## **Known Behaviours**

If the 'USB to RS485' converter is connected to the CIPer Model 30 controller's USB port while running station, then no COM port will be detected by the station.	To detect the COM port, po
If the 'USB to RS485' converter is disconnected from the CIPer Model 30 controller's port while the station is running then the serial communication will stop working.	To resume the serial comm 1. Plug-in 'USB to RS48 2. Power-cycle the CIP
If the connected 'USB to RS485' converter FTDI Cable is replaced with a new 'USB to RS485' converter (e.g. from a different Vendor) Then the name of the com port might change. If the station is running while this change is done, the serial communication will stop working. $\underbrace{\begin{tabular}{l l l l l l l l l l l l l l l l l l l $	To resume the serial comm 1. Verify the new CON 2. Resume the serial co model 30 controlle

## **USB Support**

The CIPer Model 30 controller has a single Type-A USB socket that supports RS-485 communication via RS-485 converter. The RS-485 communication is limited to three RS-485 devices. The RS-485 allows multiple devices to communicate at half-duplex on a single pair of wires, plus a ground wire, with distances up to 1200 meters (4000 feet) and supports MODBUS and BACnet MSTP protocols. The support-ed chipset used in USB to RS485 converter are FTDI (FT232 series) and prolific chipset (PL2303).

www.waveshare.com/usb-to-rs485.htm or <a href="https://core-electronics.com.au/industrial-usb-to-rs485-converter.html?utm\_source=google\_shopping&gclid=EAIaIQobChMIybbSipif8wIVSSQrCh2CxgiyEAQYASABEgLkTfD\_BwE">https://core-electronics.com.au/industrial-usb-to-rs485-converter.html?utm\_source=google\_shopping&gclid=EAIaIQobChMIybbSipif8wIVSSQrCh2CxgiyEAQYASABEgLkTfD\_BwE</a>

- The MSTP channel allows up to three generic BACnet controllers to be configured.
- ModbusAsync serial channel allows up to three MODBUS controllers to be configured.

All the baud rates up to 115200 bps are supported.

- Baud\_9600
- Baud\_19200
- Baud\_38400
- Baud\_57600
- Baud\_115200

#### **Basic Setup Steps**

- 1. Before powering up the CIPer Model 30 controller, connect the 'USB to RS-485' converter to its USB type-A socket.
- 2. After powering-up the CIPer Model 30 controller, configure the protocol (Modbus or BACnet) and baud rate using connected Niagara workbench.
- 3. Now, connect the Modbus/BACnet controllers to the RS485 port of CIPer Model 30 controller.

#### NOTE

Every time the 'USB to RS-485' connector is disconnected and reconnected, or changed to a different converter, the CIPer Model 30 controller must be power-cycled.

ower-cycle the CIPer Model 30 controller.

unication.

85 converter or check the connections.

Per Model 30 controller.

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1 port name

communication power-cycle the CIPer ers.

# **Configuring BACnet Network as an MS/TP Router**

To configure the BACnet network as an MS/TP Router:

- 1. Connect to the controller's station using Niagara Workbench.
- 2. Open the bacnet Palette.
- 3. In the NAV tree open the **Station > Config folder.**



- 4. Double click Drivers. The Driver Manager is displayed.
- 5. In the bacnet palette, open **NetworkPorts**



#### NOTE

Make sure to add BacnetNetwork under Drivers in the controller's station.

6. Select MstpPort, drag and drop the MstpPort to Drivers > BacnetNetwork > Bacnet Comm > Network in the NAV tree.



7. In the NAV tree double-click on the **MstpPort.** The MstpPort (Network Port) property sheet is displayed.

8. In the **Network Number** field, set the network number of the BACnet network segment to which the controller is being connected.

9. In the Port Name field, enter the Serial Port Name of the device connected to the controller port (ideally it should be COM1).

To verify the controller name, check the platSerialNPSDK property sheet.

1. In the NAV tree navigate to **Station > Config > Service > Platform** service and double-click platSerialNPSDK to display its property sheet. Check the Serial Port Name (COM1).

