DH485 Router/B

Ignition SCADA to SLC setup

Technical Application Note

A-DH485R

Document No. D120-027
Document Revision 1.0
10/2025

CONTENTS

1. Preface 2
   1.1. Purpose of this Document 2
   1.2. Additional Information 2
   1.3. Support 2
2. Application Description 3
3. Setup 4
   3.1. Module Layout 4
   3.2. Serial Cable wiring 5
   3.3. DH485 Router Setup 7
   3.4. RSLogix 500 Setup 9
   3.5. Ignition Setup 10
   3.5.1. Ignition Gateway 10
   3.5.2. Using the connection in the Ignition Designer: 13

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1. PREFACE

1.1. PURPOSE OF THIS DOCUMENT

This document will assist the user to setup the DH485 Router/B (referred to as DH485 Router in this document) to allow an Ignition® SCADA (Inductive Automation) application to communicate to an SLC device's DH485 port via PCCC Ethernet.

1.2. ADDITIONAL INFORMATION

The following resources contain additional information that can assist the user with the module installation and operation.

Resource	Link
Slate Installation	http://www.aparian.com/software/slate
DH485 Router/B User Manual DH485 Router/B Datasheet Application Notes Example Code & UDTs	https://www.aparian.com/products/dh485routerb
Ethernet wiring standard	www.cisco.com/c/en/us/td/docs/video/cds/cde/cde205_220_420/installation/guide/cde205_220_420_hig/Connectors.html
CIP Routing	The CIP Networks Library, Volume 1, Appendix C:Data Management

1.3. SUPPORT

Technical support will be provided via the Web (in the form of user manuals, FAQ, datasheets etc.) to assist with installation, operation, and diagnostics.

For additional support the user can use either of the following:

Contact Us web link	https://www.prosoft-technology.com/Services-Support/Customer-Support
Support email	support@prosoft-technology.com

2. APPLICATION DESCRIPTION

The Aparian DH485 Router can be used to enable multiple modern Ethernet devices to communicate with legacy SLC5/03 via their DH485 serial ports. In the application example below, an Ignition SCADA application can read and write data to an SLC500.

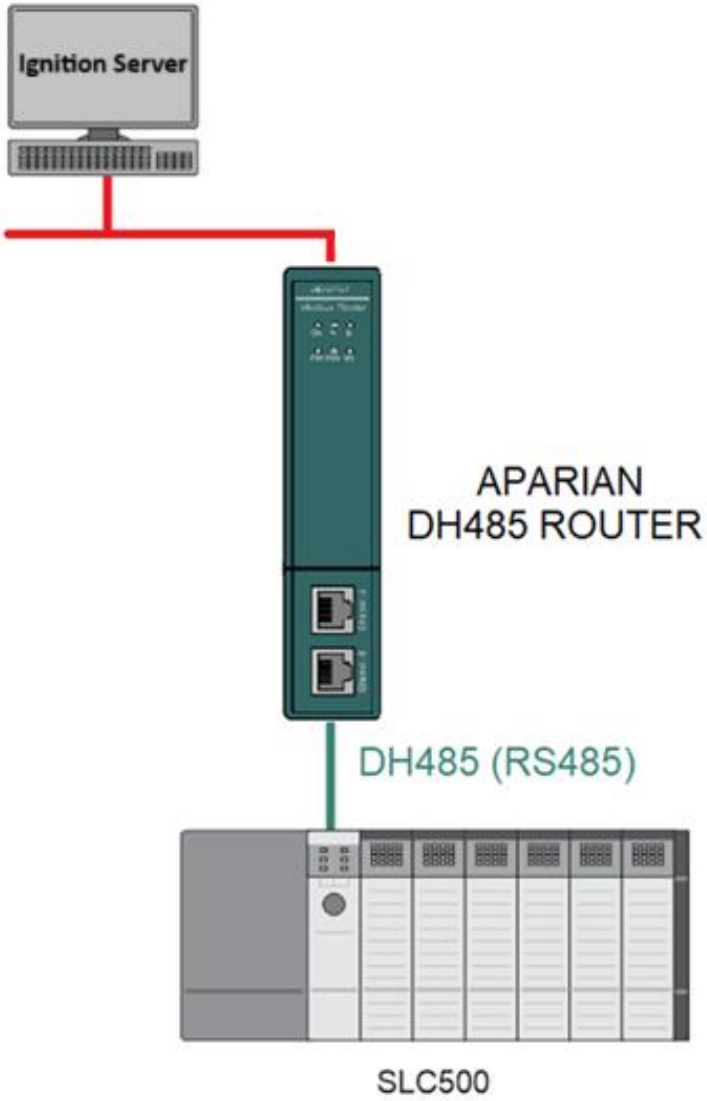

FIGURE 2.1. - EXAMPLE OF A TYPICAL NETWORK SETUP

3. SETUP

The following sections will describe the installation and configuration of all the required devices to assist the user with the initial setup.

3.1. MODULE LAYOUT

The module has two ports at the bottom and two ethernet ports on the front of the enclosure as shown in the figure below. The ports are used for Ethernet, RS232 or RS485 serial, and power. The power port uses a three-way connector which is used for the DC power supply positive and negative (or ground) voltage as well as the earth connection.

The Ethernet cable must be wired according to industry standards which can be found in the additional information section of this document.

