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Allen-Bradley ControlLogix Ethernet Driver for KEPServerEX®

Easy Guide

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Allen-Bradley ControlLogix is a popular Programmable Logic Controller (PLC) model that offers a flexible address space and plenty of processing power.

In the table below, compare and contrast the flexibility of the Allen-Bradley ControlLogix address space to that of a fixed device with a fixed address space like PLCs using the Modbus protocol. With ControlLogix, you have the freedom to refer to an item or I/O point defined in the controller with any intelligent name (such as "Temperature" or "MyFunOutput") instead of with its raw register address (like "40001"). The former is called symbolic addressing.

Configurable Address Space

Modbus: Fixed Address Space		AB ControlLogix: User-Defined Address Space	
Address Range	**Data Type**	**Address Range**	**Data Type**
00001 – 09999	BOOL	MyFunOutput	FLOAT
10000 – 19999	BOOL	BoolArray1[0..100]	BOOL
30000 – 39999	WORD	Boiler1Status	STRING

When programming these controllers, you can take addressing a step further and create what is called a User Defined Type (UDT). This is a special data structure in the controller that is made up of multiple symbolic addresses of different data types.

The Allen-Bradley ControlLogix Ethernet driver for KEPServerEX has many options for communicating with these symbolic addresses and UDTs in the PLCs. These options may seem overwhelming, but unless you are a "power user" that needs to read thousands of tags from hundreds of devices, don't worry about them! If you are just beginning, try the simple configuration for this driver described in the following steps.

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Follow the Steps

Step 1:
Create an Allen-Bradley ControlLogix Ethernet channel and device

In the server Configuration, create a new channel and select the Allen-Bradley ControlLogix Ethernet driver. Then click **Next**, and use the default settings for all other properties in the Channel Wizard.

Now, create a new device under the new channel. In the Device Wizard's **Model** dialog, select the family of device model needed (for example, ControlLogix 5500) and then click **Next.**
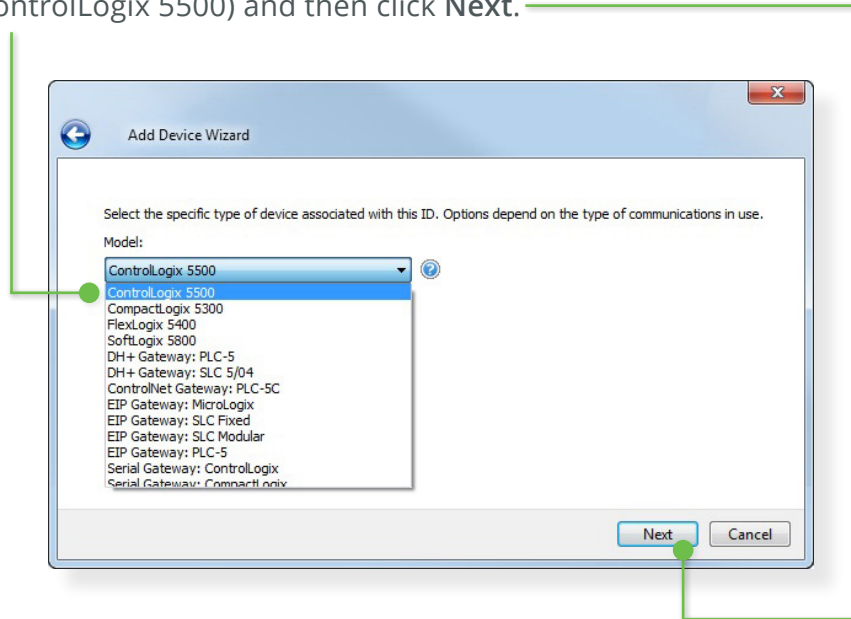
In **ID**, enter the device's IP address followed by ",1,0". For example, "192.168.100.5,1,0".
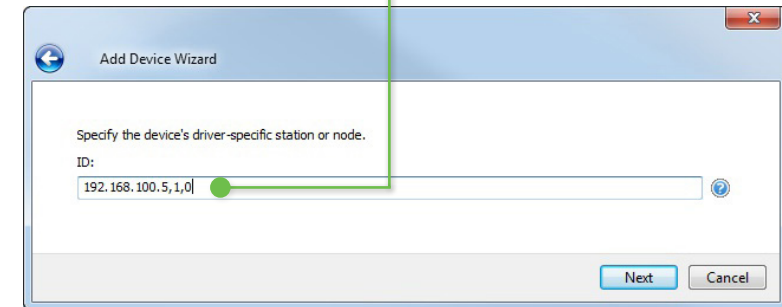
Note: Allen-Bradley ControlLogix controllers can be used as routers or gateways to other controllers connected via EtherNet/IP (EIP) or other communication lines like ControlNet, DH+, or ENI. That is why the Device Model list includes options like "EIP Gateway: PLC-5". These devices can be reached by selecting the appropriate model and then entering the appropriate connection string in **Device ID**.