I Port Name		
roperty Sheet		
SerialPortPlatformSer	viceNpsdk (Serial Port Platform Service Npsdk)	
Platform Service D	Description OS Serial Communications	
COM1	BacnetMstp	
Owner Owner	BacnetMspp	
Os Port Name	/dev/serusbl	
Port Index	0	

## While Testing without a USB to serial device:

If the device is not detected or plugged in,

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us.1.100 (inclution) . Station (inclution) . Coning	, services , Fiationinaervices		
Nav	Property Sheet		
My Network	PlatformServices (Platform Service C	Container)	
	SystemService	System Platform Service Npsdk	
<ul> <li>Station (IPCStation)</li> </ul>	TcplpService	Tcp Ip Platform Service	
🌲 Alarm	LicenseService	License Platform Service	
Config	NtpService	Ntp Platform Service Npsdk	
<ul> <li>Gervices</li> </ul>	CertManagerService	Cert Manager Service	
AlarmService	DataRecoveryService	Data Recovery Service	
BackupService	SerialPortPlatformServiceNpsdk	Serial Port Platform Service Npsdk	
CategoryService	Platform Service Description	OS Serial Communications	
JobService	-D		
RoleService			
B UserService			
AuthenticationService			
DebugService			
BoxService			
FoxService			
HierarchyService			
HistoryService			
Search Service			
Tagpictionaryservice			
Web Capital			
Webservice			
EmailService			
SpyderConfiguration			

Application Director						
Connected to 19	Connected to 192.168.1.160					
Name	Туре	Status	Details	Auto-Start	Restart on Failure	
IPCStation	station	Running	fox=n/a,foxs=4911,http=n/a,https=443	true	true	
INFO [nre]	Launchi	ing Niaga	ara Runtime Environment			
1110 2010				our our our		
INFO [22:2	5:37 27	-Sep-21	AEST][ipcBaseDriver] libcipe:	r.so loade	d	
[22:25:37][libciper] vl.1.27.149, Baud: 460800 bps						
init libra	init library Logger level:INFO					
getOsPortNames0: serialCount 0						
getOsPortNamesU: No Serial Ports						
SEVERE [22	SEVERE [22:25:40 27-Sep-21 AEST][plat.serial] getOsPortNames0() returned NULL					
WARNING [22:25:52 27-Sep-21 AESI][Crypto] Cert chain for tridium has an out of date certificate						
INFO [22:25:55 27-Sep-21 AESI][ION] FOND Server Statted on port [4511] INFO [22:25:54 27-Sep-21 AFST][sus] Niagara Runtime Environment: 4 10 0 154						
INFO [22:25:54 27-Sep-21 AEST][sys] *** Station Started (38270ms) [146906ms total] ***						
niagara>INFO [22:25:54 27-Sep-21 AEST][sys] Sourced (30270ms) [140900ms cotal]						
		_				



### NOTE

• If there is no USB device connected to the controller, COM1 is not recognized.

• If the COM port does not appear under npsdk service, it means CIPer Model 30 does not recognize connected 'USB to RS485' converter. Ensure the converter is connected and is using one of the supported chipsets (FTDI or Prolific).

10. In the Baud Rate field, set the baud rate that should be used for BACnet MS/TP communication. In the **Enabled** field select **true**. Configure the other parameters as required.

Property Sheet				
MstpPort (Network Port)				
📔 Network Number	21			
🔻 🃔 Link	MAC 0 on C	OM1 at Baud _96	00	
Port Name		COM1		
🗎 Baud Rate		Baud _9600	-	
Mstp Address		0	[0-127]	
🗎 Max Master		127	[0-127]	
Max Info Frames		20	[1-100]	
🗎 Support Extende	d Frames	🛑 false 🔍 🗸		
🗎 Status	{ok}			
Fault Cause				
Poll Service	BacnetMult	iPoll		
Max Devices	max			
Enabled	🔵 true	-		
Port Id	2			
Port Info	MS/TP			

#### **BACnet Network Properties Description**

Property	Description
Network Number	The BACnet network number of the network segment to which you are connecting.
	<ol> <li>If connecting to an existing BACnet installation, to use the network number for that installation.</li> <li>For a new BACnet installation, set to the required value.</li> </ol>