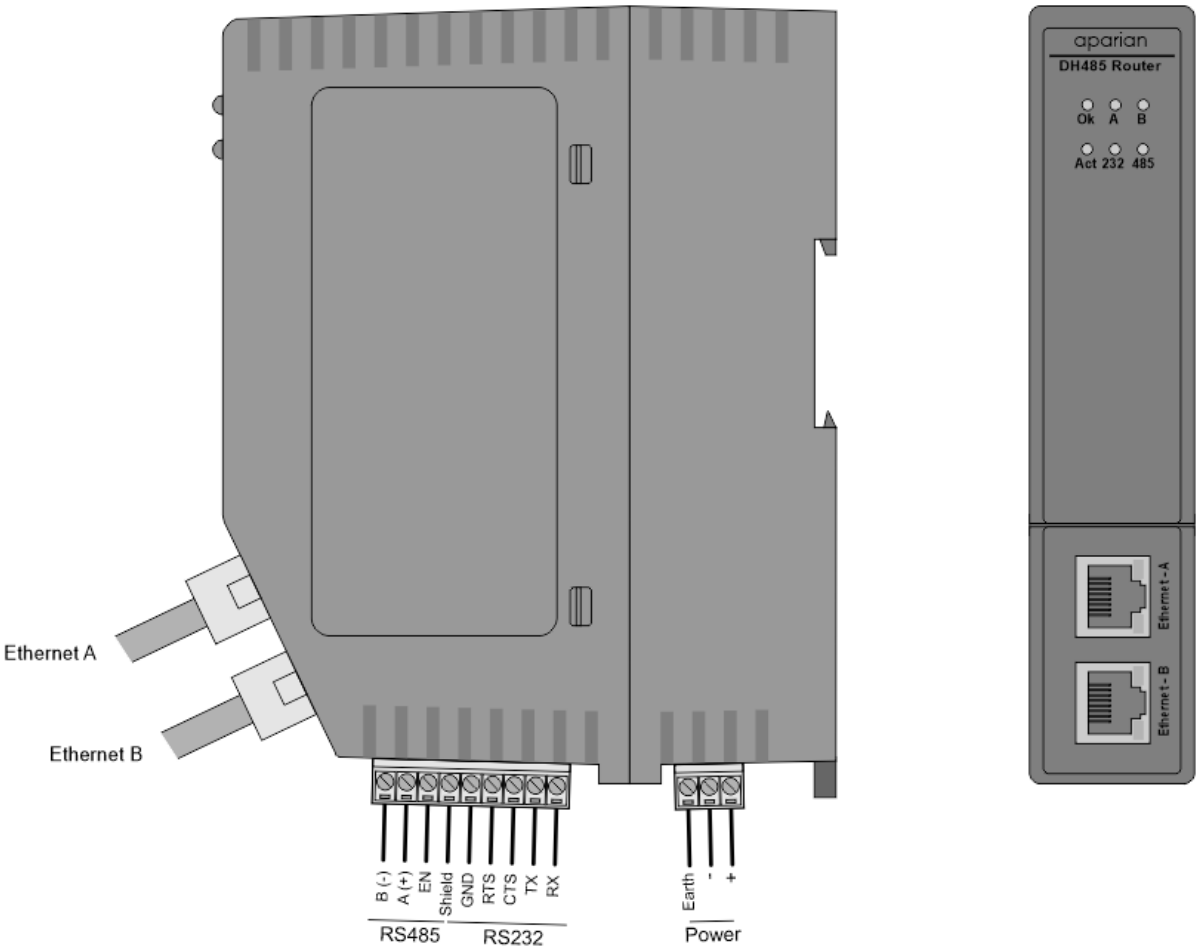

FIGURE 3.1. - DH485 ROUTER/B SIDE AND FRONT VIEW

3.2. SERIAL CABLE WIRING

The serial cable pinout is shown in the figure below:

