Cbus TCP Driver User Guide

Cous TCP Driver User Guide

Table of Contents

Installation	1
Requirement	2
MIG-112 Configuration	4
Default IP address	4
Change IP address	6
Quick Start	8
Configure Cbus Tcp Network	
Add a CbusTcpNetwork	9
Add a Cbus Devices	
Create Cbus Proxy Point	11
FG Cbus View	14
Cbus Device Manager	14
Cbus Point Manager	17
Cbus Event Logs	
Cbus Alarms	
Cbus Proxy Ext Special Consideration	
Licensing	26

Installation

Install ifcCbusTcp.jar on the computer where Niagara AX Workbench will run. To install, place a copy of the file in the modules directory of your Niagara AX installation. This is typically C:\Niagara\Niagara-3.n.nn\modules.

Install ifcCbusTcp.jar module on the target station. Using a Niagara AX workbench where the module has already been installed, connect to the stations platform service. Go to the software manager and install ifcCbusTcp.

Apart from installing the 4.*n.nn* version of the Niagara distribution files in the JACE, make sure to install the *ifcCbusTcp* module too (if not already present, or upgrade if an older revision). For more details, see "About the Commissioning Wizard" in the JACE Niagara AX Install and Startup Guide.

Following this, the station is now ready for Cbus software integration, as described in the rest of this document.

Requirement

- AX workbench 3.x.xx or higher.
 - 1. TCP Port connection.
- AX platform support:
 - 1. Web Supervisor.
 - 2. JACE 3E.
 - 3. JACE 6xx.
 - 4. JACE 7xx.
 - 5. JACE 8000 (Titan Jace).
- Compatibility with controllers of Excel 5000 family (XL50, XL80, XL100, XL500, XL600 and Zone Manager).
- Support baud rate 9600, 19200 and 38400.
- Support parallel connection to the existing Cbus network (XBS, EBI, SymmetrE).
- Flexible sizing up to max. 30 C-Bus devices per Driver network.
- **Reading and writing** from DDC points of type Digital Input, Digital Output, Analog Input, Analog Output, Pseudo Digital, Pseudo Analog and totalizer.
- Support devices alarm such a point overridden, fault alarm, high/low alarm and system alarms.



Note: Make sure the Cbus RS485 connection is connected at the terminal D2+/D2-:-

Below is the default setting:-

- 1. Cbus baud rate by default is 9600 kbps, make sure it is matching with all the controller in the network,
- 2. Cbus bus Id by default is 29 make sure this address is not being use by any Cbus controller in the network.

MIG-112 Configuration

This section provides a collection of procedures to configure the MIG-112/FG-20 setting.

Default IP address

- By the default from the factory the IP address is "192.168.10.11".
- User may require to change the default IP address to suite the network requirement. To take effect the changes MIG-112 controller required to reboot.
- Run the web browser from the computer and key in the MIG-112 controller IP address with login the user name and password as below:-

Address : <u>http://192.168.10.11</u> or <u>https://192.168.10.11</u> (SSL). User : user Password : pass

CBUS TCP DRIVER USER GUIDE

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$\leftrightarrow \rightarrow c$	O Not secure	duosys.asuscomm.com:8081/login.p	hp				:
				MIG112 BC-Cbus v3,5,0			
			Username	Enter username			
			Password	Enter password			
				Login			
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Change IP address

• After login to the MIG-112 web browser go to the "LAN" from the tree navigation, change the desire IP address and press the button "Submit". Finally reboot the MIG-112 to take effect.

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							_
		Submit Cancel					
	Copyright © 2014-2018 MaxLine Solutions Ltd. All rights re	eserved.				Versio	1 v3.5.1.0

• Below is to change the Cbus configuration, <u>baud rate by default is 9600</u> and <u>bus id by default is 29</u>, make sure the bus id is not used by other Cbus controller in the network. Improper setting may cause the communication unstable.

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Quick Start

This section provides a collection of procedures to use the AX Cbus Tcp drivers to build networks of devices with proxy points and other components. Like other AX drivers, you can do most configurations from special "manager" views and property sheets using Workbench.

