

Kollmorgen Automation Suite

OPC UA Server User Manual for PCMM2G



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For safe and proper use, follow these instructions.
Keep for future use.

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1 OPC UA Server

This document describes how to create and configure an Open Platform Communications Unified Architecture (OPC UA) Server on a PCMM2G controller and how to verify communication using various OPC UA client applications.

- This is the successor of the former OPC specifications.
- It is a standardized machine to machine communication protocol for industrial automation.
 - It is developed and maintained by the [OPC Foundation](#).
- When configured, the OPC UA driver enables secure communication using digital certificates and data encryption.

1.1 OPC UA Server Overview

The OPC UA Server is a platform-independent, service-oriented architecture designed for secure and reliable data exchange in industrial automation environments.

The OPC UA Server acts as a central communication hub, enabling seamless interoperability between devices, systems, and applications.

❗ IMPORTANT

This feature is specific for PCMM2G only.

NOTE

Videos of these features are here: [PCMM2G OPC UA Server Setup in KAS-IDE](#).

1.1.1 Key Features

- **Cross-Platform:** Operates across Windows, Linux, and embedded systems.
- **Data Modeling:** Supports complex data structures and semantic information.
- **Scalability:** Suitable for small devices to enterprise-level systems.
- **Security:** Built-in encryption, authentication, and user access control.
- **Standardized Communication:** Facilitates consistent data exchange across heterogeneous systems.

Typical Use Cases

- Industrial IoT applications
- Machine-to-machine communication
- Remote monitoring and diagnostics
- SCADA and MES integration

1.1.2 OPC UA Server Configuration

See "OPC UA - Fieldbus Configuration" (→ p. 4).

1.1.3 OPC UA Communications using External Software

These topics describe how to establish OPC UA communications using external software tools:

- "OPC UA - Establish a Connection using UaExpert" (→ p. 22).
- "OPC UA - Establish a Connection using Exor HMI" (→ p. 52).

2 OPC UA - Fieldbus Configuration

- "OPC UA - Create New Driver Configuration" (→ p. 5)
- "OPC UA - Insert an Endpoint" (→ p. 8)
- "OPC UA - Insert a Group" (→ p. 10)
- "OPC UA - Insert a Variable" (→ p. 12)
- "OPC UA - Add TAG(s)* dialog box" (→ p. 64)

See Also

- "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15)
- "OPC UA - Move Variables" (→ p. 19)
- "OPC UA - Remove Variables" (→ p. 20)
- "OPC UA - Endpoint dialog box" (→ p. 69)

2.1 OPC UA - Create New Driver Configuration

1. [Start the KAS-IDE](#).
2. Create a new project or open an existing KAS project.
3. In the [Project Explorer](#), double-click the Fieldbus node to open the Fieldbus Editor.
4. On the vertical toolbar, click the **Insert Network (Configuration)** button (). (Figure 2-1)

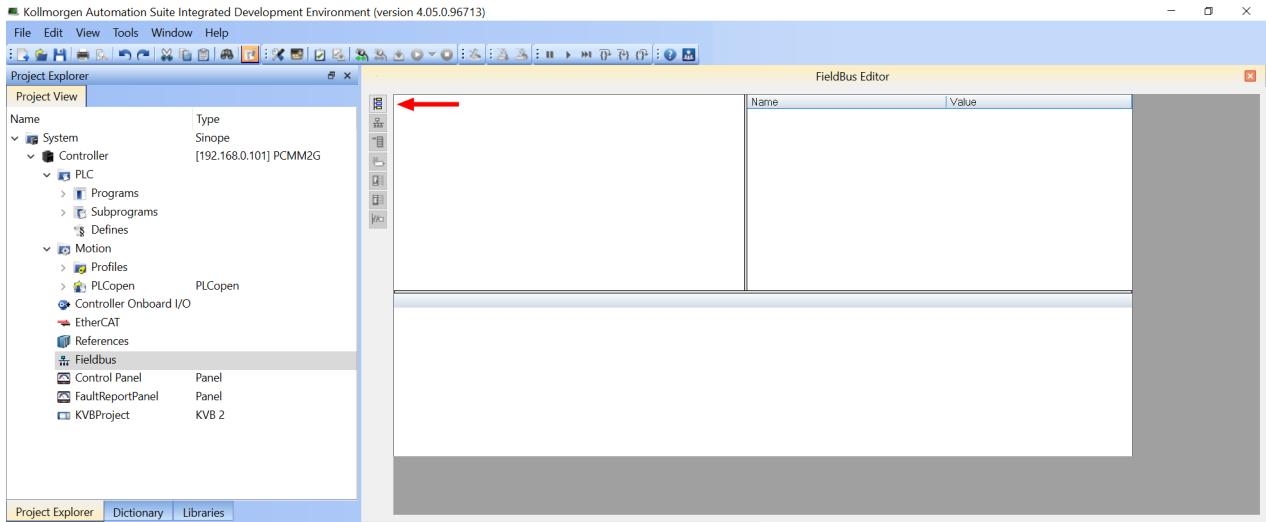


Figure 2-1: Insert Network (Configuration) button

The **Add Configuration** dialog box opens.

5. In the **Select a configuration tree**, select **OPC UA Server**. (Figure 2-2)

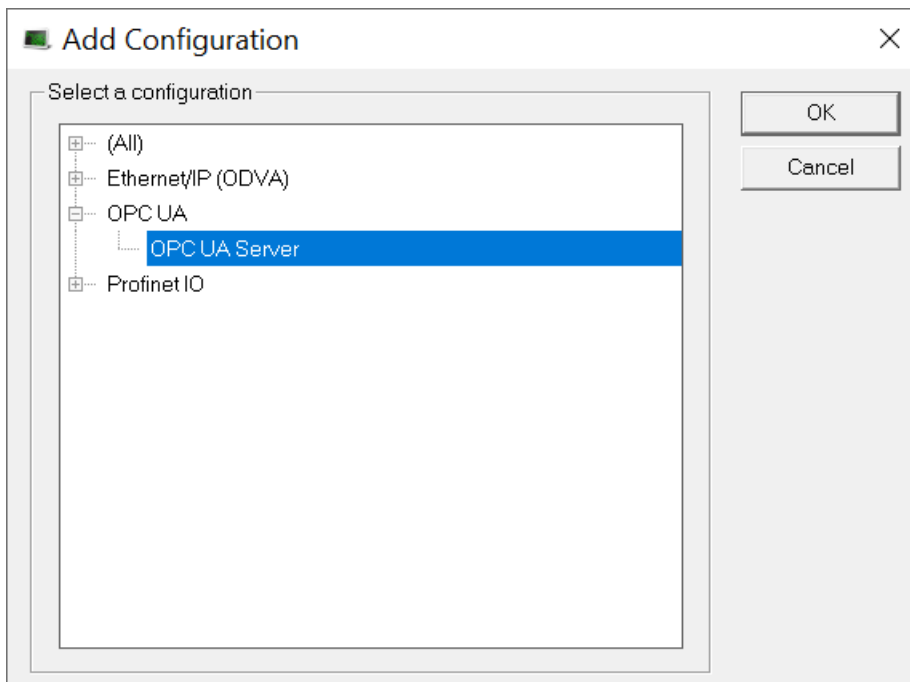


Figure 2-2: Add Configuration dialog box - OPC UA Server selected

6. Click **OK** to save the changes or selections and close the dialog box.
The "OPC UA - Server dialog box" (→ p. 76) opens. (Figure 2-3)

Figure 2-3: Server dialog box

7. In the **Name** text box, enter a name for this specific server configuration.
8. In the **URI** text box, enter the URL used for the certificate authentication.

NOTE

Leave this text box blank to use the PCMM2G assigned default URL.

9. Optional: In the **Settings** section, accept the defaults or:
 - In the **Max. Sessions** spin box, enter the maximum number of simultaneously connected OPC UA client sessions.
 - In the **Max. Subscriptions per session** spin box, enter the maximum number of subscription groups a client can create per session.
 - In the **Max. Monitored Item per subscription** spin box, enter the maximum number of items that can be monitored within a single subscription.
 - In the **Max. Publish Request per session** spin box, enter the maximum number of active publish requests per session.
 - In the **Max. Data Changed Value per Monitored Item** spin box, enter the maximum number of value changes stored in memory for each Monitored Item.

10. Optional: In the **Security settings** section, click the **Use certificates** check box to use digital certificates for data encryption between the server and client.

When selected, the text boxes of this section are activated.

TIP

Kollmorgen recommends accepting the defaults in the **Security settings** section to use self-signed certificates.

- In the **Certificates path** text box, enter the relative directory path where the certificates are stored.
- In the **Server certificate** text box, enter the filename of the server certificate used for encryption.
- In the **Server private key** text box, enter the filename of the server private key used for encryption.

IMPORTANT

- When the **Use Certificates** option is enabled, an SSL server certificate must be installed on the PCMM2G controller.
 - The PCMM2G supports self-signed certificates only for secure communication with external OPC UA client applications.
 - For instructions on generating a self-signed server certificate, see:
 - [Certificates tab - Create SSL Server Certificate \(Self-Signed\)](#).
- To establish a successful OPC UA connection, the SSL client certificates of each OPC UA client application must also be uploaded to the PCMM2G controller.
 - See [Certificates tab - Upload SSL Client Certificate](#).

11. In the **Authentication settings** section:
 - Click the **Anonymous** check box to use non-encrypted communications.
 - Click the **User name/Password** check box to activate the **User name** and **Password** text boxes.
 - Click the **Certificate** check box so the server allows the client to authenticate with a certificate.
 - The **Certificate** check box is used in conjunction with the "OPC UA - Server dialog box" (→ p. 76), **Security settings** section - **Use certificates** check box.
12. Click the **Trace Level** list box arrow and select the log level for OPC UA Server Runtime Service messages written to the controller log output.
See [Log Messages tabs](#).
13. Click **OK** to save the changes or selections and close the dialog box.
The Fieldbus Editor returns with the added OPC UA Server node. (Figure 2-4)

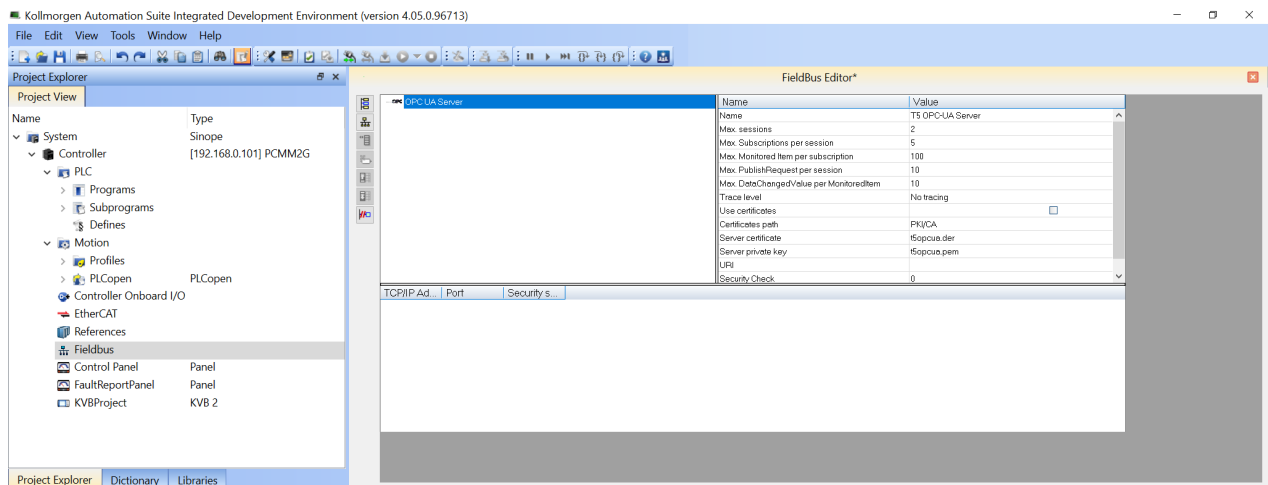


Figure 2-4: Fieldbus Editor with the added OPC UA Server node

14. Continue with "OPC UA - Insert an Endpoint" (→ p. 8).

2.2 OPC UA - Insert an Endpoint

1. In the Fieldbus Editor tree, select **OPC UA Server**.
The **Insert Master/Port** button in the vertical toolbar is activated. (Figure 2-5)

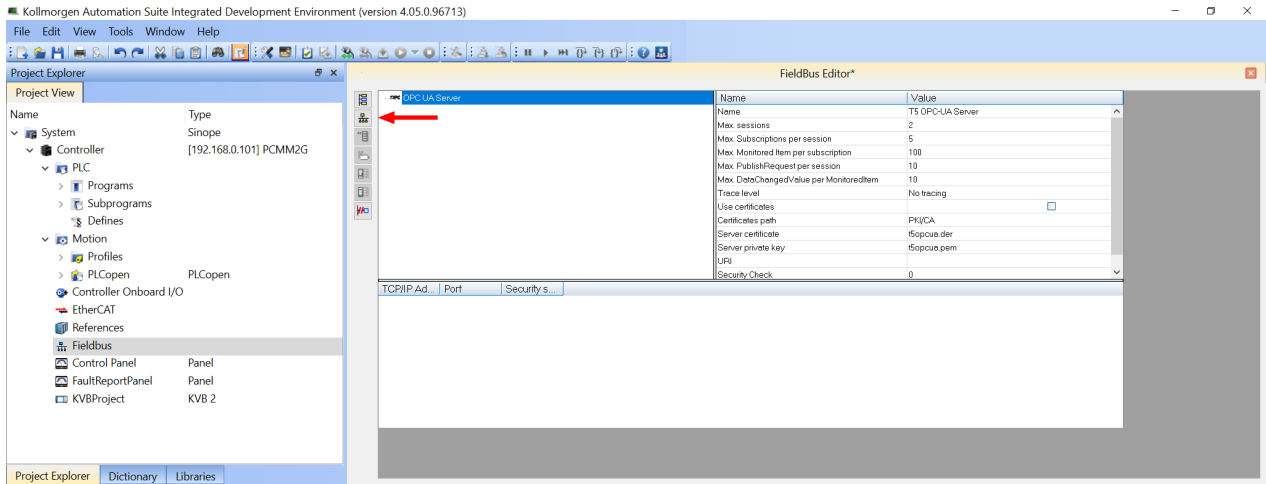


Figure 2-5: Insert Master/Port button

2. On the vertical toolbar, click the **Insert Master/Port** button ().
The "OPC UA - Endpoint dialog box" (→ p. 69) opens. (Figure 2-6)

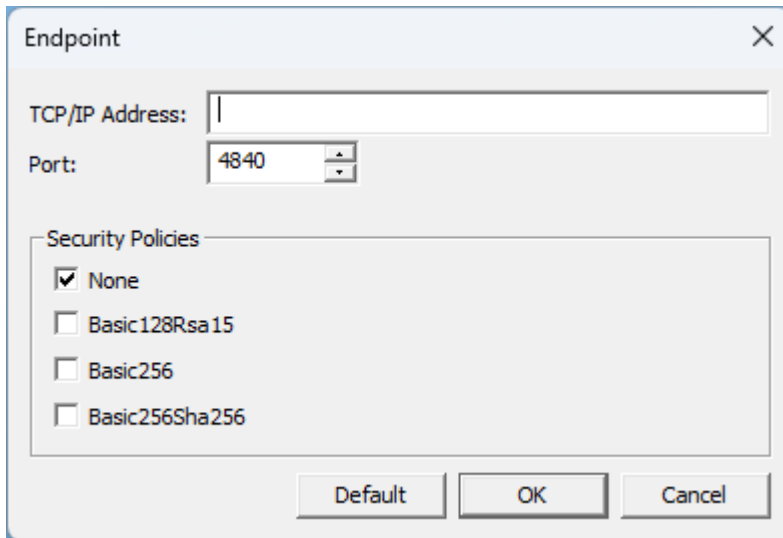


Figure 2-6: Endpoint dialog box

3. Optional: In the **TCP/IP Address** text box, enter the TCP/IP address of the KAS controller (e.g., PCMM2G).
TIP
Leave this text box blank to use the KAS controller assigned IP address.
4. In the **Port** spin box, enter the Listening Port opened by the OPC UA Server.

5. In the Security Policies section, select the applicable policy for the application.

IMPORTANT

- If using certificates in the "OPC UA - Server dialog box" (→ p. 76), **Security settings** section, at least one of the Basic128Rsa15, Basic256, or Basic256Sha256 check boxes must be selected.
- If the **Anonymous** check box is selected in the "OPC UA - Server dialog box" (→ p. 76), **Authentication settings** section, the **None** check box must be selected.

- Click the **None** check box so that no security settings are used.
 - Click the **Basic128Rsa15** check box to use both the Basic128 and RSA15 security policies.
 - Click the **Basic256** or **Basic256Sha256** check box to use the 256-bit Basic as the message encryption algorithm.
 - Click the **Basic256Sha256** check box to use both the Basic256 and SHA256 security policies.
6. Click **OK** to save the changes or selections and close the dialog box.
The endpoint is now available in the OPC UA Server Fieldbus Editor. (Figure 2-7)

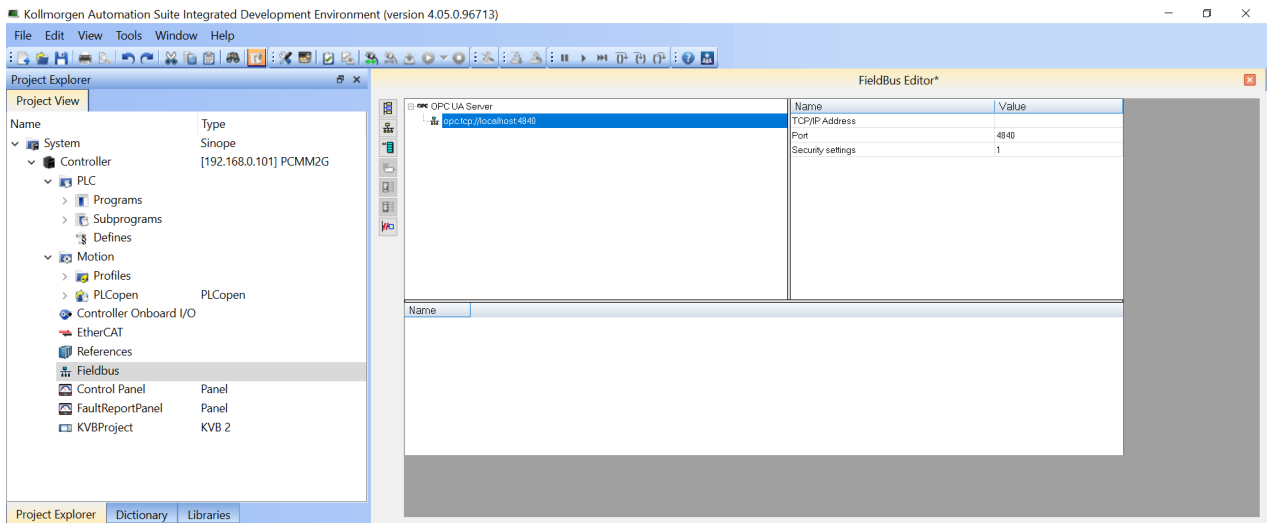


Figure 2-7: Fieldbus Editor with the added endpoint

7. Continue with "OPC UA - Insert a Group" (→ p. 10).

2.3 OPC UA - Insert a Group

1. In the Fieldbus Editor tree, select an **OPC UA Server** endpoint.
The **Insert Slave/Data Block** button in the vertical toolbar is activated. (Figure 2-8)

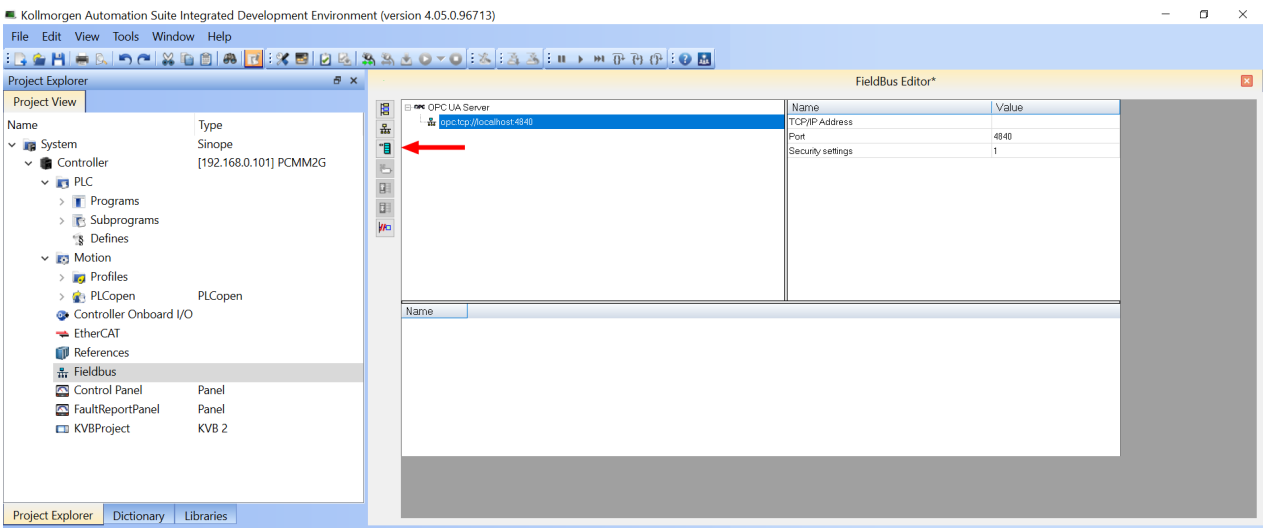


Figure 2-8: Insert Slave/Data Block button

2. On the vertical toolbar, click the **Insert Slave/Data Block** button ().
The "OPC UA - Group: dialog box" (→ p. 71) opens. (Figure 2-9)

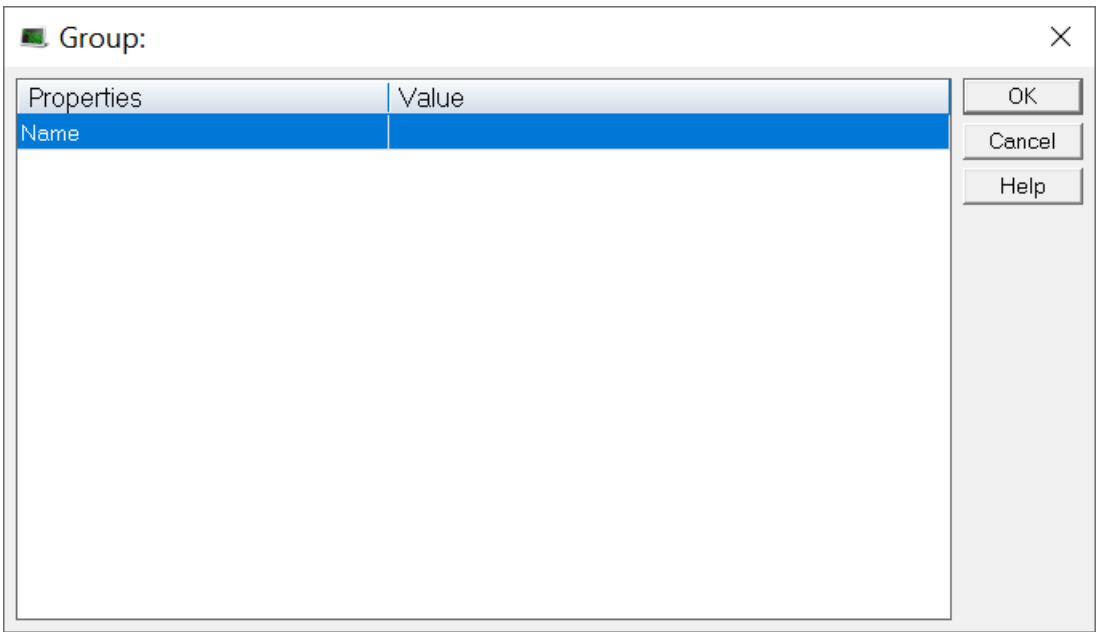


Figure 2-9: Group: dialog box

The **Group:** dialog box is used to create an individual group.

NOTE

- The Group: dialog box can only create a single group.
- See "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15).

3. In the **Name** row, double click the **Value** column cell.
The **Name - Value** text box appears.

4. Enter the name for the new group. (Figure 2-10)

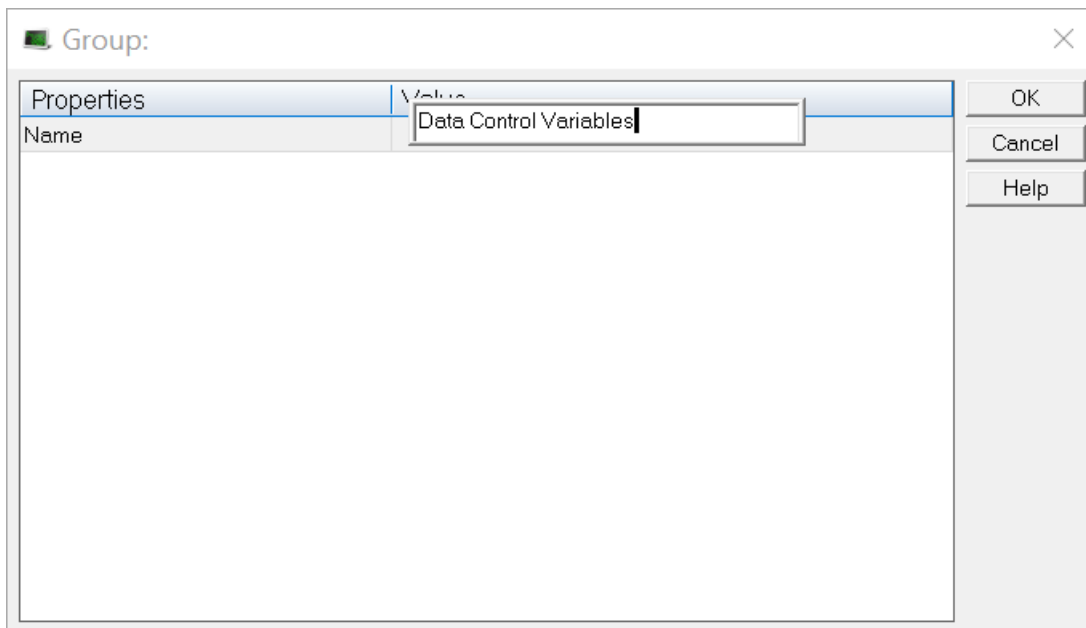


Figure 2-10: Name - Value text box

5. Press <Enter> to save the information and close the text box.
 6. Click **OK** to save the changes or selections and close the dialog box.
- The new data group is added under the OPC UA Server endpoint in the Fieldbus Editor. (Figure 2-11)

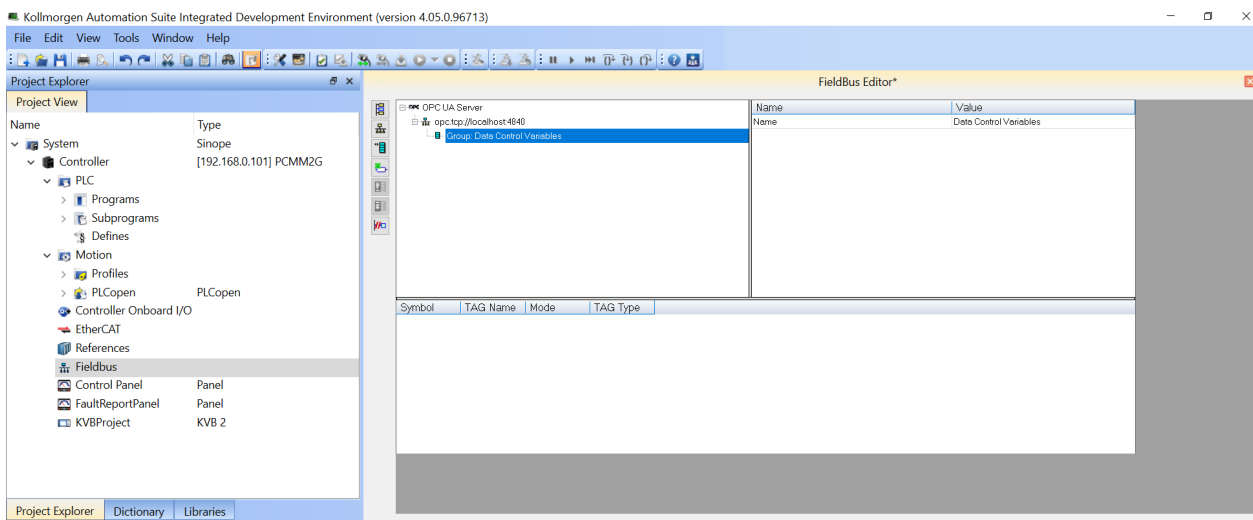


Figure 2-11: Fieldbus Editor with the added group

7. Continue with "OPC UA - Insert a Variable" (→ p. 12).

2.4 OPC UA - Insert a Variable

1. In the Fieldbus Editor tree, select the **OPC UA Server** data group to assign a new variable to. The **Insert Variable** button in the vertical toolbar is activated. (Figure 2-12)

