



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.

Each model supports BACnet/IP communication and is listed as a BACnet Building Controller (B-BC).

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.

Applications

- Fan coil units
- Chilled beams
- Reversible ceilings with 6-way valves
- Heat pumps
- Smart Room Control solution

Moreover, these HVAC applications can support different configurations (4 pipe, 2 pipe, ...) and different valve and actuator types (on/off, thermal, floating, 0-10 V, ...).

Features & Benefits

IP Communication

- Increased speed and improved handling of numerous trend logs that enable applications, such as advanced analytics that require a large amount of data.
- Experience faster response and save time when programming, configuring, creating and viewing graphics, and upgrading your system.

- Control technicians can connect the ECLYPSE Wi-Fi Adapter to the ECY-TU/PTU thereby creating a Wi-Fi Hotspot network. The control technician can then connect wirelessly to the system using a mobile device or laptop, for faster, easier system configuration, programming, commissioning, and servicing.
- Hostname management allows the controller to be addressed by a nickname to facilitate network management.

Advanced IP Connectivity

The different types of connections supported by the ECY-TU/PTU are the following:

IP wired connection

Internal switch with two Ethernet ports allows the controllers to be wired in a star or daisy-chain topology. With a daisy-chain topology:

- Fewer wire runs to a centralized switch are required, thereby achieving installation and cost reduction.
- A laptop can be connected to the second Ethernet port for direct programming, configuration, and commissioning using *EC-gfx*Program or ENVYSION.

Integrated Fail-Safe for Daisy-Chaining

Controllers feature an integrated fail-safe: in case of power failure to one of the daisy-chained controllers, communication data is still relayed to the following controller on the daisy-chain. This reduces the possibility that a single point of failure will knock-out follow-on controllers, and minimizes disruption when power is cut to a controller for maintenance operations.

IP wireless (Wi-Fi) connection

- Wi-Fi Client - Connection to the building's existing Wi-Fi network or to another controller's Wi-Fi Hotspot or Access Point.
- Wi-Fi Access Point - extending the building's wired IP network to your Wi-Fi Client devices.
- Wi-Fi Hotspot - your own wireless area network, for wireless communication between the controllers, or with a mobile device or laptop for configuration, commissioning and servicing.

Both IP wired and wireless (Wi-Fi) connection

The availability of both Ethernet ports and USB ports for the Wi-Fi Adapter, allows for simultaneous wired IP and Wi-Fi communication on the same controller, which means you can choose and combine these connection methods. For example, Wi-Fi can be used between two controllers to jump a large atrium.

Connect from anywhere

Control technicians, facility managers, occupants, and others can easily connect to the system, on-site or off-site, using the different available tools:

- ENVYSION to create and view the graphical interface
- *EC-gfx*Program to create custom control sequences
- *myDC* Control to view, edit, and configure system operating parameters

Scalable and Modular

An ECY-MBUS communication module can be connected via USB to add one M-Bus port for meter integration, thus eliminating the need for a third-party gateway (from M-Bus to BACnet/IP).

BACnet/IP Device

The ECY-TU/PTU is BTL-listed as a BACnet Building Controller (B-BC) and is certified WSP B-BC (Europe) and AMEV AS-A & AS-B (German-speaking countries). It supports BACnet/IP for faster communication in comparison to the traditional twisted pair communication bus.

No External Transformer

Some models feature a 100-240 VAC universal power supply input that allows for direct connection to the mains and do not require external transformers, for improved reliability and reduced installation costs.

Some models have a 24 VAC power supply output that can be used to power analog dampers and valve actuators thereby eliminating the need for a transformer.

Dedicated Inputs & Outputs

Each controller has specific IOs to fulfill any type of installation:

- Universal inputs for using your preferred or engineer-specified sensors.
- Sensor inputs to ensure optimal temperature measurement processing.
- Digital inputs to accelerate the integration of binary inputs such as window contacts.

- Powered Triac outputs for direct connection of valves and actuators.
- Powered relay outputs for direct connection of ventilator fans.
- Relay contact outputs for controlling externally powered devices such as electric heater, fans, ...
- Analog outputs to provide control signals for external peripherals.
- Digital / Analog outputs for enhanced flexibility

Depending on the installation configuration and controlled equipment (valves, fans...), the suitable model will allow for simplified installation and wiring, and eliminate the need for additional external power supply.

eu.bac Certified Control Efficiency

The eu.bac certification schemes guarantees the highest level of performance of the products and systems, as defined in the EU-Directives and relevant EN standards. This allows building owners to ensure that their building keeps performing as well, or better than when it was first commissioned.

