

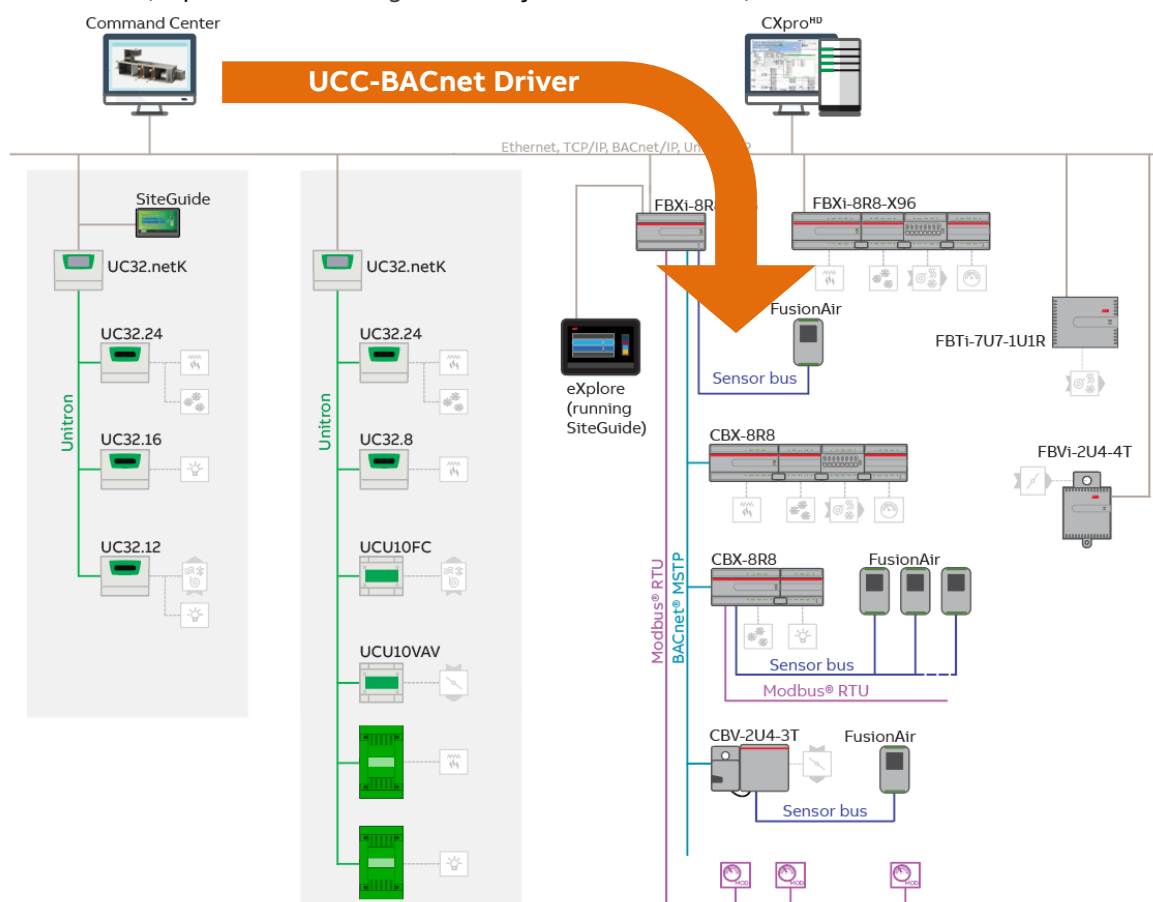
How to configure BACnet devices for a Unitron site

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1 Introduction

This document describes how to configure BACnet devices for Unitron sites.

Using the UCC-BACnet driver, ABB Cylon BACnet controller trunks can be connected to Unitron sites without the need for an ASPECT® supervisory control layer. Unitron Command Centre (UCC) is capable of retrieving data from mixed BACnet® / Unitron sites (CXpro^{HD} is used to engineer the Cylon BACnet devices).



