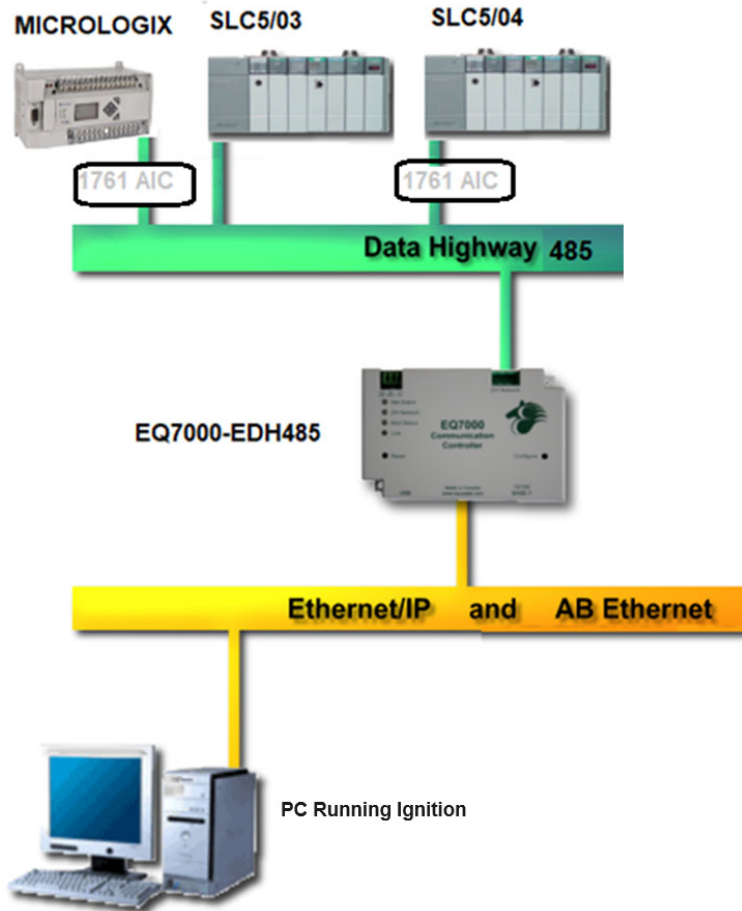


Ignition Ethernet IP Driver Getting Data from SLC503 & SLC504 On AB DH485 network with EQ7000-DH485

Network Setup:

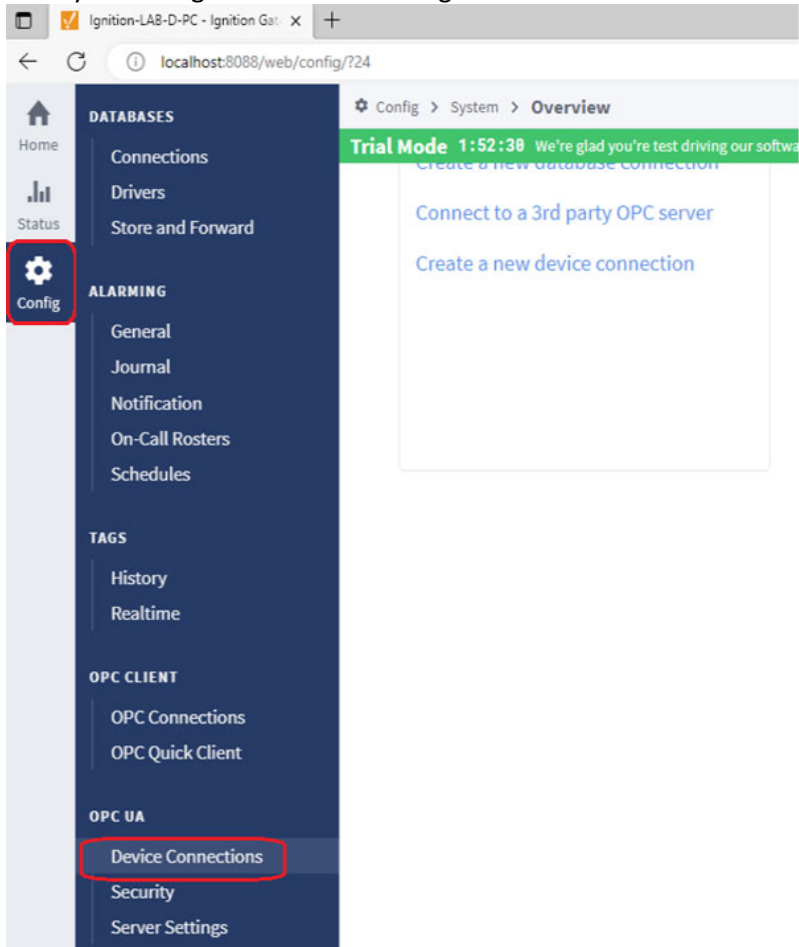
Allen Braddley Ethernet DH485 Network, PC running Ignition, Equustek EQ7000-EDH485, with SLC5/03, SLC5/04 and Micrologix with 1761 AIC which give them DH485 capability.



