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DISTECH CONTROLS™
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Submittal
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Project Data

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Owner: Danville Community School Corporation

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We are pleased to provide the enclosed submittal for your review

EC-BOS-9

Multi-Protocol Web Building Controller

Overview

The EC-BOS-9 is a compact, embedded controller and server platform for connecting multiple and diverse devices and sub-systems. With Internet connectivity and Webserving capability, the EC-BOS-9 provides integrated control, supervision, data logging, alarming, scheduling and network management. It streams data and graphical displays to a standard Web browser via an Ethernet or wireless LAN, or remotely over the Internet.

The EC-BOS-9 operates with EC-Net™ web-based building management platform powered by the Niagara Framework®.

Features & Benefits

- Scalable licensing model and modular hardware make the EC-BOS-9 suitable for installation in small buildings, as well as across large multi-unit campuses when combined with an EC-Net Supervisor
- Integrates many communication protocols and automation systems including HVAC, lighting, energy, and industrial/processing
- Two on-board isolated RS-485 ports for connecting to various common networks, e.g. BACnet MS/TP, Modbus RTU
- Option modules for additional physical network connections, e.g. LonWorks© FTT-10A, RS-232, RS-485

Model Selection

To order a fully functional EC-BOS-9, the following three components are required: EC-BOS-9, Core Software, Software Maintenance Agreement (SMA). If ordering a demo core, an SMA is not required. Refer to the EC-Net Selection Tool to calculate the required components.

EC-BOS-9 Core Software

Example: EC-BOS-9 Core - *100 Devices/5000 Points*

Series	Devices/Points[1]
EC-BOS-9 Core: EC-BOS-9 core software. Includes standard open drivers. Requires EC-Net 4.13.2 or higher. Software Maintenance Agreement (SMA) must be purchased in conjunction with core software.	**5 Devices/250 Points**: Supports up to 5 devices and 250 points. **10 Devices/500 Points**: Supports up to 10 devices and 500 points. **25 Devices/1250 Points**: Supports up to 25 devices and 1250 points. **100 Devices/5000 Points**: Supports up to 100 devices and 5000 points. **200 Devices/10000 Points**: Supports up to 200 devices and 10000 points.
EC-BOS-9 Core – Demo: EC-BOS-9 core software. Includes all available drivers. Supports up to 500 devices and 25000 points. Runs on EC-Net 4.13.2 or higher. Note: This license expires annually, and its renewal is covered by the EC-Net Support Fee.	**N/A**

1. Devices/Points cannot be added to the Demo version (EC-BOS-9 Core – Demo) of the EC-BOS-9 core software.

For more information regarding the EC-Net drivers currently offered by Distech Controls, refer to the EC-Net Drivers Reference Guide.

EC-BOS-9 Software Maintenance Agreement

Software maintenance is required when purchasing an EC-BOS-9. The minimum initial software maintenance plan is 18 months. Optional 3- or 5-year maintenance may be substituted.

If Maintenance coverage is not purchased for any period, the price of Maintenance for the next period for which it is purchased will be (a) the Maintenance fee for the period(s) for which Maintenance was not purchased, up to a maximum of 5 years; and (b) the Maintenance fee for the next year.

These software maintenance plans are ordered separately according to the EC-BOS-9 model chosen. See the price list for more details. Take advantage of the Asset Manager online tool to receive notifications about SMA expirations and Enterprise SMA to align all SMA expiration dates to a single one for the entire system.

Example: EC-BOS-9 (100 Device Core) *3 year SMA*

Series	Software Maintenance Agreement
EC-BOS-9 (5 Device Core) **EC-BOS-9 (10 Device Core)** **EC-BOS-9 (25 Device Core)** **EC-BOS-9 (100 Device Core)** **EC-BOS-9 (200 Device Core)**	**18 month SMA**: Initial 18-month software maintenance agreement. Must be purchased in conjunction with initial core software. Optional 3 or 5 year maintenance may be substituted. **1 year SMA**: 1-year software maintenance agreement (includes new and interim releases). **3 year SMA**: 3-year software maintenance agreement (includes new and interim releases). **5 year SMA**: 5-year software maintenance agreement (includes new and interim releases).

