet

- T2

If no new data will be sent after this time, an ACK is sent

- T3

Timeout period for test frame

- General Interrogation

GI message sending frequency

- Clock Synchronisation

CS message sending frequency

- Timezone GMT

Timezone information of server computer

- **Tag Parameters**

- Object Type

- ...

- InfoObjectAddress

- ...

1.4.1.3 SNMP Channel

This channel is used to connect to SNMP devices. The NetSnmplib library must be installed on your system in order for this channel type to work. You can download NetSnmplib library from [here](#)

- **Channel Parameters**

- Server Address

- The IP address of the device you want to connect to

- Read Community

- The "Read Community" information that will be used to access device information.

- **Tag Parameters**

1.4.1.4 Macro Channel

This channel is used to create virtual tags and modify them with scripts.

- **Channel Parameters**

- - Frame Timeout

The time in milliseconds that expresses the frequency of operation of the macro.

- **Tag Parameters**

1.4.1.5 Database Channel

This is the type of channel used to make queries from SCADA's own database

- **Channel Parameters**

- - Response Timeout

The number of milliseconds that represents the frequency at which the database query is executed.

1.4.1.6 Global Database Channel

It is the type of channel used to connect to different databases to create custom queries and to pass these query results to project tags.

- **Channel Parameters**

- - Response Timeout

The number of milliseconds that represents the frequency at which the database query is executed.

- **Tag Parameters**

- - Query

The query expression to be executed in the database. This tag allows retrieving the first line returned from the query. The return values ??for this first row are written into tags respectively into the tags defined in the form of :{\${32}, \${33} , \${34}, \${35},.....}:

An example "Query" expression:

```
WITH
t1 AS (
  SELECT data_value from logs.tag_log l where tag_id=19 AND data_value IS NOT NULL
ORDER BY logtime DESC limit 1 ),
t2 AS (
```

```

SELECT data_value from logs.tag_log l where tag_id=20 AND data_value IS NOT NULL
ORDER BY logtime DESC limit 1),
t3 AS (
  SELECT data_value from logs.tag_log l where tag_id=29 AND data_value IS NOT NULL
ORDER BY logtime DESC limit 1),
t4 AS (
  SELECT data_value from logs.tag_log l where tag_id=26 AND data_value IS NOT NULL
ORDER BY logtime DESC limit 1)

```

```

SELECT t1.data_value data1, t2.data_value data2, t3.data_value data3, t4.data_value
data4
FROM t1, t2 ,t3,t4;

```

:{32}, {33} , {34}, {35}}:

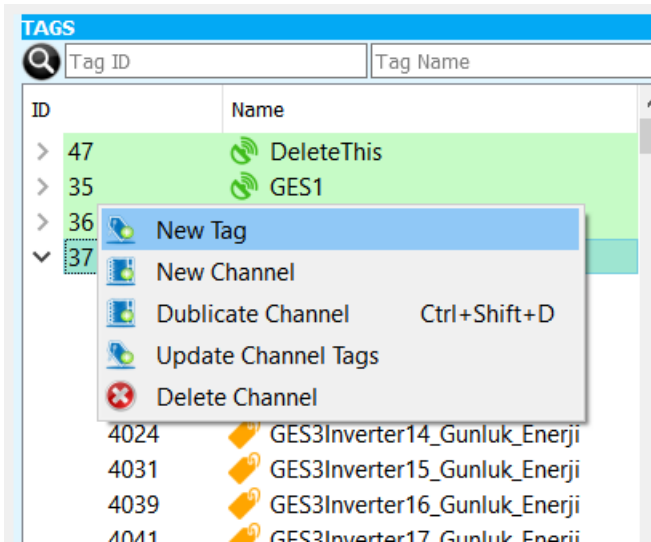
In the above PostgreSQL database query, the latest recorded database values of the tags 19, 20, 29, and 26 are written into the tags with 32, 33, 34, 35 IDs, respectively.

1.4.2 Tags

"Tag" refers to point data that is read from the scene or created virtually by the system. Tags are defined under the channels and may have different properties depending on the type of channel they are in.

1.4.2.1 Creating Tags

To create a tag, open "Tag/Channel Editor Panel". Tag/Channel pane is on the top left of the screen. On the pane, right click on the channel in which you want to create a tag. On the context menu select "New Tag" action



On the "New Tag" dialog write a name and description for the tag. The "tag name" must be unique; if you select an existing tag name, the system will prompt you a warning.

Etiket		Erişim Hakları	
<input checked="" type="checkbox"/> Kullanımda		Okuma ...	[Gözetim]
EtiketAdı	alan_01_id_01_adres_0	Yazma ...	[Gözetim]
EtiketID	32738	Değişken	
Tanım		DeğişkenAdresi	0
Unit Name		DeğişkenBoyutu	2
EtiketTipi	Standart Etiket	DeğişkenTipi	U16
FonksiyonKodu	0x3Tutan Yazmaçları Oku	<input type="checkbox"/> Veritabanına Logla	
KanalAdı	ALAN-1_01	<input checked="" type="radio"/> Değişimde logla:	
<input type="button" value="Kanalı Şuna Değiştir:"/> Kanalı Şuna Değiştir:	ALAN-1_01	Yüzde Değ []	
CihazAdresi	1	<input type="radio"/> Perodik Olarak Logla:	
Anahtar Kelimeler		300saniye	

All tags created in the system have common properties that can be changed. These features are:

1.4.2.2 General Tag Parameters

In Use

Tag is ignored by the SCADA server if the tag is not marked as "in use". The tag only becomes a definition in the system.

Tag Name

Each tag must have a unique name. Clear words and format should be used to describe the tag briefly

Description

Give a brief description about the tag

Unit Name

This is an optional property for the tag. It may be useful if you want to group tags by units on the field

Tag Type

This is an option for selecting "Schedule Tag" which is a special register reserved for calendar operations on Mikrodev devices. For more details see Mikrodiagram documentation

1.4.2.3 Access Rights

Reading: These are the rights that users have to have in order to see the tag values. Users who do not have the rights set here will not be able to read this tag value. **Writing:** It is the right that

users have to have in order to change tag values. Users who do not have the rights set here can not change this tag value.

1.4.2.4 Variable

Variable Type: The mathematical type of the variable

1.4.2.5 Logging

Log to Database

If this option is not enabled, the tag value will not be logged on the system and historical values will not be visible. Also, historical values can not be viewed on the graph.

Log on change

Logging is done in case of tag value change. The type of change can be of the type "Percentage" or "Level" change.

Percentage Change

If "Percentage Change" is selected as the type of change; Logging is done if the tag value changes by the specified percentage value of the latest logged value. If value is set to "0", all kinds of changes are logged.

Level Change

If "Level Change" is selected as the type of change; if the tag value has changed by the specified value, logging is done. If value is set to "0", all kinds of changes are logged.

Log Periodically

If this option is enabled, the tag is continuously logged in the specified time period.

Note: Logging type and tags to be logged must be carefully selected to avoid unnecessary increase in the size of the data to be stored. For example;

- The tags should never be logged if you do not need historical values.
- If a level or percentage change is selected for analog variables, a percentage or level appropriate to the data exchange pattern should be selected.
- For digital values, "log on change" should be used instead of periodic logging.

Data Logging Filter

By using the data logging filter, you can prevent the measurement values ??collected from the field from being logged according to the filter you selected. So, you will be able to pick up possible false data

- Only log when decreasing by maximum

This filter only allows logging of descending data below the entered maximum value. For example; If the maximum value is entered as 1000:

188,
225 ,(logged)
1500,(not logged)
350 ,(logged)
400 (logged)

In this example, the value '1500' is 1275 more than the previous value, so it exceeds the maximum value of 1000. Thus, is not logged.

- Only log when increasing by maximum

This filter only allows logging of incremental data below the maximum value entered.

- Only log if value is in range

This filter allows logging only if the value read from the field is in the specified range.

- Only log if value is out of range

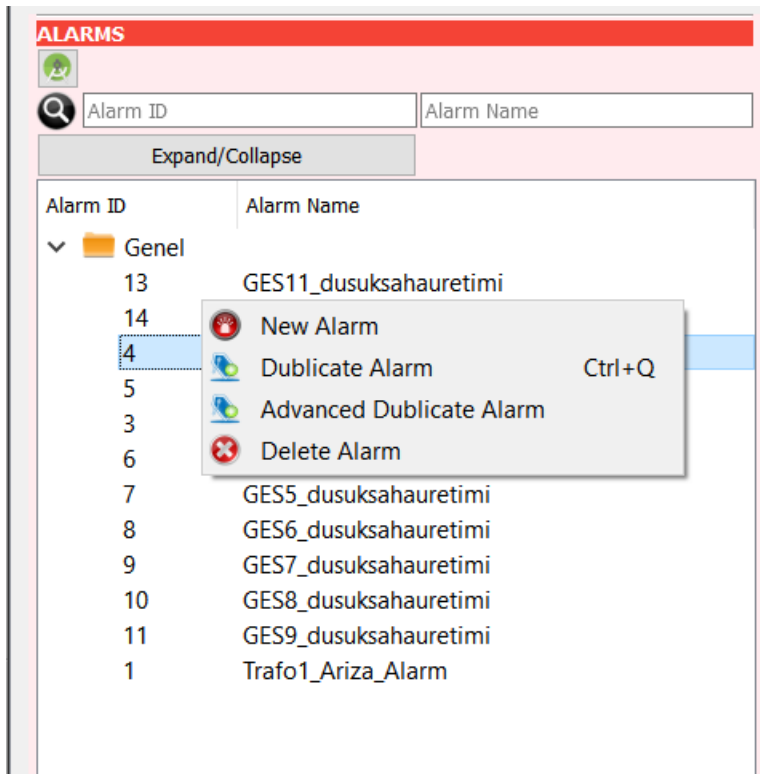
This filter allows logging only if the value read from the field is out of the specified range.