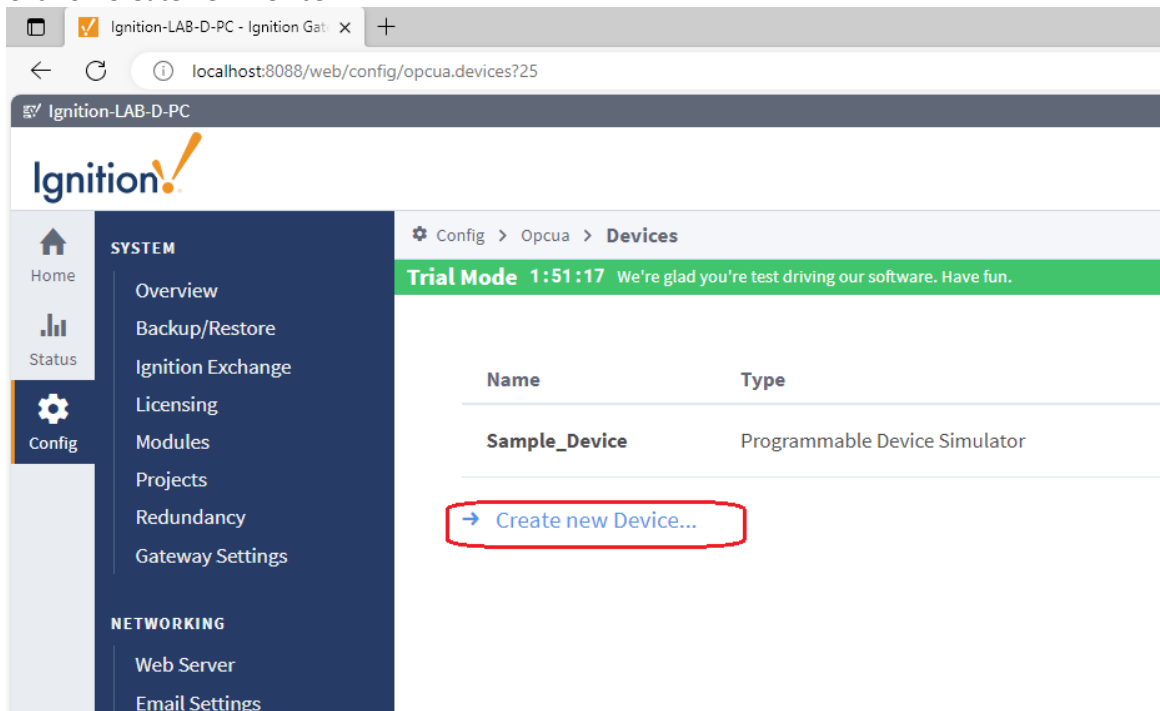
Start Ignition

The screenshot shows the Ignition software interface. The top navigation bar includes 'Home' and 'Get Started'. A status bar indicates 'Trial Mode 1:53:57' and 'We're glad you're test driving our software. Have fun.' with an 'Activate Ignition' button. The main content area features a 'WELCOME Meet Ignition' section with a large orange exclamation mark icon and a 'Build It' button. Below this is a 'Get the Designer' section with a description: 'The Designer brings all your data, systems, and developers together into one beautifully simple, integrated development environment specifically designed to help you build industrial applications more quickly.' and a 'Download Designer Launcher' button.