EC-BOS-9 Device Upgrade Pack

Example: EC-BOS-9 Device Upgrade Pack - 25

Series	Devices/Points
EC-BOS-9 Device Upgrade Pack: EC-BOS-9 device upgrade pack purchased in conjunction with or any time after initial core software purchase.	**10**: Adds support for additional 10 devices and 500 points to core software. **25**: Adds support for additional 25 devices and 1250 points to core software. **50**: Adds support for additional 50 devices and 2500 points to core software.

EC-BOS-9 Hardware Accessory

Example: EC-BOS-9 *Wall Plug Module*

Accessory	Description
EC-BOS-9 Wall Plug Module	100-240VAC, 50/60 Hz. Wall Adapter – Connects to the 2.5mm barrel plug 24V input on the EC-BOS-9 and includes US, EU, UK, and AU style plugs.

EC-BOS-9 Add-on Modules

Example: *IO-R-16*

Add-on Module	Description
EC-NPB8-LON	Add-on single port LON FTT10A module.
EC-NPB8-2X-485	Add-on dual port RS-485 module.
EC-NPB8-232	Add-on single port RS-232 module.
IO-R-16	16 Point IO Module. Powered by IO-R-34. Connected to the EC-BOS-9 remotely over RS485.
IO-R-34	34 Point IO Module. Powered by 24VAC/DC. Capable of powering (4) IO-R-16 modules. Connected to the EC-BOS-9 remotely over RS485.

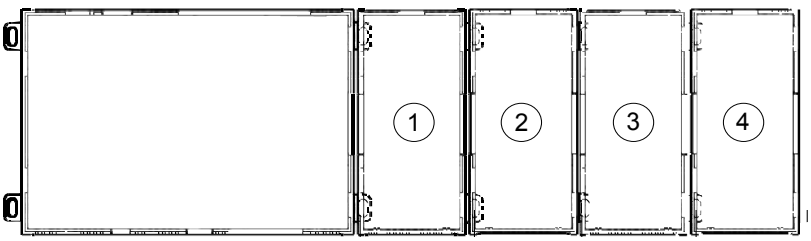
Expansion Modules

Modules	Description	Maximum Expansion Modules Supported
EC-NPB8-LON	Add-on single port LON FTT10A module.	4
EC-NPB8-2X-485	Add-on dual port RS-485 module.	2
EC-NPB8-232	Add-on single port RS-232 module.	4
IO-R-16	16 Point IO Module	16[1]
IO-R-34	34 Point IO Module	8[1]

1. For detailed information about maximum number of modules supported and maximum combinations, refer to the EC-BOS-9 I/O Modules datasheet.

Maximum Combinations (*see figure below*):

Expansion 1	Expansion 2	Expansion 3	Expansion 4
EC-NPB8-232 OR EC-NPB8-LON	EC-NPB8-232 OR EC-NPB8-LON	EC-NPB8-232 OR EC-NPB8-LON	EC-NPB8-232 OR EC-NPB8-LON
EC-NPB8-2X-485	EC-NPB8-232 OR EC-NPB8-LON	EC-NPB8-232 OR EC-NPB8-LON	EC-NPB8-232 OR EC-NPB8-LON
EC-NPB8-2X-485	EC-NPB8-2X-485	EC-NPB8-232 OR EC-NPB8-LON	



Product Specifications

Platform

Processor	NXP iMX8M+ Quad Core CPU
Memory	2GB LPDDR4 RAM
	- Removable 8GB micro-SD card
	- Real-time clock
	- Batteryless
	- Secure boot

Communications

USB type C connector	Debug port
RS-485	2 isolated RS-485 with selectable bias and termination
Ethernet	2 10/100/1000MB Ethernet ports
BACnet Listing	*(pending)*