1.4.3 Alarms

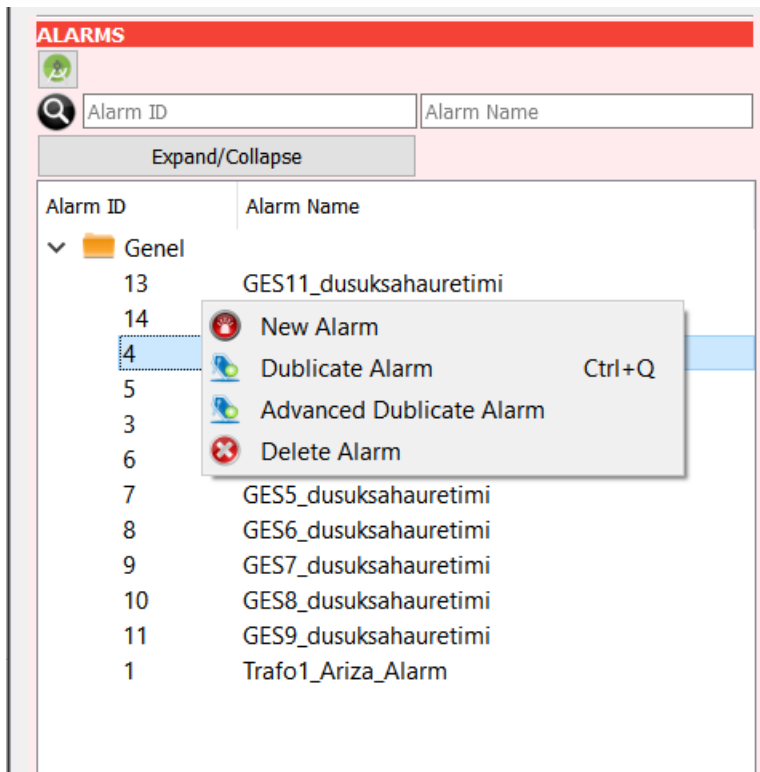
Alarms are an integral part of monitoring systems. ViewPLUS can create alarms for users according to field data and user's access rights.

1.4.3.1 Creating Alarms

To create an alarm, open "Tag/Channel Editor Panel". Alarms pane is on the bottom left of the screen. Right click on alarm pane. On the context menu select "New Alarm" action



On the "New Alarm" dialog write a name and description for the alarm. If you write an existing "class name" into AlarmClass, the alarm will be added to that class; if you write a new "class name" a new AlarmClass will created and the alarm will be added to that class



1.4.3.2 General Alarm Parameters

ALARM

AlarmName	Trafo1_Ariza_Alarm	Subscriptions	
AlarmID	1	Subscribed Users	... { 1 }
ClassName	Genel		
Description	NoDescription		
Priority	0		
VALUE Tag	<input type="text" value="Trafo1_Ariza"/>		

CONDITION <input type="radio"/> VALUE is equal to LIMIT <input type="radio"/> VALUE is smaller than LIMIT <input checked="" type="radio"/> VALUE is greater than LIMIT <input type="radio"/> VALUE is in RANGE <input type="radio"/> VALUE is out of RANGE	LIMIT <input type="text" value="0.00"/> RANGE From <input type="text" value="0.00"/> To <input type="text" value="0.00"/>
--	---

Require Acknowledge
 Log into database
 Enabled

- Alarm Name

Give an apparent unique name for the alarm

- Class Name

The name of the class which the alarm belongs to. This is useful when grouping the alarms

- Description

Write a human readable explanation about the alarm

- Value Tag

The selected tag is the source of the alarm. Condition check will be made on this tag's value.

1.4.3.3 Condition

The conditions are evaluated according to the LIMIT and RANGE values on the right side of conditions pane

- VALUE is equal to LIMIT

The alarm is activated if the value of the tag is equal to "LIMIT" value.

-VALUE is smaller than LIMIT

The alarm is activated if the value of the tag is smaller than "LIMIT" value.

- VALUE is greater than LIMIT

The alarm is activated if the value of the tag is greater than "LIMIT" value.

- VALUE is in "RANGE"

The alarm is activated if the value of the tag is in "RANGE".

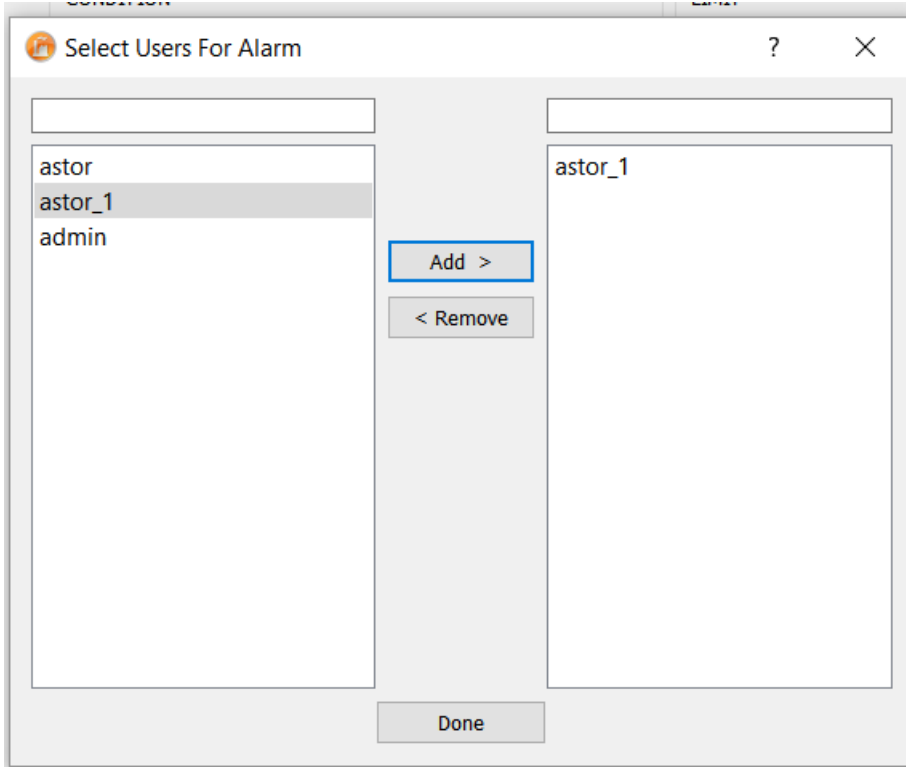
- VALUE is out of "RANGE"

The alarm is activated if the value of the tag is out of "RANGE".

1.4.3.4 Subscriptions

Alarms should be assigned to users. A user can monitor an alarm only if the user is subscribed on that alarm.

To add auser subscription on the alarm click on the Subscribed User Selection button.



On the opened dialog, select the users which you want to be subscribed on the alarm

1.4.3.5 Other

- Require Acknowledge

When this option is checked, if a user does not acknowledge the alarm, it will not disappear from alarms list if also alarm condition has gone away

- Log into Database

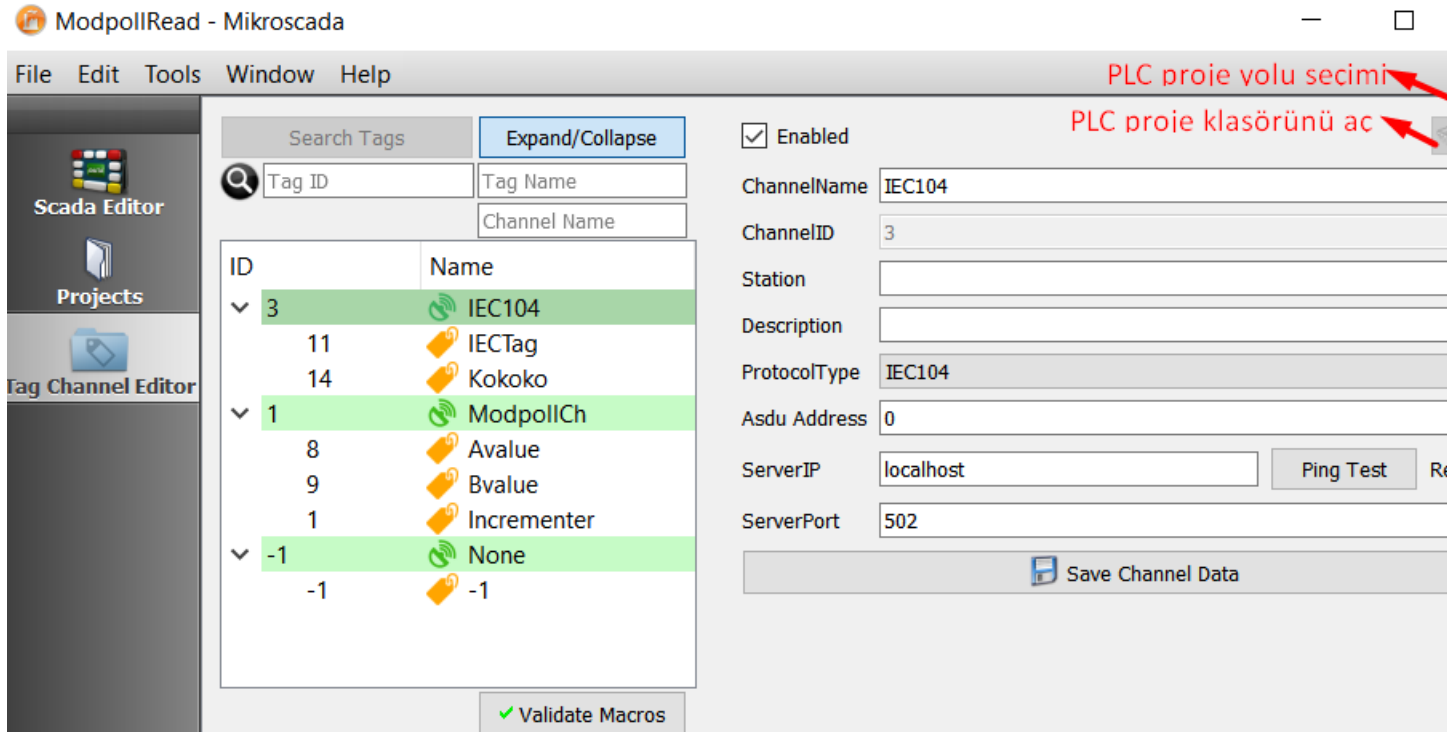
When this option is checked, the alarm states will be logged into database

- Enabled

This option activates/deactivates the alarm

1.4.4 Associating PLC and SCADA Projects

As you develop your project, it becomes more important to associate channels in SCADA with PLC projects to prevent mistakes. To do this, you can specify the PLC project path in the upper right corner of the channel menu.



1.5 Import and Export Operations

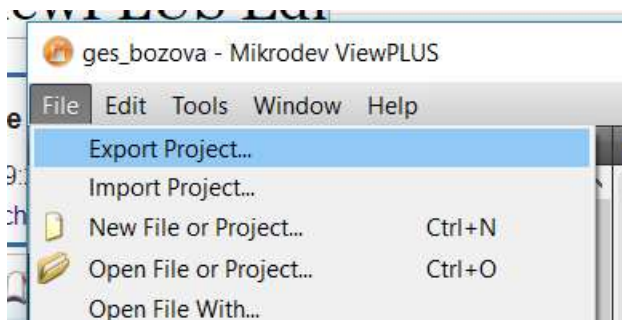
There are different options for importing/exporting data from/to the project.

