



# **ViewPLUS SCADA**

## Programming

## Manual

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## 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 Certifed 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 SCADA

The term SCADA is an abbreviation formed from the initials of "Supervisory Control and Data Acquisition." SCADA is a comprehensive and integrated database-based control and monitoring system that enables automatic control and supervision of all electronic units in a facility or plant, and reporting of results. Essentially, SCADA software is expected to perform functions such as monitoring, control, data acquisition, data recording, and storage.

SCADA systems can operate continuously, intermittently, repeatedly, or in discrete modes in industrial processes, manufacturing, production, power generation, and refineries. Infrastructure operations may include water treatment and pumping stations, wastewater treatment, oil and gas pipelines, power transmission and distribution, wind turbines, civil defense siren systems, and large communication systems in both public and private sectors. SCADA systems may also be used in facilities like plant buildings, airports, ships, and space stations. Monitoring and controlling access and energy consumption may be necessary in heating and ventilation systems (HVAC). Due to the benefits, safety, and convenience it provides, SCADA will continue to be one of the most essential needs of industrial facilities.

While developing the ViewPLUS SCADA software, stability, ease of use, and visual appeal were prioritized. With ViewPLUS SCADA, all kinds of automation units in the field can be visually monitored, controlled, and evaluated.

## **Extensive Visual Library**

- In addition to a broad visual library, it allows users to easily create their own SCADA components. Redundant Working Mode
- Data from the field is read and processed by both SCADA systems simultaneously
- preventing data loss
- Communication status tests (field devices or backup SCADA) can be performed.

## Server/Client Architecture

• Supports multiple workstations with assignable authority levels.

## Tag Capacity Based on License

• Number of alarms and trends can be defined according to the tag count.

## **Operating System Support:**

- Windows 7/8/10/11
- Windows Server 2008/2012/2016/2019/2022
- Linux (Debian)
- MacOSX.

## Security

- 128 different access permissions for tags and pages
- 128 user group assignments, OS-integrated security
- TLS/SSL communication protocols
- salted SHA256 hashes instead of plain text passwords.

## Data Transfer

• Compatible with SQL for data import/export.

## Alarm



• Define alarms for all tags, 256 different criticality levels, monitor active alarms and alarm history, filter by date and importance, export to Excel, printer, or PDF.

## Data Logging and Trend Monitoring

• Logging for all tags, graphical display for trend-defined tags, export to Excel, PDF, or printer.

- Communication
- Excellent connection with Mikrodev PLC, REMOTE IO, and Gateway products. Compatible with many industry-standard protocols: MODBUS TCP, MODBUS RTU, DNP3, SNMP, IEC104, BACNET.

## Database Support

- PgSQL
- ORACLE
- SQLite.

## **1.1 ViewPLUS SCADA PC Requirements**

For optimal performance of the ViewPLUS SCADA software, the required PC specifications are as follows:

SCADA PC Requirements	
Processor	Intel(R) Xeon(R) CPU E7-4870 @ 2.40 GHz (8 cores)
Installed RAM	32.0 GB
System Type	64-bit OS, x64-based processor
Storage	1 TB SSD

**Note:** One important point is that the processor must have 8 cores; it does not necessarily need to be a Xeon processor.

In addition to SCADA server requirements, the server must have a Static IP. To enable client connections from devices outside the network, port forwarding must be configured for the default port 3344.

## **1.2 Architecture**

The ViewPLUS SCADA server connects to field devices via intranet or internet, enabling real-time monitoring and control. Collected data is recorded in tag, event, and alarm databases. Using the configured SCADA project, it allows remote users to monitor and control field devices via internet connection to the server. While various configurations are possible depending on the designed network and hardware topology, the basic architecture is as illustrated below.



**Figure 1 SCADA Architecture** 



## 2 SCADA Database

## 2.1 Installing PostgreSQL 13

PostgreSQL is a powerful, open-source database management system. To install version 13 of PostgreSQL, follow the steps below. This guide includes installation steps for Windows, macOS, and Linux (Ubuntu) operating systems.

## 2.1.1 PostgreSQL 13 Installation for Windows

- Visit the official PostgreSQL website and download version 13 for Windows.
- Run the downloaded installer and launch the setup wizard.
- Follow the steps in the installation wizard:

Start: Click "Next" to begin.

Installation Directory: Choose the directory for installation (default is C:\Program Files\PostgreSQL\13).

Components: Select all components (PostgreSQL Server, pgAdmin 4, Stack Builder, etc.).

Data Directory: Choose a directory for data storage.

Password: Set a password for the PostgreSQL superuser (postgres).

Port: Default port number is 5432. Proceed without changing.

Locale Settings: Select the default locale settings.

Completion: Click "Next" and then "Finish" to complete installation.

• After installation, verify success by connecting through pgAdmin 4 or command line.

## 2.1.2 PostgreSQL 13 Installation for macOS

Use Homebrew to install PostgreSQL 13 by executing the following commands in Terminal:

brew install postgresql@13

• Start PostgreSQL services:

brew services start postgresql@13

• Verify installation using the command `psql postgres`. If connection is successful, the installation is complete.



## 2.1.3 PostgreSQL 13 Installation for Linux (Ubuntu)

• Add the official PostgreSQL repository:

sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt/ \$(lsb\_release -cs)-pgdg main" >
/etc/apt/sources.list.d/pgdg.list'

• Add the APT key:

wget -qO - https://www.postgresql.org/media/keys/ACCC4CF8.asc | sudo apt-key add -

• Update package list:

sudo apt-get update

• Install PostgreSQL 13:

sudo apt-get install postgresql-13

• Start PostgreSQL service:

sudo systemctl start postgresql

• Verify installation by connecting to PostgreSQL:

sudo -u postgres psql

## 2.1.4 PostgreSQL Configuration

After installation, you can configure the database by editing the configuration files. Main configuration files include:

- postgresql.conf: General PostgreSQL settings
- pg\_hba.conf: Host-based authentication settings

These files are typically located in `/etc/postgresql/13/main/` on Ubuntu or in the installation directory on Windows/macOS.



## 2.2 Database Tables

ViewPLUS SCADA uses various database tables to manage, log, and report SCADA projects. For PostgreSQL, tables are organized under the "public" and "logs" schemas.

## 2.2.1 Public Schema Tables



**Figure 2 Public Database Tables** 

- Alarms: Contains alarm definitions created via the SCADA editor.
- Channels: Contains connection information for field devices.
- Tags: Used to define tag details in the system.
- **Users:** List of authorized users for the project.

## 2.2.2 Logs Schema Tables



**Figure 3 Logs Database Tables** 

- **alarm\_table:** Stores real-time active alarm information.
- alarm\_log: Stores historical alarm data.
- event\_log: Contains user login, request, and event data.
- **Icd\_table:** Latest value and timestamp for system tags from field devices.
- **tag\_log:** Raw data collected from the field; this table can grow rapidly.
- tag\_log\_agrhour: Hourly statistics for system tags, updated every minute.
- tag\_log\_agrday: Daily statistics for system tags, updated every minute.
- tag\_log\_agrweek: Weekly statistics for system tags, updated every minute.
- tag\_log\_agrmonth: Monthly statistics for system tags, updated every minute.
- tag\_log\_agryear: Yearly statistics for system tags, updated every minute.



## 3 Creating a New Project

Follow the steps below to create a new project:

• Click File > New File or Project > Mikrodev SCA Project.

🔞 Yeni		×
Bir şablon seçin:		Tüm Şablonlar 🖂
Projeler Uygulamalar Projeyi İçe Aktar Dosyalar Mikrodev Genel	Mikrodev SCA Project	Bir SCA Projesi oluşturur. Bir intro.sca dosyası oluşturur. Bu SCADA sisteminin ilk sayfasıdır <b>Desteklenen Platformlar:</b>
		Seç Cancel

Figure 4 Creating a New Project

• Project Name and Location:

Enter the project name and select the location where it will be saved.



Konum Veritabanı Ayarları Görünüm Ayarları Özet	Giriş ve Proje Konumu This wizard generates a Mikrodev SCA Project.
	İsim: test
	Oluşturma yeri: C:\Users\mikrodev Gözat Varsayılan proje konumu olarak kullan

 $\times$ 

## **Figure 5 Project Location**

• Database Settings:

After entering the database username and password, click the "Test Connection" button to verify the password. If the PostgreSQL database is not installed on your system, click the "Download PgSQL" link to download and install the required version.

		×
← ➡Mikrodev SCA Project		
Konum	○ SQLite	
🗼 Veritabanı Ayarları	PostgreSQL	
Görünüm Ayarları	Oracle	
Ozet	Sunucu Ayarları	
	Veritabanı Adı	postgres
	SunucuAdresi	localhost
	SunucuPortu	5432
	Veritabanı Kullanıcı Adı	postgres
	Veritabanı Kullanıcı Şifresi	i
		Bağlantıyı Test Et
	You should install PgSQL Database	
	<u>PgSQLI Indir</u>	
	_	
		Next Cancel

Figure 6 Database Selection



• Visual Settings:

Adjust visual parameters such as screen color and default page size.

Konum Veritabanı Ayarları	Varsayılan Ekran Boyutu Genişlik 1280	Yüksel 1024
Özet	Arkaplan Rengi Renk Seç Sfirla	Görünüm Blok Numarasını Göste Etiket Adını Göster Tam Ekran Göster

 $\times$ 

• Version Control Settings:

On the next page, if you plan to use the SVN version control tool, configure the necessary settings.

				×
← 📑 Mikrodev SCA Project				
Konum	Proje Yönetimi			
Veritabanı Ayarları Görünüm Ayarları	Projeye altproje olarak ekle:	<none></none>	$\sim$	
i Özet	Versiyon kontrolüne ekle:	<none></none>	~	Konfigüre Et
	Eklenecek dosyalar			
	C:\Users\mikrodev\te	st:		
	intro.sca test.scapro test.tcf			
			Finish	Cancel

**Figure 8 Version Control** 



• Completing the Project:

Click the "Finish" button to create the new project. The newly created project consists of two files:

- A file with the extension ".scapro" that stores the project configuration parameters. This file generally does not require modification.

- A file named "intro.sca" where you can design the main screen used in the SCADA system.



#### **Figure 9 Project Files**

By following these steps, you can create a new SCADA project. After creating your project, you can make adjustments and add components based on your SCADA system's needs.



## 4 Scada Editor Interface



Figure 10 ViewPLUS SCADA Interface

## 4.1 Sidebar

The sidebar plays an important role in the SCADA Editor view. This panel is used to browse projects, files, and add components.



**Figure 11 Sidebar Features** 

- Add New Pane: On the left side of the editor, panes allow you to control project files and components. These provide useful tools for managing your projects and components.
- **Close Pane:** You can close unused panes to make the workspace more efficient. This helps clean up the workspace by hiding unnecessary panes.
- **Search:** The search box at the bottom of the sidebar allows you to search current project files, open diagrams, etc. This is useful for quickly locating specific files in large projects.
- **Hide/Show Panels:** A button at the bottom-left of the panel allows hiding or showing all panels, providing flexibility in organizing the workspace.

Note: If the sidebar is closed, it can be reopened via the window menu using the "Show Sidebar" option.

## 4.1.1 SCADA Components Panel

This section displays the list and categories of components to be used in SCADA projects.



Figure 12 SCADA Components Panel

- **Categories:** SCADA components are grouped under different categories, such as "Building", "Buttons", and "Lighting".
- Components: Each category lists related components, which can be added to the project using dragand-drop.
- **Filtering:** You can use the search box at the top to filter components and quickly find what you're looking for.



## 4.1.2 Projects Pane

This section displays the existing SCADA projects and the files included in these projects.



Figure 13 Projects Panel

- **Project List:** Displays a list of your current projects. Each project contains project files and pages.
- **Project Files:** Shows the files under the selected project, such as .scapro and .sca files.
- File Operations: Right-click on project files to add a new file, delete, or edit existing files.

## 4.1.3 Open Diagrams Panel

This section displays the currently open diagrams in your projects.

Açık Diagramlar	•	8+	×
YeniScada1.sca			
intro.sca			

Figure 14 Open Diagrams Panel

- **Open Diagrams List:** You can see which diagrams are currently open and quickly switch between them.
- Diagram Management: You can close open diagrams or perform operations on them.



## 4.1.4 File System Pane

This section provides access to your computer's file system.

File System	<del>,</del> ଅ, ⊗ ⊞ X
training_project	
 components	
intersect     training_project.scapro     training_project.scapro.user     training_project.tcf	
YeniScada1.sca	

Figure 15 File System Pane

• File and Folder Access: Access files and folders on your computer and manage your project files.

## 4.2 Main Workspace

The main workspace is the area where you can design SCADA pages and place components.

🔶 🔶 🖬 intro.sca	★
Insert Format	
A 🕓 🛃	
Stan	dart
	•••••••••••••••••••••••••••••••••••••••
	C >

#### Figure 16 Main Workspace

- Page Editing: You can add new components, move existing ones, and make edits.
- **Page Shortcuts:** Use the toolbar at the top to perform page editing actions (e.g., save, save as, auto-select last added item).



## 4.2.1 Page Shortcuts

Shortcut tools provide essential features to help you use the SCADA editor more efficiently. Their functions and usage are explained below.



Figure 17 Page Shortcuts

- **Save:** Click this icon to save changes made to the project. This overwrites the current files and stores all changes.
- Save As: Click this icon to save changes as a new file, preserving the original files.
- **Pointer Mode:** Click this icon to exit edit mode and enter pointer mode. This allows you to select and move objects in the workspace.
- Last Added Component: Click this icon to quickly find the last added component on the page. This is helpful for locating newly added items in large projects.
- **Change Labels:** Click this icon to change the label associations of components with similar label structures on the page. This allows for quick updates of specific labels.

🛞 Etiketleri Değiştir		?	×
Şu anki editör sayfasında ismi şununla	ı başlayan tüm nesne	e etiketlerini	i değiştir
şu ön eki			
şu ön eke			
İlk ön eke veya sonuçtaki hiçbirşey ya	ön eke sahip bir etike apılmayacaktır	et yoksa	
	Başlat	İpta	al

Figure 18 Change Labels Screen

When performing automatic label changes, it is important that labels associated with similar components have a similar structure.

Example for an energy analyzer page: Cell H01 H01\_FazL12VoltageInfo H01\_FazL1CurrentInfo H01\_FazL1VoltageInfo

Cell H02 H02\_FazL12VoltageInfo H02\_FazL1CurrentInfo H02\_FazL1VoltageInfo

If H01 page is to be adapted to H02, select the "Change Label" shortcut.

Current Prefix: Enter the variable part of labels currently on the page (e.g., H01). New Prefix: Enter the variable part of labels to be reassigned (e.g., H02).

• Clear Invalid Labels: This option clears invalid labels from the page.



## 4.3 Page Properties Panel

This panel allows configuring various settings of the selected page.

Özellik         Deği           SayfaAdı         Page           SayfaID         0           SayfaSırası         0           SayfaTipi         Saka           GeoGörünüm         1           GeoMerkez         51.50,0           BaşlangıçtaGleçkle         Yuk           OzelSayfaBoyuto         1           SayfaGenişliği         250           SayfaGenişliği         150	er laSekmesi
SayfaAdı Page SayfaID 0 SayfaSırası 0 SayfaTipi Skad GeoGörünüm GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SayfaYüksekliği 150	laSekmesi v 10
SayfalD 0 SayfaSırası 0 SayfaTipi Skad GeoGörünüm GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SayfaYüksekliği 150	laSekmesi
SayfaSırası 0 SayfaTipi Skad GeoGörünüm GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SayfaYüksekliği 150	JaSekmesi v
SayfaTipi Skad GeoGörünüm GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SayfaYüksekliği 150	IaSekmesi v
GeoGörünüm GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SavfaYüksekliği 150	,10
GeoMerkez 51.5,0, BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SavfaYüksekliği 150	,10
BaşlangıçtaÖlçekle Yok ÖzelSayfaBoyutu SayfaGenişliği 250 SavfaYüksekliği 150	~
ÖzelSayfaBoyutu SayfaGenişliği 250 SavfaYüksekliği 150	
SayfaGenişliği 250 SavfaYüksekliği 150	
SavfaYüksekliği 150	4
ArkaplanResmi 🛛 🕄	
Sayfaİkonu 🛛 🔞	
Kayar Yazı Ekle	
Erişim Hakları	

#### **Figure 19 Page Properties Panel**

- Page Name: Set or edit the name of the page.
- **Page ID:** Each page has a unique, automatically assigned ID number.
- **Page Order:** Determines the order of pages (with type "SCADA Tab") on the Client screen. The topmost page acts as the homepage. Click the AZ icon in the "Page Order" section to reorder pages using the left arrows in the opened dialog.



#### Figure 20 SCADA Pages Ordering



• Page Type: There are 3 page types in SCADA software:

SCADA Tab: Visible in the left tab section of the Client screen.

SCADA Dialog: Popup-type pages not visible in the left tab section.

SCADA Linked Page: Not in the tab section; opened via navigation from another page.

- **Geo View:** If checked, the page will be used as a map page.
- Geo Center: Enter the coordinates to focus on when the map page is opened.
- Initial Scaling: Choose the scaling type to apply when the page is opened.

Visible / Width / Height: Controls how the SCADA page will be shown in the Client screen based on width, height, or full visibility.

• Custom Page Size: Enable this option to set custom dimensions for the SCADA page.

Page Width / Height: These become active when "Custom Page Size" is selected.

- **Background Image:** Add a background image to the SCADA page.
- Page Icon: Assign an icon for SCADA Tab pages to display in the left sidebar.
- Scrolling Text: Enable this option to add scrolling text to the SCADA page.
- Access Rights: Restrict page visibility to users with assigned permissions.

## 4.4 Layers Panel

Katman 🔷
📚 Yeni Katman
Katman Yeni Katman
Yeni Katman II Etiketler Diğer

Figure 21 Creating a New Layer

You can create or delete layers on the Layers panel. By placing components on the created layers, you can establish a hierarchical structure on the page. You can hide/show layers to more easily manage complex designs. Another benefit of layers is the ability to change their visibility depending on different zoom levels.

• **Hide/Show Layers:** You can hide or show layers you've added using the "Hide/Show Layer" option from the right-click menu.



Sayfa Özelikle	ri Katmanlar
Katman	Katmanı Gizle/Göster
😻 Yeni	Katman Elemanlarını Öne Getir
	Katman Elemanlarını Arkaya At
	Katman Bileşenlerini Seç
	Katman Özellkleri
⇒ 🕕	Katman Yeni Katman
=	

**Figure 22 Layer Properties** 

• Change Component Order in a Layer:

	Katasantas	
Sayfa Ozellk	i Katmaniar	
Katman	^	
🌲 Veni	Katmanı Gizle/Göster	
- Ten	Katman Elemanlarını Ö	ne Getir
	Katman Elemanlarını Ar	kaya At
	Katman Bileşenlerini Se	ç
	Katman Özellikleri	

#### Figure 23 Changing the Order of Layers

You can change the order of the layers using the options "Bring Layer Components Forward" or "Send Layer Components Back" from the right-click menu

• Hide/Show Layers Based on Zoom Level:



**Figure 24 Selecting Layer Properties** 



You can hide or show defined layers on the page depending on the zoom level of the screen. This allows you to show components with more detail at higher zoom levels and reduce clutter by showing fewer components at lower zoom levels. To do this, first select "Layer Properties" in the Layers Panel.

In the opened dialog, two fields indicate the zoom level parameters.

🔞 Katman 🤅	Özellkleri			?	×
Katma	nı şu zum sl	kalasında görü	ünür yap	(1/100)	
<u> 1</u>	-	ve	-1		-
"-1" bu yönde Örnek olarak katmanın, ska	herhangi b "300" ve "- la 3 ten büj	iir limit yok de ∙1" değerleri yükken görün	mektir ür olacağı	nı ifade	eder
		0	К	Can	cel

**Figure 25 Layer Properties** 

The layer will be visible between the two zoom values entered here. If one of the values is set to "-1," the layer will remain visible regardless of the zoom level in that direction. For example, setting values to "300" and "-1" means: "Show the layer when the zoom level is higher than 3."



Zoom less than 3:



Figure 26 Low Zoom

Zoom greater than 3:



Figure 27 High Zoom

As shown in the image, when the zoom level exceeds 3, the layer containing the buttons becomes visible.



## 4.5 Object Properties Panel

The Object Properties panel allows you to make detailed settings for the selected component.

## 4.5.1 Object Properties Tab

Nesne Özellkleri		Etiketler Diğer	
Property		Değer	
nesneAdı		Generator_002_0	
ob	jeTipi	Generator_002	Ī
~ ge	ometri		
	Х	250 ::::::::::::::::::::::::::::::::::::	•
	Υ	390	•
	Genişlik	203	•
	Yükseklik	156	•
	Rotasyon	0	•
~ sa	bitler		
	Yazı X Ofseti	10	•
	Yazı Y Ofseti	68	•
	Yazı İçeriği	%.3f	
	Yazı Stilsay	font: 22px "Arial"; 🖋	1
	Metin Geni	203	•
~ oli	aylar		
	Olay Tipi	FareTuşunaBasıldı	,
	Olay Aksiy	ATA v 🗆 Require ack	
	Hedef Ola	P -1	6
	Sayfaya Git	Page 🗸 🔊 🗆 Alarmları Gös 🗆 CloseThisW	in
	Run Functi		
	(Web)Link	Bağlantı Ekle bağlantı adresi	

Figure 28 Component Parameters – Properties

- **Object Name:** A user-defined name to distinguish the component from others.
- Geometry: Position, size, and rotation values of the component on the screen are defined as integer
- Constants:

Text X Offset: If a "Text Tag" is defined and "Text Content" is entered, this parameter defines a horizontal offset for the displayed text.

Text Y Offset: If a "Text Tag" is defined and "Text Content" is entered, this parameter defines a vertical offset for the displayed text.

Text Content: If a "Text Tag" is defined, the formatted text entered here will be displayed on the component. The text must follow printf text formatting syntax.