Power Supply

Voltage	24VAC/DC power supply
Consumption	24VA (24VAC); 24W (24VDC)

Environmental

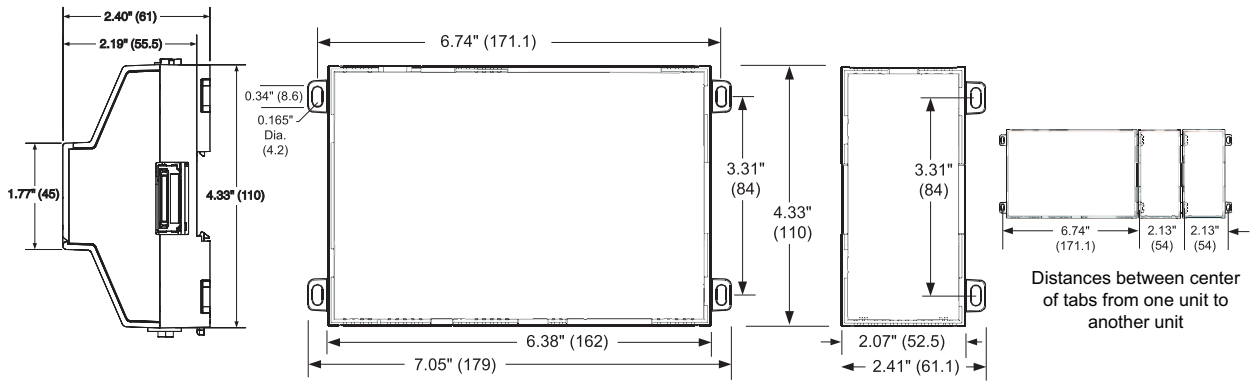
Operating Temperature	-20 to 60ºC (-4 to 140 ºF)
Storage Temperature	-40 to 85ºC (-40 to 185 ºF)
Relative Humidity	5% to 95% - Non condensing
Shipping and Vibration	ASTM D4169, Assurance Level II
MTTF	10 years+

Operating Systems

EC-Net 4	4.13.2 or later

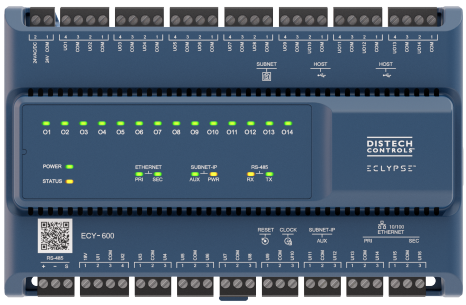
Standards and Regulations

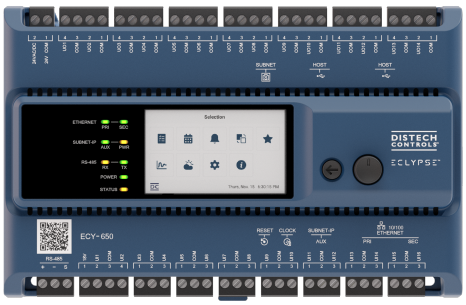
UL	UL 916 C-UL listed to Canadian Standards Associations (CSA) C22.2 No. 205-M1983 "Signal Equipment"
CE	EN 61326-1
FCC	Part 15 Subpart B, Class B, Part 15 Subpart C
R&TTE Compliance	1999/5/EC R&TTE Directive
Other compliances	CCC, SRRC, RSS, RoHS



ECY-600 Series

ECLYPSE™ Connected Controllers with 30 points





Overview

The ECY-600 Series controllers are designed to control various building automation applications such as air handling units, chillers, boilers, pumps, cooling towers, and central plant applications. They support BACnet/IP communications and are listed BACnet Building Controllers (B-BC). This series supports the use of the ECY-COM modules as well at two additional ECY-IOM extension modules.

These programmable controllers come with an embedded web server that enables web-based application configuration and a visualization interface. They also feature embedded scheduling, alarming, and logging. Control logic and graphic user interface can be customized as required for the application.