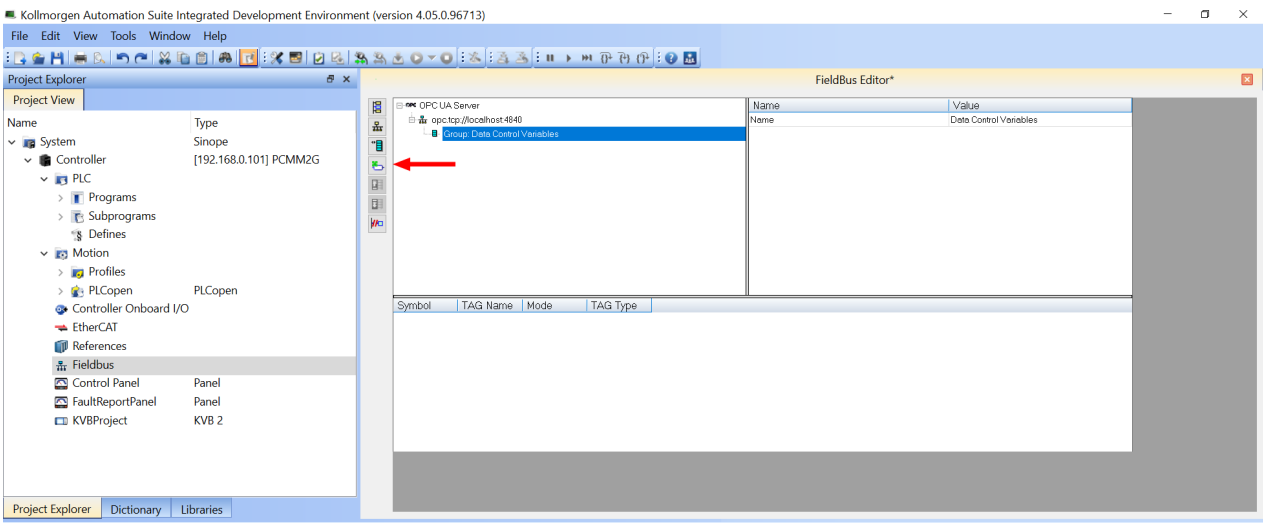


Figure 2-12: Insert Variable button

2. On the vertical toolbar, click the **Insert Variable** button (). The "OPC UA - Insert Variable dialog box" (→ p. 73) opens. (Figure 2-13)

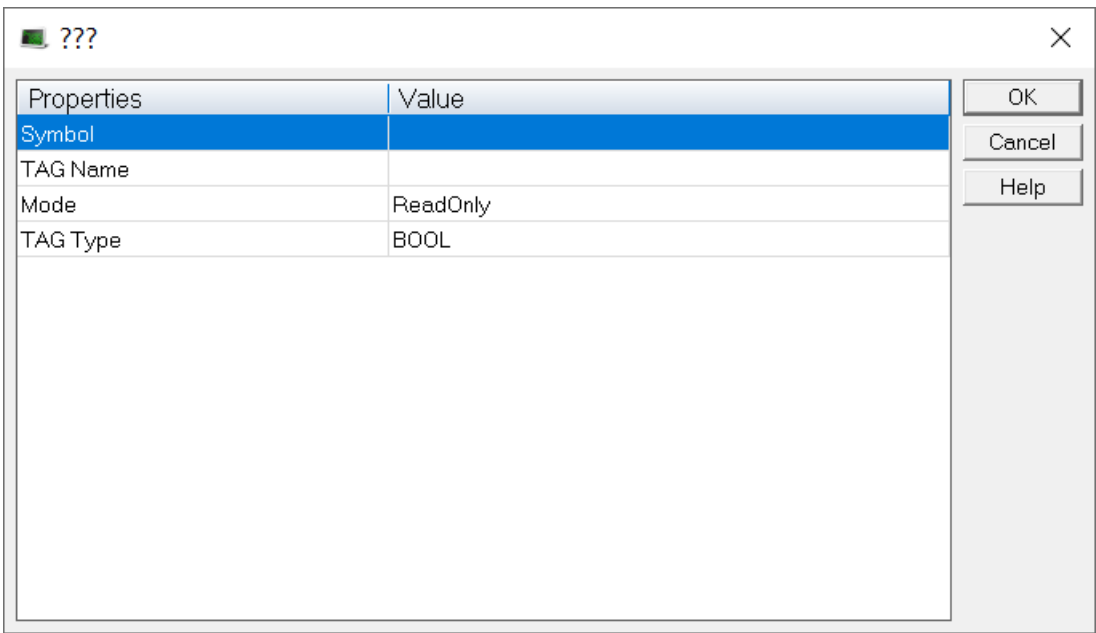


Figure 2-13: Insert Variable (???) dialog box

3. In the Symbol row, double-click the **Value** column cell to open the **Variables** combo-box. (Figure 2-14)

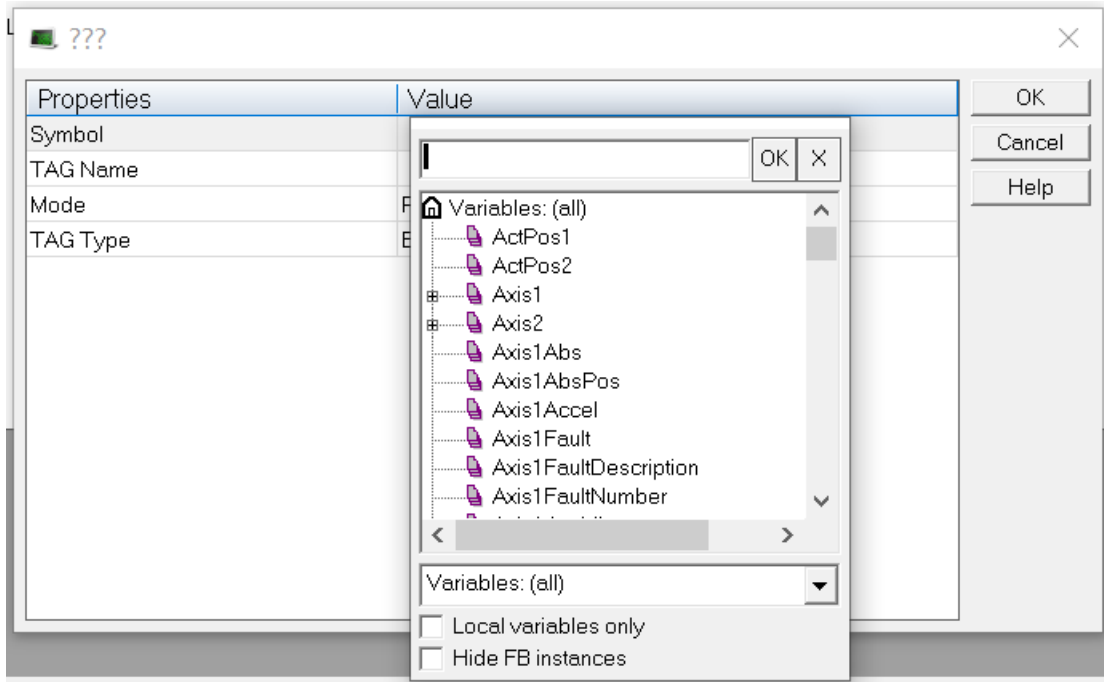


Figure 2-14: Variables combo-box

4. In the **Variables** combo-box, select the applicable variable.

NOTE

Only a single variable can be selected in the combo-box.

5. Click **OK** to save the selection and close the combo-box.
The variable is added to the **Value** column cell.
6. In the **TAG Name Value** column cell, double-click the cell to open the **TAG Name - Value** text box.
7. In the **TAG Name - Value** text box, enter the name used by the OPC UA client to address the variable.
8. Press <Enter> to save the information and close the text box.
9. In the **Mode - Value** column cell, double-click the cell to open the **Mode - Value** list box.
10. Double-click an option in the **Mode - Value** list box.
The **Insert Variables** dialog box returns showing the selection.
11. In the **TAG Type Value** column cell, double-click the cell to open the **TAG Type - Value** list box.

- Double-click an option in the **TAG Type - Value** list box.
The **Insert Variables** dialog box returns showing the selection. (Figure 2-15)

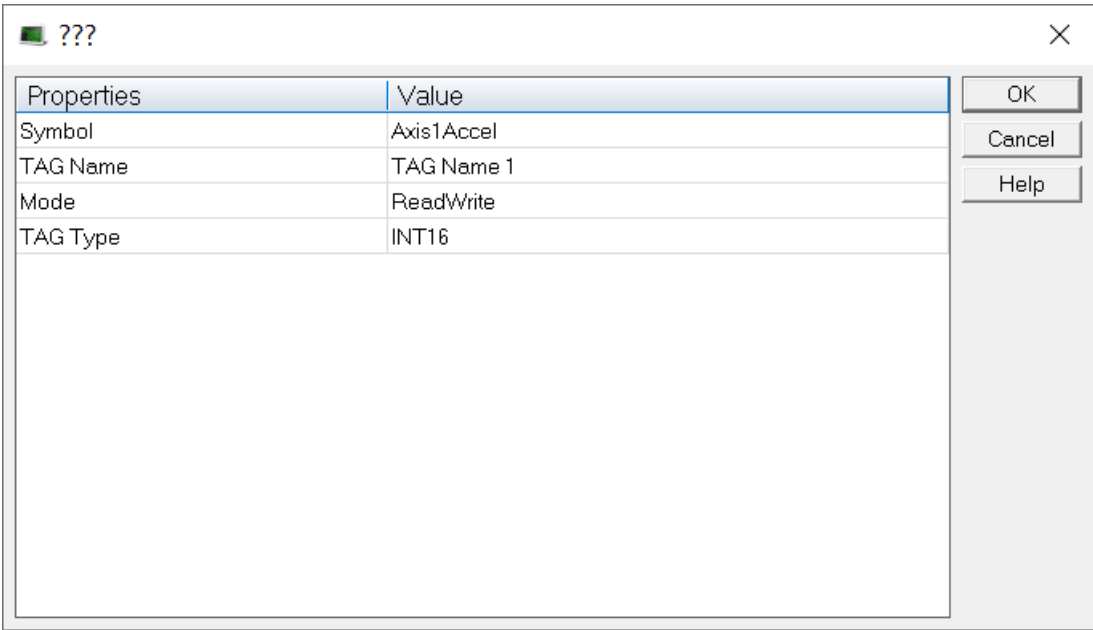


Figure 2-15: Example: Completed Insert Variables dialog box

- Click **OK** to save the changes or selections and close the dialog box.
The new variable is added to the data group. (Figure 2-16)

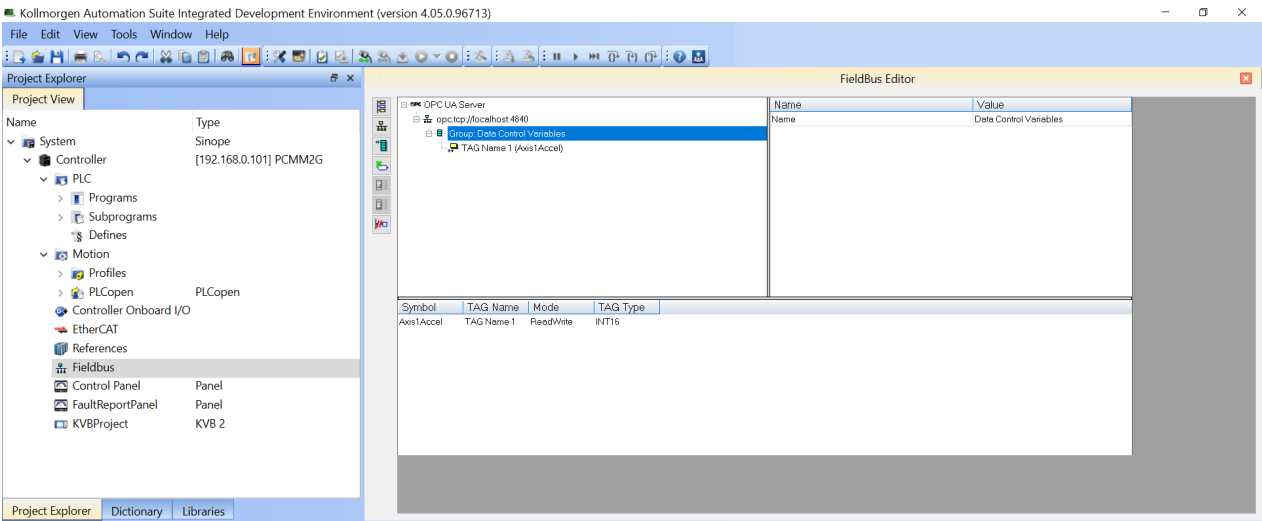


Figure 2-16: Fieldbus Editor with added variable

- Optional:
 - Repeat Steps 2 to 13 to add more variables.
 - Continue with "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15).

WARNING

- Do not** manually add variables to be exchanged (e.g., Mode = RO, WO, RW)!
- Use the "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15) procedure instead.

See Also

"OPC UA - Add TAG(s)* dialog box" (→ p. 64)

2.5 OPC UA - Add Multiple Groups and Variables to the Driver Configuration

1. In the OPC UA Server tree, right-click a Master node and select the **Add TAG(s)** option. (Figure 2-17)

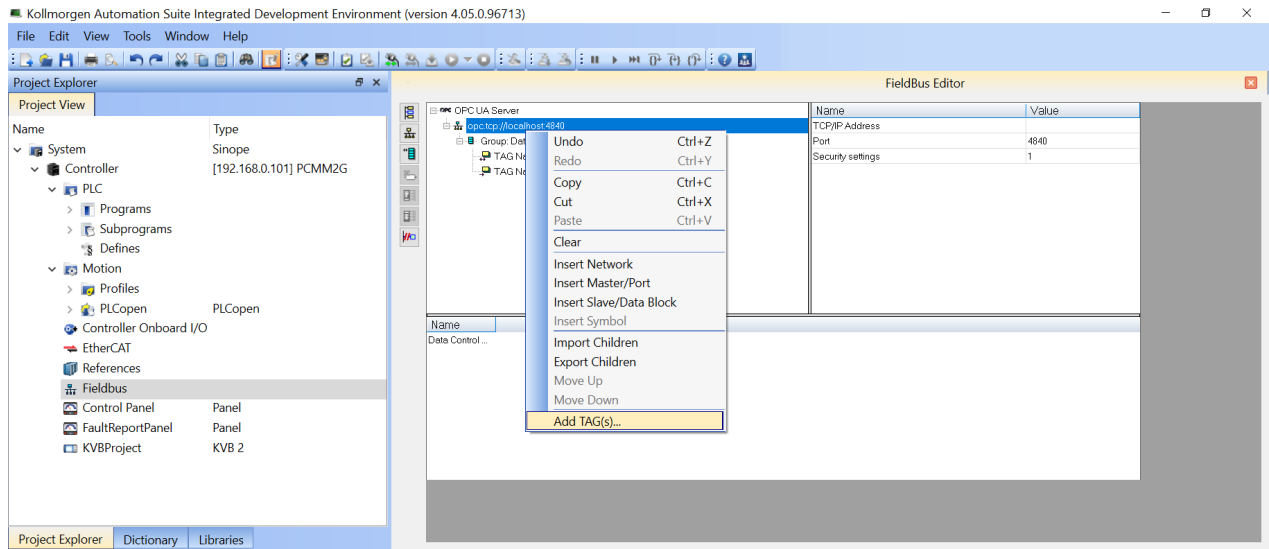


Figure 2-17: Add TAG(s) option

The "OPC UA - Add TAG(s)* dialog box" (→ p. 64) opens. (Figure 2-18)

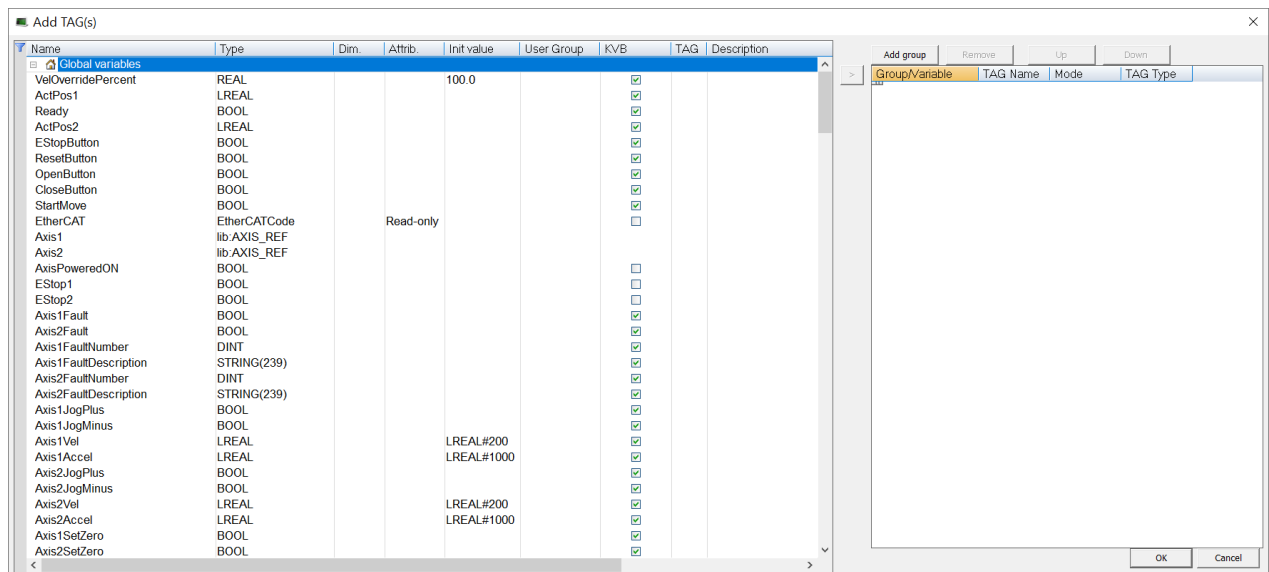


Figure 2-18: Add TAG(s) dialog box

2. Add a new group:
 - a. Click the **Add group** button to add a new group row in the **Group/Variable** table.
 - b. In the **Group/Variable** column, double-click the column cell.
The **Group/Variable** text box appears. (Figure 2-19)

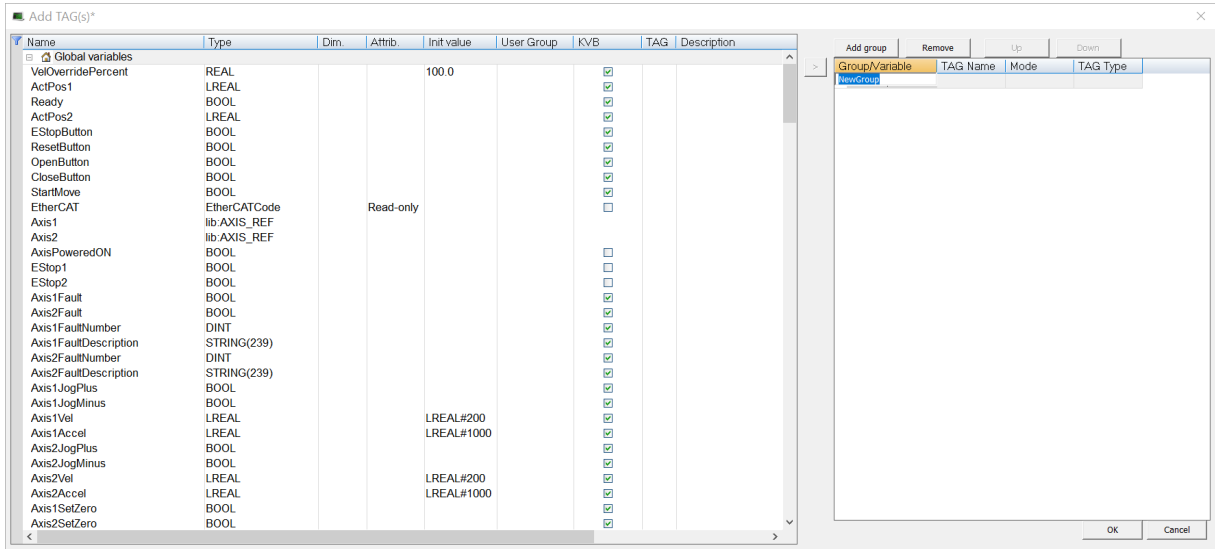


Figure 2-19: Group/Variable text box

- c. In the **Group/Variable** text box, enter a name for the new group.
 - d. Press <Enter> to save the information and close the text box.
3. Add variables to a group:
 - a. In the **Group/Variable** table, select a group to add a variable to.
 - b. In the **Available Variables** table, select a variable and click the  button. (Figure 2-20)

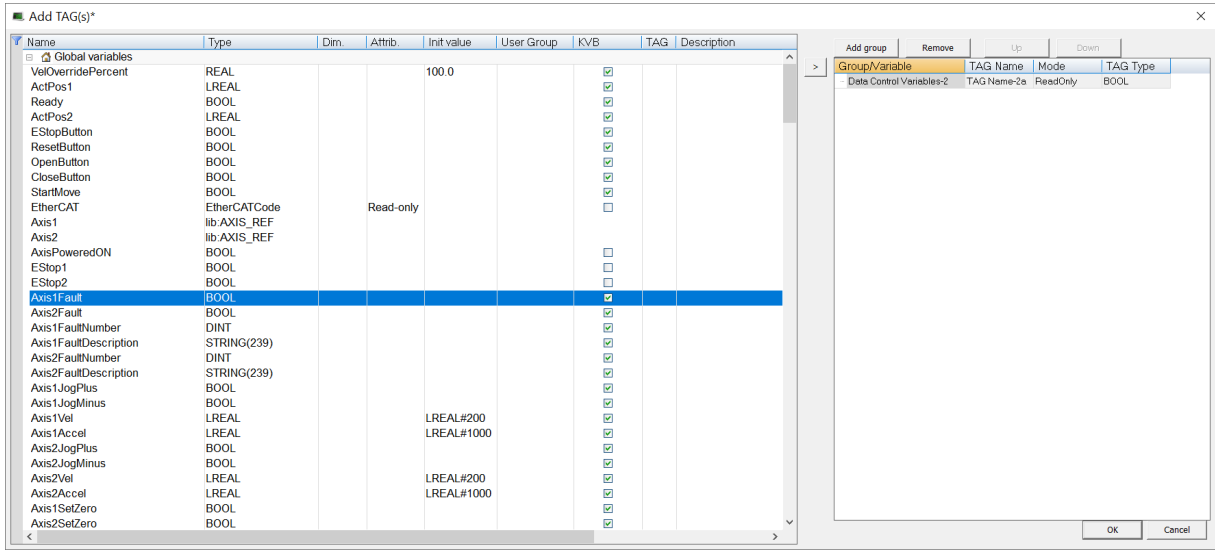


Figure 2-20: Selected variable

The variable is copied to the **Group/Variable** table. (Figure 2-21)

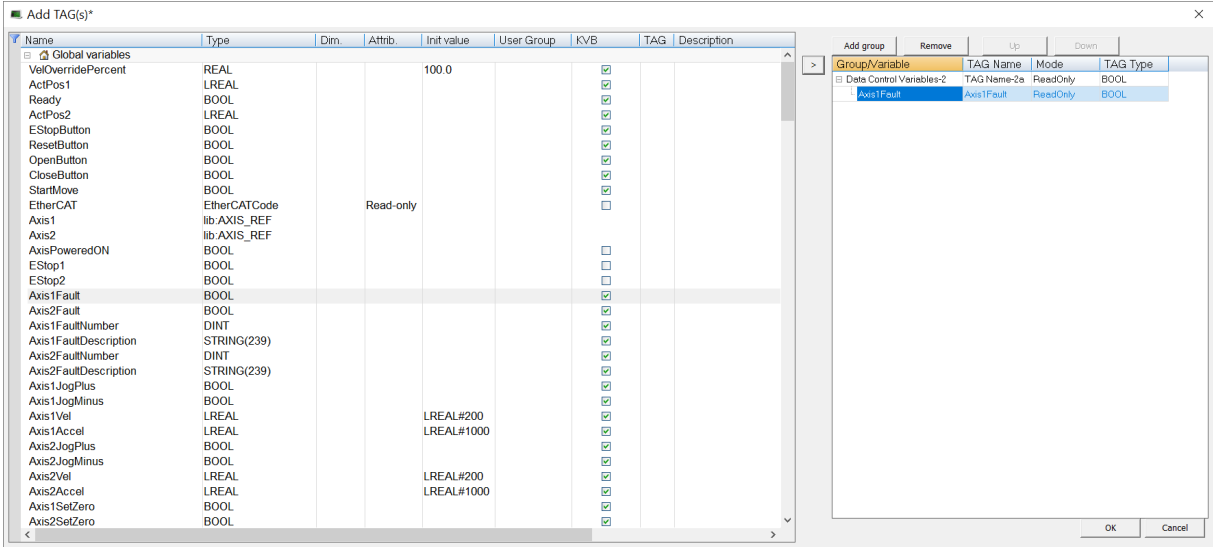


Figure 2-21: Variable added to group

- c. Repeat Steps 3a and 3b to add more variables to the group.



In the Variable Dictionary table, select a variable and drag it under the designated group.

4. Repeat Steps 2 and 3 to add more groups and their variables to the application.
5. Click **OK** to save the changes or selections and close the dialog box.

A confirmation message appears. (Figure 2-22)

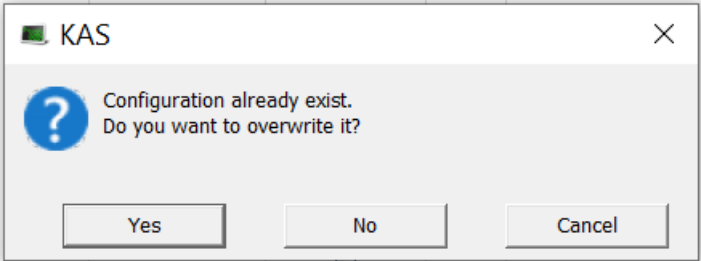


Figure 2-22: Confirmation message

6. Click **Yes** to continue.

The new groups are now available in the Fieldbus Editor. (Figure 2-23)

The TAG types of the variables are automatically set to the correct type.

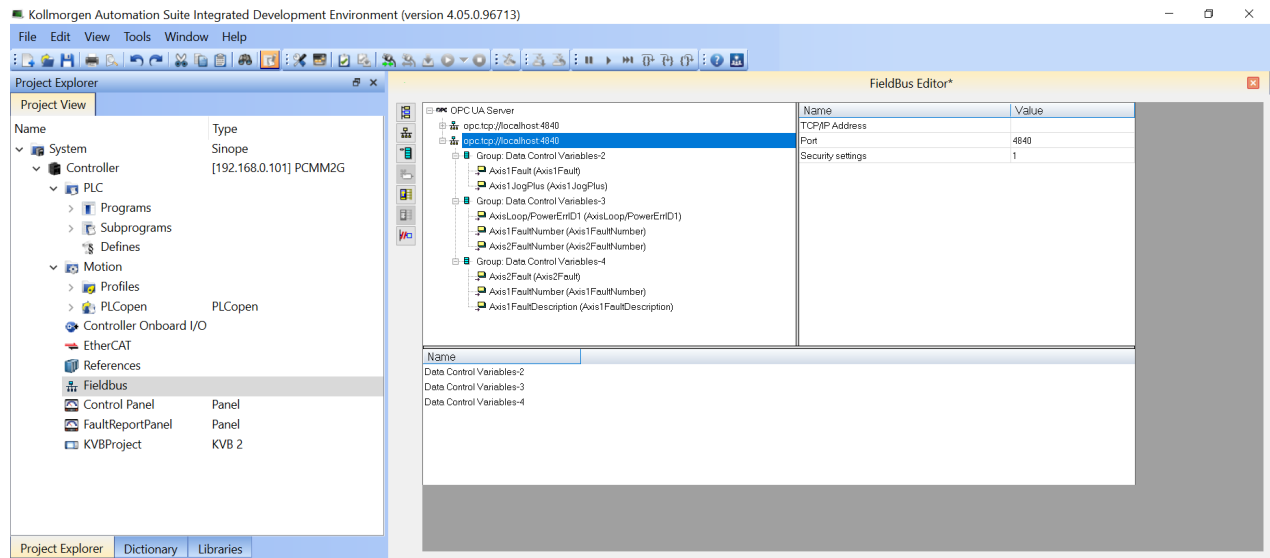


Figure 2-23: Multiple groups in the Fieldbus Editor

WARNING

- Using Drag and Drop functionality to add variables from the Variable Dictionary table to the driver configuration may result in wrong TAG type assignments.
- The KAS-IDE generates errors during project compilation if mismatches between variable Data Type and OPC UA TAG type for single data points are detected.
- This ensures only valid configurations are applied to the target system.