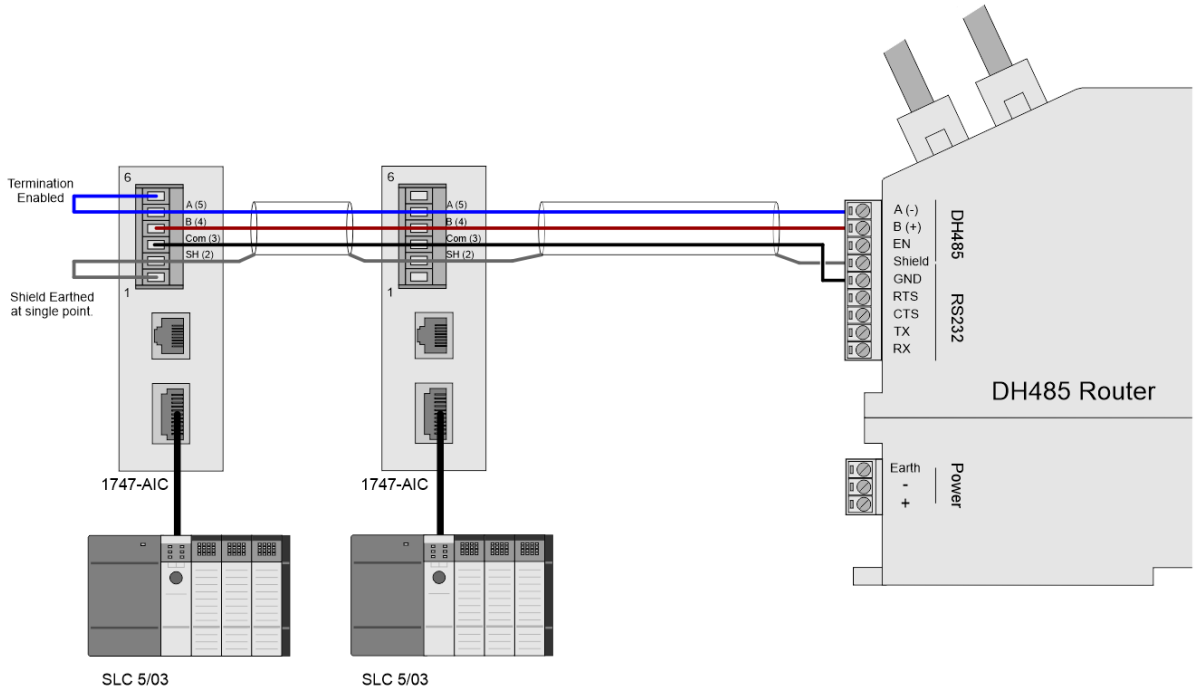

FIGURE 3.2. – SERIAL CABLE PINOUT – 1747-AIC

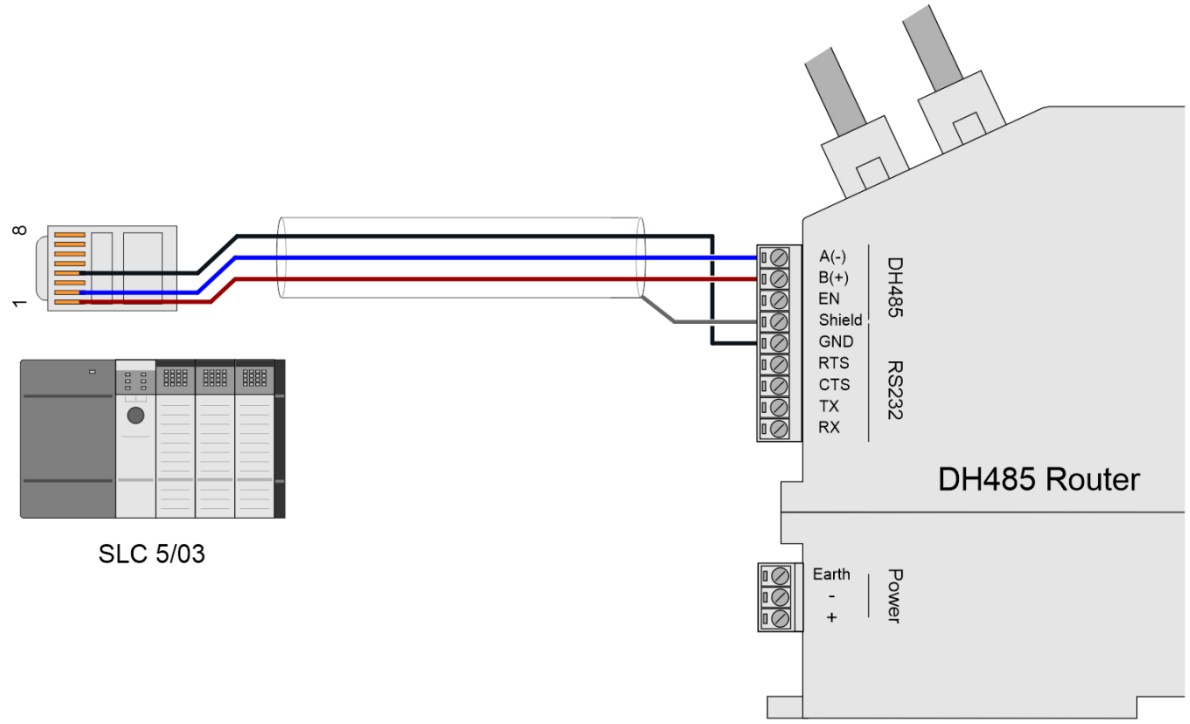

FIGURE 3.3. – SERIAL CABLE PINOUT – SLC DIRECT

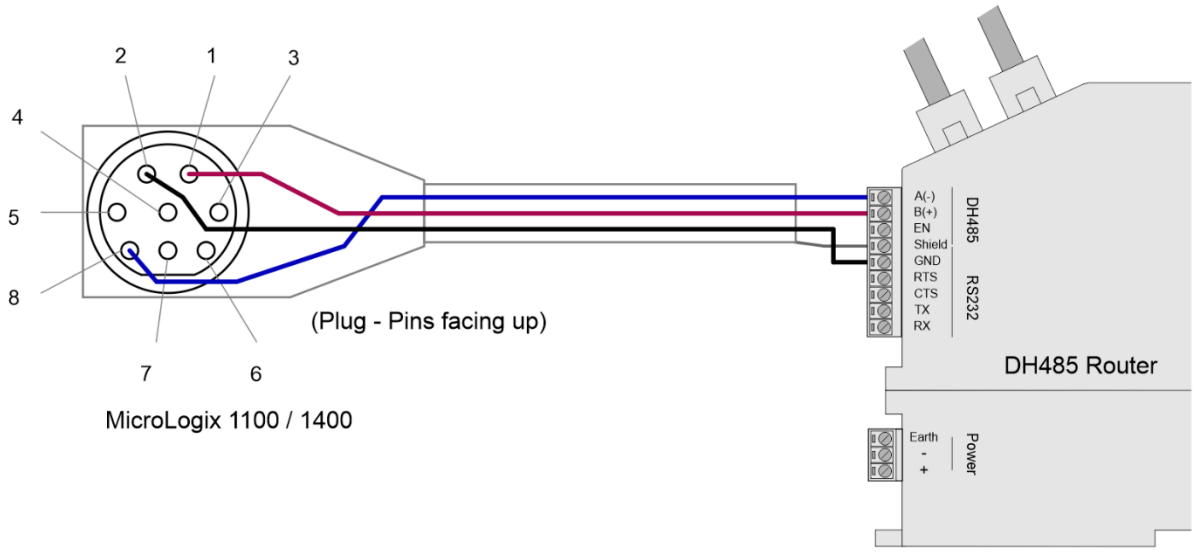

FIGURE 3.4. – SERIAL CABLE PINOUT – MICROLOGIX 1100

All RS485 networks need to be terminated at the extremities (start and end point) of the communication conductor. The termination is done by placing a resistor between the positive and negative communication conductor. The value of the resistor will depend on the characteristic impedance of the cable chosen, but generally ranges from 100 Ohm to 150 Ohm.

The DH485 Ground Bridge should be enabled and the user can also enable the DH485 Router internal RS485 terminator in the module configuration in Slate (see below):

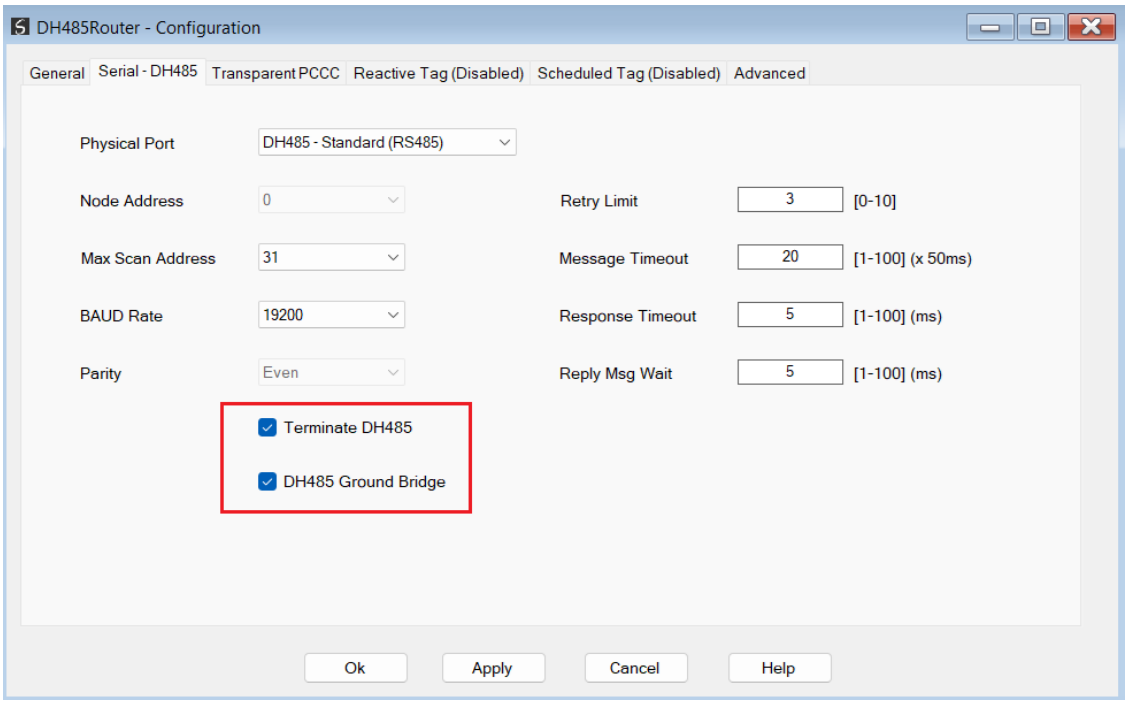

FIGURE 3.5. – INTERNAL RS485 TERMINATION

3.3. DH485 ROUTER SETUP

The DH485 Router must be configured in Transparent PCCC mode, as shown below.

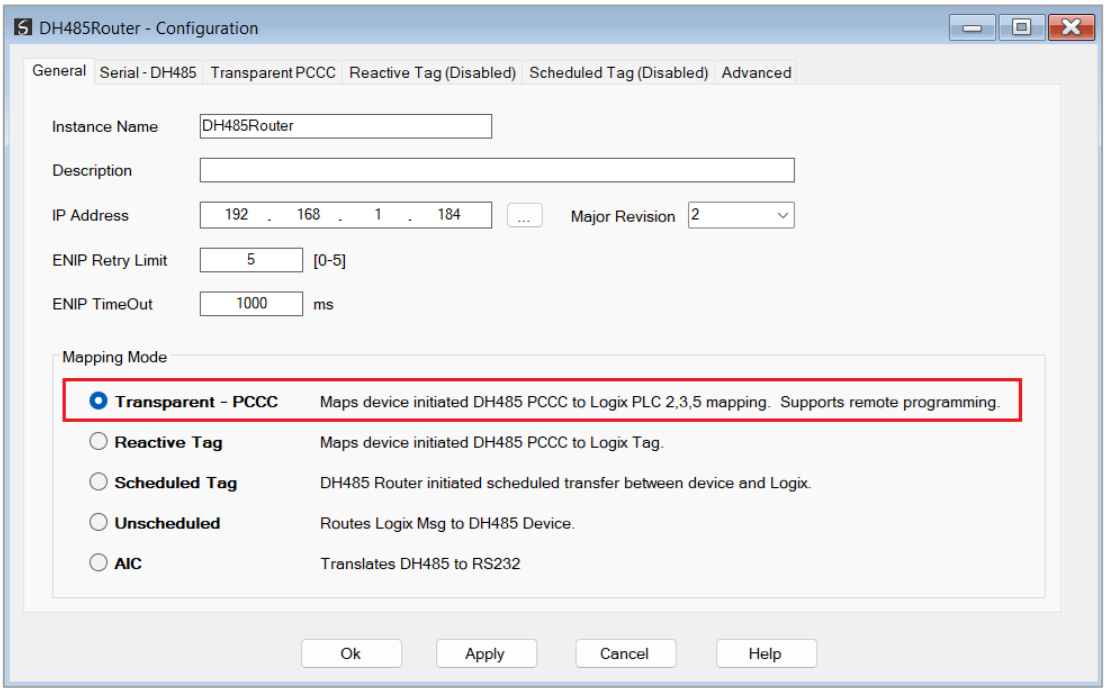

FIGURE 3.6. – DH485 GENERAL CONFIGURATION

In the Serial-DH485 settings, the BAUD Rate must match that of the SLC device (as configured using RSLogix 500).

