

# ECLYPSE™ Connected Terminal Unit Controller

## ECLYPSE™



## Overview

The ECLYPSE Connected Terminal Unit Controller (ECY-TU/PTU) is designed to control terminal units such as fan coil units, chilled beams, ceilings, and heat pumps.

It integrates a control, automation and connectivity server, a power supply, and dedicated I/Os in one convenient package.

These products feature wired and wireless advanced IP connectivity for efficient and reliable installation.

The ECY-TU/PTU comes with an embedded web server that enables web-based application configuration and an HTML5 visualization interface. It also features embedded scheduling, alarming, and logging. Control logic and graphic user interface can be customized as required for the application.

Moreover, as part of the Smart Room Control solution, these controllers can control lighting fixtures (DALI, ON/OFF, dimming) and shades/sunblind motors (24 VDC or 100-240 VAC, up/down and angle rotation) through additional expansion modules.

## Features & Benefits

- Utilizes BACnet/IP and IT standards, delivering empowered IP connectivity and open integration with building management systems
- No external transformer required
- Uses cryptographic modules making it FIPS 140-2 Level 1 Compliant
- Via its RESTful API, data can be accessed from different applications, such as energy dashboards, analytics tools, and mobile applications
- Comes with ENVYSION™ Viewer and the associated preloaded rooftop unit applications and graphics pre-installed
- xpressENVYSION offers a simplified and streamlined experience in a workflow oriented, drag & drop GUI environment
- Supports EC-gfxProgram, which makes Building Automation System (BAS) programming effortless
- Supports Smart Room Control for an end-to-end system for the control of HVAC equipment, lighting, and shades/sunblinds
- Embedded alarms, trend log and schedule support allows for fully distributed data and logic providing a more robust system
- Automatic email notifications for system status and alarms to ensure faster system servicing and response time
- ECLYPSE edge analytics automates the commissioning process, saving up to 30-45 minutes per device

# Model Selection

Example: ECY-PTU-208 (SI)

Series	Supply Voltage Input	Model <sup>1</sup>	Units
ECY-	PTU: 100-240 VAC TU: <sup>2</sup> 24 VAC	<p><b>-107</b>: 12 Points, 3 Line-Powered Relay Outputs, 2 Line-Powered Triac Outputs</p> <p><b>-207</b>: 16 Points, 3 Line-Powered Relay Outputs, 2 Line-Powered Triac Outputs, 4 Analog Outputs</p> <p><b>-208</b>: 16 Points, 3 Line-Powered Relay Outputs, 2 24 VAC Triac Outputs, 4 Analog Outputs, 24 VAC Power Supply Outputs</p> <p><b>-203</b>:<sup>3</sup> 16 Points, 3 Unpowered Relay Outputs, 2 24 VAC Triac Outputs, 2 Analog Outputs, 2 Digital/Analog Outputs, 24 VAC Power Supply Outputs</p>	<p><b>(SI)</b>: Preloaded Apps in SI (Metric) units</p> <p><b>(IMP)</b>: Preloaded Apps in Imperial (US) units</p>

1. SEP models (single Ethernet port) have secondary Ethernet port factory disabled
2. Only available with the 203 Model
3. Only available with the 24 VAC Supply Voltage Input

## Accessories

Terminal covers	Terminal cover designed to conceal the wire terminals of the ECY-PTU/TU Series controllers. Required to meet local safety regulations in certain jurisdictions
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# Product Specifications

## Power Supply Input

(ECY-PTU-107, ECY-PTU-207, and ECY-PTU-208)

Voltage Range	100-240 VAC; ±10%
Frequency Range	50 to 60Hz
Overcurrent Protection	4.0 A external circuit breaker type C
Device Insulation Type	Double Insulation
Overvoltage Category	II - 2.5 kV
Power Consumption	5 W plus all external loads
Maximum Consumption	4 A

## Power Supply Input

(ECY-TU-203)