See Also

- "OPC UA - Move Variables" (→ p. 19)
- "OPC UA - Remove Variables" (→ p. 20)

2.6 OPC UA - Move Variables

Use this procedure to move:

- Selected groups up or down.
- Selected variables in the current group up or down.

Procedure

1. In the "OPC UA - Add TAG(s)* dialog box" (→ p. 64), in the **Group/Variable** table, select a variable.
(Figure 2-24)

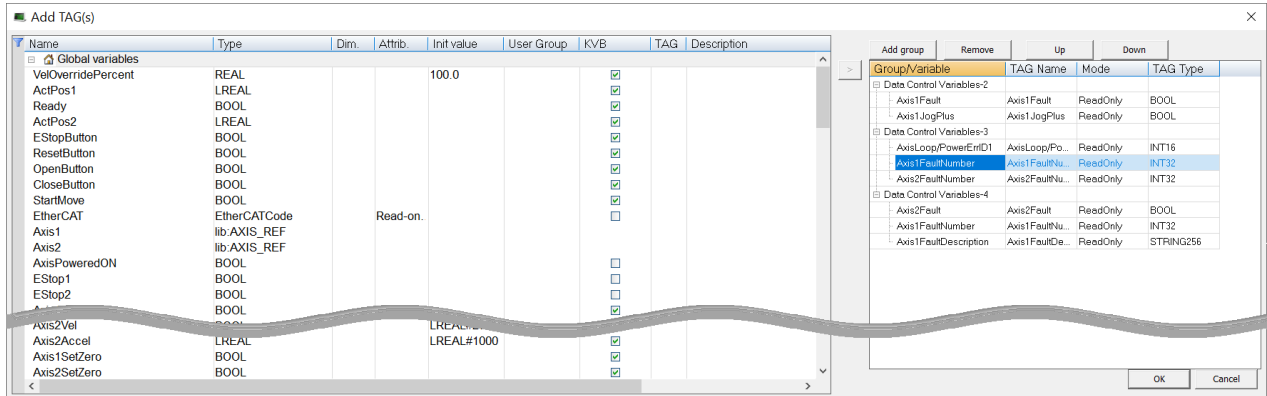


Figure 2-24: Selected variable

2. Either:
 - Click the **Up** button to move the selected item in the **Group/Variable** table up.
 - Click the **Down** button to move the selected item in the **Group/Variable** table down.

The variable moves in the designated direction. (Figure 2-25)

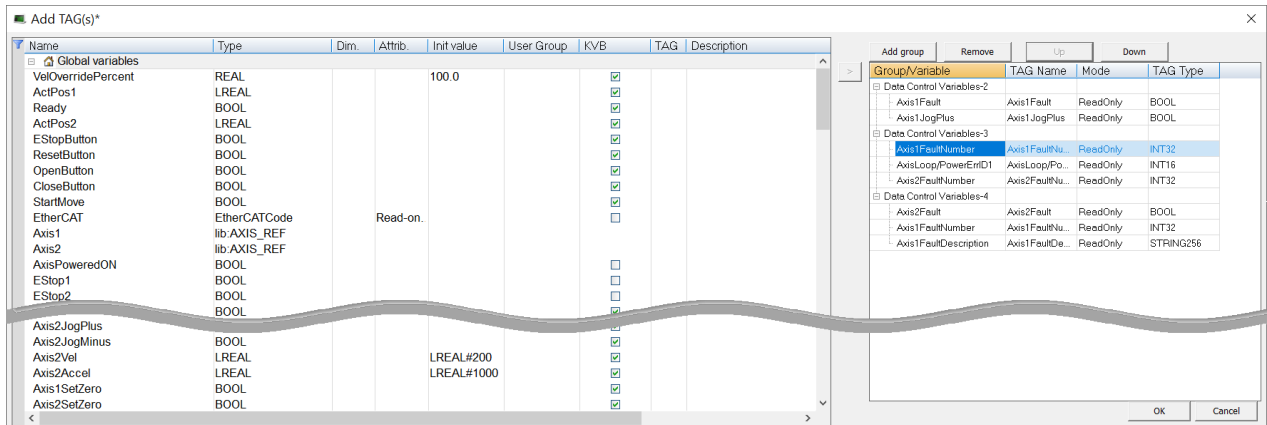


Figure 2-25: Variable moved up

3. Click **OK** to save the changes or selections and close the dialog box.
A confirmation message appears.
4. Click **OK** to continue.
The edited groups or variables are updated in the Fieldbus Editor.

2.7 OPC UA - Remove Variables

1. In the "OPC UA - Add TAG(s)* dialog box" (→ p. 64), in the **Group/Variable** table, select a variable. (Figure 2-26)

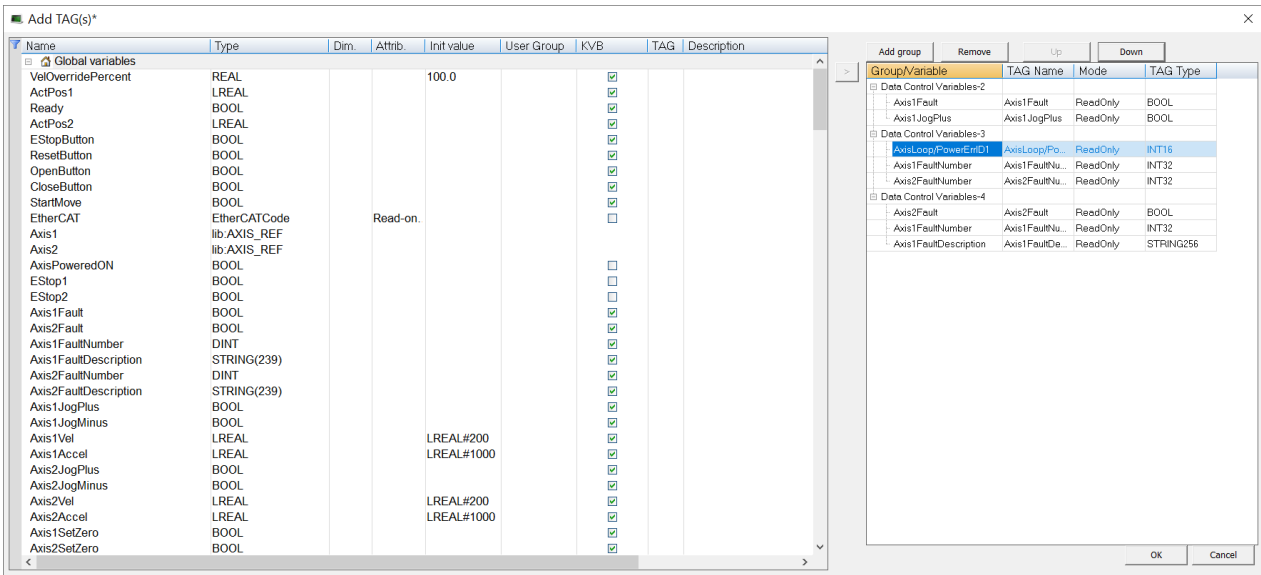


Figure 2-26: Selected variable to remove

2. Click the **Remove** button to immediately delete the selected variable from the **Group/Variable** table. (Figure 2-27)

There is no undo option to restore a deleted variable.

Click **Cancel** to discard all changes or selections and close the dialog box.

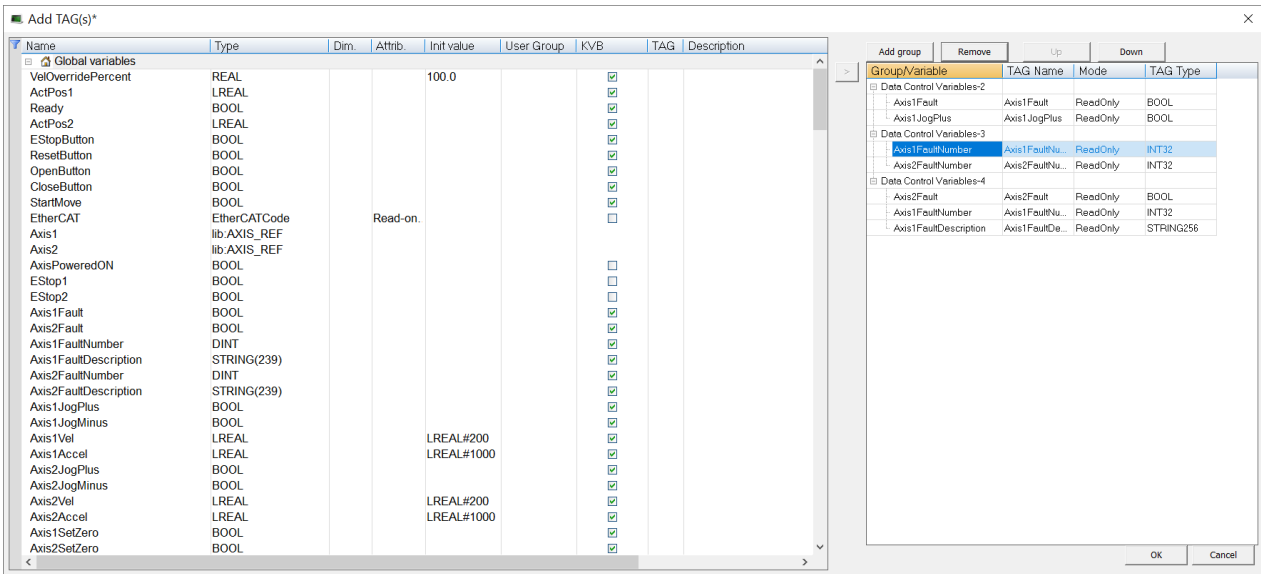


Figure 2-27: Removed variable

3. Click **OK** to save the changes or selections and close the dialog box. A confirmation message appears.
 4. Click **OK** to continue.
- The edited groups or variables are updated in the Fieldbus Editor.

3 OPC UA - External Software Communications

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3.1 OPC UA - Establish a Connection using UaExpert

These procedures are used to communicate with the PCMM2G OPC UA Server using the UaExpert tool.

- "OPC-UA - Establish a Server Connection with Certificates - UaExpert" (→ p. 23)
- "OPC-UA - Establish a Server Connection without Certificates - UaExpert" (→ p. 39)

See Also

- "OPC-UA - UaExpert Installation" (→ p. 22)
- "OPC UA - Troubleshooting" (→ p. 62)

3.1.1 OPC-UA - UaExpert Installation

❗IMPORTANT

Registration is required to download UaExpert.

- UaExpert is a free, platform-independent OPC UA client used for testing, diagnostics, and development.
 - It provides a graphical interface to connect to OPC UA servers, browse address spaces, monitor variables, and test communication.
- This tool is provided by the Unified Automation GmbH and can be downloaded from here: [UaExpert](#).
 - Registration is required to download UaExpert.
 - See the [UaExpert documentation](#) for install requirements and initial start-up instructions.

3.1.2 OPC-UA - Establish a Server Connection with Certificates - UaExpert

These are the overall steps when using certificates for an OPC UA Server connection:

- "1. PCMM2G Configuration (with Certificates)" (→ p. 23)
- "2. UaExpert Configuration (with Certificates)" (→ p. 26)
- "3. UaExpert Connection to the PCMM2G (with Certificates)" (→ p. 35)

NOTE

Videos of these features are here: [PCMM2G OPC UA Server Setup in KAS-IDE](#).

3.1.2.1 1. PCMM2G Configuration (with Certificates)

The procedure in this section configures the PCMM2G for connection to UaExpert.

1. Verify the "OPC-UA - UaExpert Installation" (→ p. 22) procedure is completed.
2. Open a web browser and enter the PCMM2G IP address.
3. Login as administrator.
See [User Authentication](#).
4. Click the [KAS Application](#) tab.
5. Click the **Stop** button if the Status of KAS app is started.
6. Click the **Settings** tab.
7. Click the **Certificates** tab. (Figure 3-1)

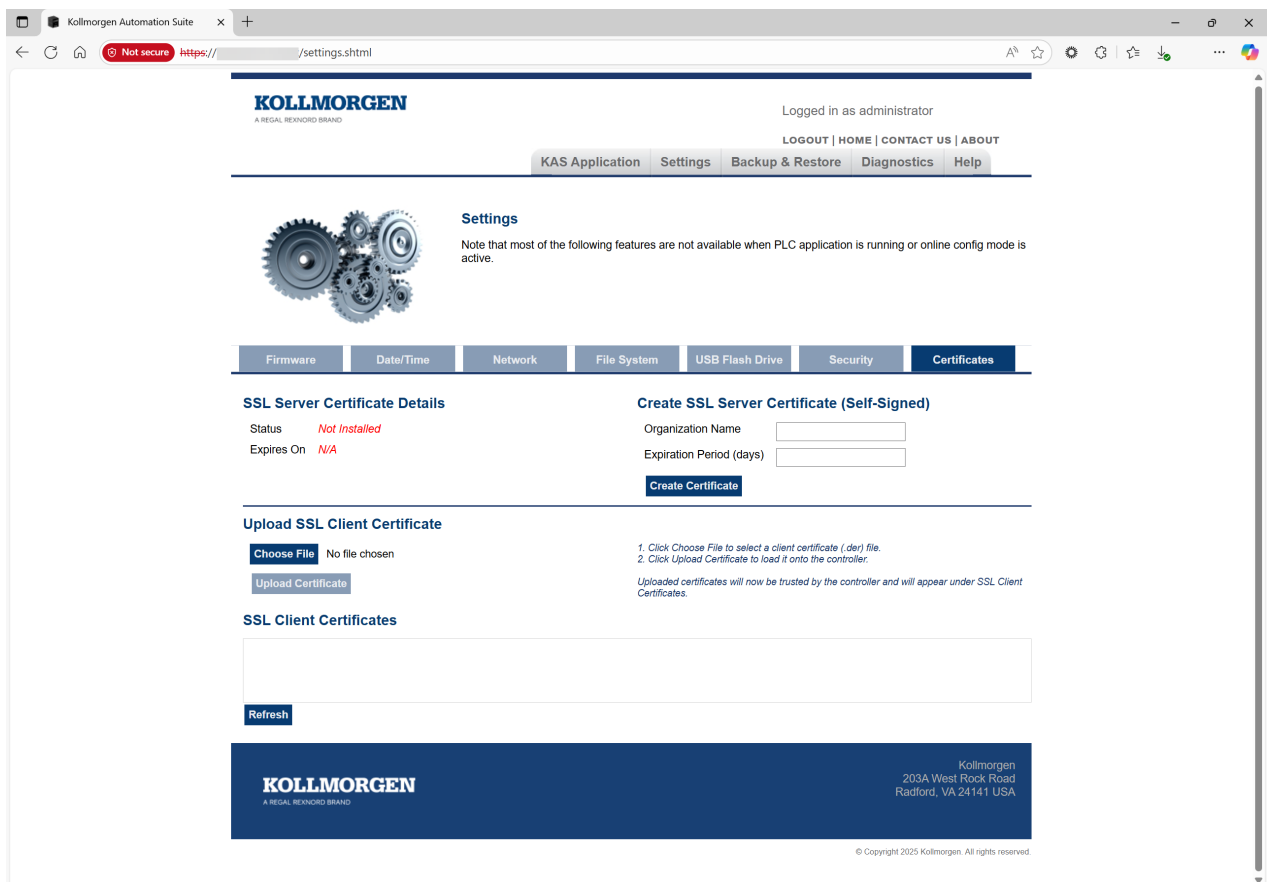


Figure 3-1: Certificates tab

8. If the **Status** in the SSL Server Certificate Details section is shown as **Not Installed**, create a new SSL Server Certificate.
See [Install the SSL Certificate](#).

9. [Start the KAS-IDE.](#)
10. Create a new project or open an existing KAS project.

11. Double-click an OPC UA Server node in the Fieldbus Editor project tree.
The "OPC UA - Server dialog box" (→ p. 76) opens. (Figure 3-2)

Server

Name:

URI:

Settings

Max. sessions	2	(1 - 100)
Max. Subscriptions per session:	5	(0 - 100)
Max. Monitored Item per subscription:	100	(0 - 65535)
Max. PublishRequest per session:	10	(1 - 100)
Max. DataChangedValue per MonitoredItem:	10	(1 - 100)

Security settings

☐ Use certificates

Certificates path:

Server certificate:

Server private key:

Authentication settings

☒ Anonymous

☐ User name

☐ Password

☐ Certificate

Trace level:

Figure 3-2: Server dialog box

12. In the **Security settings** section, click the **Use certificates** check box to use digital certificates for data encryption between the server and client.
When selected, the text boxes of this section are activated.

TIP

Kollmorgen recommends accepting the defaults in the **Security settings** section to use self-signed certificates.

13. In the **Authentication settings** section:
 - a. Clear the **Anonymous** check box.
 - b. Optional: Click the **User name/Password** check box to activate the **User name** and **Password** text boxes.
 - c. If applicable, enter a **User name** and **Password** for the configuration.
 - d. Click the **Certificate** check box so the server allows the client to authenticate with a certificate.
 - e. Click **OK** to save the changes or selections and close the dialog box.
The Fieldbus Editor returns showing the added OPC UA Server node.

14. On the vertical toolbar, click the **Insert Master/Port** button ().
The "OPC UA - Endpoint dialog box" (→ p. 69) opens. (Figure 3-3)

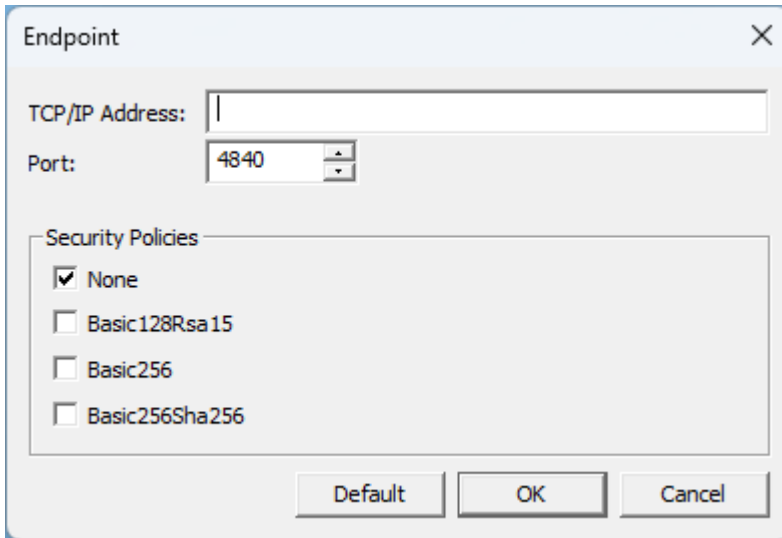


Figure 3-3: Endpoint dialog box

15. In the **Security Policies** section:
 - a. Clear the **None** check box.
 - b. Click the **Basic256** or **Basic256Sha256** check box to use the 256-bit Basic as the message encryption algorithm.
 - c. Click **OK** to save the changes or selections and close the dialog box.
The Fieldbus Editor returns.
16. Add applicable groups and variables using the "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15) procedure.
17. Compile and download the project to the KAS controller (e.g., PCMM2G).
18. Continue with "2. UaExpert Configuration (with Certificates)" (→ p. 26).

3.1.2.2 2. UaExpert Configuration (with Certificates)

The procedure in this section configures UaExpert for connection to PCMM2G.

1. Verify the procedure in the "1. PCMM2G Configuration (with Certificates)" (→ p. 23) section is completed.
2. Start UaExpert.
The UaExpert main window opens.
3. In the Project tree, right-click **Servers** and click **Add**. (Figure 3-4)

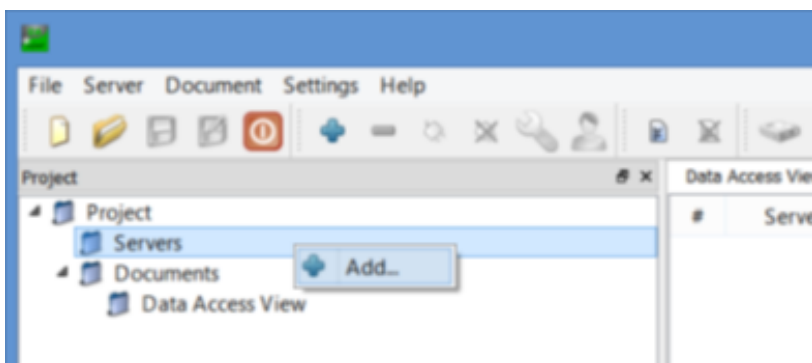


Figure 3-4: Add option

The **Add Server** dialog box opens. (Figure 3-5)

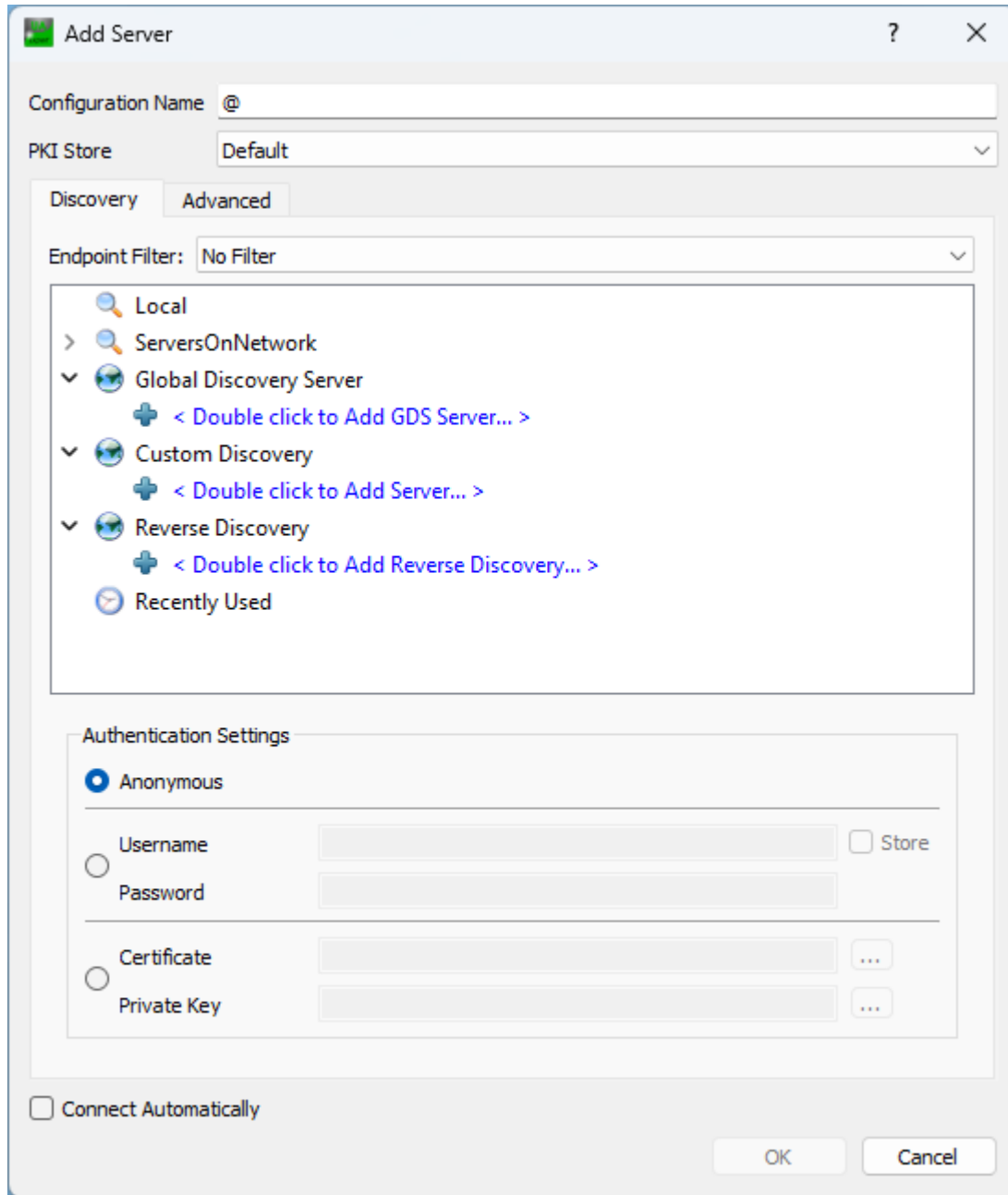


Figure 3-5: UaExpert Add Server dialog box

4. Under **Custom Discovery**, double-click the text.
The **Enter URL** dialog box opens.

5. Enter the URL as `opc.tcp://(PCMM2G_IP_Address)` to add the OPC UA Server. (Figure 3-6)

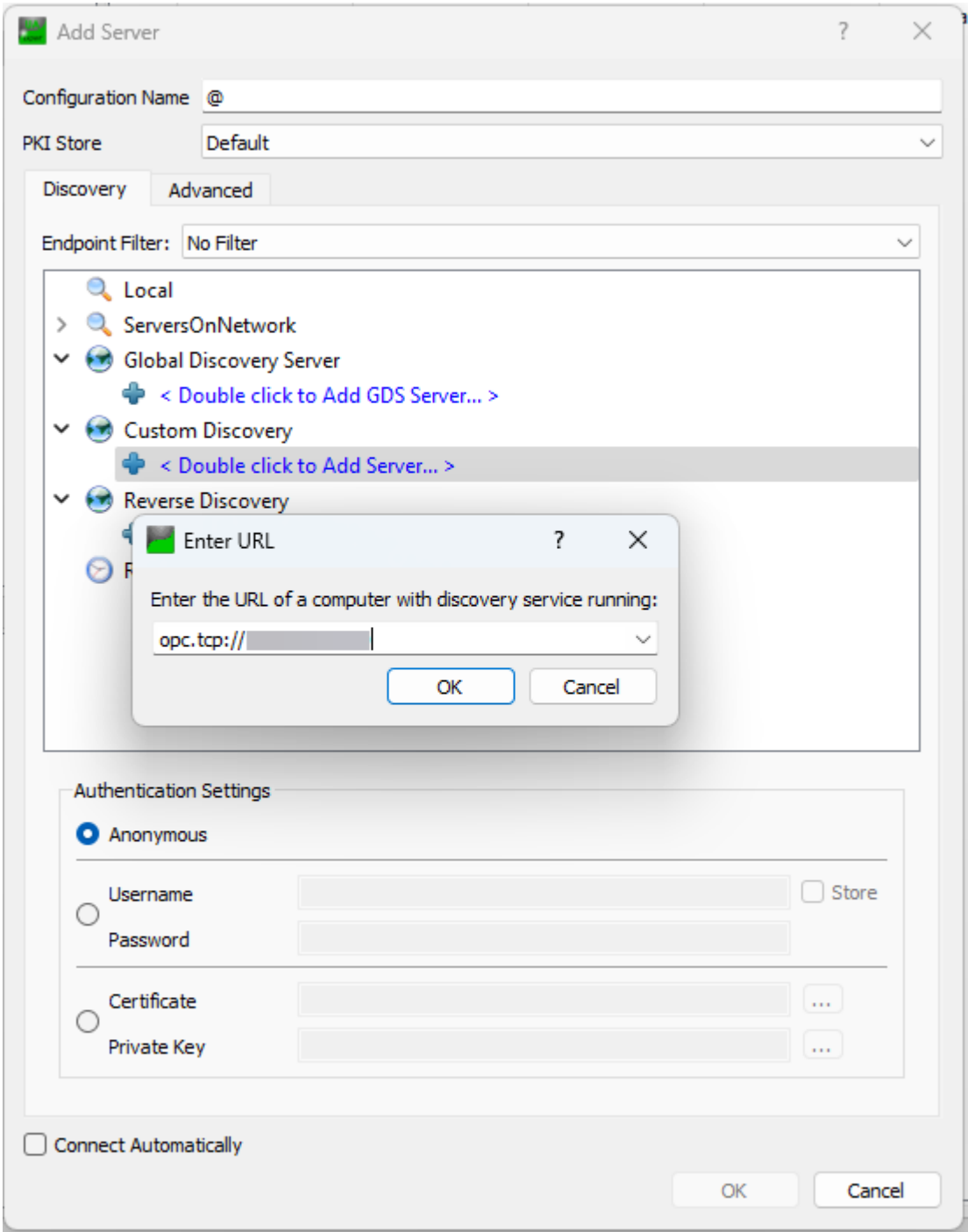


Figure 3-6: Enter URL dialog box

6. Click **OK** to save the changes or selections and close the dialog box.
The **Add Server** dialog box returns.

NOTE

A Replace Hostname message may appear. (Figure 3-7)

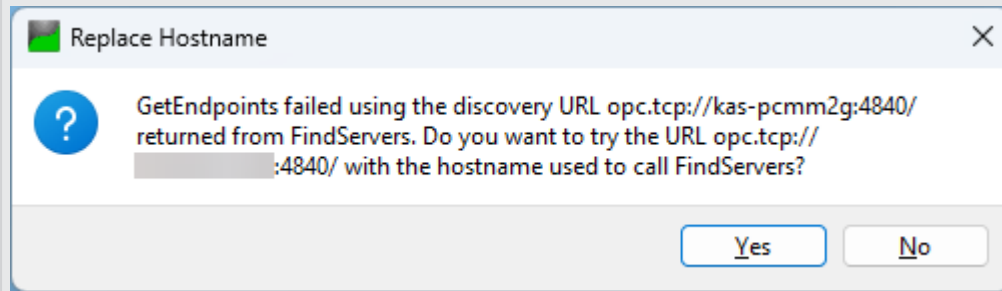


Figure 3-7: Replace Hostname message

This prompt appears because the PCMM2G supports OPC UA device discovery using its IP address, not by its hostname.

