

ECY-PTU/TU Controller



Overview

The Eclipse Connected Terminal Unit Controller (ECY-TU/PTU) controls terminal units such as fan coil units, chilled beams, ceilings, and heat pumps. It integrates a control, automation, and connectivity server, power supply, and dedicated I/Os. With wired and wireless IP connectivity, it supports efficient, reliable installation. The embedded web server enables web-based configuration and HTML5 visualization. As part of the DC Space solution, it can also control lighting (DALI, ON/OFF, dimming) and shades/sunblinds (24 VDC or 100–240 VAC) via expansion modules.

The ECY-PTU/TU Controller is powered by Eclipse Facilities and includes two years of Atrius Facilities - Organize.

Features & Benefits

- Utilizes BACnet/IP and IT standards, delivering empowered IP connectivity and open integration with building management systems
- No external transformer required
- Via its RESTful API, data can be accessed from different applications, such as energy dashboards, analytics tools, and mobile applications
- Supports DC Space 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
- Eclipse edge analytics automates the commissioning process, saving up to 30-45 minutes per device
- Readily supports Atrius Facilities that simplifies installation and maintenance of systems and increases the efficiency of building operations.

Model & Connectivity Selection

Model Selection

Example: ECY-PTU-208-C5 (SI)

Series	Supply Voltage Input	Model ^a	Connectivity	Units
ECY-	PTU: 100-240 VAC TU: ^b 24 VAC	-107: Connected Terminal Unit Controller with Eclipse Facilities - 12 Points Inputs: 3 Universal Inputs, 2 Digital Inputs, 1 Sensor Input Outputs: 1 Relay Contact Output (typ. Electric Heater), 3 Line-Powered Relay Outputs (typ. Fan Speeds), 2 Line-Powered Triac Outputs (typ. Valves).	-C0: default model if no connectivity is required -C1 C10: if connectivity is required (see table below)	(SI): Preloaded Apps in SI (Metric) units (IMP): Preloaded Apps in Imperial (US) units
		-207: Connected Terminal Unit Controller with Eclipse Facilities - 16 Points Inputs: 3 Universal Inputs, 2 Digital Inputs, 1 Sensor Input. Outputs: 1 Relay Contact Output (typ. Electric Heater), 3 Line-Powered Relay Outputs (typ. Fan Speeds), 2 Line-Powered Triac Outputs (typ. Valves), 4 Analog Outputs.		
		-208: Connected Terminal Unit Controller with Eclipse Facilities - 16 Points Inputs: 3 Universal Inputs, 2 Digital Inputs, 1 Sensor Input. Outputs: 1 Relay Contact Output (typ. Electric Heater), 3 Line-Powered Relay Outputs (typ. Fan Speeds), 2 24VAC-Powered Triac Outputs (typ. Valves), 4 Analog Outputs, 24VAC Power Supply Outputs.		
		-203: ^c Connected Terminal Unit Controller with Eclipse Facilities - 16 Points Inputs: 3 Universal Inputs, 2 Digital Inputs, 1 Sensor Input. Outputs: 1 Relay Contact Output (typ. Electric Heater), 3 Unpowered Relay Outputs (typ. Fan Speeds), 2 24VAC-Powered Triac Outputs (typ. Valves), 2 Digital/Analog Outputs, 2 Analog Outputs, 24VAC Power Supply Outputs.		

^aSEP models (single Ethernet port) have secondary Ethernet port factory disabled

^bOnly available with the 203 Model

^cOnly 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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Connectivity Packs

Connectivity packs enable remote devices to be added to a connector in Eclipse Facilities. A single pack adds x connections and x * 100 points of connectivity.

BACnet Network Values in EC-gfxProgram are available without connectivity packs.

Connectivity		Device Ratios			
		1:1	2:1	8:1	100:1
Connectivity Pack	Connections (device loads)	BACnet/IP Devices	Modbus devices (TCP/IP)	M-Bus devices ^a	Global point count
C1 ^b	1	1	2	3	100
C3	3	3	6	3	300
C5	5	5	10	3	500
C10	10	10	20	3	1000

^aThe maximum number of physical M-Bus meters is 3 when the ECY-MBUS module is connected to the controller's USB port.

^bMinimum Connectivity Pack required to enable BACnet/IP routing

Depending on the connector, a device can consume a whole connection or a fraction of a connection.

The device ratios are the following using a C5 connectivity pack (refer to table above):

- BACnet (1:1) = 5 BACnet with C5
- Modbus (2:1) = 10 Modbus with C5

- M-Bus¹ (8:1) = 40 M-Bus with C5

How to calculate connectivity

Connectivity packs are cumulative but only one pack can be ordered with a controller. More packs can be added afterwards in the field. The following shows how to calculate the connectivity needed:

$$6 \text{ BACnet} + (3 \text{ Modbus} \div 2) + (6 \text{ M-bus} \div 8) = 8.25$$

Select C10 (10 connections, 1000 points)

To assist in calculating the required connectivity, contact your RSM for more details or refer to the price list if available.

