

# ECB-203 Series

BACnet B-ASC 14-Point  
Programmable Controllers



## Overview

The ECB-203 Series controllers are microprocessor-based programmable controllers designed to control units such as RTUs, FCUs, UVs, HPUs, AHUs, and chilled ceilings. This controller uses the BACnet<sup>®</sup> MS/TP LAN communication protocol and is BTL<sup>®</sup>-Listed as BACnet Application Specific Controllers (B-ASC).



## Features & Benefits

- Flexible inputs and outputs support all industry-standard HVAC unitary applications
- Rugged hardware inputs and outputs eliminate the need for external protection equipment
- An optional full-color backlit display with jog dial provides direct access to a wide range of controller functions
- Supports EC-*gfx*Program, making Building Automation System programming effortless
- Open-to-Wireless™ ready, supporting a wide variety of wireless sensors and switches and helping to reduce installation costs
- Supports the Allure™ Series Communicating Sensors, providing intelligent sensing and environmental zone control

# Model Selection

Example: ECB-203 with environmental protection

Series	Model	Options
ECB-	<b>203:</b> 14 Points, 15 Vdc Power Supply, 6 UI, 5 DO, 3 UO	<b>with environmental protection:</b> Conformal coating for outdoor use <b>UUKL:</b> UL 864, 10 <sup>th</sup> Edition UUKL and California State Fire Marshal Listed <sup>1</sup>
	<b>253:</b> 14 Points, 15 Vdc Power Supply, 6 UI, 5 DO, 3 UO, Color Display	

1. The UL 864 UUKL Listed Smoke Control Equipment is used only in Distech Controls' UUKL smoke control system. For detailed specifications, requirements and procedures for installing and operating UUKL Listed equipment refer to the Distech Controls' UUKL Smoke Control documentation.

## Recommended Applications

Model	ECB-203	ECB-253	ECB-203 with Environmental Protection	ECB-203 UUKL
Rooftop Unit	■		■	■
2 Pipe Fan Coil	■	■		
2 Pipe Fan Coil with Changeover Sensor	■	■		
4 Pipe Fan Coil	■	■		
Heat Pump Unit	■	■	■	
Unit Ventilator	■	■		
Small Air Handling Unit	■	■		■
Chilled Ceiling	■	■		
Exhaust Fan				■

## BACnet Objects List

### BACnet Objects

Calendar Objects	1
Special events per calendar	25
Schedule Objects	2
Special events per schedule	5
PID Loop Objects	8

### Commandable Objects

BV Objects	10
MSV Objects	10
AV Objects	25

### Non-Commandable Objects

BV Objects	40
MSV Objects	40
AV Objects	75

## Product Specifications

### Power Supply Input

Voltage Range	24VAC/DC; ±15%; Class 2
Frequency Range	50/60Hz
Overcurrent Protection	Field replaceable fuse
Fuse Type	2.0A
Power Consumption ECB-203	14 VA typical plus all external loads <sup>1</sup> , 23 VA max.
Power Consumption ECB-253	17 VA typical plus all external loads <sup>1</sup> , 26 VA max.

1. External loads must include the power consumption of any connected modules such as an Allure Series Communicating Sensor. Refer to the respective module's datasheet for related power consumption information.

### Communications

Communication Bus	BACnet MS/TP
BACnet Profile	B-ASC <sup>1</sup>
EOL Resistor	Built-in, jumper selectable
Baud Rates	9600, 19 200, 38 400, or 76 800 bps
Addressing	Dip switch or with an Allure EC-Smart-View Series Communicating Sensor

1. Refer to Distech Controls' Protocol Implementation Conformity Statement for BACnet.

## Subnetwork

Communication	RS-485
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain

## Room Devices Support

Maximum combined number of devices per controller	4 <sup>1</sup>
Allure EC-Smart-View Series	Up to 4
Allure EC-Smart-Comfort Series (not supported by UUKL)	Up to 4
Allure EC-Smart-Air Series (not supported by UUKL)	Up to 4

1. A controller can support a maximum of 2 Allure sensor models equipped with a CO<sub>2</sub> sensor. Any remaining connected sensors must be without a CO<sub>2</sub> sensor.