#### **Examples:**

```
Integers: %d \rightarrow "1977"
Leading spaces: %10d \rightarrow " 1977"
Leading zeros: %010d \rightarrow "0000001977"
```



Float numbers: %4.2f  $\rightarrow$  "3.14"

- **Text Style Sheet:** You can define a stylesheet for the displayed text content to customize font, size, and color.
- Text Width: Specifies the maximum width of the text to be shown on the component.
- Events:

Event Type: Specifies under what condition the event is triggered.

Mouse Button Pressed: Triggered when the left mouse button is pressed.

Mouse Button Released: Triggered when the left mouse button is released.

Key Pressed: Triggered when a keyboard key is pressed.

Event Action: Function to be executed when the defined "Event Type" is triggered.

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

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

TOGGLE: Changes the value of the "Target Event Tag": If  $1 \rightarrow 0$ , if  $0 \rightarrow 1$ .

LOAD VALUE: If selected, right-clicking the component in the client software opens a dialog allowing the user to manually change the "Target Event Tag" value.

Require Ack: If the event action is SET, CLEAR, or TOGGLE, an on-screen confirmation dialog is shown before the value is changed.

GO TO PAGE: Navigates to the client screen defined under "Go to Page".

GO TO LINK: Opens the link defined under "Web Link" in the Web View area of the client screen.

Target Event Tag: Defines the tag affected by the selected "Event Action".

Go to Page: If the event action is "GO TO PAGE", the page defined here opens when the component is clicked.

Show Alarms: When "GO TO PAGE" is selected, if there are active alarms on any tags within that page, an exclamation mark icon appears on the component.

Run Function: Used to create a dynamic page structure. For more information, see the Dynamic Pages section.

Add Link: Enables definition of a web link by checking the "Add Link" option.

Web Link: If the event action is "GO TO LINK", the URL entered here will be opened in the Web View area when the component is clicked.



## 4.5.2 Tags Tab

Values of the selected tags in this panel constantly update the corresponding parameters based on realtime field data. These tags can also be used in macros. Each tag has predefined variable types: i, o, s, w (e.g., i1, i2, o1, o2).

Prop	erty	De	ğer	
∀ öz	ellik etiketleri			
	Resim Index Etik	,0	-1	
	Yazı Etiketi	,0	-1	
	X Konumu	<b>,</b> 0	-1	
	Y Konumu	<b>,</b> 0	-1	
	Genişlik	<b>,</b> 0	-1	
	Yükseklik	,0	-1	
	Döndürme Açısı	<b>,</b> 0	-1	
	Metin Rengi	,0	-1	
	Maske Rengi	<b>,</b> 0	-1	
	Maske Saydamlığı	,0	-1	
∀ öz	el etiketler	_		
	Özel Nitelik 1	<b>,</b> 0	-1	
	Özel Nitelik 2	<b>,</b> 0	-1	
	Özel Nitelik 3	,0	-1	
	Özel Nitelik 4	<b>,</b> 0	-1	
	Özel Nitelik 5	<b>,</b> 0	-1	
	Özel Nitelik 6	<b>,</b> 0	-1	
	Özel Nitelik 7	,0	-1	1

Figure 29 Component Parameters – Tags

#### • Property Tags:

Image Index Tag: Represents the currently displayed image index. The images and their corresponding indices can be viewed in the "Images" section under the "Other" tab or modified via the Component Manager.

Text Tag: The value of this tag is formatted using "Text Content" and displayed on the component.

X Position: Defines the horizontal screen coordinate of the component. The origin (0,0) is the top-left corner. X increases to the right.

Y Position: Defines the vertical screen coordinate of the component. The origin (0,0) is the top-left corner. Y increases downward.

Width: Width of the component.

Height: Height of the component.

Rotation Angle: Rotation angle of the component relative to the X-axis, in degrees.

Text Color: The color of the text shown on the component.\*

Mask Color: The color of the mask applied to the component.\*



\* Color values are defined as hex values in the format `#112233`. These are converted into integers by taking the hex part (e.g., 112233) and interpreting it as a decimal number. You can view sample hex color codes here, or convert them using the tool here.

Mask Transparency: A value between 0–255 is taken from this tag to define mask transparency.

- Custom Tags: You can define 7 custom tags to be used in macros. Each tag supports:
- i (in): Raw value read from the field.
- o (out): The value to be displayed on the screen after macro processing.
- S (set): The value that the user intends to set.
- w (write): The final value to be written to the field device after macro processing.
- i ---Macro---> o, s ---Macro---> w: > If no macro is applied: i = o, s = w

## 4.5.3 Other Tab



Figure 30 Component Parameters – Other

- Limits: Sets minimum and maximum values that users can assign to the "Target Event Tag" through the client software.
- Tooltip: The content shown when the user hovers the mouse over the component in the client.
- Macro: The macro script for the component is written here. It uses predefined tags from the Tags section.



• **Images:** Displays the images and their index values associated with this component. These can be edited in the "Component Manager" or new ones can be added.

Index 0: The image corresponding to index value 0 from the Image Index Tag

Index 1: The image corresponding to index value 1 from the Image Index Tag

Index 2: The image corresponding to index value 2 from the Image Index Tag

Index 3: The image corresponding to index value 3 from the Image Index Tag

## 5 Tag and Channel Editor

Channels and tags are special definitions that enable the SCADA software to access data on field devices. Channels contain protocol definitions and specific settings related to those protocols, which allow communication with field devices. Tags, on the other hand, consist of address definitions for registers on connected devices.

🕜 traini	ng_project	- Mikrode	v ViewPLUS	5					
Dosya	Düzenle	Araçlar	Pencere	Yardım					
		ETIK	ETLER						
		Q	Etiket ID			Etiket Adı			
SCADA	Editörü			Genişlet/Daralt		Kanal Adı			
	7	ID		Name					
Pro	jeler	× -	1	🝁 None					
	-		-1	🥔 -1					
Etiket Kar	nal Editoru								
							Total Tag Count:0,	Total Channel (	Count:0
					✓Makroları D	oğrula			

Figure 31 General View of Tag and Channel Editor

In the opened dialog window, necessary configurations related to the new channel can be made.



## 5.1 Channels

Channels can be created to define communication settings with field devices, or to establish virtual channels such as macros or database queries.

To create a new channel:

- 1. Open the Tag and Channel Editor tab.
- 2. Right-click on any existing channel.
- 3. Select New Channel from the menu.



## Figure 32 Adding a New Channel

## 5.1.1 Modbus TCP Channel

To communicate with field devices using the Modbus TCP protocol, a new Modbus channel must be created. In the new channel creation window, select "Modbus TCP" as the Protocol Type.

💮 Yeni Kar	al		?	×
KanalAdı İstasyon				
ProtokolTipi	MODBUS_TCP			~
	ОК	Cancel		

Figure 33 Modbus TCP Channel Definition



## 5.1.1.1 Channel Parameters

Kanal	
🗹 Kullanımda	····
KanalAdı	modbus
KanalID	3
İstasyon	
Tanım	
ProtokolTipi	MODBUS_TCP ~
View Disconnected values as 0	0
SunucuIP	127.0.0.1 Ping Testi Sonuç: ?
SunucuPortu	1080
Max Read Size	56
CevapZamanAşımı(ms)	6000
BağlantıZamanAşımı(ms)	6000
ÇerçeveZamanAşımı(ms)	3000
Kanal Grubu	-1
	🕞 Kanal Verisini Kaydet (Ctrl+s)

#### **Figure 34 Modbus Channel Parameters**

- View Disconnected values as 0: This option should be enabled (set to 1). If the connection with the slave device is lost, this parameter ensures that the values of the related Modbus tags are displayed as 0.
- Server Address: Enter the IP address of the device to be used for Modbus TCP communication.
- **Server Port:** Enter the port number used by the device for Modbus TCP communication (default is usually 502).
- **Response Timeout:** The time to wait for a response from the slave device after each Modbus query (in milliseconds). If no response is received within this time, the query is retried.
- **Connection Timeout:** The time to wait after sending a connection request to the device before retrying if the connection cannot be established (in milliseconds).
- **Frame Timeout:** The time to wait after receiving a response to a query before sending the next query (in milliseconds).
## 5.1.1.2 Tag Parameters

ETIKET				
Genel Loglama				
Etiket				
🗹 Kullanımda				
EtiketAdı	etiket1	KanalAdı		modbus
EtiketID	3	🔌 Kanalı Şuna	a Değiştir:	🔹 None 🗸 🗸
Formula	Javascript formula	0		
Tanım	A brief description	Anahtar Kelimeler		
Teçhizat	A custom equipment name	FonksiyonKodu		0x3 Read Holding Register V
Ölçülen Entiti	e.g. temp, pressure	CihazAdresi		1
Birim Adı	e.g. centigrade, psi			
Konum	Location coordinates			
Тад Туре	Standart Etiket	~		
Erisim Hakları		Değişken		
Okuma		DEğişken Adresi	0	
Yazma		VarSize	4	
		DeğişkenTipi	S32	~

### Figure 35 Modbus Tag Parameters

- **Function Code:** The function code used to read or write the tag via Modbus (e.g., 03: Read Holding Registers, 06: Write Single Register).
- Device Address (Slave ID): The identifier number of the target slave device in the Modbus protocol.
- Register Address: The Modbus address of the variable to be read or written.
- **Data Size:** The size of the data at the specified address. This value is determined automatically based on the selected data type.
- Data Type: The type of data at the specified address (e.g., Integer, Float, Boolean).

# 5.1.2 MQTT Client Channel

To communicate with field devices over a TCP/IP network using the MQTT protocol, a new MQTT Client channel must be created.

💮 New Char	inel		?	×
ChannelName Station	mqtt			
ProtocolType	MQTT_CLIENT			$\sim$
	ОК Са	incel		

Figure 36 MQTT Client Channel

Two different Payload formats are supported for communication via the MQTT driver.



#### **Selecting the Payload Format**

The payload format determines the structure of MQTT messages and how data is configured and transmitted.

### • Payload Format: 0

Compatible with Mikrodev devices. Uses a simple structure containing the value of a single variable.

Structure: { "deger3": 14.0000 }

deger3: The variable name defined in the MQTT tag. Represents the line tag defined in the PLC project.

Preferred in applications where only a single data field is sent.

### • Payload Format: 1

This format supports multiple devices and multiple variables.

Structure: { "124": { "test\_deger": {"V": 15.0000 } } }

**124:** Device ID used in MQTT communication.

test\_deger: The name of the variable.

V: Field that carries the actual value (e.g., "V" - Value).

This structure is especially useful in large-scale projects for distinguishing data by device.

5.1.2.1	MQTT	Channel	Parameters
---------	------	---------	------------

	3	
ChannelName	matt	
ChannelID	4	
Station		
Description		
ProtocolType	MOTT CLIENT	
Protocollype Dayload Format		
	0	
ServerIP	127.0.0.1 Ping Test Re	sult: ?
ServerPort	1080	
UserName		
ClientId		
Password		
WillMessage		
WillQoS		
WillRetain		
WilTopic		
CertPath		
Listen Port	1081	
Clean Session	115200	
Socket Type	Unencrypted	~
KeepAlive	6000	
	₽ Save Channel Data (Ctrl+s)	

**Figure 37 MQTT Channel Parameters** 

The following settings are used to connect to the MQTT broker:

**Server IP:** IP address of the MQTT broker.

**Server Port:** The port number the broker listens on (e.g., 1883).

Username: Enter the username if authenticated connection is required.

**Client ID:** The client ID to be used when connecting to the broker.

Password: Password for the given username.

Will Message: The message the broker publishes if the connection is lost.

Will QoS: Quality of Service level for the Will message (0, 1, 2).

Will Retain: Whether the Will message should be retained by the broker (true/false).

**Will Topic:** The MQTT topic to which the Will message is published.

Cer Path: Full path of the certificate file if a TLS encrypted connection is used.

Listen Port: The port on which the MQTT client listens for data. For example: 1081.

Clean Session: true/false. If true, previous session data is cleared upon session termination.



Socket Type: Connection type – Unencrypted or SSL/TLS.

**Keep Alive:** The interval to send keep-alive packets to maintain the connection (in milliseconds). For example: 6000.

## 5.1.2.2 Tag Definitions

ETIKET				
Genel Loglama				
Etiket				
🗹 Kullanımda				
EtiketAdı	mqtt_etiketi	KanalAdı	n	nqtt
EtiketID	27	🖉 Kanalı Şuna Değ	jiştir:	🚧 None 🗸 🗸
Formula	Javascript formula			
Tanım	A brief description	Anahtar Kelimeler	Γ	
Teçhizat	A custom equipment name			
Ölçülen Entiti	e.g. temp, pressure	Торіс	1	L
Birim Adı	e.g. centigrade, psi		L	
Konum	Location coordinates			
Sub/Pub	Subscribe	~		
Erişim Hakları		Değişken		
Okuma		Variable Name	0	
Yazma		VarSize	4	
		DeğişkenTipi	S32	~

#### Figure 38 MQTT Tag Definitions

**Device (Device ID):** Enter the unique ID number of the device.

- This field can be left blank.
- It is mandatory if Payload Format 1 is used.

**Topic:** The topic name used to send or receive data on the MQTT broker.

• Different topics can be defined for each variable or device.

Sub/Pub: Select whether the channel will perform Publish, Subscribe, or both.

- Subscribe Receives data
- Publish Sends data
- Sub / Pub Both sends and receives

Variable Name: Enter the variable name.

- This name must exactly match the line tag name in the PLC project.
- Data matching in MQTT messages is done using this name.

Variable Type: Select the variable type here.

• Supported types include s32, u32, s16, u16, s64, u64, bool, dbl, and all inverse types.

VarSize: The variable size is automatically assigned by the SCADA software based on the selected type.



• No manual input is required from the user.

## 5.1.3 Macro Channel

The Macro Channel is used to create virtual tags and perform script-like operations for calculations or logical checks on these tags.

🕜 Yeni Kana	al		?	×
KanalAdı				
İstasyon				
ProtokolTipi I	MACRO			~
	ОК	Cancel		

### **Figure 39 Macro Channel Definition**

## 5.1.3.1 Channel Parameters

KANAL	
🗹 Kullanımda	
KanalAdı	makro
KanalīD	6
İstasyon	
Tanım	
ProtokolTipi	MACRO ~
ÇerçeveZamanAşımı(ms)	3000
🗟 Kanal Ve	erisini Kaydet (Ctrl+s)

#### **Figure 40 Macro Channel Parameters**

• **Frame Timeout:** The time interval that determines how frequently the macro channel is executed. It is defined in milliseconds (e.g., 1000 = executed every 1 second).

## 5.1.3.2 Tag Parameters

KANAL	
🗹 Kullanımda	9
KanalAdı	makro
KanalID	6
İstasyon	
Tanım	
ProtokolTipi	MACRO ~
ÇerçeveZamanAşımı(ms)	3000
🕞 Kanal V	erisini Kaydet (Ctrl+s)

#### Figure 41 Macro Writing Screen

Virtual variables used in macros can be defined from v0 to v199. A total of 200 virtual variables are supported.



## Tag sources:

Real Tags: Called using the actual tag ID, such as \$1234.

Constant Values: Direct constants like 234, 12.5 can be used as integers or decimals.

## 5.1.3.3 Macro Commands



**Figure 42 Macro Commands** 

The operators usable within the macro channel are as follows:

- +: Addition
- -: Subtraction
- \*: Multiplication
- /: Division
- %: Modulus
- &: Logical AND
- |: Logical OR
- ^: Logical XOR
- >: Greater than
- <: Less than
- e: Equals
- **n**: Not equal
- **b:** Greater than or equal
- k: Less than or equal



• **?:** Special operation operator

## 5.1.3.4 Example Usages

## **Arithmetic Operation Example**

[ v0 = \$1234 \* 2 ]

Explanation: The value of the tag with ID \$1234 is multiplied by 2 and written into variable v0.

Usage of Special ? Operator

Syntax	Explanation
[ v0 = 1234 ? 0 ]	Gets RX counter value of tag 1234
[ v0 = 1234 ? 1 ]	Gets read time of tag 1234
[ v0 = 1234 ? 2 ]	Checks communication status (0 or 1)
[ v0 = 1234 ? 3 ]	Checks if the value is valid
[ v0 = v0 ? 20 ]	Converts v0 to epoch time (in seconds)
[ v1 = v0 ? 21 ]	Extracts year from v0
[ v2 = v0 ? 22 ]	Extracts month from v0
[ v3 = v0 ? 23 ]	Extracts day from v0
[ v4 = v0 ? 24 ]	Extracts hour from v0
[ v5 = v0 ? 25 ]	Extracts minute from v0
[ v6 = v0 ? 26 ]	Extracts second from v0

### **Condition Control Commands**

• [IF] – Condition Validation

[IF, v0, 2]

[ v1 = 555 ]

[E]

Explanation: If v0 equals 1, the next line (v1 = 555) is executed. Otherwise, it skips down by the parameter 2 and ends at [E].



• [NI] – Negative Condition (NOT IF)

```
[NI, v0, 2]
```

[ v1 = 555 ]

[E]

Explanation: If v0 equals 0, the next line (v1 = 555) is executed. Otherwise, it skips down by 2 lines and exits with [E].

## **Macro Termination**

Each macro must be ended with the [E] command. This indicates the completion of the macro cycle.

Note: Macro language is line-based; each operation should be written on a single line.

**Note:** Tag IDs are written with the \$ symbol, while constant IDs are used directly in ? operations (e.g., 1234).

## 5.1.4 IEC104 Channel

To communicate with field devices over the TCP/IP network using the IEC 60870-5-104 (IEC 104) protocol, you need to create a new IEC 104 channel.

💮 Yeni Kar	nal		?	$\times$
KanalAdı	iec104			
İstasyon				
ProtokolTipi	IEC104			~
			_	
	OK	Cancel		

Figure 43 IEC 104 Channel Definition



## 5.1.4.1 Channel Parameters

KANAL			
🗹 Kullanımda	9		
KanalAdı	iec104		
KanalID	4		
İstasyon			
Tanım			
ProtokolTipi	IEC104 V		
Varsayılan Asdu Addresi	1		
SunucuIP	127.0.0.1 Ping Testi Sonuç: ?		
SunucuPortu	2404		
W	12		
T1(secs)	15		
К	8		
T2(secs)	10		
T3(secs)	20		
General Interrogation(secs)	60		
Clock Syncronisation(secs)	300		
Timezone GMT	0		
🕞 Kanal Verisini Kaydet (Ctrl+s)			

### Figure 44 IEC 104 Channel Parameters

- W (Window Size Send Acknowledgement Trigger): This parameter defines after how many data frames an ACK (acknowledgement) message will be sent. An ACK is sent after sending W number of data frames.
- **K (Acknowledgement Window Size):** The maximum number of packets that can be sent without receiving an ACK. If this number is exceeded, the connection may break or need to be re-established.
- **T1 (Acknowledgement Timeout):** The maximum time to wait for an ACK after an ASDU is sent.
- **T2 (Passive ACK Timeout):** If no new data is sent, an ACK is automatically sent to the other party after this time.
- **T3 (Test Frame Timeout):** Used to verify whether the connection is still alive. A test frame is sent at regular intervals based on this parameter.
- **General Interrogation (GI):** Frequency of sending the General Interrogation command. This command retrieves all available data again (in seconds).
- **Clock Synchronisation (CS):** Frequency of sending the Clock Synchronisation (CS) command to synchronize system time (in seconds).
- **Timezone GMT:** The time zone of the server running the SCADA system in GMT. Time synchronizations are adjusted based on this value.

## 5.1.4.2 Tag Parameters

ЕПКЕГ				
Genel Loglama				
Etiket				
🗹 Kullanımda				
EtiketAdı	etiket2	KanalAdı		iec104
EtiketID	4	🖗 Kanalı Şuna De	eğiştir:	🝁 None 🗸 🗸
Formula	Javascript formula			
Tanım	A brief description	Anahtar Kelimeler		
Teçhizat	A custom equipment name			
Ölçülen Entiti	e.g. temp, pressure	Asdu Addresi		1
Birim Adı	e.g. centigrade, psi			
Konum	Location coordinates			
Nesne Tipi	double-point (Type=3)	$\checkmark$		
Erişim Hakları		Değişken		
Okuma		InfoObjectAddress	0	
Yazma		VarSize	4	
		DeğişkenTipi	S32	

## Figure 45 IEC 104 Tag Parameters

- **ASDU Address:** The Application Service Data Unit (ASDU) address to which the tag belongs. This address is used to define data groups in the IEC 104 system.
- **Object Type:** Specifies the IEC 104 object type of the data to be read or written. For example: Single-point information, Measured value, etc.
- InfoObject Address: The information object address of the defined tag. SCADA uses this address to perform read and write operations.

# 5.1.5 DNP3 Channel

A new DNP3 Channel must be created to communicate with field devices over a TCP/IP network using the DNP3 (Distributed Network Protocol).

🔞 New Char	nel			?	$\times$
ChannelName	dnp3				
Station				 	
ProtocolType	DNP3				~
		OK	Cancel		

Figure 46 Defining the DNP3 Channel



## 5.1.5.1 Channel Parameters

CHANNEL			
☑ Enabled			·
ChannelName	dnp3		
ChannelID	3		
Station			
Description			
ProtocolType	DNP3		
Default Slave Address	1		
ServerIP	127.0.0.1		Ping Test Result: ?
ServerPort	20000		
Request Timeout (ms)	15000		
Master Address	3		
Class 1,2,3 Poll Interval (secs)	60		
Integrity Poll Interval (secs)	30		
Clock Syncronisation (secs)	300		
Timezone GMT	0		
DNP3 Options			
Issue Integrity Poll On Res	start		
□ Issue Integrity Poll On Sla	ve Online		
□ Issue Integrity Poll On Buf	ffer OverFlow		
Unsolicited			
Unsolicited Mode Class 1		Disable	~
Unsolicited Mode Class 2		Disable	~
Unsolicited Mode Class 3		Disable	~
Advanced			
Operate Mode		Direct	~
Feedback Poll After Operate	2	Enable	~
	🔂 Save Chanr	nel Data (Ctrl+s)	

#### Figure 47 DNP3 Channel Parameters

- **Default Slave ID:** The default slave address used in requests sent to slave devices (DNP3 Slave ID). Each device should have a unique address.
- Server IP: The IP address of the slave device for DNP3 communication. The connection is made to this address over TCP/IP.
- Server Port: The TCP port used for the DNP3 protocol. The default port number is 20000.
- **Request Timeout:** The maximum time (in milliseconds) the SCADA system will wait for a response from the slave device after sending a request. If no response is received within this time, the request is considered to have timed out.
- **Master Address:** The DNP3 Master ID of the SCADA system. Slave devices use this address to identify incoming requests. It must be unique within the system.
- **Class 1/2/3 Polling Interval:** Specifies polling intervals for DNP3 data classes. These queries allow periodic collection of event-based data (in seconds).