Voltage Range	24 VAC; ±15%; Class 2
Frequency Range	50 to 60Hz
Overcurrent Protection	2.0 A fast acting, 5x20mm (GMA-2A) internal fuse
Device Insulation Type	Double Insulation
Overvoltage Category	II - 2.5 kV
Power Consumption	5 W plus all external loads
Maximum Consumption	2 A

## Communications

Ethernet Connection Speed	10/100 Mbps
Cable Type	Cat 5e, 8 conductor twisted pair (unshielded)
Addressing	IPv4 or Hostname
BACnet Profile	BACnet Building Controller (B-BC)), AMEV AS-A and AS-B
BACnet Listing	BTL, WSP B-BC
BACnet Interconnectivity	BBMD forwarding capabilities
BACnet Transport Layer	IP
Web Server Protocol	HTML5
Web Server Application Interface	REST API
Wireless Adapter	Optional, USB Port Connection
Wi-Fi Communication Protocol	IEEE 802.11b/g/n
Wi-Fi Network Types	Client, Access Point, Hotspot

## Subnetwork

Communication	RS-485
Cable Type	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain
Maximum number of standard room devices supported per controller combined <sup>1</sup>	4
Allure EC-Smart-View Series <sup>2</sup>	4
Allure EC-Smart-Comfort Series	4
Allure EC-Smart-Air Series <sup>2</sup>	4
EC-Multi Sensor	4
ECx-Light-4 / ECx-Light-4D / ECx-Light-DALI <sup>1</sup>	4
ECx-Blind-4 / ECx-Blind-4LV <sup>1</sup>	4
Maximum number of Bluetooth low energy room devices per controller combined <sup>3</sup>	4
Allure UNITOUCH™	2
EC-Multi-Sensor-BLE	4

1. For more details about supported quantities, see the Product Selection Tool available in Builder: <https://builder.distech-controls.com>.
2. 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.
3. A mixed architecture with standard room devices and Bluetooth low energy enabled devices is not recommended.

## Hardware

Processor	Sitara ARM processor
CPU Speed	600MHz
Memory	4GB Non-volatile Flash (applications & storage) 512MB RAM
Real Time Clock (RTC)	Real Time Clock with rechargeable battery Supports SNTP network time synchronization
RTC Battery	20 hours charge time, 20 days discharge time Up to 500 charge / discharge cycles

Cryptographic Module	FIPS 140-2 Level 1 Compliant
Ethernet	2 × switched RJ-45 Ethernet ports with integrated fail-safe for daisy-chaining
USB Connections	2 × USB 2.0 Ports 1 × Micro-USB 2.0 Ports
Subnet	RJ-45
Green LED	Power status and Ethernet Traffic
Orange LED	Controller status and Ethernet Speed

## Open-to-Wireless Adapter

Communication Protocol	EnOcean wireless standard <sup>1</sup>
Connector Type	USB
Number of Wireless Inputs	Unlimited <sup>2</sup>



1. Available when an optional external ECLYPSE Open-to-Wireless Adapter is connected to the controller. Refer to the Open-to-Wireless Application Guide for a list of supported EnOcean wireless modules.
2. Wireless inputs will only be limited by physical distance between the EnOcean devices and the ECLYPSE Open-to-Wireless Adapter.

## Mechanical

Dimensions (H × W × D)	142 × 145 × 57 mm (5.60 × 5.71 × 2.24")
Dimensions with Terminal Covers (H × W × D)	195 × 145 × 57 mm (7.67 × 5.71 × 2.24")
Shipping Weight	0.6 kg [1.32 lbs]
Enclosure Material <sup>1</sup>	FR/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 covers and strain relief)
Nema Rating	1
Altitude	< 2000 m (6560 ft)
Pollution Degree	2

## Standards and Regulations

CE Emission	EN61000-6-3: 2007+A1:2011
CE Immunity	EN61000-6-1: 2007
CE Electrical Safety	EN 60730-1 : 2011
FCC	Compliance with FCC rules part 15, subpart B, class B
UL Listed (CDN & US)	UL 61010-1 Energy management equipment
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 (40kΩ input impedance)

