USER GUIDE

MAN0132 rev 5

CBX Demonstration Case

Style conventions used in this document:

UI Text: Text that represents elements of the UI such as button names, menu options etc. is presented with a grey background and border, in Tahoma font which is traditionally used in Windows UIs. For example:

`Ok`

Standard Terms (Jargon): Text that is not English Language but instead refers to industry standard concepts such as Strategy, BACnet, or Analog Input is represents in slightly condensed font. For example:

BACnet

Code: Text that represents File paths, Code snippets or text file configuration settings is presented in fixed-width font, with a grey background and border. For example:

```
$config_file = c:\CYLON\settings\config.txt
```

Parameter values: Text that represents values to be entered into UI fields or displayed in dialogs is represented in fixed-width font with a shaded background. For example

`10°C`

Product Names: Text that represents a product name is represented in bold colored text. For example

INTEGRA™

Company Brand names: Brands that are not product names are represented by bold slightly compressed text:

ABB Active Energy

PC Keyboard keys: Text representing an instruction to press a particular key on the keyboard is enclosed in square brackets and in bold font. For example:

[Ctrl]+[1]

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1 Using the Demo Case

OVERVIEW

The **CBX/FLX Democase** gives a working demonstration of the Cylon **CBX** expandable MSTP BACnet Building Management System using **Cylon Engineering Centre** and **Aspect** tools.

The Democase includes:

Top Panel: 1 x **CBX-8R8** controller, 1 x **FLX-8R8** I/O expansion module, 1 x **FLX-8R8** I/O expansion module with local over-ride function, 1 x **SiteGuide** v2.2 touchscreen display,

Base Panel: 1 x **MATRIX** Aspect Control Engine Network Controller (Loaded with **Aspect** Software), Ethernet Switch, External Ethernet connection interface for remotely connecting a PC, Power Switch / Fuse, Power supplies, Light switch response circuit, Space temperature simulation potentiometer, Panel filter status simulation potentiometer.

NOTE: The Base Panel must not be removed from the demo-case when mains supply is connected.

1. Power on the **CBX/FLX Democase**
2. Swipe **SiteGuide** Screen to access the **Aspect** Demo Dashboard, noting there are Metric and Imperial versions available.
3. If a PC is to be connected; connect via Ethernet port on the Base Panel via Browser @ IP address `192.168.1.251`
4. User: `aamuser`, Password: `default`
5. View `CBX Demo_Metric01 HTML` or `_Imperial01 HTML` (loaded version dependant) as an alternative to the **SiteGuide** screen the **SiteGuide** Screen on PC
6. During typical operation, the comms status indication LEDs should be functioning as follows: Red LED should be `on`, the Green LED should be `blinking` and the Yellow LED should be `off`. *Refer to DS0119 CBX System Datasheet for full comms LED status information.*
7. **SiteGuide** password: `CYLONCTL`
8. **SiteGuide** Advanced setting access Password: `04950`

DEMOCASE CONTENTS

1. Pre-wired DemoCase
2. Power Lead
3. Ethernet Cable for remote PC access
4. User Guide

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RUNNING THE DEMO

The **CBX-8R8** is a fully programmable BTL-listed BACnet Advanced Application Controller (B-AAC) that communicates on an RS-485 local area network using the BACnet MS/TP protocol. This controller features 8 UniPuts™ with Relay and 8 Universal Inputs as well as support for up to three **FLX** (Field Level eXpansion) series extension modules providing up to 64 points of control.

The **Democase** includes 48 programmable (via **Engineering Centre**) I/O points.

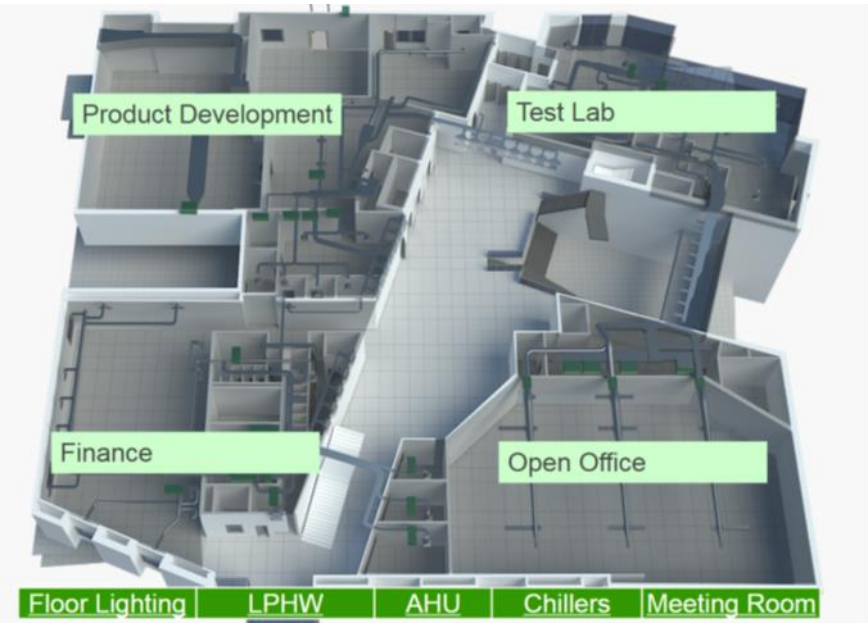
The **CBX-8R8** controller has been pre-programmed with a strategy which is connected to an **Aspect** instance in the Matrix to illustrate via the connected **SiteGuide** Screen or a connected PC the following:

Viewing Graphics from the included **SiteGuide** or a connected PC; in the Graphics dropdown menu select:

1.1 BUILDING OCCUPANCY LIGHTING CONTROL SIMULATION

The floor plan is available in **Aspect** to view a simulation of a typical building plan lighting control.

Select one of the areas and adjust the **Change Value** input on the **Aspect** screen to turn lighting `On`/`Off` for that area.



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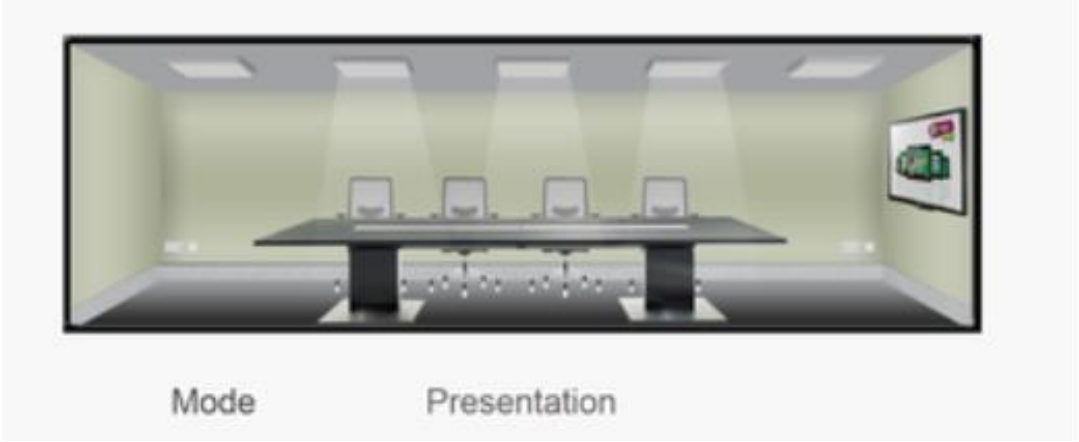
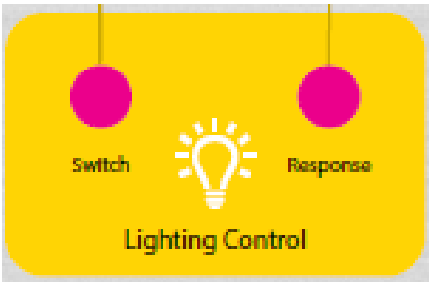
1.2 MEETING ROOM / LIGHTING RESPONSE



Momentary contact switch controlling lighting simulation LED.

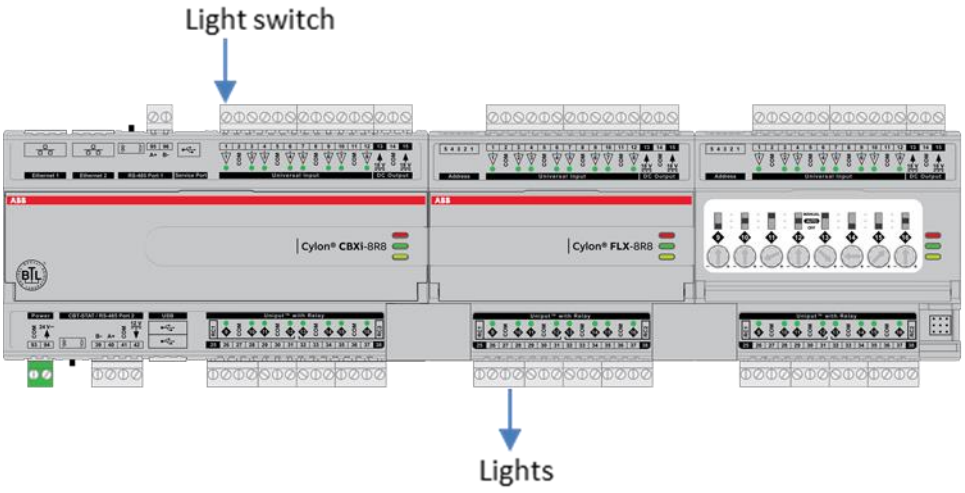


Digital response is prioritised to enable a sub `200 ms` response time, suitable for lighting applications.