1.5.1 Importing/Exporting Projects

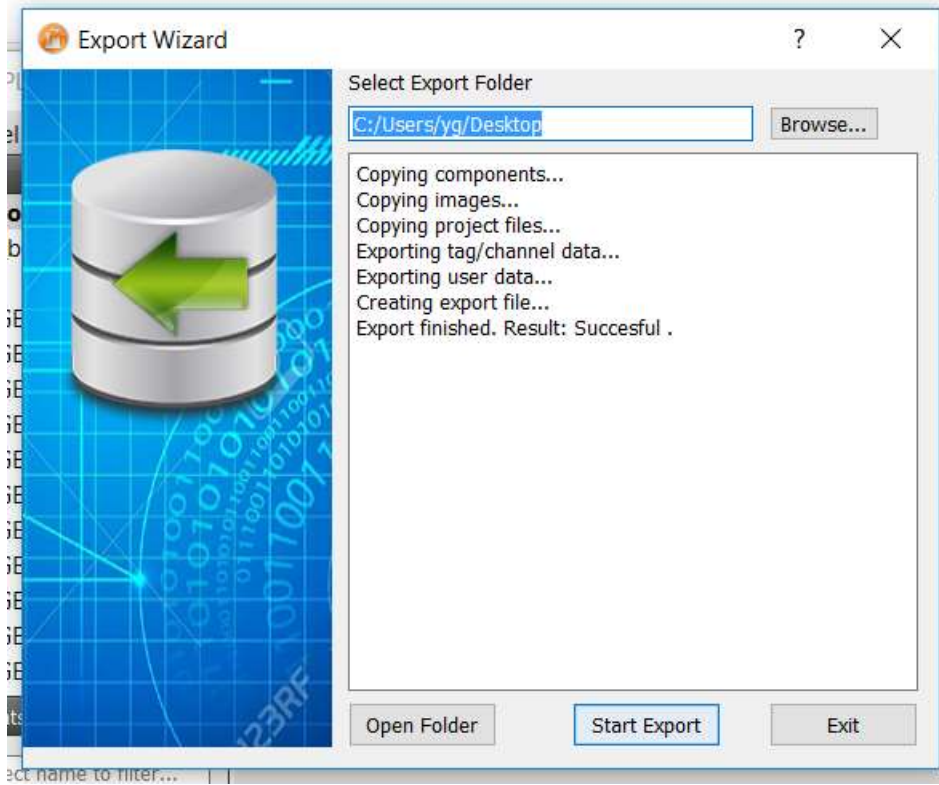
This wizard allows the user to import/export tags, channels, alarms, users and pages using a special file format (.scaexp).

- Exporting Project

After opening the project on ViewPLUS, on the File menu select "Export Project" option:

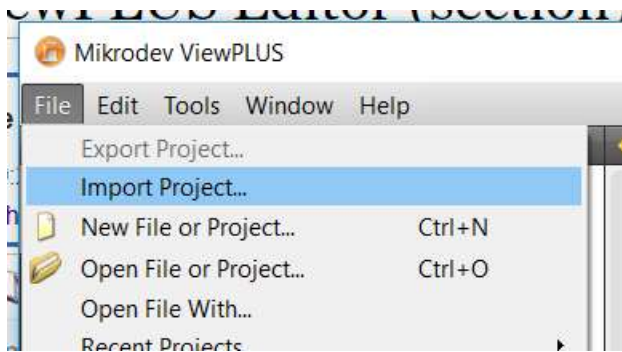


On the wizard window, select an output folder path for the ".scaexp" file to be generated. After that, when you push on the "Start Export" button, the wizard will create the ".scaexp" file

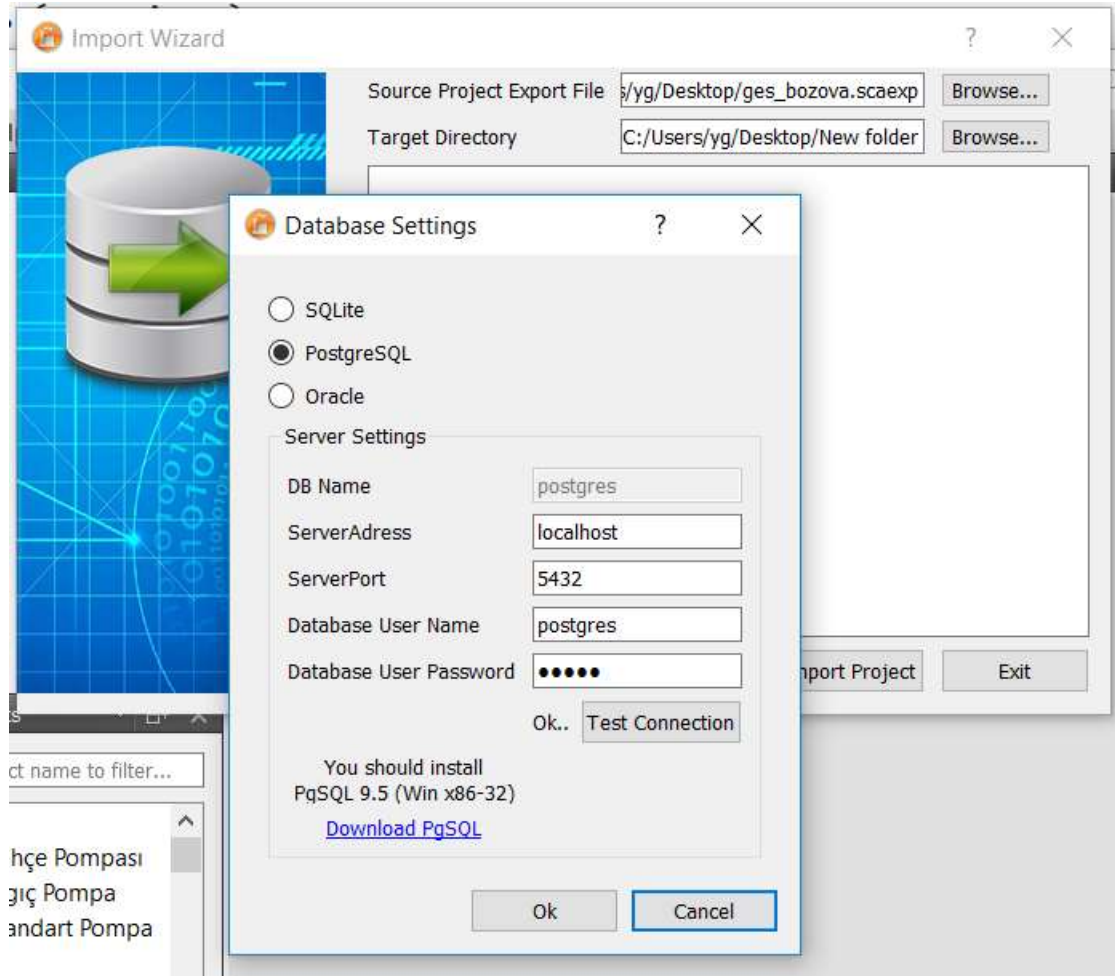


- Importing Project

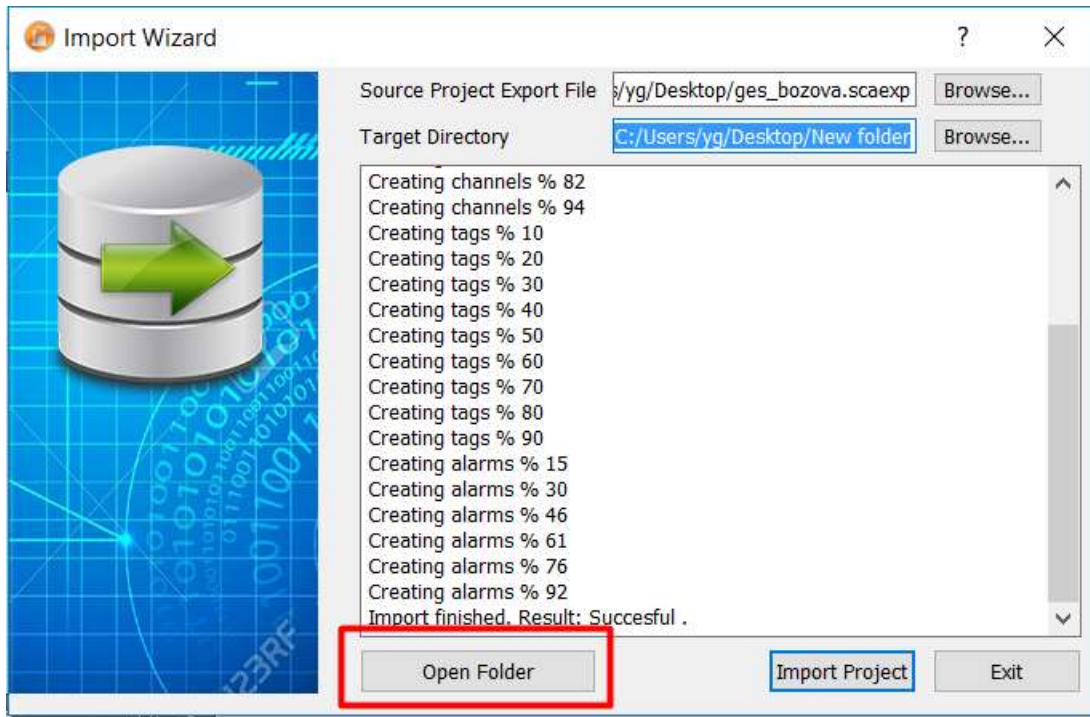
On the File menu select "Import Project" option:



On the wizard window, select the exported ".scaexp" file and a destination folder for the project files to be extracted:



After that, when you push on the "Import Project" option, the wizard will ask for database connection settings. The project database will be extracted into the configured database



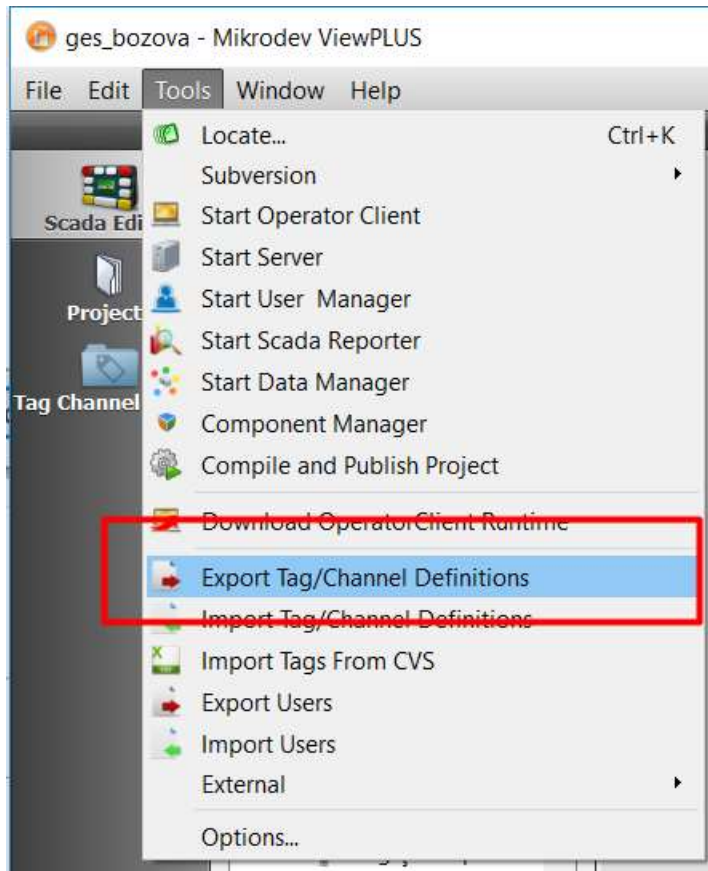
When the operation is complete successfully, the project is ready to be used.