- For any of the Cbus TCP networks:
 - "Configure the Cbus Tcp network"
 - "Add Cbus devices"
 - "Create Cbus proxy points"

Configure Cbus Tcp Network

To add and configure a Cbus Tcp network, perform the following main tasks:

- Add the Cbus TCP network, as needed:
 - Add a CbusTcpNetwork

Add a CbusTcpNetwork

To add a CbusTcpNetwork in the station

Use the following procedure to add a CbusTcpNetwork component under the station's Drivers container.

Note : If the host JACE has plan to connect to multiple MIG112 Cbus Gateway to be used for client (master) access of Cbus networks, add one CbusTcpNetwork for each MIG112 Cbus Gateway. Note that for each CbusTcpNetwork, you must Configure the Ip Address and TCP port parameters.(by default the port is <u>10101</u>).

Note : Only single connection can be made at once into the MIG112 controller TCP port connection, multiple connection from the multiple software or computer will not allowed.

To add a CbusTcpNetwork in the station:

- Double-click the station's **Drivers** container, to bring up the **Driver Manager**.
- Click the New button to bring up the New network dialog. For more details, see "Driver Manager New and Edit" in the Drivers Guide.
- Select "Cbus Tcp Network," number to add: 1 (or more if multiple networks) and click **OK**. This brings up a dialog to name the network(s).
- Click OK to add the CbusTcpNetwork(s) to the station. You should have a CbusTcpNetwork named "CbusTcpNetwork" (or whatever you named it), under your Drivers folder, initially showing a status of "{ok}" and enabled as "true."

Configure the Ip Address and TCP port parameters

In the CbusTcpNetwork property sheet for each network, you must set the Ip Address and Tcp port configuration to match communications parameters.

To set the Ip Address and Tcp port parameters

To set the Ip Address and Tcp port parameters for a CbusTcpNetwork:

Right-click the CbusTcpNetwork and select Views > Property Sheet.

The Property Sheet appears.

Scroll down

Set the properties for the MIG112 Cbus Gateway connection, where defaults are:

- Ip Address: 192.168.10.11 Enter the MIG112 Cbus Gateway ip address
- TCP Port: 10101 Bind to RS485 D1+/D1-.
- TCP Port: 10102 Bind to RS485 D2+/D1-.

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- Click the **Save** button.

Add a Cbus Devices

After adding a Cbus Tcp network, you can use the network's default "device manager" view to add the appropriate Cbus devices. You also could use discover the device automatically by pressing the button "discover".

Note: You need the address information for each Cbus device you are adding, as well as for later procedures to add proxy points under devices.

To add a Cbus device in the network

Use the following procedure to add the correct type of Cbus device in the network. To add a Cbus device:

 In the Nav tree or in the Driver Manager view, double-click the client network, to bring up the device manager (Cbus Device Manager). All of these device manager views operate in a similar fashion.

Note: For general device manager information, see the "About the Device Manager" section in the Drivers Guide.

- Click the New button to bring up the New device dialog.
- Select for number to add: 1 (or more, if multiple) and click **OK**. This brings up a dialog to name the device(s), enter Cbus device.
 - Any *Cbus Device* needs the unique address in use.
- Click OK to add the Cbus device(s) to the network.
 You should see the device(s) listed in the Cbus Device Manager view, showing a status of "{ok}" and enabled as "true."

If a device shows "down" check the configuration of the network and/or Cbus device address. You can simply double-click a device in the device manager to review settings in an **Edit** dialog, identical to the **New** dialog when you added it.

After making any address changes, click **Save**, then right-click the device and select **Actions > Ping**.

Create Cbus Proxy Point

As with device objects in other drivers, each Cbus device has a **Points** extension that serves as the container for proxy points. The default view for any Points extension is the Point Manager (and in this case, the "**Cbus Point Manager**"). You use it to add Cbus proxy points under any Cbus device.

Note: Unlike the point managers in many other drivers, the **Cbus Point Manager** does offer a "Learn mode" with a **Discover** button and pane. Otherwise you can simply use the **New** button to create proxy points, referring to the vendor's documentation for the addresses of data items in each Cbus device.