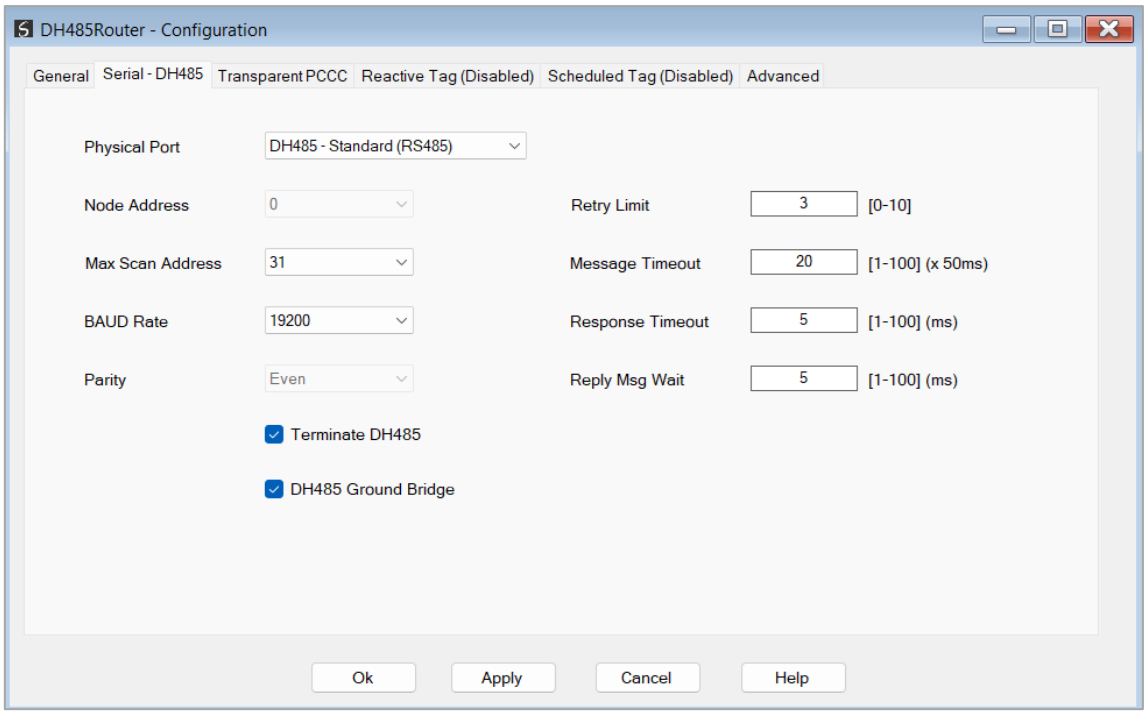

FIGURE 3.7. – DH485 SERIAL CONFIGURATION

NOTE: At least one transparent mapped item must be added for the SLC500 communication to work over DH485. If the DH485 Router is used purely for communicating to the Ignition, then the user can, as an example, add a DH485 Node of 1 (which **must be unique** on the DH485 network) with an IP address of the DH485 Router. The reason for this is because the DH485 Router requires a node on the DH485 network.

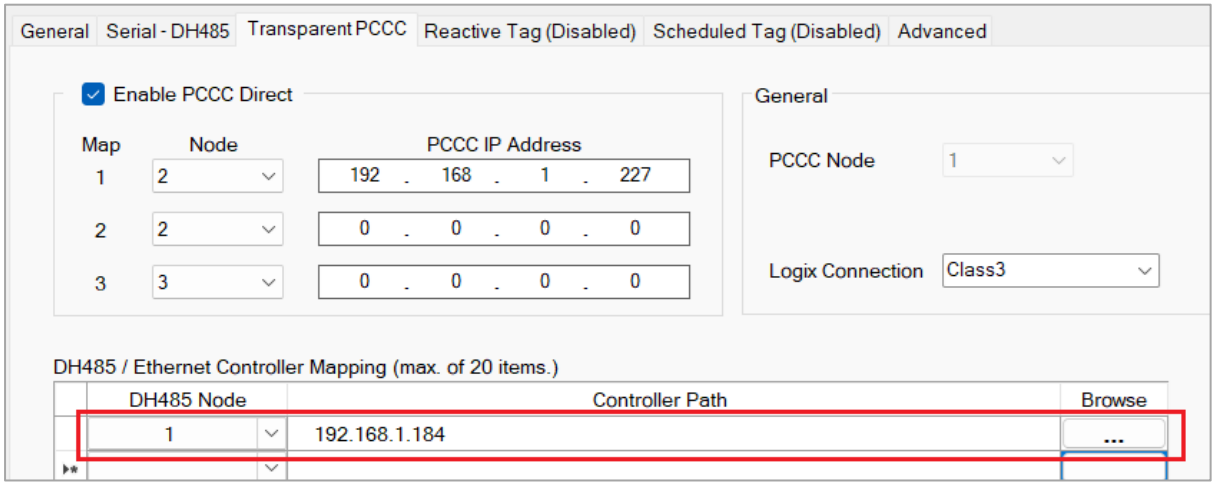

FIGURE 3.8. – TRANSPARENT PCCC CONFIGURATION

The Ignition application will use PCCC (AB-ETH) to communicate with the DH485 Router. To enable this on the DH485 Router, the user will need to set the *Enable PCCC Direct* in the Transparent PCCC tab, set the DH485 node of the SLC, and set the IP address that will be used for the PCCC communicate (i.e., the IP address the DH485 Router will emulate).

NOTE: The IP address selected in the PCCC Direct mapping **must not** match the DH485 Router main IP address configured in the General tab.

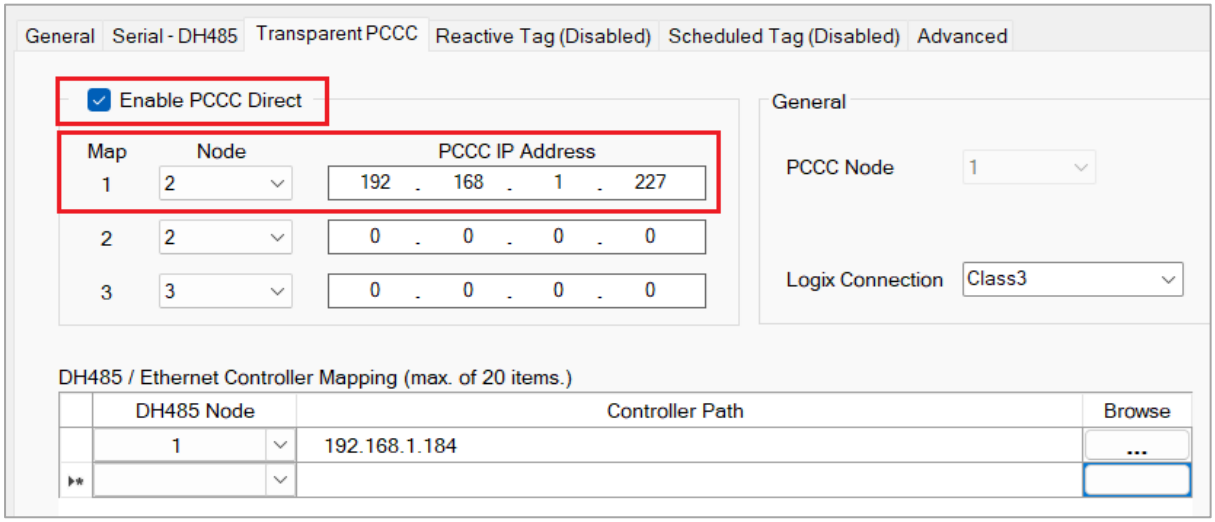

FIGURE 3.9. – PCCC DIRECT CONFIGURATION

3.4. RSLOGIX 500 SETUP

Using RSLogix500, the DH485 port must be configured to match that of the DH485 Router's serial port settings with respect to BAUD rate. The DH485 node address of the SLC must also match the Node set in the PCCC Direct Map.