Features & Benefits

- ECLYPSE Series input/output and communication modules are supported, providing competitive I/O combinations, and supporting up to 62 I/O points (up to 1 communication module and 2 I/O modules).
- More compact architecture and flexible installation. Can be mounted vertically or horizontally; perfect for panel retrofits or applications when limited horizontal space is available
- An optional full-color backlit display with jog dial provides direct access to a wide range of controller functions
- Flexible networking using options for isolated applications and fail-safe daisy-chaining applications. Two Ethernet ports and an AUX port can be configured to create separate networks.
- Software-configurable IOs reduce controller manipulation.
- Different communication protocols such as BACnet MS/TP, BACnet/SC, BACnet/IP, MQTT, Modbus RTU, Modbus TCP, and M-Bus are supported to ensure ease of communication, authentication, and error detection.
- Connectivity packs enable remote devices to be added to a connector in ECLYPSE Building Intelligence. The connectivity packs along with optional I/O and expansion modules provide ultimate flexibility and expandability to customize your project needs.
- Readily supports Atrius Facilities that simplifies installation and maintenance of systems and increases the efficiency of building operations.

Model and Connectivity Selection

Model Selection

Example: ECY-*650*

Series	Model
ECY-	***600***: 30-Points, 24VAC/DC Power Supply, 16 UI, 14 UO
	650: 30-Points, 24VAC/DC Power Supply, 16 UI, 14 UO, Color display

Connectivity Packs

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

BACnet Network Values in EC-*gfx*Program are available without connectivity packs.

Connectivity		Device ratios			
		1:1	2:1	8:1	100:1
Connectivity pack	Connections (device load)	BACnet devices (IP or MS/TP)	Modbus devices (TCP/IP or RTU)	M-Bus devices	Global point count
C1*	1	1	2	8	100
C3	3	3	6	24	300
C5	5	5	10	40	500
C10	10	10	20	60	1000
C25	25	25	50	60	2500
C50	50	50	100**	60	5000

*Minimum Connectivity Pack required to enable BACnet routing, MS/TP “Client”, integration, use of RS485 port

**Modbus RTU limited to 32 devices/RS-485 port, 96 devices total

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-Bus (8:1) = 40 M-Bus with C5

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:

20 BACnet + (3 Modbus ÷ 2) + (6 M-bus ÷ 8) = 22.25

Select C25 (25 connections, 2500 points)

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

Accessories

ECLYPSE Wi-Fi Adapter	Wi-Fi Adapter for ECLYPSE Connected Controllers.
ECLYPSE HD15 Cable	6ft (1.8m) cable for multiple-row panel installations. An HD15 cable must always be followed by a power supply module. For more information, refer to the Hardware Installation Guide.
ECx-Subnet-Adapter	Required for daisy-chaining the ECx-Display or the EC-Multi-Sensor with other subnet devices
RTC Battery Adapter	Adapter to add a size CR2032 coin cell battery (not included)

Recommended Applications

Model	ECY-600 / 650
Air Handling Unit	■
Multi-Zone Application	■
Chiller	■
Boiler	■
Cooling Tower	■
Central Plant	■

Product Specifications

Power Supply Input (24VAC)

Input Voltage Range	24VAC; ±15%; Class 2
Power Consumption	100VA maximum; internal and external loads included 12VA typical, no load
Recommended Transformer Size	100VA
Frequency Range	50 to 60Hz

Power Supply Input (24VDC)

Input Voltage Range	24VDC; ±15%; Class 2
Power Consumption	60W maximum; internal and external loads included[1] 5W typical, no load
Recommended Power Supply Size	60W

1. Powering external devices through the Subnet-IP does not work if input supply is in VDC.

Current Limits

Power Supply Input	4A (internal fuse)
18V	240mA
Subnet-IP	180mA (10W)
Subnet	450mA (6.75W)
USB 2.0	500mA per port