Click **Yes** to continue.

7. Under **Custom Discovery**, expand the newly added node.
8. Under the `opc.tcp://(PCMM2G_IP_Address)`, select **Basic256Sha256 - Sign & Encrypt**. (Figure 3-8)

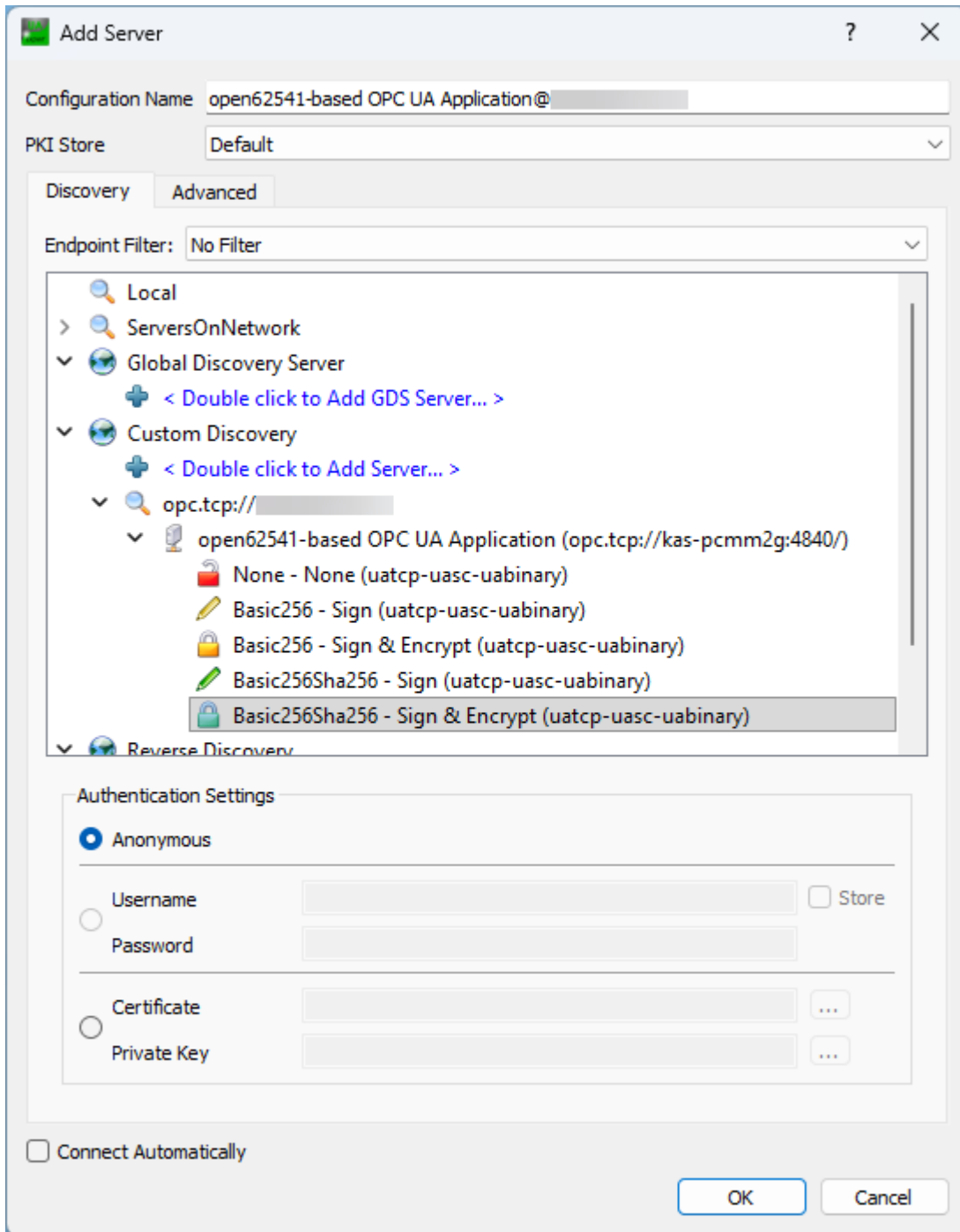
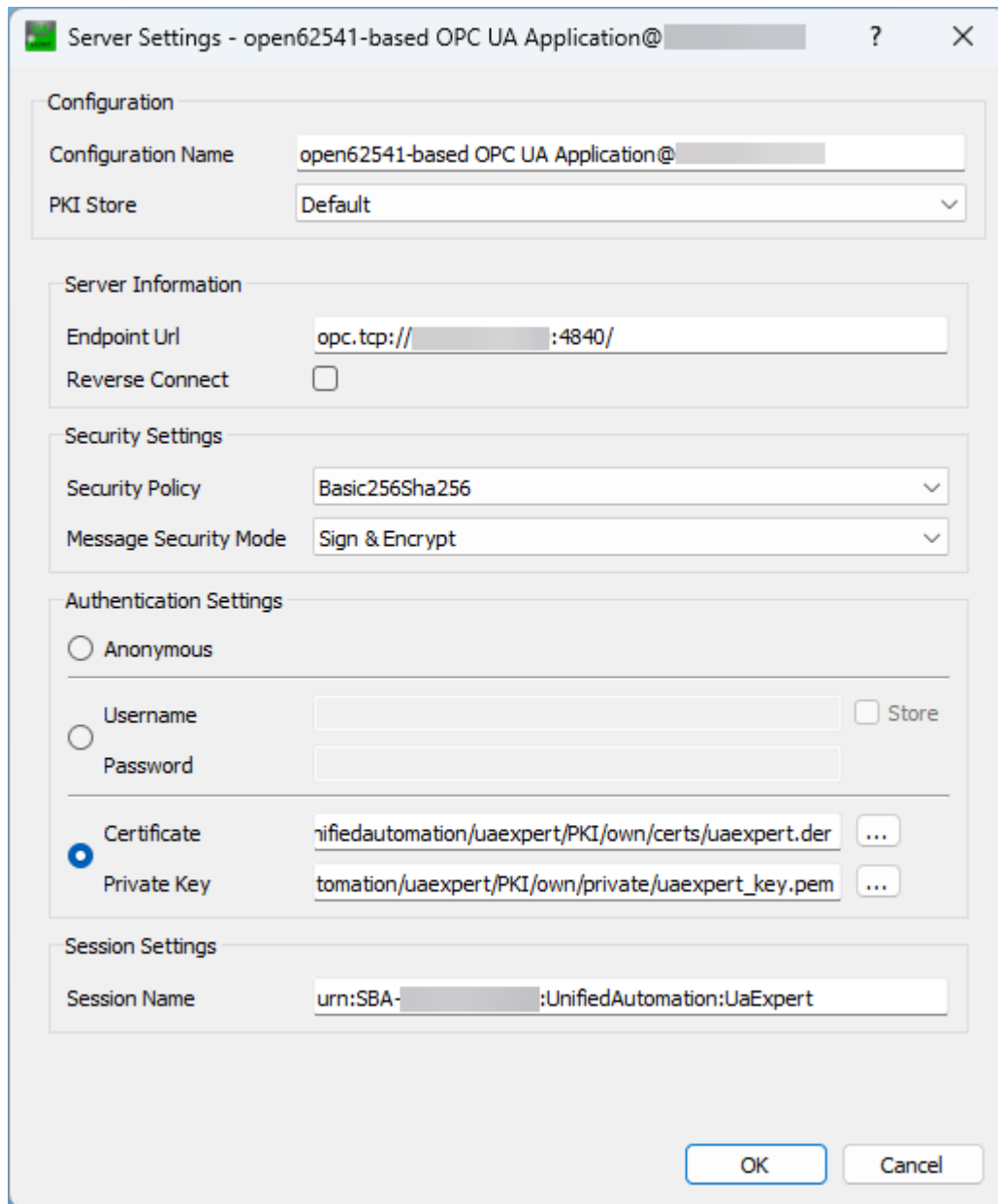


Figure 3-8: Add Server dialog box - Basic256Sha256 - Sign & Encrypt

9. In the **Authentication settings** section:
 - a. Click the **Certificate / Private Key** option button.
 - b. In the **Certificate** check box, enter the path to the UaExpert certificate.
Example: C:/Users/<<user_name>>/AppData/Roaming/unifiedautomation/uaexpert/PKI/own/certs/uaexpert.der

- c. In the **Private Key** text box, enter the path to the UaExpert private key. (Figure 3-9)
 Example: C:\Users\<<user_name>>\AppData\Roaming\unifiedautomation\uaexpert\PKI\own\private\uaexpert_key.pem



Server Settings - open62541-based OPC UA Application@ [redacted]

Configuration

Configuration Name: open62541-based OPC UA Application@[redacted]

PKI Store: Default

Server Information

Endpoint Url: opc.tcp://[redacted]:4840/

Reverse Connect: ☐

Security Settings

Security Policy: Basic256Sha256

Message Security Mode: Sign & Encrypt

Authentication Settings

☐ Anonymous

☐ Username: [redacted] ☐ Store

☐ Password: [redacted]

☒ Certificate: nifiedautomation/uaexpert/PKI/own/certs/uaexpert.der ...

☐ Private Key: tomation/uaexpert/PKI/own/private/uaexpert_key.pem ...

Session Settings

Session Name: urn:SBA-[redacted]:UnifiedAutomation:UaExpert

OK Cancel

Figure 3-9: Server Settings dialog box

- A Username and Password can be used if this Authentication Setting option is enabled in the KAS project. (Figure 3-10)
- The password is always encrypted if **Use Certificates** is enabled in the KAS project.

Server Settings - open62541-based OPC UA Application@ ... ? X

Configuration

Configuration Name: open62541-based OPC UA Application@ ...

PKI Store: Default

Server Information

Endpoint Url: opc.tcp://:4840/

Reverse Connect: ☐

Security Settings

Security Policy: Basic256Sha256

Message Security Mode: Sign & Encrypt

Authentication Settings

☐ Anonymous

☒ Username: kas ☒ Store

Password:

☐ Certificate: ...

☐ Private Key: ...

Session Settings

Session Name: urn:SBA-:UnifiedAutomation:UaExpert

OK Cancel

Figure 3-10: Server Settings dialog box - Username and Password

- d. Click **OK** to save the changes or selections and close the dialog box. The server is now available in the UaExpert project tree.

10. On the UaExpert toolbar, click the **Settings** button and select **Manage Certificates > Properties**. The UaExpert **Manage Certificates** dialog box opens. (Figure 3-11)

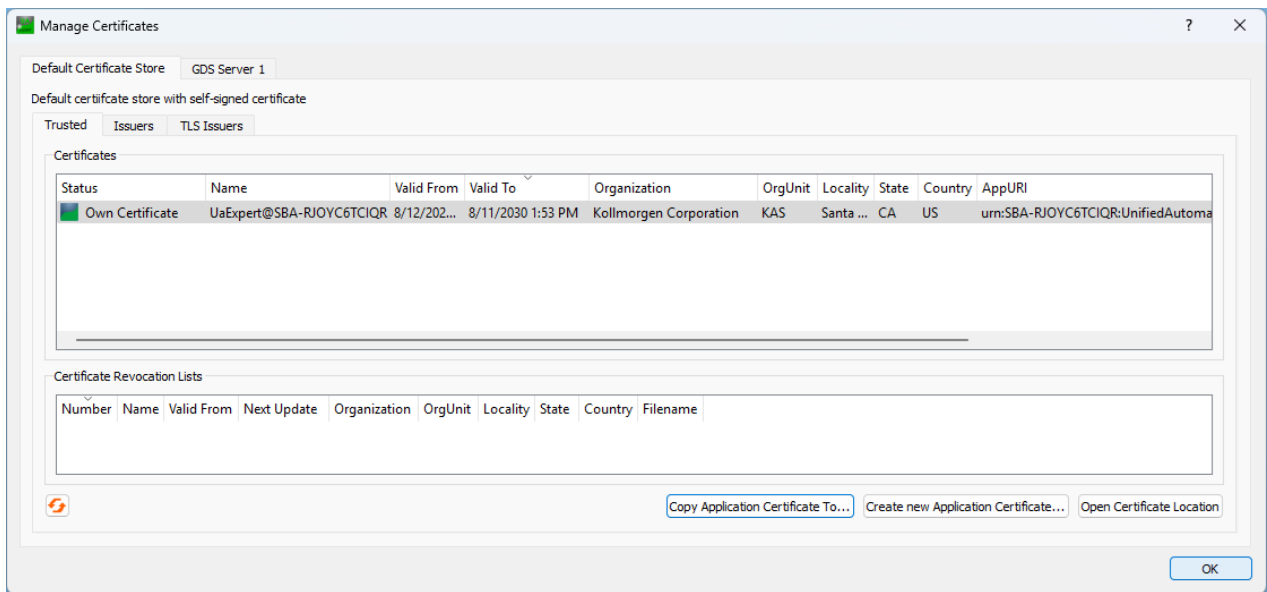


Figure 3-11: Manage Certificates dialog box

11. Click the **Copy Application Certificate To...** button to open the **Save As** dialog box. (Figure 3-12)

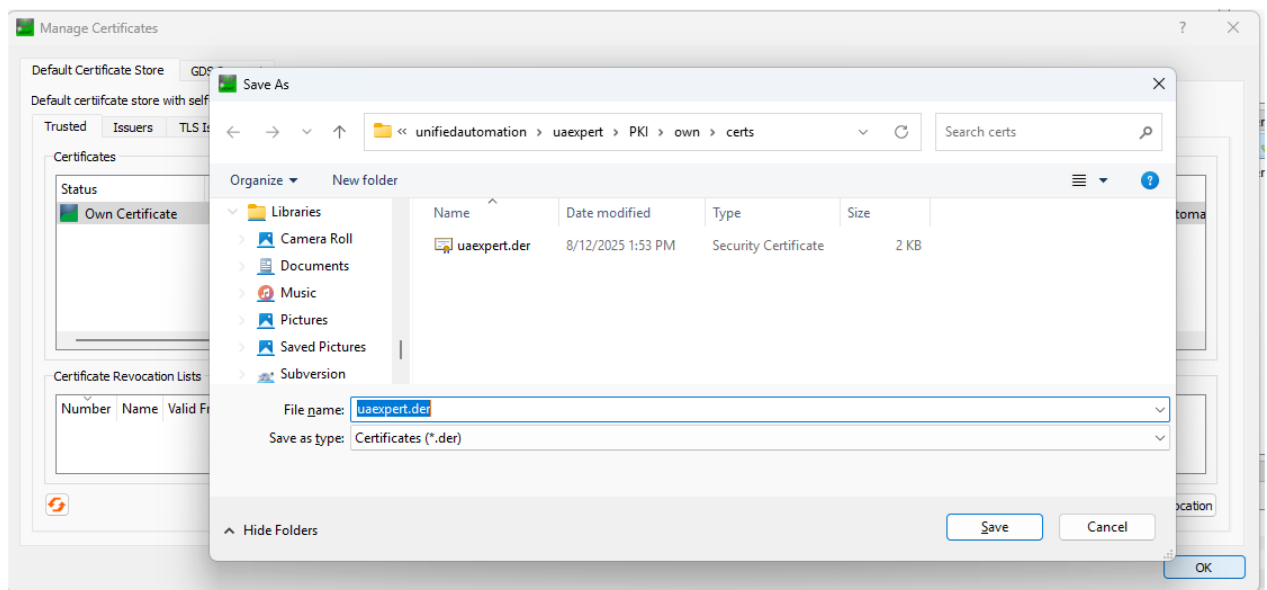


Figure 3-12: Save As dialog box

12. Save the file **uaexpert.der** to a temporary directory on the PC (e.g., C:\Temp).
13. Click **Save** to save the file in the designated location and close the dialog box.

14. Using the web browser opened in the "1. PCMM2G Configuration (with Certificates)" (→ p. 23) section:
 - a. Click the **Settings** tab.
 - b. Click the **Certificates** tab. (Figure 3-13)

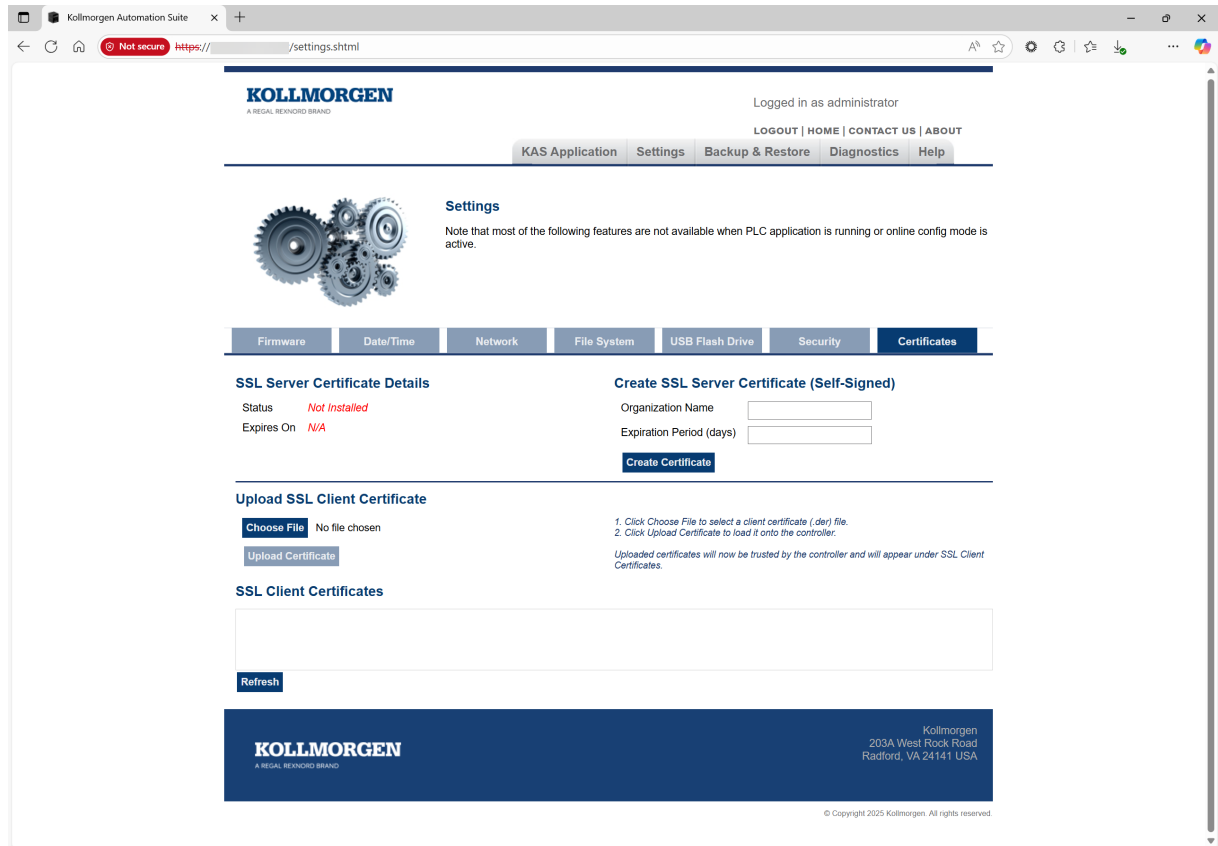


Figure 3-13: Certificates tab

- c. In the **Upload SSL Client Certificate** section, click the **Choose File** button. A File Explorer window opens.
 - d. Locate and select the certificate file **uaexpert.der** that was saved in Step 12 in section "2. UaExpert Configuration (with Certificates)" (→ p. 26).
 - e. Click **Open** to confirm the selection and close the File Explorer window.
 - f. Click the **Upload Certificate** button to upload the file to the PCMM2G.
 - The Certificate is added to the PCMM2G trusted store.
 - This allows OPC UA connections from UaExpert.
 - The file **uaexpert.der** appears under SSL Client Certificates explorer tree.
15. Continue with "3. UaExpert Connection to the PCMM2G (with Certificates)" (→ p. 35).

3.1.2.3 3. UaExpert Connection to the PCMM2G (with Certificates)

The procedure in this section connects UaExpert to the PCMM2G.

1. Verify the procedure in the "2. UaExpert Configuration (with Certificates)" (→ p. 26) section is completed.
2. On the toolbar, click the **Connect** button () to connect to the server.
A Connect Error message opens. (Figure 3-14)

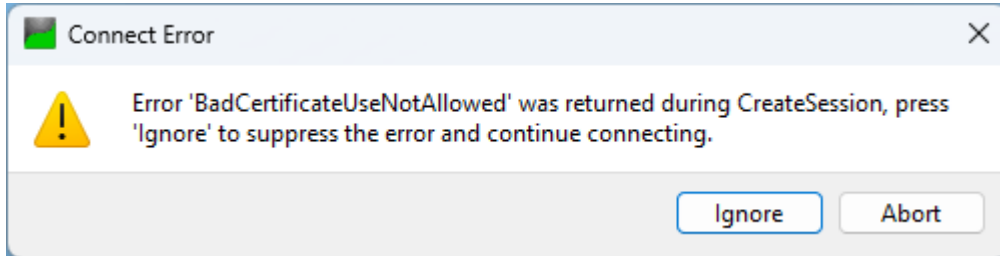


Figure 3-14: Connect Error message

3. Click **Ignore** to continue connecting.

Data is now available from the KAS/PCMM2G OPC UA Server. (Figure 3-15)

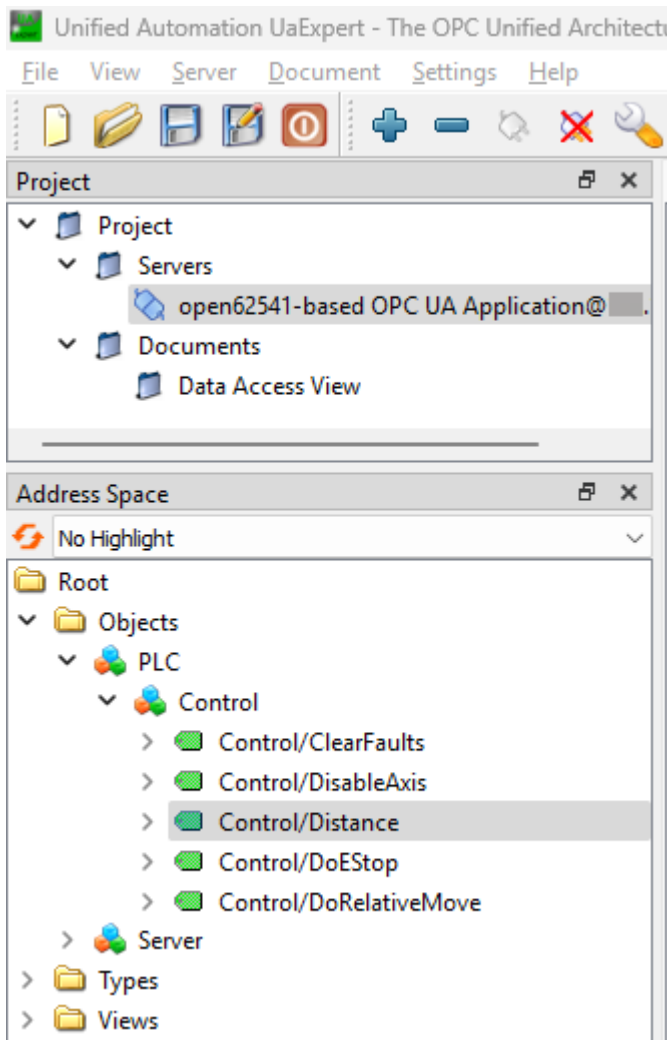


Figure 3-15: UaExpert - KAS OPC UA Data Objects

4. In the **Address Space** scroll box, select the applicable PLC object.

5. Drag-and-drop the selected objects to the **Data Access View** table. (Figure 3-16)

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Timestamp	Statuscode
1	open62541-based OPC UA Application@	NS1 String Control/ClearFaults	Control/ClearFaults	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
2	open62541-based OPC UA Application@	NS1 String Status/ECAT_Up	Status/ECAT_Up	true	Boolean	8:42:29,064 AM	8:42:29,064 AM	Good
3	open62541-based OPC UA Application@	NS1 String Status/Axis1ActPos	Status/Axis1ActPos	89.8578643799	Double	9:23:32,560 AM	9:23:32,560 AM	Good
4	open62541-based OPC UA Application@	NS1 String Status/Axis1Faulted	Status/Axis1Faulted	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
5	open62541-based OPC UA Application@	NS1 String Control/DoRelativeMove	Control/DoRelativeMove	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
6	open62541-based OPC UA Application@	NS1 String Control/EnableAxis	Control/EnableAxis	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good

Figure 3-16: Data Access View table

- Verify the values of PLC objects in the **Data Access View** table matches with the KAS project running on the PCMM2G.
- In the **Data Access View** table, select a variable.
The **Attributes** panel appears.
- Scroll through the variables to locate a variable with an **AccessLevel** set to **CurrentWrite**. (Figure 3-17)

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Timestamp	Statuscode
1	open62541-based OPC UA Applic...	NS1 String Cont...	Control/ClearFaults	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
2	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DisableAxis	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
3	open62541-based OPC UA Applic...	NS1 String Cont...	Control/Distance	90	Double	8:41:18,207 AM	8:41:18,207 AM	Good
4	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DoEStop	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
5	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DoRelativeMove	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
6	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1ActPos	-97.7611541748	Double	10:57:13,239 AM	10:57:13,239 AM	Good
7	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1Faulted	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
8	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1Powered	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
9	open62541-based OPC UA Applic...	NS1 String Stat...	Status/ECAT_Up	true	Boolean	8:41:31,941 AM	8:41:31,941 AM	Good

Figure 3-17: Attributes panel

- Double-click the applicable **Value** column cell and change its value.
- Switch to the KAS-IDE window.