Aspect ***Meeting Room*** is also linked to this action; with the option to set the light level via the Aspect interface.

The lighting signal is passed through the I/O bus; signal input into `CBX` (`UI 01`); Digital output from `FLX01` (`Uniput 110`).

The lighting response time can be reviewed through the connected LED.



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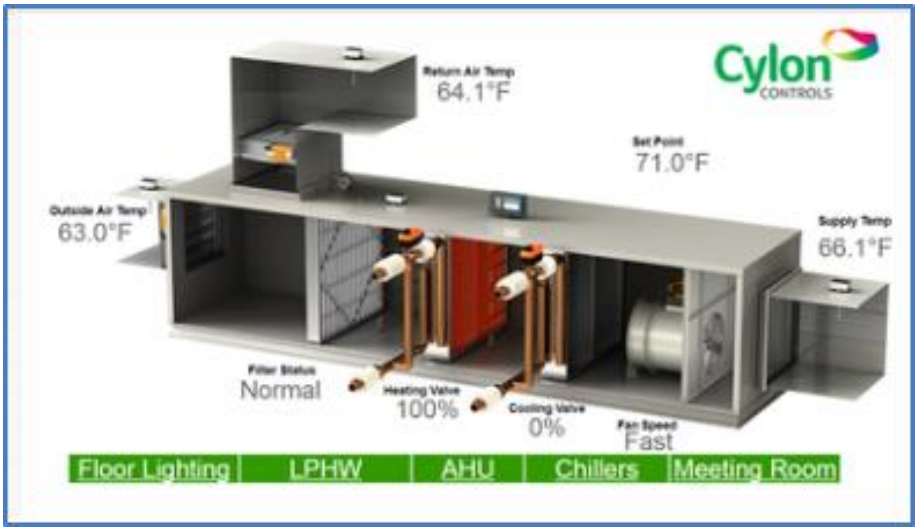
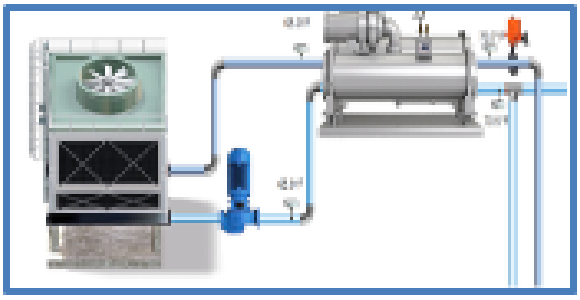
1.3 SIMULATED AHU (HEAT / COOL) PLANT EQUIPMENT CONTROL



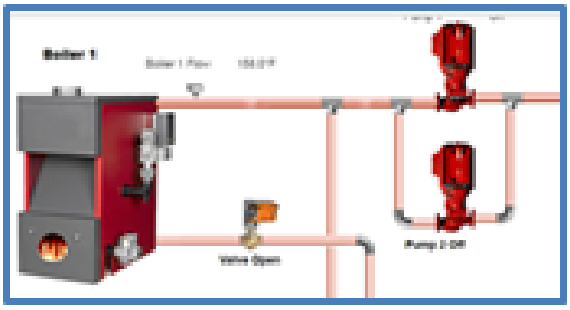
`Return Air Temperature` (Room Temp) is simulated by FLX01 (`UI101`). `Potentiometer adjustment` + `Uniput 016` (Analog LED). Set point is pre-set at `71 °F`.

The resulting simulated air temperature differential determines the Heat / Cool function and Fan Speed (CBX Uniputs `09`, `10`, `11`).

In Cooling mode the Chiller simulation is turned on.



In Heating mode the LPHW simulation is turned on.