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)
BACnet Listing	BTL (B-BC)
BACnet Interconnectivity	BBMD forwarding capabilities BACnet/SC routing
BACnet Transport Layer	IP, BACnet/SC (Node)
Web Server Protocol	HTML5
Web Server Application Interface	REST API

Network Security	802.1X
	• EAP-TTLS / MSCHAPv2
	• PEAP-MSCHAPv2
	• EAP-TLS
Wireless Adapter	Optional, USB Port Connection
	Refer to the Eclipse Wi-Fi Adapter Spec Sheet

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 ^a	4
Allure EC-Smart-Vue Series ^b	4
Allure EC-Smart-Comfort Series	4
Allure EC-Smart-Air Series ^b	4
EC-Multi Sensor	4
ECx-Light-4 / ECx-Light-4D / ECx-Light-4DALI / ECx-Light-DALI-A ^a	2
ECx-Blind-4 / ECx-Blind-4LV / ECx-Blind-OO4smi / ECx-Blind-4SMI-LoVo ^a	2
Maximum number of Bluetooth low energy room devices per controller combined ^c	4
Allure UNITOUCH™	2
EC-Multi-Sensor-BLE	4

^aFor more details about supported quantities, see the Product Selection Tool available in Builder: <https://builder.distech-controls.com>.

^bA controller can support a maximum of 2 Allure sensor models equipped with a CO₂ sensor. Any remaining connected sensors must be without a CO₂ sensor.

^cA 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

¹Some physical M-Bus meters can include more than 1 virtual M-Bus device. Since each virtual M-Bus device has its own M-Bus address on the M-Bus network, the Connectivity Pack will count the number of virtual devices, rather than the number of physical M-Bus meters. It is therefore recommended to check whether the M-Bus meters that will be connected to the controller include virtual M-Bus devices, and, if so, how many, before choosing a Connectivity Pack license.

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 ^a
Connector Type	USB
Number of Wireless Inputs	Unlimited ^b



^aAvailable when an optional external Eclipse 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.

^bWireless inputs will only be limited by physical distance between the EnOcean devices and the Eclipse 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 ^a	FR/ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating
Mounting	Din-rail or wall-mounting

^aAll 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
PEP ecopassport®	Compliant environmental declaration



Universal Inputs (UI)

General

Input Type	Universal; software configurable
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Contact

Type	Dry contact (0 – 3.3VDC)
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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)
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Resistance/Thermistor

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

General

Input Type	Sensor; software configurable
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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)

Digital (On/Off) (ECY-PTU-208 and ECY-TU-203)

Voltage Range 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

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

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

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

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

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)

On-board 24 VAC Power Supply

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

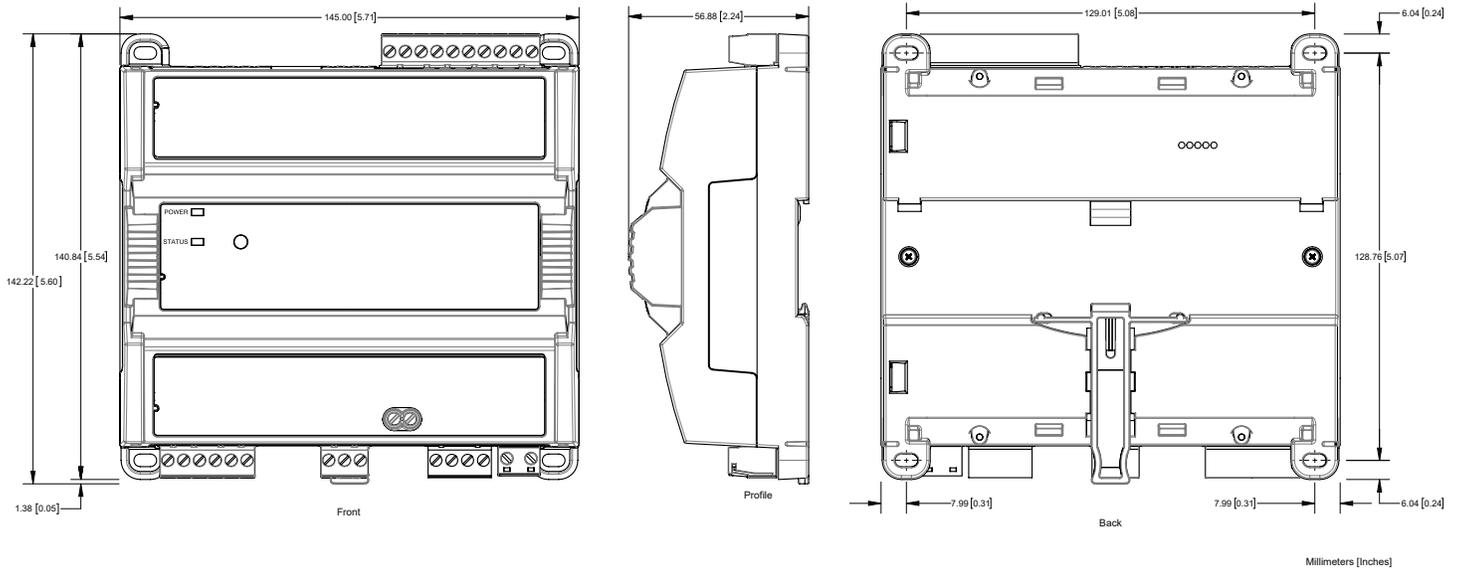
Power Source	Internal on-board 24 VAC power supply
Voltage Range	24 VAC; $\pm 15\%$
Frequency	50 Hz
Current	600 mA max. on a resistive load (14 VA; $\pm 15\%$)
Peak current	850 mA
Short-circuit protection (ECY-PTU-208)	Integrated Fail Safe
Short-circuit protection (ECY-TU-203)	Fuse
Overload protected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