1.5.2 Importing/Exporting Tags/Channels/Alarms

Users can import/export tag/channel/alarm definitions from/to other projects.

- Exporting Tags/Channels/Alarms

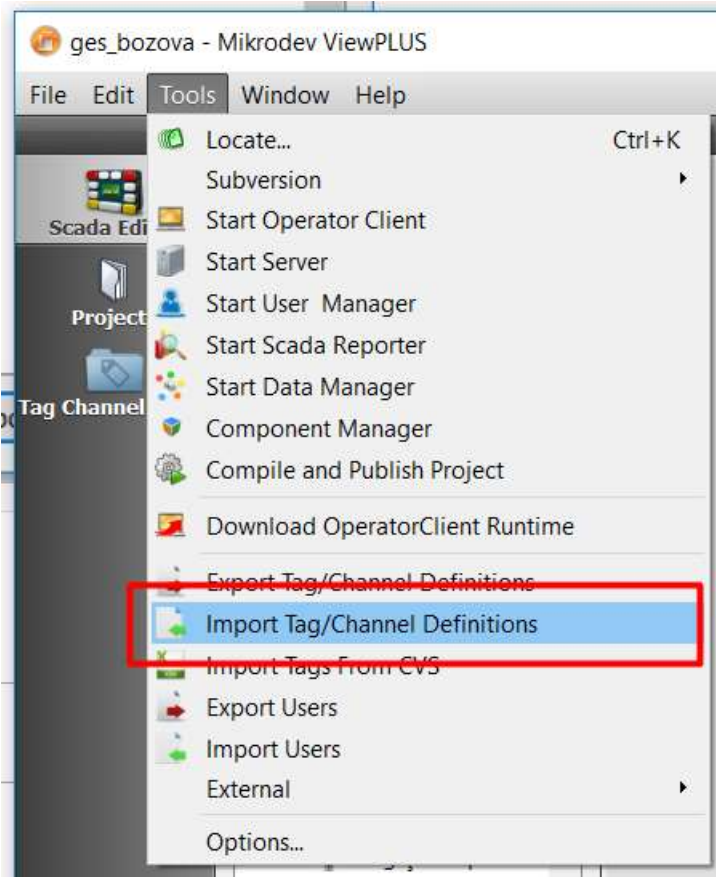
After opening the project on ViewPLUS, on the Tools menu select "Export Tag/Channel Definitions" option:



When you confirm the export file path selection dialog, a file with ".tcf" extension will be created. You can use this file for importing into other projects.

- Importing Tags/Channels/Alarms

After opening a project on ViewPLUS, on the Tools menu select "Import Tag/Channel Definitions" option:



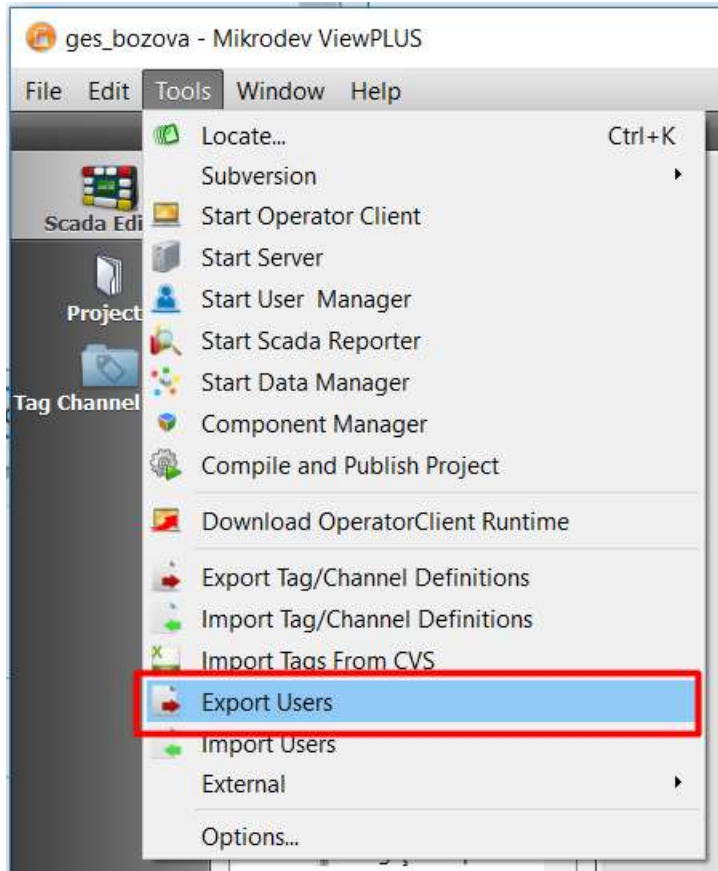
Important Note: This operation will overwrite existing tags. Thus, this operation may damage your project. Be sure that the exported tag id interval and local project's tag id interval do not intersect!

1.5.3 Importing/Exporting Users

Users created for a project could be exported to another project. Export/Import users menu could be used for that

- Exporting Users

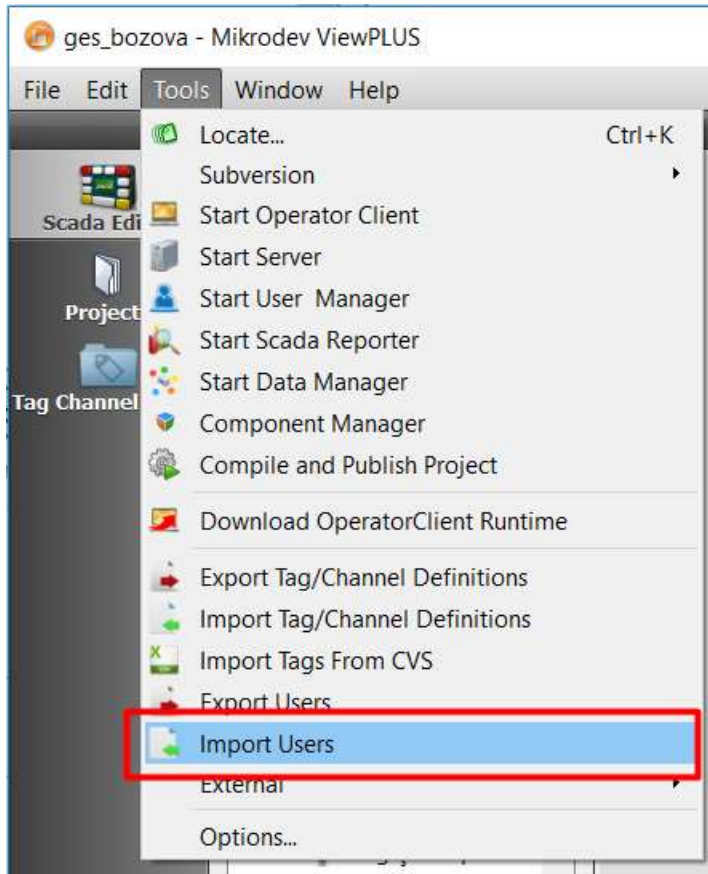
After opening the project on ViewPLUS, on the Tools menu select "Export Users" option:



When you confirm the export file path selection dialog, a file with ".usr" extension will be created. You can use this file for importing users into other projects.

- Importing Users

After opening a project on ViewPLUS, on the Tools menu select "Import Users" option:



Important Note: This operation will overwrite existing users. Thus, this operation may damage your project. Be sure that the exported user id interval and local project's user id interval do not intersect!

1.6 Macro Guide

ViewPLUS supports macros in different types. Some of these macros work on the server side, while others work on the client side.

The "macro tags" we define in the Tag/Channel Editor work on the server side. And it acts as a virtual tag. These macros work continuously on the server for the specified period.

On the editor, it is possible to write separate macros for each object. These macros affect the display and behavior of that object and are only executed when the user is watching the object.

1.6.1 Server Side Macro Tags

Macros can take two processing elements at a time and are written line by line.

Example:

```
[ v0 = $1234 * 2]
```

The operands that can be inserted into the macro are:

200 separate variables(v0, v1, ..., v199)

Tag values (in "\$1234" format)

Constant values (Constant decimal values such as "234,12" can be added)

[**v0** = \$1234 * 2]

v0 : The element to the left of “ = ” is the final result of the operation

***** : Operators like “+ , - , * , / , % , & , | , ^ , > , < , e , b , k , n , ?“ could be used. Here:

e: Equality check. The result is "1" if the operands are equal to each other, and "0" if not..

n: Not equal check. If the operands are not equal to each other, the result is "1", otherwise it returns "0".

b: Greater than check. If the first operand is greater than the second, the result is "1", otherwise it returns "0".

k: less than check. The result is "1" if the first operand is smaller, and "0" if it is not.

?: This is a special operand.

[**v0** = 1234 ? 0] : Returns the "RX Count" value of the tag with id 1234 (Read counter value)

[**v0** = 1234 ? 1] : Returns the "Read Time" value of the tag with id 1234 (the time at which the latest data was read from the field)

[**v0** = 1234 ? 2] : Checks whether there is communication with the device on which the tag with id 1234 is located

[**v0** = 1234 ? 3] : Checks whether there is a valid value in the tag with id 1234.(In general, when a SCADA server is started for the first time, it may be late to write a valid value in the tag, or a valid value of the tag may never be written)

[**v0** = v0? 20] : Writes server datetime into "v0" variable as the number of seconds that have passed since 1970-01-01T00:00:00

[**v1** = v0? 21] : Writes server year into "v1" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

[**v2** = v0? 22] : Writes server month into "v2" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

[**v3** = v0? 23] : Writes server day into "v3" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

[**v4** = v0? 24] : Writes server hour into "v4" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

[**v5 = v0? 25**] : Writes server minute into "v5" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

[**v6 = v0? 26**] : Writes server seconds into "v6" as "v0" is the number of seconds that have passed since 1970-01-01T00:00:00

Attention: Here the tag id (1234 in the example) must be entered into the macro as a fixed value without "\$" at the beginning

Condition check:

In the following example, it is checked whether the variable "v0" is equal to 1. If "v0" is equal to 1, the macro executes the command on the bottom line (makes v1 value 555). If it is not equal to 1, the line is moved down by the second parameter ("2") of the "IF" line. In this example, if "v0" is not equal to 1, the macro will go down 2 lines, that is, it will go to the return value ([E]) line and it will be finished.