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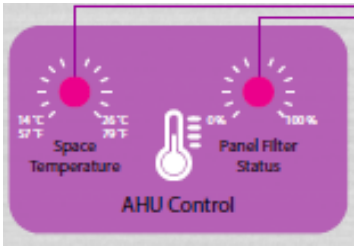
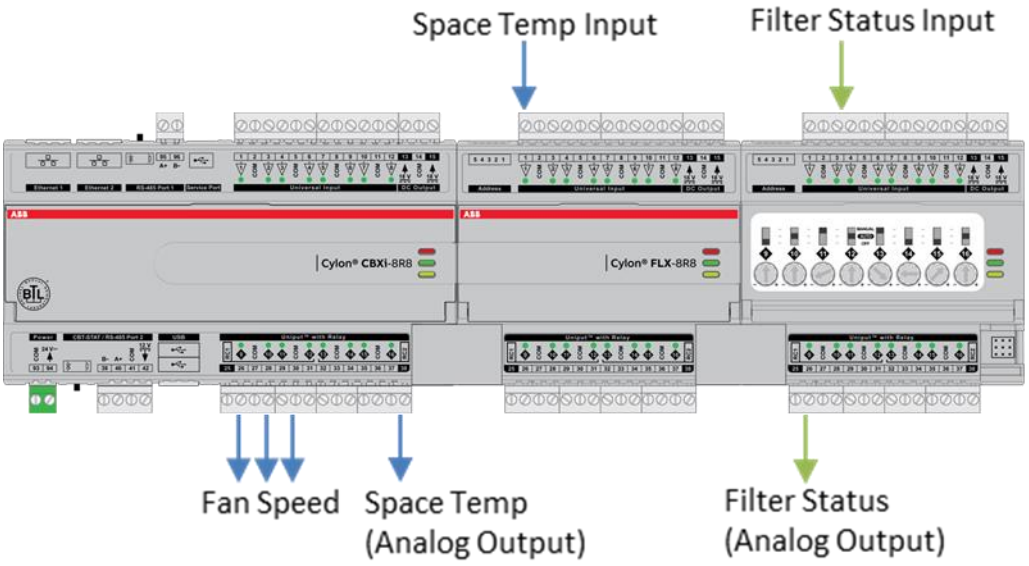
Panel filter status

Panel filter status is simulated through the Filter Status potentiometer



FLX02: `UI02` – Drives to `Alarm` when simulated pressure differential across filter increases. `Potentiometer` + `Uniput 209` (Analog LED). Alarm resets on removal.



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1.4 I/O DIAGNOSTICS

Hardware I/O points include LEDs to indicate status as follows:

1.4.1 Universal Inputs / Uniputs configured as an input

When input is configured as `Digital`:

- `LED Off`: open circuit or logic 'off'.
- `LED On`: logic 'on' When input is configured as Resistor/thermistor.
- `LED Off`: valid resistance connected (Note: 0 Ω is counted as valid).
- `LED Slow blink`: resistor/thermistor not connected When input is configured as Analog.
- LED intensity is modulated by the analog signal When the LED is blinking:
  - `Fast blink` indicates error condition.
  - `Two short flashes followed by a value`* indicates the input is in an override state (overridden by Engineering Center).

***Note**: The LED intensity illustrates the value measured at the input terminals. The flash indicates that this value has been overridden.

1.4.2 UniPuts™ + Relay configured as an output

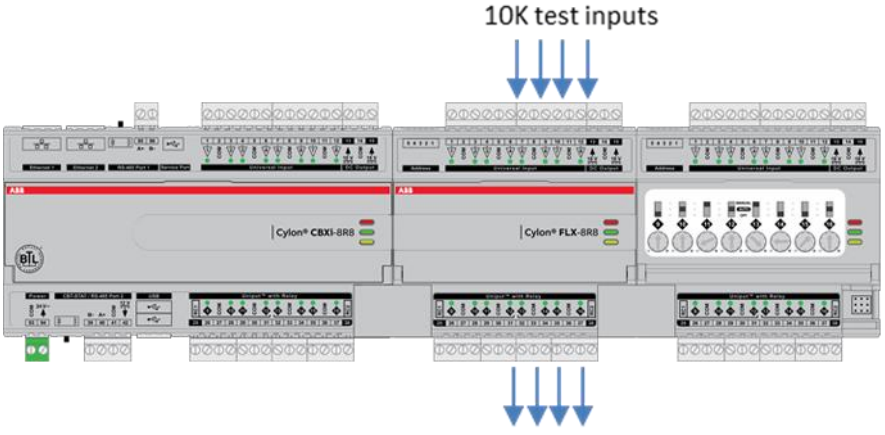
When output is configured as Digital:

- `LED Off`: open circuit or logic 'off'
- `LED On`: logic 'on' When output is configured as Analog:
- LED intensity is modulated by the analog signal When the LED is blinking:
  - Fast blink indicates error condition
  - Two short flashes followed by a value indicates the output is in an override state (overridden by Engineering Center or HOA).