11. Navigate to the OPC UA Server Fieldbus Editor. (Figure 3-18)

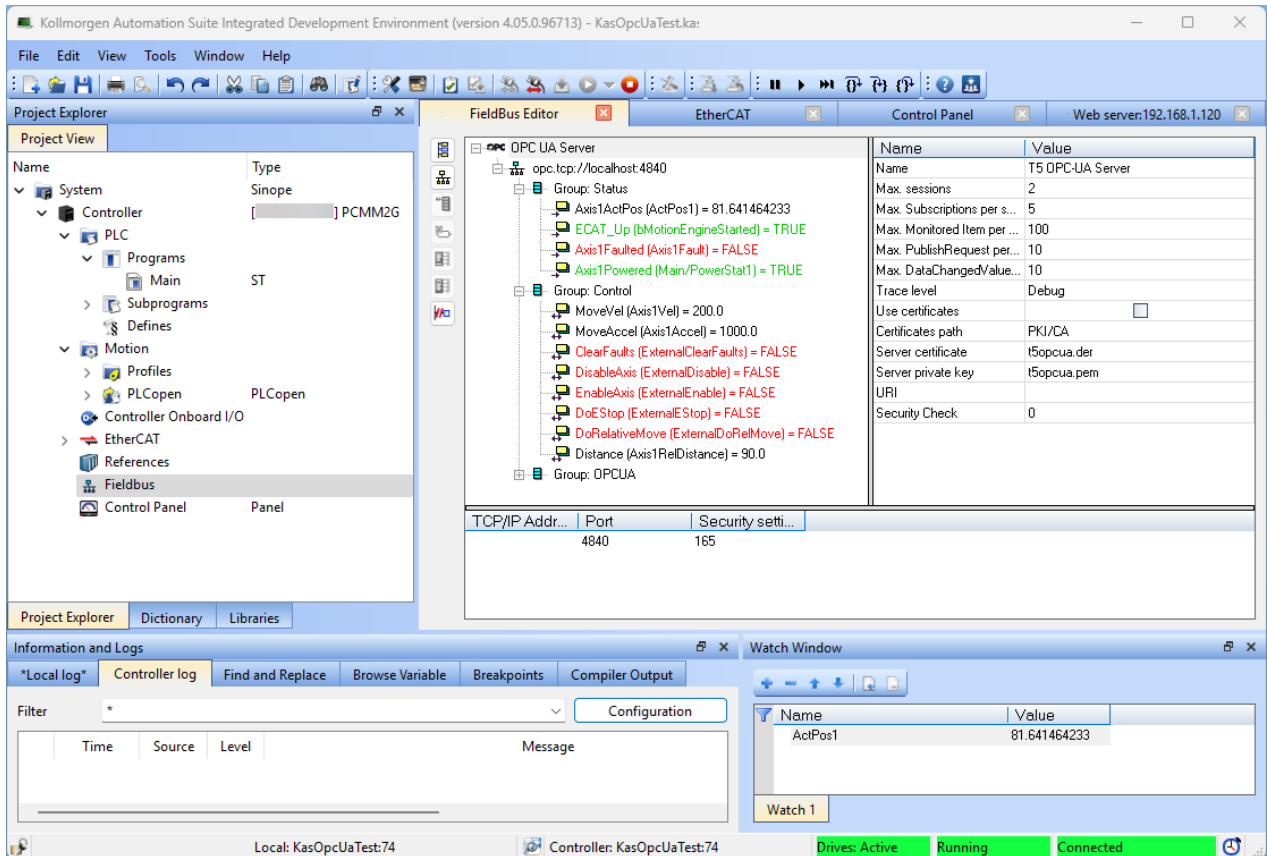


Figure 3-18: KAS Fieldbus Editor

12. Change a variable value in the KAS-IDE.
13. Verify the change in UaExpert.
A re-browse of the variable value in UaExpert may be necessary to refresh the visible values.

14. Select the PLC object and right-click to use **Rebrowse**. (Figure 3-19)

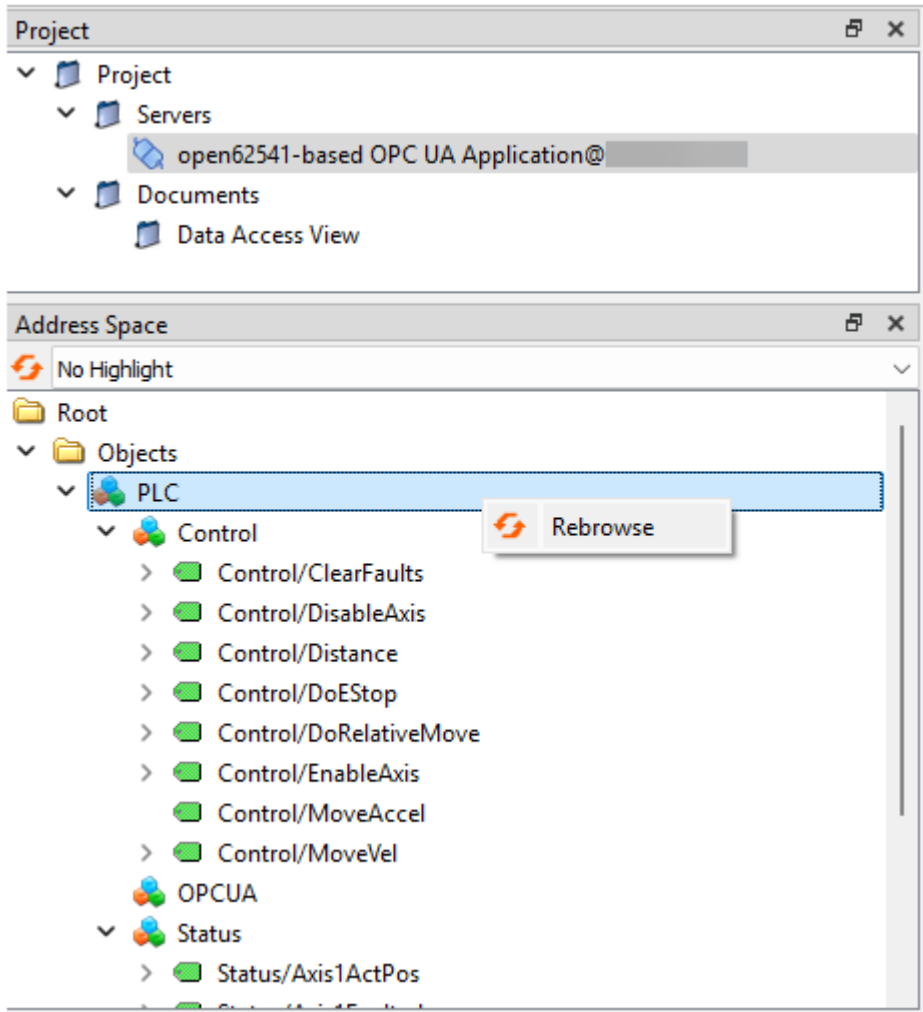


Figure 3-19: Rebrowse option

NOTE

- A maximum of 100 OPC UA client connections are accepted simultaneously.
- Established connections are disconnected if no data is exchanged within 30 seconds.

NOTE

- Uploaded certificates are automatically trusted by the OPC UA Server running on PCMM2G.
- The certificates enable secure communication when using Sign or SignAndEncrypt security modes.
- If the certificate is not uploaded, the PCMM2G OPC UA Server rejects the connection attempt from UaExpert.

See Also

- "OPC-UA - Establish a Server Connection without Certificates - UaExpert" (→ p. 39)
- "OPC UA - Establish Server Connection without Certificates - Exor HMI" (→ p. 53)
- "OPC UA - Troubleshooting" (→ p. 62)

3.1.3 OPC-UA - Establish a Server Connection without Certificates - UaExpert

These are the overall steps without using certificates for an OPC UA Server connection:

- "1. PCMM2G Configuration (without Certificates)" (→ p. 39)
- "2. UaExpert Configuration (without Certificates)" (→ p. 42)
- "3. UaExpert Connection to the PCMM2G (without Certificates)" (→ p. 48)

NOTE

Videos of these features are here: [PCMM2G OPC UA Server Setup in KAS-IDE](#).

3.1.3.1 1. PCMM2G Configuration (without Certificates)

The procedure in this section configures the PCMM2G for connection to UaExpert.

1. Verify the "OPC-UA - UaExpert Installation" (→ p. 22) procedure is completed.
2. [Start the KAS-IDE](#).
3. Create a new project or open an existing KAS project.
4. Double-click an OPC UA Server node in the Fieldbus Editor project tree.
The "OPC UA - Server dialog box" (→ p. 76) opens. (Figure 3-20)

Server

Name:

URI:

Settings

Max. sessions	2	(1 - 100)
Max. Subscriptions per session:	5	(0 - 100)
Max. Monitored Item per subscription:	100	(0 - 65535)
Max. PublishRequest per session:	10	(1 - 100)
Max. DataChangedValue per MonitoredItem:	10	(1 - 100)

Security settings

☐ Use certificates

Certificates path:

Server certificate:

Server private key:

Authentication settings

☒ Anonymous

☐ User name

☐ Password

☐ Certificate

Trace level:

Figure 3-20: Server dialog box

5. In the **Authentication settings** section:
 - a. Keep the **Anonymous** check box selection.
 - b. Optional: Click the **User name/Password** check box to activate the **User name** and **Password** text boxes.
 - c. If applicable, enter a **User name** and **Password** for the configuration.
 - d. Click **OK** to save the changes or selections and close the dialog box.
The Fieldbus Editor returns showing the added OPC UA Server node.
6. On the vertical toolbar, click the **Insert Master/Port** button ().
The "OPC UA - Endpoint dialog box" (→ p. 69) opens. (Figure 3-21)

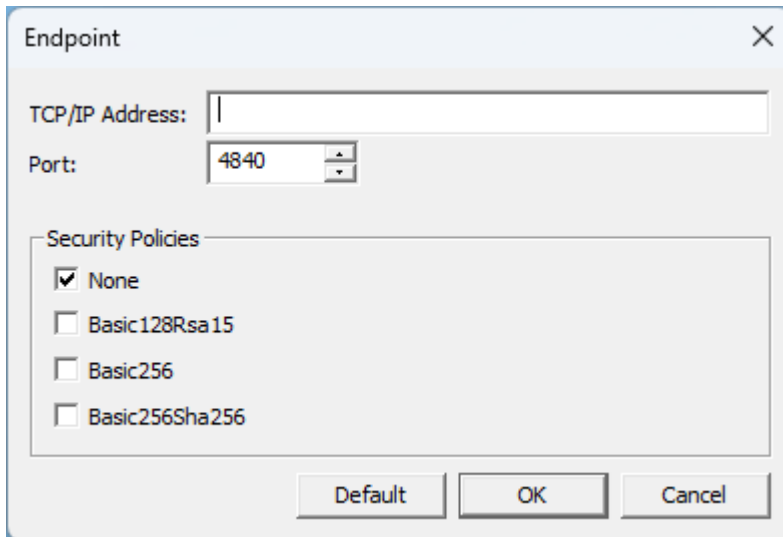


Figure 3-21: Endpoint dialog box

7. In the **Security Policies** section, accept the default selection of **None**.
8. Click **OK** to save the changes or selections and close the dialog box.
The Fieldbus Editor returns.
9. Add applicable groups and variables using the "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15) procedure.
10. Compile and download the project to the KAS controller (e.g., PCMM2G).
11. Continue with "2. UaExpert Configuration (without Certificates)" (→ p. 42).

3.1.3.2 2. UaExpert Configuration (without Certificates)

The procedure in this section configures UaExpert for connection to PCMM2G.

1. Verify the procedure in the "1. PCMM2G Configuration (without Certificates)" (→ p. 39) section is completed.
2. Start UaExpert.
The UaExpert main window opens.
3. In the Project tree, right-click **Servers** and click **Add**. (Figure 3-22)

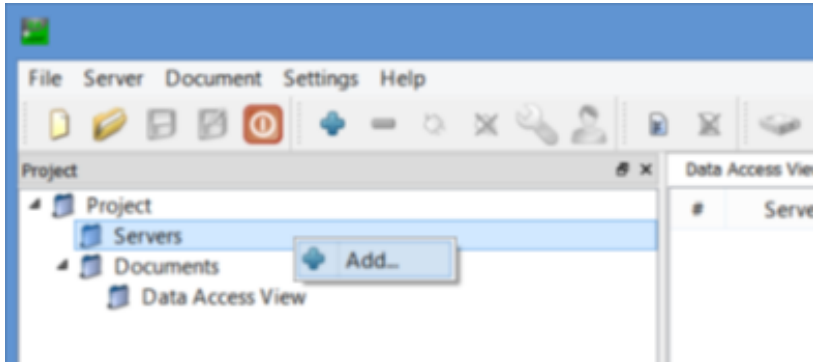


Figure 3-22: Add option

The **Add Server** dialog box opens. (Figure 3-23)

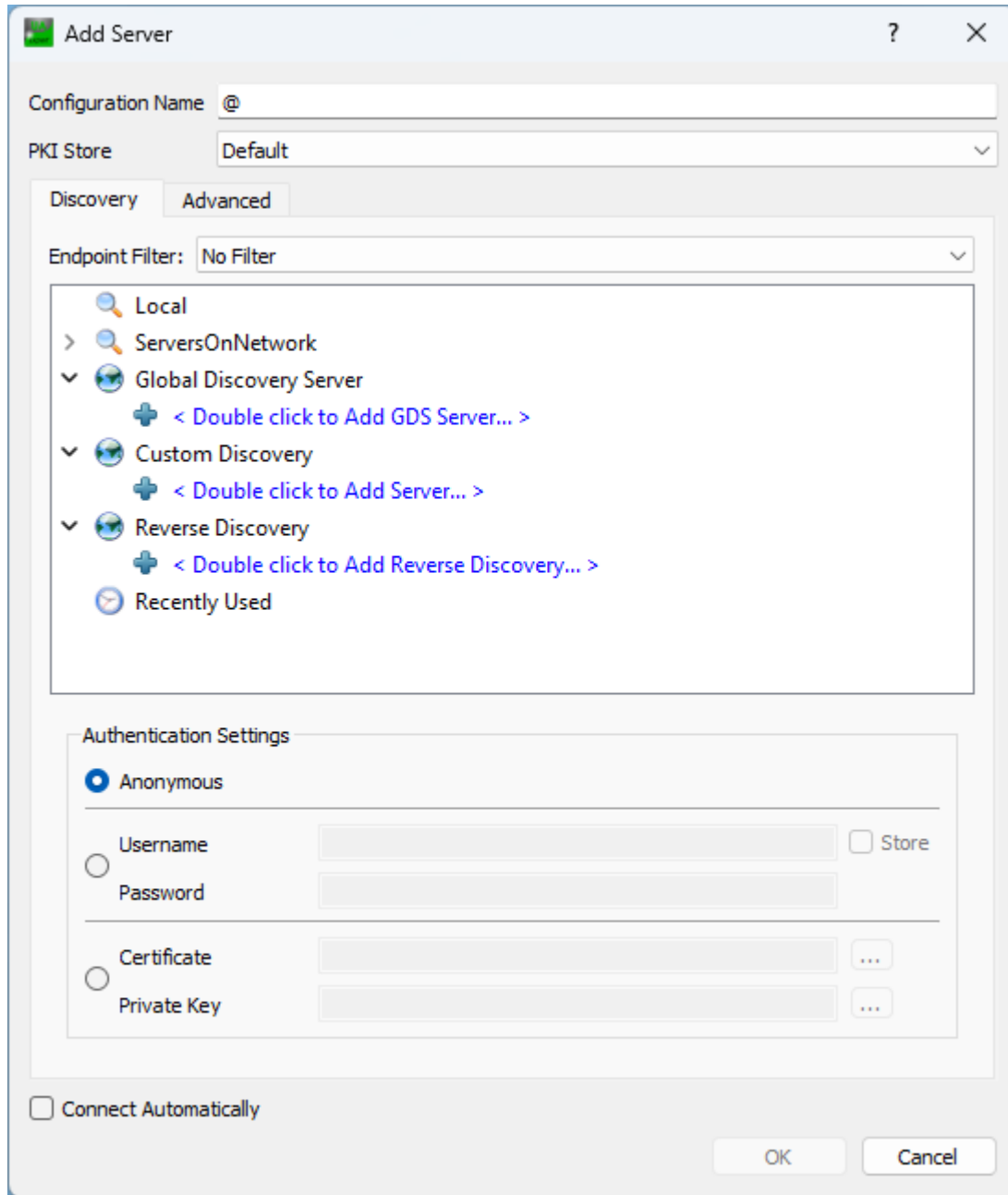


Figure 3-23: UaExpert Add Server dialog box

4. Under **Custom Discovery**, double-click the text.
The **Enter URL** dialog box opens.

5. Enter the URL as `opc.tcp://(PCMM2G_IP_Address)` to add the OPC UA Server. (Figure 3-24)

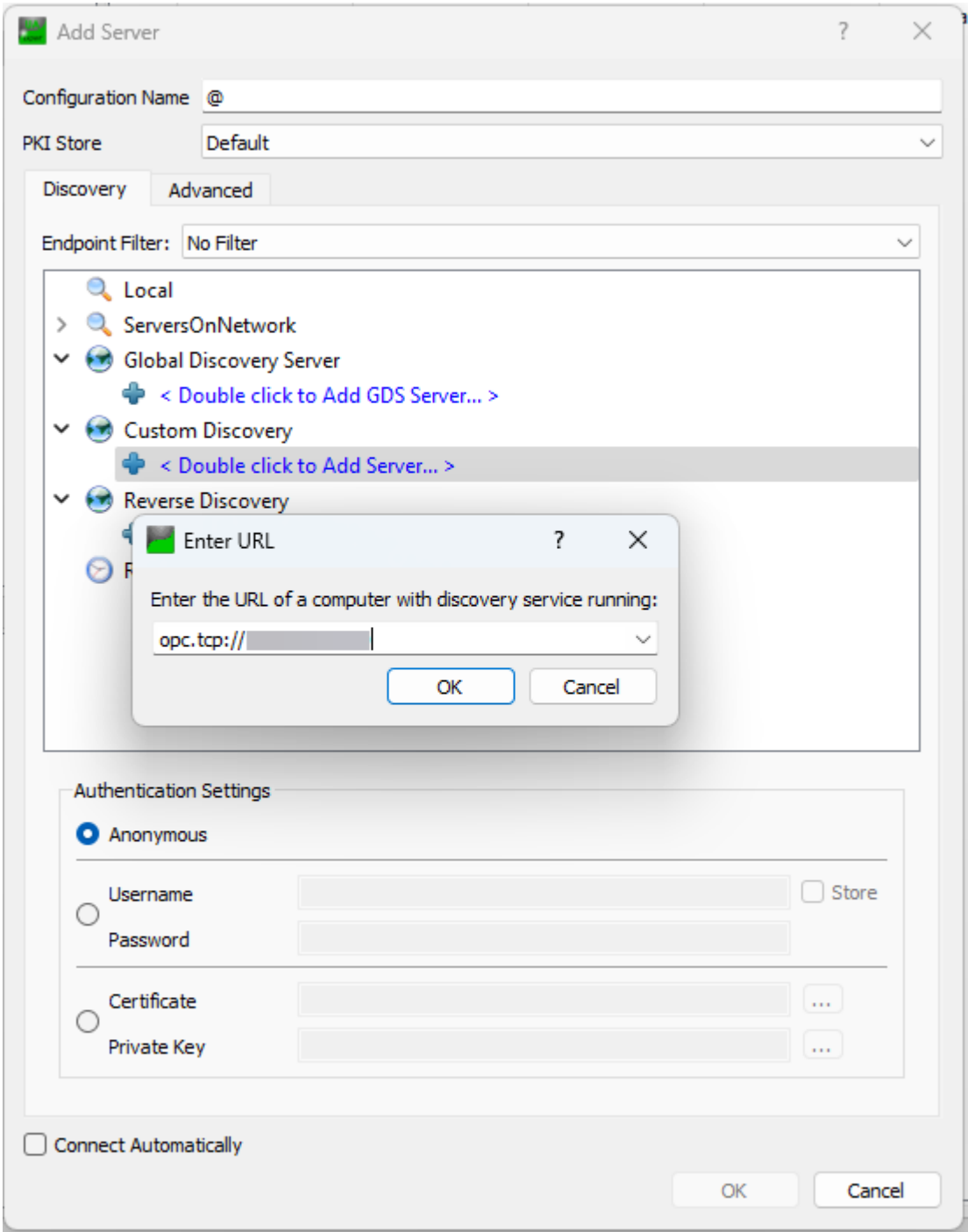


Figure 3-24: Enter URL dialog box

6. Click **OK** to save the changes or selections and close the dialog box. The **Add Server** dialog box returns.

NOTE

A Replace Hostname message may appear. (Figure 3-25)

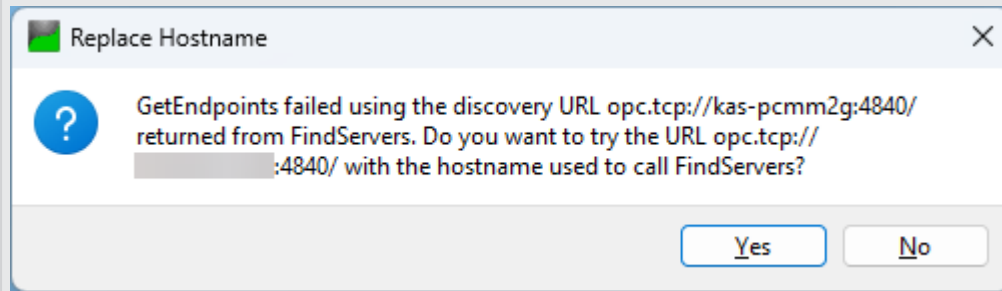


Figure 3-25: Replace Hostname message

This prompt appears because the PCMM2G supports OPC UA device discovery using its IP address, not by its hostname.

Click **Yes** to continue.

ⓘ IMPORTANT

A **None** security policy **must be** configured for the OPC UA Server in the KAS project.

7. Under **Custom Discovery**, expand the newly added node.

8. Under the `opc.tcp://(PCMM2G_IP_Address)`, select **None**. (Figure 3-26)

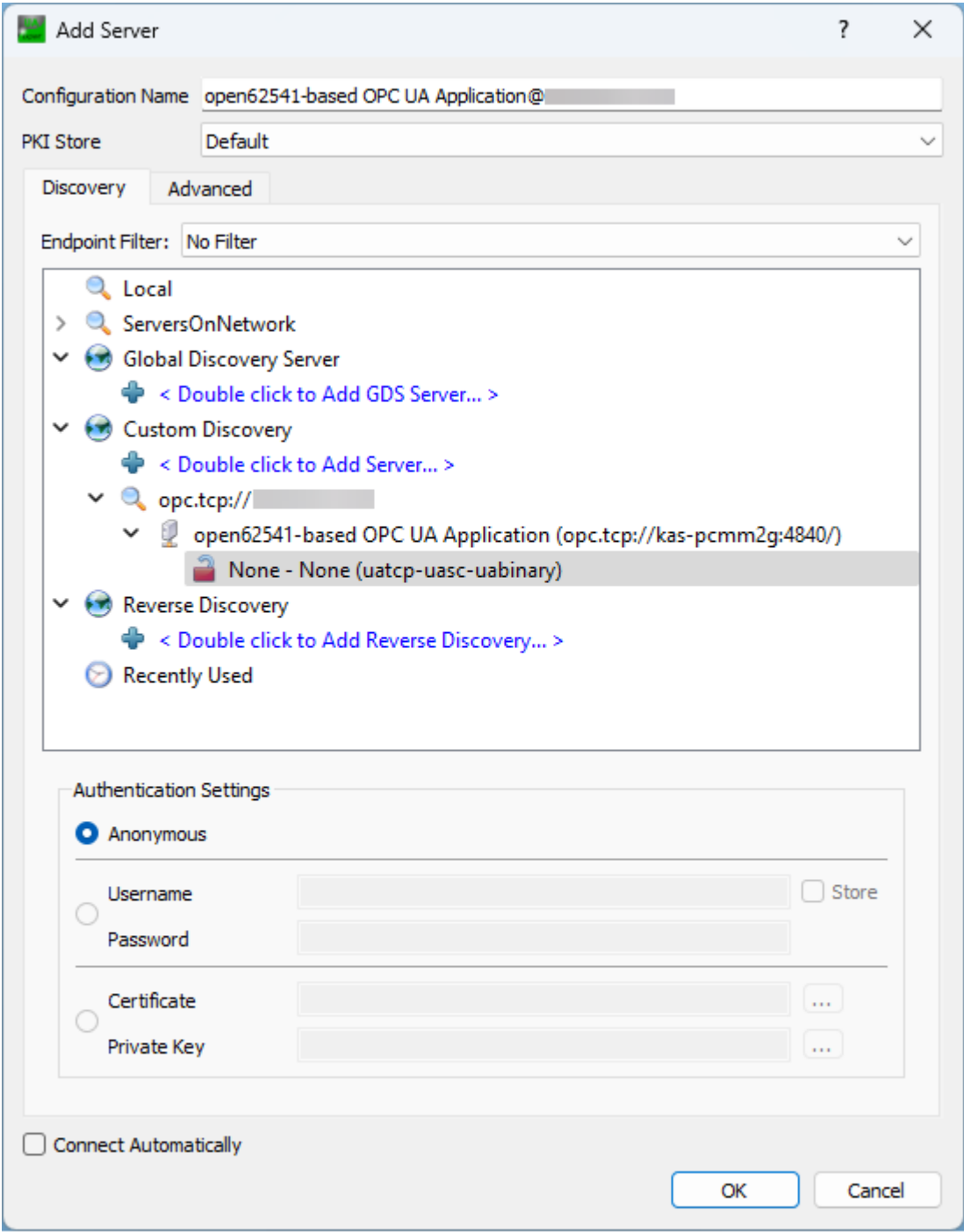


Figure 3-26: Add Server dialog box - None

- A Username and Password can be used if this Authentication Setting option is enabled in the KAS project. (Figure 3-27)
- The password is always encrypted if **Use Certificates** is enabled in the KAS project.

Server Settings - open62541-based OPC UA Application@ ? X

Configuration

Configuration Name: open62541-based OPC UA Application@

PKI Store: Default

Server Information

Endpoint Url: opc.tcp://:4840/

Reverse Connect: ☐

Security Settings

Security Policy: Basic256Sha256

Message Security Mode: Sign & Encrypt

Authentication Settings

☐ Anonymous

☒ Username: kas ☒ Store

Password:

☐ Certificate: ...

☐ Private Key: ...

Session Settings

Session Name: urn:SBA-:UnifiedAutomation:UaExpert

OK Cancel

Figure 3-27: Server Settings dialog box - Username and Password

9. Click **OK** to save the changes or selections and close the dialog box.
The server is now available in the UaExpert project tree.
10. Continue with "3. UaExpert Connection to the PCMM2G (without Certificates)" (→ p. 48).

3.1.3.3 3. UaExpert Connection to the PCMM2G (without Certificates)

The procedure in this section connects UaExpert to the PCMM2G.

