ECB-PTU Series

BACnet® B-ASC Powered Terminal Unit Programmable Controllers

Overview

The ECB-PTU Series controllers are microprocessor-based programmable controllers designed to control powered terminal units such as powered fan coil units, heat pumps units, and chilled beams.

Each controller uses the BACnet® MS/TP LAN communication protocol and is BTL®-Listed as BACnet Application Specific Controllers (B-ASC) and WSP Certified.

These controllers are optimized for ultra-low power consumption and can be operated as stand-alone units or as part of a networked system to suit any installation requirement

Features & Benefits

- Flexible inputs and outputs support all industry-standard terminal unitary applications
- Rugged hardware inputs and outputs eliminate the need for external protection equipment
- Factory pre-loaded applications allow for out-of-the-box, energy efficient operation of standard terminal unitary equipment
- End-to-end solution for support of Smart Room Control of HVAC equipment, lighting and sunblinds
- 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
- eu.bac Certified Control Efficiency guarantees the highest level of performance of the products and systems
- Our controllers are BTL-listed and WSP-certified, which guarantee interoperability with other manufacturers' BTL-listed controllers

Model Selection

Example: **ECB-PTU**-*208 (SI)*

Series	Model	Units
ECB-PTU-	**107**: 12 Points, 3 Powered Relay Outputs, 2 Line-Powered Triac Outputs **207**: 16 Points, 3 Powered Relay Outputs, 2 Line-Powered Triac Outputs, 4 Analog Outputs **208**: 14 Points, 3 Powered Relay Outputs, 2x24 VAC Triac Output[1], 2 Analog Outputs, 24 VAC Power Supply Output **307**: 17 Points, 3 Powered Relay Outputs, 4 Line-Powered Triac Outputs, 2 Analog Outputs **308**: 16 Points, 3 Powered Relay Outputs, 4x24 VAC Triac Output[1], 2 Analog Outputs, 24 VAC Power Supply Output	**(SI)**: Preloaded Apps in SI (Metric) units **(IMP)**: Preloaded Apps in Imperial (US) units

1. Can be used to power certain types of valves and air dampers, thereby eliminating the need for a transformer.

Recommended Applications

Model	ECB-PTU-107	ECB-PTU-207	ECB-PTU-208	ECB-PTU-307	ECB-PTU-308
Fan Coil Unit:					
• 2/4 pipes - 3 speed fan - On/Off / thermal valves	■				
• 2/4 pipes - Variable / 3-speed fan - On/off / thermal valves		■	■		
• 2/4 pipes - Variable / 3-speed fan - Analog actuator		■	■		
• 2 pipes - Variable / 3-speed fan - Floating actuator		■	■		
• 4 pipes - Variable / 3-speed fan - Floating actuator				■	■
• Two Room: 2/4 pipes - Variable speed fan - On/Off / thermal valves				■	■
Heat Pump Unit:					
• 3-speed fan	■				
• Variable speed fan		■	■		
Chilled Beam:					
• On/Off / thermal valves	■		■		
• 2 pipes - Floating actuator	■		■		
• 4 pipes - Floating actuator				■	■
• Two Room: 2/4 pipes - On/Off / thermal / analog valves				■	■
Reversible Ceiling with 6-way valves		■	■		
Unit Ventilator		■	■		

BACnet Objects

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

Voltage Range	100-240 VAC; -15%/+10%;
Frequency Range	50/60Hz
Overcurrent Protection	4.0A external circuit breaker type C or 4.0A fast acting high breaking external fuse (250 VAC min)
Device Insulation Type	Type Double Insulation
Overvoltage Category	II - 2.5 kV
Power Consumption (ECB-PTU-107 / 207 / 307)	0.9 W plus all external loads[1]
Power Consumption (ECB-PTU-208 / 308)	<2.7 W plus all external loads[1]
Maximum Consumption (ECB-PTU-107 / 207 / 307)	4.0 A
Maximum Consumption (ECB-PTU-208 / 308)	3.5 A

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[1]
EOL Resistor	Built-in, dip switch selectable
Baud Rates	9600, 19 200, 38 400, or 76 800 bps
Addressing	Dip switch

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
Maximum number of room devices supported per controller combined	4
Allure EC-Smart-Vue Series[1]	4
Allure EC-Smart-Comfort Series	4
Allure EC-Smart-Air Series[1]	4
EC-Multi Sensor	4
ECx-Light-4 / ECx-Light-4D / ECx-Light-4DALI	2
ECx-Blind-4 / ECx-Blind-4LV / ECx-Blind-4SMI / ECx-Blind-4SMI-LoVo	2

1. A controller can support a maximum of 2 Allure sensor models equipped with a CO_2 sensor. Any remaining connected sensors must be without a CO_2 sensor.