To add Cbus proxy points

Once a Cbus device is added, you can add proxy points to read and write data. If programming online (and the device shows a status of "{ok}"), you can get statuses and values back immediately, to help determine if point configuration is correct. Use the following procedure:

To create Cbus proxy points in a device:

■ In the **Device Manager**, in the **Exts** column, double-click the Points icon local in the row representing the device you wish to create proxy points.

This brings up the **Cbus Point Manager**.

- (Optional) Click the New Folder button to create a new points folder to help organize points, and give it a short name, such as "TempNo1", or whatever name works for your application. You can repeat this to make multiple points folders, or simply skip this step to make all proxy points in the root of Points. Note that all points' folders have their own Cbus Point Manager view, just like Points. If making points folders, double-click one to move to its location (and see the point manager).
- At the location needed (**Points** root, or a points folder), click the **New** button. The **New** points dialog appears, in which you select a "Point Type," "Number to Add," "Point Id and Element".

😫 Edit								×
Name	Туре	User Address	Point Type	Point Id	Element	Alarm Class	Enabled	Facets
N PSA2_VALUE	Numeric Writable	PSA2	Analog Pseudo	1	VALUE	defaultAlarmClass	true	units=null,pre
Name Type User Address On Point Type Point Id Element Alarm Class Enabled Facets Tuning Policy	PSA2_V Cannot PSA2 Analog 1 VALUE Defaul otrue units=nu Name Defaul	ALUE edit Pseudo [0- [t Alarm Class e ull,precision=1,m .t Policy	1001] 1001] 1001] in=-inf,max=+inf	» «	₽			
		but	_	-	-			
			ОК	Cancel				

For more details, see "About Cbus proxy points"

 Click **OK** to add the proxy point(s) to the Points extension (or to the current points folder), where each shows as a row in the point manager.

If parameter correctly, each point should have a status of "{ok}" with a polled value displayed.

- If a point shows a "{fault}" status, check its ProxyExt "Fault Cause" property value, which typically includes a Cbus "exception code" string, such as "Read fault" In such a case, recheck the address in the point against the documented address for the data item.
- Continue to add proxy points as needed under the **Points** extension of each Cbus device. As needed, double-click one or more existing points for the **Edit** dialog, similar to the **New** dialog used to create the points. This is commonly done for re-editing items like data addresses, names, or facets.

FG Cbus View

- Cbus Device Manager
- Cbus Point Manager

Cbus Device Manager

The Cbus Device Manager is the default view when you double-click on a Cbus Tcp Network in the Nav tree. This manager view provides a quick and easy way to display.

The Cbus Device Manager is the default view for any Cbus Tcp Network container. The Cbus Device Manager is a table-based view, where each row represents a unique device. When building a network in the station, you use this view to create, edit, and delete device-level components. Below is an example Cbus Device Manager view.

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The view above shows a typical Cbus Device Manager view.

The "New Folder", "New", and "Edit" buttons are not unique to the Cbus Device Manager, and are explained in the "AX User's Guide" in the "Driver Architecture" section. The "Match" button is not used for the Cbus driver.

You can now add the devices to the station database by clicking the "Add" button. This will pop up the "Add" dialog box:

👫 Edit									\times
Name	Туре	Address	Controller Name	Model	Firmware Versi	on	Override Flag	Enabled	₽,
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Name Type Addre: Contro Model Firmw Overri Enable	ss bller Name are Version de Flag ed	XL500 Cannot ed 1 XL500 XL500 2.07.06 true true	it [1 - 30]			LA LA LA			
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The "Add" dialog box affords you the opportunity to tweak the display name, enabled state, and/or address of each of the selected devices. Click the "OK" button to add the devices to the database, or click "Cancel" to bail out.

The "Discover" button implements functionality that is unique and tailored to discovering Cbus devices. By clicking the "Discover" button, the "learn" mode of the manager is invoked (the panes will be split, and a "discovery" table will be displayed in the top pane).

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Single or multiple Cbus devices can be added as device by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the "Add" dialog box to appear: Once the device(s) are satisfactorily edited, click "OK" to create the device corresponding to the device property.

Cbus Point Manager

The Cbus Point Manager is the default view when you double-click on a "points" folder (a CbusPointDeviceExt type folder) under a CbusDevice in the Nav tree. This manager view provides a quick and easy way to display and learn Cbus points in a Cbus device.

