Ignition Inductive Automation Ethernet IP Driver connecting to Allen Bradley PLC5 and SLC504 using EQ7000-EDH+



For Educational purpose in this application note we used Ignition maker Edition. Navigate to Devices under configure and click on Create new Device.

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Ign	Maker Edition						Help 🕑	Get Designer
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Status Config	Ignition Exchange Licensing Modules Projects	Name Sample_Device	Type Programmable Device Simulator	Description	Enabled	Status	Ma	re 🗸 edit
	Redundancy Gateway Settings NETWORKING	→ Create new Device	les.					

Select Allen-Bradley PLC5 (Connect to PLC5s via Ethernet)

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Home	Overview	
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•	Licensing	Connect to Compact logix DI Coup to firmware v00.19
Config	Modules	connect to compactLogix PLCs up to infinware v20.18.
	Projects	Allen-Bradley Controll ogix (Legacy)
	Redundancy	Connect to Controll origin (Legar)
	Gateway Settings	connect to controlLogix PLCs up to infinware v20.18.
	NETWORKING	Allen-Bradley Logix Driver
	Web Server	Connect to Allen-Bradley Logix family devices. Optimized for devices wit
	Gateway Network	
	Email Settings	Allen-Bradley MicroLogix
	1	Connect to MicroLogix 1100 and 1400 series PLCs.
	SECURITY	
	General	Allen-Bradley PLC5
	Auditing	Connect to PLC5s via Ethernet.
	Users, Roles	
	Service Security	O Allen-Bradley SLC
	Identity Providers	Connect to SLC 5/05s via Ethernet.
	Security Levels	
	Security Zones	O Modbus RTU
Then	scroll down and click	on Next.

× _ ✓ Ignition-LAB-D-PC - Ignition Gate × + ← → C (1) http://localhost:8088/web/config/opcua.devices?14 8 🤜 ☆ AB : a Amazon 💼 eBay F Facebook 🔹 YouTube OPC CLIENT Config > Opcua > Devices ♠ OPC Connections Home O Programmable Device Simulator OPC Quick Client հ A simulator device that can be configured with a user-defined hierarchy of static or function-driven values. Status OPC UA Config O Siemens S7-1200 Device Connections Security Connect to Siemens S7-1200 PLCs over Ethernet. Server Settings O Siemens S7-1500 SEQUENTIAL FUNCTION CHARTS Connect to Siemens S7-1500 PLCs over Ethernet. Settings ○ Siemens S7-300 Connect to Siemens S7-300 PLCs over Ethernet. O Siemens S7-400 Connect to Siemens S7-400 PLCs over Ethernet. O TCP Driver O UDP Driver inductive Ignition by Inductive Automation. Copyright © 2003-2021. All rights reserved. <u>View license</u> **Q** Search... Ŧ

Under General:

Type a name for the PLC here we typed PLC5 then type the Description, in ours here we typed PLC5-80.

Under Connectivity:

Hostname: is the IP address of our EQ7000-EDH+

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**

1 : for Backplane , 0 for the slot number, 2 is for Channel A, 6 is for our PLC5 octal node address number \times 🗾 Ignition-LAB-D-PC - Ignition Gate 🗙 🕇 ← → C ③ http://localhost:8088/web/config/opcua.devices?19 ☆ 🛽 8 🗸 : a Amazon 💼 eBay 📑 Facebook 🗈 YouTube ☞ Ignition-LAB-D-PC WEW | Log Out → Maker gnition. Help 🕜 **Get Designer** Editio Config > Opcua > Devices A SYSTEM Home Overview հե Backup/Restore Status Ignition Exchange General Licensing • Name PLC5 Modules Config Projects Redundancy Description PLC5-80 Gateway Settings ~ NETWORKING Enabled (default: true) Web Server **Gateway Network** Connectivity **Email Settings** SECURITY Hostname 192.168.2.55 General Auditing 2000 Timeout Users, Roles (default: 2.000) Service Security **Identity Providers** Browse Cache Timeout 240000 Security Levels (default: 240.000) Security Zones **Connection Path** 1,0,2,6 DATABASES Connections Drivers □ Show advanced properties Store and Forward **Create New Device** Q Search...

Wait for the status to say connected.

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	0	Config > Opcua > Dev	ices							
Home	SYSTEM									
da	Backup/Restore									
Status	Ignition Exchange	 ✓ Successfully 	created new Device "PLC5"							
•	Licensing	Name	Туре	Description	Enabled	Status				
Config	Modules								-	
	Projects	PLC5	Allen-Bradley PLC5	PLC5-80	true	Connecting: Browse pending	More	edit	3	
	Gateway Settings	Sample_Device	Programmable Device Simulator		true	Running	More	edit	t	
	NETWORKING	→ Create new De	vice							
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	Email Settings									
	SECURITY									
	General									
	Auditing									
	Users, Roles									
	Identity Providers									
	Security Levels									
	Security Zones									
	DATABASES									
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Now the PLC5 is connected we can add the SLC504 by clicking again on Create new Device



Select Allen-Bradley SLC (Connect to SLC 5/05s via Ethernet) as shown and scroll down and click on Next g/ Ignition-LAB-D-PC