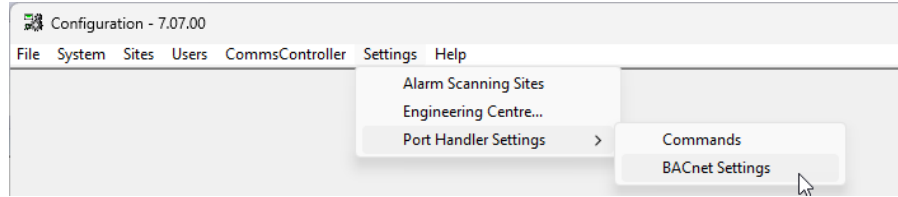
When Cylon BACnet devices are installed on a Site they must first be engineered in CXpro^{HD}, and then when they are operational they can be added to the Unitron site as described below, and made visible within Cylon Engineering Centre (CEC) and Unitron Command Centre (UCC) alongside Unitron devices.

Both BACnet and Unitron controllers on a mixed protocol site are visible in the UCC/CEC Site Tree.

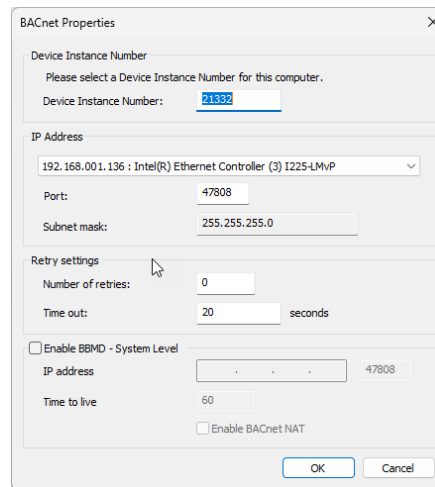
BACnet trend log data is accessible and can be backed up in the same way as the Unitron data, and a facility for the management of BACnet schedules and alarms is available in the UCC.

2 Configuring BACnet Devices on a Site

- Before running the discovery function, it is necessary to verify if the BACnet properties of the CEC are configured correctly. For this go to **CCConfig** and select **BACnet Settings**.



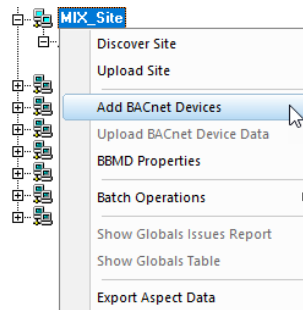
- Make sure that **Device Instance number** of the PC BACnet Stack is unique for the whole BACnet network and **IP Address** is in the right range for the BACnet devices that you are about to add.



Note: If BACnet devices are on a different IP VLAN then an **Enable BBMD – System Level** option is available to bridge PC and BACnet devices networks.

When bridging networks it is essential to provide and continuously ensure a secure connection between the product and your network or any other network (as the case may be).

- Discover and add BACnet devices – in the **CEC Site tree** right-click on the desired **Unitron site** and select **Add BACnet Devices** to launch the **Discovery Tool**.



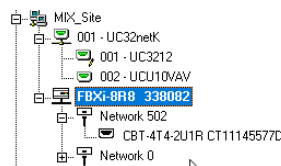
Note: Windows might ask for the driver to be allowed access to your networks. This must be granted for the **BACnet** discovery to work.

Note: The 'Add BACnet Devices' option is available only on **Site** nodes within **Unitron** sites or mixed sites. This option is not available in BACnet-only sites.

Note: This functionality will only be available if the BACnet devices are connected under a Smart Router.

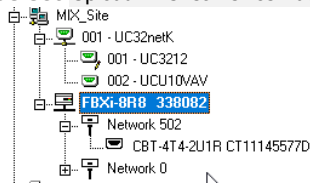
- Configure your discovery BACnet ID range (Site Details > Subnet) between 1 and 4194302. If your BACnet networks are large and have MSTP devices it is recommended to increase the Wait Timeout. If required you can limit the discovery to a single MSTP network by setting MSTP Network No. (if this is left blank the discovery will broadcast a "Who-is" to all available BACnet networks).

- In the Discovery Tool, select the required devices and add them to the site.