Preloaded Application and Graphics

Faster programming and configuration

The ECY-TU/PTU is a plug and play device that saves time and money since no programming or graphic design is needed as it comes with ENVYISION™ Viewer and the associated preloaded applications and graphics are pre-installed.

All standard terminal applications, such as fan coil units, chilled beams and ceilings, are included.

Direct web access

Also, no additional tools are required; only a web-browser is needed when you are using the pre-loaded application through ENVYISION. An Allure™ EC-Smart-Vue sensor can also be used. However, if the pre-loaded application does not meet the application requirements, it is possible to use EC-gfxProgram to program it.



HTML5 Visual Interface

The ECY-TU/PTU comes embedded with ENVYISION Viewer and xpressENVYISION.

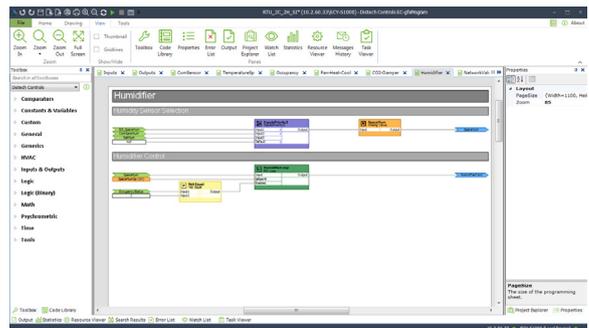


ENVYISION Viewer – Web-based graphical user interface

The embedded ENVYISION viewer provides fast loading of visual applications through native web pages with absolutely no browser plug-ins. Host and view preloaded graphics, and access schedules, alarms, and trend logs directly from your ECY-TU/PTU.

Programmability

Supports Distech Controls' EC-gfxProgram, which makes Building Automation System (BAS) programming effortless, by allowing you to visually assemble building blocks to create a custom control sequence for any HVAC , lighting, or building automation application.



Simplified Network Commissioning

The XpressNetwork Utility saves you time and expense by giving you increased control over multiple ECLYPSE controllers through device discovery and batch operations such as configuring, programming, and updating multiple ECLYPSE controllers on the network.

In addition, with the embedded step by step Commissioning Wizard, all configuration operations can be setup and applied in one go.

Increase productivity using the *xpressNetwork* Companion mobile app, making it easier to identify and locate a controller on the network. Use the QR Code marked on ECLYPSE controllers to easily collect key controller data and to facilitate its network integration with *xpressNetwork* Utility.

Open to Web Services

With the RESTful API, the ECY-TU/PTU's data can be accessed from different applications, such as energy dashboards, analytics tools, and mobile applications. The RESTful API documentation explains the implementation protocol for this interface.

Mobility

The controller can be remotely accessed to program, configure, or maintain the installation thus reducing costs associated with on-site visits. Through a mobile device or PC, a range of tasks can be performed using the following free-to-use tools and interfaces:

- ENVYISION web-based graphic design and visualization interface
- EC-*gfx*Program graphical programming interface
- *myDC* Control mobile application
- *XpressNetwork* Companion controller data collection utility

Alarms, Trend Log, Schedule Support

Embedded alarms, trend log and schedule support allows for fully distributed data and logic providing a more robust system. Embedded trend logs simplify system troubleshooting when compared to a centralized system.

Email Notifications Service

Technicians & facility managers can receive automatic email notifications for system status and alarms to ensure faster system servicing and response time. Email notification text can be customized to provide pertinent information about the issue at hand.

FIPS 140-2 Level 1 Compliant

FIPS 140-2 Level 1 compliance provides an enhanced level of security to protect data the controller is collecting and sharing making it suitable for use in the most sensitive environments.