SYSTEM	Config > Opcua > Devices
Overview	
Backup/Restore	
Ignition Exchange	Allen-Bradley CompactLogix (Legacy)
Licensing	Connect to Compact Logix PLCs up to firmware v20.18
g Modules	connect to compact ogix PLes up to innivate v20.16.
Projects	Allen-Bradley ControlLogix (Legacy)
Redundancy	Connect to Controll ogiv PLCs up to firmware v20.18
Gateway Settings	connect to control ogix P Les up to infinware v20.16.
NETWORKING	Allen-Bradley Logix Driver
	Connect to Allen-Bradley Logix family devices. Ontimized for devices with firmy
Web Server	
Gateway Network	Allen-Bradley MicroLogix
Email Settings	Connect to Microl ogix 1100 and 1400 series PLCs
SECURITY	
General	Allen-Bradley PLC5
Auditing	Connect to PLC5s via Ethernet.
Users, Roles	
Service Security	Allen-Bradley SLC
Identity Providers	Connect to SLC 5/05s via Ethernet.
Security Levels	
Security Zones	O Modbus RTU
	Connect to devices that implement the Modbus RTU protocol over a serial link

Similarly type the name, description and also the hostname and connection path here for the SLC504 was node 3 so the path was 1,0,2,3

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A Home	SYSTEM Overview	🌣 Config > Opcua	> Devices		
dit	Backup/Restore				
Status	Ignition Exchange		General		
•	Licensing				
Config	Modules		Name	SLC504	
	Projects	-			
	Redundancy		Description	SLC5/04	
	Gateway Settings				
	NETWORKING		Enabled	✔ (default: true)	
	Web Server	L			
	Gateway Network				
	Email Settings		Connectivity		
	SECURITY		Hostname	192.168.2.55	
	General	-			
	Auditing Users, Roles		Timeout	2000	
				(default: 2,000)	
	Service Security	-			
	Security Levels		Browse Cache	240000	
	Security Zones		meour	(default: 240,000)	
		-	Connection Path	1,0,2,3	
	DATABASES				
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Here we have both the SLC 5/04 and the PLC5 both connected.

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Ign	tion Maker Edition						
A	SYSTEM	🌣 Config 🗲 Opcua	> Devices				
Home	Overview						
da	Backup/Restore						
Status	Ignition Exchange		 Successfully created i 	new Device "SLC504"			
•	Licensing		Name	Туре	Description	Enabled	Status
Config	Modules						
	Projects		PLC5	Allen-Bradley PLC5	PLC5-80	true	Connected: Protocol: DHRIO
	Redundancy						
	Gateway Settings		SLC504	Allen-Bradley SLC	SLC5/04	true	Connected: Protocol: DHRIO
	NETWORKING		Sample_Device	Programmable Device Simulator		true	Running
	Web Server						
	Gateway Network		 Create new Device 				
	Email Settings						

Now to confirm our connections we were able to read some tags form both the PLC5 and the SLC 504 To do that click on OPC Quick client, then click on the plus sign beside the Ignition OPC UA Server



To see connected devices click on the plus sign of the Devices that will show both PLC5 & SLC-504 those we added before, now to open the folders and see the tags of each device, 1st to check the SLC 5/04 tags click on the plus sign of the SLC504

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Here we can see SLC504 tags, open N7 then click on N7:0 then to read that word 0 of Integer file 7 just click on r



Here we can see the word 0 value of integer file N7 for SLC5/04

SYSTEM			
	Config > Opc > OPC Quick	Client	
Overview			
Backup/Restore			
Ignition Exchange	🗸 Read o	completed. [I	gnition OPC UA Server]ns=1;s=[SLC504]N7:
Licensing	Value: 1998		
Modules	Quality: Goo Timestamn!	4/20/21.12:26	:45 PM PDT
Projects	Timestamp	120/22, 22120	
Redundancy	TYPE	ACTION	TITLE
Gateway Settings	Server	refresh	e- ⊖ Ignition OPC UA Server
	Object		
NETWORKING	Object		
Web Server	Object		₽- 🔁 [SLC504]
Gateway Network	Object		⊕- □ B3
Email Settings	Object		⊕- 🗀 B12
SECURITY	Object		⊕- 🗀 C5
Conoral	Object		⊕- 🗀 F8
Auditing	Object		⊕- 🗀 F11
Auditing	Object		₽- 🗀 F29
Lison Balas			⊖- 🔂 N7
Users, Roles	Object		
Users, Roles Service Security	Object	[s][r][w]	• • N7:0
Users, Roles Service Security Identity Providers	Object Tag Tag	[s][r][w] [s][r][w]	• • N7:0

We can repeat for PLC5

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Status	Ignition Exchange	TYPE	ACTION	TITLE		<u>î</u>				
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Config	Modules	Object		🕂 🖨 Devices						
	Projects	Object		□- 😋 [PLC5]						
	Redundancy	Object		⊕- ` B3						
	Gateway Settings	Object		⊕- 🗀 B12						
		Object		⊕- □ B15						
	NETWORKING	Object		⊕- 🗀 B47						
	Web Server	Object		⊕- ` B52						
	Gateway Network	Object		⊕- □ C5						
	Email Settings	Object		⊕- 🗀 C16						
	CC CUDITY	Object		⊕- 🚞 F8						
	SECURITY	Object		⊕- 🗀 F11						
	General	Object		⊕- 🧰 F29						
	Auditing	Object		⊕- ⊑ F46		-				
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	Identity Providers									
	identity Providers	Subscription 1	[x] [Add]							
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Here we can see the word 0 value of integer file N7 for PLC5 %' Ignition-LAB-D-PC

Ignition Maker Edition				
SYSTEM Home Overview III Backup/Restore Ignition Exchange Licensing Config Modules	Config > Opc > Q	PC Quick Cl Read cor Ilue: 850 uality: Good mestamp: 4	iient mpleted. [Ignit: /20/21.12:27:49 P	ion OPC UA Server]ns=1;s=[PLC5]N7:0
Projects Redundancy Gateway Settings		Object Object Object		● - □ F8 ● - □ F11 ● - □ F29
NETWORKING Web Server Gateway Network Email Settings		Object Object Object Object		
SECURITY		Tag	[s][r][w]	