FLX01: UIs `105`, `106`, `107`, and `108` (10kΩ) are linked to Analog Outputs at FLX01: Uniputs `113`, `114`, `115`, `116`

The strategy has designated FLX01: UIs `105`, `106`, `107`, `108` as 10 kΩ resistive. Removal of the UI connector block shows the fault status diagnostic LED function.

These UI points are linked in the strategy to Analog Outputs at FLX01: Uniputs `113`, `114`, `115`, `116`. Note the LED status change on removal and replacement of the 10 kΩ resistor test inputs.



1.5 HAND/OFF/AUTO OVER-RIDE

The FLX-8R8-H includes hardware override switches for each of its 8 outputs. The override

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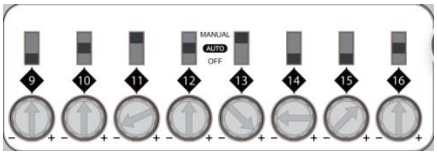
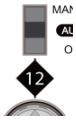
controls are located behind the flap on the front of the device:

and consist of a switch and a rotary knob for each output:



The channel number corresponding to the switch is shown directly below the switch.

The switch can be set to one of 3 positions:



When a switch is set to the **Centre position** the corresponding output channel is set to `Auto` mode – the output is controlled by strategy.

The rotary knob has no effect in this mode.

When a switch is set to the **Bottom position** the corresponding output is forced to `Off` – both the strategy setting and the rotary knob have no effect.

When a switch is set to the **Top position** the corresponding output is set to `Manual` mode

- for digital outputs, the output is forced `on`
- for analog outputs the rotary knob setting controls the output value.

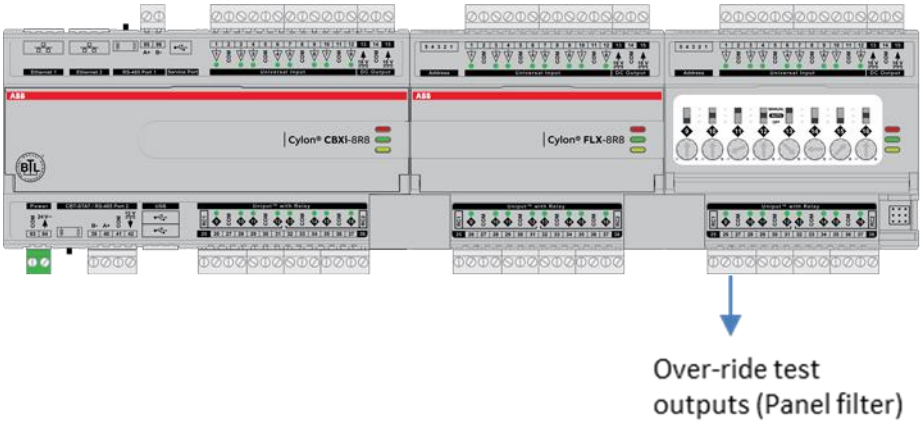
Note: Manual position is supervised, i.e. the strategy is aware of the manual value.

`FLX02` (FLX-8R8-H) – local over-ride or through Engineering Centre

`Uniput 209` LED intensity is linked to filter status (`Auto`)

Set HOA switch to `Off` - Note the IO status indication (Status reported to Engineering Centre)

Set to `Manual` – Note the IO status indication (Status report to Engineering Centre)



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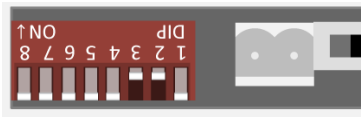
2 Appendix: Troubleshooting

POWER SUPPLY

The CBX/FLX Democase operates from a standard 120 V … 240 V AC mains power supply.

CBX-8R8 ADDRESS SELECTOR SWITCH

The CBX-8R8 has been set to address -XXXX- using the 8-bit MSTP Address Selector Switch is located on the top of the controller.



BUS MODULE CONFIGURATION SWITCH

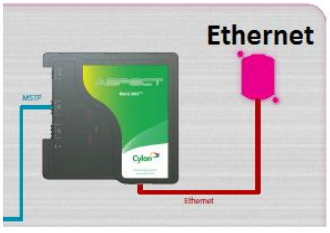
The FLX modules include a BUS address dip-switch and have been set up and assigned within Engineering Centre

RS485 MSTP CONNECTOR PORT

The MSTP Terminal is located at the top right-hand corner of the controller. This is the controller's Network Communications Port and is used to connect to the MATRIX and the Aspect interface application.

IP Network Connection

The MATRIX is connected to an Ethernet switch, which enables viewing of the Aspect instance using the connected SiteGuide or via a PC connected to the Ethernet port (Top-right corner of the Base Panel)



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