Digital-Analog Outputs General

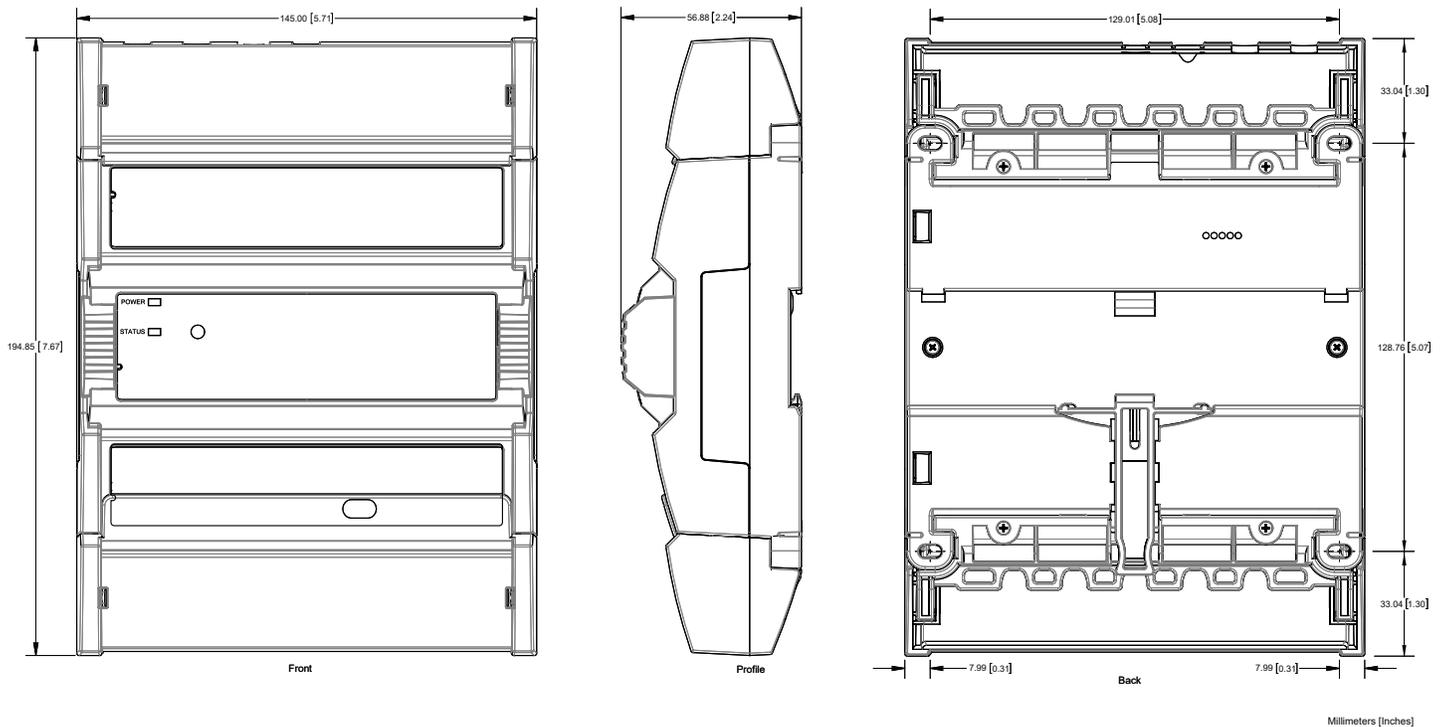
(ECY-TU-203)

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

Dimensions



ECY-PTU without terminal block covers



ECY-PTU with terminal covers

Specifications subject to change without notice.

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