### Resistance/Thermistor

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

## Sensor Inputs (SI)

### General

Input Type Sensor; 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

### Resistance/Thermistor

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

Accuracy ±0.1°C @ 25°C (±0.18°F @ 77°F)

## 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 100Hz maximum

Minimum Duty Cycle 5 milliseconds On / 5 milliseconds Off

## Power Supply (Vref)

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

## Triac Outputs

### General

#### (ECY-PTU-107 and ECY-PTU-207)

Output Type Triac

Voltage Range 0 or 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

### (ECY-PTU-208 and ECY-TU-203)

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)

### (ECY-PTU-107 and ECY-PTU-207)

Voltage Range	0 or 100-240 VAC (same as device power supply)
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## Digital (On/Off)

### (ECY-PTU-208 and ECY-TU-203)

Voltage Range	0 or 24 VAC
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## 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

## Powered Relay Outputs

### General

#### (ECY-PTU-107, ECY-PTU-207, and ECY-PTU-208)

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

## Unpowered Relay Outputs

### General

#### (ECY-TU-203)

Output Type	Digital
Application	Typically Fan Speeds
Supplied Voltage	None
Supported Voltage	100-277 VAC
Current	3.0 A max. (inductive or resistive load) for the total sum of the 3 outputs
Protection	Must be protected with an external circuit breaker or fast acting, high breaking fuse in accordance with the controlled

load (3 A max. / min voltage according to the controlled load)

Resting State	Normally Open
Common Terminal	Shared

## 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 (ECY-PTU-107 / ECY-PTU-207 / ECY-PTU-208)	100-240 VAC
Voltage Range (ECY-TU-203)	100-277 VAC
Current	9.0 A max. on a resistive load (2 kW @ 230 VAC)
Resting State	Normally Open
Common Terminal	Dedicated digital

## Analog Outputs

### General

#### (ECY-PTU-207, ECY-PTU-208 and ECY-TU-203)

Output Type	Analog
Voltage Range	0-10 VDC linear
Current	5 mA max
Current sourcing	Maximum 5 mA at 10 VDC (minimum resistance 2 kΩ)
Current sinking	Maximum 2 mA at 1 VDC (minimum resistance 5 kΩ)

## 24 VAC Outputs

### (ECY-PTU-208 and ECY-TU-203)

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

### General

#### (ECY-PTU-208 and ECY-TU-203)

Power Source	Internal on-board 24 VAC power supply
Voltage Range	24 VAC; ± 15%
Frequency	50 Hz
Current	600 mA max. on a resistive load (14 VA; ± 15%)
Peak current	850 mA
Short-circuit protection (ECY-PTU-208)	Integrated Fail Safe
Short-circuit protection (ECY-TU-203)	Fuse
Overload protected	Yes

# Digital-Analog Outputs

## General (ECY-TU-203)

Output Type	Digital Triac or Analog; software configurable
Triac Output Mode	See Triac Output specifications
Analog Output Mode	See Analog Output specifications