1. Verify the procedure in the "2. UaExpert Configuration (without Certificates)" (→ p. 42) section is completed.
2. On the toolbar, click the **Connect** button () to connect to the server.
Data is now available from the KAS/PCMM2G OPC UA Server. (Figure 3-28)

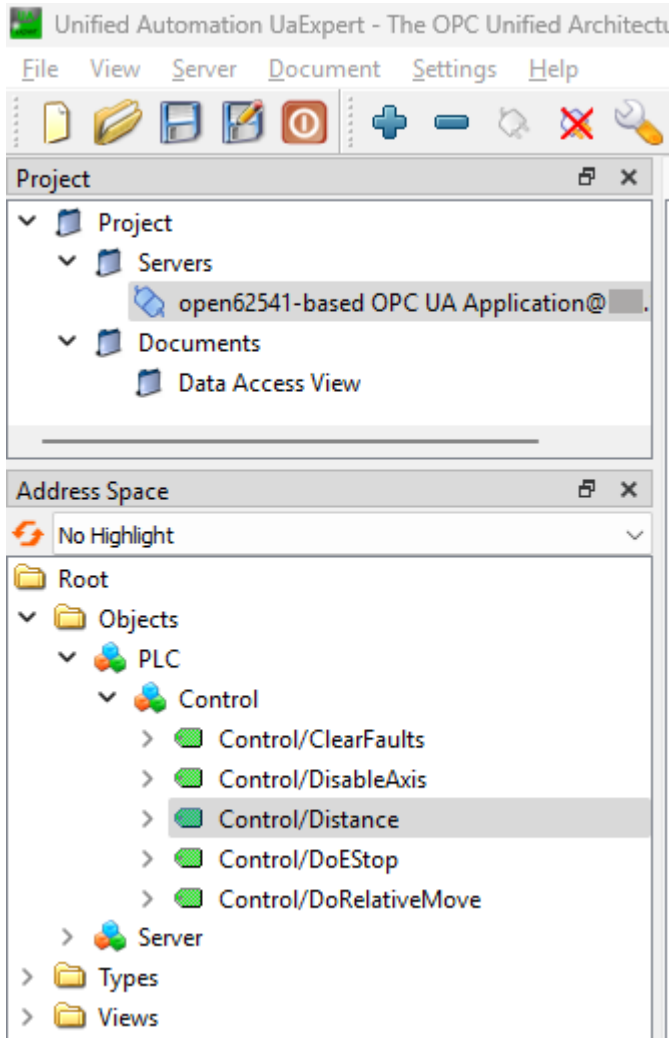


Figure 3-28: UaExpert - KAS OPC UA Data Objects

3. In the **Address Space** scroll box, select the applicable PLC object.

4. Drag-and-drop the selected objects to the **Data Access View** table. (Figure 3-29)

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Timestamp	Statuscode
1	open62541-based OPC UA Application@	NS1 String Control/ClearFaults	Control/ClearFaults	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
2	open62541-based OPC UA Application@	NS1 String Status/ECAT_Up	Status/ECAT_Up	true	Boolean	8:42:29,064 AM	8:42:29,064 AM	Good
3	open62541-based OPC UA Application@	NS1 String Status/Axis1ActPos	Status/Axis1ActPos	89.8578643799	Double	9:23:32,560 AM	9:23:32,560 AM	Good
4	open62541-based OPC UA Application@	NS1 String Status/Axis1Faulted	Status/Axis1Faulted	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
5	open62541-based OPC UA Application@	NS1 String Control/DoRelativeMove	Control/DoRelativeMove	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good
6	open62541-based OPC UA Application@	NS1 String Control/EnableAxis	Control/EnableAxis	false	Boolean	8:42:15,141 AM	8:42:15,141 AM	Good

Figure 3-29: Data Access View table

- Verify the values of PLC objects in the **Data Access View** table matches with the KAS project running on the PCMM2G.
- In the **Data Access View** table, select a variable.
The **Attributes** panel appears.
- Scroll through the variables to locate a variable with an **AccessLevel** set to **CurrentWrite**. (Figure 3-30)

#	Server	Node Id	Display Name	Value	Datatype	Source Timestamp	Server Timestamp	Statuscode
1	open62541-based OPC UA Applic...	NS1 String Cont...	Control/ClearFaults	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
2	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DisableAxis	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
3	open62541-based OPC UA Applic...	NS1 String Cont...	Control/Distance	90	Double	8:41:18,207 AM	8:41:18,207 AM	Good
4	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DoEStop	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
5	open62541-based OPC UA Applic...	NS1 String Cont...	Control/DoRelativeMove	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
6	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1ActPos	-97.7611541748	Double	10:57:13,239 AM	10:57:13,239 AM	Good
7	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1Faulted	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
8	open62541-based OPC UA Applic...	NS1 String Stat...	Status/Axis1Powered	false	Boolean	8:41:18,207 AM	8:41:18,207 AM	Good
9	open62541-based OPC UA Applic...	NS1 String Stat...	Status/ECAT_Up	true	Boolean	8:41:31,941 AM	8:41:31,941 AM	Good

Attribute	Value
NamespaceIndex	1
IdentifierType	String
Identifier	Control/MoveAccel
NodeClass	Variable
BrowseName	1, "Control/MoveAccel"
DisplayName	"en-US", "Control/MoveAccel"
Description	"en-US", "Control/MoveAccel"
Value	
SourceTimestamp	9/15/2025 8:41:18,207 AM
SourcePicoSeconds	0
ServerTimestamp	9/15/2025 8:41:18,207 AM
ServerPicoSeconds	0
StatusCode	Good (0x00000000)
Value	1000
Datatype	Double
NamespaceIndex	0
IdentifierType	Numeric
Identifier	11 [Double]
ValueRank	-1 [Scalar]
ArrayDimensions	UInt32 Array[-1]
AccessLevel	CurrentRead, CurrentWrite
UserAccessLevel	CurrentRead, CurrentWrite
AccessLevelEx	BadAttributeIdInvalid (0x80350000)
MinimumSamplingInterval	0
Historizing	false
WriteMask	0
UserWriteMask	0
RolePermissions	BadAttributeIdInvalid (0x80350000)
UserRolePermissions	BadAttributeIdInvalid (0x80350000)
AccessRestrictions	BadAttributeIdInvalid (0x80350000)

Figure 3-30: Attributes panel

- Double-click the applicable **Value** column cell and change its value.
- Switch to the KAS-IDE window.

10.
 Navigate to the OPC UA Server Fieldbus Editor. (Figure 3-31)

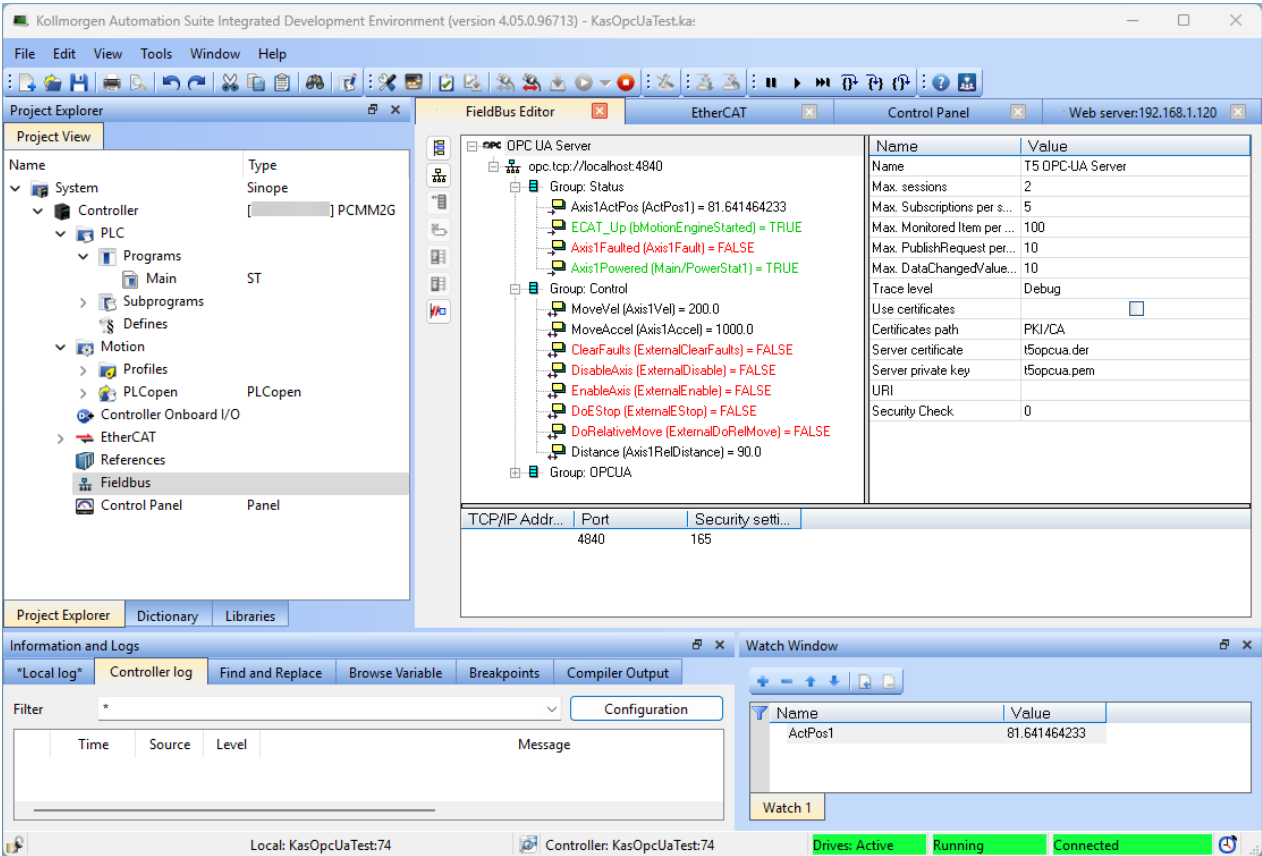


Figure 3-31: KAS Fieldbus Editor

- Change a variable value in the KAS-IDE.
- Verify the change in UaExpert.
A re-browse of the variable value in UaExpert may be necessary to refresh the visible values.

13. Select the PLC object and right-click to use **Rebrowse**. (Figure 3-32)

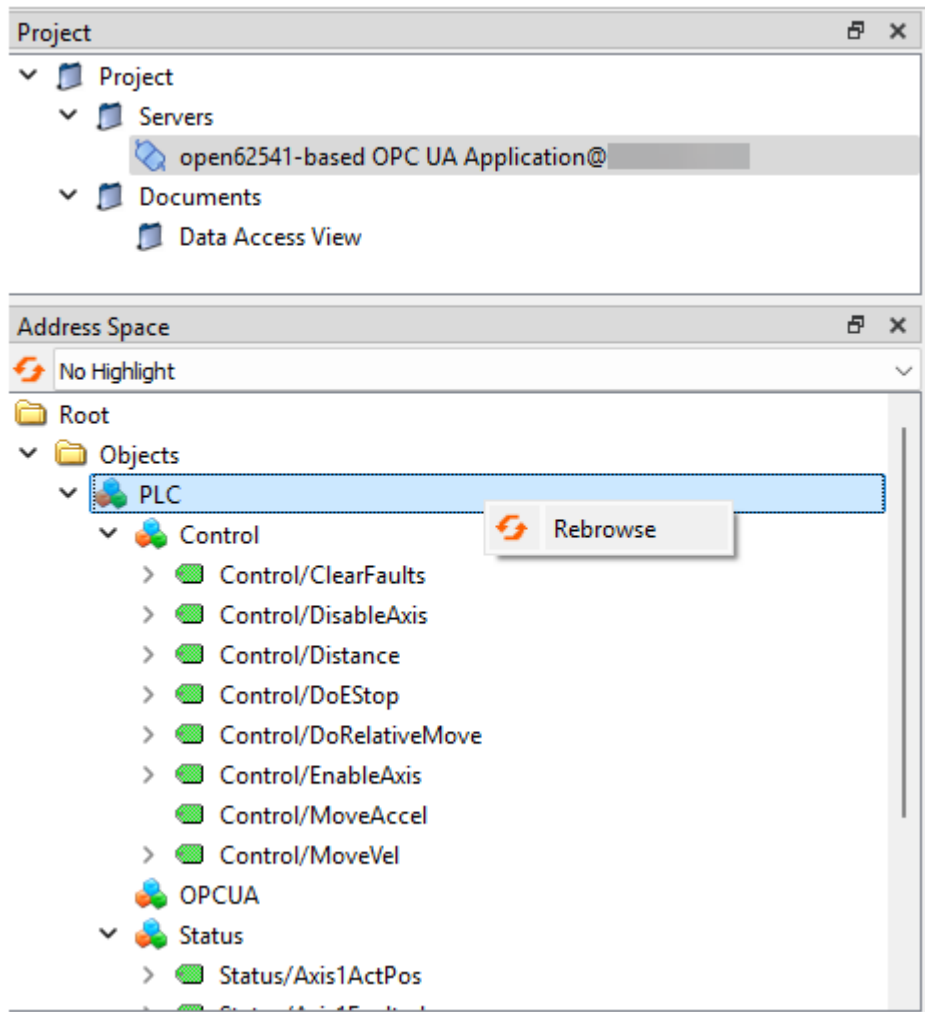


Figure 3-32: Rebrowse option

NOTE

- A maximum of 100 OPC UA client connections are accepted simultaneously.
- Established connections are disconnected if no data is exchanged within 30 seconds.

See Also

- "OPC-UA - Establish a Server Connection with Certificates - UaExpert" (→ p. 23)
- "OPC UA - Establish Server Connection without Certificates - Exor HMI" (→ p. 53)
- "OPC UA - Troubleshooting" (→ p. 62)

3.2 OPC UA - Establish a Connection using Exor HMI

These procedures are used to communicate with the PCMM2G OPC UA Server using the Exor HMI tool.

- "OPC UA - Establish Server Connection without Certificates - Exor HMI" (→ p. 53)

See Also

- "OPC UA - Troubleshooting" (→ p. 62)
- "OPC-UA - UaExpert Installation" (→ p. 22)

3.2.1 OPC UA - Exor HMI Installation

❗IMPORTANT

Registration is required to download JMobileStudio.

- JMobile Studio is a software application designed to create graphical HMI pages for Exor HMI products.
 - See [Automation Products - EXOR Int.](#)
- See [JMobile Suite & Software Downloads](#) to download the software and view initial start-up instructions.
 - Registration is required to download JMobileStudio.

3.2.2 OPC UA - Establish Server Connection without Certificates - Exor HMI

1. Verify the "OPC UA - Exor HMI Installation" (→ p. 52) procedure is completed.
2. [Start the KAS-IDE.](#)
3. Create a KAS project using an OPC UA Server configuration.
See "OPC UA - Create New Driver Configuration" (→ p. 5).
 - a. Create a new KAS project using any application template.
 - b. Configure the controller for the project as a PCMM2G.
 - c. In the KAS-IDE Fieldbus Editor, create a valid OPC UA Server configuration with "Anonymous" authentication setting enabled and several PLC variables assigned to it.
4. Compile and download the project to a PCMM2G controller.
5. Start the KAS project.
6. Launch JMobileStudio.
7. Start a new project for the Panel type you have available.
This example procedure uses eSmart10. (Figure 3-33)

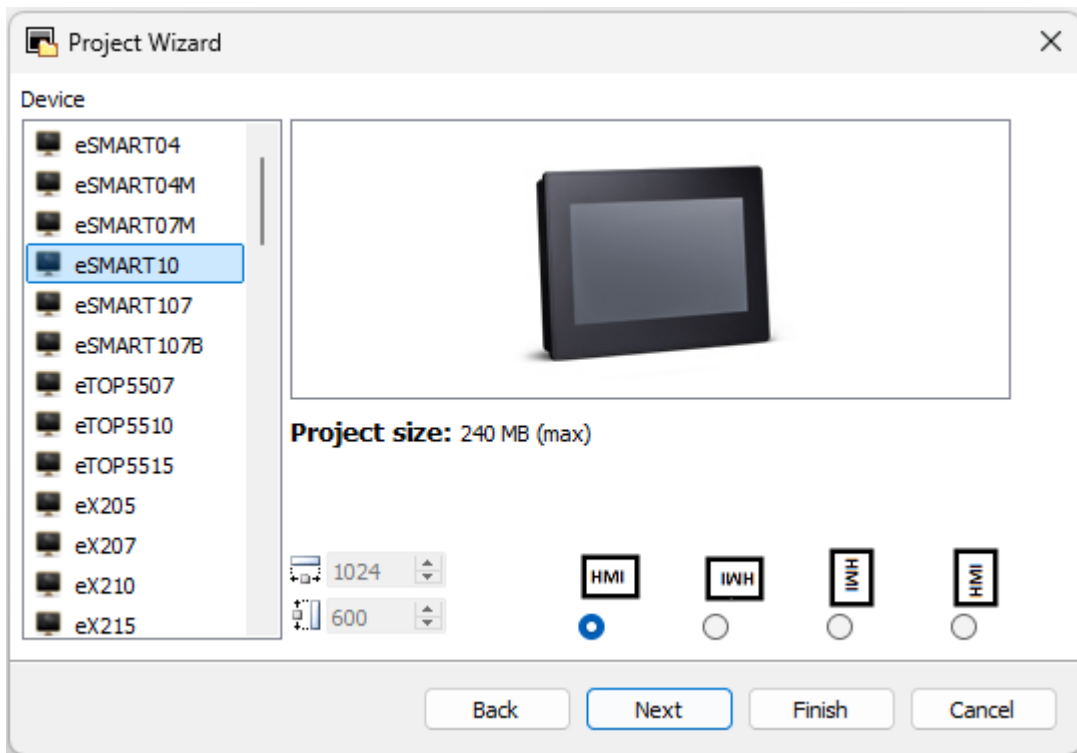


Figure 3-33: Exor Project Wizard - eSMART10

8. Click **Finish**.
The wizard closes and the ProjectView window opens.
9. In the ProjectView tree, in the **Configuration** section, select **Protocols**.
10. On the ProjectView toolbar, click the + button to open the **Protocols** tab.
11. In the Protocols tab > **PLC** column, click the drop-down arrow and select **OPC UA Client**.
The **OPC UA Client** dialog box opens.
12. In the **Host** text box, enter the PCMM2G IP address.

13. Accept the defaults for all other parameters. (Figure 3-34)

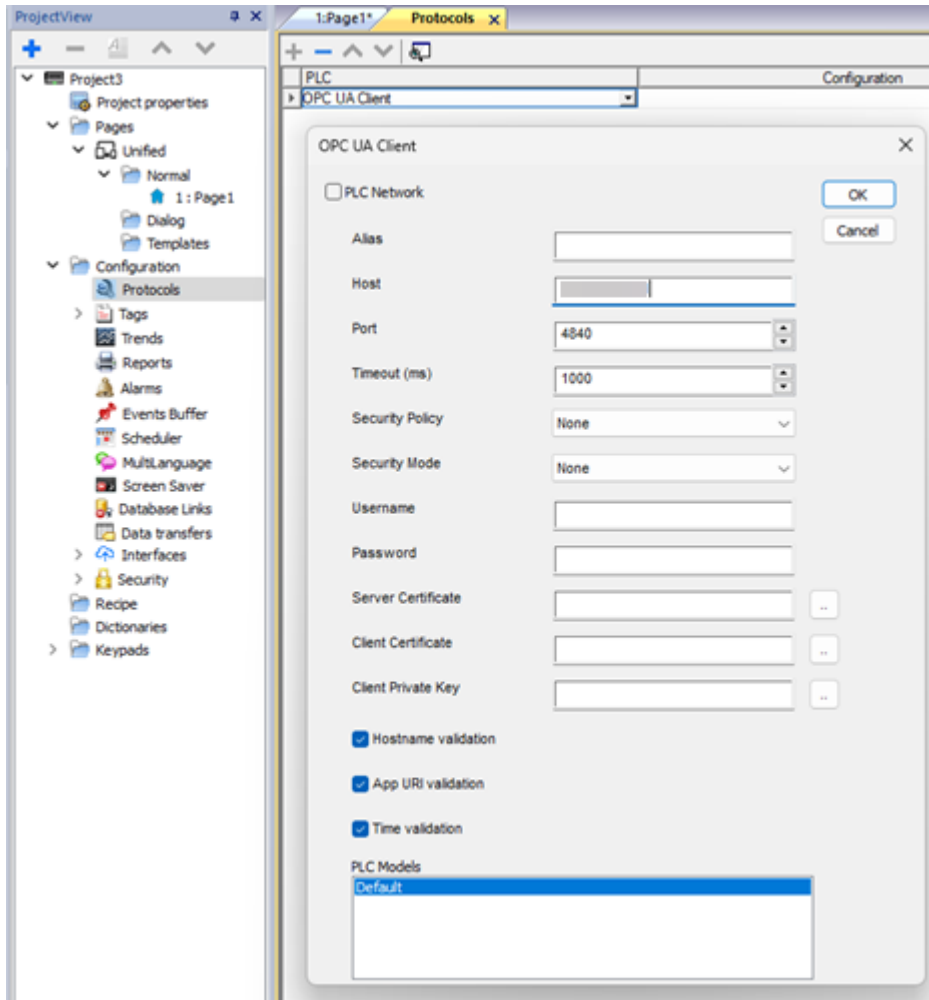


Figure 3-34: OPC UA Client dialog box

14. Click **OK** to save the changes or selections and close the dialog box.
The ProjectView window returns.
15. In the ProjectView tree, in the **Configuration** section, select **Tags**.
The **Tags** tab opens.
16. On the **Tags** toolbar, click the >] button.
The HMISudio dialog box opens.

17. Accept the default selection of OPC UA Discover v1.0. (Figure 3-35)

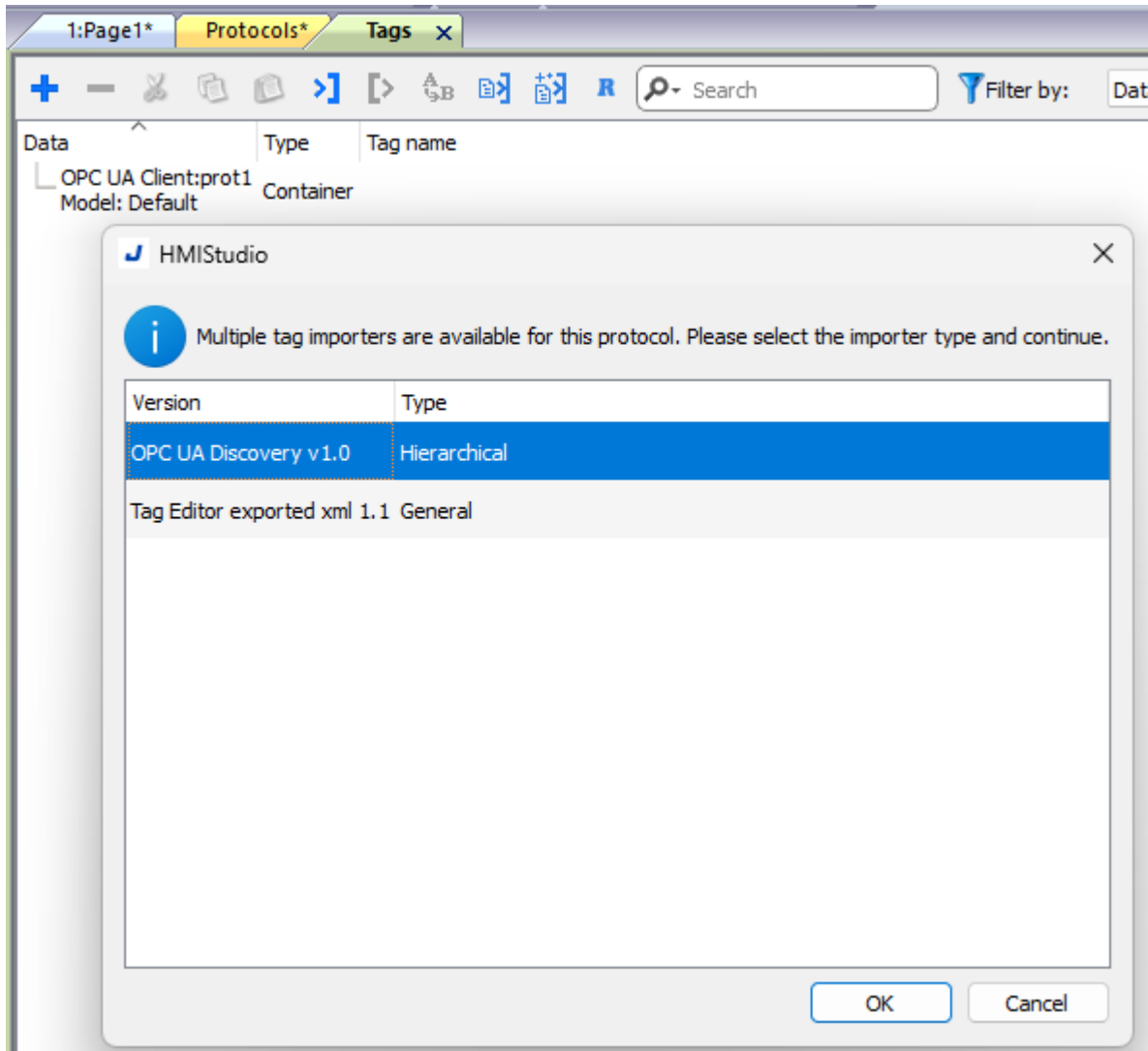


Figure 3-35: HMISudio dialog box

18. Click **OK** to save the changes or selections and close the dialog box. This imports the dictionary from PCMM2G host.

The **OPCUA Client importer** dialog box opens. (Figure 3-36)

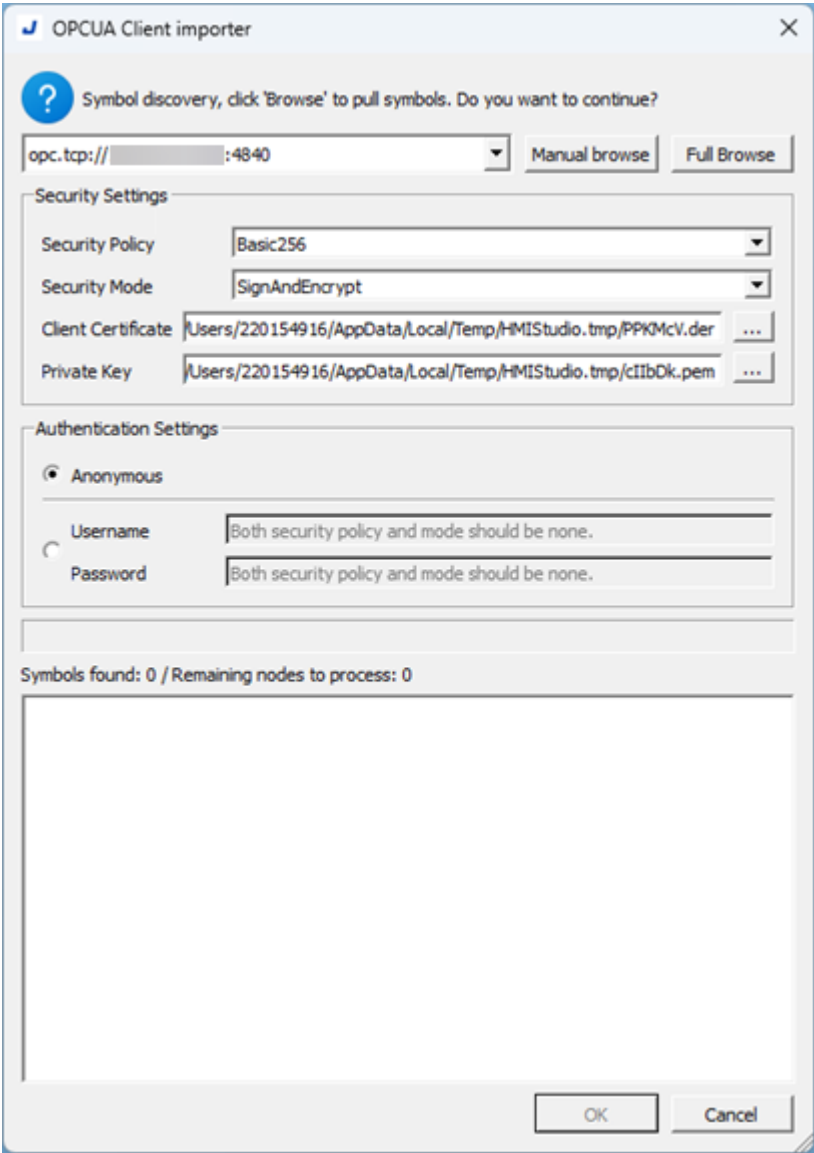


Figure 3-36: OPC UA Client Importer dialog box

- 19. Click the **Full Browse** button.
The **OPC UA Server Certificate** dialog box opens.

20. Click the **Accept Temporarily** button. (Figure 3-37)

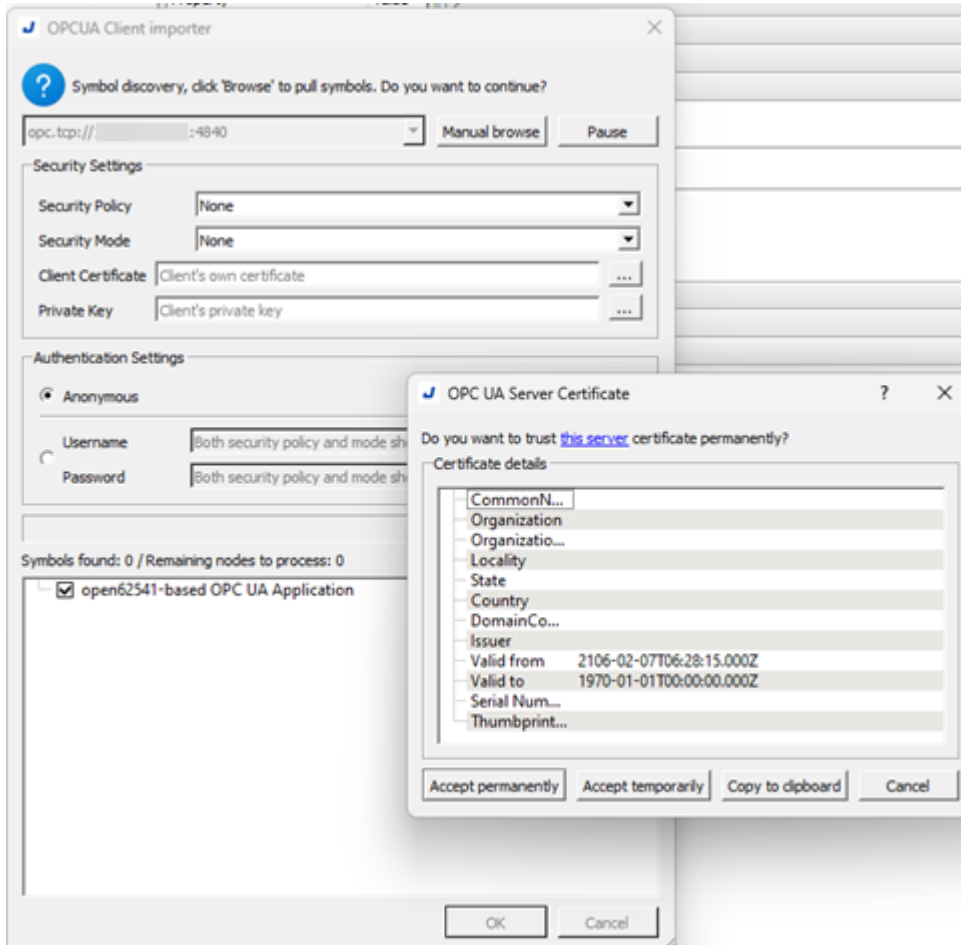


Figure 3-37: OPC UA Server Certificate dialog box

The **OPC UA Server Certificate** dialog box closes.