After you start Ignition click on Config and scroll down and click on Device Connections under OPC UA.



Click on Create new Device.



Select Allen Bradley SLC Connect to SLC5/05 via Ethernet

The screenshot shows the Ignition software configuration interface. The breadcrumb path is 'Config > Opcua > Devices'. A green banner at the top indicates 'Trial Mode 1:50:33' with the text 'We're glad you're test driving our software. Have fun.' The left sidebar contains a 'Config' menu with the following categories and items:

- SYSTEM**
 - Overview
 - Backup/Restore
 - Ignition Exchange
 - Licensing
 - Modules
 - Projects
 - Redundancy
 - Gateway Settings
- NETWORKING**
 - Web Server
 - Email Settings
 - Gateway Network
- SECURITY**
 - General
 - Auditing
 - Users, Roles
 - Service Security
 - Identity Providers
 - OAuth2 Clients
 - Security Levels
 - Security Zones

The main content area displays a list of device options, each with a radio button and a description:

- Allen-Bradley CompactLogix (Legacy)**
Connect to CompactLogix PLCs up to firmware v20.18.
- Allen-Bradley ControlLogix (Legacy)**
Connect to ControlLogix PLCs up to firmware v20.18.
- Allen-Bradley Logix Driver**
Connect to Allen-Bradley Logix family devices. Optimized for devices with reduced performance.
- Allen-Bradley MicroLogix**
Connect to MicroLogix 1100 and 1400 series PLCs.
- Allen-Bradley PLC5**
Connect to PLC5s via Ethernet.
- Allen-Bradley SLC**
Connect to SLC 5/05s via Ethernet.

The 'Allen-Bradley SLC' option is highlighted with a red rectangular box.

Scroll Down and Click Next.

The screenshot shows the Ignition software configuration interface, scrolled down from the previous view. The breadcrumb path is 'Config > Opcua > Devices'. The left sidebar contains the following categories and items:

- ENTERPRISE ADMINISTRATION**
 - Setup
- SEQUENTIAL FUNCTION CHARTS**
 - Settings
- PERSPECTIVE**
 - Branding Customization

The main content area displays a list of device options, each with a radio button and a description:

- Programmable Device Simulator**
A simulator device that can be configured with a user-defined hierarchy of static or function
- Siemens S7-1200**
Connect to Siemens S7-1200 PLCs over Ethernet.
- Siemens S7-1500**
Connect to Siemens S7-1500 PLCs over Ethernet.
- Siemens S7-300**
Connect to Siemens S7-300 PLCs over Ethernet.
- Siemens S7-400**
Connect to Siemens S7-400 PLCs over Ethernet.
- TCP Driver**
- UDP Driver**

A blue 'Next >' button is located at the bottom right of the list and is highlighted with a red rectangular box.

Under General:

Type a Name for the PLC, then type the Description.

Under Connectivity:

Hostname: is the IP address of our EQ7000-EDH485

Connection Path: Since here EQ7000 is emulating a Control Logix 1756 DHRIO, Details of the path according to **Ignition Inductive Automation manual**

The Connection Path format contains 4 numbers separated by commas. The first number is always 1 and tells the 1756-ENET module to route through the backplane. The second number is the slot number of the 1756-DHRIO module of the DH+ network the PLC-5 processor is connected to. The third number is the channel of the 1756-DHRIO module that the PLC-5 processor is connected to. Use 2 for channel A and 3 for channel B. The final and fourth number is the DH+ node number. This number is in octal and is the same as configured in the PLC-5 processor. See the **ControlLogix Ethernet Communication interface Module User Manual** for more information.

Connection Path Format: 1,<1756-DHRIO slot number>,<1756-DHRIO channel>,<DH+ node number>

The valid range for the 1756-DHRIO slot number is between 0 and 16 but depends on the chassis size. The 1756-DHRIO channel is either 2 for channel A or 3 for channel B. The DH+ node number range is from 00 to 77 octal. **Reference Inductive Automation manual** <https://docs.inductiveautomation.com/display/DOC80/Connecting+to+PLC5>

Path details explained above are for DH+ but are similar for DH485, so type the path as 1,0,2,5, and click on Create New Device.

