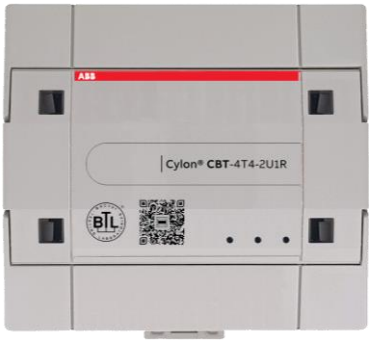
TECHNICAL DATA SHEET
DS0128 rev 26

CBT-4T4-2U1R



DESCRIPTION

The **CBT-4T4-2U1R** is a freely programmable BACnet® Unitary Controller with native MS/TP communications support. The controller is BTL listed as a BACnet Advanced Application Controller (B-AAC) and is ideally suited for the control of Fan Coil Units with ECM motors, Heat Pumps, Unit Ventilators, Unit Heaters, Chilled Ceilings/Beams and custom unitary equipment.

Part of the ABB Cylon® **CB Line** of BACnet field controllers, the **CBT-4T4-2U1R** features 4 Uniputs™ with Triac (configurable as inputs OR outputs), 4 Universal Inputs, 2 UniPuts, 1 Digital Output with a high-power relay output and a dedicated input for **ABB Cylon®** room sensors.

APPLICATION

The **CBT-4T4-2U1R** is suitable for controlling a variety of small to medium-sized HVAC equipment such as:

- Fan Coil Units with ECM
- Heat Pumps
- Unit Ventilators
- Chilled Ceilings/Beams
- Unit Heaters
- Exhaust Fans
- Custom Unitary Equipment

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

4 Uniputs with Triac

Configured as analog or digital outputs, or voltage inputs
along with Triac functionality that can switch a 24 V AC load

4 Universal Inputs

Can be configured as analog or digital inputs with pulse counting on the 4th input

2 UniPuts

Can be configured as analog or digital output or voltage inputs

1 Digital (Relay) Output

Can switch high inrush loads up to 240 V AC, 8 Amps

BACnet MS/TP Fieldbus

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

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

©ABB 2024 All Rights Reserved.
Subject to change without notice

SPECIFICATIONS

MECHANICAL

Size (excluding terminal plugs)	5.7 x 5.12 x 1.78" [145 x 130 x 45 mm]
Enclosure	Injection molded, flame retardant ABS plastic
Mounting	DIN rail - The housing base is designed for snap-mounting on DIN rails - The controller should not be freely accessible after mounting - Unit must be oriented such that powered relay terminals are at the bottom of unit

CONNECTION

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

Terminals	PCB mounted plug terminal connections Max connector screw torque = 0.5Nm (4.42 lbf-in)
Conductor Area	Max: AWG 12 (3.09 mm²) Min: AWG 22 (0.355 mm²)

ENVIRONMENT

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

Ambient Temperature	0 °C … 50 °C [32 °F … 122 °F] ambient.
Ambient Humidity	0% … 90% RH non-condensing
Storage Temperature	-30 °C … +70 °C (-22 °F … 158 °F)
EMC Immunity	EN 55024, 2010
EMC Emission	EN 55022, 2010 Class A
Approvals	BTL Listed – BACnet Advanced Application Controller (B-AAC) UL Listed (CDN & US) UL916 Energy Management Equipment - File No. E176435
Safety	EN 60730-1:2011 Automatic Action type i.e. Type 1.B.Y CE Approved
Pollution Degree	Class 2 (EN 60730-1)

ELECTRICAL

Supply Requirements	24 V AC +15 % / –20 % 50/60 Hz
Transformer Rating	12 VA typical, 81 VA max with all external loads
Relay Rating	250 V AC @ 8 A
BACnet Loading	¼ unit load device

PROCESSOR

Type	STM32 F103ZET6 32bit processor
Clock Speed	8 MHz crystal, 72 MHz internal processor clock rate
System Memory (soldered to PCB not removable)	Internal Flash 512 Kbyte Internal SRAM 64 Kbyte External Flash 16 Mbyte External SRAM 1 Mbyte

COMMUNICATIONS

Local serial port	USB Micro-B socket (used as service port)
BACnet MS/TP port	RS485 @ 9K6, 19K2, 38K4 or 76K8 Baud (defaults to 38K4) Max cable length 1.2 km
Local Sensor Port	RS485 with a maximum cable length 500 m Supports ABB Cylon® room sensors

INTERFACE

Engineering Software	CXpro[HD]

INPUTS / OUTPUTS

Note: Shielded cable is recommended for all input connections.