[**IF** , v0 , 2]

[**v1 = 555**]

[**E**]

Another condition control operand is "NI" (NOT IF) . This checks the equality to 0 as the opposite of "IF"..

In the following example, it is checked whether the variable "v0" is equal to 0. If "v0" is equal to 0, the macro executes the command on the bottom line (makes v1 value 555). If it is not equal to 0, the line is down by the second parameter ("2") on the "NI" line. In this example, if "v0" is not equal to 0, the macro will go down 2 lines, that is, it will go to the return value ([E]) line and it will finish

[**NI** , v0 , 2]

[**v1 = 555**]

[**E**]

In order for macros to work correctly , a return ([E] </ nowiki> return) must be added

1.6.2 Client Macros

Client Macros: This macro is written in the same format as the "server macros". However, only tags defined on that object can be used within those macros The tags defined on the tag tab of objects are used as follows:

For each tag "i, o, s, w" values exist.

i (in) : The raw value of the tag read from the field

o (out):The value to display on the screen after the tag has been passed through the macro operations

s (set):The value set by the user for the tag
w(write): The value to be written to the field device after the value that the user wants to set is passed through the macro operations
i ---Macro---->o , s---Macro---->w
If there is no macro operation 'i' is equal to 'o', 's' is equal to 'w'.

1.6.3 Basic Scripting

1.6.3.1 Display Tag Value

You can add dynamic content on some components. To achieve this, you should use the '\$' operator and 'braces' (\$ {...}):

```
 ${Tag_ID}
```

As an example, you should write '\${1234}' onto your component to display the value of a tag with the tag ID '1234' in your system.

```
Tank Level is ${1234}
```

this expression will be shown on the component like:

```
Tank level is 78
```

1.6.3.2 Performing Arithmetic Operations

You can perform arithmetic operations using the '#' operator and 'braces'({# {...}}). In the examples below you can see how you can do an arithmetic operation:

Example:

```
Elapsed time is #{ ${1150} / 3600 } hours or #{ ${1150} / 60 } minutes
```

Will be displayed as:

```
Elapsed time is 5 hours or 300 minutes
```


2 ViewPLUS Server

2.1 Overview

The server software must be associated with a project in order to be able to run. When run from the Editor menu, the currently open project is used by the server. To run the server independently from the editor, select "Editor > Select Tools > Create Server Files" to specify a folder and copy the server files to this folder. The "ServerEngine" script is used to launch the server. The "ServerEngine" script looks for a folder named "Project" in the same folder as the default behavior.

The "Project" folder contains special files created by the editor. The main ones are; "MicrodevScada.ini", "Project.zip", "project pages with .sca extension", and component files. The server reads the information in the "MikrodevScada.ini" file, such as where to connect to the database and where to keep the records.

When the SCADA server is started for the first time, the user may be prompted to enter the database connection information. The server can open a project in a different folder by using command line parameters below.

```
“ServerEngine -dir “C:\Users\yg\Desktop\server\projectname“ ”
```

```
-dir : Project folder
```

Server Home Screen

The main screen of the server has a console on which general system logs can be viewed. This console shows important server changes. More detailed server logs are saved in a separate file. When the "Start" button is pressed, the server tries to connect to the field devices. After the connection is established, the server opens a port to which clients can connect and waits for incoming connections. When the server starts reading data from the field, it records them on the database server as specified in the project settings. Instantaneous readings of field-readable data can be viewed on the tag monitoring screen.

Shortcut Creation

- Right-click the created shortcut and select "Properties".
- Change the field marked "Target" to the following (Change the file path according to your system):

```
C:\Users\\TestProject" -start C:\Program Files
(x86)\ViewPLUS\bin\ServerEngine.exe"
```

- Then copy this shortcut to "C:\Users\\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup". The server will now start automatically when the user logs in to the system.
- Auto startup can be accomplished by copying the OperatorClient shortcut to "C:\Users\\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup".

2.2.2 Linux Platform

2.3 Email Server Settings

E-mail can be sent in case of an alarm to the user whose "e-mail send option" is marked as active from the user manager. For this, e-mail configuration settings must be made on the server. In addition, the smtp server to be used should allow "less secure application access". The configuration file "ServerEngine.ini" where the e-mail server settings can be found in the following folder:

```
C:\Users\\AppData\Roaming\Mikrodev\ScadaServer\\ServerEngine.ini
```

In this file, the following variables must be set correctly under [SMTP]:

```
[SMTP]
```

```
SMTP_user =<email username>
SMTP_pwd=<e-mail password>
SMTP_host=<smtp server address>
SMTP_port=<smtp server port>
SMTP_mailDelay=<The time (in seconds) to wait for an e-mail to be sent after an alarm
condition(in seconds)>
```

You can use the [this](#) program to test the settings you have made.

2.4 Create Server Runtime

You can also run the developed SCADA project without installing ViewPLUS on a different computer. By selecting "Create Server Files" from the "Tools" menu for this, you can collect the files in a folder for project and server work. By moving this folder, it is possible to run your project on different server machines.

2.5 Advanced Settings

log_server.txt:

On Windows systems, it is located in the following folder:
 C:\Users\\AppData\Roaming\Mikrodev\ScadaServer\
 It is the file where the detailed server logs are found

log_serverstarter.txt :

The file that contains logs of the server monitor software

OperatorClient.ini :

ServerEngine.ini:

On Windows systems, it is located in the following folder:
 C:\Users\\AppData\Mikrodev\ScadaServer\
 [Login]> ServerAdr : Database address

[Login]> DbName : Database name

[Login]> DbUserName : Database user name

[Login]> DbPassword : Database password

[Connection] > Port : The default server port is 560. A different port can be selected by changing this parameter.

[Logging] > IsLogging : Data logging can be enabled / disabled(true/false)

[Logging] > IsLoggingDisconnections: You can choose whether to log connection failures

[REDUNDANCY]> ServerMode : Determines the mode of operation. This value can be PRIMARY or BACKUP. When this mode is set to BACKUP, the server communicates with the PRIMARY server to form a redundant structure.

[REDUNDANCY]> PrimaryIP : The PRIMARY server IP address to which the server in BACKUP mode will connect is written in this field.

[REDUNDANCY]> PrimaryPORT : The port number of the PRIMARY server to which the server in BACKUP mode will connect is written in this field.

[REDUNDANCY]> Timeout : PRIMARY is the value in seconds that specifies how long the server will remain active if the BACKUP server is down.

2.6 Parallel Redundant Working Mode

ViewPLUS SCADA software can run in "Parallel Redundant Mode" on a server cluster consisting of several computers. In this case, the server downtime can be reduced to the minimum. Redundant mode servers must be on the same local area network.

2.6.1 Installation Steps

- While ViewPLUS is running in this mode, every 2 servers (PRIMARY, BACKUP) must be able to access the project database over the network.
- At the same time, project files must be present on the server computers and they must be up to date (same as each other). To ensure this synchronization, a version control tool such as SVN can be used or the files can be moved manually.
- In order for the backup and main server to communicate, the main server must have port 51313 open on the computer. Make sure that this port is allowed in the firewall settings.
- In the next step, the following configuration settings must be made in the ScadaServer.ini files on the primary server (PRIMARY) and the backup server (BACKUP):

Primary server(PRIMARY):

```
[REDUNDANCY]
ServerMode=PRIMARY
PrimaryIP=192.168.2.201
PrimaryPORT=51314
Timeout=60
size=0
```

Backup server(BACKUP):

```
[REDUNDANCY]
ServerMode=BACKUP
PrimaryIP=192.168.2.201
PrimaryPORT=51314
Timeout=60
size=0
```

ServerMode: Specifies the backup operation mode. This value can be PRIMARY or BACKUP. When this mode is set to BACKUP, the server communicates with the PRIMARY server to create a redundant structure. PrimaryIP: The PRIMARY server IP address to which the server in BACKUP mode will connect is written in this field. PrimaryPORT: The port number of the PRIMARY server to which the server in BACKUP mode will connect is written in this field. Timeout: Is the value in seconds that specifies the time PRIMARY server is out of service before the BACKUP server become active.

In the example, the IP address of the primary server (PRIMARY) is a fixed IP of "192.168.2.201". The IP address of the primary server in the system to be installed must be a static IP in this way, variable IP from a DHCP server should not be used. The port number set in PrimaryPORT can be set differently according to security requirements. In this case, the correct port number should be entered by modifying every 2 configuration files.

After the configuration process is completed, first the primary and then the backup servers are started . From this moment on, the backup server will switch on and off in case of a shutdown, watching the primary server. When the primary server becomes active again, the backup server will stop itself by switching to the watching mode

2.6.2 Synchronization of the Project on the Backup Server

When the backup server starts running, the server will use the files in the project folder. Therefore, if these files are not synchronized with the files on the main server, an older version of the project will be sent to the clients. A synchronization mechanism must be established to prevent this from happening.

Assuming that the project files are on the SVN version control server as described earlier, you can provide automatic synchronization as follows

- We create a batch script that will trigger SVN synchronization. In this example, the file name is updateSvn.bat. Modify the contents of the file according to the file paths in your system to make it like this:

```
CD D:\MIKRODEV\Projects\DepoProject  
"C:\Program Files\TortoiseSVN\bin\svn.exe" update
```

Every time we run this script, it will synchronize the project folder with that of the SVN server.

- In the next step, this script will be configured to run at specific intervals. For this we will use the Windows "Schedule Tasks" tool.

By following the steps below, the synchronization procedure will be run every 10 minutes. You can configure this time interval as you like.

Task Scheduler

Create a new task

Timing Programming

Set timing settings. In this example we choose to work once every 10 minutes.

Script Selection

Finally, associate the .bat file you created with the timer.

If you confirm the timer, the backup server will synchronize itself every 10 minutes with the project on the main server.