Hardware

Processor	STM32 (ARM Cortex™ M3) MCU, 32 bit
CPU Speed	68 MHz
Memory	384 kB Non-volatile Flash (applications) 1 MB Non-volatile Flash (storage) 64 kB RAM
Green LEDs	Controller and Power Status,
Orange LEDs	LAN Tx & Rx

Wireless Receiver

Communication Protocol	EnOcean wireless standard[1]
Number of Wireless Inputs[2]	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 (H × W × D)	132 × 132 × 44 mm (5.2 x 5.2 x 44")
Dimensions with Terminal Covers (H × W × D)	182 × 132 × 44 mm (7.2 x 5.2 x 44")
Shipping Weight (ECB-PTU-107 / 207)	0.82lbs (0.37 kg)
Shipping Weight (ECB-PTU-307)	0.86lbs (0.39 kg)
Shipping Weight (ECB-PTU-208 / 308)	0.93lbs (0.42 kg)
Enclosure Material[1]	ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating
Mounting	Din-rail or wall-mounting

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	+5°C to +40°C (+41°F to +104°F)
Storage Temperature	-20°C to +70°C (-4°F to +158°F)
Relative Humidity	0 to 90% Non-condensing
Ingress Protection Rating	IP30 (with terminal block cover and strain relief)
Altitude	< 6561ft (2000m)
Pollution Degree	2

Certified Performances

eu.bac license number	213324
Cooling Control Accuracy	
Chilled Ceiling Systems	0.36°F (0.2°C)
Fan Coil Systems (2 pipes + electric heater)	0.18°F (0.1°C)
Fan Coil Systems (4 pipes)	0.18°F (0.1°C)
Heating Control Accuracy	
Fan Coil Systems (2 pipes + electric heater)	0.18°F (0.1°C)
Fan Coil Systems (4 pipes)	0.18°F (0.1°C)

Standards and Regulation

CE Emission	EN61000-6-3: 2006; A1:2010
CE Immunity	EN61000-6-1: 2005
FCC	Compliance with FCC rules part 15, subpart B, class B
UL Listed (CDN & US)	UL 61010-1 Energy management equipment
	CSA C22.2 NO. 61010-1
	File number: E352591
PEP ecopassport®	Compliant environmental declaration

Universal Inputs (UI)

General

Input Type	Universal; software configurable

Contact

Type	Dry contact (0 – 3.3VDC)

Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500milliseconds On / 500milliseconds Off

0 to 10VDC

Range	0 to 10VDC

Resistance/Thermistor

Thermistor	10KΩ Type 2, 3 (10KΩ @ 77ºF; 25ºC)

Sensor Inputs (SI)

General

Input Type	Sensor; software configurable
Accuracy	± 0.1°C, 32.18°F @ 25°C; 77°F (controller only)

Contact

Type	Dry contact (0 – 3.3VDC)

Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	500ms On / 500ms Off

Resistance

Thermistor	10KΩ Type 2, 3 (10KΩ @ 77ºF; 25ºC)

Digital Inputs (DI)

General

Input Type	Digital; software configurable

Contact

Type	Dry contact (0 – 3.3VDC)

Counter

Type	Dry contact (0 – 3.3VDC)
Maximum Frequency	1Hz maximum
Minimum Duty Cycle	20 milliseconds On / 20 milliseconds Off

Power Supply (Vref)

Output (Vref)	5 VDC for polarization (I < 1 mA)

Triac Outputs

General (ECB-PTU-107 / 207 / 307)

Output Type	Triac
Voltage Range	100-240 VAC (same as device power supply)
Maximum Current per Output	0.5 A continuous
	1 A @ 15% duty cycle for a 10-minute period
Inrush Current	3.0 A maximum (<20 milliseconds)
Common Terminal	1 per pair of outputs

General (ECB-PTU-208 / 308)

Output Type	Triac
Power Source	Internal on-board 24 VAC power supply
Voltage Range	See on-board 24 VAC power supply
Current	See on-board 24 VAC power supply
Common Terminal	1 per pair of outputs

Digital (On/Off)

Voltage Range (ECB-PTU-107 / 207 / 307)	0 or 100-240 VAC (same as device power supply)
Voltage Range (ECB-PTU-208 / 308)	0 or 24 VAC

PWM

Application	Typically Thermal Valve Control
Range	Adjustable period from 2 to 65 seconds

Floating

Minimum Outputs	2 consecutive outputs
Minimum Pulse On/Off Time	500 milliseconds
Drive Time Period	Adjustable from 10 to 600 seconds