**Class 1:** High priority data (e.g., alarms, fault conditions)



Class 2: Medium priority data

Class 3: Low priority data

- **Time Synchronization:** Frequency of sending time information from SCADA to slave devices to prevent clock drift (in seconds).
- Integrity Polling Interval: The frequency with which SCADA queries the complete dataset from slave devices, even if no events occur (in seconds).
- **Clock Synchronization (CS):** The frequency with which the SCADA system sends a CS command to synchronize device clocks at the protocol level. This adds an extra layer of security beyond standard time sync.
- **Timezone GMT:** The time zone of the computer running the SCADA system, in GMT. This is used as a reference during time synchronization.
- DNP3 Options:

**Issue Integrity Poll on Restart:** When the SCADA system restarts, it automatically initiates an integrity poll to retrieve all data.

**Issue Integrity Poll on Slave Online:** When a slave device comes online, an integrity poll is automatically performed.

**Issue Integrity Poll on Buffer Overflow:** If the slave device's buffer overflows, the system initiates an integrity poll to prevent data loss.

#### **Unsolicited:**

**Unsolicited Mode Class 1:** Indicates whether the slave device is allowed to send Class 1 (high priority) data to SCADA unsolicited.

**Unsolicited Mode Class 2:** Allows the slave device to send Class 2 (medium priority) data to SCADA unsolicited.

**Unsolicited Mode Class 3:** Allows the slave device to send Class 3 (low priority) data to SCADA unsolicited.

This mode supports event-based data transmission and can reduce polling frequency while accelerating data delivery.

#### Advanced:

Operate Mode: Specifies how commands are sent:

Direct: The command is executed immediately.

Select Before Operate: The command is first confirmed with a "select" step before sending the "operate" command. Recommended for security.

**Feedback Poll After Operate:** After an "operate" command, the corresponding tag's status is queried again to verify successful execution.

## 5.1.5.2 Tag Parameters

Tag					
✓ Enabled					
TagName	etiket1	ChannelName		dnp3	
TagID	26	🔷 Set Cha	nnel To:	🚧 None	``
Formula	Javascript formula				
Description	A brief description	Keywords			
Equipment	A custom equipment name				
Measured Entity	e.g. temp, pressure				
Unit Name	e.g. centigrade, psi				
Location	Location coordinates				
DNP3 Object Type	analog output $\vee$				
Access Rights		Variable			
Read		ObjectAddress	0		
Write		VarSize	4		
		VariableType	FLT		

## Figure 48 DNP3 Tag Parameters

To define data tags to be used in the SCADA system via DNP3 protocol, the following parameters must be configured:

• **DNP3 Object Type:** Specifies the type of data represented by the tag. One of the following types, compliant with the DNP3 standard, should be selected:

Object Type	Explanation
Binary Input	Digital input (e.g., switch open/closed, alarm state). Read-only.
Binary Output	Digital output (e.g., relay trigger). Writable.
Control Relay	Digital output for control commands. Typically supports "Select Before Operate."
Analog Input	Analog input data (e.g., temperature, pressure). Read-only.
Analog Output	Analog output value (e.g., adjustable voltage/current). Writable.
Control Analog 32	32-bit analog control command.
Control Analog 16	16-bit analog control command.
Control Analog Float	Analog control command with floating-point (float) data type.



• **Object Address:** The address (index) where the data resides in the DNP3 protocol. SCADA uses this address to read from or write to the device.

# 5.1.6 Global Database Channel

The Global Database Channel is used to connect to databases running on external systems outside of SCADA, and to transfer specific query results from those databases to SCADA project tags. This channel enables flexible data exchange by allowing access to remote databases like PostgreSQL or MySQL instead of the SCADA's local database.

🔞 Yeni Kar	al	?	×
KanalAdı İstasyon			
ProtokolTipi	GLOBALDATABASE		~
	OK Cancel		

#### **Figure 49 Defining the Global Database Channel**

#### 5.1.6.1 Channel Parameters

Kanal	
🗹 Kullanımda	· · · · · · · · · · · · · · · · · · ·
KanalAdı	Global_database
KanalID	8
İstasyon	
Tanım	
ProtokolTipi	GLOBALDATABASE
VeritabanıTipi	SQLite
SunucuIP	Ping Testi Sonuç: ?
SunucuPortu	1080
VeritabanıAdı	
DatabaseUserName	
DatabasePassword	
TNS Adı	
CevapZamanAşımı(ms)	6000
	🔂 Kanal Verisini Kaydet (Ctrl+s)

#### **Figure 50 Global Database Channel Parameters**

- Database Type: The type of the database to connect (e.g., PostgreSQL, MySQL, etc.)
- Server IP: IP address of the database server
- Server Port: Port number of the database server
- Database Name: Name of the target database to connect
- Database Username: Username for accessing the database
- Database Password: Password for accessing the database
- **Response Timeout:** Timeout duration in milliseconds to wait for a query response if none is received. For example: 10000 → 10 seconds.



## 5.1.6.2 Tag Parameters

ETIKET
Genel Loglama Makro
Sorgu

#### Figure 51 Global Database Tag Parameters

Database queries are written in the macro section of the channel. The obtained query results can be directly written to project tags.

## 5.1.6.3 Example Database Query:

WITH

t1 AS (

SELECT data\_value FROM logs.tag\_log 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 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 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 WHERE tag\_id=26 AND data\_value IS NOT NULL ORDER BY logtime DESC LIMIT 1)

SELECT t1.data\_value AS data1, t2.data\_value AS data2, t3.data\_value AS data3, t4.data\_value AS data4 FROM t1, t2, t3, t4;

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

## **Explanation:**

- The latest database values of tags with tag\_id 19, 20, 29, and 26 are fetched.
- These values are then transferred to SCADA tags with IDs 32, 33, 34, and 35 respectively.
- Using the :{\${...}}: syntax, the columns returned from the query are sequentially mapped to SCADA tags.



# 5.1.7 Database Channel

The Database Channel is a type of channel used in the SCADA system to execute SQL queries on its own database in order to query specific tag or record information. This channel is especially suitable for historical data analysis or operations with specific conditions.

🔞 Yeni Kar	nal		?	×
KanalAdı İstasyon				
ProtokolTipi	DATABASE			~
	ОК	Cancel		

#### Figure 52 Defining the Database Channel

## 5.1.7.1 Channel Parameters

KANAL	
🖂 Kullanımda	()
KanalAdı	database
KanalīD	7
İstasyon	
Tanım	
ProtokolTipi	DATABASE
	Ping Testi Sonuç: ?
CevapZamanAşımı(ms)	6000
🚽 Kanal V	erisini Kaydet (Ctrl+s)

#### **Figure 53 Database Channel Parameters**

• **Response Timeout:** The timeout value defines how long the system should wait if no response is received from the database query. This value is in milliseconds. For example: a value of 10000 means the system will wait 10 seconds for a response. If no response is received within this time, the connection is terminated and considered an error.



## 5.1.7.2 Tag Parameters

_

### **Figure 54 SQL Query Input Screen**

SQL queries are defined in the macro section of the channel. Direct access is provided to the internal database of the SCADA system.

**Note:** The query must return only a single value. Queries that return multiple rows or columns are considered invalid.

## 5.1.7.3 Example Queries

• Last value of a specific tag:

SELECT data\_value FROM logs.tag\_log WHERE tag\_id=1 ORDER BY logtime DESC LIMIT 1

• First value of a specific tag:

SELECT data\_value FROM logs.tag\_log WHERE tag\_id=1 ORDER BY logtime LIMIT 1

# 5.1.8 ICCP Channel

💮 Yeni Kanal	?	×
KanalAdı iccp İstasyon		
ProtokolTipi TASE.2/ICCP		~
ОК Са	ncel	

Figure 55 ICCP Channel Definition

### **Communication Test and Compatibility Requirements**

- Mutual Ping Test: Required to verify the connection between the SCADA and TEİAŞ servers.
- Port 102: Must be open on the system running SCADA and should allow incoming connections.
- Firewall & Antivirus: Custom rules may need to be defined for port 102 in these software systems.

## 5.1.8.1 Channel Parameters

KANAL					
🗹 Kullanımda					
KanalAdı	ісср				
KanalID	3				
İstasyon					
Tanım					
ProtokolTipi	TASE.2/ICCP		$\sim$		
SoketTipi	Active		~		
SunucuIP	127.0.0.1	Ping Testi	Sonuç: ?		
SunucuPortu	1080				
Bilateral Table ID					
AP Title					
AP Qualifier					
P-Selector (presentation layer address)					
S-Selector (session layer address)					
T-Selector (ISO transport layer address)					
Listen Port	1081				
	🗟 Kanal Verisini Kaydet (Ctrl+s)				

#### Figure 56 ICCP Channel Parameters

Channel Name: Provided by TEİAŞ. Enter the IP as 127.0.0.1. The term "TEIAS" must be removed.

**Protocol Type:** Should be selected as TASE.2 / ICCP.

**Socket Type:** Should be set to Passive.

Server IP: Should be entered as 127.0.0.1.



Server Port: 102 (default ICCP port)

Listen Port: Should be set to 102.

Bilateral Table ID: Provided by TEIAŞ. Enter as per ICCP client configuration information.

**AP Title:** Provided by TEİAŞ.

AP Qualifier: Provided by TEİAŞ.

**P-Selector:** Provided by TEİAŞ. Enter the IP as 127.0.0.1.

S-Selector: Provided by TEİAŞ. The term "TEIAS" must be removed.

**T-Selector:** Provided by TEİAŞ. The term "TEIAS" must be removed.

Note: The ICCP version on the ViewPLUS SCADA side must match the ICCP version provided by TEİAŞ.

#### 5.1.8.2 Tag Parameters

ETIKET			
Genel Loglama			
Etiket			
🗹 Kullanımda		[	
EtiketAdı	etiker1	KanalAdı	iccp
EtiketID	3	🔷 🖗 Kanalı Şuna De	ğiştir: 🦘 None 🗸 🗸
Formula	Javascript formula		
Tanım	A brief description	Anahtar Kelimeler	
Teçhizat	A custom equipment name		
Ölçülen Entiti	e.g. temp, pressure	Dataset	1
Birim Adı	e.g. centigrade, psi		
Konum	Location coordinates		
Data Point Type	Durum ~		
Evision Haldow		Değişken	
		Point Name	0
Okuma		VarSize	4
Yazma		DeğişkenTini	532 ×
		Degişken ilpi	332 ×

#### **Figure 57 ICCP Tag Parameters**

ICCP Object Name: The name specified in the TEİAŞ signal list; used directly as the tag name.

Dataset: Determined based on the signal unit:

- MWh  $\rightarrow$  COUNTER
- MW, MVAR  $\rightarrow$  ANALOG

Data Point Type: Should be set to RealQ for all signals.

Variable Type: Should be set to DBL (double) for all signals.



# 5.1.9 Server Info Channel

The Server Info Channel provides access to system-level information of the SCADA server. Through this channel, real-time data such as the number of active/defined/acknowledged alarms, system time, and connection status can be read.

Its purpose is to monitor the system status and enhance operational awareness.

🔞 Yeni Kar	nal	?	×
KanalAdı	serverinfo		
İstasyon			
ProtokolTipi	SERVERINFO		$\sim$
	OK Cancel		

#### **Figure 58 Server Info Channel Definition**

## 5.1.9.1 Channel Parameters

KANAL	
🗹 Kullanımda	·
KanalAdı	serverinfo
KanalID	4
İstasyon	
Tanım	
ProtokolTipi	SERVERINFO V
	Ping Testi Sonuç: ?
ÇerçeveZamanAşımı(ms)	3000
	🕞 Kanal Verisini Kaydet (Ctrl+s)

#### **Figure 59 Server Info Channel Parameters**

**Response Timeout:** The interval at which the function defined in the server info channel will be executed. Expressed in milliseconds.

Example:  $1000 \rightarrow$  The function will be called every 1 second.



## 5.1.9.2 Tag Parameters

E		
P	nel Loglama Sorgu	1
	orgu	

#### **Figure 60 Server Info Tag Parameters**

Each tag's Query field is populated with special commands (keywords) that return information related to the server's internal state.

**Note:** Although written in JavaScript syntax, this channel uses special system-specific keywords.

**Note:** The return statement is mandatory. Without it, the query result will not be written to the tag.

**Note:** Values cannot be assigned to other system tags; only read/query operations are allowed.

Keyword	Description
:ALARMCOUNT()	Returns the total number of defined alarms in the system.
:ALARMCOUNT(ClassName)	Returns the number of alarms defined in the specified alarm class.
:ACTALARMCOUNT()	Returns the number of currently active (triggered) alarms.
:ACTALARMCOUNT(ClassName)	Returns the number of active alarms within the specified class.
:ACKEDALARMCOUNT()	Returns the total number of acknowledged active alarms.
:ACKEDALARMCOUNT(ClassName)	Returns the number of acknowledged active alarms for the specified class.
:SYSTEMTIME()	Returns the server system time in milliseconds since the epoch.
:CONNECTEDCHANNELS(ChannelName)	Returns the number of connected (active) channels in the specified channel group.
:DISCONNECTEDCHANNELS(ChannelName)	Returns the number of disconnected (inactive) channels in the specified channel group.

### **5.1.9.3 Supported Keywords and Descriptions**



## 5.1.9.4 Example Usages

## Example 1: Total number of defined alarms in two alarm classes

var1 = :ALARMCOUNT(Panel1);

var2 = :ALARMCOUNT(Panel2);

totalalarms\_defined = (var1 + var2);

return totalalarms\_defined;

### Example 2: Simple tag query to display the number of active alarms

return :ACTALARMCOUNT();

### Example 3: Retrieving the server system time

return :SİSTEM ZAMANI();

## 5.1.10 SNMP Channel

The SNMP (Simple Network Management Protocol) Channel allows the SCADA system to read data from devices that communicate using the SNMP protocol.

Through this channel, systematic data can be collected from network infrastructure devices such as switches, UPS units, routers, etc.

**Note:** For this channel to work, the Net-SNMP library must be installed on the system. You can access the relevant library here.

🕜 Yeni Ka	nal		?	×
KanalAdı				
İstasyon				
ProtokolTipi	SNMP			$\sim$
	OK	Cancel		

Figure 61 SNMP Channel Definition



# 5.1.10.1 Channel Parameters

KANAL	
🗹 Kullanımda	· · · · · · · · · · · · · · · · · · ·
KanalAdı	snmp
KanalID	5
İstasyon	
Tanım	
ProtokolTipi	SNMP ~
SunucuIP	127.0.0.1 Ping Testi Sonuç: ?
SunucuPortu	1080
	Ranal Verisini Kavdet (Ctrl+s)

#### **Figure 62 SNMP Channel Parameters**

Server Address: The IP address of the device to which SNMP queries will be sent.

Server Port: The SNMP port number.

Default value: 161

### 5.1.10.2 Tag Parameters

ETIKET			
Genel Loglama			
Etiket			
🗹 Kullanımda			
EtiketAdı	etiket3	KanalAdı	snmp
EtiketID	5	🖗 Kanalı Şuna Değiştir:	🚧 None 🗸 🗸
Formula	Javascript formula		
Tanım	A brief description	Anahtar Kelimeler	
Teçhizat	A custom equipment name		
Ölçülen Entiti	e.g. temp, pressure	CihazAdresi	1
Birim Adı	e.g. centigrade, psi	Read Community	
Konum	Location coordinates		
Erişim Hakları			
Okuma			
Yazma			

#### **Figure 63 SNMP Tag Parameters**

**Device Address:** The address information of the device defined in the SNMP protocol. It is usually the same as the IP address or may require a specific definition.

Read Community: The access key used to retrieve SNMP data (e.g., public).



Required for SNMP versions 1 and 2.

## 5.1.11 SOAP API Channel

The SOAP API Channel is a channel type used to connect to a SOAP (Simple Object Access Protocol) Web Service, parse the service responses, and write the retrieved data into tags within the SCADA project. SOAP envelopes are processed using a WSDL-based definition structure, and the response is integrated into the SCADA system using an XML parser.

💮 Yeni Kar	nal		?	×
KanalAdı				
İstasyon				
ProtokolTipi	WEBAPI_SOAP			$\sim$
	OK	Cancel		

#### **Figure 64 SOAP API Channel Definition**

## 5.1.11.1 Channel Parameters

KANAL			
🗹 Kullanımda			
KanalAdı	soap_api		
KanalID	5		
İstasyon			
Tanım			
ProtokolTipi	WEBAPI_SOAP		$\sim$
		Ping Testi	Sonuç: ?
CevapZamanAşımı(ms)	6000		
🕞 Kan	al Verisini Kaydet (Ctrl+s)		

#### **Figure 65 SOAP API Channel Parameters**

**Response Timeout:** The timeout duration (in milliseconds) that defines how long the system should wait for a response after executing a SOAP query. If no response is received within the defined time, the connection is terminated.



## 5.1.11.2 Tag Parameters

ETIRET	
Genel Logiama Sorgu	
Sorgu	

### Figure 66 SOAP API Tag Parameters

The queries to be sent to the SOAP service are written into the Query field of the relevant tag. The query consists of three parts:

**WSDL Path:** The WSDL definition of the SOAP service.

**SOAP Envelope:** The request prepared in XML format.

Tag Mapping Rule: Defines how the XML response will be mapped to SCADA tags.



## 5.1.11.3 Example Implementation

### **Example Query:**

WSDL\_PATH = https://minosxcloud.umpi.it/ws/wsminos.php?wsdl;

<SOAP-ENV:Envelope

xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"

xmlns:ns1="http://localhost/"

xmlns:xsd="http://www.w3.org/2001/XMLSchema"

xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/"

SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">

<SOAP-ENV:Body>

<ns1:getStatus>

<user xsi:type="xsd:string">ws-istanbul</user>

<password xsi:type="xsd:string">passwordvalue</password>

<db\_name xsi:type="xsd:string">databasename</db\_name>

<id\_andros xsi:type="xsd:string">s345dfsad2345asd45fsdfsgds4542345a</id\_andros>

</ns1:getStatus>

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>

:{\${32}, <stato><statopl num="1"><fase1 stato>;

\${33}, <stato><statoingresso num=17 stato>}:



#### **Example Response from Server:**

```
<SOAP-ENV:Envelope SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
```

xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"

xmlns:xsd="http://www.w3.org/2001/XMLSchema"

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">

<SOAP-ENV:Body>

<ns1:getStatusResponse

xmlns:ns1="http://localhost/">

<res xsi:type="xsd:string">

<armadio identificatore="b3e1f32cb0db36ef0fbfaf047074e4d5">

<stato>

<statoingresso num="16" stato="1">ON Input Andros CMS-EXP 1</statoingresso>

<statoingresso num="17" stato="1">ON Input Andros CMS-EXP 2</statoingresso>

<statopl num="1">

<fase1 stato="0">Line 1 Phase 1 OK</fase1>

<fase2 stato="0">Line 1 Phase 2 OK</fase2>

<fase3 stato="0">Line 1 Phase 3 OK</fase3>

</statopl>

</stato>

</armadio>

</res>

</ns1:getStatusResponse>

</SOAP-ENV:Body>

</SOAP-ENV:Envelope>



**Tag Mapping Rules (Parser Structure)** 



## Figure 67 SOAP API Tag Writing Method

:{\${TagID}, <child1><child2><child3 filterAttribute returnAttribute>}:

#### **Interpretation Rules:**

Condition	Description
Only node path is defined	The node's text value is read and written to the tag.
returnAttribute is defined	The value of the specified attribute in the first matched node is written to the tag.
Both filterAttribute and returnAttribute	The tag receives the attribute value of the node that matches the specified filter.

### **Examples:**

32, <stato><statopl num="1"><fase1 stato>  $\rightarrow$ The value of the stato attribute in the fase1 node is written to tag ID 32.

33, <stato><statoingresso num=17 stato>  $\rightarrow$  The stato value of the statoingresso node with num="17" is written to tag ID 33.



# 5.1.12 JavaScript Channel

The JavaScript Channel is a channel type used within the SCADA system to create JavaScript-based calculations, conditional operations, or data processing logic. Using JavaScript functions, values of different tags can be read, mathematical operations can be performed, and the result can be written to a virtual tag.

🝘 Yeni Kanal		?	×
KanalAdı			
İstasyon			
ProtokolTipi JAVASCRIPT			~
OK	Cancel		

#### Figure 68 JavaScript Channel Definition

## 5.1.12.1 Channel Parameters

🗠 Kullanimda			····
KanalAdı	java_script		
KanalID	9		
İstasyon			
Tanım			
ProtokolTipi	JAVASCRIPT		
		Ping Testi	Sonuç:
ÇerçeveZamanAşımı(ms)	3000		
	🗟 Kanal Verisini Kavdet (Ctrl+s)		

#### Figure 69 JavaScript Channel Parameters

• Frame Timeout: The interval at which the JavaScript function will be executed, in milliseconds. For example: 1000 → the function is called every 1 second.

## 5.1.12.2 Tag Parameters

ET	IKET			
(	Genel	Loglama	Sorgu	
	Sorgu			

### Figure 70 JavaScript Tag Parameters



JavaScript commands are written in the Query field of the relevant tag. Other system tags can be accessed using the format \${tagID}.