1 for Backplane, 0 for the slot number, 2 is for Channel A, 5 is for our SLC5/03 node address number

The screenshot shows the Ignition Gateway configuration interface. The browser address bar indicates the URL is localhost:8088/web/config/opcuadevices?46. The interface is titled 'Ignition-LAB-D-PC' and shows a navigation menu on the left with categories like SYSTEM, NETWORKING, SECURITY, DATABASES, and ALARMING. The main content area is titled 'Config > Opcua > Devices' and displays a configuration form for a new device. The form has two tabs: 'General' and 'Connectivity'. The 'General' tab is active, showing the following fields: Name (SLC503), Description (SLC503DH485), and Enabled (checked). The 'Connectivity' tab is also visible, showing the following fields: Hostname (192.168.2.49), Local Address (empty), Timeout (2000), Browse Cache Timeout (240000), and Connection Path (1,0,2,5). A 'Create New Device' button is located at the bottom right of the form.

Ignition trying to detect the protocol and get connected.

Config > Opcua > Devices

Trial Mode 1:42:38 We're glad you're test driving our software. Have fun.

Successfully created new Device "SLC503"

Name	Type	Description	Enabled	Status
SLC503	Allen-Bradley SLC	SLC503DH485	true	Disconnected Determining Protocol
Sample_Device	Programmable Device Simulator		true	Running

→ Create new Device...

Wait until the protocol is detected DHRIO, and the device connected.

Config > Opcua > Devices

Trial Mode 1:41:36 We're glad you're test driving our software. Have fun.

Successfully created new Device "SLC503"

Name	Type	Description	Enabled	Status
SLC503	Allen-Bradley SLC	SLC503DH485	true	Connected: Protocol: DHRIO
Sample_Device	Programmable Device Simulator		true	Running

→ Create new Device...

Repeat the process to add the SLC504 node 3

Backup/Restore
Ignition Exchange
Licensing
Modules
Projects
Redundancy
Gateway Settings

NETWORKING
Web Server
Email Settings
Gateway Network

SECURITY
General
Auditing
Users, Roles
Service Security
Identity Providers
OAuth2 Clients
Security Levels
Security Zones

- Allen-Bradley CompactLogix (Legacy)
Connect to CompactLogix PLCs up to firmware v20.18.
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Connect to ControlLogix PLCs up to firmware v20.18.
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Connect to Allen-Bradley Logix family devices. Optimized for devices with reduced performance.
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Connect to MicroLogix 1100 and 1400 series PLCs.
- Allen-Bradley PLC5
Connect to PLC5s via Ethernet.
- Allen-Bradley SLC
Connect to SLC 5/05s via Ethernet.
- Siemens S7-400
Connect to Siemens S7-400 PLCs over Ethernet.
- TCP Driver
- UDP Driver

Next >

Type the name, Description, Hostname and the path 1,0,2,3 then click on Create New Device

Ignition-LAB-D-PC - Ignition Gat

localhost:8088/web/config/opcua.devices?55

Ignition-LAB-D-PC

Config > Opcua > Devices

Trial Mode 1:39:17 We're glad you're test driving our software. Have fun.

General

Name: SLC504

Description: SLC504DH485

Enabled: (default: true)

Connectivity

Hostname: 192.168.2.49

Local Address: Address of network adapter to connect from. (default:)

Timeout: 2000 (default: 2,000)

Browse Cache Timeout: 240000 (default: 240,000)

Connection Path: 1,0,2,3

Show advanced properties

Create New Device

Here we have both the SLC503 and SLC504 connected.

Ignition-LAB-D-PC - Ignition Gat

localhost:8088/web/config/opcua.devices?59

Ignition-LAB-D-PC

Config > Opcua > Devices

Trial Mode 1:38:14 We're glad you're test driving our software. Have fun.

✓ Successfully created new Device "SLC504"

Name	Type	Description	Enabled	Status
SLC503	Allen-Bradley SLC	SLC503DH485	true	Connected; Protocol: DHRIO
SLC504	Allen-Bradley SLC	SLC504DH485	true	Connected; Protocol: DHRIO
Sample_Device	Programmable Device Simulator		true	Running

→ Create new Device...

To confirm we read some tags from both the SLC5/03 and the SLC 5/04
Under OPC CLIENT Click on OPC Quick client.