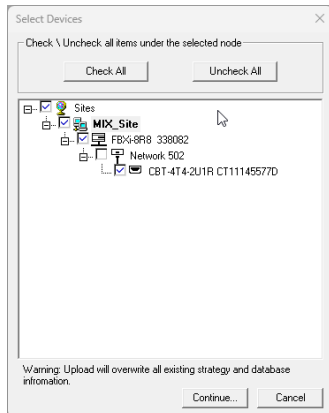


In the Site Tree you will see a BACnet devices and trunks alongside existing Unitron trunks

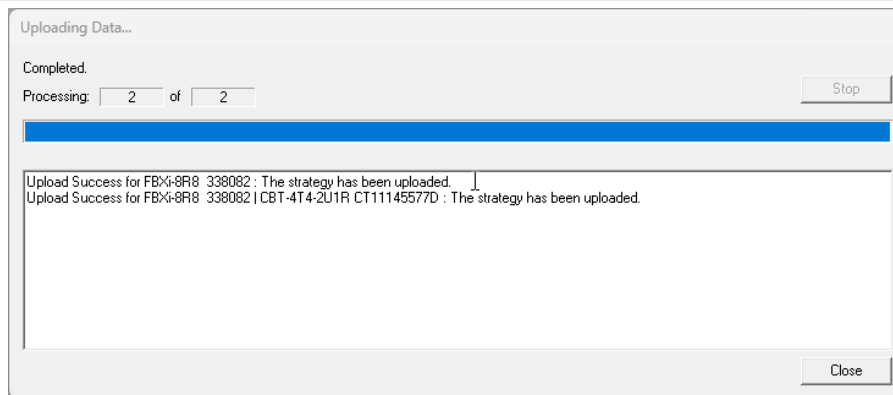
- To upload Data discovered from the BACnet devices, right-click on the **Site** node of a Unitron or mixed site, and select **Upload BACnet Device Data** to open the **Select Devices** dialog:



- Select the controllers from which you want to upload BACnet and controller data, and press **Continue...**



Note: If the discovered data was previously uploaded, and subsequent changes made through CXpro^{HD}, then the CEC will display a warning to allow you to choose whether to overwrite existing data or to cancel the upload. This includes adding a new database to the BACnet site at any time in the future and simply importing that database into the Unitron Site.



Note: Strategies on imported BACnet devices can only be created/edited in CXpro^{HD}.

EXAMPLES OF DISCOVERY RESULTS

TYPICAL DISCOVERY RESULT

BACnet Explorer

Device List Legend:

- A newly discovered device not configured in Cylon Engineering Centre yet
- No device with matching Device Instance found in site
- The discovered device matches with device configured in Cylon Engineering Centre
- The discovered device has a different MAC Address configured in Cylon Engineering Centre

NOTE: If BACnet NAT Routing is enabled it is not possible to place MS/TP controllers under the correct BACnet routers.

Name	MAC	Type	No. Types	Model	Instance	Vendor ID	MS/TP Network	IP Address
001 - FBXi-UC32net	1	UC32.netK/WEB/MOD	-1	-1	-1	-1	0	192.168.1.11
001 - FBXi-UC3224	1	UC32.24	-1	-1	-1	-1	0	192.168.1.13
002 - UC32netK/WEB/M...	2	UC32.netK/WEB/MOD	-1	-1	-1	-1	0	192.168.1.13
001 - UC3224	1	UC32.24	-1	-1	-1	-1	0	192.168.1.13
FBXi-8R8 338256	3	FBXi-8R8-X96	1	FBXi-8R8-X96	338256	171	502, 503	192.168.1.41
CBT-4T4-2U1R (933222)	2	UCU10FC BACnet MSTP	1	CBT11	933222	171	502	192.168.1.41
CBX CCBX830603F	3	CBX-8R8	1	CBX	830603	171	502	192.168.1.41
001 - FBTi-6T1-1U1R	4	FBTi-6T1-1U1R	1	FBTi-6T1-1U1R	308131	171	502	192.168.1.51

Number of Devices found: 8

OK Cancel Rescan

DISCOVERY RESULT WITH “???” ERROR

If “???” characters are displayed in the “Type” column it indicates that the Controller Type was not recognized.

If a controller displays ??? then to allow the importing process to continue either that controller must be deselected, or it must be manually edited to set a type.

BACnet Explorer

Device List Legend:

- A newly discovered device not configured in Cylon Engineering Centre yet
- No device with matching Device Instance found in site
- The discovered device matches with device configured in Cylon Engineering Centre
- The discovered device has a different MAC Address configured in Cylon Engineering Centre

NOTE: If BACnet NAT Routing is enabled it is not possible to place MS/TP controllers under the correct BACnet routers.