Retrieved

from

["https://mikrodev.miraheze.org/w/index.php?title=ViewPLUS_Server&oldid=3152"](https://mikrodev.miraheze.org/w/index.php?title=ViewPLUS_Server&oldid=3152)

2.6.3 Navigation menu

2.6.3.1 Personal tools

- **Hata! Köprü başvurusu geçerli değil.**

- [Not logged in](#)
- [Talk](#)
- [Contributions](#)
- [Create account](#)
- [Log in](#)

2.6.3.2 Namespaces

- [Page](#)
- [Discussion](#)

2.6.3.3 Variants

2.6.3.4 Views

- [Read](#)
- [View source](#)
- [View history](#)

2.6.3.5 More

2.6.3.6 Search

<input type="text" value="Special:Search"/>	<input type="text" value="Search"/>	<input type="button" value="Go"/>
---	-------------------------------------	-----------------------------------

2.6.3.7 Navigation

- [Main page](#)

2.6.3.8 ViewPLUS

- [Introduction](#)
- [Editor](#)
- [Component Manager](#)
- [User Manager](#)
- [Server](#)
- [Client](#)
- [Reporting](#)
- [Data Manager](#)
- [Smart Bill](#)
- [Application Notes](#)
- [Appendix](#)

2.6.3.9 Mikrodiagram

- [Introduction](#)
- [Mikrodiagram Application Notes](#)

2.6.3.10 Tools

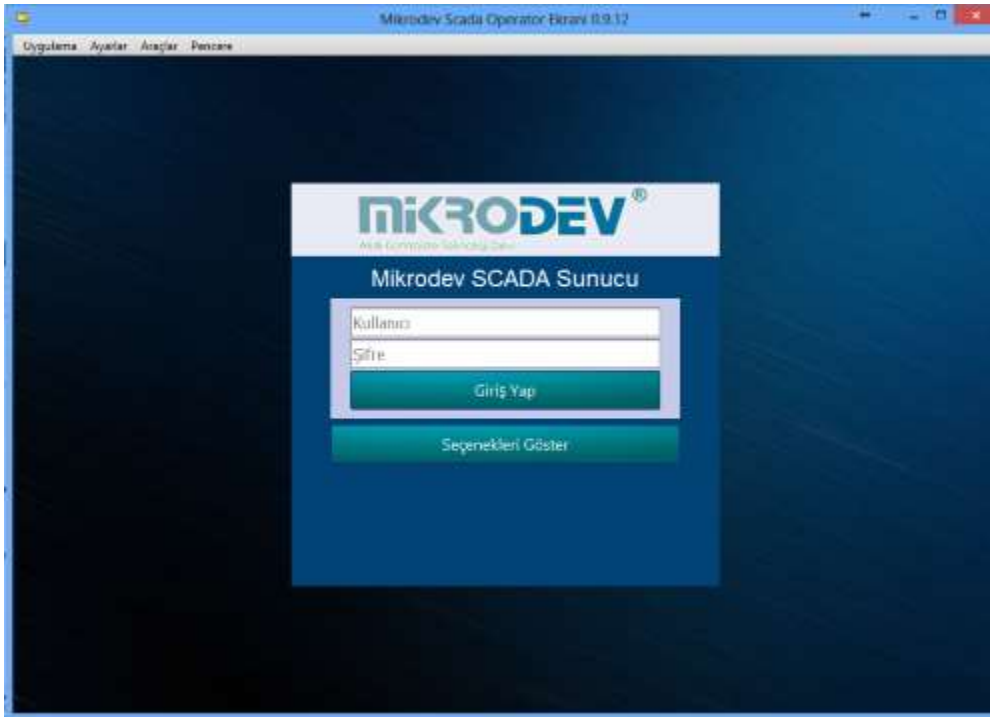
- [What links here](#)
 - [Related changes](#)
 - [Special pages](#)
 - [Permanent link](#)
 - [Page information](#)
 - [Cite this page](#)
 - [Get shortened URL](#)
-
- This page was last edited on 19 June 2017, at 23:03.
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3 ViewPLUS Client

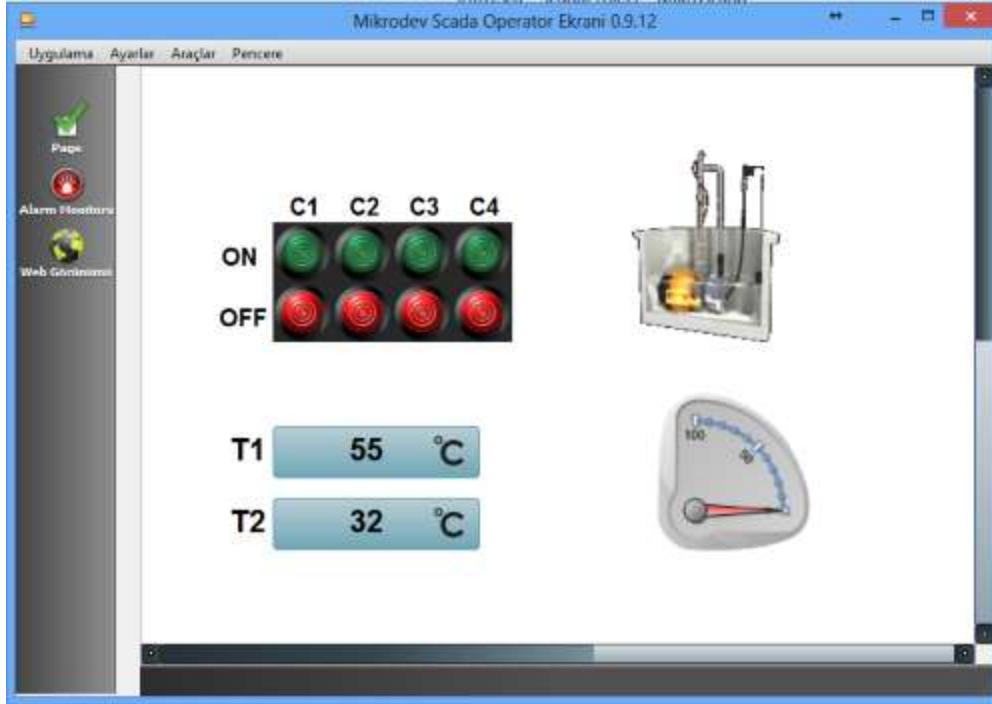
3.1 Client Overview

Client software; allows end users to connect to the SCADA server via the internet or intranet, allowing them to monitor and control the prepared project.



To connect to the SCADA server, you need to enter the user, password, server address and port information into the client software. You need to use "User Manager" to create a new user. When this information is entered correctly, an encrypted connection is established between the server and the client software, and the project main screen sent from the server is displayed on the client.

The "page selector" on the left side of the client screen also shows shortcuts for pages that are defined as "SCADA Tab" in the editor. The appearance and order of the shortcuts shown here can be set on the editor. Besides these shortcuts, there are shortcuts with alarm panel and web view panel.



Access Rights

Content shown on the client may differ depending on the access privileges of the user, the pages and the defined tags. Pages that do not corresponds with the access rights of the user will not be shown in the "page selector", or links that are directed to those pages will not work. If a visual element on the page contains a tag that the user does not have access to, the user is prevented from watching or controlling this item.

3.2 Alarm Management

To be able to access alarm management, the user needs to have related access right.

3.3 Report Management

To be able to access report management, the user needs to have related access right. Report Manager for Operator Client provides same functionality as "SCADA Reporter" tool. For details please refer to [ViewPLUS Reporting](#)

3.4 Controlling Field Data

According to the project structure, there are different types of objects you can control over client application. To be able to manipulate a field data, you need to have associated access rights for writing on the tag related with that object.

Buttons

Buttons work in a boolean style. They may work in toggle mode or only set/unset mode.

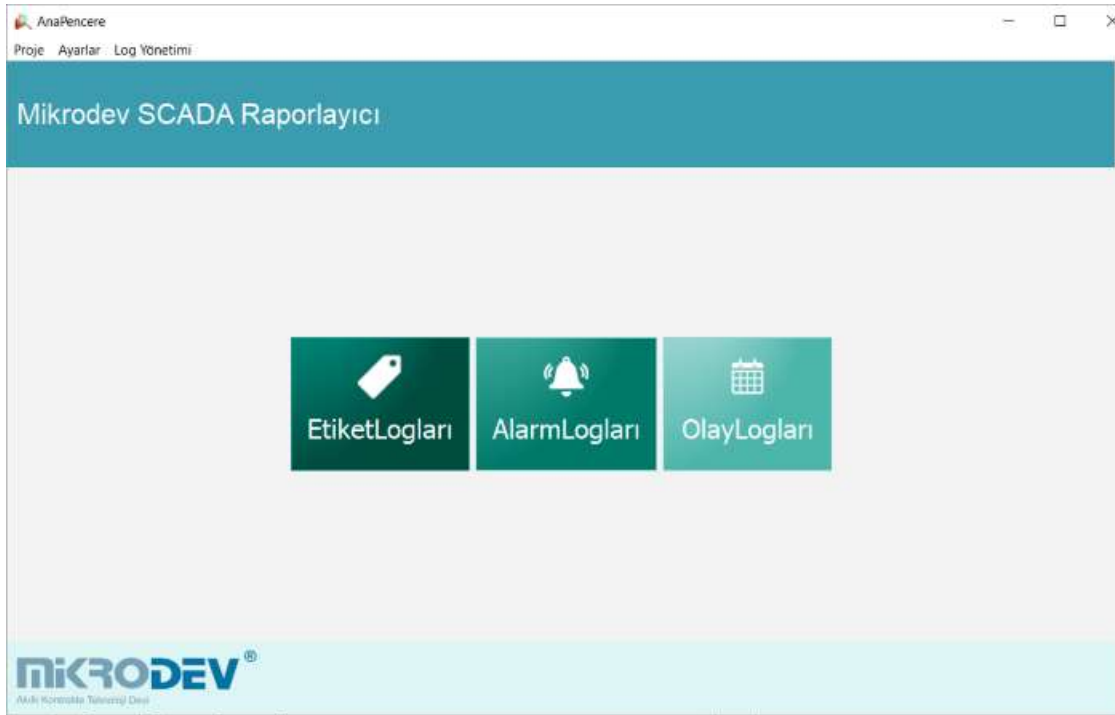
Value settable Widgets

You can set some field values by right clicking and selecting "Set Value" option from menu.

4 ViewPLUS Reporting

4.1 Overview

You can use the Reporter to view and analyze trend data that is logged by the SCADA software. Reporting is done on 3 basic record types. These are tag logs, alarm logs and event logs.