	Port Name	The port should be the same as the name of the connected USB to RS485 convert-er. Typically, the name is COM1.
	Baud Rate	The Baud Rate of CIPer Model 30 controllers on the BACnet MSTP bus. The baud rate of each controller is automatically set to the baud rate Router (this device) when the CIPer Model 30 controller is powered up and connected to the BACnet MS/TP bus.
		NOTE: When the baud rate of the BACnet MSTP bus of a running system is changed, any CIPer Model 30 controllers connected to the bus mu back.
	Mstp Address	The address of the controller on the Mstp bus. Range = 0 to 127 (default value is 0) Each BACnet controller on the MS/TP network segment n address (Mstp Address). Leave the Mstp Address at 0 (the default) and verify that no other MS/TP controller has a same address
	Max Master	Set max master value to the highest known master device on the network, with pos-sible room for expansion.
	Max Info Frames	Controls how many messages are sent before passing the token and may be in-creased up to 50 to increase performance in some cases. Range = 0 to 100.
	Support Extended Frames	Enables and disables the use of larger frames, which, if supported by the device, may improve performance.
	Status	Read only. Indicates whether the MstpPort configuration is enabled/disabled.
	Fault Cause	Read only. Displays the details of the invalid configuration.
	Poll Services	Allows network polling properties to be configured.
	Max Devices	Read only. Indicates the maximum number of devices available on the network.
	Enable	Enables/Disables the MstpPort configuration.
	Port Id	Read only. The number of the Ethernet port being configured.
	Port Info	Read only. Reports the type of port (Ethernet, MS/TP, etc.).
_		

## 11. Click Save.

## NOTE

Every time the 'USB to RS485' connector is disconnected and reconnected, or changed to a different converter, the CIPer Model 30 controller must be power-cycled.

of the BACnet IP – MS/TP
ust be disable and enabled
nust have a unique MAC

# **Configuring ModbusAsyncNetwork**

To configure the ModbusAsynchNetwork:

- 1. Connect to the controller's station using Niagara Workbench.
- 2. In the NAV tree open the Station > Config folder.
  - ontroller's station using Niagara Workbench.
- 3. Double-click **Drivers.** The Driver Manager is displayed.

ontroller's station using Niagara Workbench.

4. Click New and select the ModbusAsynch Network from drop-down list.



5. Click **OK.** This opens ModbusAsynchNetwork dialogue box.

🎦 New				2
Name		Туре	Enabled	ſ₽
🕙 ModbusAs	yncNetwork	Modbus Async Network	true	
📄 Name	ModbusAsy	ncNetwork		
📄 Туре	Modbus Async Network			
Enabled 👔	🔵 true	•		
	01	K Cancel		

6. Click **OK.** This opens ModbusAsynchNetwork dialogue box.

7. In the NAV tree open the **Station > Config > Drivers** folder.

8. Right-click on ModbusAsyncNetwork > Views and select AX property sheet.

The propertysheet for the ModbusAsyncNetwork is displayed.

ModbusAsyncNetwork	Modbus Async Network)
Status	(disabled)
Enabled	🔴 faise
Fault Cause	
🕨 🖵 Health	Ok [23-Mar-21 7:36 PM IST]
Alarm Source Info	Alarm Source Info
Monitor	Ping Monitor
X Tuning Policies	Tuning Policy Map
Poll Scheduler	Basic Poll Scheduler
Retry Count	1
Response Timeout	+00000h 00m 01.000s
Float Byte Order	Order3210
Long Byte Order	Ovder3210
Use Preset Multiple	vegister 🧶 false 🔄
Use Force Multiple C	sil 🧶 false 🔄
Max Fails Until Devic	Down 2 [0-max]
🚔 Inter Message Delay	000000h 00m 00.000s # (0ms-1second)
🖷 🏺 Serial Port Config	COM1, 9500, 8, 1, None
Status	(down)
Port Name	RCR3
🗎 Baud Rate	Baud9600
Data Bits	Data Situt
Stop Bits	Stop Bit1
Parity	Mana
Flow Control Mo	le RtsCtsDeineut - RtsCtsDeDuteut - Contradiction - XooX

## ModbusAsyncNetwork Properties Description

Property	Description		
Status	Read only. Indicates the condition of the ModbusAsyncNetwork configuration at the last check.		
	<b>Ok</b> - The component is licensed and polling successfully.		
	Down - The last check was unsuccessful, e.g. because of an incorrect property setting, or loss of network connection.		
	Disabled - The network is disabled (the Enable property is set to false).		
	Fault - There is another problem. Refer to Fault Cause for more information.		
Port Name	The name of the USB Port. Typically, the name is COM1.		
Baud Rate	The communication speed in bits per second. (defaults = 9600)		
Data Bits	Specifies how many bits form a character (byte). (default = 8)		
Stop Bits	The number of stop bits. (default = 1)		
Parity	The parity used to confirm that the system communicated each character successfully. (default = Even)		

9. In the Enabled field, select True.

10. Expand the Serial Port Config property.

11. Expand the Serial Port Config property.

12. Expand the Serial Port Config property.

13. Configure the Serial port as required.

14. Click Save.