UniPuts with Triac

When configured as **Input**:
- Analog Input
  - Range: 0 … 10 V @ 40 kΩ
  - Resolution: 12 bit
- Digital Volt-Free contact, @ 25 mA not continuous

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
- 24 V AC Triac @ 500 mA maximum. Switch live.

UniPuts

When configured as **Input**:
- Analog Input
  - Range: 0 … 10 V @ 40 kΩ
  - Resolution: 12 bit
- 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, @ 25 mA not continuous

When configured as **Output**:
- Analog Output 0 … 10 V (@20 mA), 12-bit resolution
- Digital Output 0 … 10 V (@20 mA)

Universal Inputs

- Analog Input
  - Range: 0 … 10 V @ 130 kΩ
  - Resolution: 12 bit
- Temperature measurement
  - Range: 0 °C … +50 °C (32 °F … 122 °F)
  - Resolution: 12 bit
  - Passive Input for a large range of temperature sensors. 10K3A1 sensors are recommended.

Note: It is not recommended using Sensors with a heating dissipation constant (K factor) < 2 as this will lead to an offset error.

- Current input
  - Range: 0 … 20 mA @ 390 Ω
  - Accuracy: ±0.5% full scale [100µA]
- Digital Volt-Free contact, Dry Contact

Note: Only Universal Input 4 supports pulse counting at below 20 Hz and a minimum pulse width of 25 milliseconds.

Relay Digital Output

Relay Contacts with ability to switch up to 240 V AC
Maximum Load: 240 V AC / 8 A max

24 V AC output terminal

Total current drawn from 24 V AC terminals is limited to 0.9 A.

Notes: 1) All inputs and outputs are protected against short circuit, as well as over-voltage up to 24 V AC.

SOFTWARE FEATURES

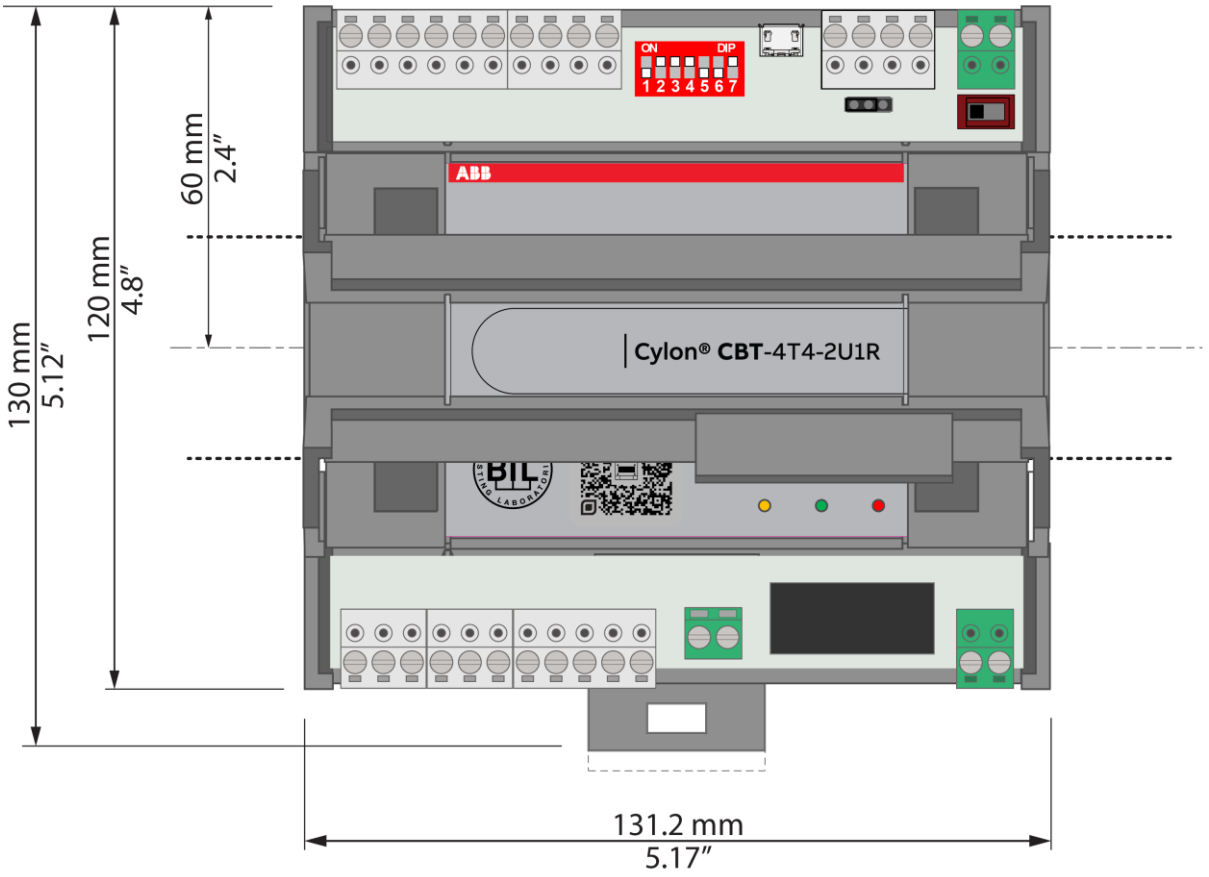
Maximum number of Strategy Blocks	500
Maximum number of Trend Log Modules	6
Maximum internal Trend Log capacity (standard)	1024
Data Security	Strategy and Setpoints backed up in Flash