Communications

Ethernet Connection Speed	10/100 Mbps
Cable Type	Cat 5e, 8 conductor twisted pair (unshielded)
Addressing	IPv6, IPv4, or Hostname
BACnet Profile	BACnet Building Controller (B-BC))
BACnet Listing	BTL (B-BC)
BACnet Interconnectivity	BBMD forwarding capabilities BACnet MS/TP to BACnet/IP and BACnet/SC routing
BACnet Transport Layer	IP, BACnet/SC & MS/TP (optional)
Web Server Protocol	HTML5
Web Server Application Interface	REST API
BACnet MS/TP or Modbus RTU	1 × RS-485 serial communications ports
RS-485 Wiring	1-pair + Common/shield
RS-485 EOL Resistor	Built-in
RS-485 Baud Rates	9600, 19 200, 38 400, or 76 800 bps
RS-485 Addressing	Controller's Web Configuration Interface
Modbus TCP	Devices must be on the same subnet
Wireless Adapter	Optional, USB Port Connection
Wi-Fi Communication Protocol	IEEE 802.11g/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[1]	12
Allure EC-Smart-Vue Series[2]	12
Allure EC-Smart-Comfort Series	6
Allure EC-Smart-Air Series[2]	6
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
Maximum number of Bluetooth low energy room devices per controller combined [3]	6
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_2 sensor. Any remaining connected sensors must be without a CO_2 sensor.
3. A mixed architecture with standard room devices and Bluetooth low energy enabled devices is not recommended.

Subnet-IP

Subnet-IP Connection Speed	10/100 Mbps
Cable Type	Cat 5e, 8 conductor twisted pair
Subnet-IP Voltage	55VDC[1]

1. Powering external devices through the Subnet-IP does not work if input supply is in VDC.

Hardware

Processor	Sitara ARM processor
CPU Speed	1GHz
Memory	4GB Non-volatile Flash (applications & storage) 512MB RAM
Co-processor[1]	STM32 (ARM Cortex M0+) MCU 32-bit
MCU Speed	64 MHz
MCU Memory	512KB Non-volatile Flash (system) 144KB 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 MS621T coin cell battery; an adapter is available to add a size CR2032 coin cell battery with the external connector
Ethernet	3 switched RJ-45 Ethernet ports (Supported Protocols: BACnet/IP, Modbus TCP, NTP, and REST)

1. Dedicated for IO control and MSTP

	Primary and secondary Ethernet ports with integrated fail-safe for daisy-chain operation
USB Connections	2 × USB 2.0 Ports
RS-485 Serial Communications	Screw terminals (Supported Protocols: BACnet MS/TP or Modbus RTU)
Subnet	RJ-45
Green LED	Power status, I/O, Ethernet Traffic, Subnet-IP AUX, and RS-485 TX
Orange LED	Controller status, Subnet-IP PWR, RS-485 RX

1. Dedicated for IO control and MSTP

Environmental

Operating Temperature [1]	ECY-600: -40 to 158°F (-40 to 70°C)[2] ECY-650: -4 to 122°F (-20 to 50°C)[3]
Storage Temperature	ECY-600: -40 to 185°F (-40 to 85°C) ECY-650: -22 to 176°F (-30 to 80°C)
Relative Humidity	0 to 90% non-condensing
Ingress Protection Rating	IP20
Nema Rating	1

1. Some applications may be limited at high operating temperatures.
2. For controllers not equipped with an operator interface, the internal temperature must not exceed 185°F (85°C).
3. For controllers equipped with an operator interface, the internal temperature must not exceed 158°F (70°C).