The Cbus Point Manager is the default view for any CbusPointDeviceExt container. The Cbus Point Manager is a table-based view, where each row represents a unique Cbus address within a device.

Below is an example Cbus Point Manager view.

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CbusTcpNetwork	N AI02_VALUE	Numeric Point	0.0{ok}	Analog Input	1	VALUE	defaultPolicy			
XLS00	N AI03_VALUE	Numeric Point	87.0 {ok}	AnalogInput	2	VALUE	defaultPolicy			
EventLos	N AI04_VALUE	Numeric Point	0.0 {ok}	AnalogInput	3	VALUE	defaultPolicy			
Points	N AI05_VALUE	Numeric Point	0.0 {ok}	AnalogInput	4	VALUE	defaultPolicy			
CbusDevice	() AI06_VALUE	Numeric Point	76.7 {ok}	AnalogInput	5	VALUE	defaultPolicy			
Apps	N AI07_VALUE	Numeric Point	0.0 {ok}	Analog Input	6	VALUE	defaultPolicy			
Files	N AI08_VALUE	Numeric Point	0.0 {ok}	Analog Input	7	VALUE	defaultPolicy			
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	N A002_VALUE	Numeric Writable	22.0 {ok} @ def	Analog Output	1	VALUE	defaultPolicy			
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CbusTcpNetwork	N A005_VALUE	Numeric Writable	0.0 {ok} @ def	Analog Output	4	VALUE	defaultPolicy			
CbusDevice	N A006_VALUE	Numeric Writable	76.0 {ok} @ def	Analog Output	5	VALUE	defaultPolicy			
CbusDeviceFolder	N A007_VALUE	Numeric Writable	0.0 {ok} @ def	Analog Output	6	VALUE	defaultPolicy			
Points	N A008_VALUE	Numeric Writable	22.0 {ok} @ 10	Analog Output	7	VALUE	defaultPolicy			
	B DI1_VALUE	Boolean Point	false {ok}	Digital Input	0	VALUE	defaultPolicy			
	B DI2_VALUE	Boolean Point	false {ok}	Digital Input	1	VALUE	defaultPolicy			
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The "New Folder", "New", and "Edit" buttons are not unique to the Cbus Device Manager, and are explained in the "AX User's Guide" in the "Driver Architecture" section. The "Match" button is not used for the Cbus driver.

The "Discover" button implements functionality that is unique and tailored to discovering Cbus devices points. By clicking the "Discover" button, the "learn" mode of the manager is invoked (the panes will be split, and a "discovery" table will be displayed in the top pane).

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× XL500	AI02_VALUE	Analog Input	1	VALUE										
Atarm Sol	B AI02_MODE	Analog Input	1	MODE										
Points	B AI02_ALARMSTATUS	Analog Input	1	ALARMST	ATUS									
CbusDevice	B AI02_SUPPRESSALARM	Analog Input	1	SUPPRES	SALARM									
Apps	AI02_HIGHWARNINGLIMI*	f Analog Input	1	HIGHWAR	NINGLIMIT									
Files	AI02_HIGHALARMLIMIT	Analog Input	1	HIGHALA	RMLIMIT									
Hierarchy	N AI02_LOWWARNINGLIMIT	Analog Input	1	LOWWAR	NINGLIMIT									
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67.219.119.242 (WhitneyHighSchool)	Database												67 ob	ojects
4	Name	Туре	Out		Point Type	Point Id	Element	Tuning Policy Name	Fault Cause					12
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	N AI03_VALUE	Numeric Point	87.0 {ok}		Analog Input	2	VALUE	defaultPolicy						
CbusTcpNetwork	N AI04_VALUE	Numeric Point	0.0{ok}		Analog Input	3	VALUE	defaultPolicy						
Couspevice	N AI05_VALUE	Numeric Point	0.0{ok}		Analog Input	4	VALUE	defaultPolicy						
Points	🚺 AI06_VALUE	Numeric Point	76.7 {ok}		Analog Input	5	VALUE	defaultPolicy						
	N AI07_VALUE	Numeric Point	0.0 {ok}		Analog Input	6	VALUE	defaultPolicy						
	N AI08_VALUE	Numeric Point	0.0 {ok}		Analog Input	7	VALUE	defaultPolicy						
	N A001_VALUE	Numeric Writable	66.0 {ok} @ 10)	Analog Output	0	VALUE	defaultPolicy						
	N A002_VALUE	Numeric Writable	22.0 {ok} @ d	ef	Analog Output	1	VALUE	defaultPolicy						
	ADDR VALUE	Numeric Writshle	older	New	🖋 Edit	Discover	Ca	ancel (+) Add	≽ Match	🖏 Tagit				Y