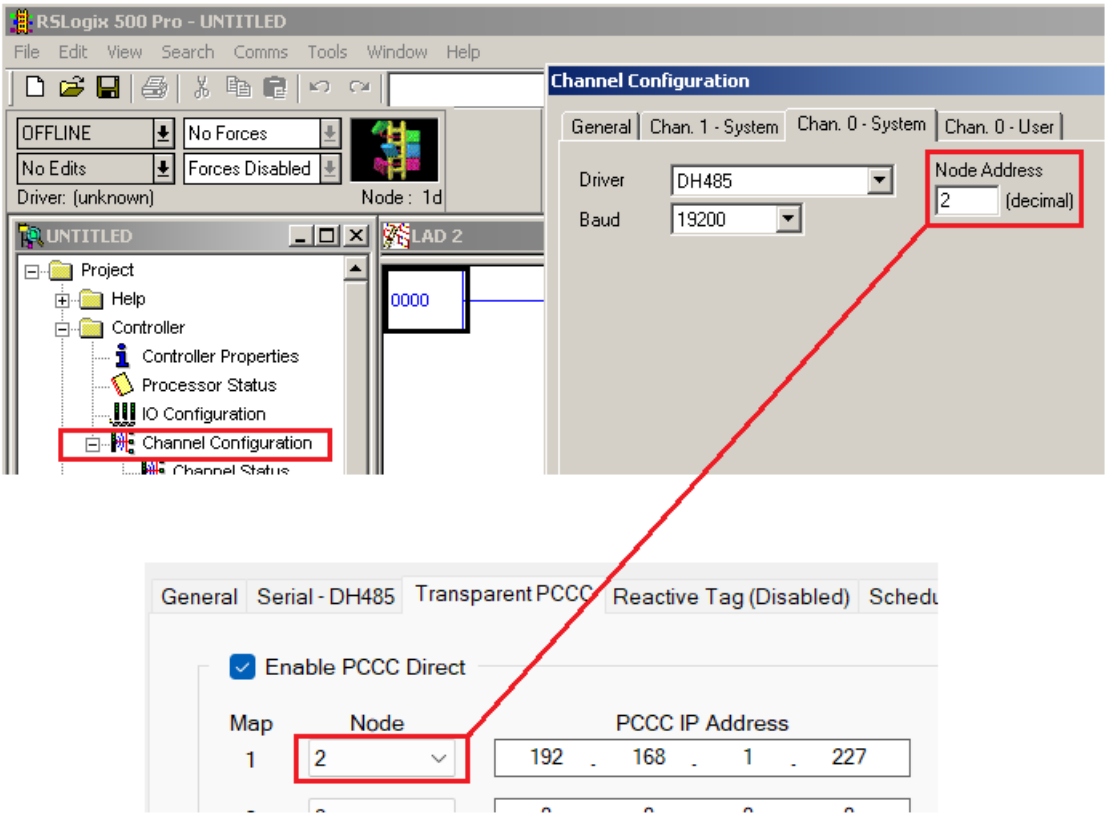

FIGURE 3.10. – RSLOGIX 500 CONFIGURATION

3.5. IGNITION SETUP

- Ignition can be configured to communicate to an SLC controller via the DH485 Router.
- The communication can be set-up using the Ignition Gateway

3.5.1. IGNITION GATEWAY

- In the Ignition Gateway, open the connections tab on the left of the screen to expose the Connections Overview

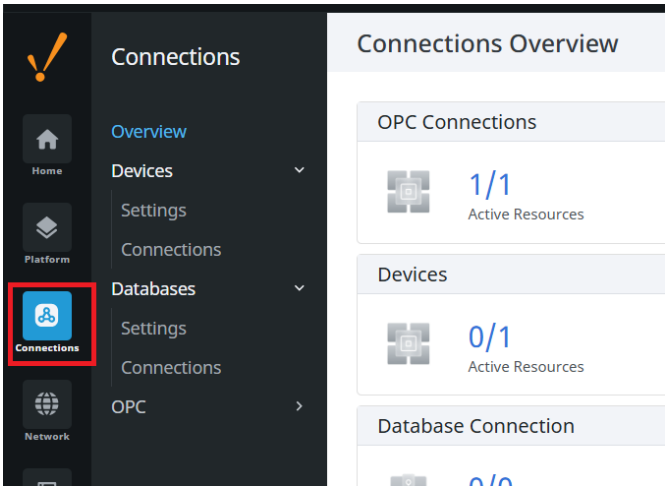

FIGURE 3.11. IGNITION GATEWAY

- In the Overview, select the view devices option.

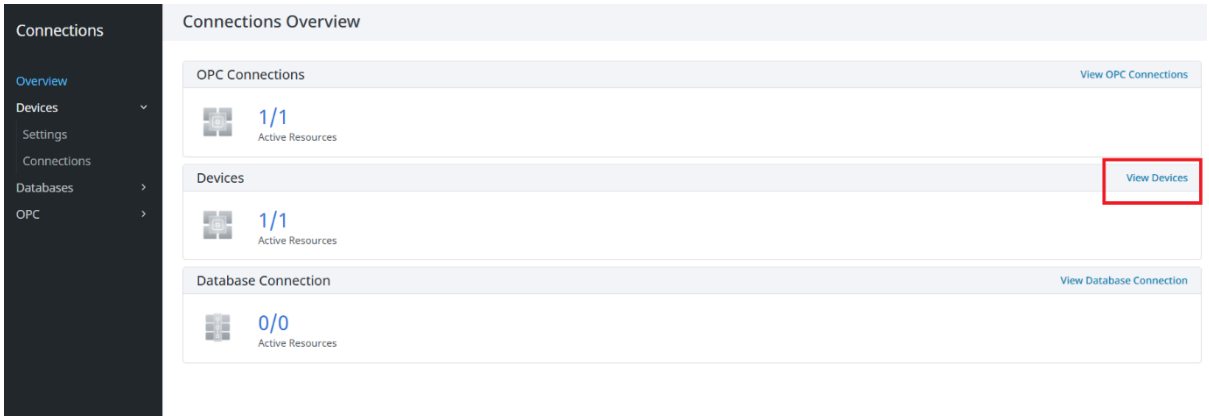

FIGURE 3.12. ADDING A DEVICE

- This will open the Device connections page, select Create Device Connection.

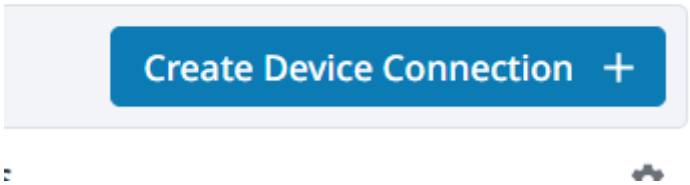

FIGURE 3.13. DEVICE CONNECTION

- Select the Allen Bradley SLC option.