The **OPCUA Client importer** dialog box returns. (Figure 3-38)

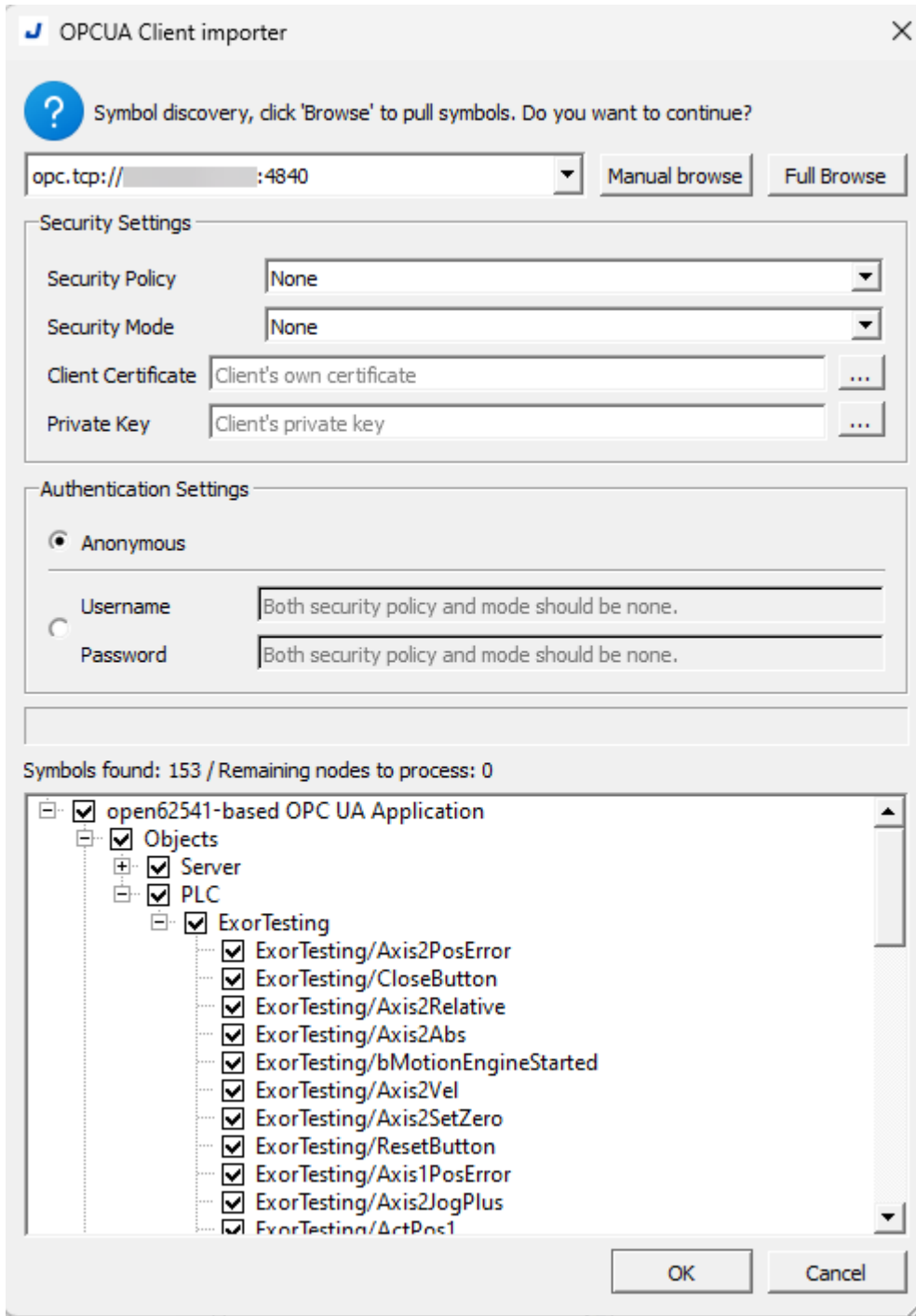


Figure 3-38: OPCUA Client importer dialog box

21. In the **Symbols found** scroll box, verify all Tags setup in the KAS-IDE Fieldbus Editor have been found.
22. Optional: Clear the check boxes of any variables that are not applicable.
23. Click **OK** to save the changes or selections and close the dialog box.

If successful, a confirmation message appears.

This message shows the number of imported tags. (Figure 3-39)

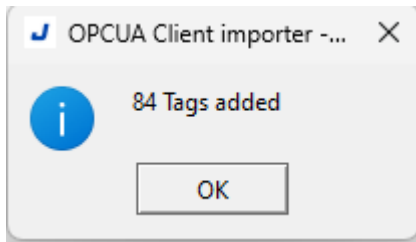


Figure 3-39: Imported tags confirmation message.

24. Click **OK** to close the confirmation message.

The Tags tab is populated with all imported tags from the KAS-IDE Fieldbus Editor. (Figure 3-40)

These Tags can be used with objects in the Exor panel screens.

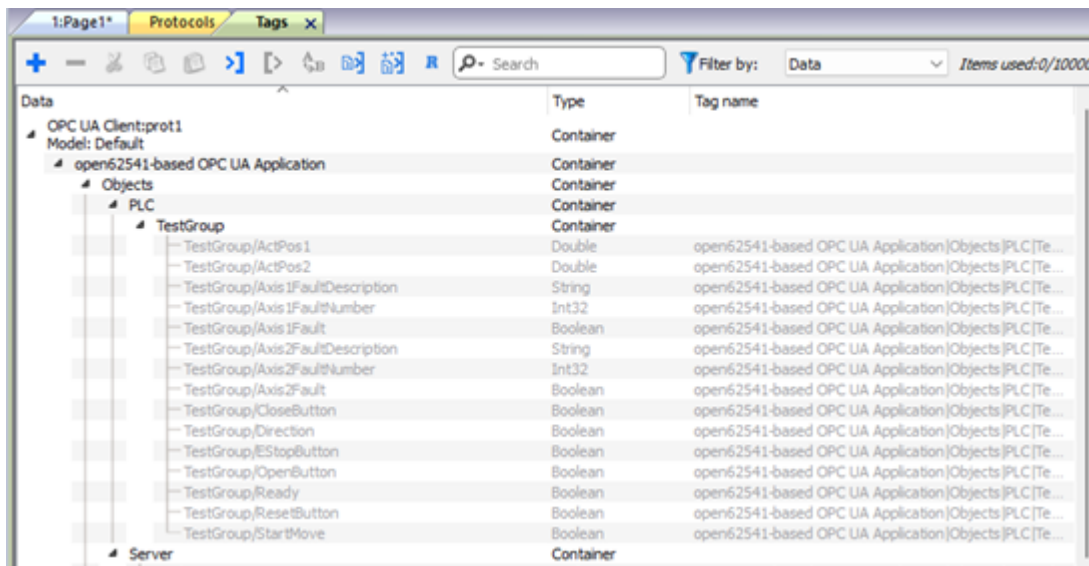


Figure 3-40: Tags tab populated with all imported tags

In the Page tab, the setup screens can now select object and add imported tag to DataLink parameter. (Figure 3-41)

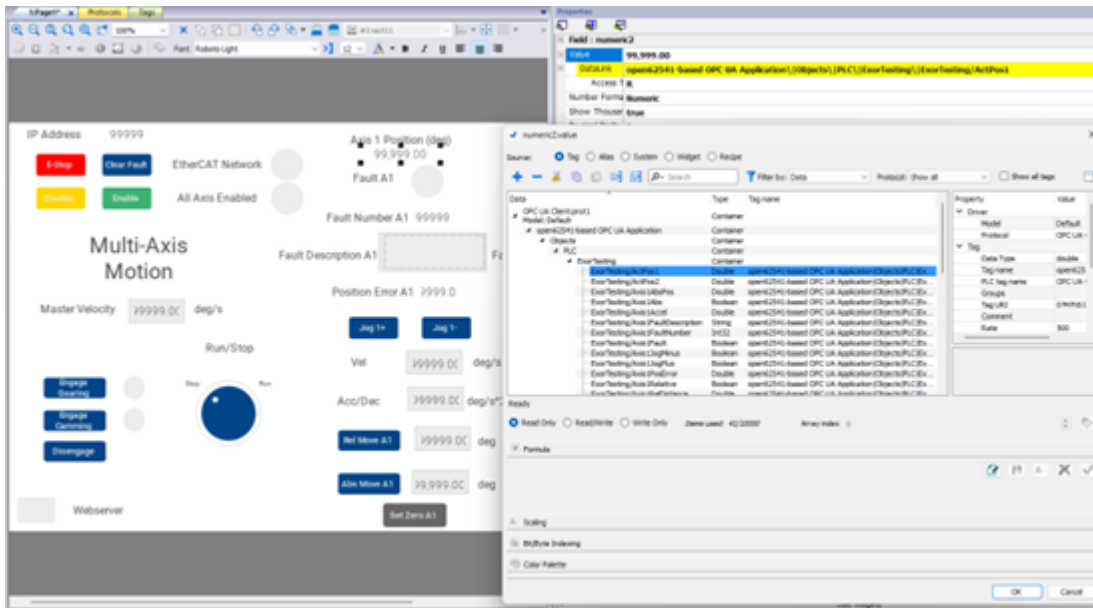


Figure 3-41: Example: 1:Page tab

Example: Figure 3-42 show the screen running an eSmart10 panel with objects mapped to tags through OPC UA.

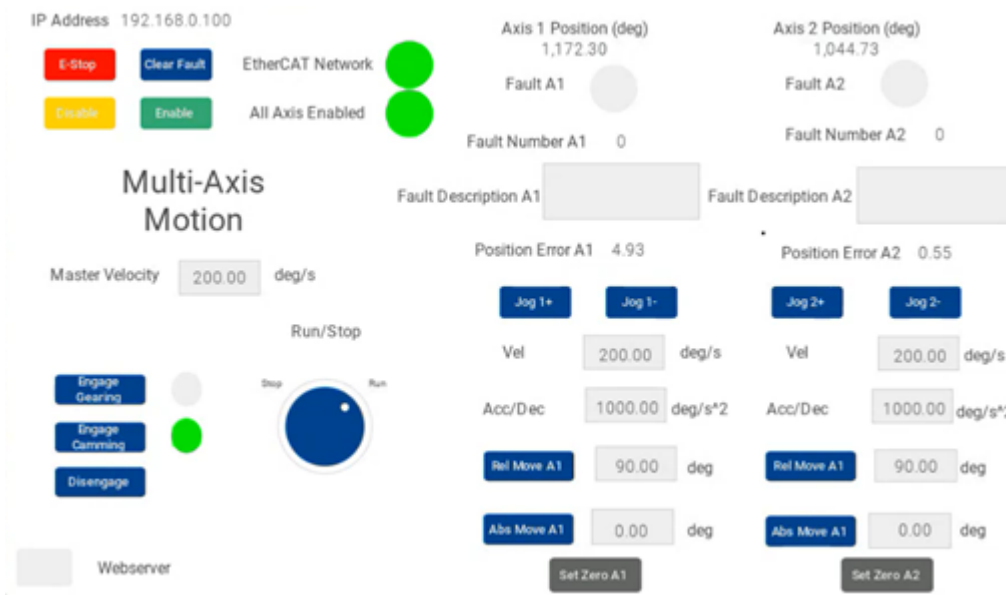


Figure 3-42: Example: iSMART10 panel

See Also

- "OPC-UA - Establish a Server Connection with Certificates - UaExpert" (→ p. 23)
- "OPC-UA - Establish a Server Connection without Certificates - UaExpert" (→ p. 39)
- "OPC UA - Troubleshooting" (→ p. 62)

4 OPC UA - Additional Features

According to the OPC UA Standard, Part 7, the OPC UA Server implementation supports these features:

Service Set	Service	Supported
Attribute	• Read • History Read • Write • History Update	• YES • NO • YES • NO
Discovery	• Find Servers • Find Servers On Network • GetEndpoints • Register Server • Register Server 2	• YES • NO • YES • NO • NO
Method	Call	NO
Monitored Item	• Create • Modify • Set Monitoring Mode • Set Triggering • Delete Monitored Items	• YES • YES • YES • NO • YES
Node Management	• Add nodes • Add references • Delete nodes • Delete references	• NO • NO • NO • NO
Query	• Query First • Query Next	• NO • NO
Session	• Create Session • Activate Session • Close Session • Cancel	• YES • YES • YES • NO
Subscription	• Create • Modify • Set Publishing Mode • Publish • Republish • Transfer Subscriptions • Delete Subscriptions	• YES • YES • YES • YES • YES • NO • YES
View	• Browse • Browse next • TranslateBrowsePathsToNodeIds • Register Nodes • Unregister Nodes	• YES • YES • YES • YES • YES

5 OPC UA - Troubleshooting

If the connection to the server cannot be established, verify if the:

- Correct server IP and port are configured within the client configuration.
- Runtime Service can open the configured OPC UA listening port successfully.
- Machine running the Runtime Service can be reached within the network (e.g., ping command).
- Passwords for the server and client configuration match.
- Correct certificates are used.
- Correct security policy is configured for server and client.

6 Dialog boxes, Windows, and KAS UI Elements

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6.1 OPC UA - Add TAG(s)* dialog box

Usage

The Add TAG(s)* dialog box is used to:

- Add and configure global variables and variables from all programs to specific variable groups of the driver.
- Create new groups for organizing variables.
- Remove selected variables.
- Shift groups or selected variables within the current group up or down.

The sections are:

- "Add TAG(s)* dialog box buttons" (→ p. 65)
- "Variables Dictionary table" (→ p. 67)
- "Group/Variables table" (→ p. 68)

Access

1. In the **OPC UA Server** tree, right-click a Master node and select the **Add TAG(s)** option. (Figure 6-1)

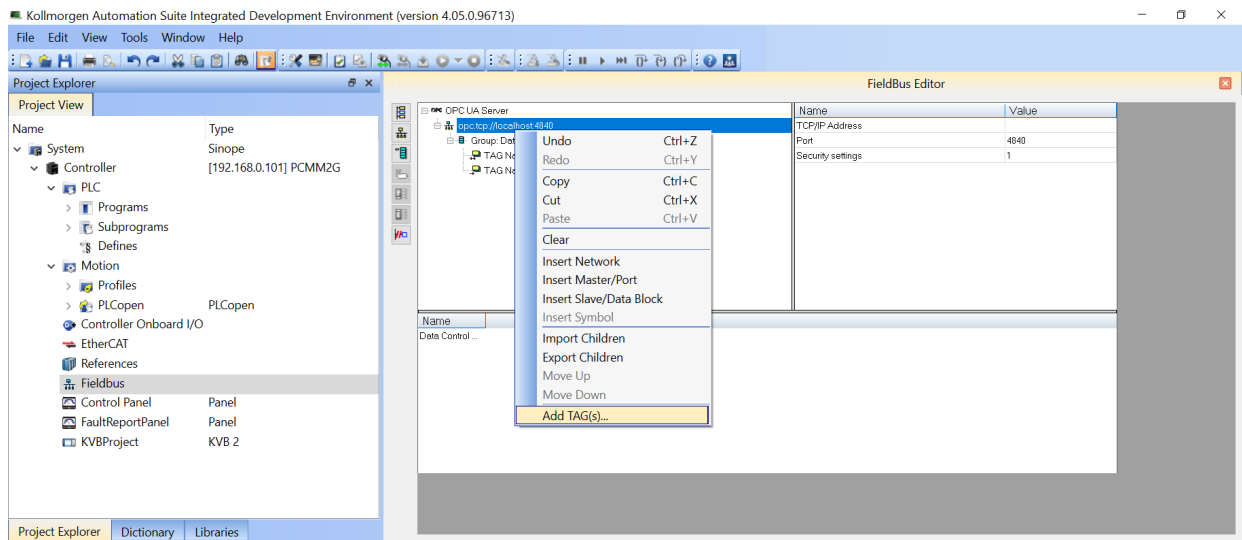


Figure 6-1: Add TAG(s) option

The Add TAG(s)* dialog box opens. (Figure 6-2)

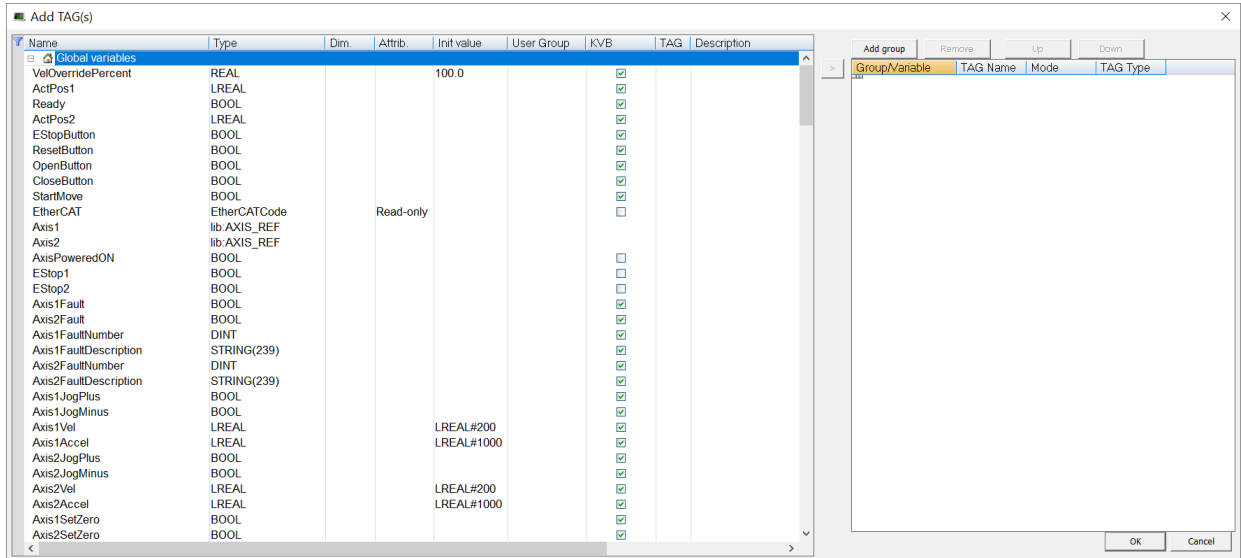


Figure 6-2: Example: Add TAG(s)* dialog box with content

6.1.1 Add TAG(s)* dialog box buttons

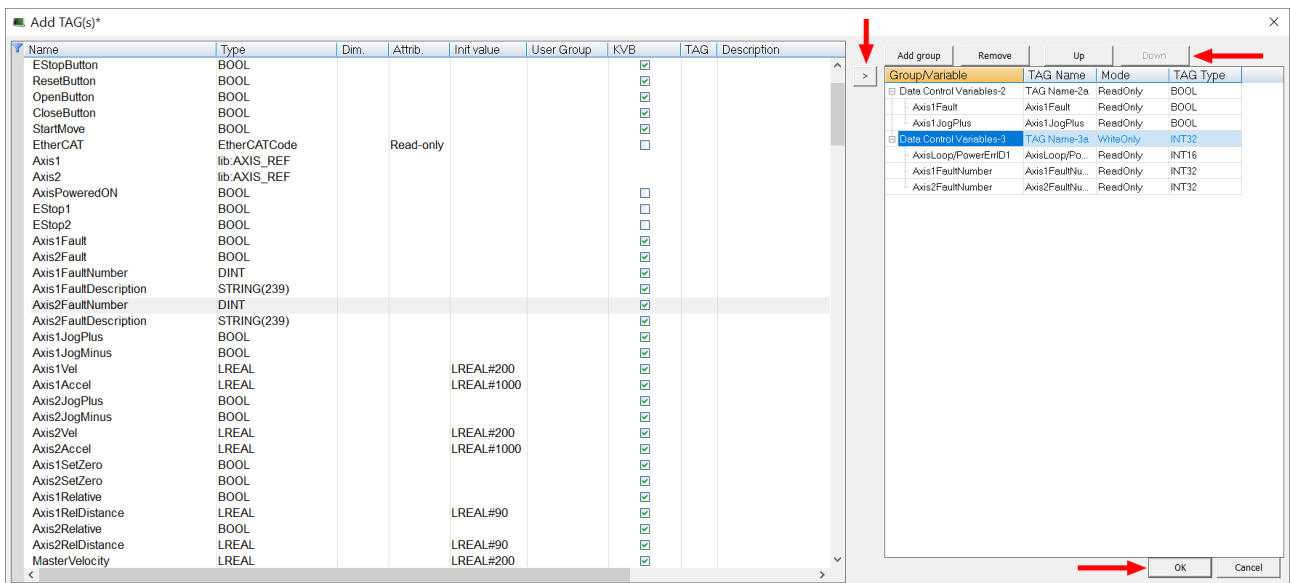


Figure 6-3: Add TAG(s)* dialog box buttons

Dialog box Description

Button	Description
> button	Click the > () button to move the selected variable to the Group/Variable table.
Add group button	TIP
	In the Variable Dictionary table, select a variable and drag it under the designated group.
Add group button	Click the Add group button to add a new group row in the Group/Variable table.

Button	Description
Remove button	Click the Remove button to immediately delete the selected variable from the Group/Variable table.
Up button	Click the Up button to move the selected item in the Group/Variable table up.
Down button	Click the Down button to move the selected item in the Group/Variable table down.
OK button	Click OK to save the changes or selections and close the dialog box.
Cancel button	Click Cancel to discard all changes or selections and close the dialog box.

Variables Dictionary table

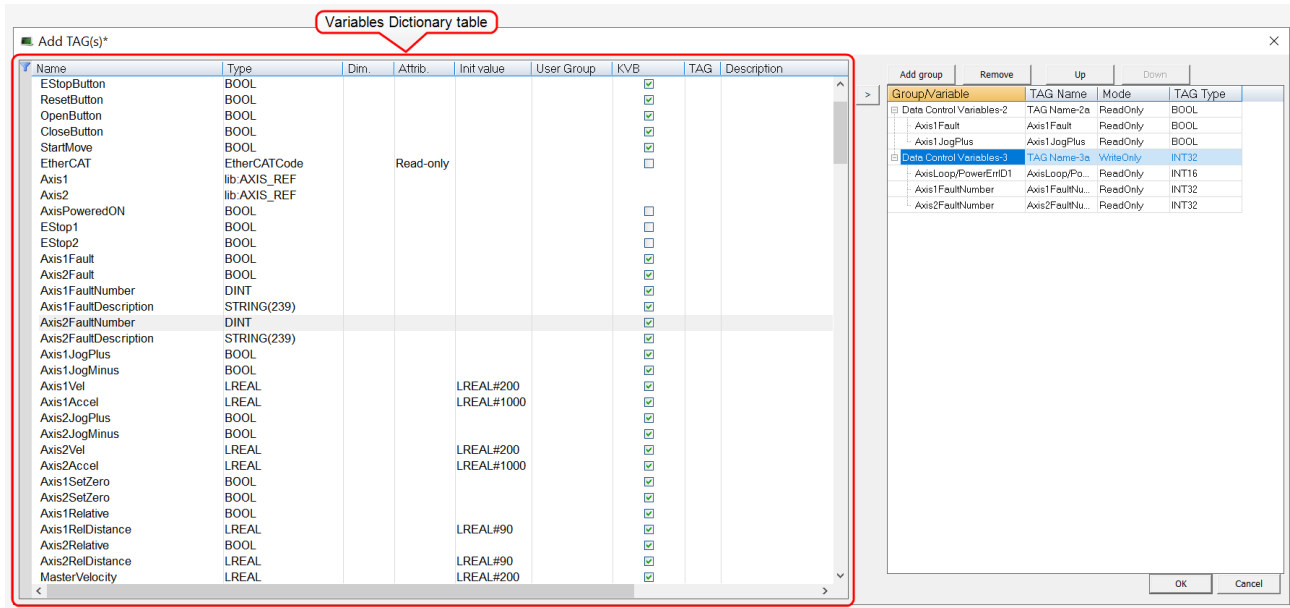


Figure 6-4: Add TAG(s)* dialog box - Available Dictionary table

Dialog box Description

Column	Description
Name column	This column is the name of the variable.
Type column	This column is the data type of the variable.
Dim. column	- This column shows the dimensions of the variable's array. - See Arrays.
Attrb. column	- This column is the attribute of the variable. - Example: Read-only
Init value column	This column is the initial value of the variable.
User Group column	- This column is the part of the description (comment). - Can be used as a TAG in the variable editor to filter or sort variables.
KVB column	N/A
TAG column	N/A
Description column	N/A

Group/Variables table

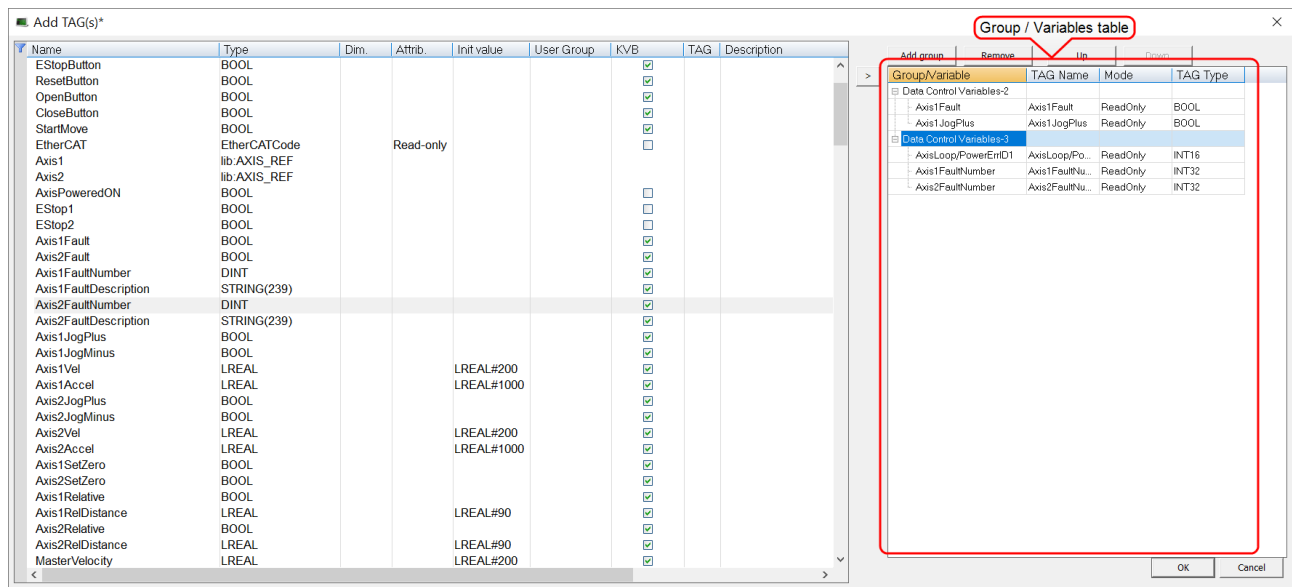


Figure 6-5: Add TAG(s)* dialog box - Group/Variable table

Dialog box Description

Column	Description
Group/Variable column	- This column is the user-defined name of the OPC UA group or variable. - In the Group/Variable column, double-click the column cell. The Group/Variable text box appears. - In the Group/Variable text box, enter a name for the new group.
TAG name column	- This column is the user-defined name of the TAG. - In the TAG Name column, double-click the column cell. The TAG Name text box appears. - In the TAG Name text box, enter the name used by OPC UA clients to identify this variable.
Mode column	- This column is the user-defined data access mode of the variable. - In the Mode column, double-click the column cell. The Mode list box appears. - In the Mode list box, double-click a selected option.
TAG Type column	- This column is the user-defined data type of the TAG. - In the TAG Type column, double-click the column cell. The TAG Type list box appears. - In the TAG Type list box, double-click a selected option.

6.2 OPC UA - Endpoint dialog box

Usage

The **Endpoint** dialog box is used to add an individual endpoint to an OPC UA Server.