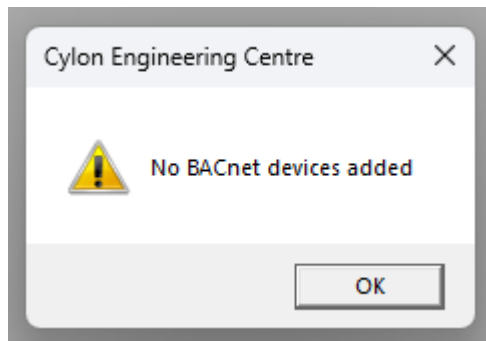
Name	MAC	Type	No. Types	Model	Instance	Vendor ID	MS/TP Network	IP Address
001 - FBXi-UC32net	1	UC32.net...	-1	-1	-1	-1	0	192.168.1.11
001 - FBXi-UC3224	1	UC32.24	-1	-1	-1	-1	0	192.168.1.13
002 - UC32netK/...	2	UC32.net...	-1	-1	-1	-1	0	192.168.1.13
001 - UC3224	1	UC32.24	-1	-1	-1	-1	0	192.168.1.13
FBXi-8R8 338256	3	FBXi-8R8-...	14	FBXi-8R8-X96	338256	171	502, 503	192.168.1.41
CBT-4T4-2U1R (9...	2	???	33	CBT11	933222	171	502	192.168.1.41
CBX CCBX830603F	3	CBX-8R8	1	CBX	830603	171	502	192.168.1.41
001 - FBTi-6T1-1...	4	FBTi-6T1-...	14	FBTi-6T1-1U1R	308131	171	502	192.168.1.51

Number of Devices found: 8

OK Cancel Rescan

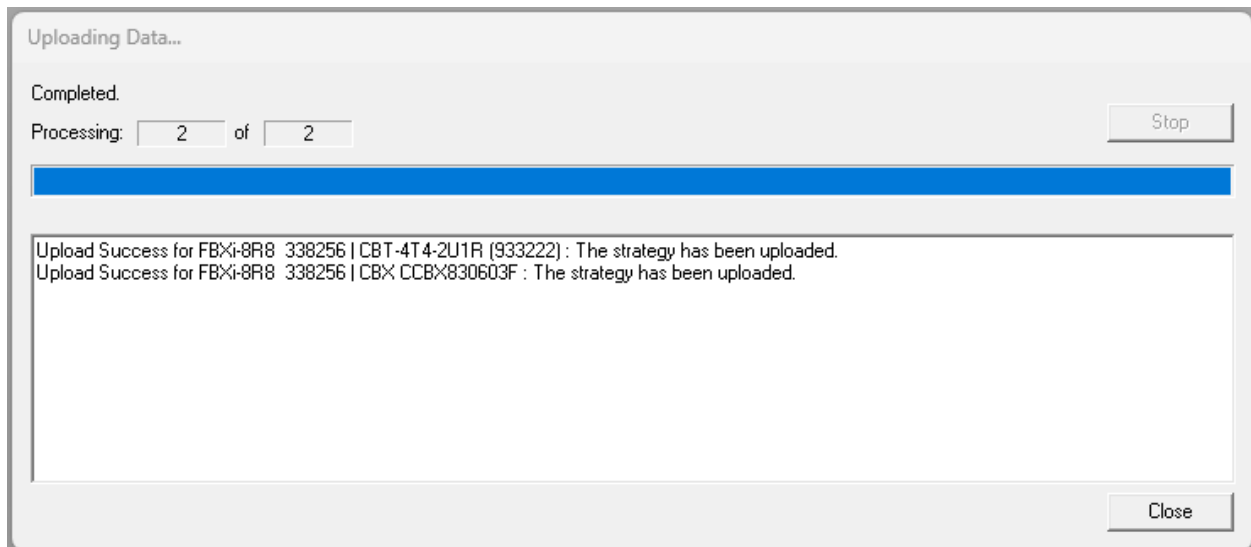
NO DEVICES ADDED

If you run **Add BACnet Devices** to initiate a discovery and no new BACnet devices are discovered, then the following message will be displayed :



SUCCESSFUL UPLOAD

if BACnet Data is successfully uploaded a message like the one below is displayed



3 Configuring BACnet points in CCDraw

Once the BACnet data of added BACnet devices have been uploaded to the Unitron site, then points mapping in graphics can be performed.