## Dimensions

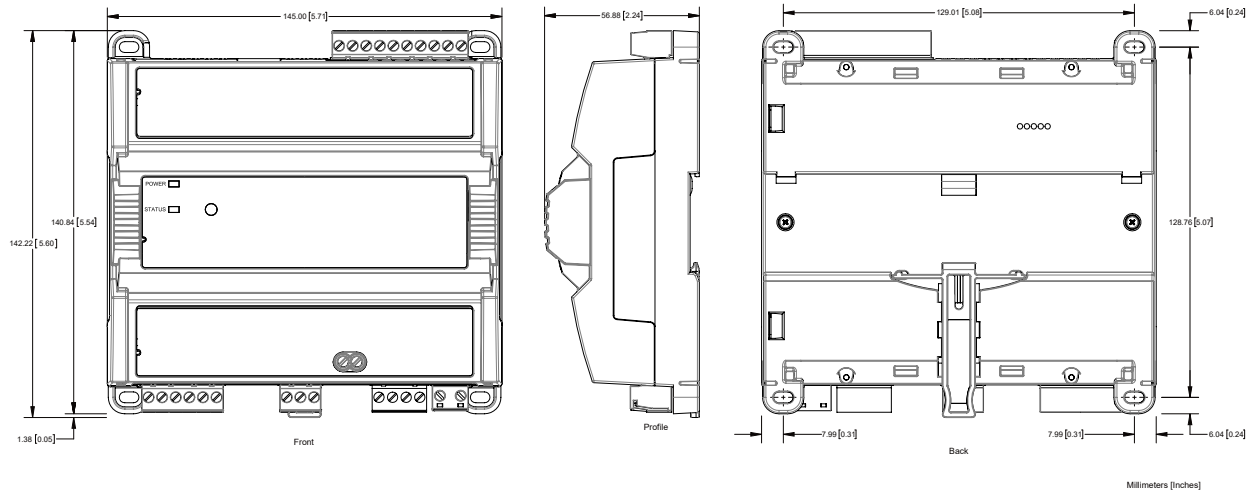


Figure 1: ECY-PTU without terminal block covers

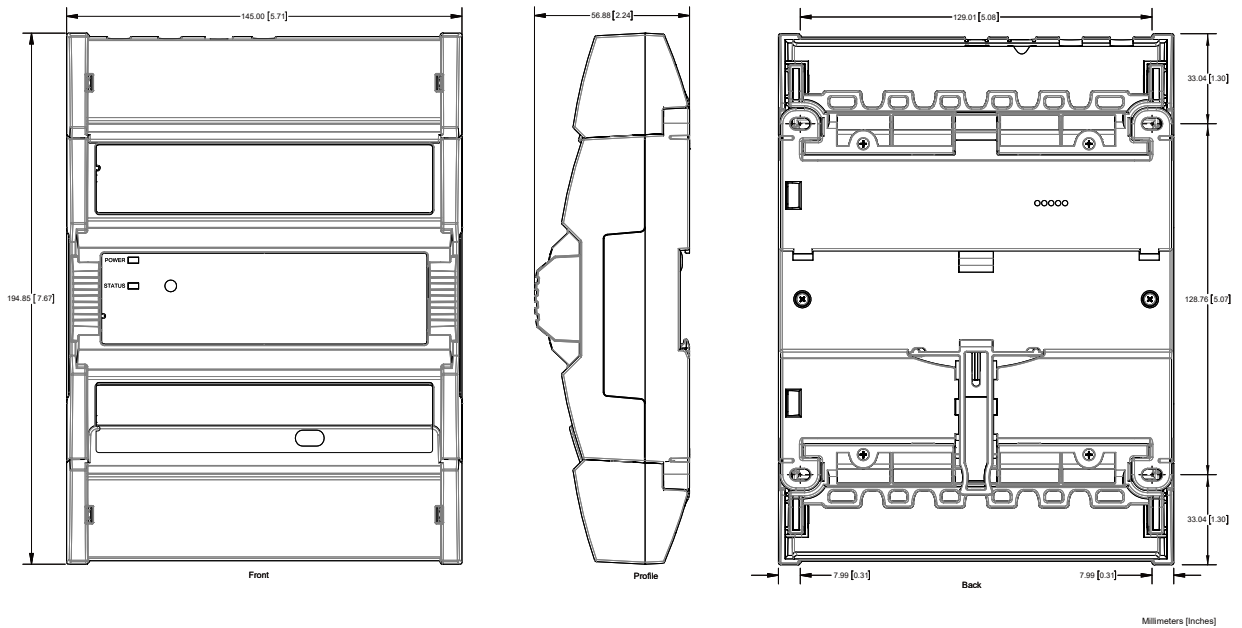


Figure 2: ECY-PTU with terminal covers

Specifications subject to change without notice.

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