This example uses a **Logix 5563 (L63)** controller.

Continue through the Device Wizard, keeping the default settings for all remaining parameters. The default settings simplify configuration and often work the first time for device connections.
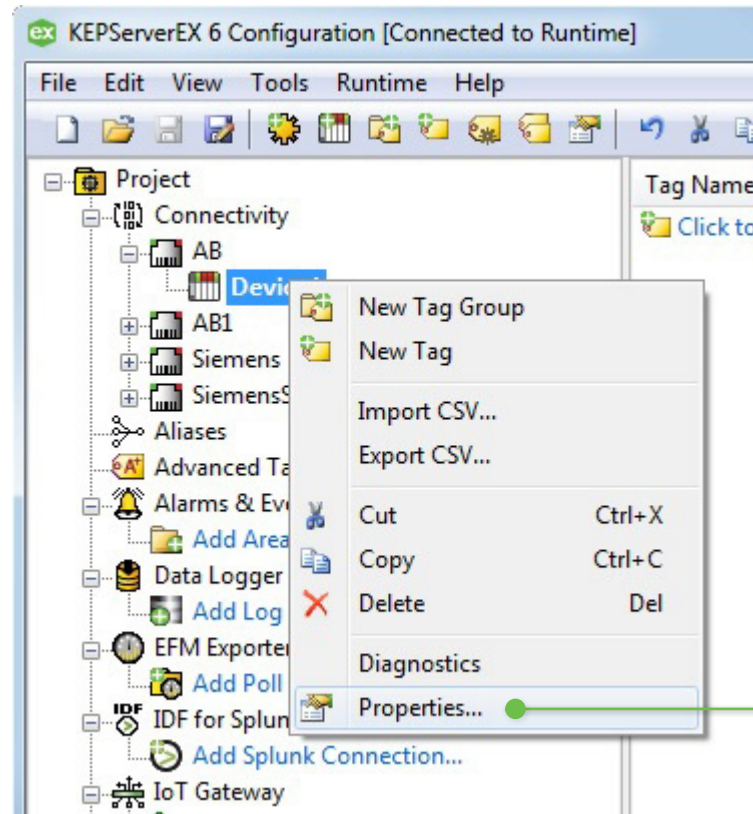

Note: To return to settings after completing a wizard, right-click on the channel or device and select **Properties**.

Step 2:
Perform automatic tag generation from the device

Automatic Tag Generation (ATG) uses the server to connect to the physical PLC and request all the items configured in the program on that device. These items then appear with the same symbolic name in KEPServerEX that they were configured with in the PLC programming software. These data points are called "tags" in the server.