Dynamic Points from the BACnet Controllers are added to Command Centre Graphics in the same way as points from Unitron controllers are added.

Open CCDraw and using analog or digital point tool place it on the graphical screen. The CCDraw – Setup a dynamic point dialog window will open.

- If your BACnet Router supports Strategies, then the UCxx selection field will include an option to select “* Router *”, and in that case the Point selector will reflect points in the Router.

CCDraw - Setup a dynamic point

Point Type

- ☐ Analog
- ☐ Digital
- ☒ Analog Set
- ☐ Digital Set
- ☐ Analog Hardware
- ☐ Digital Hardware
- ☐ Allow Override

Point Address

Name	Number	Wild
Comms: FBXi-8R8 338082	or 2	<input type="checkbox"/>
UCxx: * Router *	or 0	<input type="checkbox"/>
Point: CBT-4T4-2U1R CT11145577D	or 1	<input type="checkbox"/> Range : 1-1024

Attribute

- ☐ None
- ☐ Time
- ☐ Strategy Variable Delay
- ☐ Datalog
- ☐ Datalog Interval Change
- ☐ Datalog Group
- ☐ Comms Schedule
- ☒ UC Time Schedule
- ☐ UC Holiday Schedule
- ☐ Time Schedule Manager

Name:

or Number:

Colour Bar

- ☐ Show Colour Bar
-

Movement

- ☒ Horizontal
- ☐ Vertical

Text

- ☐ Show text
-
- ☐ SetText position on exit
-

Point Range

Minimum:

Maximum:

- BACnet points from MSTP devices connected to an ABB Cylon Router are configured as below

CCDraw - Setup a dynamic point

Point Type

- ☐ Analog
- ☐ Digital
- ☐ Analog Set
- ☒ Digital Set
- ☐ Analog Hardware
- ☐ Digital Hardware
- ☐ Allow Override

Point Address

Name	Number	Wild
Comms: FBXi-8R8 338256	or 2	<input type="checkbox"/>
UCxx: CBT-4T4-2U1R (933222)	or 2	<input type="checkbox"/>
Point: Return Temperature Sensor	or 1	<input type="checkbox"/> Range : 1-16

Attribute

- ☒ None
- ☐ Time
- ☐ Strategy Variable Delay
- ☐ Datalog
- ☐ Datalog Interval Change
- ☐ Datalog Group
- ☐ Comms Schedule
- ☐ UC Time Schedule
- ☐ UC Holiday Schedule
- ☐ Time Schedule Manager

Name:

or Number:

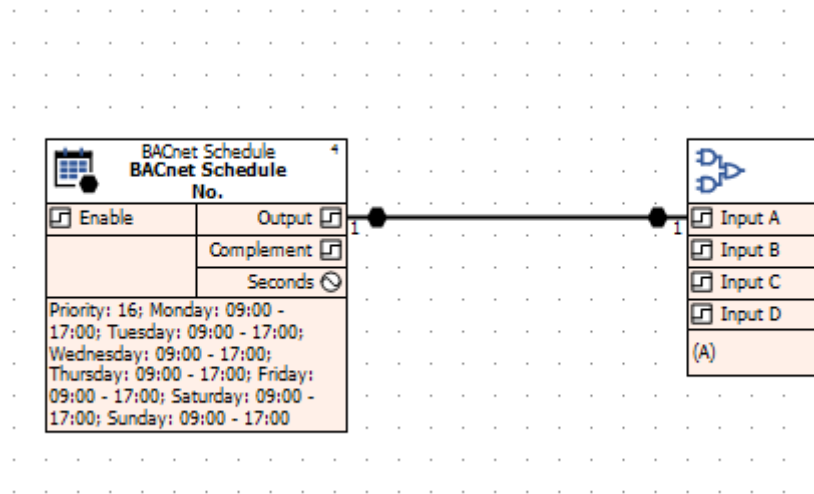
Point Range

Minimum:

Maximum:

4 Configuring BACnet Schedules

- When adding a dynamic point for a BACnet Schedule use the “UC Time Schedule” attribute that refers to a BACnet Time Schedule.