**Note:** Assigning values to other system tags is not allowed within the JavaScript channel. Use the Macro Channel for such operations.

## 5.1.12.3 Value Assignment Rules for JavaScript Tags

Reading tag values: \${2}, \${3}, etc.

Defining and processing variables: var x = ...

Return: Use the return ...; command to write the result to the SCADA tag.

## 5.1.12.4 Supported JavaScript Features

- All basic arithmetic operations
- Comparison operators (===, >, <, !==)
- Math object: Math.sqrt(), Math.abs(), Math.pow(), etc.
- return is mandatory; otherwise, the value will not be written to the tag.

## 5.1.12.5 Example Applications

#### **Addition Example**

Adds the values of two tags and returns the result.

var3 = \${2} + \${3}; return var3;

#### Sum and Square Root Calculation

var1 = 5 + \${2}; var2 = 3 + \${3}; subtotal = var1 + var2; return Math.sqrt(subtotal);

#### **Condition Comparison (Equality Check)**

var1 = \${2}; var2 = \${3}; var3 = var1 === var2 ? 1 : 0; return var3;

Explanation: Returns 1 if var1 and var2 are equal, otherwise returns 0.

## Invalid Example (Will Not Work)

 $\{3\} = 3 + var1;$ 

**Note:** This example is invalid because value assignment to other tags is not allowed in the JavaScript channel. Use the Macro Channel for this purpose.

# 6 SCADA Editor – Alarms

Alarms are one of the most critical components of SCADA systems in terms of monitoring and intervention. ViewPLUS SCADA provides alarm generation and management based on field data and user definitions.

# 6.1 Creating an Alarm

Alarm definitions are created through the Tag/Channel Editor panel.

- Open the Tag/Channel Editor screen.
- Right-click the "Alarms" tab located in the lower-left section.
- Select the "New Alarm" option from the menu.

#### Figure 71 Adding a New Alarm

In the alarm definition screen that appears, enter the alarm name, description, and class information.

- If an existing class name is entered, the alarm is added to that class.
- If a new class name is entered, the system creates a new class and assigns the alarm to it.



					? X
Geni	şlet/Daralt				
n ID Alarm Name		AlarmAdı	etiket1=7		
Genel		AlarmSınıfi	Genel		
etiket1=5		Tanım	NoDescrip	tion	
3 etiket3=1		Öncelik	0		\$
9 etiket3=1 7 etiket4=20 4 kanal_deger1=5	DEĞER etiketi	₽ 🥠	tiket1	~	
	KOŞUL		SINIR		
10 kanal_deger1	=8	DEĞER , SINIR	a eşit	7,00	-
5 kanal_deger2=10	= 10	<ul> <li>DEĞER , SINIR</li> <li>DEĞER , SINIR</li> </ul>	dan küçük dan büyük	ARALIK	
		🔿 DEĞER , ARALI	IK içinde	Bu değerden 0,00	×
		O DEĞER , ARALI	IK dışında	Bu değere 0,00	*

Figure 72 Creating an Alarm Class

# **6.1.1 General Alarm Parameters**

ALARM	1 14 <b>2</b>	Abonelikler					
AlarmAdi	etiket1=/	Aboriciaci					
AlarmID	11	Abone Kullanıcılar		{1}			
SınıfAdı	Genel						
Tanım	NoDescription						
Öncelik	0						
DEĞER etiketi	🔎 🥜 etiket 1			~			
KOŞUL		SINIR					
) DEĞER ,	SINIR a eşit	7.00		\$			
O DEĞER , SINIR dan küçük							
O DEĞER ,	SINIR dan büyük	ARALIK					
O DEĞER ,	ARALIK içinde	Bu değerden	0,00	▲ ▼			
🔿 DEĞER , I	ARALIK dışında	Bu değere	0,00	* *			
Geri Bildirim Veri tabanın Kullanımda	Geri Bildirim İste       Yeri tabanına giriş yap       Kullanımda						
			🕞 Alarm Verisini Kaydet (Ctrl+s)				

#### **Figure 73 General Alarm Parameters**

Alarm Name: The name by which the alarm will be recognized in the system.

**Class Name:** The name of the class to which the alarm belongs. Allows grouping of alarms.

**Description:** A descriptive text explaining the function of the alarm.

**Priority:** Defines the importance level of the alarm. ViewPLUS SCADA (v0.9.154 and later) supports four levels:



ALARM	attact 7		Abonelikler		
Alarmadi	etiket1=/		Aborreikier		
AlarmID	11		Abone Kullanıcılar		{1}
SınıfAdı	Genel				
Tanım	NoDescriptio	n			
Öncelik	0	* *			
DEĞER etiketi KOŞUL DEĞER, ; DEĞER, ; DEĞER, ; DEĞER, / DEĞER, / Geri Bildirim Veri tabanın Kullanımda	P etket SINIR a eşit SINIR dan küç SINIR dan büy ARALIK içinde ARALIK içinde ARALIK içinde İste İste a giriş yap	Different ala table below alarm warnir 0-31 Hig 32-63 Me urg 64-95 Lov 96-127 No	rm warnings will be triggered outlines the relationship betw 1g behavior 9h Critical: Alarm sounds with dium Critical: Alarm sounds with ency w Critical: Alarm sounds with a n-Critical: No alarm warning i	based on the assigned priorities. The eeen alarm priority and the corresponding Behavior a warning indicating high urgency ith a warning indicating moderate a warning indicating low urgency s triggered	

**Figure 74 Alarm Priorities** 

0–31: High 32–63: Medium 64–95: Low 96–127: Warning (silent alarm – no sound)

**Value Tag:** The tag to be used for triggering the alarm.

**Condition:** The logical condition that activates the alarm: equal to, less than, greater than, within/outside a range, etc.



Subscriptions: Users who will monitor the alarm are defined here.

Abonelikler					
Abone Kullanıcılar				{1}	
Alarm için Kullanıcı Seçin	Ekle > < Çıkar	admin	?	×	* * * *
	Tamam				

### Figure 75 Defining Users Subscribed to the Alarm

### **Other Settings:**

- Require Acknowledgment: Requires user confirmation.
- Log to Database: Logs the alarm status to the database.
- Enabled: Defines whether the alarm is active or passive.

# 6.2 Monitoring Alarms

Created alarms can be monitored both from the Client interface and SCADA design pages.

# 6.2.1 Monitoring Alarms on SCADA Design Pages

Using SCADA components, visual monitoring and acknowledgment of alarms can be performed directly on pages.

## Steps:

- 1. Create a new SCADA project and define tags
- 2. Add alarm conditions to relevant tags.



ALARM		Abanalidar				
AlarmAdı	etket1=5	Aborielisei				
AlarmID	1	Abone Kullanıcılar			{1}	
SmifAdi	Genel					
Tanım	etiket1, 5 degerine esit.					
Öncelik	0					
DEĞER etiketi	🔎 🥜 etiket 1					~
KOŞUL		SINIR				
DEĞER ,	SINIR a eşit	5,00				<b>•</b>
O DEĞER , SINIR dan küçük						[1003
O DEĞER ,	SINIR dan büyük	ARALIK				
O DEĞER ,	ARALIK içinde	Bu değerden	0,00			\$
O DEĞER ,	ARALIK dışında	Bu değere	0,00			*
Geri Bildirim	İste					
Veri tabanır	na giriş yap					
🗹 Kullanımda						
			Alarm Verisini Kavdet (C	trl+s)		

### Figure 76 Example of Creating an Alarm Condition

3. Add components like Display and Button to the SCADA page.

	Nesne Ozellkleri Etiketler	Dičer	
	Heare Occument	bigei	
	Descent	Dažas	^
	Property	Degei	
	v özellik etiketleri		
	and the second second		<i>—</i>
	Kesim Index Etiketi	-1	¥
	Many Failurati	O attacks	4
	Td21 ELIKELI	euketi	143
	X Konumu	.0 .1	4
	A Konumu	-1 -1	<b>*</b>
a a a a	V Konumu	0 1	<u>4</u>
0.000 ;eukeri	ritonama	<i>•</i>	
· · · · · · · · · · · · · · · · · · ·	Genislik	0 1	<b>4</b>
	Yükseklik	0 -1	<b>1</b>
	Döndürme Acısı	0 1	×
	Metin Rengi	-1	<b>1</b>
	Maske Rengi	-1	¥-
			1
	Maske Saydamligi	-1	<b>2</b>
	Y özel etiketler		
	ozereditettet		
	Özel Nitelik 1	-1	1
V1227 V1247			
X:227 , 1:247 🗸 🗸	Ozel Nitelik 2	-1	<b>1</b>
, , ,			



4. In the component's "Events" tab, check the Show Alarms option.

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	Ru Ru	un Functi		
			Bağlantı Ekle	
				-

Figure 78 Enabling the Show Alarms Option

- 5. Start the server and open the Client screen.
- 6. When an alarm occurs, a bell icon or color change appears on the component.



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version and the second	
Tumuni See Aamin Parde	
Skarg Zennen * MahmelD Sind Jaan Johanna Onenn Onerlik OneyArpan Oney/Hexa); OneyAnadi Mataryon Kanad Delayon Kanad Delayon Kanad 65.08.2023 1535571 Gend etket1.5 Selyenin esk [RS]ALAMITERDED()	

Figure 79 Monitoring Alarm from the Client

7. Right-click the bell icon and select Acknowledge Alarm to confirm it.



### Figure 80 Acknowledging the Alarm

8. After entering the acknowledgment message, the alarm icon disappears.

🗮 Uygulama Ayarlar Araçlar Pencere Yardım		4
Verification Verif	iket1	
Tümünü Seç [Alamlan Filtrele	Olay Zamani	
Olay Zamanı AlarmID Sınıf İsim Açıklama Durum Öncelik	Onaylayan Onay Mesaji Onaylandimi İstasyon Kanal Değer Etiket Adı	
03.08.2023 15:47:55 1 Genel etiket1=5 etiket1, 5 degerine esit. [TRG] ALARM TETIKLENDI 0	admin test [ACK] ONAYLANDI kanal_104 5 etiket1	

Figure 81 Monitoring the Acknowledged Alarm from the Client


### 6.2.2 Page-Based Alarm Monitoring

Allows monitoring of alarm information on a separate SCADA page.

#### Steps:

- 1. Create two pages: a main page and an alarm page.
- 2. Define a page transition using a button component. Enable the Show Alarms option on the button.



Figure 82 Defining Go to Page Function on Button

3. Add components to the alarm page to monitor alarms.

	Nesne Ozelikleri Etiketler Dičer	
	Hearte Ocennierr	
	Descet: Dežes	A
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	Yukseklik 🎺 -1	2
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	Motin Pongi O 1	4
	Wear Kengi	<b>*</b>
	Maske Rengi	<u>4</u>
	music nengi	
	Maske Savdamlığı 🖉 -1	<b>1</b>
	özel etiketler	
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X:227 , Y:247	Özel Nitelik 2	<u>4</u>
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>		

#### Figure 83 Associating Alarm Tag with a Component

4. When an alarm occurs, an exclamation mark appears on the button.

🗮 Uygulama Ayarlar Araçlar Pencere Yardım	۵
Tenderic Control Contr	
	_
Tamma Kag Alamian Firsto	
Obsy Zamam         Alamitti         Seed         Jain         Apklama         Denum         Oscolik         Onayleyan         Doayleyan         Denylandi mi         Istasyon         Kanul         Degice         Effect Address           0101220211622011         Gend         etket1=5         et	

Figure 84 Monitoring Page-Based Alarms via Component

Note: This method only allows monitoring; acknowledgment is not possible.



### 6.2.3 Monitoring Alarms on the Map Page

Alarms can be monitored on GIS-based map pages using markers.

#### Steps:

1. Create a map page and enable the Geo View feature.



Figure 85 Enabling Geo View for Map Page

- 2. Add a marker.
- 3. Assign the alarm-related page to the marker and enable the Show Alarms checkbox.

Store 1	D.A.	GIS Nesneleri Seçili İşaretçi Özellikleri:		
e e	A	Özellik İşaretçilD Yazı Konum	Değer 300708908971012100 Station 51.55596114704759, -0.1744079589844414	
	A102	Category Sayfaya Bağlantı	Station V Ldit Activate P YeniScada1 V P Alarmlari Göster CloseThisWindov CloseThisWindov	N
A217		Run Function		

Figure 86 Enabling Show Alarms Option on Marker

- 4. Add an alarm monitoring component to the relevant SCADA page.
- 5. When an alarm occurs, the marker will flash with an exclamation icon.
- 6. The number of alarmed markers is displayed at the top-left of the Client screen.



Figure 87 Monitoring Active Alarms from the Map Page

**Note:** Alarm icons on the map are for monitoring only; they cannot be acknowledged.

# 7 ViewPLUS SCADA Map Page

## 7.1 Designing a Map Page

The ViewPLUS SCADA application supports geographic map infrastructure. With this feature, map-based SCADA pages can be created, and the field status can be monitored using shape and color changes based on tag values.

### **Geo View Feature**

By selecting Page Properties > Page Type from the top-right of the ViewPLUS SCADA Editor page, Geo View can be activated to display the page as a map view.

The map infrastructure works integrated with Google Maps or ArcGIS.

Sayfa Özellkleri			
Özellik	Değer		^
SayfaAdı	Page		
SayfalD	0		ľ.
SayfaSırası	0	24	
SayfaTipi	SkadaSekmesi	~	
GeoGörünüm	$\square$		
GeoMerkez	51.5,0,10	-	
BaşlangıçtaÖlçekle	Yok	~	
ÖzelSayfaBoyutu			
SayfaGenişliği	250	\$	
SayfaYüksekliği	150	÷	
ArkaplanResmi	8		
Sayfalkonu	8		
Kayar Yazı Ekle			~

Figure 88 Geo View Option



### Using Google Maps

- A Map API key is required.
- Once the key is set, the "For development purposes only" watermark disappears.

**Note:** The editor must be restarted.

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Mag o Northampton	This page can't load	Google Maps corre	ectly.	Southwold	
er Learnington Spa	Do you own this websit	<u>e?</u>	ок		
nt purposes only For development bu	poses only For	development pur	poses only	For development purposes only	F
tenham		Colc	nester		
er Cotswolds AONB Direncester		Chelmsford	Clacton-on-Sea		5. 19
Swindon Hills AONB	Watford I ondon	Southend-on-	Sea		
enham Ma Reading					
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lge Basingstoke	Surrey Hills Area of	Maidstone	Canterbury		Blankenbe
nt purposes only	poses only For	development pur	posesionly <sub>over</sub>	For development purposes only	() I
Salisbury Winchester		High Weald	Folkestone	Dunkirk	Panne
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Portsmouth_o	Brighton	Hastings		Parcinaturel	+
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Googla		(auboard shortcuts   Man	data 82022 GeoBasis D	E/RKG (82000), Google Terms of Use Report	a man error

Figure 89 Google Maps View



Definition path:

- > Projects > Project Configuration > GIS Settings > GIS Provider: Google
- > Projects > Project Configuration > GIS Settings > Map API Key

	basliksiz								
	SCADA S	Sayfaları Project Configuration Görünüm Ayarları İstemci Seçenekleri							
Projeler		Project Configuration							
	$\sim$	GIS Ayarları							
Etiket Kanal Editörü		GIS Provider Google ~							
		Harita API Anahtari							
		Click here to get a Google API key							
		Activate Project Protection							
		Set/Update Password							
		Etiket Kanal Dosyası:							
		Dosya Adı: basliksiz.tcf							
		Çıktı Klasörü							
		Yol: C:/Users/ADMIN/basliksiz/output							
		Bileşen Kütüphanesi Klasörü							
		Yol: C:/Users/ADMIN/basliksiz/components Git							

Figure 90 Map API Key Definition



#### **Using ArcGIS**

- No API key is required.
- It is free of charge.

The definition is done from the same menu by selecting ArcGIS.



Figure 91 ArcGIS View



## 7.2 Adding Icons to the Map Page

## 7.2.1 Adding an Icon

- 1. Click Add Marker in the SCADA editor.
- 2. Mark the relevant location on the map.
- 3. After adding the marker, you can interact with it.



Figure 92 Adding an Icon to the Map Page



## 7.2.2 Creating a Category

- 1. Click on the marker.
- 2. Go to GIS Objects > Selected Marker Properties > Category > Click Edit.
- 3. Click the Add New Category option to define the category name and icon.

Özellik	Değer	^			
İşaretçilD	6458622721248322000				
Yazı	Station				
Konum	50.01693165657993 , 7.3570211260	015326			
Category	Station	✓			
Sayfaya Bağlantı	Activate D Page V	Alarmları Göster			

**Figure 93 Category Creation Page** 

Click the Add New Category button, enter the category name, and upload the image. This way, map icons can be used in different colors and shapes as indicators for alarms or other conditions.

🖻 Marker Cat	tegories	? ×	ions		Clear
Ad	dd New Category	Remove Selected Category	Arnhem 5	Münster	P. C. C. C. C. C. C. C. C. C. C. C. C. C.
Image	Category		ibosch	XDX	
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		Editoru Kapat	Luxembourg	NAMA D	M

Figure 94 Example Category Creation



## 7.2.3 Linking Tags with Categories (Run Function)

> GIS Objects > Selected Marker Properties > Run Function

You can define the following example function for each icon:

```
function onCheckMarkerIcon() {
```

```
var $Category ="White";
```

if (\${1} == 1)

\$Category="Yellow";

else if(\${1} == 2)

\$Category="Black";

```
else if(${1} == 3)
```

```
$Category="Red";
```

```
return $Category;
```

```
}
```

- \${1}: Represents the value of the tag with ID 1.
- \$Category: Represents the category name.

The category is changed conditionally, and the icon is displayed with the corresponding category visual.

**MKRODEV**\*

## 7.2.4 Application Results

Based on the defined categories and conditions, the icons on the map dynamically change in color/visuals. This allows centralized monitoring of field device statuses via the map.



Figure 95 Example of Displaying White Marker When Value is 0



Figure 96 Example of Displaying Yellow Marker When Value is 1



Figure 97 Example of Displaying Black Marker When Value is 2



Figure 98 Example of Displaying Red Marker When Value is 3



### 8 SCADA Server

The server module of ViewPLUS SCADA software is the main component that collects data from field devices and transfers it to clients. To operate, this server must be associated with a SCADA project.

When the server is started, it establishes a database connection, begins receiving data from field devices, and provides a data service through a port that clients can connect to.

### 8.1 Server Main Screen

When the ViewPLUS SCADA server is started, it presents a graphical interface to the user. This interface provides status information, protocol driver monitoring, alarm control, and simplified connection management.

### 8.1.1 Top Menu Options

The menu bar at the top of the SCADA server provides quick access to essential operations, system settings, and diagnostic tools.



**Figure 99 Top Menu Options** 

### 8.1.1.1 Server Menu

This menu allows you to directly control the server's operational state:



#### Figure 100 Server Menu

Start: Launches the server and activates data communication.

Stop: Stops the server and terminates all device and client connections.



Restart: Stops and restarts the server to reload system configurations and drivers.

Exit: Closes the server application.

### 8.1.1.2 Settings Menu

ServerEngine 2.0.0 Beta10 - denemeeee							
Sunucu	Ayarlar 🖌	Araçlar					
	🎄 Konfi	g Dosyası Seç		Tekrar Baslat	)		
	👳 Veri T	abanı Ayarları		Tekrai Daşlat	)		
Kontrol	Dil		•	Türkçe	-		
		OK 04.06.2025	,08:29:01	İngilizce	AMAML		
		[INF] 04.06.2025	,08:29:01	Remaining License Days	: 1797		
Etiket Izle	me	UK J 04.06.2025	, 08:29:01	Alaan I (akaa)			

**Figure 101 Settings Menu** 

Select Config File: Allows you to manually choose a .ini configuration file.

Database Settings: Configure database connection details here (e.g., type, username, password).

Language: Allows switching the SCADA server interface language between Turkish and English.

### 8.1.1.3 Tools Tab



Figure 102 Tools Menu

Report Manager: Opens the integrated SCADA reporting module (e.g., generating reports from recorded data).

Email Test: Allows sending a test message via the SMTP server for email notification setup.



#### **E-mail Test Window**

This window is used to test the SMTP configuration to ensure that the server can send emails during alarm conditions.

🧊 E-mail Te	st	?	×
Smtp-server:			
SecurePort	Enable		
Server port:	465		
Kullanici Adi:			
Sifre:			
Alici:			
Konu:	E-mail test		
Mesaj:	Bu bir test e-mailidir		
Detayli			
	Test Mesaji Gonder Smtp Konfigurasyonunu Kaydet	Ciki	5

Figure 103 E-mail Test Window

Smtp-server: SMTP server address (e.g., smtp.gmail.com)

SecurePort Enable: Enables the use of a secure port (SSL/TLS)

Server Port: Port number of the SMTP server (e.g., 465)

Username: Email address from which the message will be sent

**Password:** Application password for the sender email account (an app-specific password should be used for providers like Google)



Recipient: Email address to which the test message will be sent

Subject: Subject of the email

Message: Content of the email

Details: Success or error messages returned by the server are displayed here

#### **Bottom Buttons:**

Send Test Message: Sends a test email using the entered settings.

Save SMTP Configuration: Saves the SMTP settings to the configuration file.

Exit: Closes the window.

### 8.1.2 Control Screen



#### Figure 104 Server Control Screen

- Displays messages related to server startup, shutdown, device connections, database connection, and driver loading.
- Real-time information such as active drivers and data connection statuses is displayed here.
- The server can also be stopped, started, or restarted using the buttons at the top of the page.



## 8.1.3 Tag Monitoring Screen

This tab is used to monitor real-time values of all tags defined in the SCADA project. The server displays live data read from field devices in this section.