INTERFACE

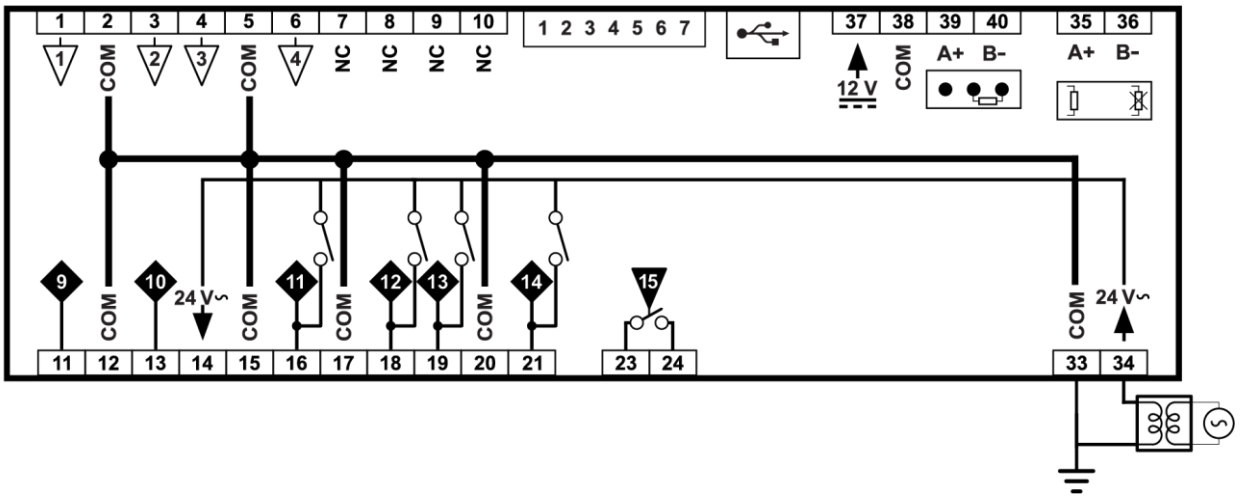
Engineering Software	CXpro[HD]