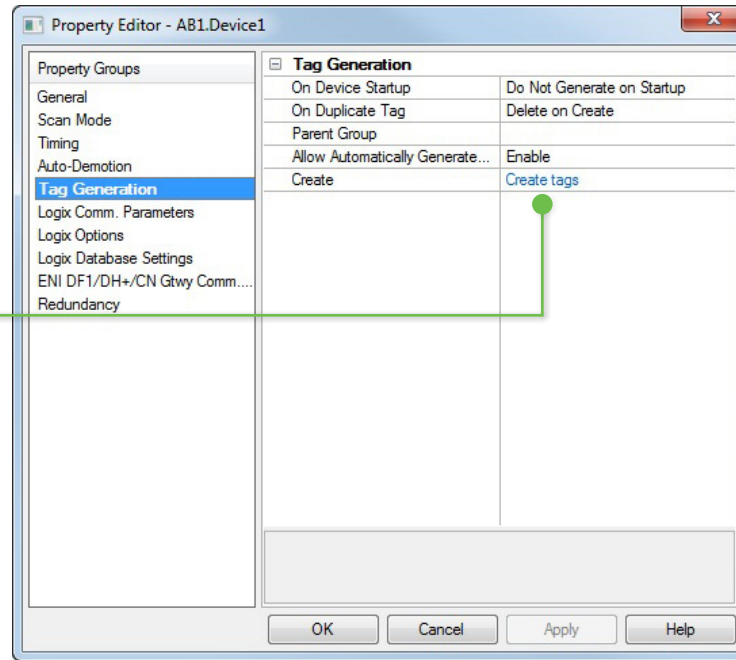**Pull item information such as I/O points into server from the device.**
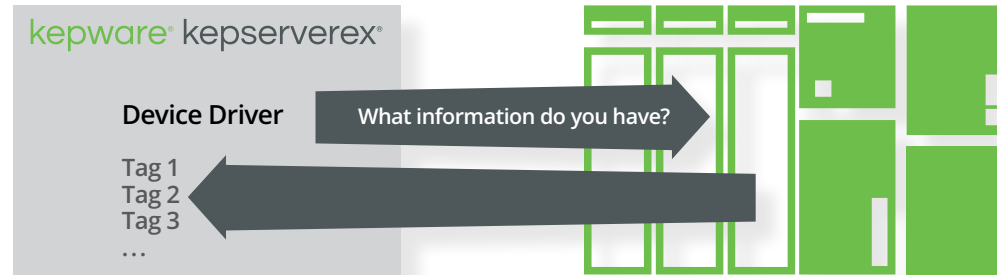
Once your device is physically connected to the server via an Ethernet connection, you can perform ATG. To do so, simply right-click on the device in the server and select **Properties**. In the **Logix Database Settings** tab, you will see that the driver is set to create the tags from the PLC by default.

Note: Tags can also be generated from a file that you can obtain from RSLogix or Studio5000. To be compatible with KEPServerEX, this file must be saved using the ".l5k" file type. If you do not have a device physically connected to the server PC, you can use this .l5k file as an alternate method for performing ATG.

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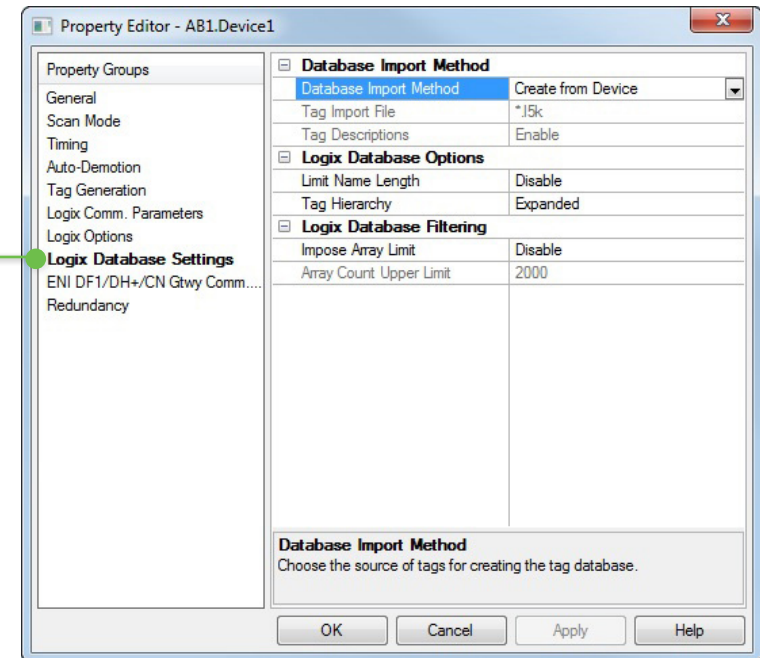
Next, open the **Tag Generation** tab and click the highlighted blue text "Create tags" to begin the process of generating tag items from the PLC. The events listed in your Event Log will show if the server is successfully communicating with the PLC and whether automatic tag generation was successful.