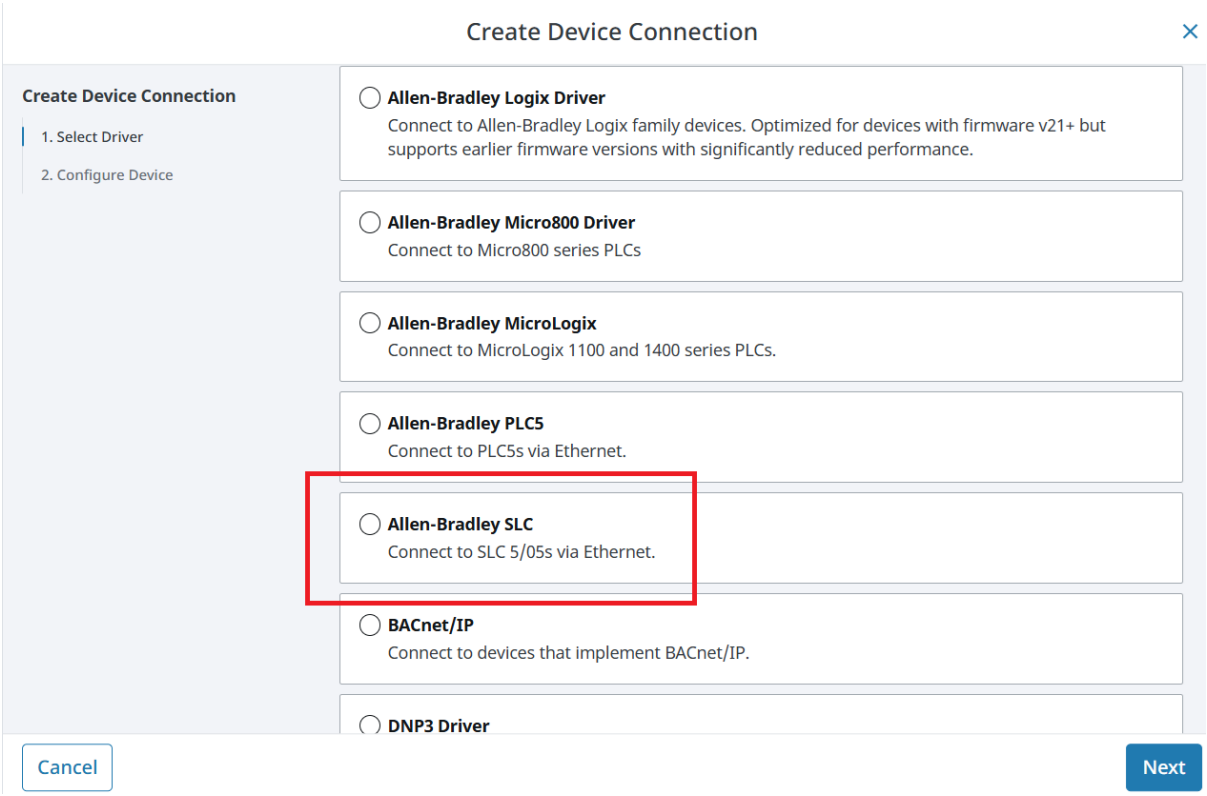

FIGURE 3.14. ALLEN BRADLEY SLC

- Select next to open the Configure device screen. Give the connection an appropriate name, (e.g. “MySLC”).

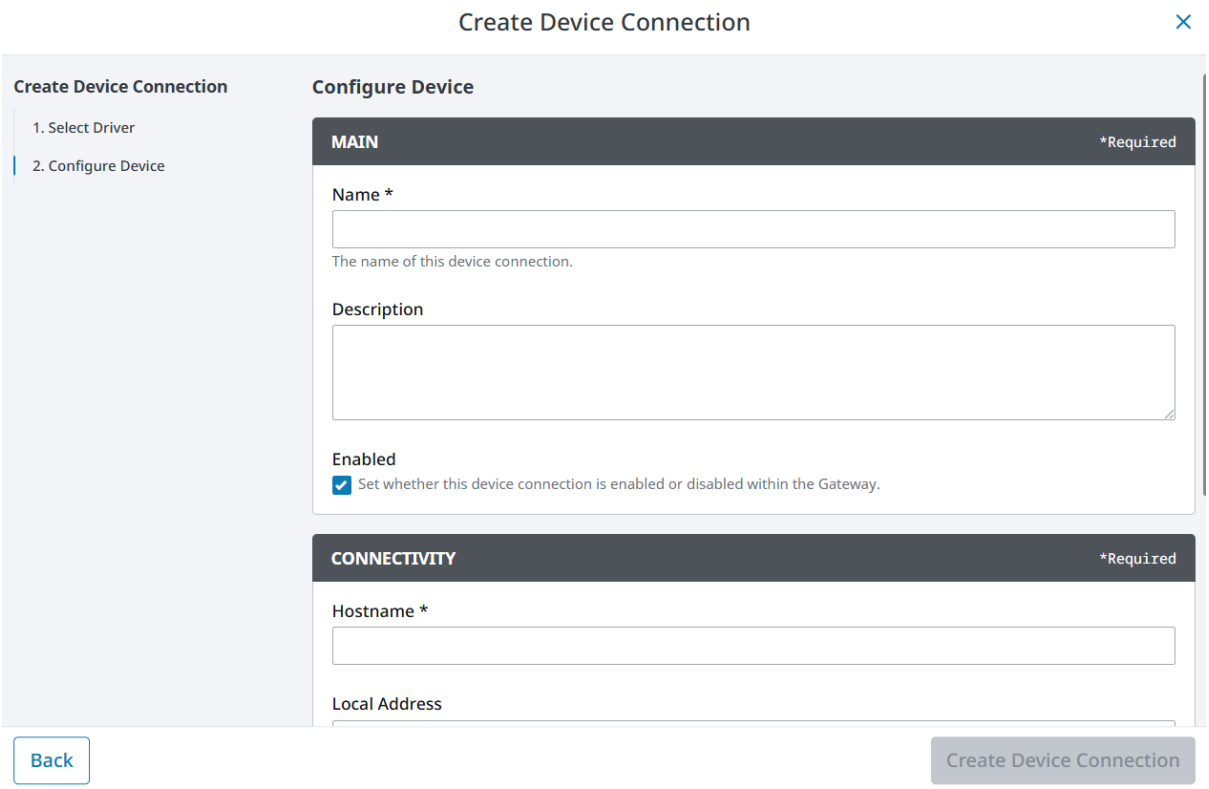

FIGURE 3.15. CONFIGURE CONNECTION

- Set the host name as the IP address set during the PCCC Direct set-up (In this example, the IP address 192.168.1.227 was used.)