4.2 Tag Logs

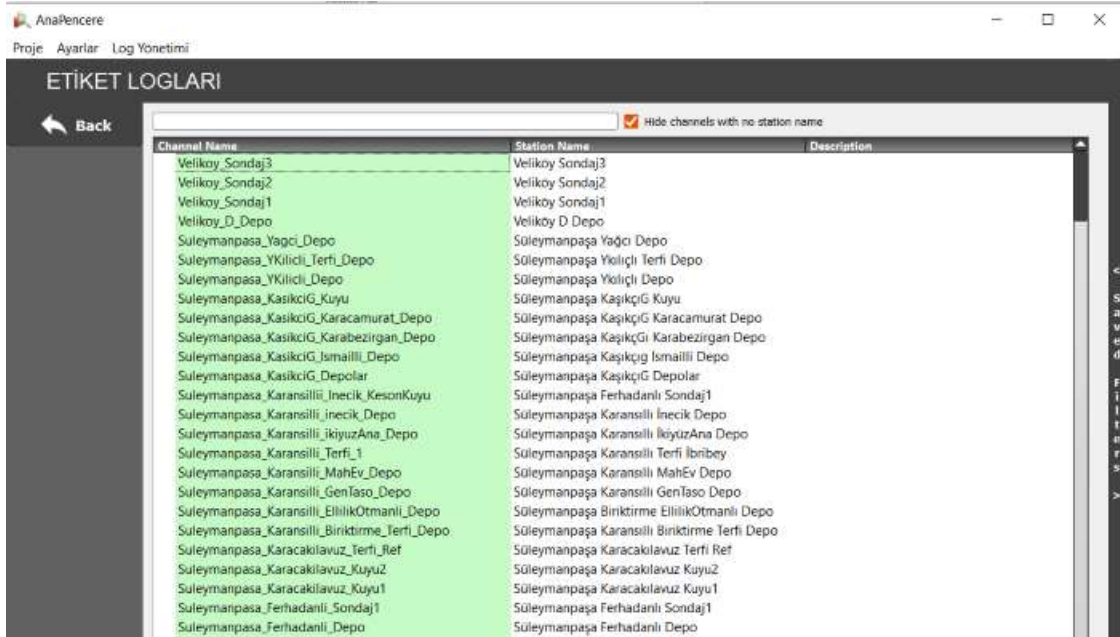
Tag log is the data that has been recorded, depending on the logging configuration of the tag. Output can be generated in different formats by filtering according to location, time and other parameters of the tag.

4.2.1 Selection of Tags to Log

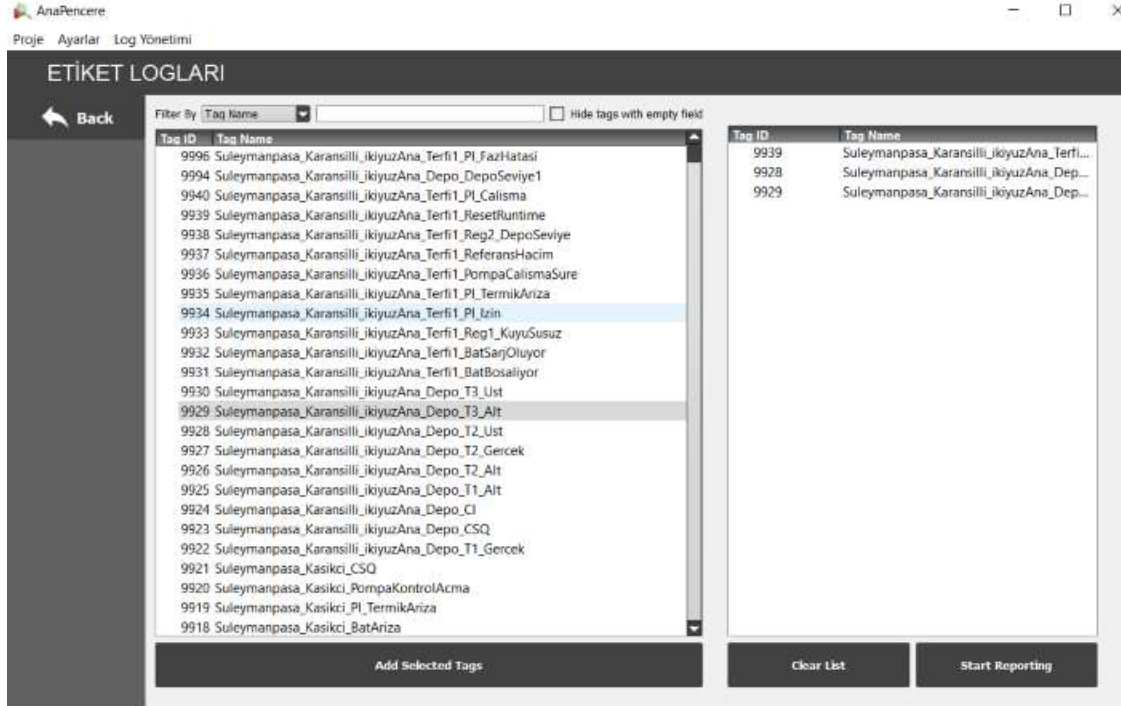
On the tags selection screen, tags under a station can be grouped or all can be selected. If you use the tags option under the station, a list of all the stations appears.



Tags under the station can be listed by clicking on the station name.



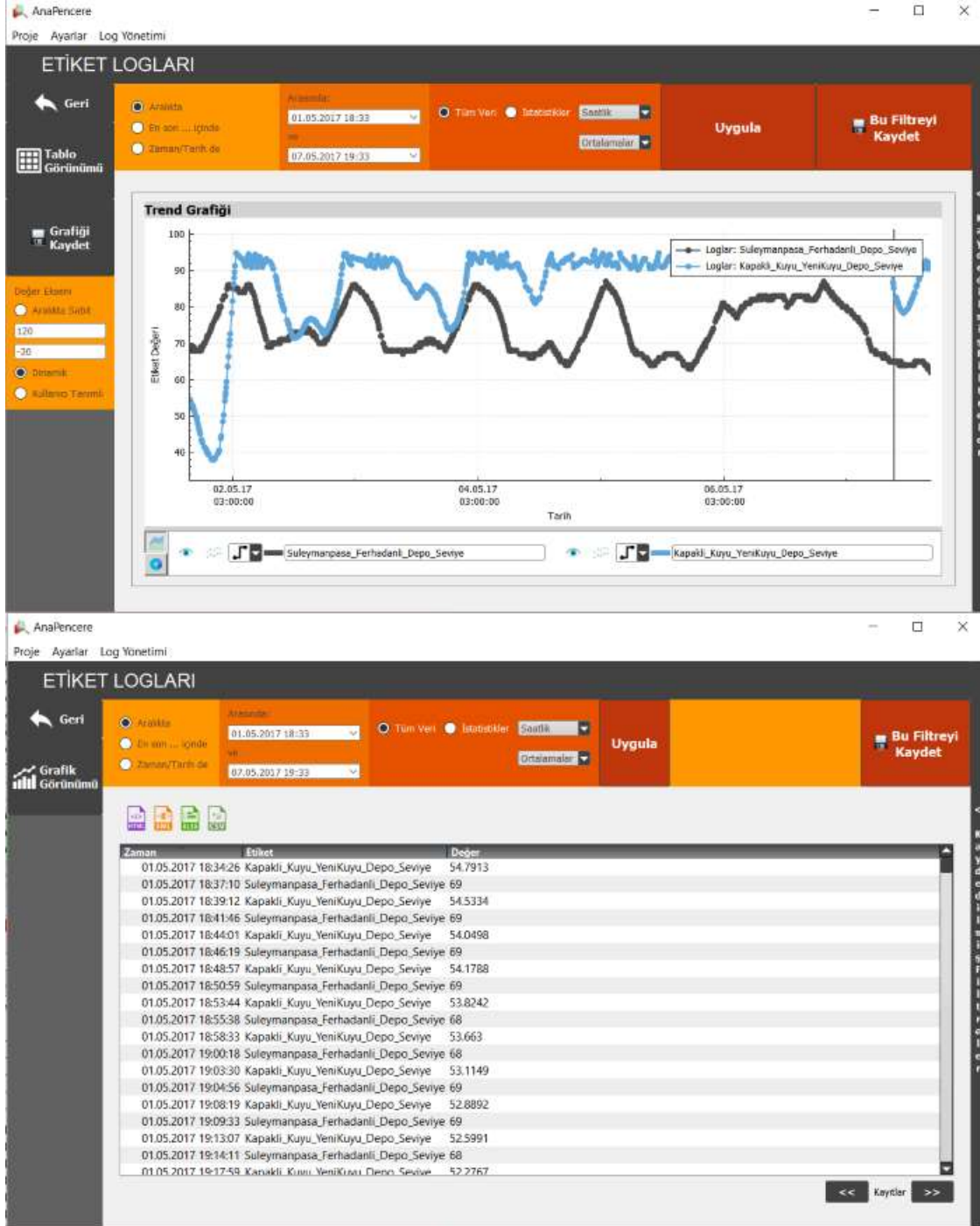
"All Tags" option is selected to make selection through all tags.



Filters can be made on the tag list in different ways according to the tag properties. Tags to be reported from the list in the left panel are selected by double clicking. The selected tags are displayed in the panel on the right. To delete a specific tag from the right panel, select the tag and press the "Delete" key on the keyboard. To delete all of the tags, select "Clear List".

4.2.2 Viewing Tag Log

When the report sheet is first opened, the values of the selected tags are displayed graphically for a specific time interval. "Table View" can be selected to display the data on table form . Different choices can be made regarding the time range and type of data shown.



4.2.2.1 Selecting a Time Interval

The time range of the displayed data can be selected in 3 different ways.

- A) Interval : 2 dates are selected
- B) Within the last: Hour, day, week, etc. are selected and the backward time from current date/time is calculated.
- C) On Time/Date: An exact date can be selected , or a time value could be added forwards or backwards to this date. For example, "This Day - 5", means "5 days ago".

If the date is selected and time unit is "Month"; the month of that date is selected as the time interval.

4.2.2.2 Selecting Data Type

The type of data to be displayed can be statistical value as well as the value of the data itself.

- A) All Data: Shows the actual value of the data that has been logged
- B) Statistics: Displays the mean, total, maximum, minimum, change and median values of the data for the selected time periods. For example, if the hourly maximums in a daily time interval are selected, the time interval is divided into hourly slices to produce an output consisting of 24 points.