ServerEngi	ne 2.0.0 Beta10 -	denemeeee								-		×
Sunucu Aya	ırlar Araçlar											
					Sırala	mayı Etkinleştir Etik	ket Adı 💌	Filtre				
	İstasyon	Kanal	Anahtar Kelimeler	Etiket ID	Etiket Adı	Cihaz	Yazmaç	Zaman	Sayaç	0	)eğer	
Kontrol		macro		1	etiket1	1	0	08:38:27 04.06.25	188	1	15.00000	0
Etiket İzleme Alarmlar Aktif Oturumlar												

#### Figure 105 Tag Monitoring Screen

Station: Name of the station the tag is linked to

Channel: Name of the channel the tag is linked to

Keywords: Keywords associated with the tag

Tag ID: System-assigned ID for the tag

Tag Name: Name of the tag (e.g., tag1)

**Device:** Device address

Register: Address of the data register

Time: Last data read time (date and time)

Counter: Total read count for the tag

Value: Current tag value (example: 15.000000)

### 8.1.3.1 Tag Monitoring Screen Features:

Real-Time Monitoring: Changes in field data are instantly reflected.

**Filtering:** The search box at the top right allows filtering by Tag Name, Tag ID, Channel, etc., for quick access in large projects.

Sorting: Enable Sorting option allows sorting by column values (e.g., by value ascending).



### 8.1.4 Alarms Screen

The Alarms tab allows monitoring of all defined alarm events in the SCADA system. It provides real-time alarm tracking and access to historical alarm records.



#### Figure 106 Alarms Screen

Record Time: Date and time the alarm occurred

Alarm ID: Unique system ID of the alarm

Current Status: Shows whether the alarm is active or passive

Event Type: Reason the alarm was triggered (e.g., threshold exceeded, connection lost)

Data Value: Real-time tag value when the alarm occurred

Record ID: System log record number

### 8.1.4.1 Tabs

Active Alarms: Displays currently active alarms in the system.

Logged Alarms: Displays recorded alarm events.

Alarm History: Lists detailed records of all historical alarm events.



#### 8.1.4.2 Features

**Export to XML:** Alarm history can be exported using the "Export to XML" button.

Log Analysis: Past logs can be analyzed for identifying system issues.

Time-Based Tracking: Chronological event chains can be analyzed based on date and time information.

### 8.1.5 Active Sessions Screen

This tab is used to view session information of users connected to the server. It provides visibility into all clients accessing the SCADA system.



#### Figure 107 Active Sessions Screen

Remote IP: IP address from which the client is connected

User: Username of the logged-in user

Session Key: Unique session identifier for each connection

Last Message Time: Time when the last message was received from the client



### 8.1.5.1 Features

Live Monitoring: Connections can be monitored in real time. New connections appear instantly.

**Security Tracking:** Information such as which users are accessing the system and their IPs can be tracked for security purposes.

**Time Information:** The last message time indicates whether a session is still active. Sessions inactive for long periods can be tracked by administrators.

### 8.1.6 Whitelist Screen

The Whitelist tab is used to allow connections to the SCADA server only from predefined IP addresses. This is an important tool to enhance external access security.

ServerEngine 2.0.0 Beta10 - denemeeee	_	×
Sunucu Ayarlar Araçlar		
Beyaz Liste Filtrelemeyi Etkinleştir : Bu sadece izin verilen IPlerin bağlantı yapabilmesini sağlar     Bir IP Adresi Ekleyin		
Id IP Adresi		
Etiket İzleme		
Alamlar		
Aktif Oturumlar		
Beyaz Liste		
Kara Liste		
Other Settings		
<b>i</b> Bilgi		

Figure 108 Whitelist Screen



### 8.1.6.1 Features

**Enable Whitelist Filtering:** When checked, only IP addresses on the list are allowed to connect. All other IPs are automatically blocked.

Add IP Address Button: Used to add a new IP address. Opens a window where the address can be entered and added to the list.

List View: Added IP addresses are displayed in a table with ID and IP Address information.

## 8.1.7 Blacklist Screen

The Blacklist tab is used to define IP addresses that should be blocked from accessing the server. This feature helps protect against unauthorized access.



#### Figure 109 Blacklist Screen



### 8.1.7.1 Features

Add IP Address Button: Used to add a new IP address to the blacklist. Enter the IP in the window to block it.

Blacklisted IP Addresses: These IPs are completely blocked from accessing the server.

List View: Each IP address is listed with an ID number in the table.

### 8.1.8 Other Settings Screen

The Other Settings tab includes advanced settings for client security, server redundancy, and MQTT bridging.

🗊 ServerEngine 2.0.0 Beta10 - denemeeee - 🗆 X						
Sunucu Ayar	rlar Araçlar					
Kontrol Veriket İzleme	Client Settings  Client Settings  Auto Loggoff Timeout (Minutes)  Don't allow multiple connection for same to Enable user blacklist after 3 failed login a	10 ser tempts				
Alarmlar	Redundancy Settings					
Aktif Oturumlar	Redundancy Mode Backup Server Settings	PR	IMARY SERVER			*
Ê	Primary Server IP	127.0.0.1				
Beyaz Liste	Redundant Server Activation Timeout (sec)	30				
Kara Liste	Redundancy Communication Port	51	314			
	Mqtt Bridge					
Other Settings	Enable Bridge (changing this requires res	art)				

#### **Figure 110 Other Settings Screen**



### 8.1.8.1 Client Settings

This section configures client session and security behavior:

Enable Client Auto Logoff: Ends client sessions that remain idle for a specified period.

Auto Logoff Timeout (Minutes): Sets the timeout period (e.g., "10" = 10 minutes of inactivity).

**Don't allow multiple connection for same user:** Prevents simultaneous connections using the same username.

**Enable user blacklist after 3 failed login attempts:** Automatically blacklists the IP after three failed login attempts.

### 8.1.8.2 Redundancy Settings

This section configures how primary and backup servers operate for uninterrupted SCADA system performance:

#### **Redundancy Mode:**

PRIMARY SERVER: The server acts as the main server.

BACKUP SERVER: The server acts as a backup.

Primary Server IP: Specifies the main server IP address if the current one is a backup.

**Redundant Server Activation Timeout (sec):** Defines the time (in seconds) before the backup takes over after loss of connection to the main server.

**Redundancy Communication Port:** Port used for communication between main and backup servers (e.g., 51314).

### 8.1.8.3 MQTT Bridge

Enable Bridge: Enables the MQTT Bridge mode of the SCADA server.

Note: The server must be restarted for this setting to take effect.

This feature allows the SCADA system to exchange data with an external MQTT server.



## 8.1.9 Information Screen

The Information tab shows the database usage status of the SCADA project running on the server. This helps administrators track how much data has been generated and how much space it occupies over time.



### Figure 111 Information Screen

**Total Used Database Size:** Displays the total size of all logged data. Example: 9269 kB (approximately 9 MB)

### 8.1.9.1 Features

Database Management: Facilitates tracking of archiving and cleanup needs to prevent database bloat.

Project Monitoring: Useful for long-term monitoring of data growth to plan system resource usage.



### 8.2 Starting the SCADA Server

To start the ViewPLUS SCADA server, follow these steps:

- Open the SCADA project in the ViewPLUS editor.
- Click Tools > Start Server from the menu.



**Figure 112 Server Startup Option** 

The server will open a window to access the database information of the project. You must enter the database username and password here. This step is required only for the first launch and is saved to the configuration file thereafter.



🗊 ServerEngir	e 2.0.0 Beta10					$ \Box$ $\times$
Server Settin	gs Tools					
Control Control	Start         Stop         Rd           [INF] 03.06.2025 , 15:33:24 License info         [INF] 03.06.2025 , 15:33:24 All Init Done         [OK] 03.06.2025 , 15:33:24 All Init Done           [OK] 03.06.2025 , 15:33:24 Preparing pr         [OK] 03.06.2025 , 15:33:24 Preparing pr	Istart TagCount:Unlimited, Protocols: M cense Days: 1798 oject database connection. Please	odbus - RawSocket - IEC 101 - : wait	IEC 104 - SNMP -	 MQTT - DNP3 - TASE2/ICCP	Debug Verbose
Alarms		🗊 Database Settings	?	×		
26-		Server Settings				
Active Sessions		Database/Schema	denemeeee			
		ServerAdress	localhost			
White List		ServerPort	5432			
		Database User Name	postgres			
Black List		Database User Password				
Other Settings			Test Connec	tion		
Information			Ok Canc	e		
						•
		Active Connections:	0			

Figure 113 Database Settings Window

• When the server is started, it attempts to connect to field devices and launches a service that clients can connect to.



## 8.2.1 Starting via Desktop Shortcut

The SCADA server software can also be started independently of the editor using a desktop shortcut.

• First, create a desktop shortcut to the ServerEngine.exe file.



Figure 114 Creating a Desktop Shortcut for ServerEngine.exe

 Then, in the shortcut's properties, add the path of the SCADA project to be run along with the necessary parameters in the "Target" field: -dir "C:\<Proje klasör yolu>" -start

Örnek	hedef	parametre:	"C:\Program	Files\ViewPLUS\bin\ServerEngine.exe"	-dir
"C:\Users	s\mikrode <sup>,</sup>	v\Desktop\zama	nlayici_etiketi_te	est" -start	

🇊 ServerEngine.e	ce - Kısayol Özellikleri	×
Genel Kisayol U	yumluluk Güvenlik Aynntılar Önceki Sürümler	
Serve	erEngine.exe - Kisayol	
Hedef tür:	Uygulama	
Hedef yer:	bin	
Hedef:	,Program Files\ViewPLUS\bin\ServerEngine.exe"	
Başlama yeri:	"C:\Program Files\ViewPLUS\bin"	
Kısayol tuşu:	Yok	
Çalıştır:	Normal pencere ~	
Açıklama:		
Dosya Konun	uunu Aç Simge Değiştir Gelişmiş	
	Tamam İptal U	ygula

Figure 115 Shortcut Properties Target Parameter

• Double-click the created shortcut to start the server for the specified SCADA project. Once running, the server connects to field devices, opens a port for client connections, and starts logging data to the database.

## 8.2.2 Automatic Startup (at Windows Boot)

SCADA Server can be configured to start automatically when the computer boots. This is achieved by copying the server shortcut to the Windows Startup folder. In this way, when the user logs into Windows, the SCADA server will automatically launch.

This method is especially ideal for users who want SCADA systems to operate continuously without requiring operator intervention. The same approach can also be used for client applications.

- Locate the previously created ServerEngine.exe shortcut on the desktop.
- Copy this shortcut into the following folder: C:\Users\<Username>\AppData\Roaming\Microsoft\Windows\Start Menu\Programs\Startup

This folder contains applications that are automatically launched when Windows starts.



Dosya Giriş	şlangıç Paylaş	Görünüm			- □ × ~ 0
← → * ↑ <mark> </mark>	« Baş	lat Menüsü > Programlar > Başlangıç	ٽ ~	🔎 Başlangıç klasör	ünde ara
🛃 Hizh arisim		Ad	Değiştirme tarihi	Tür	Boyut
Masaüstü	*	🗊 ServerEngine.exe - Kısayol	5.05.2023 10:29	Kısayol	2 KB
🔸 Indirilenler 🔮 Belgeler	A A				
Resimler	*				

### Figure 116 Copying ServerEngine.exe Shortcut to the Startup Folder

### 8.2.3 Running as a Windows Service

The ViewPLUS SCADA server can be run as a service on the Windows operating system. With this method, the server operates silently in the background and can start automatically even if the system is rebooted without requiring a user to log in. This setup is recommended for systems that demand uninterrupted operation.



## 8.2.3.1 Installation Steps

### Service Installation:

First, the server service component must be installed. Right-click on the installcoreservice.bat file located in the bin folder of ViewPLUS SCADA and select Run as Administrator.

■ DriverApiWriter.exe       3/28/2023 1:02 PM       Application       1,19         ■ DriverDNP3.exe       3/28/2023 1:02 PM       Application       52         ■ DriverONP3.exe       3/28/2023 1:02 PM       Application       66         ■ DriverONP3.exe       3/28/2023 1:02 PM       Application       66         ■ DriverGlobalDatabase.exe       3/28/2023 1:02 PM       Application       1,65         ■ DriverGCP.exe       3/62/2023 1:02 PM       Application       77         ■ DriverISCript.exe       3/28/2023 1:02 PM       Application       77         ■ DriverIScript.exe       3/28/2023 1:02 PM       Application       77         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       77         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       77         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       96         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       96         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       97         ■ DriverModbus.ROT.exe       3/28/2023 1:02 PM       Application       96         ■ DriverSmp.exe       ■       0       0       0         ■ DriverSmp.exe <td< th=""><th>Name</th><th></th><th>Date modified</th><th>Туре</th><th></th><th>Size</th></td<>	Name		Date modified	Туре		Size
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	libxslt.dll	💎 Rename			en	395 KE

Figure 117 Running installcoreservice.bat File



#### **Defining a System Environment Variable:**

To define which project the server will run, a system environment variable must be created:

- Go to the Start menu  $\rightarrow$  open "Edit the system environment variables"
- In the window that opens, click on Advanced > Environment Variables



**Figure 118 System Environment Variables** 

• In the "System variables" section, click on New.



Variable	Value
OneDrive	C:\Users\mikrodev\OneDrive
OneDriveConsumer	C:\Users\mikrodev\OneDrive
Path	C:\Users\mikrodev\AppData\Local\Microsoft\WindowsApps;C:\Us
TEMP	C:\Users\mikrodev\AppData\Local\Temp
TMP	C:\Users\mikrodev\AppData\Local\Temp
	New Edit Dalata
rtem variabler	New Edit Delete
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### Figure 119 Defining a New System Variable

• Define a new variable as shown below:

Variable name: VPLUS\_SCADA\_DIR

Variable value: <Full path to the project folder>

### Example:

Variable name: VPLUS\_SCADA\_DIR

Variable value: C:\Users\mikrodev\Desktop\SCADA\_Projem

Click OK in all open windows to save the variable.



Edit System Variable		$\times$
Variable name:	VPLUS_SCADA_DIR	
Variable value:	C:\Users\mikrodev\Desktop\Musteri SCADA Proje\TEİ\TEI_SCADA_EXP\tei_ems	
Browse Directory	Browse File OK Cancel	

### Figure 120 Adding New System Variable

### Starting the Service:

Once the installation is complete, go to Task Manager > Services tab.

Find the service named VPlusScadaService, right-click it, and select Start.



File       Options       View         Processes       Performance       App history       Startup       Users       Details       Services         Name       PID       Description       Status       Group         Quephost       UPnP Device Host       Stopped       LocalServiceA         User DataSvc       User Data Access       Stopped       UnistackSvcGr         QuerManager       1932       User Manager       Running       netsvcs         QuerManager       1932       User Manager       Running       netsvcs         QuerManager       1932       User Manager       Running       netsvcs         QuerManager       1932       User Manager       Running       netsvcs         QuestManager       1932       User Manager       Running       netsvcs         QuestManager       1932       User Manager       Running       netsvcs         QuestSvc       Volumetric Audio Compositor Service       Running       netsvcs         Quartice Audio Compositor Service       Stopped       LocalSystemN         Quartice Audio Compositor Service       Running       Netsvcs         Quartice Audio Compositor Service       Stopped       LocalSystemN         Vintual Disk	^ <u>'</u>
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🔍 VMUSBArbService 4692 VMware USB Arbitration Service Running	
🕼 VMware NAT Service 4788 VMware NAT Service Running	
🕼 VmwareAutostartService VMware Autostart Service Stopped	
🖓 VPlusScadaService 24404 VPlusScadaService Running	
🖓 VSS Volume Shadow Copy Stopped	
🖓 W32Time 20376 Windows Time Running Local Service	
🖓 WaaSMedicSvc Windows Update Medic Service Stopped wusvcs	
🖓 WalletService WalletService Stopped appmodel	
🖓 WarpJITSvc WarpJITSvc Stopped LocalServiceN	
🖓 wbengine Block Level Backup Engine Service Stopped	
🖓 WbioSrvc 12540 Windows Biometric Service Running WbioSvcGroup	
🖓 Wcmsvc 1620 Windows Connection Manager Running LocalServiceN	
🕼 wcncsvc 20240 Windows Connect Now - Config Registrar Running LocalServiceA	
🕼 WdiServiceHost 5548 Diagnostic Service Host Running LocalService	
🕼 WdiSystemHost 14720 Diagnostic System Host Running LocalSystemN	
🖓 WdNisSvc 14640 Microsoft Defender Antivirus Network Inspection Service Running	
WebClient 14968 WebClient Running LocalService	
🕼 Wecsvc Windows Event Collector Stopped NetworkService	
🕼 WEPHOSTSVC Windows Encryption Provider Host Service Stopped WepHostSvcG	

Figure 121 Starting the Windows Service



## 9 ViewPLUS Scada Client

The ViewPLUS SCADA client allows users to connect to the SCADA server and view and control defined projects.

To establish a connection, a username, password, server IP address, and port number must be entered.

New users can only be defined through the SCADA editor.

Once user authentication is completed, an encrypted connection is established between the client and the server, and the main screen defined by the server is loaded on the client.

The pages and elements displayed on the client are filtered according to the permissions defined for the user.

Navigation to pages for which the user does not have access is not allowed,

and visual components associated with tags that are not within access rights are disabled.



**Figure 122 Client Interface** 

No	Component	Description
1	Username	Username defined in the SCADA system
2	Password	Password of the user authorized to log in
3	IP and Port	IP address and port of the server computer
4	Login	Connect to the server using login credentials
5	Remember User	Saves the last used user information
6	Profiles	Previously saved user profiles
7	Toolbar	Manages the visibility of the left panel
8	Application	From the application menu, you can save the current user profile, log out of the session, or exit the application completely.
9	Settings	From the settings menu, you can select the language, manage visual indications of connection interruptions, control cache settings, and disable the alarm sound.
10	Tools	Provides quick access to the report screen or project pages from the tools menu.
11	Window	From the window menu, you can maximize the screen, split the active page, zoom in/out, or arrange the layout of alarm windows.
12	Help	From the help menu, you can enable debug mode and view version information of the client software.

# 9.1 Basic Interface Elements

## 9.2 Top Menu Items

### 9.2.1 Application Menu



Figure 123 Application Menu

Save Current Profile: Creates a new profile using the session information.

**Print:** Initiates the print process for the active SCADA page. Offers options to send directly to the printer, save as PDF, or export as a PostScript file.

**Exit:** Closes the client application.

Log Out: Terminates the active connection with the server.
## 9.2.2 Settings Menu



Figure 124 Settings Menu

Language: Select Turkish / English interface

Draw Connection Error Layout: Displays a warning through components when the connection is lost

Cache the Current Page: Enables page caching

Clear Cache Folder: Clears the local cache

Remember Last Visited Page: Automatically redirects to the last visited page after reconnection

Disable Alarm Sound: Disables audible alerts

## 9.2.3 Settings Menu



Figure 125 Settings Menu

Reports: Opens the reporting module

Pages: Displays the project pages

## 9.2.4 Window Menu



Figure 126 Window Menu

Full Screen: Displays the application in full screen

Detach Current Page: Displays the page in a separate window

Scale / Zoom In / Zoom Out: Adjusts the display settings

**Show Navigation Panel**: Opens or hides the navigation panel (page selector). This panel allows quick switching between user-defined SCADA pages.

Split Alarms: Displays alarms in a bottom or side panel

Remove Panes: Closes the open alarm windows

## 9.2.5 Help Menu





**Help Content**: Opens a custom help link defined via the SCADA editor. Directs the user to the specified document using the default web browser.

**Debug Window**: Can be opened using the Ctrl + Shift + D shortcut. Displays the IDs and values of tags on the page. Primarily used for project testing and error identification.

**License Information**: Displays the current license details, including validity period and granted permissions, if applicable.

**About ViewPLUSClient**: Contains version information, build number, and company details of the client software. Serves as a reference for technical support requests.

**Note**: The "Help Content" link is a custom URL defined in the editor. It can be configured via *Project* > *Client Options* > *Custom Help Link for Clients*.



	denemeeee SCADA Sayfaları Project Configuration Görünüm Ayarları İstemci Seçenekleri	
SCADA Editörü Projeler	İstemci Seçenekleri	
tiket Kanal Editörü	Varsayılanları Geri Yükle       Bağlantı Hatası Zaman Aşımı       Bağlantı Hatası Zaman Aşımı       Bağlantı Hatası Arkaplan Rengi       Bağlantı Hatası Yazı Rengi	
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	WebGörünümü       Custom Sounds       Alarm Level1       Q	
	Alarm Level3	



# 9.3 Left Navigation Panel

When the ViewPLUS SCADA client is launched, this panel appears on the left side of the screen and provides the user with quick access to project pages, alarm management, report screens, and custom links. The options displayed in the panel may change dynamically based on the user's access rights.



Figure 129 Left Navigation Panel

Tab	Description
Page	Lists all "Page Tab" type pages defined in the SCADA project. The user can view only the pages they have access rights to. In the current example, only one page is defined, so only one option is shown.
Alarmlar	Used to monitor active alarms across the system. Alarm history, active alarms, and alarms assigned to the user can be tracked in detail through this tab. (A more detailed explanation will be added later.)
Web View	This section is used by assigning a custom web link for the client. A web address configured via the editor is displayed here as an icon. When the user clicks on this tab, the specified web page opens in the default browser. It is commonly used for links to technical documents, company websites, or customer portals.
Reports	Displays the reports generated from SCADA system data logs. Defined report templates, records based on time intervals, and export operations are managed through this tab. (A more detailed explanation will be added later.)



**Note:** The "Web View" link is a custom URL defined in the editor. It can be configured via Project > Client Options > Default Web View Homepage menu.

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	SCADA Sayfaları Project Configuration Görünüm Ayarları İstemci Seçenekleri	
SCADA Editoru	İstemci Seçenekleri	
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	Özel Ikon/Yazı	
	Raporlar 😧 Raporlar	
	WebGörünümü 😳	
	Custom Sounds	
	Alarm Level	
	Alarm Level3 😵	
	Diğer	
	Custom Help Link For Clients https://docs.mikrodev.com	
	Webview Default Home https://docs.mikrodev.com	

Figure 130 Adding Default Link for Web View

# 9.4 ViewPLUS Client Alarm Screen

In the ViewPLUS SCADA system, alarm monitoring can be performed from both the client and server (Server Engine) interfaces. The alarm structure consists of three main sections: active alarms, alarm history, and alarm configurations.