BACnet Schedule

CCDraw Setup a dynamic point

Point Type

- ☐ Analog
- ☒ Digital
- ☐ Analog Set
- ☐ Digital Set
- ☐ Analog Hardware
- ☐ Digital Hardware
- ☐ Allow Override

Point Address

Name	Number	Wild
Comms: FBXi-8R8 338082	or 2	<input type="checkbox"/>
UCxx: * Router *	or 0	<input type="checkbox"/>
Point: Bacnet Schedyle Status	or 1	Range: 1-1024

Attribute

- ☐ None
- ☐ Time
- ☐ Strategy Variable Delay
- ☐ Datalog
- ☐ Datalog Interval Change
- ☐ Datalog Group
- ☐ Comms Schedule
- ☒ UC Time Schedule
- ☐ UC Holiday Schedule
- ☐ Time Schedule Manager

Name: BACnet Schedule No.

or Number:

Colour Bar

☐ Show Colour Bar

Set Colours...

Movement

☒ Horizontal

☐ Vertical

Text

☐ Show text

Font...

☐ SetText position on exit

Precision...

Point Range

Minimum: 0,0

Maximum: 100,0

Value Limits...

Attach Animation...

OK Cancel

- In CCView, once you click on the Schedule point the **BACnet Schedule Editor** will open:

- Select one of the days on the left and click on **Edit** button

This will open a weekly BACnet **Weekly Schedule** editor where times can be added or modified. Click **OK** to accept the changes

Time	Value
09:00:00	ON
13:00:00	OFF

Buttons: Add, Delete, Apply to: (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday), OK, Cancel

- Click on the **Download** button to send changes to BACnet Schedule

BACnet Schedule Editor

Site: MIX_Site Network: FBXI-8R8 338082 Controller: * Router * Schedule: BACnet Schedule No.

Effective Period

Start Date: 28.08.2024 End Date: 28.08.2024

Weekly Schedule

Day	Time-Values
Monday	(09:00:00, ON), (13:00:00, OFF)
Tuesday	(09:00:00, ON), (13:00:00, OFF)
Wednesday	(09:00:00, ON), (13:00:00, OFF)
Thursday	(09:00:00, ON), (13:00:00, OFF)
Friday	(09:00:00, ON), (13:00:00, OFF)
Saturday	(09:00:00, ON), (13:00:00, OFF)
Sunday	(09:00:00, ON), (13:00:00, OFF)

Exception Schedule

Type	Priority	Date/Reference	Time-Values

Buttons: Load From File, Save to File, Upload, Download, Exit

5 Configuring BACnet Trendlogs

To configure a BACnet Trendlog, in the **Attribute** section of the **CCDraw – Setup a dynamic point** dialog, select the **Datalog** option, in the same way as for a Unitron Site.

BACnet Space 2 Temp

CCDraw - Setup a dynamic point

Point Type

- ☐ Analog
- ☐ Digital
- ☐ Analog Set
- ☐ Digital Set
- ☒ Analog Hardware
- ☐ Digital Hardware
- ☐ Allow Override

Point Address

Name	Number	Wild
Comms: FBX4-8R8 338082	2	<input type="checkbox"/>
UCxx: * Router *	0	<input type="checkbox"/>
Point: BACnet Space 2 Temp	2	<input type="checkbox"/> Range: 1-24

Attribute

- ☐ None
- ☐ Time
- ☐ Strategy Variable Delay
- ☒ Datalog
- ☐ Datalog Interval Change
- ☐ Datalog Group
- ☐ Comms Schedule
- ☐ UC Time Schedule
- ☐ UC Holiday Schedule
- ☐ Time Schedule Manager

Name: BACnet Space 2 Temp Trend

or Number: 2

Colour Bar

☐ Show Colour Bar

Set Colours...

Movement

☒ Horizontal

☐ Vertical

Text

☒ Show text

Font...

☒ SetText position on exit

Precision...

Point Range

Minimum: 0.0

Maximum: 100.0

Value Limits...