Smart Room Control Support

The Smart Room Control solution is an end-to-end system for the control of HVAC equipment, lighting, and shades/sunblinds, achieving the highest levels of comfort for occupants while cutting costs from installation time and wiring/material requirements to energy consumption. This solution combines:

- Lighting and shade/sunblind expansion modules to control lights (on/off or dimming) and shades/sunblinds (up/down and angle rotation).
- Multi-sensor combining motion and luminosity (Lux) sensors and an Infrared receiver that works with a convenient remote control.
- The ECLYPSE platform is compatible with Distech Controls line of *Bluetooth*® low energy technology enabled devices (Allure UNITOUCH™ and EC-Multi-Sensor-BLE) and mobile application providing state-of-art occupant management.
- Allure™ Series Communicating room sensors for increased occupant comfort settings using integrated sensors for temperature, humidity, CO₂, and motion.

Allure™ Series Communicating Sensor Support

These controllers work with a wide range of sensors, such as the Allure Series Communicating Sensors that are designed to provide intelligent sensing and control devices for increased user experience and energy efficiency.

- Allure EC-Smart-Vue
- Allure EC-Smart-Comfort
- Allure EC-Smart-Air
- Allure UNITOUCH



Model Selection

Connected Terminal Unit Controller

Model	ECY-PTU-107	ECY-PTU-207	ECY-PTU-208	ECY-TU-203
Supply Voltage Input	100-240 VAC	100-240 VAC	100-240 VAC	24 VAC
Points	12	16	16	16
Universal Inputs	3	3	3	3
Digital Inputs	2	2	2	2
Sensor Inputs	1	1	1	1
Relay Contact Outputs <i>(typ. Electric Heater)</i>	1	1	1	1
Relay Outputs <i>(typ. Fan Speeds)</i>	3 (Line-Powered)	3 (Line-Powered)	3 (Line-Powered)	3 (Unpowered)
Powered Triac Outputs <i>(typ. Valves)</i>	2 (Line-Powered)	2 (Line-Powered)	2 (24 VAC)	2 (24 VAC)
Analog Outputs	-	4	4	2
Digital / Analog Outputs	-	-	-	2
24 VAC Power Supply Outputs	-	-	■	■
ENVYSION Viewer	■	■	■	■
Preloaded Apps in Imperial units	CDIY-PTU107IMP-00	CDIY-PTU207IMP-00	CDIY-PTU208IMP-00	CDIY-PTU203IMP-00
Preloaded Apps in Metric units	CDIY-PTU107SI-00	CDIY-PTU207SI-00	CDIY-PTU208SI-00	CDIY-PTU203SI-00

Accessories

ECLYPSE Wi-Fi Adapter	Wi-Fi Adapter for ECLYPSE Connected Controllers.
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Product Specifications

Power Supply Input

For ECY-PTU-107, ECY-PTU-207, and ECY-PTU-208

Voltage	100-240 VAC; ±10%
Frequency Range	50 to 60 Hz
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 + all external loads
Maximum Consumption	4 A

For ECY-TU-203

Voltage	24 VAC; ±15%; Class 2
Frequency Range	50 to 60 Hz
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 + all external loads
Maximum Consumption	2 A

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

Communications

Ethernet Connection Speed	10/100 Mbps
<input type="checkbox"/> Addressing	IPv4 or Hostname
BACnet Listing	BTL, WSP B-BC
BACnet Interconnectivity	BBMD forwarding capabilities
BACnet Profile	BACnet Building Controller (B-BC), AMEV AS-A and AS-B
BACnet Transport Layer	IP
Web Server Protocol	HTML5
Web Server Application Interface	REST API

Supported Wireless Connectivity:

- 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	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Topology	Daisy-chain configuration
Maximum number of standard devices supported per controller combined	4 ¹
<input type="checkbox"/> Allure EC-Smart-Vue Series ²	
<input type="checkbox"/> Allure EC-Smart-Air Series ²	
<input type="checkbox"/> Allure EC-Smart-Comfort Series	
<input type="checkbox"/> EC-Multi-Sensor Series	
Maximum number of expansion modules supported per controller combined	4 ¹
<input type="checkbox"/> ECx-Light-4 / ECx-Light-4D / ECx-Light-4DALI	
<input type="checkbox"/> ECx-Blind-4 / ECx-Blind-4LV	
Maximum number of Bluetooth low energy devices per controller combined	4
<input type="checkbox"/> Allure UNITOUCH	2
<input type="checkbox"/> EC-Multi-Sensor-BLE	4



A mixed architecture with standard room devices and Bluetooth low energy enabled devices is not recommended.