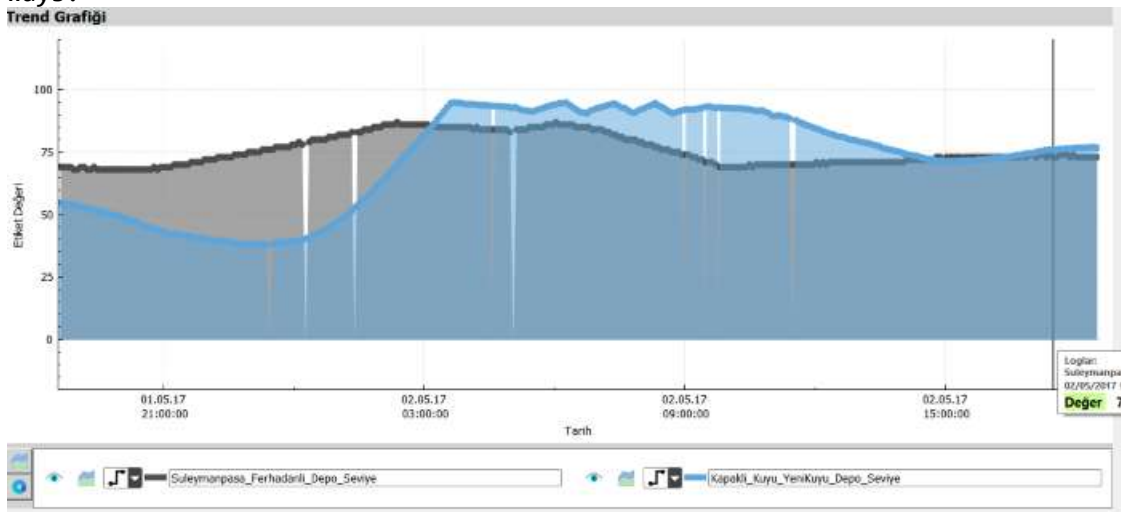
4.2.2.3 Managing Charts

Show/hide Legend button: Shows or shows the name of the plotted tag and descriptions that show line color in the upper right corner of the chart Add a New Chart: Adds a new chart object that you can compare the data in the main chart with the previous time periods. The added chart is displayed synchronously with the main chart according to the determined time interval.



If the data belonging to the selected item in the range defined on the chart is present, this data is indicated by a point. The points shown can be connected to each other in different ways. Underneath the chart is the charting properties menu for each individual chart. Through this menu, the following operations can be performed

- A) Show / hide chart: This line can be hidden and shown with this button
- B) Charged / unloaded: Below of the line related to the tag is filled in integral. It may be easier to compare with other tags in this way.
- C) Merge Points: The points indicated by the item data can be merged into different ways.



4.2.2.4 Saving Charts

According to the selected parameters, the chart can be saved in an image file in "png" format. Use the "Save Chart " button in the left panel

4.2.3 Exporting Data

The data according to the selected parameters can be exported in various formats. For this, firstly the table view button is pressed to create a data table. By using the buttons "html, xml, xlsx, csv" located at the top of the table view screen, the data in the table is converted to these formats and stored.

4.2.4 Saving Filters

The parameters selected to create the data can be saved, and then the same filter can be applied again when needed. The parameters created for this should be applied at least once (Apply Button). After doing this, select "Save this filter" and a name will be given to the filter. The filters are saved for user account. The user can reach these filters from any location. The saved filter can be applied from the saved filters menu on the right side of the screen. When the filters in this menu are copied by right clicking with the mouse, the content of the filter is copied to the clipboard. This copied content can be linked to objects on the SCADA Editor screen. When clicked on the related object on this screen, the report screen opens and the predefined filter is run.

4.3 Creating Reporting Command

It is possible to create the report output in the desired format by calling the created filters through the reporting command line. For this, it is enough to give the command parameters required for the reporting application. Using this feature, it is possible to create automatic reports at certain time intervals via the "Task Scheduler" of the Windows operating system.

```
ScadaReporter.exe -database modpollread -user postgres -password laqhd -
server localhost -port 5432 -query twohours -format csv -output
"C:\Users\yg\Documents\Reports\Last2Hours"
-database Name of the project database (same name as project)
-user Database user name
-password Database user password
-server Database ip address
-port Database connection port
-tnsname tns name for Oracle databases
-format Report output form. Possible values are html, csv, xlsx, xml dir
-query The name of the filter saved in the report. This parameter is required for
the report command. If not given, we do not produce a report; The reporting interface
opens
-output The path and name of the file to be exported.
```


5 ViewPLUS Appendix

5.1 Working with Multi-user

It is also possible for multiple users to work on the same project. The ViewPLUS project consists of 2 basic components as mentioned before. Project files and database. A version control application (such as SVN, Clearcase, Git ...) is needed so that project files can be synchronized among different users. The project database is kept on a central server and synchronization is provided if the users configure their projects to use this database.

5.1.1 Synchronization with SVN

A version control tool such as SVN can be used to synchronize project files on different computers, prevent conflicts, and backup historical project versions. ViewPLUS has an integration with SVN.

5.1.2 PostgreSQL Database Remote Connection

PostgreSQL does not allow access from the network as a security measure when the database is installed, it only allows connections from localhost. To ensure access to the database of users on the same network, the following steps should be taken:

- 1) Add an exception to the firewall for the PostgreSQL port (5432)
- 2) Add the following line to the `pg_hba.conf` file:

```
host all all 0.0.0.0/0 md5
```

- 3) Add the following line to the `postgresql.conf` file:

```
listen_addresses='*'
```

5.2 Date/Time Formatting

These expressions may be used for the date part of the format string:

Expression Output

d	the day as number without a leading zero (1 to 31)
dd	the day as number with a leading zero (01 to 31)
ddd	the abbreviated localized day name (e.g. 'Mon' to 'Sun'). Uses <code>QDate::shortDayName()</code> .
dddd	the long localized day name (e.g. 'Monday' to 'Sunday'). Uses

	<code>QDate::longDayName()</code> .
M	the month as number without a leading zero (1-12)
MM	the month as number with a leading zero (01-12)
MMM	the abbreviated localized month name (e.g. 'Jan' to 'Dec'). Uses <code>QDate::shortMonthName()</code> .
MMMM	the long localized month name (e.g. 'January' to 'December'). Uses <code>QDate::longMonthName()</code> .
yy	the year as two digit number (00-99)
yyyy	the year as four digit number

Note: Unlike the other version of this function, day and month names must be given in the user's local language. It is only possible to use the English names if the user's language is English.

These expressions may be used for the time part of the format string:

Expression Output

h	the hour without a leading zero (0 to 23 or 1 to 12 if AM/PM display)
hh	the hour with a leading zero (00 to 23 or 01 to 12 if AM/PM display)
H	the hour without a leading zero (0 to 23, even with AM/PM display)
HH	the hour with a leading zero (00 to 23, even with AM/PM display)
m	the minute without a leading zero (0 to 59)
mm	the minute with a leading zero (00 to 59)
s	the second without a leading zero (0 to 59)
ss	the second with a leading zero (00 to 59)
z	the milliseconds without leading zeroes (0 to 999)
zzz	the milliseconds with leading zeroes (000 to 999)
AP or A	interpret as an AM/PM time. <i>AP</i> must be either "AM" or "PM".
ap or a	Interpret as an AM/PM time. <i>ap</i> must be either "am" or "pm".

6 ViewPLUS Application Notes

6.1 Creating a Constantly Increasing Counter Tag

In some cases, it may be desirable that the trend of the tag value read from the field is continuously increasing (such as reading a counter). In such cases, when the data read from the field is contaminated because of device replacement, project update, and etc.; trends and counter total values may also get contaminated. To prevent this, a mechanism on SCADA can be configured in the following way.

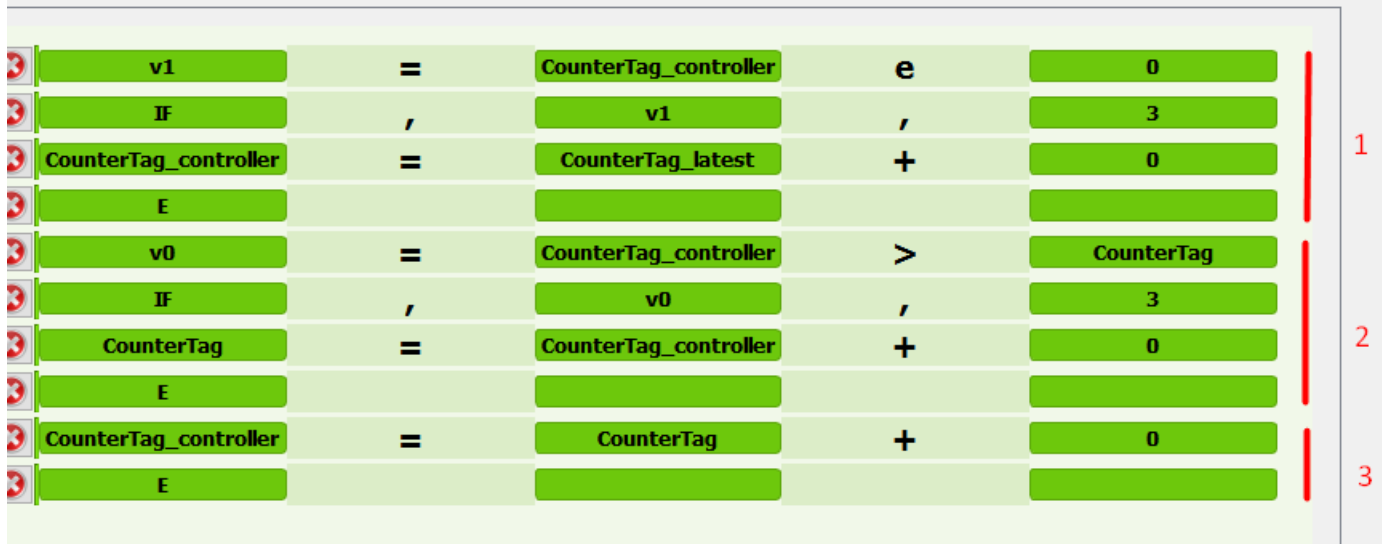
- We need 3 separate tags to solve the problem. As an example we will create a "CounterTag" tag. In parallel we will create a "CounterTag_latest" tag under "Database Channel" and a "CounterTag_controller" tag under Macro channel to fix field-based distortions so that this tag can read the latest value logged in the database.

ID	Name
5	DB_CHANNEL
6	CounterTag_latest
3	Macros
4	CounterTag_controller
1	MinusTest
2	CounterTag
-1	None
-1	-1

- We will use the following query in the tag settings to get the most current value we have logged into the "CounterTag_latest" tag:

`select dataval from logs.lct_table where tag_id=2` This query will read the last logged value of the "CounterTag" tag with tag ID "2"

- Finally, we will add the control macro to the "CounterTag_controller" tag. The macro will be:



```
[v1=$4e0]
[IF,v1,3]
[$4=$6+0]
[E]
[v0=$4>$2]
[IF,v0,3]
[$2=$4+0]
[E]
[$4=$2+0]
[E]
```

This macro consists of 3 main sections. Lines numbered 1 reads the last logged value from the database when the server is running for the first time. Line 2 sets the value to be the value on the field device if it is less than the last log value for any reason. Lines 3 are the part where macro continuously updates the control tag.

- In order to prevent erroneous logs in addition to the structure created above, the "log only while increasing" option should be enabled in the tag logging settings.