Property Editor - AB1.Device1

Property Groups
- General
- Scan Mode
- Timing
- Auto-Demotion
- **Tag Generation**
- Logix Comm. Parameters
- Logix Options
- Logix Database Settings
- ENI DF1/DH+/CN Gtwy Comm....
- Redundancy

Tag Generation

On Device Startup	Do Not Generate on Startup
On Duplicate Tag	Delete on Create
Parent Group	
Allow Automatically Generate...	Enable
Create	Create tags

OK   Cancel   Apply   Help

Source	Event
KEPServerEX\Runtime	Completed automatic tag generation for device 'AB1.Device1'.
Allen-Bradley Contr...	AB1.Device1	Database status. Building tag project(s), please wait.	Tag project count = 78652.
Allen-Bradley Contr...	AB1.Device1	Database status. Generating OPC tags.
Allen-Bradley Contr...	AB1.Device1	Database status.	Program count = 1, Data type count = 113, Imported tag count = 3670.
Allen-Bradley Contr...	AB1.Device1	Details.	IP = '<10.10.110.13>,1,0:44818', Vendor ID = 1, Product type = 14, Product code = 56, Revision= 20.12, Product name = '1756-L63/A LOGIX5563', Product S/N = 0X133763.
Allen-Bradley Contr...	AB1.Device1	Database status. Retrieving controller project.
KEPServerEX\Runtime	Attempting to automatically generate tags for device 'AB1.Device1'.

If the database creation fails, first check the IP Address specified in Device Properties. Then, make sure that you can ping the device's IP from your Windows command prompt. For additional assistance, contact Kepware Technical Support.
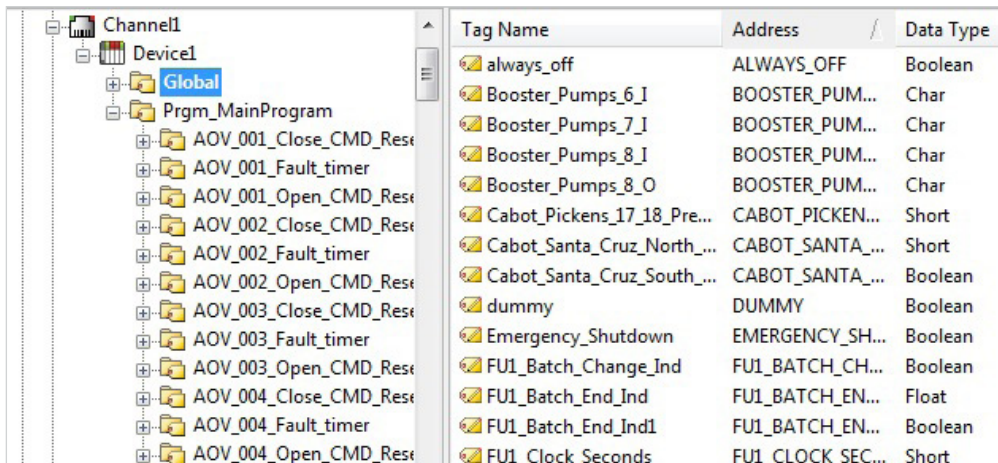
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Step 3:
Connect with the OPC Quick Client to see incoming data

Once ATG has completed successfully, tags and tag group folders will be visible in KEPServerEX.

Click the OPC Quick Client icon located in the server toolbar to launch a lite polling client that allows you to connect to the server and read/write all the server items. If there is a large amount of tags, the Quick Client may take a few seconds to connect to the server and perform an initial update.

Next, select the folder labeled with the <ChannelName.DeviceName> created earlier in this exercise. If the data Quality is "Good," then the device is successfully connected.

At this point, you have successfully configured the Allen-Bradley ControlLogix Ethernet driver and generated tags for all the items configured on the device.

Learn More

For optimization strategies and additional tips, refer to our **Allen-Bradley ControlLogix Ethernet Driver product manual**.

J8671–Allen-Bradley-ControlLogix-Ethernet-Driver-for-KEPServerEX–EG–EN–0317