Powered Relay Outputs

General

Output Type	Digital
Application	Typically Fan Speeds
Current	3.0 A max. (inductive or resistive load) for the total sum of the 3 outputs
Resting State	Normally Open
Common Terminal	Shared

Digital (On/Off)

Voltage Range	0 or 100-240 VAC (Same as device power supply)

Digital Relay Contact Outputs

General

Output Type	Digital
Application	Typically Electric Heater
Protection	Must be protected with an external circuit breaker or fast acting, high breaking fuse in accordance with the controlled load (10 A max. / min voltage according to the controlled load)

Contact

Type	Dry contact
Voltage Range	100-255 VAC
Current (ECB-PTU-107 / 207 / 208 / 308)	9.0 A max. on a resistive load (2 kW @ 230 VAC)
Current (ECB-PTU-307)	6.0 A max. on a resistive load (1.4 kW @ 230 VAC)
Resting State	Normally Open
Common Terminal	Dedicated digital

Analog Outputs

(ECB-PTU-207 / 208 / 307 / 308)

Output Type	Analog
Voltage Range	0-10 VDC linear
Current	5 mA max

24 VAC Outputs

(ECB-PTU-208 / 308)

Power Source	Internal on-board 24 VAC power supply
Voltage Range	See on-board 24 VAC power supply
Current	See on-board 24 VAC power supply

On-board 24 VAC Power Supply

(ECB-PTU-208 / 308)

Power Source	Internal on-board 24 VAC power supply
Voltage Range	24 VAC; ± 10%
Frequency	50 Hz
Current	500 mA max. on a resistive load (12 VA @ 24 VAC)
Peak current	800 mA
Short-circuit protection	Fuse
Overload protected	Yes