Range: 1-24

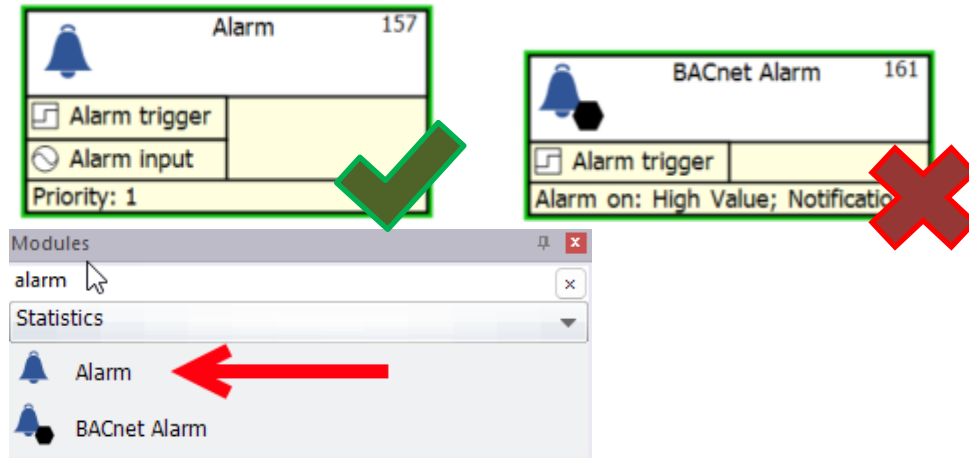
Attach Animation...

OK **Cancel**

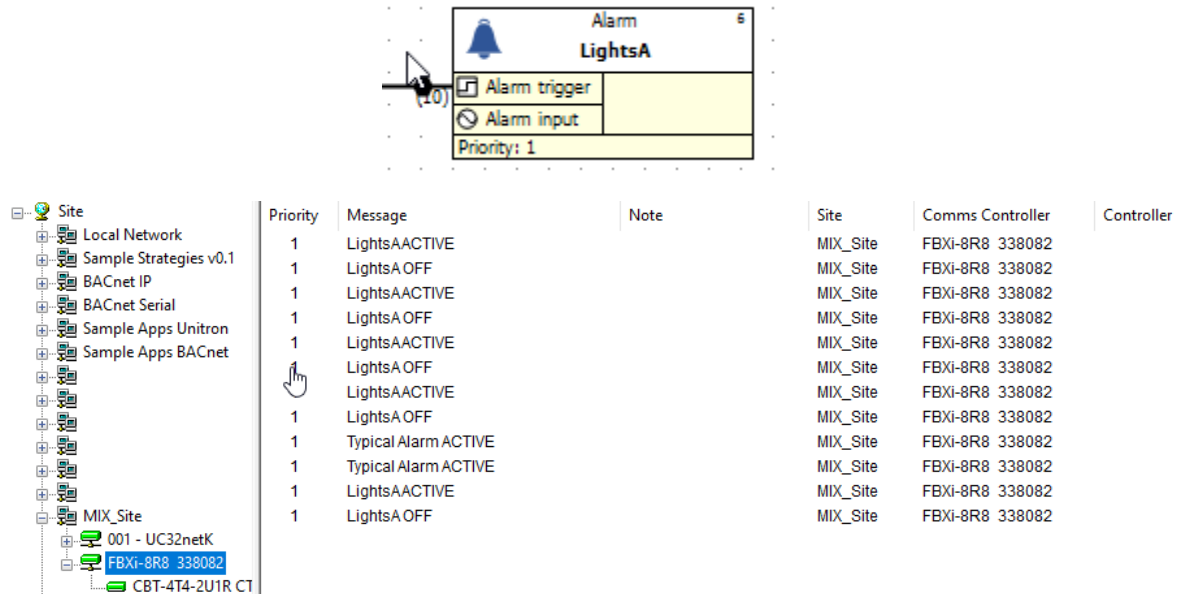
6 BACnet Alarms in Unitron CCArms

There are two different Alarm modules available within CXpro^{HD}. To configure an Alarm for use in the Unitron CCArms module, the “standard” Alarm module must be used, rather than the BACnet Alarm module.

