



Connectivity Guide

Connecting to Allen-Bradley PLC-5 using ControlLogix Gateway

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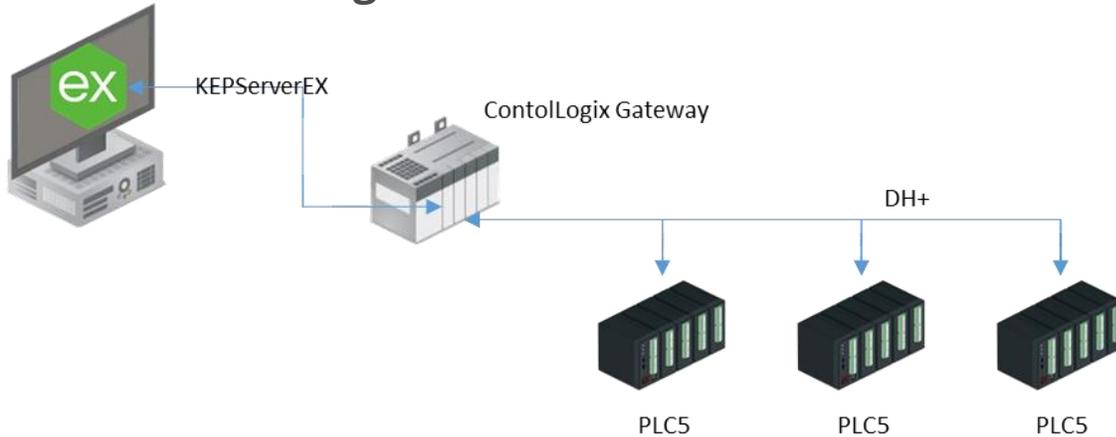
1. Overview

The purpose of this document is to provide a real-life example of how to connect Allen-Bradley PLC-5 devices using ControlLogix Gateway. In this instance, their infrastructure had been in place for 5 years. They had an RSLinx connected to the Gateway, but they wanted to replace it with KEPServerEX®.

2. Hardware infrastructure

1. **PLC-5 Controllers:** This older controller by Allen-Bradley was discontinued in 2017. They communicate via a serial connector with Data Highway Plus (DH+) protocol. Each PLC-5 device has physical switches to provide a DH+ identification number (unique in the network).
 - For more information, refer to [Allen-Bradley / Rockwell Automation](#).
2. **Data Highway Plus (DH+):** This old serial protocol is based on RS-485, and is developed and owned by Allen-Bradley. With this serial connection, you could exchange messages between devices on the line, connect PCs to get real time data (for HMI and SCADAS) and to program the PLC.
3. **ControlLogix Gateway:** This is the converter between Ethernet Allen-Bradley CIP protocol and the serial DH+ protocol. It does not need a CPU, but it will need the appropriate modules for the protocols in the conversion. In this instance, the ControlLogix Gateway consists of the following elements:
 - a. **1756-DHRIO – ControlLogix DHRIO Communication Module:** This can be configured to communicate using RIO or DH+ protocols. It has 2 serial interfaces to create up to 2 DH+ networks (A and B). In this instance, the customer only used Interface A.
 - b. **1756-ENET – ControlLogix Ethernet Communication Module:** This module that will connect to KEPServerEX. The IP can be defined via rotary switches or with a software configuration tool. This instance uses ControlLogix Ethernet driver to connect KEPServerEX to this module.
 - c. **1756-A4 – ControlLogix chassis:** This is where the modules are plugged (also known as the backplane).
 - d. **1756-PA72 – Power supply:** This is plugged into the chassis/backplane.

3. Architecture Diagram



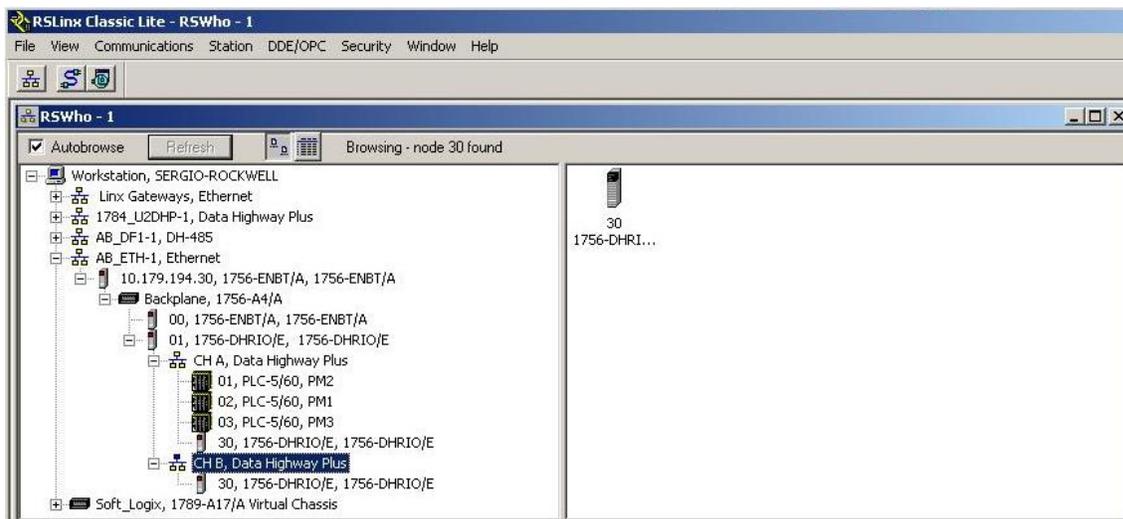
4. Connecting PLC-5 Devices with ControlLogix Gateway