The screenshot shows a web browser window with the URL `localhost:8088/web/config/opc.quickclient?62`. The page title is `Config > Opc > OPC Quick Client`. A green banner at the top indicates `Trial Mode 1:35:58` with the message `We're glad you're test driving our software. Have fun.`

The left sidebar contains a navigation menu with the following sections:

- NETWORKING**
 - Web Server
 - Email Settings
 - Gateway Network
- SECURITY**
 - General
 - Auditing
 - Users, Roles
 - Service Security
 - Identity Providers
 - OAuth2 Clients
 - Security Levels
 - Security Zones
- DATABASES**
 - Connections
 - Drivers
 - Store and Forward
- ALARMING**
 - General
 - Journal
 - Notification
 - On-Call Rosters
 - Schedules
- TAGS**
 - History
 - Realtime
- OPC CLIENT**
 - OPC Connections
 - OPC Quick Client** (highlighted with a red box)

The main content area displays a table for subscriptions:

Subscription name	Rate (ms)
Subscription 1	1000

At the top of the table, there is a link `Subscription 1 [x] [Add]`. The table has two columns: `Subscription name` and `Rate (ms)`. The first row contains the values `Subscription 1` and `1000`.

Click on the plus sign beside the Ignition OPC UA Server.

The screenshot shows the Ignition OPC Quick Client configuration page. The breadcrumb trail is "Config > Opc > OPC Quick Client". A green banner at the top indicates "Trial Mode 1:34:53". On the left, a "SYSTEM" menu is open, showing options like Overview, Backup/Restore, Ignition Exchange, Licensing, Modules, Projects, Redundancy, and Gateway Settings. The main content area contains a table with the following data:

TYPE	ACTION	TITLE
Server	refresh	Ignition OPC UA Server

Click on the plus sign of Devices.

The screenshot shows the Ignition OPC Quick Client configuration page. The breadcrumb trail is "Config > Opc > OPC Quick Client". A green banner at the top indicates "Trial Mode 1:34:18". On the left, a "SYSTEM" menu is open, showing options like Overview, Backup/Restore, Ignition Exchange, Licensing, Modules, Projects, Redundancy, and Gateway Settings. The main content area contains a table with the following data:

TYPE	ACTION	TITLE
Server	refresh	Ignition OPC UA Server
Object		Devices
Object		Server

To read from SLC5/03 click on the plus sign of the SLC503.

The screenshot shows the Ignition OPC Quick Client configuration page. The breadcrumb trail is "Config > Opc > OPC Quick Client". A green banner at the top indicates "Trial Mode 1:33:26". On the left, a "SYSTEM" menu is open, showing options like Overview, Backup/Restore, Ignition Exchange, Licensing, Modules, Projects, Redundancy, and Gateway Settings. Below the "SYSTEM" menu, a "NETWORKING" menu is also visible, showing options like Web Server and Email Settings. The main content area contains a table with the following data:

TYPE	ACTION	TITLE
Server	refresh	Ignition OPC UA Server
Object		Devices
Object		[SLC503]
Object		[SLC504]
Object		[Sample_Device]
Object		Server

To read integer word 0 from integer file 7 click on the plus sign of N7 then click on r of the N7:0 to read it's value here we read value of 1978

The screenshot shows the Ignition Gateway configuration interface. The breadcrumb navigation is **Config > Opc > OPC Quick Client**. A green banner at the top indicates **Trial Mode 1:32:20** with the message "We're glad you're test driving our software. Have fun."

A notification box displays the following information:

- Read completed. [Ignition OPC UA Server]ns=1;s=[SLC503]
- Value: 1978
- Quality: Good
- Timestamp: 11/1/23, 3:31:28 PM PDT

Below the notification is a table listing the OPC UA server structure:

TYPE	ACTION	TITLE
Server	refresh	Ignition OPC UA Server
Object		Devices
Object		[SLC503]
Object		B3
Object		B12
Object		C5
Object		F8
Object		F11
Object		F29
Object		I
Object		N7
Tag	[s][r][w]	N7:0
Tag	[s][r][w]	N7:1
Tag	[s][r][w]	N7:2