## Hardware

Processor	STM32 (ARM Cortex™ M3) MCU, 32 bit
CPU Speed	68 MHz
Applications Memory	384 kB Non-volatile Flash
Storage Memory	1 MB Non-volatile Flash
Memory (RAM)	64 kB RAM
Real Time Clock (RTC)	Built-in Real Time Clock without battery Network time synchronization is required at each power-up cycle before the RTC become available
Green LEDs	Power status & LAN Tx
Orange LEDs	Controller status & LAN Rx
Communication Jack	BACnet 1/8" (3.5mm) stereo audio jack

## Wireless Receiver

Communication Protocol	EnOcean wireless standard <sup>1</sup>
Number of Wireless Inputs <sup>2</sup>	24
Supported Wireless Receivers	Refer to the Open-to-Wireless Application Guide
Cable	Telephone cord
Connector	4P4C modular jack
Length (maximum)	2m (6.5ft)



1. Available when an optional external Wireless Receiver module is connected to the controller. Refer to the Open-to-Wireless Application Guide for a list of supported EnOcean wireless modules.
2. Some wireless modules may use more than one wireless input from the controller.

## Mechanical

Dimensions ECB-203 (H × W × D)	4.7 × 5.7 × 2.03" (119.38 × 144.78 × 51.47 mm)
Dimensions ECB-253 (H × W × D)	4.7 × 5.7 × 2.55" (119.38 × 144.78 × 64.68 mm)
Shipping Weight ECB-203	0.97lbs (0.44 kg)
Shipping Weight ECB-253	1.08lbs (0.49 kg)
Enclosure Material <sup>1</sup>	FR/ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating Plenum rating per UL1995
Installation	Direct DIN-rail mounting or wall mounting through mounting holes (see figure above for hole positions)

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive

## Environmental

Operating Temperature ECB-203 with Environmental Protection	-40°F to 158°F (-40°C to 70°C)
Operating Temperature ECB-203 and ECB-253	32°F to 122°F (0°C to 50°C)
Storage Temperature	-4°F to 122°F (-20°C to 50°C)
Relative Humidity	0 to 90% Non-condensing

## Standards and Regulation

CE Emission	EN61000-6-3: 2007; A1:2010
CE Immunity	EN61000-6-1: 2007
FCC	Compliance with FCC rules part 15, subpart B, class B
UL Listed (CDN & US)	UL916 Energy management equipment UL 864 UL 864, 10 <sup>th</sup> Edition, UUKL Listed Smoke Control Equipment (ECB-203 UUKL model only) <sup>1</sup>
California State Fire Marshal Listing	CSFM: 7300-2187:0100 (ECB-203 UUKL model only) <sup>1</sup>
CEC Appliance Database	Appliance Efficiency Program <sup>2</sup>



1. For detailed specifications regarding the ECB-203 UUKL model, refer to the Distech Controls UUKL Smoke Control Design Guide.
2. California Energy Commission's Appliance Efficiency Program: The manufacturer has certified this product to the California Energy Commission in accordance with California law.

## ECB-253 Display

Display Type	Backlit-color LCD
Display Resolution	400 W x 240 H pixels (WQVGA)
Effective Viewing Area (W × H)	2.4 × 1.4" (61.2 × 36.7mm) diagonal: 2.8" (71mm)
Menu Navigation	Jog dial turn, select navigation with Exit button

## Universal Inputs (UI)

### General

Input Type	Universal; software configurable
Input Resolution	16-Bit analog / digital converter
Power Supply Output	15VDC; maximum 120mA

### Contact

Type	Dry contact
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### Counter

Type	Dry contact
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500milliseconds On / 500milliseconds Off

### 0 to 10VDC

Range	0 to 10VDC (40kΩ input impedance)
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### 0 to 5VDC

Range	0 to 5VDC (high input impedance)
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### 0 to 20mA

Range	0 to 20mA
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249Ω external resistor wired in parallel

### Resistance/Thermistor

Range 0 to 350 KΩ

Supported Thermistor Types Any that operate in this range

#### Pre-configured Temperature Sensor Types:

Thermistor 10KΩ Type 2, 3 (10KΩ @ 77°F; 25°C)

Platinum Pt1000 (1KΩ @ 32°F; 0°C)