## 9.4.1 Active Alarms Tab

This area displays the alarms triggered in the system in real time

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aportai														
	Dışa Aktar													Alarm Sesini Kapat

#### Figure 131 Active Alarms Tab

- Alarm details such as name, description, priority level, acknowledgment status, alarm time, and user information are shown in detail in separate columns.
- Alarms are categorized into 4 sound levels based on their priority. Silent alarms can also be defined.
- Each alarm remains active until it is acknowledged.
- Alarms can be exported (.csv, .html, .xml, etc.).
- Right-clicking an alarm allows direct access to the associated SCADA page.

## 9.4.2 Alarm Logs

All historical alarms are stored in this tab.

Geçmişi Filtrele		Olay Zamani	
Kayıt Zamanı Alarm Kimliği Mevcut Durum Olay Tipi Veri Değeri	Kayıt Kimliği		
Dşa Aktar		Da	ha Fazla Yükle

Figure 132 Alarm Logs Tab

- Alarms are categorized in detail by event type (Triggered, Acknowledged, Removed, Recovered).
- Old alarms can be filtered and exported.
- With the "Load More" feature, past database records can be loaded.



# 9.4.3 Alarms on the SCADA Page

The alarm screen can be pinned below or beside the SCADA page:



### Figure 133 Displaying Alarms on the SCADA Page

- Window > Split Alarms Vertically
- Window > Split Alarms Horizontally
- Window > Close Panes to remove



## 9.5 ViewPLUS SCADA Reporter Screen

The Reporter tool is used to view and analyze trend data recorded by the SCADA software. Reporting is performed on three main log types: tag logs, alarm logs, and event logs.

To access the Reporter screen, follow these steps:

- 1. Start the server in your project.
- 2. Launch the ViewPLUS Client application.
- 3. Click the "Reporter" tab on the left sidebar.

**Note:** If the "Reporter" tab does not appear in the left sidebar, ensure that the logged-in user has the necessary permissions to access the reports.

Uygula	ama Ayarlar Araçlar Pencere Yardım				
Page Alarmlar	Mikrodev SCADA Reporter				
/ebGorunumu Raporlar					
			٩	ŧ	
		Etiket Logları	Alarm Logları	Olay Logları	
	RICRODEV®				

#### **Figure 134 Reporter Screen**



## 9.5.1 Tag Logs

Tag logs represent the time-based data recorded for tags with logging enabled in the Tag Channel Editor. These logs can be filtered by station, time, and statistical parameters and reported in tabular or graphical format.

## 9.5.1.1 Tag Selection

Tags are grouped by station and listed accordingly. Only tags with logging enabled are displayed.

Double-clicking on a tag adds it to the right panel. Tags can be removed individually or all at once using the "Clear List" option.



#### Figure 135 Tag Selection Screen

#### 9.5.1.2 Viewing Tag Logs

Tag values are presented either graphically or in a table view. Two key parameters can be selected:

#### • Time Range Selection:

Between: Select two dates.

Within Last: Specify a time range such as hours/days/weeks retrospectively.

Time/Date: A specific timestamp.

Before Time: From today backwards.



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#### Figure 136 Time Range Selection for Tag Logs

• Data Type Selection:

All Data: Displays all recorded values.

Statistical: Displays average, max, min, total, delta, median.



### 9.5.1.3 Managing Graphs

Show Label: Displays the tag name and its color on the graph.



**Figure 137 Show Label Option** 

Add New Trend: Adds a comparison graph.



Figure 138 Add New Trend Option



**Show/Hide:** Toggles visibility of the graph line.



#### Figure 139 Show/Hide Option

**Fill/Clear:** Fills or clears the area below the graph line.







Join Points: Adjusts the line connection style for data points.

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## **Figure 141 Join Points Option**

# 9.5.1.4 Saving the Graph

Graph can be saved as screenshots in PNG format using the "Save Graph" option.

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	3 -	> Belgeler 3D Objects	Desktop		1
		> Masaüstü			
Grafiği Kaydet		> Resimler Documents	Downloads		
	2,5	> 🛃 Yandex.Disk			
Değer Ekseni		V This PC Music	Pictures		<
<ul> <li>Aralikta Sab</li> </ul>		> 3 3D Objects			ĸ
120	2 -	> Documents Videos			2
-20				~	
Dinamik     Kulanca	je i	File name: grafik.png		×	
Ruleric	0 1,5 -	Save as type: Resimler (".png ".jpg ".bmp ".pdf)		v	
	8	∧ Hide Folders	Save Cancel		
	1				r i i i i i i i i i i i i i i i i i i i
					1
					e e
	0,5				
	0				<b>†</b>
			13.07.23 09:40:00	13.07.23 09:50:00	13.07.23 10:00:00
				Tarh	
	<u> </u>				
	•	i deper 1			





### 9.5.1.5 Exporting Data

Switch to table view to export data in HTML, XML, XLSX, or CSV format.

🛄 Mikrodev Viev	vPLUSCIient 0.9.154	- 0 >	<
Uygulam	na Ayarlar Araçlar Pencere Yardım		2
ETİKE	T LOGLARI		
← Geri	Arakta 🔽 13.07.2023 09-09 = vt 13.07.2023 10:03 = Turnive 💌 🕑 Uvou	🗧 🖥 Filtrevi ka	2
Grafik Görünüm	Time Tag Value		
	13.072023 0930.46 deger1 1		
			a
			ľ
			i

### Figure 143 Export Tag Data

## 9.5.1.6 Saving Filters

Filter parameters can be saved with a custom name using the "Save this filter" option for later reuse.



Figure 144 Save Filter for Tag Logs



### 9.5.1.7 Linking Saved Filter to SCADA Object

A saved filter can be copied via right-click and linked to an object in the editor screen. When the linked object is clicked, the report screen opens with the predefined filter applied.

## 9.5.2 Alarm Logs

Alarms generated in the system can be monitored via the Alarm Logs section of the Reporter screen.

#### 9.5.2.1 Selecting Alarms to Display on the Reporter Screen

Alarms created in the ViewPLUS SCADA Editor are listed on the alarm selection page. The alarm list can be filtered in various ways according to alarm properties. Alarms to be reported are selected by doubleclicking items in the left panel. Selected alarms appear in the right panel.

To open the report screen for the selected alarms, click the "Start Reporting" button in the bottom right corner.

To delete a specific alarm from the right panel, select the alarm and press the Delete key. To remove all alarms, select "Clear List."



Figure 145 Alarm Selection Screen



### 9.5.2.2 Viewing Alarm Logs

When the report page is first opened, the selected alarms are displayed in a table format for a specified time range.

Mikrodev ViewPLU	ISClient 0.9.154	-	σ	$\times$
Uygulama	Ayarlar Araçlar Pencere Yardım			2
ALARM L	OGLARI			
Gerl	Arakta 🔽 13.07.2023 08.21 • vi (13.07.2023 18.21 • Vi (13.07) 18.21 • Vi (13.07) 18.	🖶 Filtı	evi kav	5
N South				
	Html e Aktar Xml e Aktar Excel e Aktar CSV e Aktar			
	Fitrel (Kayt Kimið 💌			5
	alarm Jog id			-
	2			
				<
				к
				a

#### Figure 146 Viewing Alarm Logs

#### • Time Range Selection:

Between: Two different dates are selected.

Within Last: Choose hour, day, week, etc., and calculate time backward from the current date/time.

Date/Time: A specific date and time is selected.

**Before Time:** Time is calculated retrospectively from today. For example, "Today - 5 days" represents 5 days ago.

Once the appropriate filter option is selected, click Apply on the right.



Figure 147 Time Range Selection for Alarm Logs



## 9.5.2.3 Exporting Data

Based on the selected parameters, data can be exported in various formats. Use the buttons at the top of the report screen—HTML, XML, XLSX, CSV—to export data.

🛄 Mikrodev Viev	PLUSClient 0.9.154										-	σ	$\times$
Uygulan	na Ayarlar Araçla	ar Pencer	e Yardım	ı									2
ALARI	/I LOGLARI												
Geri	Son içinde 🔽 1		Saat		🔮 Uygu						E F	iltreyi ka	5
N OCH	HTML XML	10.54	CSV										
	Html e Aktar Xml e Akt	ar Excel e Aktar	CSV e Aktar										
	Filtrel Kavit Kimilä			· · · · ·									
	alarm_log_id	* alarm_id		lataval	la	gtime							
	2		3		20	23.07.13 10:24:20							
													к
													a
							 _	 					

#### Figure 148 Exporting Alarm Logs

## 9.5.2.4 Saving Filters

Selected parameters must be applied at least once. Then, use the "Save this filter" option to name and save the filter. The saved filter will appear in the filter menu on the right, specific to the user account.



#### Figure 149 Saving Filters for Alarm Logs



## 9.5.2.5 Linking Saved Filters to SCADA Objects

A saved filter can be copied via right-click and linked to SCADA objects in the Editor. When the linked object is clicked, the report screen will open with the predefined filter applied.

## 9.5.3 Event Logs

User actions can be monitored in the Event Logs section of the Reporter screen.



#### Figure 150 Event Logs



### 9.5.3.1 Viewing Event Logs in the Reporter Screen

When the report page is first opened, all user actions are displayed in a table. Actions such as login IP addresses, writing values to tags, report page access requests, the names of tags for which write requests were made, and the timestamps of these events can be seen.

#### • Selecting a Time Range:

Interval: Two different dates are selected.

Within Last: Choose hour, day, week, etc., and calculate time backward from the current date/time.

Date/Time: A specific date is selected.

Time Ago: Time is calculated retrospectively from today.



Figure 151 Selecting Time Range for Event Logs

After choosing the appropriate filter, click Apply on the right.

**Note:** If the "Auto Update" option on the right of the Apply section is checked, the event log screen will refresh automatically.

## 9.5.3.2 Exporting Data

Data in the table can be exported using the html, xml, xlsx, csv buttons located at the top of the Reporter screen.

Mikrodev ViewPLUSClient 0.9.154	ŧ.				- 0	$\times$
\Xi Uygulama Ayarlar A	raçlar Pencere Yardım					2
OLAY LOGLARI						
Geri	Aralikta 13.07.2023 10:02 * V	13.07.2023 11:02 💌 🛛 🖉 Uva	u 🗹 Auto Upda		🖥 Filtrevi ka	v
N	211/2 2.512 E153	665V)				
	Html e Aktar Xml e Aktar Excel e Aktar	CSV e Aktar				
	logtime user_name	ip_addr	event_desc	state_desc tag_id		
	13.07.2023 11:01: admin	127.0.0.1	ReportJsonRequest	Report Json Data Ta1		
	13.07.2023 11:00: admin	127.0.0.1	ReportJsonRequest	Report Json Data Ta1		
	13.07.2023 11:00: admin	127.0.0.1	ReportJsonRequest	Report Json Data Ta1		
	13.07.2023 10:59: admin	127.0.0.1	ReportJsonRequest	Report Json Data Ta1		
	13.07.2023 10:58: admin	127.0.0.1	ReportJsonRequest	Report Json Data Ta1		
	13.07.2023 10:58: admin	127.0.0.1	VeriYazmaTalebi	0 i i i etiket deeer deger2		
	13.07.2023 10:58: admin	127.0.0.1	KullaniciYetkilendir	-1		<
	13.07.2023 10:57: admin	127.0.0.1	VeriYazmaTalebi	1 i i n etiket dee er deger2		
	13.07.2023 10:57: admin	127.0.0.1	KullaniciYetkilendir	-1		к
	12.07.2022.10-50 admin	127001	PenortleonPenuet	Report Icon Data Ta 1		a

#### Figure 152 Exporting Event Logs

### 9.5.3.3 Saving Filters

Used parameters can be saved with the "Save this filter" option for future reuse. Filters are saved per user account.



## **10** Component Manager

The "Component Manager" is an editor used in ViewPLUS SCADA projects to organize visual elements, define new components, and create project-specific component libraries. With this manager tool, component files with the .comx extension can be defined, and visual animations can be integrated into the SCADA interface.

The application can be launched from the Tools menu on the main SCADA screen by selecting Component Manager.



Figure 153 Accessing the Component Manager

When the program is launched, the main screen appears as shown below.

This screen includes the component folder, the list of existing components, and action buttons.



💱 Bileşen Yöneticisi Ver 1.0.0	-	×
BileşenKlasörü		
C:/Users/mikrodev/denemeeee/components/		
Veni Bileşen     Bileşen i Sil     Bileşen Adı     Bileşen Kategorisi		
Bileşeni Duzeni	e	

#### Figure 154 Component Manager Main Interface

- **Component Folder:** Indicates the directory where the project components are located.
- New Component: Used to define a new component.
- Delete Component: Permanently deletes the selected component.
- Filtering Field: Allows filtering among existing components by name.



## **10.1 Defining a New Component**

When the "New Component" button is clicked, the component definition window opens.

💗 Bileşen Tanımlama			? ×
Özellikler			
Bileşen Adı			
Bileşen Kategorisi			
Varsayılan Genişlik	100	İlk Remin Boyutl	arını Kullan
Varsayılan Yükseklik	100	]	
Resimler			
		Yeni Resim Ekle:	
		ОК	Cancel

**Figure 155 Component Definition Screen** 

**Component Name:** The name to be assigned to the new component.

**Component Category:** This field specifies the group to which the component belongs. Multiple components can be defined under the same category name.

Default Width/Height: The component's size on the interface.

**Use First Image's Size:** When selected, the component's size is automatically adjusted according to the dimensions of the first added image.

**Images Area:** This area is where the visuals (.png, .jpeg, .gif, .svg) belonging to the component are uploaded and ordered.

**Note:** The "index" values corresponding to the images determine which image is displayed on the SCADA screen based on the tag value. For example, if the tag value is "2", the image under index 2 will be displayed.

💗 Bileşen Tanıml	ama	? ×
Özellikler		
Bileşen Adı	LightAll_001	
Bileşen Kategorisi	Light	
Varsayılan Genişli	k 130 İlk R	Remin Boyutlarını Kullan
Varsayılan Yüksel	dik 130	
Resimler		
	Yeni	Resim Ekle:
<ul> <li>♦     <li>■     <li>In     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     <li>■     </li> </li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></li></ul>	deks : 0	
• In	deks : 1	
• In	deks : 2	
o In	deks : 3	
⁰ In	deks : 4	
		OK Cancel

Figure 156 Example Component Definition Screen

Components under the same category are listed as a group in the SCADA editor.

Components can be used as elements in screen design and can be associated with animations.

Existing components can be edited by adding or removing images.



# 11 SCADA User Manager

In the ViewPLUS SCADA system, user management, access rights control, and group definitions are carried out through the User Manager interface.

To create a user and perform necessary configurations in ViewPLUS, go to the Tools tab and select Launch User Manager.



Figure 157 Opening the User Manager



# **11.1 Creating a New User**

Click the New User tab and fill in the required parameters to create a new user. The created user will appear under the username in the Users tab.

Yeni Kullanıcı		? ×
initaddar	Kullanici Adi         İsim         Soyisim         Şifre         Şifre(Onayla)         Eposta       user@user.com         Telefon Numarasi       +90-0000-00000	OK Cancel

Figure 158 Creating a User

#### **User Creation Interface:**

Username: The username used to log into the SCADA system. It must be unique.

**First Name:** The user's first name. This can appear in visualizations and reports.

Last Name: The user's surname.

**Password:** The password the user will use to log in. A secure password should be chosen.

**Confirm Password:** A repeated entry of the above password for verification.

**Email:** The user's email address. System notifications and alarm alerts can be sent to this address.

**Phone Number:** The user's phone number. Especially useful for alarm notifications or user identification.



## 11.2 Users Tab

In ViewPLUS SCADA, the Users tab is used to manage users, control access rights, and define group structures via the User Manager interface.

Dosya Dü	zenle Dil Yardım		
2	Filtrele	KullanıcıVerisi	
Kullanıcılar			
•7	username	Genel Kullanus Ericim Hakka Ülve Olunan Grunlar	
	admin		
Grupiar		Kullanio	
		✓ Aktif	
ErişimHakları			
		Kullania admin	1
		İsim admin	
		Sovieire	
		ooyionn dummi	
		Yetkilendirme	
			Şifreyi Değiştir
		Diğar	
		Telefon Numarasi +90-0000-0000000	
		Enosta admin@admin.com	
		V Left Pane Active	
		Abonelikler	
			Alarm Aboneliklerini Seçin
		Alarm Uyanlarını e-posta ile Gönder	
		Özel Roller	
		Raporlara Erisim	
		misanr(erişiediir sayralar üzerinde sadece izleme hakkina sahiptir)	
		✓ Yönetici(Tüm sayfalar üzerinde okuma/yazma hakkına sahiptir)	

Figure 159 General User Settings

Active: Indicates whether the user is active in the system. If unchecked, the user cannot log in.

User: The username (non-editable).

Name / Surname: The user's full name. Appears in reports and logs.

Authorization: Allows password changes for existing users.

Phone Number / Email: User contact details. Alarm notifications are sent via the defined email address.

Left Pane Active: Determines whether the SCADA Client's left panel is visible for this user.

**Send Alarm Alerts via Email:** Sends alarms assigned to the user via email. The email address must be valid.

**Select Alarm Subscriptions:** Defines which alarm lists the user can monitor. Only selected alarms will be shown.

Access to Reports: Allows access to the Reporter screen in ViewPLUS Client. If not selected, the "Reports" tab will not be visible.

Guest: The user can only view accessible pages without control or write permissions.

Administrator: Has full read/write access to all SCADA pages and tags. This is the most privileged user role.



# **11.3 User Access Rights**

Which pages and tags a user can see or interact with in SCADA screens are determined by access rights. These can be assigned on a page, tag, or object basis and are configured under the User Access Rights tab in the user definition screen.

# 11.3.1 User Access Rights Tab

This tab lists all predefined access rights in the system (Right1, Right2, ..., Right48).

iniaVerisi						
Genel	Kullanıcı Erişim Hakkı	Üye Olunan Gruplar				
	Tersine Çevir	[	<u>Tümü</u>	ſ	<u>Hiçbiri</u>	
ld	Erişim Hakkı					
1	✓ Right1					
2	✓ Right2					
3	✓ Right3					
4	✓ Right4					
5	✓ Right5					
6	✓ Right6					
7	✓ Right7					
8	✓ Right8					
9	✓ Right9					
10	✓ Right10					
11	✓ Right11					
12	✓ Right12					
13	✓ Right13					
14	✓ Right14					
15	V Right15					
10	V Right 16					
1/	V Right /					
18	V Right 18					
19	V Right 19					
20	V Right20					
21	v Rightz I					

#### **Figure 160 Defining User Access Rights**

- All: Selects all access rights.
- None: Clears all selections.
- Invert: Inverts the current selection.

These rights are used in the page and tag access windows explained below.



# **11.3.2** Tag Access Rights – Tag Channel Editor

In the tag detail window, the Access Rights section allows:

Read Permission: Users can only read the tag

Write Permission: Users can write values to the tag.

Access rights IDs (e.g., Right2, Right5) are assigned to each permission field.

Genel Loglama	Makro		
Etiket			
🗹 Kullanımda		[	
EtiketAdı	etiket1	KanalAdı	macro
EtiketID	1	🖗 Kanalı Şuna Değiştir:	🝁 None 🗸 🗸 🗸
Formula	a 🔮		
Tanım	A brief description	Anahtar Kelimeler	
Teçhizat	A custom equipment n		
Ölçülen Entiti	e.g. temp, pressure		
Birim Adı	e.g. centigrade, psi		
Konum	Location coordinates		
Erişim Hakları		Değişken	
Okuma		VarSize 4	
Yazma		DeğişkenTipi S32	~
		J	

Figure 161 Defining Tag Access Rights

**Example:** If Tag1 has Read: Right2 and Write: Right5, users without these rights will neither see nor change the tag in SCADA screens.



# **11.3.3** Page Access Rights – SCADA Design Page

If you want only specific users to access a SCADA page:

- Go to the page properties and click the Access Rights field.
- Select the access rights (e.g., Right1, Right6) required to view the page.

Özellik	Değer
SayfaAdı	Page
SayfalD	0
SayfaSırası	0 <b>2</b> ↓
SayfaTipi	SkadaSekmesi ~
GeoGörünüm	
GeoMerkez	51.5,0,10
BaşlangıçtaÖlçekle	Yok 🗸
ÖzelSayfaBoyutu	
SayfaGenişliği	250 🜲
SayfaYüksekliği	150 🌲
ArkaplanResmi	
Sayfaİkonu	
Kayar Yazı Ekle	
Erişim Hakları	

Figure 162 Page Access Rights

This determines visibility in the "page selector" panel. Users without access rights won't see the page listed, and navigation links will not function.



**Note:** Assigning an access right (e.g., Right5) to a user only gives that right to the user. To be effective, the same access right must also be defined on each page or tag the user should access.

So, granting access rights alone is not sufficient. The same access rights must also be configured on every relevant object (tag, page, or component).