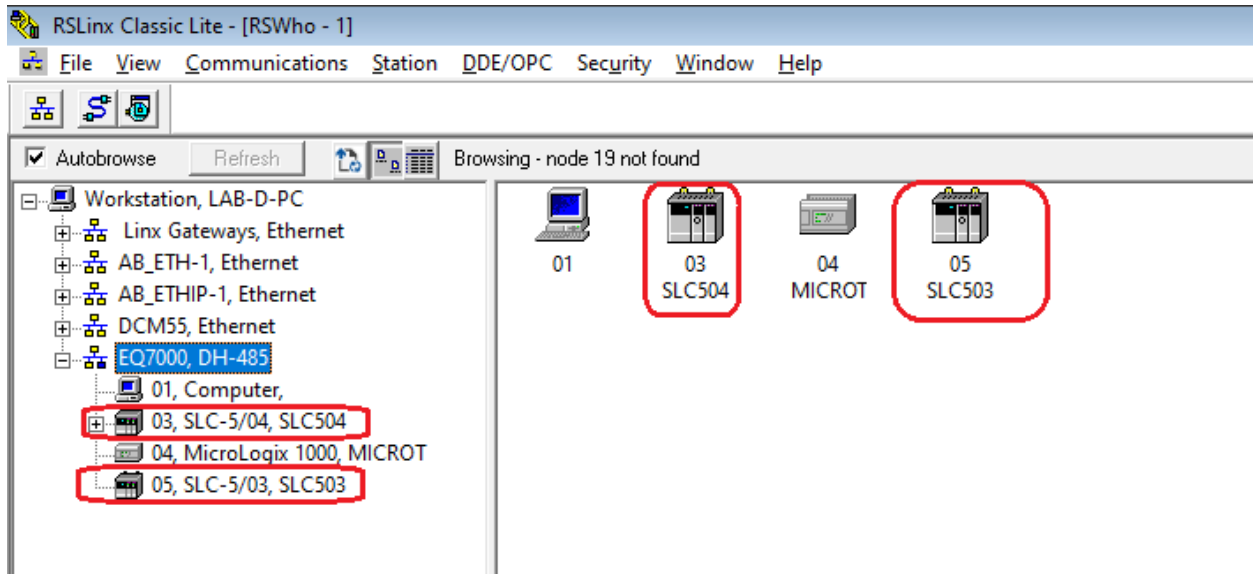
In the table, the **N7** object and the **r** (read) permission for the **N7:0** tag are highlighted with red boxes.

Repeating the same process to read the value of the word 0 in integer file 7 of the SLC504.
Which read value of 1998

The screenshot shows the Ignition Gateway web interface. The breadcrumb navigation is 'Config > Opc > OPC Quick Client'. A green banner at the top indicates 'Trial Mode 1:38:52'. A notification box shows a green checkmark and the text: 'Read completed. [Ignition OPC UA Server]ns=1;s=[SLC504]N7:0'. Below this, the read details are: 'Value: 1998', 'Quality: Good', and 'Timestamp: 11/1/23, 3:32:56 PM PDT'. The 'Value: 1998' is circled in red. Below the notification is a tree view of the OPC UA server structure. The tree shows 'Ignition OPC UA Server' containing 'Devices', which includes '[SLC503]', '[SLC504]', 'B3', 'B12', 'C5', 'F8', 'F11', 'F29', and 'N7'. The 'N7' folder is circled in red. Under 'N7', there are three tags: 'N7:0', 'N7:1', and 'N7:2'. The 'r' in the permissions '[s][r][w]' for the 'N7:0' tag is circled in red.

TYPE	ACTION	TITLE
Server	refresh	Ignition OPC UA Server
Object		Devices
Object		[SLC503]
Object		[SLC504]
Object		B3
Object		B12
Object		C5
Object		F8
Object		F11
Object		F29
Object		N7
Tag	[s][r][w]	N7:0
Tag	[s][r][w]	N7:1
Tag	[s][r][w]	N7:2

We also used RSLINX to read the data files of integer file 7 of both SLC5/03 and SLC5/04, here is Allen Bradley Ethernet driver that was created for the EQ7000-EDH485 where we can see in RSWHO all three PLCs that we have on the DH485 network as shown on next page.



The two values were read in RSLINX data files of SLC503 and SLC504.