4.1 Identify each device in the network, and get their IDs

In this instance, the End User used RSLinx Classic. To identify each device, we ran a RSWho command from RSLinx (Communications → RSWho). The program found all the Allen-Bradley elements accessible from the PC (pictured below).

Note: You can use a free version of RSLinx (RSLinx Lite) to browse for devices. With RSLinx, we determined:

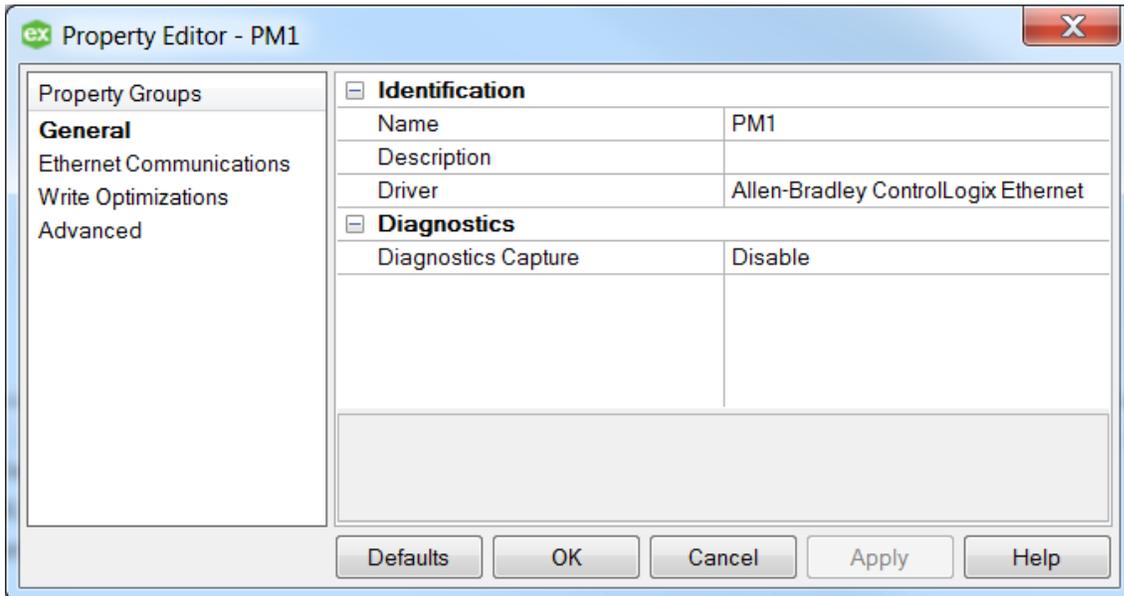
- the Ethernet module IP address: 10.179.194.30
- in the backplane, slot 01 is the DH+ module and slot 00 is the Ethernet module
- there are three PLC-5/60 devices (1, 2, 3) in the DH+ network in Interface A.



Note: The DH+ interface must have a DH+ address. The PLC programmer gave the address 30 octal (24 decimal).