See "OPC UA - Insert an Endpoint" (→ p. 8).

Access

1. In the Fieldbus Editor tree, select **OPC UA Server**.
The **Insert Master/Port** button in the vertical toolbar is activated. (Figure 6-6)

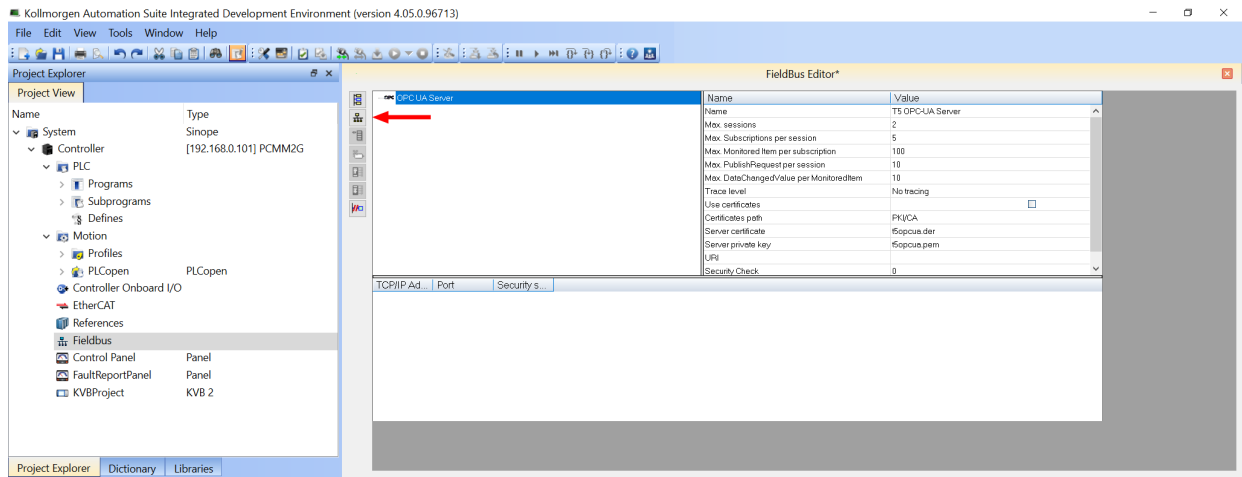


Figure 6-6: Insert Master/Port button

2. On the vertical toolbar, click the **Insert Master/Port** button ().
The Endpoint dialog box opens. (Figure 6-7)

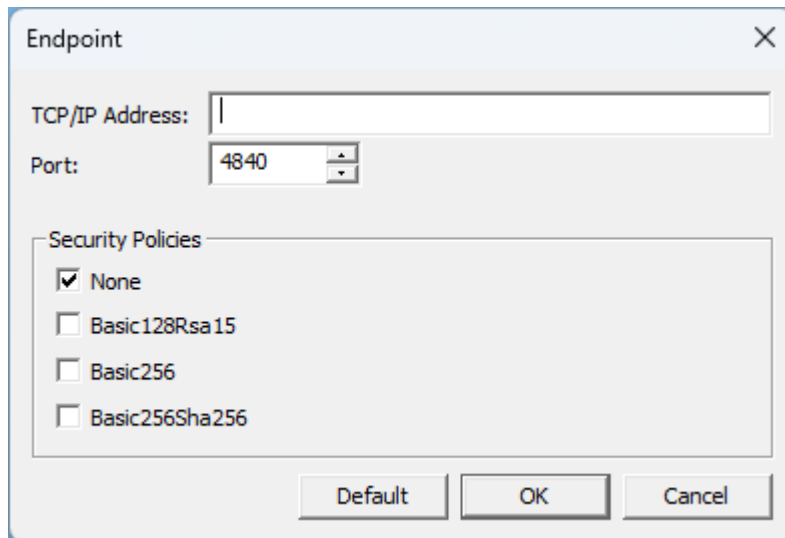


Figure 6-7: Endpoint dialog box

Dialog box Description

Section	Element	Description
	TCP/IP Address text box	- In the TCP/IP Address text box, enter the TCP/IP address of the KAS controller (e.g., PCMM2G). - The default is a blank text box.  TIP - Leave this text box blank to use the KAS controller assigned IP address.
	Port spin box	- In the Port spin box, enter the Listening Port opened by the OPC UA Server. - The range is 1025 to 65535. - The default is 4840.
Security Policies section	None check box	 IMPORTANT - If using certificates in the "OPC UA - Server dialog box" (→ p. 76), Security settings section, at least one of the Basic128Rsa15, Basic256, or Basic256Sha256 check boxes must be selected. - If the Anonymous check box is selected in the "OPC UA - Server dialog box" (→ p. 76), Authentication settings section, the None check box must be selected. - Click the None check box so that no security settings are used. - This check box is the default selection.
	Basic128Rsa15 check box	- Click the Basic128Rsa15 check box to use both the Basic128 and RSA15 security policies. - RSA15 is the key wrap algorithm. 128-bit Basic is the message encryption algorithm.
	Basic256 check box	Click the Basic256 or Basic256Sha256 check box to use the 256-bit Basic as the message encryption algorithm.
	Basic256Sha256 check box	Click the Basic256Sha256 check box to use both the Basic256 and SHA256 security policies. - SHA256 is the signature digest. 256-bit Basic is the message encryption algorithm.
	Default button	Click Default to reset all changes or selections back to the default settings.
	OK button	Click OK to save the changes or selections and close the dialog box.
	Cancel button	Click Cancel to discard all changes or selections and close the dialog box.

6.3 OPC UA - Group: dialog box

Usage

The **Group:** dialog box is used to create an individual group.

NOTE

- The Group: dialog box can only create a single group.
- See "OPC UA - Add Multiple Groups and Variables to the Driver Configuration" (→ p. 15).

Access

1. In the Fieldbus Editor tree, select an **OPC UA Server** endpoint.
The **Insert Slave/Data Block** button in the vertical toolbar is activated. (Figure 6-8)

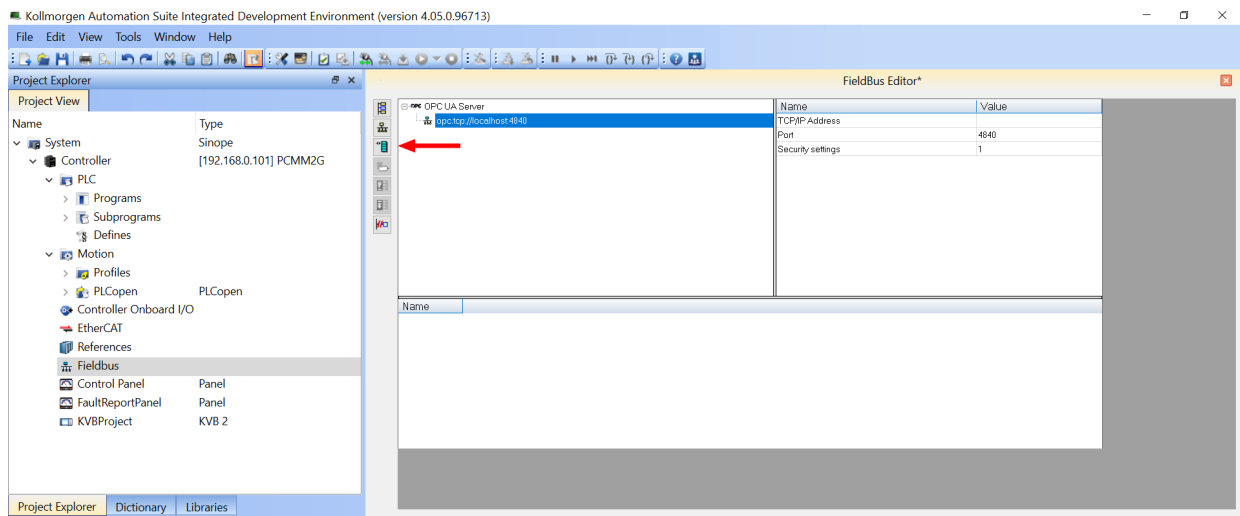


Figure 6-8: Insert Slave/Data Block button

2. On the vertical toolbar, click the **Insert Slave/Data Block** button ().
The Group: dialog box opens. (Figure 6-9)

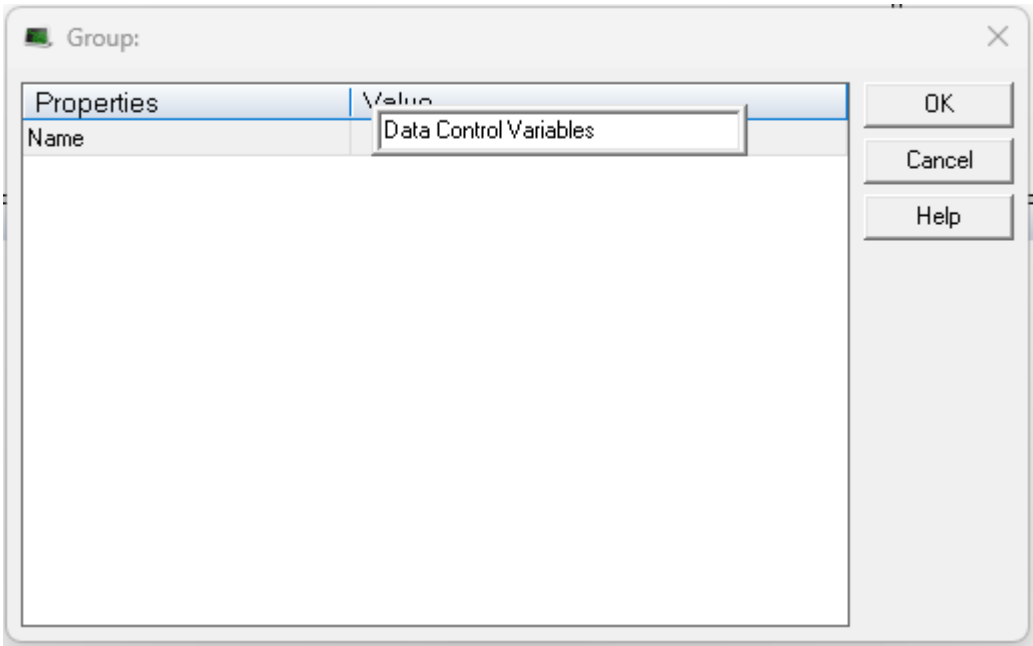


Figure 6-9: Group: dialog box with Name - Value text box

Dialog box Description

Section	Element	Description
Properties column		The Properties column lists the properties to define for this variable.
Value column		The Value column shows the entered Name of the data group.
	Name - Value text box	In the Name - Value text box, enter the name of the new data group.
	Default button	Click Default to reset all changes or selections back to the default settings.
	OK button	Click OK to save the changes or selections and close the dialog box.
	Cancel button	Click Cancel to discard all changes or selections and close the dialog box.

6.4 OPC UA - Insert Variable dialog box

Usage

The **Insert Variable (???)** dialog box is used to define a variable for a data group.

Access

1. In the Fieldbus Editor tree, select the **OPC UA Server** data group to assign a new variable to. The **Insert Variable** button in the vertical toolbar is activated. (Figure 6-10)

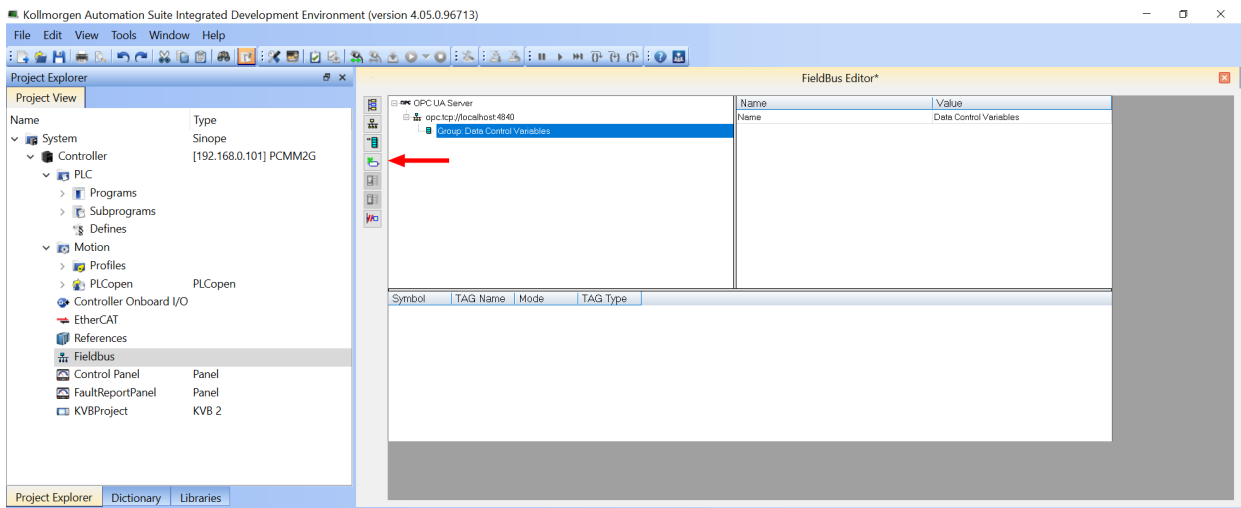


Figure 6-10: Insert Variable button

2. On the vertical toolbar, click the **Insert Variable** button (). The Insert Variable (???) dialog box opens. (Figure 6-11)

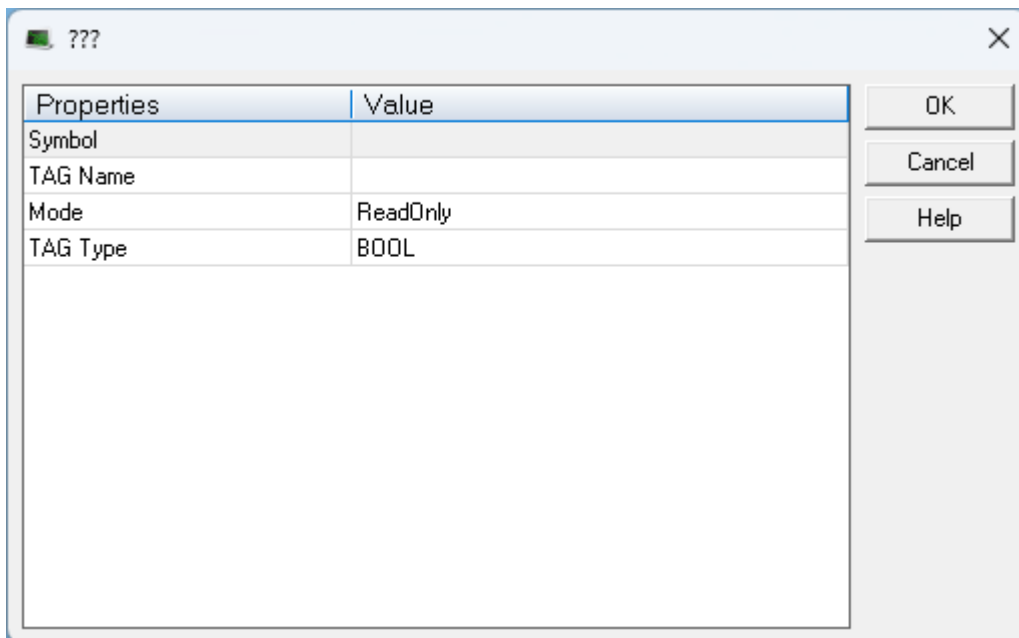


Figure 6-11: Insert Variable (???) dialog box

Dialog box Description

Section	Element	Description
Properties column		The Properties column lists the properties to define for this variable.
Value column		The Value column shows the entered Name of the variable.
Symbol row	Variables combo-box	- In the Symbol row, double-click the Value column cell to open the Variables combo-box. - In the Variables combo-box, select the applicable variable. NOTE Only a single variable can be selected in the combo-box.
TAG Name row	TAG Name - Value text box	In the TAG Name - Value text box, enter the name used by the OPC UA client to address the variable.
Mode row	Mode - Value list box	- In the Mode - Value column cell, double-click the cell to open the Mode - Value list box. - In the Mode - Value list box, select the Read/Write permissions for this variable. The options are: - Read-only - Write-only - Read / Write (default) - Nb. Use Sessions - Displays the number of clients connected (sessions) to the server. - Nb. Used Subscriptions - Displays the number of subscriptions to the server. - Nb. Used Monitored Items - Displays the number of monitored items to the server. - Nb. Used Publish Request - Displays the current managed requests in the server. - Nb. Used Notification Msg - Displays the current number of notification messages send by the server.
TAG Type row	TAG Type - Value list box	- In the TAG Type Value column cell, double-click the cell to open the Mode - Value list box. - In the TAG Type - Value list box, select the OPC UA data type for this variable. The options are: - BOOL - FLOAT32 - FLOAT64 - INT8 - INT16 - INT32 - INT64 - STRING256 - UINT8 - UINT16 - UINT32 - UINT64
	Default button	Click Default to reset all changes or selections back to the default settings.

Section	Element	Description
	OK button	Click OK to save the changes or selections and close the dialog box.
	Cancel button	Click Cancel to discard all changes or selections and close the dialog box.

6.5 OPC UA - Server dialog box

Usage

The Server dialog box is used to define the application settings for the OPC UA Server.

Access

1. In the [Project Explorer](#), double-click the Fieldbus node to open the Fieldbus Editor.
2. On the vertical toolbar, click the **Insert Network** (Configuration) button ().
The **Add Configuration** dialog box opens.
3. In the **Select a configuration** tree, select **OPC UA Server**. (Figure 6-12)

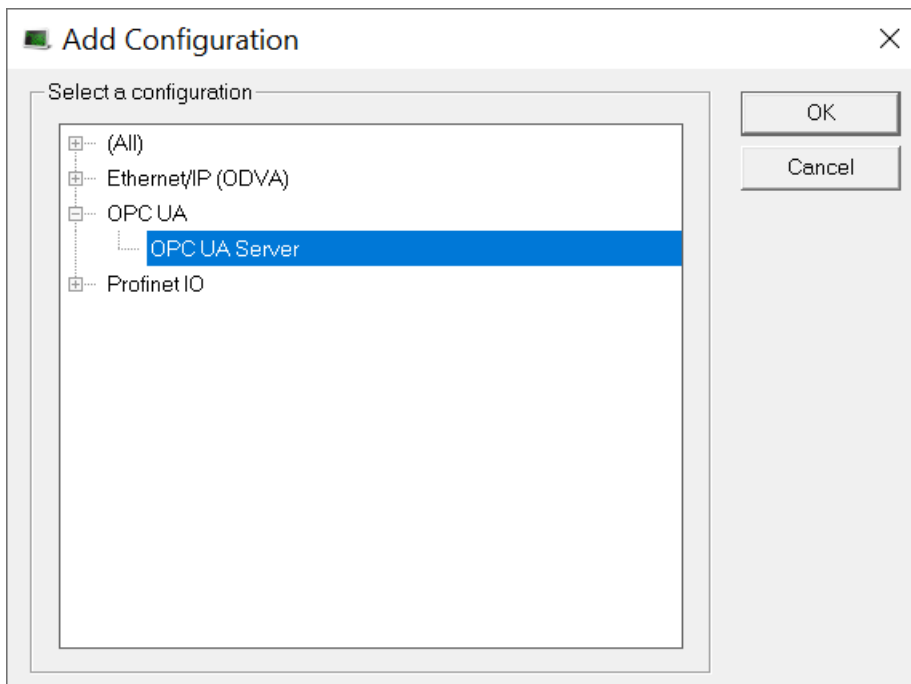
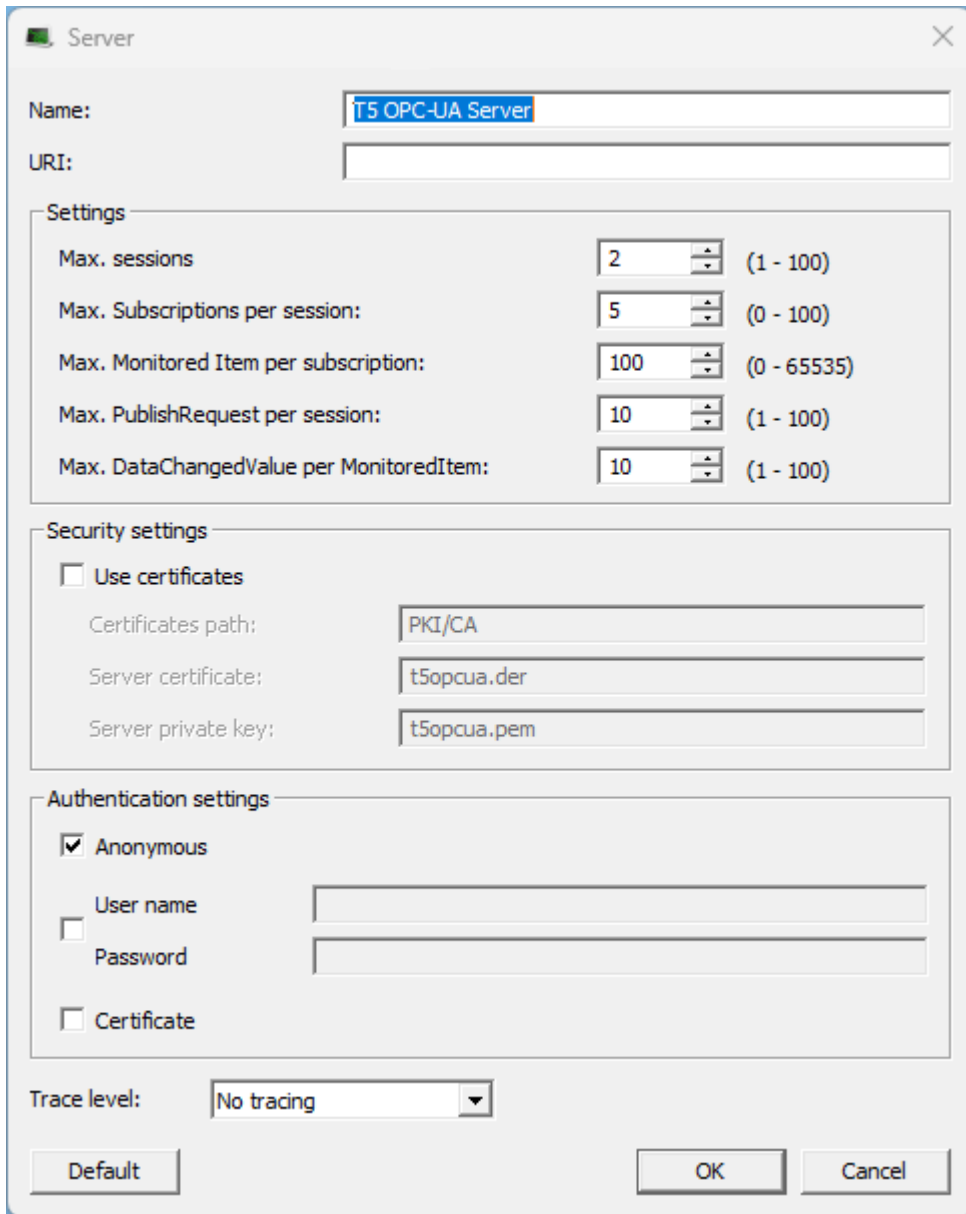


Figure 6-12: Add Configuration dialog box - OPC UA Server selected

- Click **OK** to save the changes or selections and close the dialog box.
The Server dialog box opens. (Figure 6-13)



The screenshot shows the 'Server' dialog box with the following configuration:

- Name:** T5 OPC-UA Server
- URI:** (empty)
- Settings:**
 - Max. sessions: 2 (range 1 - 100)
 - Max. Subscriptions per session: 5 (range 0 - 100)
 - Max. Monitored Item per subscription: 100 (range 0 - 65535)
 - Max. PublishRequest per session: 10 (range 1 - 100)
 - Max. DataChangedValue per MonitoredItem: 10 (range 1 - 100)
- Security settings:**
 - ☐ Use certificates
 - Certificates path: PKI/CA
 - Server certificate: t5opcua.der
 - Server private key: t5opcua.pem
- Authentication settings:**
 - ☒ Anonymous
 - ☐ User name (empty)
 - ☐ Password (empty)
 - ☐ Certificate
- Trace level:** No tracing
- Buttons:** Default, OK, Cancel

Figure 6-13: Server dialog box

Dialog box Description

Section	Element	Description
	Name text box	- In the Name text box, enter a name for this specific server configuration. - This Name is used to distinguish the server instance. - The server is identified via this name. - The default is T5 OPC UA Server.
	URI text box	- In the URI text box, enter the URL used for the certificate authentication. - It must be the same URL as the URL used in the Subject Alternative Name of the server certificate.
Settings section	Max. Sessions spin box	- In the Max. Sessions spin box, enter the maximum number of simultaneously connected OPC UA client sessions. - The range is 1 to 100. - The default is 2.
	Max. Subscriptions per session spin box	- In the Max. Subscriptions per session spin box, enter the maximum number of subscription groups a client can create per session. - The range is 1 to 100. - The default is 5.
	Max. Monitored Item per subscription spin box	- In the Max. Monitored Item per subscription spin box, enter the maximum number of items that can be monitored within a single subscription. - The range is 0 to 65535. - The default is 100.
	Max. Publish Request per session spin box	- In the Max. Publish Request per session spin box, enter the maximum number of active publish requests per session. - Requests are initiated immediately after a subscription is created. - The range is 1 to 100. - The default is 10.
	Max. Data Changed Value per Monitored Item spin box	- In the Max. Data Changed Value per Monitored Item spin box, enter the maximum number of value changes stored in memory for each Monitored Item. - The range is 1 to 100. - The default is 10.

Section	Element	Description
Security settings section	Use certificates check box	 TIP Kollmorgen recommends accepting the defaults in the Security settings section to use self-signed certificates. - The settings selected in this section enables secure communication using digital certificates. - In the Security settings section, click the Use certificates check box to use digital certificates for data encryption between the server and client. When selected, the text boxes of this section are activated. - When selected, the text boxes of this section are activated. - By default, this check box is not selected.
	Certificates path text box	- In the Certificates path text box, enter the relative directory path where the certificates are stored. - The default is PKI/CA.
	Server certificate text box	- In the Server certificate text box, enter the filename of the server certificate used for encryption. - The default is t5opcua.der.  IMPORTANT The file must be stored in a subfolder called certs in the designated certificates folder.
	Server private key text box	- In the Server private key text box, enter the filename of the server private key used for encryption. - The default is t5opcua.pem.  IMPORTANT The file must be stored in a subfolder called private in the designated certificates folder.
Authentication settings section	Anonymous check box	- The check boxes in the Authentication settings section can be used singly or in any combination. - Click the Anonymous check box to use non-encrypted communications.
	User name/Password check box	Click the User name/Password check box to activate the User name and Password text boxes.
	User name text box	In the User name text box, enter a user name restricting the access to the server.
	Password text box	In the Password text box, enter a password restricting the access to the server.
	Certificate check box	Click the Certificate check box so the server allows the client to authenticate with a certificate.

Section	Element	Description
	Trace Level list box	- Click the Trace Level list box arrow and select the log level for OPC UA Server Runtime Service messages written to the controller log output. See Log Messages tabs. The options are: No tracing - Select the No tracing option to log only critical and warning messages. - This is the default. Information - Select the Information option to log information messages. - This selection includes critical and warning messages. Debug - Select the Debug option to log debug messages. - This selection includes critical, warning, and information messages.
	Default button	Click Default to reset all changes or selections back to the default settings.
	OK button	Click OK to save the changes or selections and close the dialog box.
	Cancel button	Click Cancel to discard all changes or selections and close the dialog box.

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PCMM2G

The PCMM2G's Operating System (OS) and boot loader ([U-Boot](#)) are based on free and open-source software.

- The individual copyright notices, license texts, and disclaimers of warranty for the software components are located in the controller, under the directory: /usr/share/common-licenses/.
 - For more information about accessing the PCMM2G's files, see [SSH Login to a Controller](#).
- The OS, bootloader, and their software component's source codes including modifications, copyright notices, license texts, disclaimers of warranty, and the compilation scripts to build the OS image are available at the Kollmorgen webpage [PCMM2G Operating System \(OS\) License Sources](#).
- The OS image and its corresponding sources file is identified by an "OS-Sources" designator, followed by its version number: OS-Sources-x.xx.x.xxxxx.
- The compilation scripts and sources file are available at the Kollmorgen webpage [PCMM2G Operating System \(OS\) Build Sources](#).
- See [PCMM2G - File Naming Conventions](#) in the KAS online help.

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