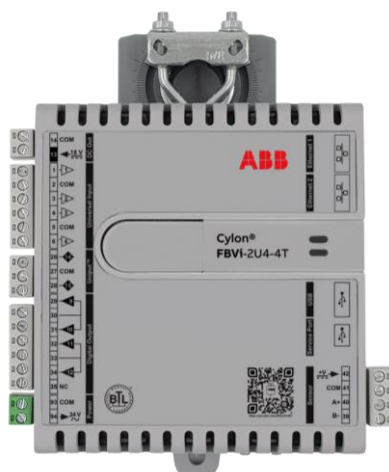


Cylon® FBVi-2U4-4T



DESCRIPTION

The FBVi-2U4-4T 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 the Cylon® FLXeon Series of BACnet/IP field controllers, the FBVi-2U4-4T features 2 UniPuts™, 4 Universal Inputs and 4 Digital (Triac) Outputs, along with an integrated airflow sensor and a dedicated input for Cylon® room sensors. The FBVi-2U4-4T model includes an integrated Belimo actuator.

APPLICATION

The FBVi-2U4-4T 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

ABB'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

4 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 Bi-directional Pressure Sensor

0 ... 1.3 inches-water (0 ... 320 Pa)
Can measure differential pressure directly without need for a separate sensor

Integrated Actuator

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 750 Strategy Blocks

Up to 15 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

COMMUNICATIONS

Ethernet ports	Dual Switched 10/100BASE-TX (RJ45) Addressing: IP address or Hostname / DHCP Client or Static IP Connection Topology: Daisy-chain, supports Spanning Tree Modbus TCP, BACnet/IP
USB port	Type-A USB connector USB 2.0 5 V DC 2.5 W
Sensor/RS485 Port 2	Software selectable Modbus RTU or FusionAir sensor bus. RS485 @ 9K6,19K2, 38K4(default), 57K6, 76K8 or 115k2 Baud. Max cable length 1.2 km @ default ¼ unit load device. RS485 sensor bus with a maximum cable length 500 m. Supports ABB Cylon® room sensors.
Modbus	Max. 320 Modbus points which can be a combination of Modbus RTU or TCP. Notes: Acts only as a Modbus Client for Modbus TCP communications, Acts only as a Modbus Master for Modbus RTU communications. Routing of Modbus RTU to Modbus TCP via strategies in CXpro [®] D
BACnet	Profile: BACnet Building Controller (B-BC), AMEV AS-A Listing: BTL B-BC

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 ±20% Class-2 50/60 Hz
Transformer Rating	Up to 20 VA
BACnet Loading	¼ unit load device
Cylon® room sensor Power Supply	12 V DC ... 13.5 V DC / 200 mA output
Auxiliary Power	18 V DC / 60 mA output
Over-current protection	Internal re-settable fuse

SOFTWARE FEATURES

Maximum number of Strategy Modules	750
Maximum number of Trendlog Modules	15
Entries per Trendlog	1024
Maximum BACnet Schedules	10
Maximum number of Exposable BACnet Points	150

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.

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) bi-directional airflow measurement using internal microbridge type airflow sensor.

Integrated Actuator

Belimo LMB24-MPL CYL

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

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	Belimo LMB24-MPL CYL with Brushless DC Motor	
	Torque	45 in-lb [5 Nm]
	Angle of Rotation	95° adjustable with mechanical stop
	Shaft Diameter	1/4" to 5/8" [6mm to 16mm]
	Noise Level	< 35 dB (A)
	Running Time	95 sec constant, independent of load
Feedback	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)

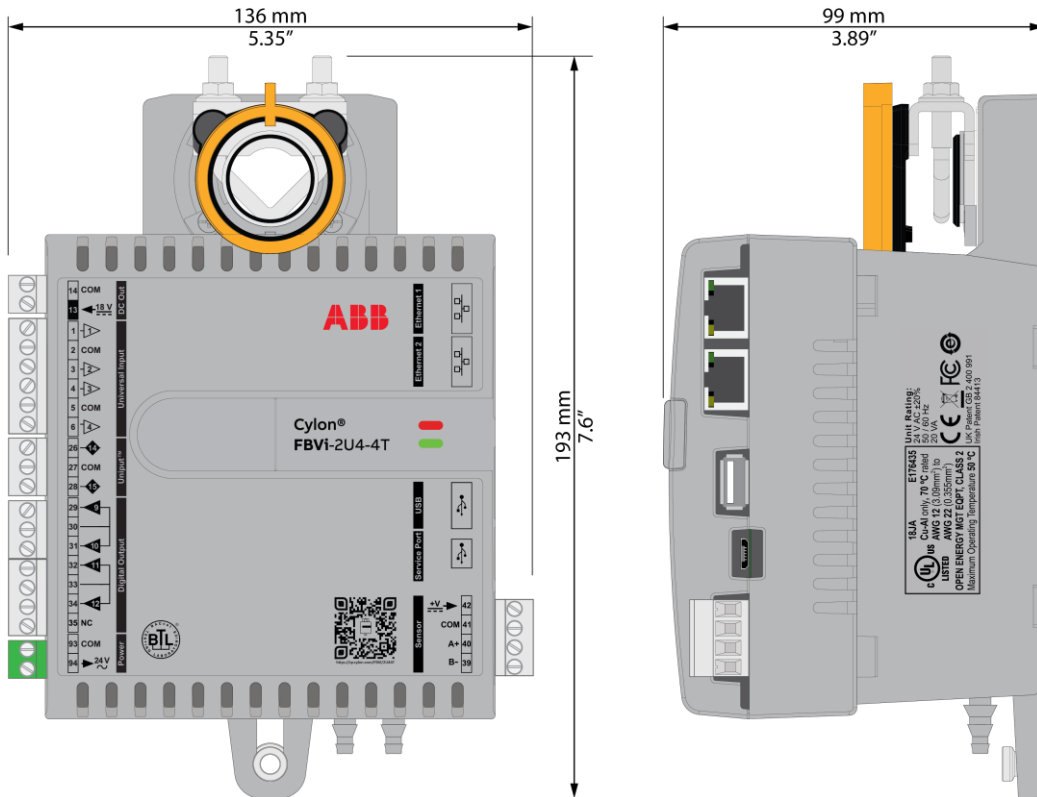
SECURITY

Data Security	Strategy and Set points backed up in Flash
Transport Layer Security	Support for TLS 1.2
Upgrade Security	Upgrade software bundles are signed

INTERFACE

Engineering Software	CXpro ^{HD}	
Commissioning	Aero ^{bt}	
Touchscreen	eXplore	
Supervision	FusionAir	

DIMENSIONS



SYSTEM ARCHITECTURE

