



FBVi-2U4-3T

DESCRIPTION

The **FBVi-2U4-3T** is a freely programmable BACnet® Unitary Controller with native BACnet/IP communications support. The controller is BTL listed as BACnet Building Controller (B-BC) and is ideally suited for the control of Variable Air Volume zoning applications.

Part of Cylon's **FLXeon Series** of BACnet/IP field controllers, the **FBVi-2U4-3T** features 2 UniPuts™, 4 Universal Inputs and 3 Digital (Triac) Outputs, along with an integrated airflow sensor and a dedicated input for Cylon's **CBT-STAT** or **UCU Room Display** intelligent room sensors. The **FBVi-2U4-3T** model includes an integrated Belimo actuator.

FLXeon's scalable and modular architecture utilizes its embedded graphics and visualization engine **FLXvue** to get data from the #edge2cloud.

APPLICATION

The **FBVi-2U4-3T** is suitable for controlling single duct or fan assisted Variable Air Volume (VAV) applications. This controller also supports demand ventilation application, occupancy sensing or lighting control to further enhance energy savings.

Typical VAV zoning applications include;

- Cooling only
- Cooling with Reheat
- Cooling with Reheat and Perimeter Radiation
- Series fan VAV
- Parallel fan VAV
- Dump box
- Room pressurization

The controller accommodates available pre-engineered strategies or can be tailored to custom applications using **CXpro^{HD}** programming software.

2 UniPuts

Cylon's patented technology that can be configured as analog / digital outputs or voltage inputs

4 Universal Inputs

Can be configured as analog (voltage or current) or digital inputs

3 Digital (Triac) Outputs

Can switch 24 V AC @ 500 mA (live or neutral)

IP Connected

Supports the following configurable BACnet objects: AI / BI / AO / BO / AV / BV, Trend Logs, and Schedules

Integrated Pressure Sensor

0 ... 1.3 inches-water (0 ... 320 Pa)

Can measure differential pressure directly without need for a separate sensor

Integrated Actuator^(FBVi-2U4-3T)/External Actuator Port^(FBVi-2U4-3T-N)

Belimo actuator featuring a brushless DC motor with integrated position feedback and 45 inch-pounds (5 N-m) of torque

Cylon Intelligent Room Sensor support

Up to 500 Strategy Blocks

Up to 6 Trendlogs

1024 entries per Trendlog

Data Security

Strategy and setpoints backed up in Flash

No Hardware I/O Jumpers

Hardware points are automatically configured by the downloaded strategy

SPECIFICATIONS

MECHANICAL

Size (excluding terminal plugs)	5.35 x 7.6 x 3.89" [136 x 193 x 99 mm]
Enclosure	Injection molded flame retardant ABS
Mounting	Direct Mount
Integrated Actuator (CBV-2U4-3T)	Belimo LMB24-MPL CYL with Brushless DC Motor Torque: 45 in-lb [5 Nm] Degrees of Rotation: 95° adjustable with mechanical stop Fits Shaft Diameter 1/4" to 5/8" [6mm to 16mm] Noise level < 35 dB (A) Running Time - 95 sec constant, independent of load Integrated position feedback

CONNECTION

Note: Use Copper or Copper Clad Aluminum 70 °C (158 °F) conductors only.

Terminals	PCB mounted plug terminal connections
Conductor Area	Max: AWG 12 (3.31 mm ²) Min: AWG 22 (0.355 mm ²)

ENVIRONMENT

Note: This equipment is intended for field installation within an enclosure.

Ambient Temperature	-25 °C ... 50 °C (-13 °F ... 122 °F)
Ambient Humidity	0% ... 90% RH non-condensing
Storage Temperature	-30 °C ... +70 °C (-22 °F ... 158 °F)
EMC Immunity	EN 61326-1: 2013
EMC Emission	EN 61326-1: 2013 EN 61000-3-2: 2014 EN 61000-3-3: 2013
Approvals	UL Listed (CDN & US) UL916 Energy Management Equipment – File No. E176435
Safety	CE Approved

ELECTRICAL

Supply Requirements	24 V AC/DC +15 % / -20 % 50/60 Hz
Transformer Rating	Up to 55 VA (up to 12 VA internal power plus up to 43 VA supplied to Triac loads)
BACnet Loading	¼ unit load device
CBT-STAT Power Supply	12 V DC ... 13.5 V DC / 200 mA output
Auxiliary Power	18 V DC / 60 mA output

PROCESSOR

Type	TI Sitara AM335X Dual-core ARM Cortex A8
Clock Speed	600 MHz
System Memory	4 GB eMMC Flash + 512 MB DDR3 DRAM
Real-Time Clock	Yes, backed for 7 days typical

COMMUNICATIONS

Ethernet ports	Dual Switched 10/100BASE-TX (RJ45) Addressing: IPv4, IPv6 or Hostname / DHCP Client or Static IP Connection Topology: Daisy-chain BACnet/IP, BTL B-BC
Local serial port	USB Micro-B socket
USB port	Type-A USB connector USB 2.0 5 V DC 2.5W
Local STAT Port	RS485 with a maximum cable length 500 m Supports CBT-STAT and UCU Room Display

INPUTS / OUTPUTS

Note: Shielded cable is recommended for all input connections.