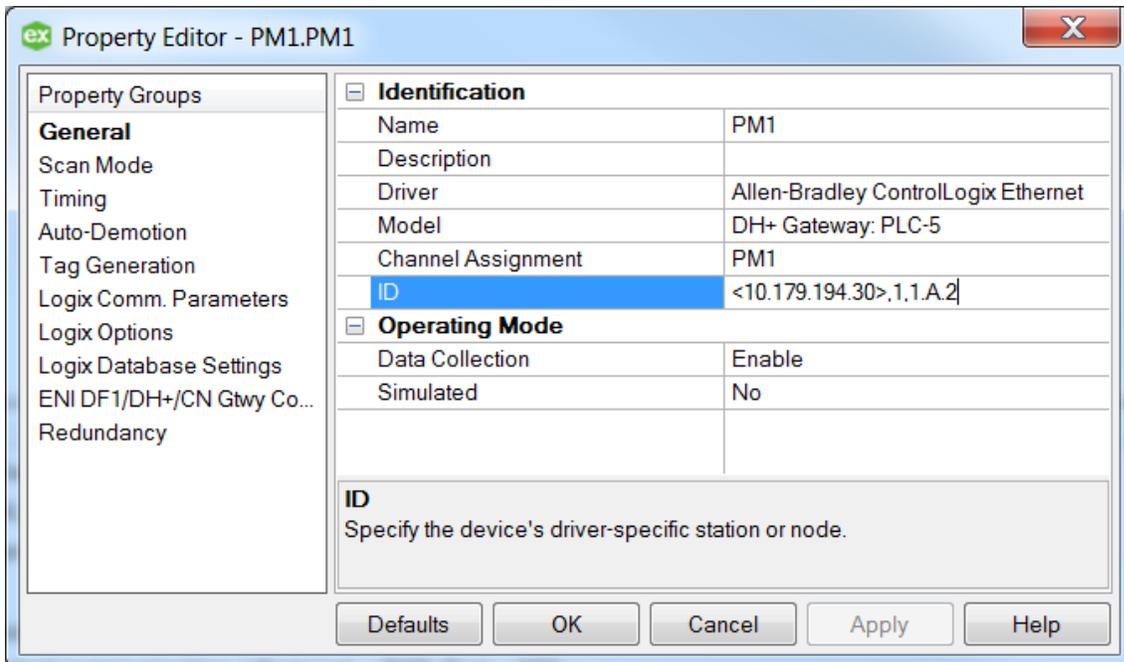
4.2 Configure KEPServerEX

1. Create a Channel and select Allen-Bradley ControlLogix Ethernet for the driver.



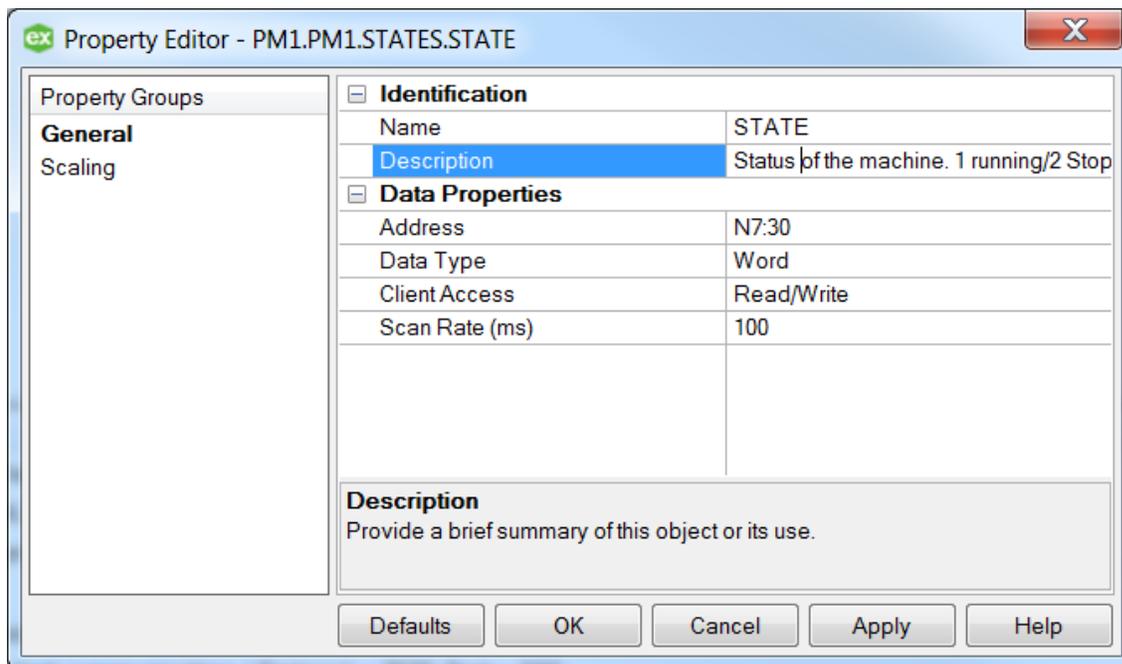
2. Create a Device and select DH+ Gateway: PLC-5 for the model.
3. For the ID, enter the following: <10.179.194.30>,1,1.A.2

This configuration allows access to Device 2 in DH+ interface A, which is in slot 1 of the backplane (always identified as 1) in the gateway with IP address 10.179.194.30



5. Tag Generation

DH+ devices do not permit automatic tag generation, so tags must be created manually per PLC-5 syntax (as indicated below).



Property Editor - PM1.PM1.STATES.STATE

Property Groups

- General
- Scaling

Identification	
Name	STATE
Description	Status of the machine. 1 running/2 Stop
Data Properties	
Address	N7:30
Data Type	Word
Client Access	Read/Write
Scan Rate (ms)	100

Description
Provide a brief summary of this object or its use.

Defaults OK Cancel Apply Help