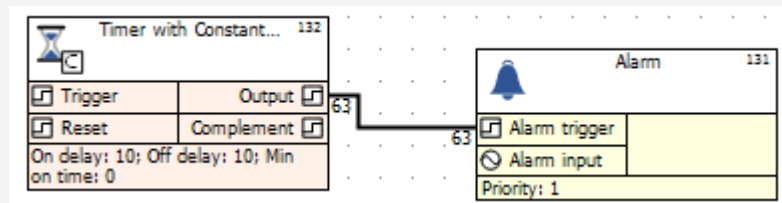
Note: The Unitron BACnet driver does not recognize the BACnet Alarm Module



CCAarms will display BACnet site alarms as Unitron Alarms



Note: If a BACnet alarm event occurs and clears in a very short period it might not be reported. To avoid this, it is recommended that a Minimum On Timer (30 seconds) is used on the input to the Alarm module to ensure that short duration alarms are always captured.



7 Configuring BACnet graphical points for Unitron

Add BACnet Points to Command Centre Graphics using CCDraw in the same way as for a Unitron site

BACnet Analog Setpoint

CCDraw - Setup a dynamic point

Point Type: ☒ Analog, ☐ Digital, ☐ Analog Set, ☐ Digital Set, ☐ Analog Hardware, ☐ Digital Hardware, ☐ Allow Override

Point Address: Comms: FBX:8R8 338082, Name: Room SP, Number: 2, Wild: ☐

UCx: * Router *, or 0, ☐

Point: Room SP, or 1, Range: 1-1024

Attribute: ☒ None, ☐ Datalog, ☐ Comms Schedule, ☐ Time, ☐ Datalog Interval Change, ☐ UC Time Schedule, ☐ Strategy Variable Delay, ☐ Datalog Group, ☐ UC Holiday Schedule, ☐ Time Schedule Manager

Name:

Colour Bar: ☒ Show Colour Bar, ☐ Set Colours...

Movement: ☒ Horizontal, ☐ Vertical

Text: ☒ Show text, ☐ SetText position on exit, Font..., Precision...

Point Range: Minimum: 19.0, Maximum: 27.0, Value Limits...

Attach Animation... OK Cancel

BACnet Digital Point

CCDraw - Setup a dynamic point

Point Type: ☐ Analog, ☒ Digital, ☐ Analog Set, ☐ Digital Set, ☐ Analog Hardware, ☐ Digital Hardware, ☐ Allow Override

Point Address: Comms: FBX:8R8 338082, Name: Schedule PV, Number: 2, Wild: ☐

UCx: * Router *, or 0, ☐

Point: Schedule PV, or 2, Range: 1-1024

Attribute: ☒ None, ☐ Datalog, ☐ Comms Schedule, ☐ Time, ☐ Datalog Interval Change, ☐ UC Time Schedule, ☐ Strategy Variable Delay, ☐ Datalog Group, ☐ UC Holiday Schedule, ☐ Time Schedule Manager

Name:

Colour Bar: ☒ Show Colour Bar, ☐ Set Colours...

Movement: ☒ Horizontal, ☐ Vertical

Text: ☒ Show text, ☐ SetText position on exit, Font..., Precision...

Point Range: Minimum: 0, Maximum: 100, Value Limits...

Attach Animation... OK Cancel

A Hardware Point can be Manually Overridden from a Unitron Command Centre Graphic and this is set up in CCDraw in exactly the same way as Unitron points - as shown in the screenshot below.

Hardware point

CCDraw - Setup a dynamic point

Point Type: ☐ Analog, ☐ Digital, ☐ Analog Set, ☐ Digital Set, ☒ Analog Hardware, ☐ Digital Hardware, ☒ Allow Override

Point Address: Comms: FBX:8R8 338082, Name: Cooling Valve, Number: 9, Wild: ☐

UCx: * Router *, or 0, ☐

Point: Cooling Valve, or 9, Range: 1-24

Attribute: ☒ None, ☐ Datalog, ☐ Comms Schedule, ☐ Time, ☐ Datalog Interval Change, ☐ UC Time Schedule, ☐ Strategy Variable Delay, ☐ Datalog Group, ☐ UC Holiday Schedule, ☐ Time Schedule Manager

Name:

Colour Bar: ☒ Show Colour Bar, ☐ Set Colours...

Movement: ☒ Horizontal, ☐ Vertical

Text: ☒ Show text, ☐ SetText position on exit, Font..., Precision...

Point Range: Minimum: 0, Maximum: 100, Value Limits...

Attach Animation... OK Cancel

In addition, limits can be set for BACnet setpoints in the same way as they for Unitron points - as shown in the bottom-right of the screenshot above.