Dimensions

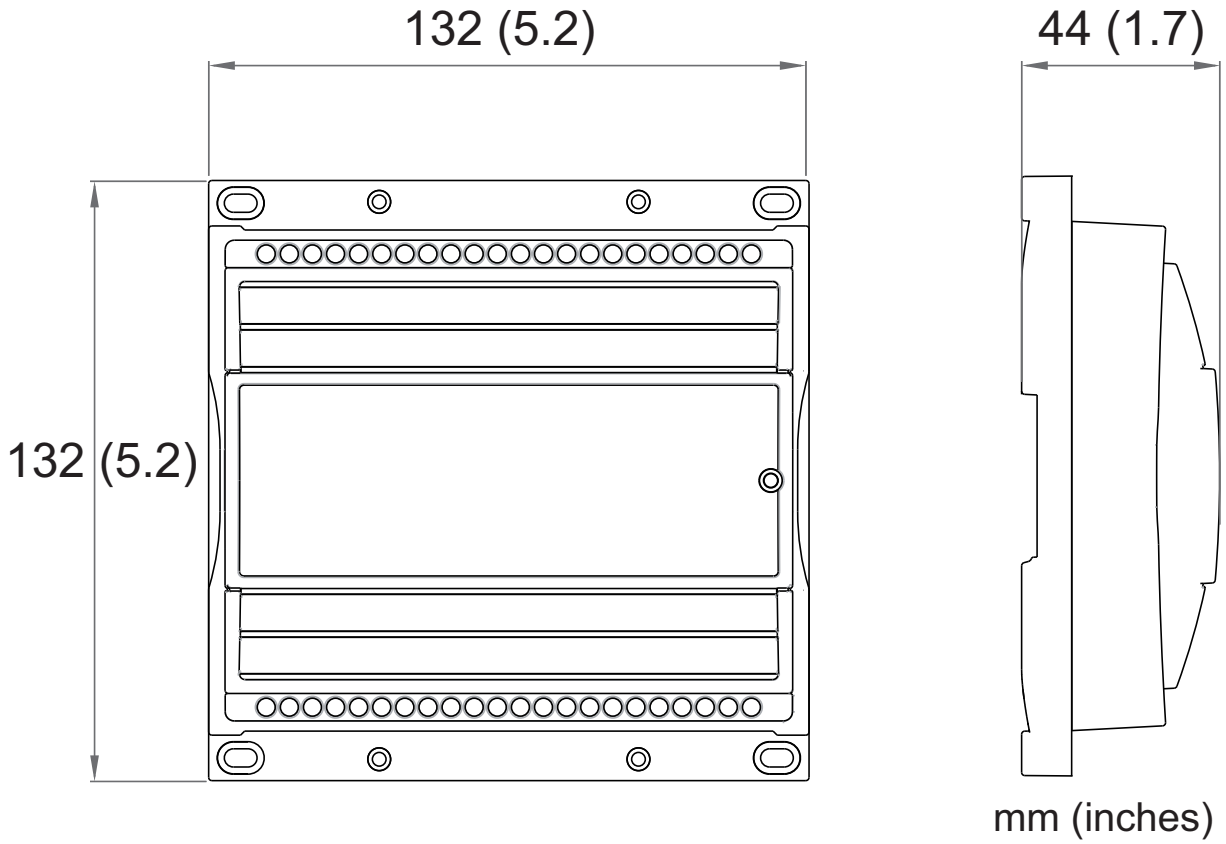

Figure 1: PTU Enclosure - Without strain relief

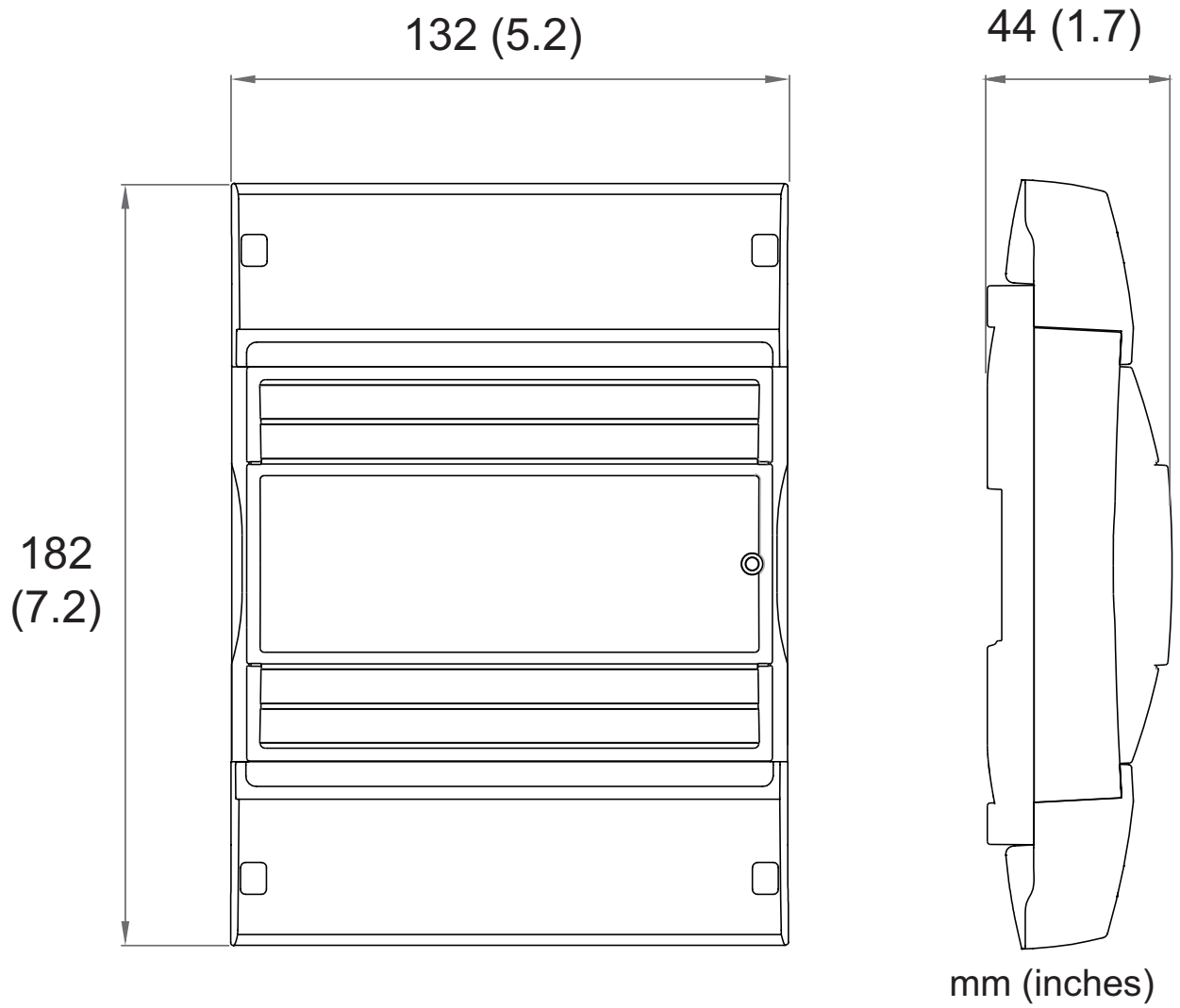

Figure 2: PTU Enclosure - With strain relief