UniPuts™



When configured as Input:

Analog Input	Range: 0 ... 10 V @ 40 kΩ Accuracy: ±0.5% full scale [50mV]
Resistance measurement	Range: 0 ... 450 kΩ Accuracy: ±0.5% of measured resistance
Temperature measurement	Range: -40 °C ... +110 °C (-40 °F ... +230 °F) Accuracy: 10k NTC sensors (e.g. 10k Type 2 (10K3A1) or 10k Type 3 (10K4A1): ±0.3 °C, -40 to 90 °C (-40 °F to 194 °F); ±0.4 °C > 90 °C (194 °F)
Current input	Range: 0 ... 20 mA @ 390 Ω

Note: Current Input requires user-supplied external 390 Ω resistance.

Accuracy: depends on user-supplied external resistor
Digital Volt-Free contact, 2 mA contact-wetting current
Digital 24 V AC detect
Pulse counting up to 20 Hz, 25 ms - 25 ms

When configured as Output:

Analog Output 0 ... 10 V @ 20 mA max load, 12-bit resolution
Digital Output 0 ... 10 V @ 20 mA max load

Universal Inputs



Analog Input	Range: 0 ... 10 V @ 130 kΩ Accuracy: ±0.5% full scale [50mV]
Resistance measurement	Range: 0 ... 450 kΩ Accuracy: ±0.5% of measured resistance
Temperature measurement	Range: -40 °C ... +110 °C (-40 °F ... +230 °F) Accuracy: 10k NTC sensors (e.g. 10k Type 2 (10K3A1) or 10k Type 3 (10K4A1): ±0.3 °C, -40 to 90 °C (-40 °F to 194 °F); ±0.4 °C > 90 °C (194 °F)
Current input	Range: 0 ... 20 mA @ 390 Ω Accuracy: ±0.5% full scale [100µA]
Digital Volt-Free contact, 2 mA contact-wetting current	
Pulse counting up to 20 Hz, 25 ms - 25 ms	

Digital (Triac) Outputs



24 V AC Triac @ 500 mA maximum. Switch live or switch neutral.
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Triac Common



Connected to 24 V AC: Digital Outputs will switch live.
Connected to 0 V: Digital Outputs will switch neutral.

Airflow Sensor



0 ... 1.3 inches of water (0 ... 320 Pa) airflow measurement using internal microbridge type airflow sensor.
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Integrated Actuator



Belimo LMB24-MPL CYL

SOFTWARE FEATURES

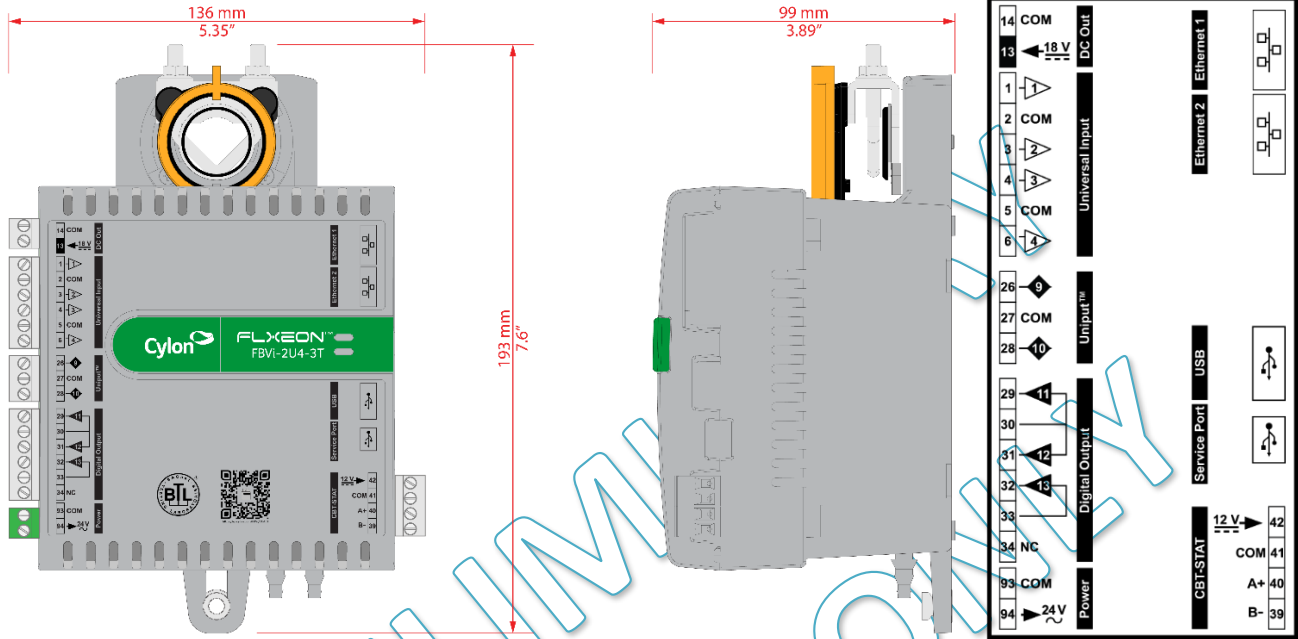
Maximum number of Strategy Modules	500
Maximum number of Trendlog Modules	6
Entries per Trendlog	1024
Maximum BACnet Schedules	16
Exceptions per Schedule	5
Maximum number of Exposable BACnet Points	960
Data Security	Strategy and Set points backed up in Flash

INTERFACE

Engineering Software	CXpro ^{HD}
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DIMENSIONS AND WIRING



SYSTEM ARCHITECTURE