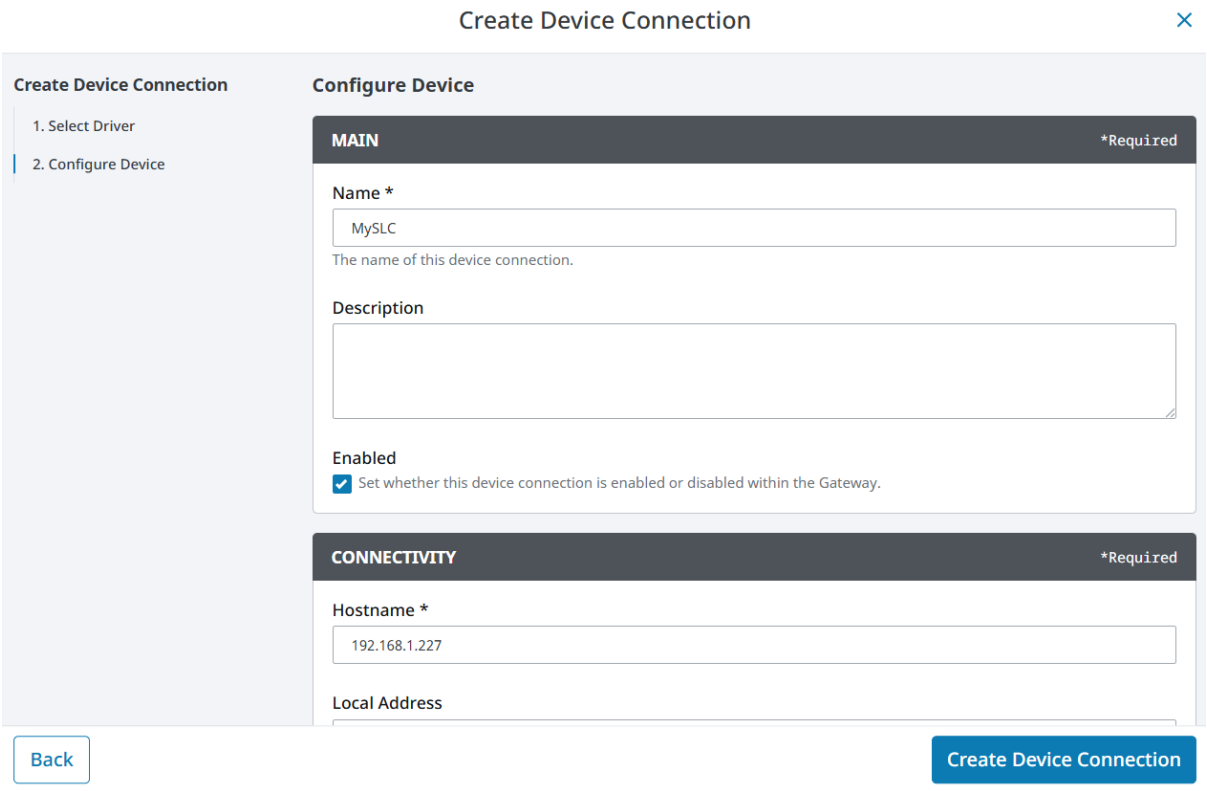

FIGURE 3.16. HOST NAME OF CONNECTION

- Select Create Device Connection.

3.5.2. USING THE CONNECTION IN THE IGNITION DESIGNER

- In the Home tab select Launch Designer in the top right corner.

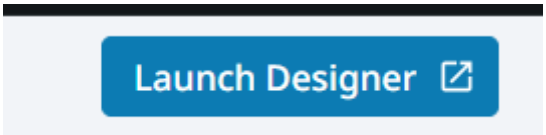

FIGURE 3.17. DESIGNER

- Sign in with your Ignition Username and Password.

- In the tag browser on the left side of the designer, right click the blank space, select add tag< New Tag < OPC tag.

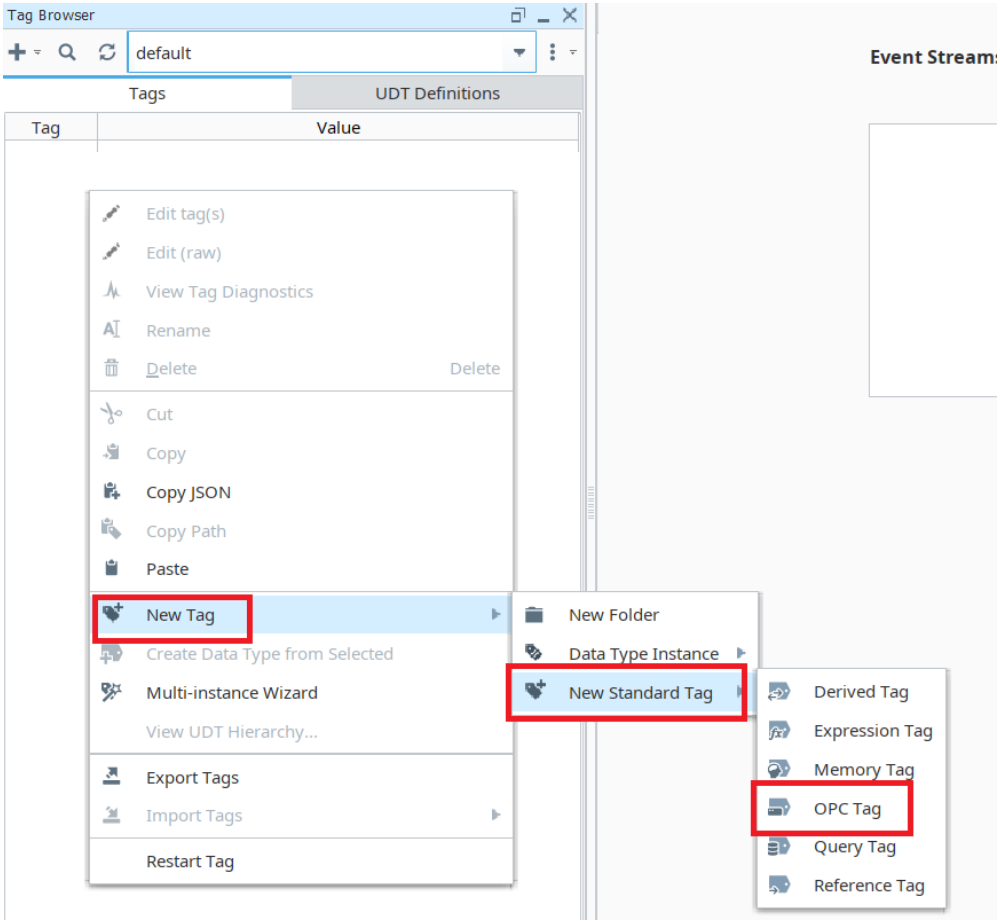

FIGURE 3.18. ADD TAG

- In the Tag Editor, under value select Ignition OPC UA Server as the OPC server

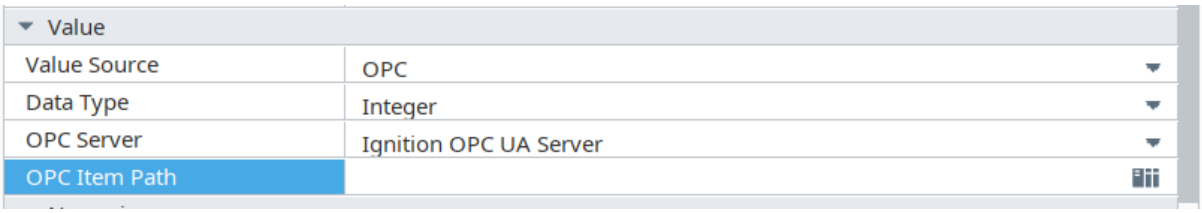

FIGURE 3.19. CONFIGURE OPC SERVER

- In the OPC Item Path you will be able to browse your SLC connection and assign its tags to Ignition.