## 11.4 Groups Tab

Users can be assigned to groups. Group definitions can be used to centrally manage access rights.

ya Düzen	le Dil Yar	rdım				
g	roup_id	group_name			. (	
	1	Administrators			Grup Adı:	Guests
	2	Operators			A	
ucilar	3	Guests			Uyeler	Grup Erişim Hakları
	4	Reporters				[ [ + [
2	5	Station1Users			Tersine	<u>Çevir Tümü Hiçbiri</u> 0
	6	Station2Users			1.4	Existing United as
piar	7	Station3Users			IG	Enşim Hakiari
8	8	Station4Users			1	Right1
	9	Station5Users			2	Right2
lakları	10	CustomGroup1			2	Dish42
	11	CustomGroup2			2	Kights
	12	CustomGroup3			4	Right4
	13	CustomGroup4			5	Right5
	14	CustomGroup5				
	15	CustomGroup6			6	Right6
	16	CustomGroup7			7	Right7
	17	CustomGroup8			8	Right 8
	18	CustomGroup9			°	Kighto
	19	CustomGroup10			9	Right9
	20	CustomGroup11			10	Right10
	21	CustomGroup12			11	Dish411
	22	CustomGroup13				Kight I
	23	CustomGroup14			12	Right12
	24	CustomGroup15			13	Right13
	25	CustomGroup16				
	20	CustomGroup 17			14	Kight 14
	27	CustomGroup 18			15	Right15
	20	Customoroup 19			16	Right16
	29	CustomGroup20				
	21	CustomGroup21			1/	Right17
	32	CustomGroup22			18	Right18
	32	CustomGroup24			10	Right19
	34	CustomGroup25			1.5	
	35	CustomGroup26			20	Right20
	36	CustomGroup27			21	Right21
	37	CustomGroup28			22	Pight22
	38	CustomGroup29			22	Kightzz
	39	CustomGroup30			23	Right23
	40	CustomGroup31			24	Right24
	41	CustomGroup32			25	Dista25
	42	CustomGroup33			25	Kight25
	43	CustomGroup34			26	Right26
	44	CustomGroup35			27	Dish#27

#### Figure 163 Groups Tab

From the Member Groups section, a user can be added to one or more groups. Access rights assigned to the group will automatically apply to all users in that group.



# 11.5 Access Rights Tab

The Access Rights tab shows all access rights defined in the system. From here, rights can be named and edited, but they are not assigned to users or groups from this screen.

Dosya Dü	zenle Dil Y	ardım
	right_id	right_name
	1	Right1
	2	Right2
Kullanıcılar	3	Right3
	4	Right4
•2	5	Right5
	6	Right6
Gruplar	7	Right7
	8	Right8
	9	Right9
ErişimHakları	10	Right10
	11	Right11
	12	Right12
	13	Right13
	14	Right14
	15	Right15
	16	Right16
	17	Right17
	18	Right18
	19	Right19
	20	Right20
	21	Right21
	22	Right22
	23	Right23
	24	Right24
	25	Right25
	26	Diab+26

Figure 164 Access Rights Tab



# **12 SCADA Reporter Tool**

The SCADA Reporter tool is used in Mikrodev SCADA projects to analyze, filter, export, and report logged (recorded) data. This application does not monitor live data, it only operates on data previously recorded in the SCADA system.

🗼 Scada Reporter						- (	×
Proje Ayarlar Log Yönetimi Mikrodev SCAD/	A Reporter						
	<b>EtiketLogları</b>	َرْهُمْ AlarmLogları	ClayLogları	Report From Template	< KaydedilmişFiltreler		
Akilli Kontrolde Teknoloji Devi	EV®						





# **12.1** Accessing the SCADA Reporter Application

The application can be launched from the SCADA Editor interface via Tools > Scada Reporter.



Figure 166 Launching the Reporter Tool

## 12.2 Main Interface

When the SCADA Reporter application is launched, the user is presented with four main categories:

Tag Logs: Used to view time-based logged tag values in the SCADA system.

**Alarm Logs:** Used to view records such as the timestamp, status, and type of alarms occurring in the system.

**Event Logs:** User interactions such as logins, value writings, and page entries can be monitored in this section.

**Report From Template:** Used to create reports using pre-defined filter templates.



## 12.3 Top Menu Options

### 12.3.1 Project Menu

**Connect to Project:** Connects to the SCADA database to be reported.

**Options:** Used to configure settings such as connection information and output file path.

**Exit:** Closes the application.

Kopyala	ma Sil	Yenider	Yeni		Özell
🔍 Scada Reporter					
Proje Ayarlar Log Yönetimi					
Projeye Bağlan					
Seçenekler					
Çıkış			ADA Reporter		

#### Figure 167 Project Menu

### 12.3.2 Settings Menu

Language: Changes the application language to Turkish or English.



Figure 168 Settings Menu

**Note:** The reporter tool must be restarted for this selection to take effect.



## 12.3.3 Log Management Menu

**Clear Logs:** Used to delete recorded data from the system. This is permanent and should be used carefully.

**Backup Logs:** Creates a backup of the log data in the database.



Figure 169 Log Management Menu

### 12.4 Using Saved Filters via SCADA Buttons

Filters created in the ViewPLUS SCADA Reporter application can be accessed not only from the Reporter interface but also via a button on the SCADA screen. This feature provides user-friendly access to preconfigured report filters.

## 12.4.1 Saving a Reporting Filter

After applying a filter for any tag, alarm, or event log on the Reporter screen:

- Click the "Save This Filter" button located at the top right.
- In the window that appears, enter a name for the filter and click **OK** to complete the save process.

The saved filter will appear in the "Saved Filters" section on the right panel.




Figure 170 Saving a Reporting Filter

# 12.4.2 Copying the Filter Link Address

- Right-click on the desired filter in the filter list on the right.
- From the menu that appears, select "Copy Link Location" to copy the link to the clipboard.







# **12.4.3** Assigning the Filter Link to a Button in SCADA Editor

- A button component is created in the SCADA Editor.
- After selecting the button, navigate to the "Events" tab in the bottom-right panel.
- Set the "Event Action" to GO\_TO\_LINK
- In the lower section, check the Link checkbox (under Web), and paste the previously copied filter link into the input field.



### Figure 172 Assigning a Filter Link to a Button

Now, when the user clicks this button on the SCADA screen, the report window defined with the corresponding filter opens directly. This method:

Accelerates operational reporting,

Provides easy access to frequently used reports,

Reduces user errors and complex interface interactions.

# **13 ViewPLUS SCADA Data Manager**

In the ViewPLUS SCADA system, the Data Manager is a management tool that provides archiving, backup, data deletion, and organization functions to maintain long-term system efficiency.

The Data Manager is launched from the Tools tab in the main SCADA interface.



Figure 173 Launching the Data Manager

When the Data Manager window opens, two main functions are displayed on the main screen:

- Archiving: Archiving of old data.
- **Backup**: Backing up the entire database.



🔆 ViewPLUS SCA Proje Ayarlar	DA DataManager v1.0.0 - denem	eeee Database			-	•	×
ñ			Data Manager				
	Archiving	Backup	Rem	nove Data	Edit Data		

Figure 174 Data Manager Main Screen



## **13.1 Archiving Process**

Clicking the Archiving option opens the archiving screen. On this screen, the temporary folder, database path, and archive date are specified.

ViewPLUS SCADA DataMa	inager v1.0.0 - denemeeee Database		_	>
je Ayarlar				
ñ	Data Manager			
Temp Data Folder	C:/Users/mikrodev/AppData/Local/Temp			
DB Bin Path				
🗹 Clear Archived Data Fr	rom Log Database			
Archieve Data Older Than	11.03.2025 08:32	Start Archiving		
Clear				

#### Figure 175 Archiving Screen

Temp Data Folder: The location where temporary data is stored.

**DB Bin Path:** The path where the database executables are located.

Example Path: C:/Program Files/PostgreSQL/13/bin

**Clear Archived Data From Log Database:** If checked, archived data will be deleted from the main database.

Archive Data Older Than: All logs prior to this date will be archived.

Start Archiving: Initiates the archiving process.



Proje Ayarlar				
÷		Data Manager		
Temp Data Folder	C+Alsers/mikrodev/AnnDataAoral/Temp			
DB Bin Path	C:/Program Files/PostgreSQL/13/bin			
Clear Archived Data F	rom Log Database	~	Start Archiving	

Figure 176 Selecting Bin Folder for Archiving Process

If the Clear Archived Data From Log Database option is checked, a warning will appear asking whether to delete the logs after archiving has started.



### Figure 177 Warning Message for Deleting Logs After Archiving

- **OK**: Deletes the archived logs from the main database.
- **Cancel**: Keeps the logs in the main database.

After the archiving is completed, a message saying "Archiving completed" will appear.



🔆 Vi Proje	ewPLUS SCADA DataMa	nager v1.0.0 - denemeeee Database -		×
Â		Data Manager		
	Temp Data Folder	C:/Users/mikrodev/AppData/Local/Temp		
	DB Bin Path	C:/Program Files/PostgreSQL/13/bin		
	Clear Archived Data Fr	rom Log Database		
	Archieve Data Older Than	11.03.2025 08:32 V Start Archiving		
	# Finished: Command 11, # 6 Transferring tag_log_ #	Exicode v, Existants u agrinonth to archive completed	^	
	# 7 Dumping tag_log_agr # [11-06-25 08:50:53] "\" tag_log_agryear_id_tag_i mikrodev/AppData/Local/ # ProcessStateChanged: # ProcessStateChanged: # COPY 0	year started C;/Program Files/PostgreSQL/13/bin/psql* h localhost -U postgres -p 5432 -< "\COPY (SELECT d_data_avg.data_um.data_max.data_min.data_median,logtime,logdate,median_logtime,samplecount FROM logs.tag_log_agryear WHERE logtime < 1741671163319) TO 'C:/Users/ Temp/archive-metadata_12.dat;* denemeeee 1		
	# ProcessStateChanged: # # Finished: Command 12, # 7 Dump tag_log_agryea #	0 ExtCode 0, ExitStatus 0 ar fnished		
	# 7 Transferring data to a # [11-06-25 08:50:53] "( denemeeee_archive # ProcessStateChanged: # ProcessStateChanged: #	archive C:/Program Files/PostgreSQL/13/bin/psql" -h localhost -U postgres -p 5432 -c "\COPY logs.tag_log_agryear FROM 'C:/Users/mikrodev/AppData/Local/Temp/archive-metadata_12.dat'; 1 2		
	# COPY 0			
	# ProcessStateChanged: # # Finished: Command 13, # 7 Transferring tag_log_ # # Archive process comple	0 ExtCode 0, ExitStatus 0 .grycar to archive completed ted	Ŷ	
	Clear			

#### Figure 178 Archiving Completed Message

A new archive database is created, for example: denemeeee\_archive



### Figure 179 Resulting Database After Archiving

Archived logs can be viewed from this database.



> 🍮 denemeeee
✓ 🍮 denemeeee_archive
> 🐼 Casts
> 💖 Catalogs
> 🛱 Event Triggers
> 🖶 Extensions
> 🛒 Foreign Data Wrappers
> 🤤 Languages
> 🖒 Publications
✓ 💖 Schemas (2)
✓ 🚸 logs
> 🕼 Aggregates
> A B↓ Collations
> 🏠 Domains
> 🐻 FTS Configurations
> 🚯 FTS Dictionaries
> Aa FTS Parsers
> 🧕 FTS Templates
> 🖷 Foreign Tables
> (iii) Functions
> I Materialized Views
> 🔁 Operators
> (( ) Procedures
> 13 Sequences
✓ I lables (14)
> aalm_table
> == alarm_log
> ap_write_builter
> event_log
> en log 2025-06
> = tag log agrday
tag_log_agrhour
> tag_log_agrmonth

Figure 180 Archive Database



## 13.2 Backup Process

Clicking the Backup button from the main Data Manager screen opens the backup interface.

🔆 ViewPLUS SCADA DataManager v1.0.0 - denemeeee Database		-	×
Proje Ayarlar			
ň	Data Manager		
Output Dump File	C:/Users/mikrodev/database_11_06_2025.badsup		
	Start Dump		
1			_

### Figure 181 Backup Main Screen

- **Output Dump File:** The path where the backup file will be saved.
- **DB Bin Path:** The folder containing the database executables.
- Start Dump: Starts the backup process.

Proje Ayarlar	
ň	Data Manager
Output Dump File	C:/Users/mikrodev/database_11_06_2025.backup
DB Bin Path	C:/Program Files/PostgreSQL/13/bin
	Start Dump

#### Figure 182 Selecting Bin Folder for Backup Process



Once the backup is complete, a message saying "Backup completed" will be shown.

ViewPLUS SCADA DataManager v1.0.0 - denemeeee Database		-	>
ie Ayarlar			
ñ	Data Manager		
Output Dump File	C:/Users/mikrodev/Desktop/database_11_06_2025.backup		
DB Bin Path	C:/Program Files/PostgreSQL/13/bin		
	Start Dump		
# pg_dump: Togs.itc; table: "tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; table: "tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_2025:06" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_gorday" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_gorday" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_gorday" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryes" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryes" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryes" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryes" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryest" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryest" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tag.jog_goryest" tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tablosunun i ∳eri ∳i yedekleniyor pg_dump: Togs.itg; tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.blacklist" tablosunun i ∲eri ∳i yedekleniyor pg_dump: Toblic.chardtistates" tablosunun i ∲eri ∳i yedekleniyor pg_dump: Toblic.pguidstatestas]or tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.pguidstates' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.pguidstates' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.pguidstates' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.chardtist' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.chardtist' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.chardtist' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.chardtist' tablosunun i ∳eri ∳i yedekleniyor pg_dump: Toblic.chardtist' tablosunun i ∳eri ∳i yedekleniyor			
pg_uning: "public.whitelist" tablosunun i eri ei yetekeniyor # ProcessStateChanged: 0			
# # Finished: Command 14, ExtCode 0, ExitStatus 0			
# # Full Dump Database completed			¥

Figure 183 Backup Completion Message

After the backup is completed, a file with a .backup extension will be created in the specified directory. This file can later be used to restore the database or migrate it to another system.



Figure 184 Backup File Generated After Backup Process



# 14 MQTT Bridge Tool

Devices in the field communicate with ViewPLUS SCADA using protocols such as IEC 60870-5-104 (IEC 104) and Modbus. All data transmitted to the SCADA system via these protocols can be forwarded to the MQTT protocol with the help of the MQTT Bridge Tool. This enables seamless integration of the data into cloud systems, mobile applications, or external analytics platforms.

## 14.1 Main Interface

MQTT Bridge Tool editör ekranı, ViewPLUS SCADA editörü içinden Araçlar > MQTT Bridge Tool menüsü aracılığıyla açılır.



Figure 185 Launching MQTT Bridge Tool

All defined connections are listed in the MQTT Bridge Tool interface. Each connection displays information such as Client ID, Topic, data publishing method (On Change / Periodic), Payload, etc.

1	🗄 Mikrodev Mqtt Bridge -	v2.0.0 [denemeeee]								-		×
					MQ	TT Bridge Table						
	Add Connection	Expand/Collapse				-						
	Client ID	Торіс	Туре	On Change	Change Type	Change Value	Periodic	Payload	Periodic Value	Tag Lis	t	
												н
												н
												н
												н
												н
												н
												н
												н
												н
												н
												н
												н
												н
										Save C	Config	

Figure 186 MQTT Bridge Tool Main Screen



# 14.2 Adding a New MQTT Connection

Clicking the "Add Connection" button opens the screen to input new MQTT connection information.

Add MQTT Connection	? ×
Connection Details	
Client ID:	
Host:	
Port: 1883	
Authentication	
Username:	
Password:	
SSL Settings	
Enable SSL	
SSL CA Path	Browse
Advanced Options	
Keep Alive (sec): 60	
Connection Timeout (sec): 30	
Clean Session	
ОК	Cancel

Figure 187 MQTT Connection Settings Window

• Connection Details

**Client ID:** Unique identifier of the MQTT client.

Host: Broker IP address.

Port: Connection port (default: 1883).

• Authentication

Username / Password: For brokers requiring authentication.

• SSL Settings

**Enable SSL:** Option to enable secure connection.

**SSL CA Path:** Path to the certificate.

• Advanced Options

Keep Alive: Duration for keeping the connection alive.

Connection Timeout: Timeout duration for connection.



**Clean Session:** If enabled, starts a clean session on each connection.

### **14.3 Defining Publish and Subscribe Topics**

Once a connection is defined, right-clicking on it allows the following operations:

Client_test Add Subscribe Topic Delete Connection	Client ID client_test	Add Publish Topic Add Subscribe Topic Delete Connection	Туре	On Change	Chai
--	--------------------------	---	------	-----------	------

### Figure 188 Defining Publish and Subscribe Topics

Add Publish Topic: Defines a new topic for MQTT publishing.

Add Subscribe Topic: Defines a topic to listen to incoming MQTT messages.

**Delete Connection:** Deletes the connection.



### 14.3.1 Publish Topic

Using the "Add Publish Topic" option, you can define the topic through which data will be published.

Add Publish Topic			?	×
Topic Name:	Double-click o	on a tag to add it to the	payload list	
Publish Options         On Change         Change Value:       0.000         Change Type:       None         Send Periodically         Periodic (ms):       1000	Tag II	D Tag Name etiket1		
QoS: 0 - Almost On Retain	Double-click o	r press Delete to remov	e items	
		ок	Cancel	

Figure 189 Add Publish Topic Screen

**Topic Name:** Name of the MQTT topic to which data will be published.

**On Change:** Enables sending data on tag change.

**Change Value:** Threshold value for triggering data send.

**Change Type:** Types such as None, Level, Percent, Integral.

Send Periodically: Enables data to be sent at specified intervals.

Periodic (ms): Interval in milliseconds.

**QoS:** MQTT quality of service level.

**Retain:** Retains the last message on the broker for new clients.

Double-clicking a tag from the list on the right inserts it into the payload.

# 14.3.2 Subscribe Topic

Add Subscribe Topic						?	×	
Topic Name:	Do	uble	e-click on a	tag	to add it to the p	payload	list	
Subscribe Options			Filter: Filter tags					
QoS (Subscription): 0 - Almost On			Tag ID		Tag Name			
Write Into Tag Buffer	1	1			etiket1			
		uble	click or pr	055	Delata to ramova	itoms		
		uble	e-cuck of pre	255	Delete to remove	e llems		
					ок	Cance	el 👘	

Figure 190 Add Subscribe Topic Screen

**Topic Name:** Name of the MQTT topic to be listened to.

QoS (Subscription): Quality level for incoming data.

Tags from the list on the right can be double-clicked to map them with the payload.

These settings allow publishing data from SCADA to the MQTT broker.



# 14.4 Example Payload

```
[
{"ts":"1733141120","values":{"1":"30"}},
{"ts":"1733141120","values":{"2":"28"}},
{"ts":"1733141120","values":{"3":"32"}},
{"ts":"1733141120","values":{"4":"31"}},
{"ts":"1733141120","values":{"5":"15"}}
]
```

### ts: Timestamp

values: Tag ID and its value

With the help of the MQTT Bridge Tool, SCADA projects gain the ability to publish measurement data to online platforms, enable real-time monitoring, and support IoT integration.



## **14.5** Starting the Driver for MQTT Bridge Tool

To ensure that the MQTT Bridge Tool is automatically enabled when the server starts, follow the steps below:

- Open the Other Settings tab from the left menu in the ViewPLUS ServerEngine application.
- Locate the Mqtt Bridge section at the bottom of the opened screen.
- Check the Enable Bridge option. When this setting is enabled, the MQTT Bridge driver will be active after the next server restart.

ServerEngir	ne 2.0.0 Beta10 - denemeeee			-		×	
Sunucu Aya	rlar Araçlar						
Kontrol Rontrol Etiket İzleme	Client Settings   Enable Client Auto Loggoff  Auto Loggoff Timeout (Minutes)  Don't allow multiple connection for same Enable user blacklist after 3 failed login a	user Ittempts	10			\$	
Alarmlar	Redundancy Settings						
Aktif Oturumlar	Redundancy Mode Backup Server Settings		PRIMARY SERVER				
Ê	Primary Server IP	127.0.0.1					
Beyaz Liste	Redundant Server Activation Timeout (sec)	30					
Kara Liste	iste       Redundancy Communication Port         Mqtt Bridge       Mqtt Bridge         Image: Strain Str		51314				
Other Settings							



Note: The server application must be restarted for this setting to take effect.

# **15 ViewPLUS SCADA Web API**

With the ViewPLUS SCADA Node WebAPI, you can access field devices and perform remote control operations. This guide includes all steps from installation to data query examples.

To download the WebAPI folder: SCADA Node Web API

### **15.1 Database Connection**

In order for the WebAPI to connect to the database, system environment variables must be defined:

1. Open the Edit the system environment variables window from the Start menu. Click on Environment Variables under the Advanced tab.