Single or multiple points can be added as control points with CbusProxyExt extensions by selecting the discovered row(s) in the top pane, and clicking add. Doing so will cause the "Add" dialog box to appear: Once the point(s) are satisfactorily edited, click "OK" to create the proxy points corresponding to the point property.



Cbus Event Logs

Any Cbus event log such a point override, high/low alarms from the device wills log to the event log history, The event log can be define from the specified Cbus Device property.



The Cbus event log can be view from the AX Alarm Console Recipient.

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• Nav	Application Director	XL500	A008_VALUE						×
ピ 🖸 🔀 🕲 My Network	Time Range	√ 29-Ju	un-18 2:03 AM SGT to	? ()					
✓ ≦ XL500	wb/XL500								50 records
Alarm Soi	Timestamp	Address	Event Timestamp	Controller Name	Point Name	Value	Condition		ŧ
▶ ﷺ EventLoį	29-Jun-18 2:03:20 AM SGT	1	null	XL500	A003	54 0 Pct	Manual operation		A
Points	29-Jun-18 2:03:52 AM SGT	1	null	XL500	A006	76 0 Pct	Manual operation		
Apps	29-Jun-18 9:45:52 AM SGT	1	null	XL500	A001	66 0 Pct	Manual operation		
Files	29-Jun-18 9:47:47 AM SGT	1	null	XL500	A001	33 0 Pct	Auto operation		
Hierarchy	29-Jun-18 9:48:17 AM SGT	1	null	XL500	A003	54 0 Pct	Auto operation		
- C History	29-Jun-18 9:48:18 AM SGT	1	null	XL500	A006	76 0 Pct	Auto operation		
▼ 🖀 wb	29-Jun-18 10:22:22 AM SGT	1	null	XL500	A002	33 0 Pct	Manual operation		
AuditHistory	29-Jun-18 10:22:29 AM SGT	1	null	XL500	A002	55 0 Pct	Auto operation		
	29-Jun-18 10:23:40 AM SGT	1	null	XL500	A002	57 0 Pct	Manual operation		
▲ XL500	29-Jun-18 10:23:48 AM SGT	1	null	XL500	A002	55 0 Pct	Auto operation		
▶	29-Jun-18 10:24:00 AM SGT	1	null	XL500	A002	65 0 Pct	Manual operation		
4	29-Jun-18 10:24:08 AM SGT	1	null	XL500	A002	55 0 Pct	Auto operation		
• Palette	29-Jun-18 10:24:08 AM SGT	1	null	XL500	A002	57 0 Pct	Manual operation		
🖿 🗶 🔊 🧴 ifcCbusTcp 🗸	29-Jun-18 10:25:09 AM SGT	1	null	XL500	A002	55 0 Pct	Auto operation		
ChusTroNetwork	29-Jun-18 10:25:25 AM SGT	1	null	XL500	AO02	22 0 Pct	Manual operation		
Coustepretwork	29-Jun-18 10:25:31 AM SGT	1	null	XL500	A002	55 0 Pct	Auto operation		
CbusDeviceFolder	29-Jun-18 10:25:49 AM SGT	1	null	XL500	A001	66 0 Pct	Manual operation		
Points	29-Jun-18 10:25:50 AM SGT	1	null	XL500	A006	76 0 Pct	Manual operation		
	29-Jun-18 10:25:50 AM SGT	1	null	XL500	AO03	54 0 Pct	Manual operation		
	29-Jun-18 10:26:01 AM SGT	1	null	XL500	PSA2	65	Manual operation		
	29-Jun-18 10:26:04 AM SGT	1	null	XL500	PSA2	0	Auto operation		
	29-Jun-18 10:30:13 AM SGT	1	null	XL500	AO02	22 0 Pct	Manual operation		
	29-Jun-18 10:30:14 AM SGT	1	null	XL500	PSA2	65	Manual operation		
	29lun-18 10:31:03 AM SGT	1	null	XI 500	AO02	55 0 Pct	Auto operation	_	-

Cbus Alarms

Any Cbus alarm such a point override, high/low alarms from the device wills route to the alarm console, the alarm can be define from the specified Cbus TCP Network property and at the individual Cbus proxy extension point.