Nickel RTD Ni1000 (1KΩ @ 32°F; 0°C)  
RTD Ni1000 (1KΩ @ 69.8°F; 21°C)

## Universal Outputs (UO)

### General

Output Type	Universal; software configurable
Output Resolution	10-bit digital to analog converter
Output Protection	Built-in snubbing diode to protect against back-EMF, for example when used with a 12VDC relay Output is internally protected against short circuits
Load Resistance	Minimum 200 Ω for 0-10VDC and 0-12VDC outputs Maximum 500 Ω for 0-20mA output
Auto-reset fuse	Provides 24VAC over voltage protection

### 0 or 12VDC (On/Off)

Range 0 or 12VDC

Source Current Maximum 60 mA at 12VDC (minimum load resistance 200Ω)

## PWM

Range Adjustable period from 2 to 65 seconds

Thermal Actuator Management Adjustable warm up and cool down time

## Floating

Minimum Pulse On/Off Time 500 milliseconds

Drive Time Period Adjustable

## 0 to 10VDC

Range 0 to 10VDC

Source Current Maximum 60 mA at 10VDC (minimum load resistance 200Ω)

## Digital Outputs (DO)

### General

Output Type 24VAC Triac; software configurable

Maximum Current per Output 0.5A continuous  
1A @ 15% duty cycle for a 10-minute period

Power Source External

### 0 or 24VAC (On/Off)

Range 0 or 24VAC

## PWM

Range Adjustable period from 2 to 65 seconds

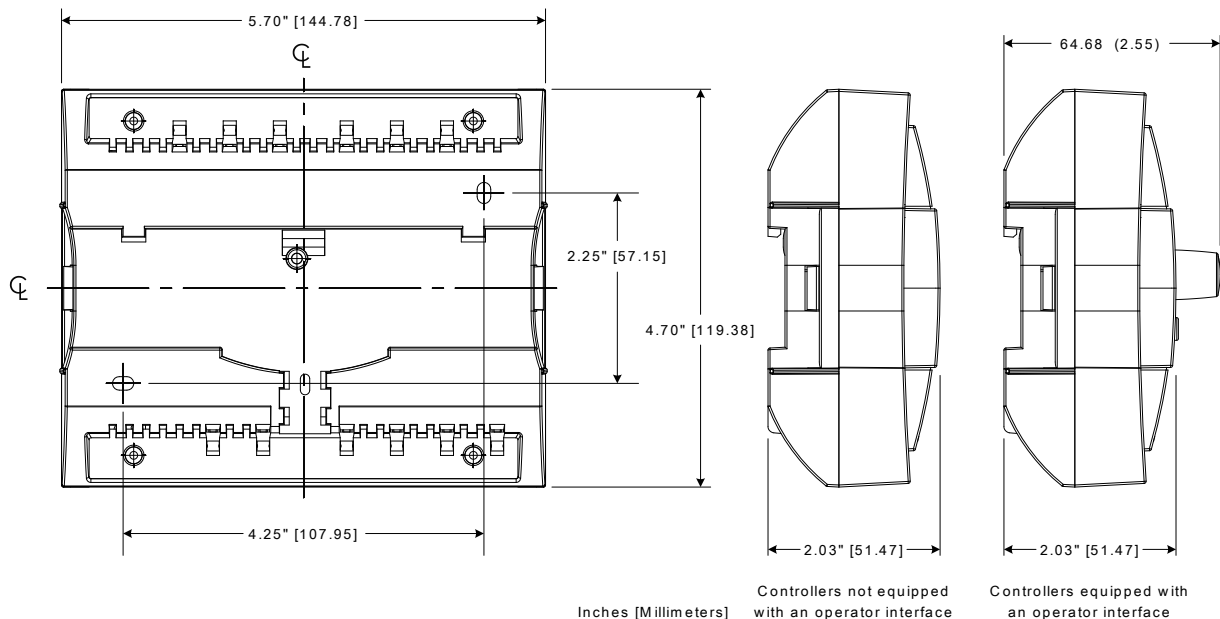
## Floating

Minimum Pulse On/Off Time 500 milliseconds

Drive Time Period Adjustable

Power Source External

## Dimensions



Specifications subject to change without notice.

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