	- 1					
lgisayar Adı	Donanım	Gelişmiş	Sistem Ko	ruması	Uzak	
Bu deăisiklik	lerin coău ici	n Yönetic	r i olarak otu	irum ac	manız de	erekir.
Performans					-	
Görsel efek	tler, işlemci z	amanlam	ası, bellek l	kullanım	ı ve san	al bellek
					_	
						Ayarlar
Kullania Pr	ofillori					
	onnen					
Oturum açı	nanızıa ligili n	iasaustu i	ayanan			
						Avadar
- Başlangıç v	ve Kurtarma -					
Sistem baş	langıcı, sister	n hatası v	e hata ayık	lama bi	lgisi	
					_	
						Ayarlar
				_		
					Ortam D	eğişkenleri

Figure 192 Selecting System Environment Variables



2. Under System Variables, click New and add the following variables:

Değişken	Değer				
ChocolateyLastPathUpdate	133337856951121322				
docurous	C:\Users\mikrodev\AppData\Roaming\npm				
OneDrive	C:\Users\mikrodev\OneDrive				
OneDriveConsumer	C:\Users\mikrodev\OneDrive				
Path	C:\Users\mikrodev\AppData\Local\Yarn\bin;C:\Program Files\node				
TEMP	C:\Users\mikrodev\AppData\Local\Temp				
TMP	C:\Users\mikrodev\AppData\Local\Temp				
stem değişkenleri	Yeni Düzenle Sil				
stem değişkenleri Değişken	Yeni Düzenle Sil				
stem değişkenleri Değişken MOSQUITTO_DIR	Yeni Düzenle Sil Değer C:\Program Files\mosquitto				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS	Yeni     Düzenle     Sil       Değer     C:\Program Files\mosquitto       8				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS OS	Yeni     Düzenle     Sil       Değer     C:\Program Files\mosquitto       8     Windows_NT				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS OS PATH	Yeni     Düzenle     Sil       Değer     C:\Program Files\mosquitto       8     Windows_NT       C:\Python311\;C:\Windows;C:\Windows\sys				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS OS PATH PATHEXT	Yeni         Düzenle         Sil           Değer         C:\Program Files\mosquitto         8           Windows_NT         C:\Python311\;C:\Windows;C:\Windows;C:\Windows\sys         .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;JSE;.WSF;.WSF;.MSC;.PY;.PYW				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS OS PATH PATHEXT PROCESSOR_ARCHITECTURE	Yeni     Düzenle     Sil       Değer     C:\Program Files\mosquitto       8     Windows_NT       C:\Python311\Scripts\;C:\Python311\;C:\Windows;C:\Windows\sys       .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;JSE;.WSF;.WSH;.MSC;.PY;.PYW       AMD64				
stem değişkenleri Değişken MOSQUITTO_DIR NUMBER_OF_PROCESSORS OS PATH PATHEXT PROCESSOR_ARCHITECTURE PROCESSOR_IDENTIFIER	Yeni     Düzenle     Sil       Değer     C:\Program Files\mosquitto       8     Windows_NT       C:\Python311\Scripts\;C:\Python311\;C:\Windows;C:\Windows\sys       .COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS; JSE;.WSF;.WSH;.MSC;.PY;.PYW       AMD64       Intel64 Family 6 Model 140 Steoping 1. GenuineIntel				

Figure 193 Defining a New System Variable

• For PostgreSQL;

HR\_DBTYPE = POSTGRES

Yeni Sistem Değişkeni			$\times$
Değişken adı:	HR_DBTYPE		
Değişken değeri:	POSTGRES		
Dizine Gözat	Dosyaya Gözat	Tamam İptal	

Figure 194 Variable for PostgreSQL (1)

HR\_PGCONNECTIONSTRING = postgres://postgres:qwx123@127.0.0.1:5432/basliksiz2

(Database user: postgres, password: qwx123, server address: 127.0.0.1, port: 5432, SCADA project: basliksiz2)



Yeni Sistem Değişkeni		×
Değişken adı:	HR_PGCONNECTIONSTRING	
Değişken değeri:	postgres://postgres:qwx123@127.0.0.1:5432/basliksiz2	
Dizine Gözat	Dosyaya Gözat	Tamam İptal

### Figure 195 Variable for PostgreSQL (2)

• For ORACLE:

HR\_CONNECTIONSTRING = 127.0.0.1/orcl

Yeni Sistem Değişkeni				
Değişken adı:	HR_CONNECTIONSTRING	]		
Değişken değeri:	127.0.0.1/orcl	]		_
Dizine Gözat	Dosyaya Gözat		Tamam İptal	

### Figure 196 Variable for ORACLE (1)

### HR\_USER = ORACLETEST

Değisken adı:	HR USER	1	
Değişken değeri:	ORACLETEST		

### Figure 197 Variable for ORACLE (2)

### HR\_PASSWORD = qwx123

Yeni Sistem Değişkeni				>
Değişken adı:	HR_PASSWORD			
Değişken değeri:	qwx123			
Dizine Gözat	Dosyaya Go	özat	Tamam	İptal

### Figure 198 Variable for ORACLE (3)



### 15.2 Starting the Server

- 1. Ensure Node.js is installed on your computer. Download Node.js
- 2. After defining the environment variables, you can change the port number in the config/webserver.js file within the WebAPI folder (default: 3000).

EXPLORER     JS web-server/s X       > SCADANODEWEBAPLV1.2     config > JS web-server.js >       > auth     1       ~ config     2       JS database.js     3       > fortulars       > controllers       > data aris		
<pre>&gt; SCADANODEWEBAPL_V1.2 config &gt; J\$ web-server.js &gt; &gt; auth 1 module.exports = { &gt; config 2 port: process.env.HTTP_PORT    3000 3 }; J\$ web-server.js &gt; controllers &gt; controllers</pre>	EXPLORER ····	JS web-server.js ×
JS database.js 3 }; JS web-server.js > controllers	✓ SCADANODEWEBAPI_V1.2 > auth ✓ config	<pre>config &gt; J\$ web-server.js &gt; 1 module.exports = { 2 port: process.env.HTTP_PORT    3000</pre>
Js variabasejs Js web-server.js > controllers	IS database is	3 };
JS web-server.js > controllers	Ja Gatabase.js	
> controllers	Js web-server.js	
) dh anis	> controllers	
	> db_apis	

Figure 199 Updating Web Server Port

3. Update the JWT security key in config.js (e.g., changethissecret).

EXPLORER	J <sup>S</sup> config.js ×
〜 SCADANODEWEBAPI_V1.2 🖺 📴 ひ 🗊	Js config.js > @] <unknown></unknown>
> auth > config > controllers > db_apis > node_modules > services	<pre>1 module.exports = { 2 'secret': 'changethissecret' 3 };</pre>
Js config.js Js index.js {} package-lock.json {} package.json {} README.txt \$\$ webapi.docx	

Figure 200 Updating JSON Web Token

4. Check if the correct version of the PostgreSQL library is installed:

npm list

npm install pg@8.11.1 # gerekirse





#### Figure 201 Verifying Database Version



### Figure 202 Updating Version via Command Line

#### 5. To start the server:

node .



#### Figure 203 Starting Web API Server



# **15.3 HTTP Client (Thunder Client)**

To test API requests, you can install the Thunder Client extension in Visual Studio Code:

- 1. Install VS Code.
- 2. Open the Extensions menu on the left and search for Thunder Client, then install it.
- 3. Pin the Thunder Client icon to the sidebar.

刘 - Р	ile Edit	Selection View Go Run	Terminal Help	Extension: Thunc	ler Client - ScadaNodeWebApi_v1.2 - )	visual Studio Code				8 –	a ×
(J)				Extension: Thunder Client ×							□ …
ر به	thunde	er Thunder Client ⊙ 3222m Lightweight Rest API Client f. ∲Ranga Vadhineni @	4 5	Thunder Client V2.38 Ranga Vadhineni 🔮 thunderdient.co Lightweight Rest API Client for VS C	2 om   ♀ 2,507,073   ★★★ ode	<b>★ ★</b> (176)					
 ₽	•	Thunder 🗢 4K ★ Type quickly. Type freely. Ken T Ekeoha Install		Disable V Uninstall V @							
۲	4	Thunder $\Phi$ 28 Snippets for lwc (Salesforce)		DETAILS FEATURE CONTRIBUTIONS CHANGELOG RUNTIME STA							
Ŷ	(f)	Steve-DevOps install		Thunder Client				Categories Programming Lang	uages Snippets Testing		
		Charles Pasuncau		Thunder Client is a lightweight Rest API Client Extension for V	isual Studio Code, hand-crafted by	Ranga Vadhineni with simple and clean	design.				
		thunder_dust $\Phi$ s strike zzz		<ul> <li>Voted as #10 Product of the day on Product Hunt</li> <li>Website - www.thunderclient.com</li> </ul>				Marketplace	urces		
				Follow Twitter for updates - twitter.com/thunder_clien				Repository			
		A deep purple atmospheric		<ul> <li>Support: github.com/rangav/thunder-client-support</li> </ul>							
		BuddyDeveloping Install		Story behind Thunder Client							
	°	convert thunderClie @ 38		Read Launch Blog Post on Medium				More Into			
	0	Trust Nguyen		Usage				Last released	2021-3-30, 15:5945 2023-8-6, 22:11:36		
		Search in OpenGrok $\Phi$ 4t		<ul> <li>Install the Extension, Click Thunder Client icon on the</li> </ul>	Action Bar.			Last updated Identifier	2023-8-9, 15:59:41 rangav.vscode-thunder-client		
	<u></u>	yuwh Install		<ul> <li>From Sidebar click New Request button to test API</li> </ul>							
		gbe0 API Extension 👁 🕫									
		Extension package that inclu. gbe0 Install		New Request	• 79	an A ngagmucbook thunder-cli % tc 'welcone'					
		XPack (General) $0.99$		Activity Collections Env     Ger V Headers* Auto	Rody Tests Pre-Bus New Str	gest URLI GET = NTEpsi//www.thunderClient.com/wet /ironment: Test (Active) #tess 200 DK Size: 410 Dytes Time: 234 ns	.come				
	•	Extension Pack for miscellan		δ <sup>o</sup> (the colections) =	Per C	ipenia					
	<u> </u>	Mangur's extension (0.161		B <sup>C</sup> B Account C parameter		News": "Lightweight News AP2 Client for VSCode", createdby": "Nampa Vadhizeni", lourched: 2021,					
		Collection of personal exten.				"pit": "Save data to Git Workspece", "Bemes", "Supports VECode Themes", "data": "Collections & Environment Variables",					
	28	mvtsiliva <b>Install</b>		Custome     Z days ego     Status: 200 OK     Size: 419 Biz	tos Time: 428 ms	"testing": "Scriptless Testing", "local": "Local Storage & Works Offline"					
	-	idss-snippet Ф 61 代码片段		Besponse Headers <sup>10</sup> Cooki     Adays ago     Besponse Headers <sup>10</sup> Cooki		"graphql's true, "codeficipet": true, "requestChaining"; true,					
8		chensi-thunder Install		Orders     1     C     Tessage*: "Welcome to     Tessage*: "Welco	Thunder Client", Rest API Client for VSCode",						
£63		Autumn Grey Theme @ 18		Tempe Tempe	edhineni", Te Re	sts Hesults sponse Code equal to 200	Pass				
* 6	0000	Gray theme, me lying in a th		Create Order 2 Sector State Asta A	tis Wolanova Bu	The set	Margarith.				8 B

**Figure 204 Installing Thunder Client Extension** 

### 15.4 Retrieving Access Token

- 1. Create a user in the SCADA editor (must have report permissions).
- 2. Send a POST request using Thunder Client:

```
URL: http://localhost:3000/api/auth/login
```

Body:

```
{
```

```
"username": "<username>",
```

```
"password": "<password>"
```

}

3. Save the access token returned in the response for future use.

Note: The server must be running (node .) to retrieve the token.



### 15.5 Fetching Data with Web API

#### Use the token to send GET requests:

In Thunder Client, go to the Headers tab and remove all existing headers.

Add a new header

Key: x-access-token

Value: your previously received token (without quotes)

• List All Tags

GET http://<server\_IP>:3000/api/auth/tags

Returns: All tag details (id, tag name, address, etc.)

• Get a Single Tag

GET http://<server\_IP>:3000/api/auth/tags/<tag\_id>

Access Alarms

GET http://<server\_IP>:3000/api/auth/alarms

Note: Use the tag\_id in the alarm object to access related tag data.

• List Channels

GET http://<server\_IP>:3000/api/auth/channels

• Get a Single Channel

GET http://<server\_IP>:3000/api/auth/channels/<channel\_id>

• All Real-Time Tag Values

GET http://<server\_IP>:3000/api/auth/rt\_values

• Single Real-Time Tag Value

GET http://<server\_IP>:3000/api/auth/rt\_values/<tag\_id>

#### Notes:

- A token is required for all requests.
- The token must be sent in the x-access-token header.
- The server IP refers to the device where WebAPI is installed.
- The port number can be changed from config/web-server.js.
- Token expiration may vary depending on the application.

# 16 Installing the OPC UA Server Service

## 16.1 Activating the OPC Server Service

Within ViewPLUS SCADA, go to the Tools tab and select Install OPC Server Service to perform the installation.

/lik	crode	ev ViewPLUS					
	Araq	çlar Pencere Yardım	n				
		Bul		Ctrl+K	8+ ×	<b>+ +</b>	<no document=""></no>
Τ		ViewPLUS Client					
	F	Sunucuyu Başlat					
ť.	<u> </u>	User Manager					
L	Þ.	Scada Reporter					
L	÷.	Data Manager					
L	Ŷ	Bileşen Yöneticisi					
	Ŷ	Mqtt Bridge Tool					
L	ŵ.	Projeji Derle ve Yayınla					
		Download ViewPLUSC	lient Runtime				×
1		OPC Server Service		•	🗵 Inst	all OPC Ser	ver Service
Ľ		Etiket/Kanal Tanımların	n Dışa Aktar		🗵 Rer	nove OPC S	Server Service
L	4	Etiket/Kanal Tanımların	n İçe Aktar				
L	X	Import Tags From Exce	4				
L	-	Kullanıcıları Dışa Aktar					
L	-	Kullanıcıları İçe Aktar					
		Harici		+			
		Seçenekler					

Figure 205 Installing the OPC Service

After installation, the service named VPlusScadaOPCService should be running and visible in Task Manager.

🔍 vmicvss		Hyper-V Birim Gölge Kopyası İsteyicisi
🔍 VMnetDHCP	5416	VMware DHCP Service
VMUSBArbService	5744	VMware USB Arbitration Service
🔍 VMware NAT Service	5408	VMware NAT Service
Contract Network Contra		VMware Autostart Service
WPlusScadaOPCService	1120	VPlusScadaOPCService
Service VPlusScadaService		VPlusScadaService
🔍 VSS		Birim Gölge Kopyası
🔍 W32Time		Windows Time
🔍 WaaSMedicSvc		Windows Update Medic Hizmeti
🔍 WalletService		Cüzdan Hizmeti

### Figure 206 Starting the OPC Service



# 16.2 Connecting via UAExpert

# **16.2.1 Installing UAExpert**

Download and install UAExpert from:

https://www.unified-automation.com/downloads/opc-ua-clients.html

# 16.2.2 Adding a Server

1. In the UAExpert interface, go to Server  $\rightarrow$  Add.

scovery Advanced	
dpoint Filter: No Filter	
Q     Local       Image: Second Secon	srver >
V Recently Used	
Authentication Settings	
Authentication Settings	
Authentication Settings	Store
Authentication Settings   Anonymous  Username Password  Certificate Physical Key	Store

Figure 207 Adding a Server via UAExpert



2. In the popup window, enter the address opc.tcp://localhost:43344 (if ViewPLUS SCADA is running on the same computer).



### **Figure 208 UAExpert Server Settings**

## 16.2.3 Establishing a Connection

After the server appears in the list, select an appropriate endpoint to connect. It is recommended to choose the highest security level.

nfiguration Name open62541-ba	sed OPC UA Application
Discovery Advanced	
Endpoint Filter: No Filter	
Q Local	
Y 🛃 Local Network	
> g Microsoft Terminal	l Services
> Microsoft Window	s Network
Web Client Network	rk
<ul> <li>Reverse Discovery</li> </ul>	and the second second second second
South a state of the state o	Add Reverse Discovery >
<ul> <li>Custom Discovery</li> </ul>	
South a state of the state o	Add Server>
Y one ten//localboo	******
openeps/rocarios	CHODE LIA Ann Easting (annual)
✓ g open62541-bas	ed OPC UA Application (opc.tcp)
	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
generation of the second	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Non     Recently Used	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Non     Recently Used	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Non     Recently Used	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Non     Recently Used  Authentication Settings  Authentication Settings	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Non     Recently Used  Authentication Settings      Anonymous  Username	red OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
v v open62541-bas     None - Non     Recently Used  Authentication Settings  Authentication Settings Username Username	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
v v open62541-bas     None - Nor     Recently Used      Authentication Settings     Anonymous     Username     Password	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Nor     Recently Used  Authentication Settings     Anonymous  Username Password Certificate	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
v v open62541-bas     None - Nor     Recently Used  Authentication Settings     Anonymous  Username Password  Certificate	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Nor     None - Nor     Recently Used  Authentication Settings      Anonymous      Username     Password      Certificate     Private Key	ed OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)
open62541-bas     None - Nor     None - Nor     Recently Used  Authentication Settings      Anonymous      Username     Password      Certificate     Private Key	eacond OPC UA Application (opc.tcp) ne (uatcp-uasc-uabinary)

Figure 209 Endpoint List

# 16.2.4 User Login

Configuration Name	open62541-based OPC UA Appl	cation
Server Information		
Endpoint Url	opc.tcp://DESKTOP-S3BTNGG	43344/
Reverse Connect		
Security Settings		
Security Policy	None	
Message Security Mod	le None	-
Username     Passivord	admin	•• Store
Certificate		
Certificate Private Key		
Certificate Private Key Session Settings		

### Figure 210 Username and Password Entry for Server Connection

Log in using the username and the hashed password stored in the ViewPLUS SCADA project database.

File	Edit Data - PostgreSQL 9.5 (localhost:5432) - basliksiz29 - public.users File Edit View Tools Help									
	user_id [PK] serial	active	firstname character varying(30)	lastname character varying(30)	username character varying(30)	password character varying(40)				
1	1	TRUE	admin	admin	admin	71a49ec8051755c4a21bfc2ca1c43bbe7534f				

Figure 211 ViewPLUS SCADA Database User Password

# 16.3 Connecting via KEPServerEX

### 16.3.1 Installing KEPServerEX

Download and install KEPServerEX from:

http://www.opcturkey.com/indir

# 16.3.2 Defining Channel and Device

1. Creating a new channel and select OPC UA Client as the type.



Figure 212 Adding OPC UA Client Channel in KEPServer



2. Set the Endpoint URL to opc.tcp://localhost:43344. The security policy can be set to None if needed.

File       Edit       Yiew       Tools       Runtime       Help         Project       Project       Project       Project       Project         Project       Connectivity       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Add Ases       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project       Project         Project       Project       Project <t< th=""><th>Channel Nam</th><th>Add Channel Wizard Specify the unique URL destination of the OPCUA endpoint. Endpoint URL: opc.tcp://localhosti43344  Select the endpoint security policy. Note that Basic128Roa15 and Basic256 have be deprecated by the OPCFoundation and are notionger considered to be secure. Security Policy: None Select the type of encryption to use for messages between the driver and server. Heavor Mode:</th><th>eer</th><th>× itual Network</th></t<>	Channel Nam	Add Channel Wizard Specify the unique URL destination of the OPCUA endpoint. Endpoint URL: opc.tcp://localhosti43344  Select the endpoint security policy. Note that Basic128Roa15 and Basic256 have be deprecated by the OPCFoundation and are notionger considered to be secure. Security Policy: None Select the type of encryption to use for messages between the driver and server. Heavor Mode:	eer	× itual Network
		None v @	Íptal	

Figure 213 KEPServer Connection Settings



3. Enter the username and hashed password from the ViewPLUS SCADA project.

Project     Project     Ornectivity     Gick to add a channel.	Channel Nam Signature Channel Nam	Add Channel Wizard	× — itua
Advanced Tags     Advanced Tags     Advanced Tags     Advance Tags		Enter a valid account user name to use when connecting to OPC UA endpoints that require authentication. Username:	
Add Poll Group     Si IDF for Splunk     Got Gateway     Solution		Enter a valid password to use with the user name when connecting to OPC UA endpoints that require authentication.	
Scheduler      Ship Agent      Add Schedule      Ship Agent      Add Agent		••••••••••••••••••••••••••••••••••••••	

Figure 214 Defining Username and Password in KEPServer

4. After creating the channel, define the device.



## 16.3.3 Viewing Tags

Channels and tags defined in ViewPLUS SCADA can be viewed through the OPC server and mapped in the KEPServerEX interface.







# 16.4 Creating OPC Certificates (for Linux)

Use the createcert.sh script file to generate certificates. This process requires a Linux system with OpenSSL installed.

Below is a secure and advanced OPC UA certification procedure. This script generates private keys and certificates for both the Certificate Authority (CA) and the server, and also supports CRL (Certificate Revocation List).

## 16.4.1 Certificate Authority

### **CA** Creation

mkdir ca

openssl genpkey -algorithm RSA -pkeyopt rsa\_keygen\_bits:2048 -out ca/ca.key

openssl req -new -x509 -days 3600 -key ca/ca.key -subj "/O=MyServer/CN=localhost" -out ca/ca.crt

openssl x509 -in ca/ca.crt -inform pem -out ca/ca.crt.der -outform der

### **CRL Creation:**

mkdir demoCA

touch ./demoCA/index.txt

echo "1000">./demoCA/crlnumber

openssl ca -crldays 3600 -keyfile ca/ca.key -cert ca/ca.crt -gencrl -out ca/ca.crl

openssl crl -in ca/ca.crl -inform pem -out ca/ca.der.crl -outform der



## 16.4.2 Creating Server Certificate

mkdir server

#### Define certificate extensions:

cat < server/exts.txt

[v3\_ca]

subjectAltName=DNS:localhost,DNS:<PC-Adı>,IP:127.0.0.1,IP:<ScadaServerPCIP>,URI:urn:unconfigurated:application

basicConstraints=CA:TRUE

subjectKeyIdentifier=hash

authorityKeyIdentifier=keyid,issuer

keyUsage=digitalSignature,keyEncipherment

extendedKeyUsage=serverAuth,clientAuth,codeSigning

EOF

### Generate server private key:

openssl genpkey -algorithm RSA -pkeyopt rsa\_keygen\_bits:2048 -out server/server.key

openssl rsa -in server/server.key -inform pem -out server/server.key.der -outform der

#### Create CSR

openssl req -new -sha256 -key server/server.key -subj "/O=MyServer/CN=localhost" -out server/server.csr



### 16.4.3 Signing the Server Certificate

openssl x509 -days 3600 -req -in server/server.csr -extensions v3\_ca -extfile server/exts.txt -CAcreateserial -CA ca/ca.crt -CAkey ca/ca.key -out server/server.crt

openssl x509 -in server/server.crt -inform pem -out server/server.crt.der -outform der

## 16.4.4 Copying Certificates

#### For UA Expert

cp ca/ca.crt.der ~/.config/unifiedautomation/uaexpert/PKI/trusted/certs/

cp ca/ca.der.crl ~/.config/unifiedautomation/uaexpert/PKI/trusted/crl/

#### For ViewPLUS SCADA Project:

mkdir -p \$PROJECT\_PATH/certs

cp server/server.crt.der \$PROJECT\_PATH/certs/

cp server/server.key.der \$PROJECT\_PATH/certs/

As a result of these steps, the OPC UA server is securely certified and can establish trusted communication with clients such as UAExpert or KEPServerEX.