By enabling the Cbus alarm at the Cbus TCP Network "Accept Alarm" property system will receive the alarm and route automatically to the standard alarm console.

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My Host : Emova-PC (wb) : Station (wb) :	Config : Drivers : CbusT	spNetwork	1	AX Proper	ty Sheet 👻		
• Nav	Application Director	busTcpNetwork 00 A008_VALUE			×		
ピ 🔿 🗵 🔇 My Network	Property Sheet						
👻 😁 Drivers	CbusTcpNetwork (CbusTCPNetwork)						
NiagaraNetwork	🗎 Status	{ok}			- 1		
CbusTcpNetwork	Enabled	🔵 true 🔍			- 1		
🔻 🖀 XL500	Fault Cause						
Alarm Sou	🕨 🖵 Health	Ok [29-Jun-18 11:44 AM SGT]					
Event Los	Alarm Source Info	Alarm Source Info					
Points	Monitor	Ping Monitor			- 1		
ChusDevice	X Tuning Policies	Cbus Tuning Policy Map			- 1		
Apps	Poll Scheduler	Basic Poll Scheduler			- 1		
Files	Retry Count	2 [0-5]			- 1		
Hierarchy	🗎 Response Timeout	00000h 00m 03.000s = [3secs-10secs]			- 1		
 History 	🗎 Address	192.168.10.11:10102			- 1		
▼ ≩ wb	🗎 Accept Alarm	🔵 true 🔍			- 1		
	🕨 🦎 License	Win-77C5-9793-D81C-2F55					
CbusDevice -	XL500	Cbus Device					
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- Palette					- 1		
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The alarm point can define at the Cbus Proxy Extension, simply select the "Alarm Class" property and select from the existing alarm class list and the alarm will automatically route to the selected alarm class.

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Name	Туре	User Address	Point Type	Point Id	Element	Alarm Class	Enabled	Facets
AI03_VALUE	Numeric Poin	t A103	Analog Input	2	VALUE	defaultAlarmClass	true	units=null,precisio
Name Туре	AI Car	03_VALUE nnot edit						
Vser Address Point Type	AI Ar	03 nalog Input						
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Drivers AI03_VALUE (Numeric Po	it)		
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The Coust of	IE:Analog Input:2		
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Conversion	Default 👻		
Files Tuning Policy Name	Perfault Policy		
Hierarchy Read Value	87.00 {ok}		
- Write Value	0.00 {ok}		
👻 🖀 wb 🕼 User Address	AI03		
🔺 AuditHistory 🕥 Point Type	Analog Input 🔹		
🔺 CbusDevice 🤟 Point Id	2 [0-1001]		
Balatta Element	VALUE		
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Cbus Proxy Ext Special Consideration

Whenever a Cbus proxy Ext is added or configured to have an point property value and the base Type is Writable Point as shown below, there is additional special behavior need to take note:

Some of the command point required to use override(priority 1-10) to change the value, as when the "set" action is execute the output will not change unless user use override(priority 1-10) to change the value.

Licensing

Cbus driver License is running independently from the Tridium license, it has no restriction to run to any of the existing license vendor.

The Cbus license provide 2 hour demo license without the unlock code. After the demo license expired the Cbus Driver communication will stop automatically and will show fatal fault at the Cbus TCP Network level. "ifcCbusTcp license expired". To extend the demo period user required to restart the station.



To request the license submit the JACE/Web Supervisor host ID, to unlock the driver simply go to the license property action and invoke command "License Update", the dialog "License Update" will appear. Place the signature code at the "Signature" property. Please take note the license only provide by authorize vendor. If the signature code is successful enter the property "Mode" will automatically change to "registered" and user is required to restart the station to take effected.

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