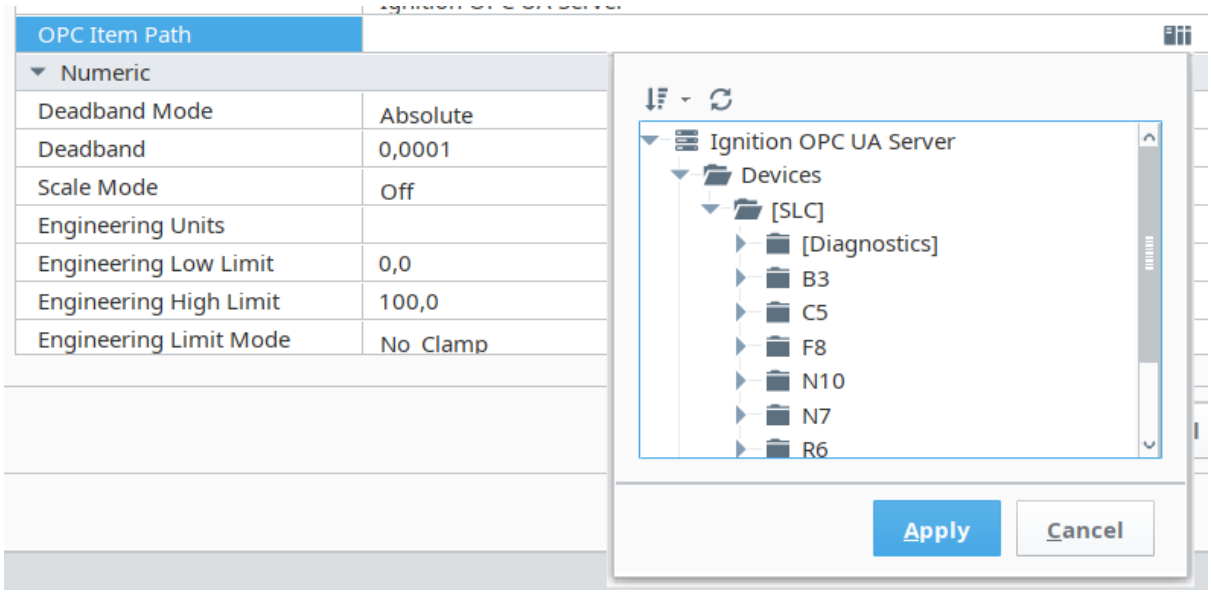

FIGURE 3.20. LINK SLC TAG

- This example will use the SLC tag B3:0/0. By expanding B3 The different bytes of the tag will be exposed, which can then be expanded again to expose the bits of the B3 tag. Select B3:0/0.

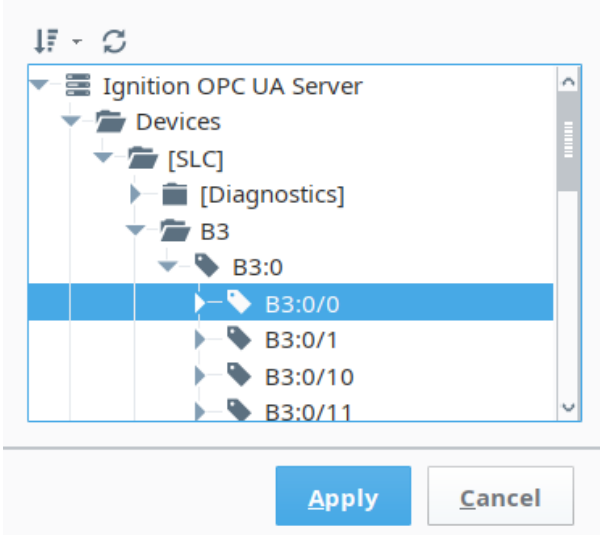

FIGURE 3.21. SELECTING B3:0/0

- With B3:0/0 set as the OPC Item Path, click Ok to add it to the Tag Browser

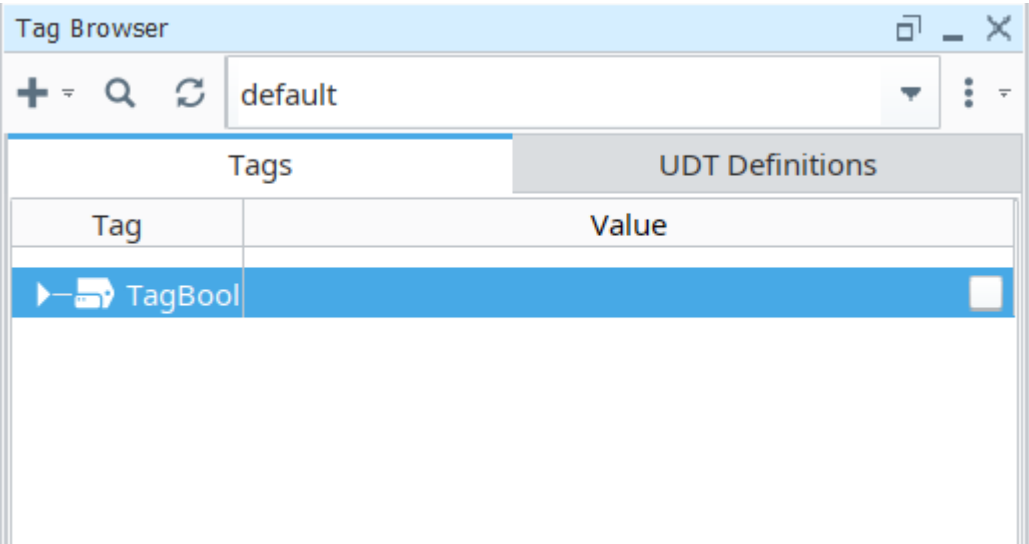

FIGURE 3.22. TAG BROWSER

- The user can then select the tags value to write to it, this will reflect in studio500.

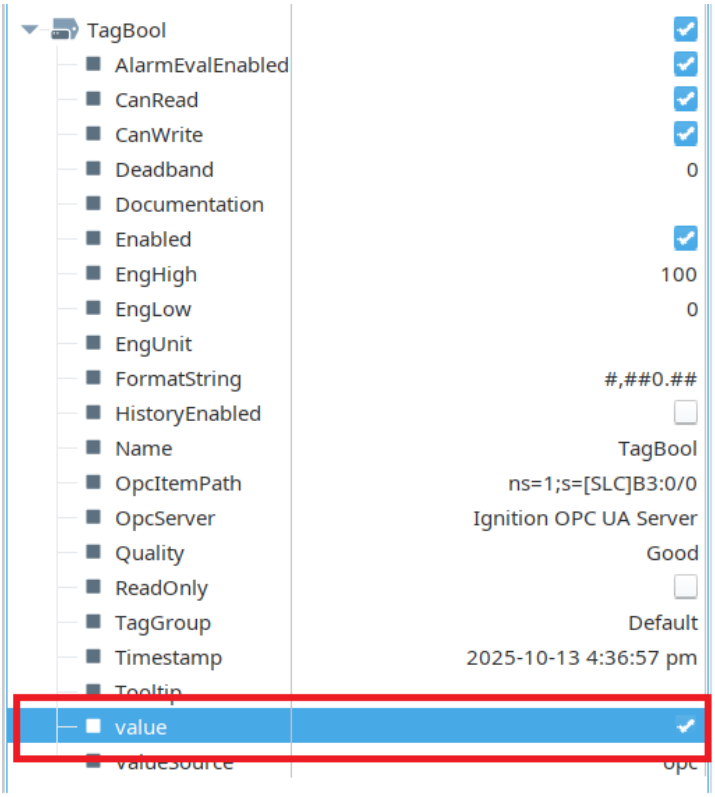

FIGURE 3.23. TAG VALUE

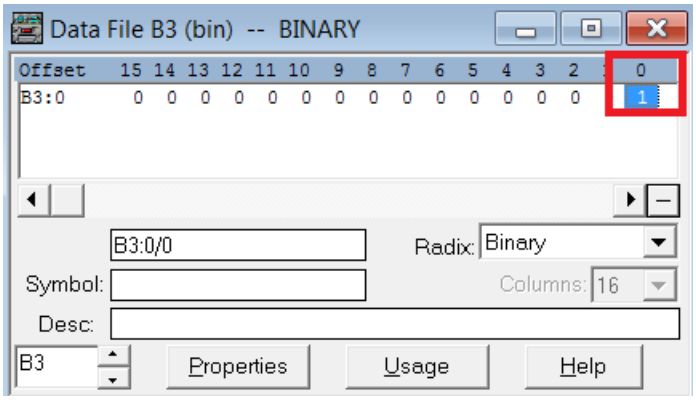

FIGURE 3.24. STUDIO 500