1. For more information regarding supported quantities, see the [ECLYPSE User Guide](#) available on SmartSource.
2. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO₂ sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO₂ sensor.

Hardware

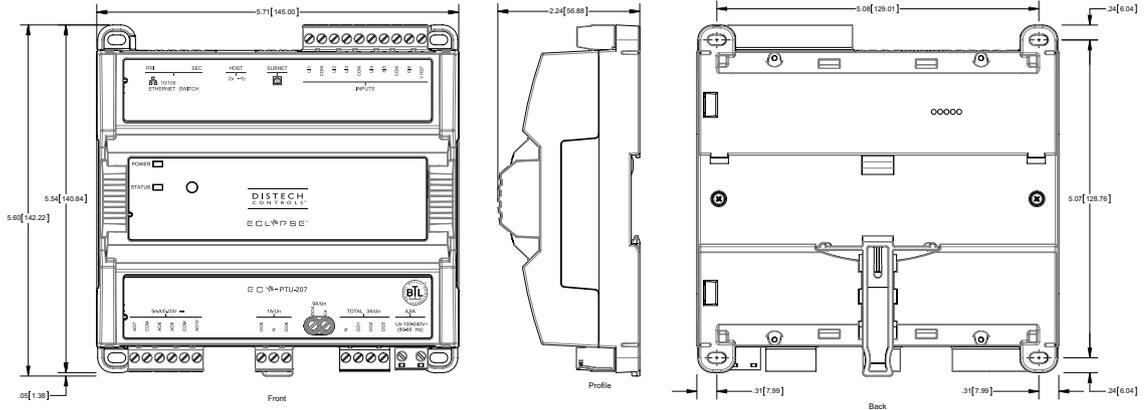
Processor	Sitara ARM processor
CPU Speed	600 MHz
Memory	4 GB Non-volatile Flash (applications & storage)
Real Time Clock (RTC)	Real Time Clock with rechargeable battery Supports SNTP network time synchronization
RTC Battery	20 hours charge time, 20 days discharge time Up to 500 charge / discharge cycles
Cryptographic Module	FIPS 140-2 Level 1 Compliant
Communications Ports:	
<input type="checkbox"/> Ethernet	2 switched RJ-45 Ethernet ports
<input type="checkbox"/> Integrated fail-safe for daisy-chaining	In case of power failure to one of the controllers, communication data is still relayed to the following controller on the daisy-chain
<input type="checkbox"/> USB Connections	2 × USB 2.0 Ports 1 × Micro-USB 2.0 Port
<input type="checkbox"/> Subnet	RJ-45
Status Indicators	Green LEDs: Power status, and Ethernet Traffic Orange LEDs: Controller status, and Ethernet Speed