©ABB 2024 All Rights Reserved.
Subject to change without notice

DIMENSIONS

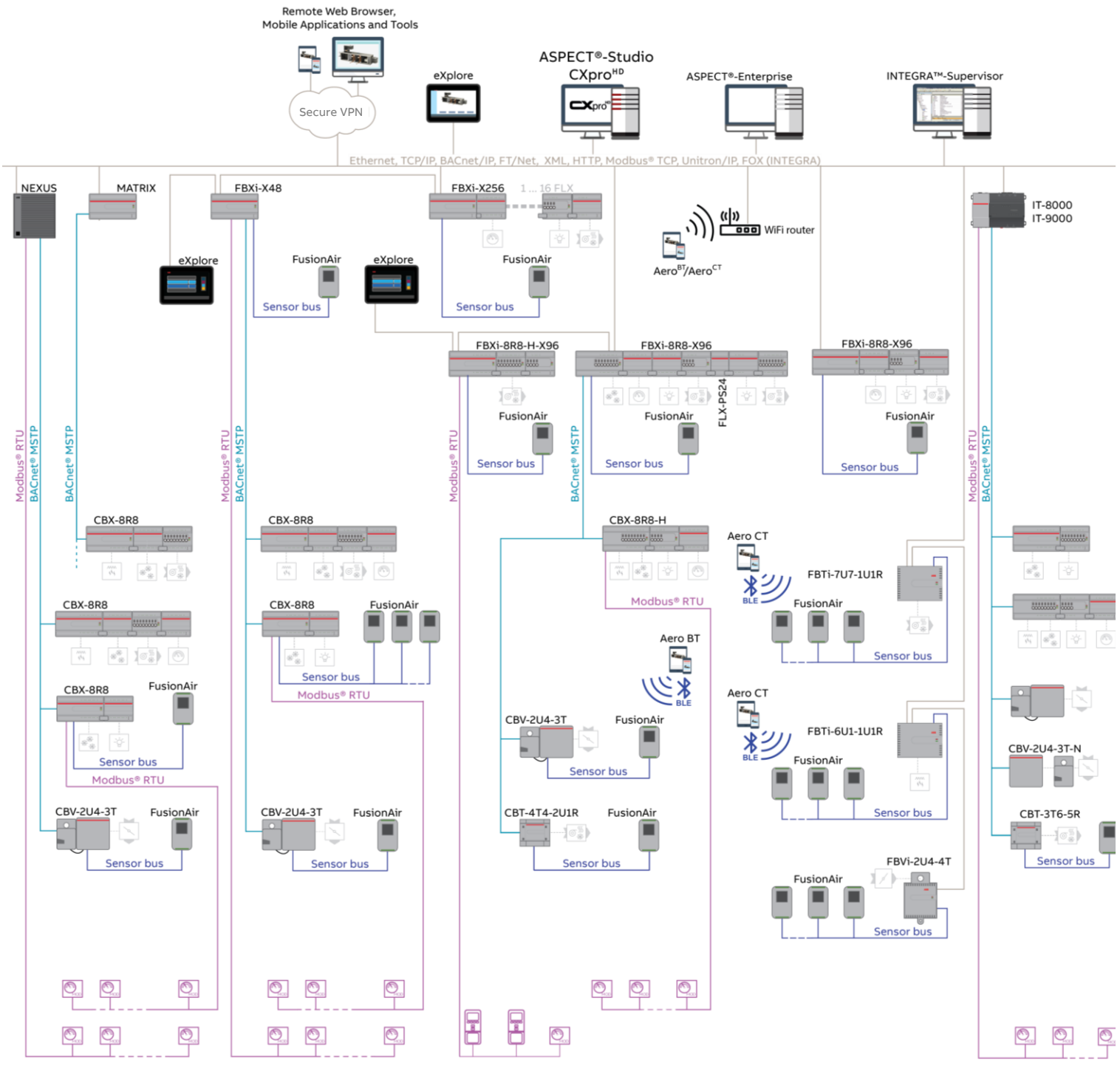


WIRING



©ABB 2024 All Rights Reserved.
Subject to change without notice

SYSTEM ARCHITECTURE



FBXi / CBXi-8R8 / CBX-8R8

CBXi-8R8-H / CBX-8R8-H

CBV-2U4-3T

FLX-8R8 / FLX-4R4 / FLX-16DI

FLX-8R8 -H

FLX-4R4-H

FLX-PS24

CBT-4T4-2U1R

FBVi-2U4-4T

NEXUS Series

MATRIX-2 Series

INTEGRA Series

eXplore

FusionAir Smart Sensor

CBT-STAT

UCU Room Display

©ABB 2024 All Rights Reserved.
Subject to change without notice
SOLUTIONS.ABB/HVAC-BUILDING-AUTOMATION

DS0128 rev 26