Mechanical

Dimensions

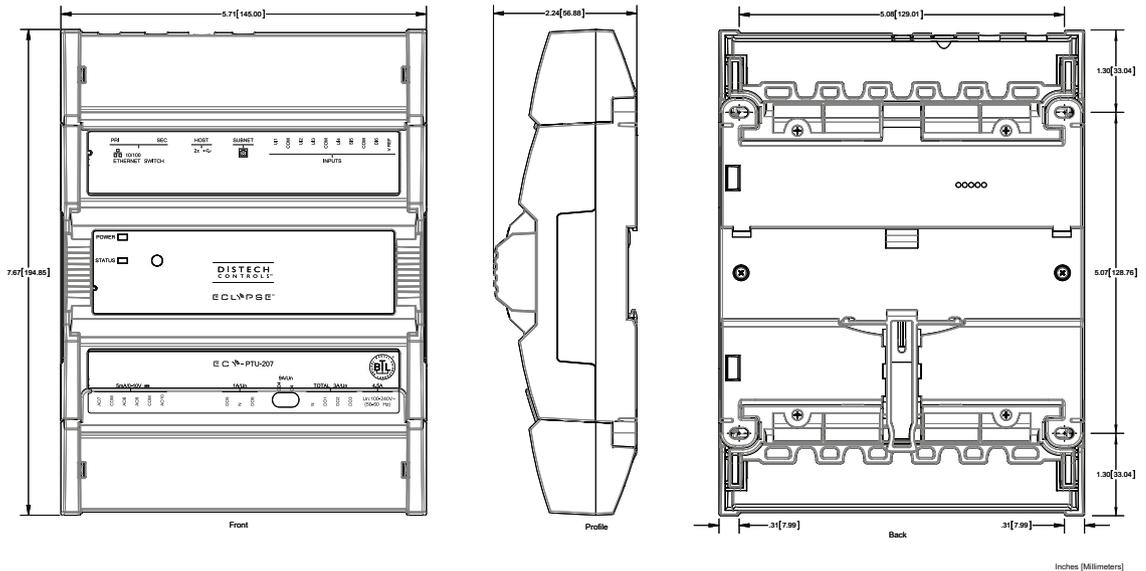
Without terminal block covers

5.60 × 5.71 × 2.24" (142 × 145 × 57 mm)



With terminal block covers

7,67 × 5.71 × 2.24" (195 × 145 × 57 mm)



Shipping weight _____ 0.6 kg [1.32 lbs]

Material _____ Flame retardant ABS

Enclosure Rating _____ Plastic housing, UL94-5VB flammability rating

Color _____ Blue

Installation _____ Direct din-rail mounting 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

Standards & Regulations

CE - Emission _____ EN 61000-6-3: 2007 + A1: ed.2011; Generic standards for residential, commercial and light-industrial environments

CE - Immunity _____ EN61000-6-1: 2007; Generic standards for residential commercial and light-industrial environments

CE - Electrical Safety _____ EN 60730-1 : 2011 - Automatic electrical controls for household and similar use - Part 1: General requirements

UL Listed (CDN & US) _____ UL 61010-1 Safety Requirements For Electrical Equipment

FCC ————— This device complies with FCC rules part 15, subpart B, class B

Specifications – Inputs

Universal Inputs (UI)

General

Input Type ————— Universal; software configurable

Contact

Type ————— Dry contact (0-3.3 VDC)

Counter

Type ————— Dry contact (0-3.3 VDC)

Maximum Frequency ————— 1 Hz maximum

Minimum Duty Cycle ————— 500 milliseconds On / 500 milliseconds Off

0 to 10 VDC

Range ————— 0 to 10 VDC (40 k Ω input impedance)

Resistance/Thermistor

Type ————— 10 k Ω Type II, III (10 k Ω @ 25°C ; 77°F)

Sensor Inputs (SI)

General

Input Type ————— Sensor; software configurable

Contact

Type ————— Dry contact (0-3.3 VDC)

Counter

Type ————— Dry contact (0-3.3 VDC)

Maximum Frequency ————— 1 Hz maximum

Minimum Duty Cycle ————— 500 milliseconds On / 500 milliseconds Off

Resistance

Type ————— 10 k Ω Type II, III (10 k Ω @ 25°C ; 77°F)

Accuracy ————— $\pm 0.1^\circ\text{C}$ @ 25°C ($\pm 0.18^\circ\text{F}$ @ 77°F)

Digital Inputs (DI)

General

Input Type ————— Digital; software configurable

Contact

Type ————— Dry contact (0-3.3 VDC)



Counter

Type _____ Dry contact (0-3.3 VDC)

Maximum Frequency _____ 100 Hz maximum

Minimum Duty Cycle _____ 5 milliseconds On / 5 milliseconds Off

Power Supply (Vref)

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

Specifications – Outputs

Triac Outputs

General

For 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

Inrush Current _____ 1 A @ 15% duty cycle for a 10-minute period

Common Terminal _____ 1 per pair of outputs

For 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)

For ECY-PTU-107 and ECY-PTU-207

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

For 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 from 10 to 600 seconds

Powered Relay Outputs

For 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

For ECY-TU-203

Output Type _____ Digital
Application _____ Typically Fan Speeds
Supplied Voltage _____ No voltage supplied
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 Contacts 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
 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

For ECY-PTU-207 ECY-PTU-208 and ECY-TU-203

General

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

24 VAC Outputs

For 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

For ECY-PTU-208 and ECY-TU-203

Voltage Range ————— 24 VAC; \pm 10%

Frequency ————— 50 Hz

Current ————— 700 mA max. on a resistive load (16 VA @ 24 VAC)

Peak current ————— 850 mA

Short-circuit protection:

ECY-PTU-208 ————— Integrated Fail Safe

ECY-TU-203 ————— Fuse

Overload protected ————— Yes

Digital-Analog Outputs

For 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

Specifications subject to change without notice.

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