Mechanical

Dimensions (H × W × D)	*ECY-600:* 4.79 ×7.36 × 2.46" (121.60 × 187.00 × 62.58 mm) *ECY-650:* 4.79 ×7.36 × 2.91" (121.60 × 187.00 × 73.86 mm)
Shipping Weight	1.45lbs (0.66kg)
Mounting	DIN rail or screw mounting
Enclosure Material	Flame retardant/Polycarbonate (FR/PC)
Enclosure Rating[1]	Plastic housing, UL94-5VB flammability rating

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 and Regulations

CE Emission	EN61000-6-3 (2007) A1 (2001) AC (2012)
CE Immunity	EN61000-6-1 (2007)
IEC	IEC 63044-5-1 (2019) IEC 63044-5-2 (2019)
FCC	Compliance with FCC rules part 15, subpart B, class B
ICES Compliance	ICES-003
UL Listed (CDN & US)	UL916 Energy management equipment

ECY-650 Display

Display Type	Backlit-color LCD
Display Resolution	400 W x 240 H pixels (WQVGA)
Effective Viewing Area (W × H)	2.26 × 1.36" (57.3 × 34.54mm) diagonal: 2.63" (66.9mm)
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	18VDC; maximum 240mA
Auto-reset fuse	Provides 24VAC over voltage protection

Contact

Type	Dry contact

Pulse/Counter

UI1 to UI4:

Pulse Input	SO output compatible
Maximum Frequency	100Hz maximum
Minimum Duty Cycle	5ms On / 5ms Off

UI5 to UI16:

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

0 to 10VDC

Range	0 to 10VDC (40kΩ input impedance)

0 to 5VDC

Range	0 to 5VDC (high input impedance)

0 to 20mA

Internal Resistor	249 ohm
External Resistor	249 ohm

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 @ 77ºF; 25ºC)
Platinum	Pt1000 (1KΩ @ 32ºF; 0ºC)
Nickel	RTD Ni1000 (1KΩ @ 32ºF; 0ºC) RTD Ni1000 (1KΩ @ 69.8ºF; 21ºC)

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

0 to 20mA

Range	0 to 20mA
Type	Current source

Dimensions

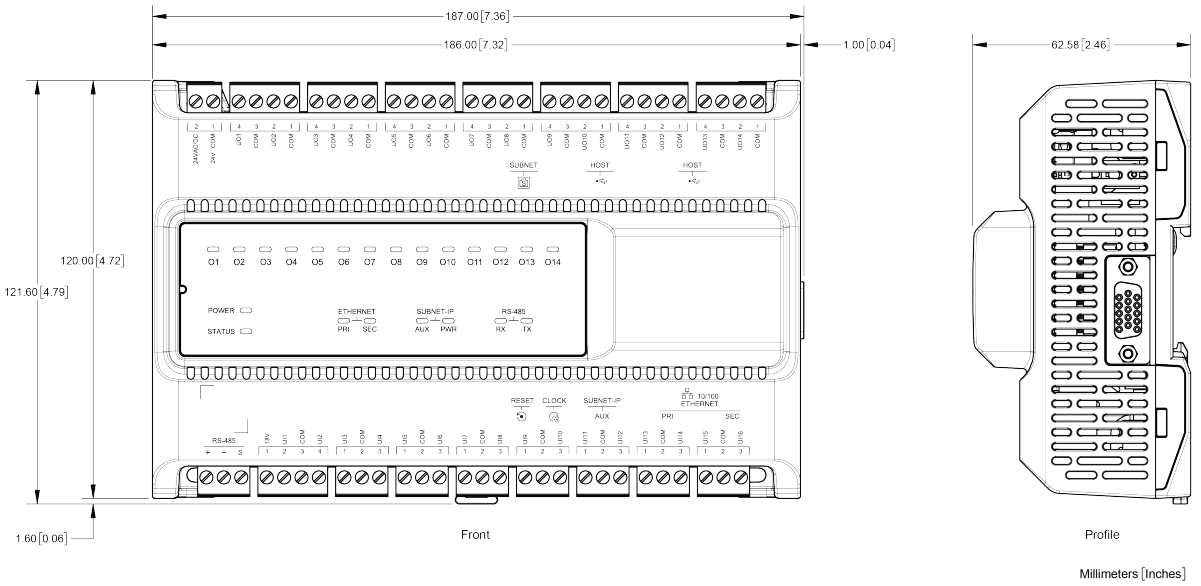


Figure 1: Controllers not equipped with an operator interface

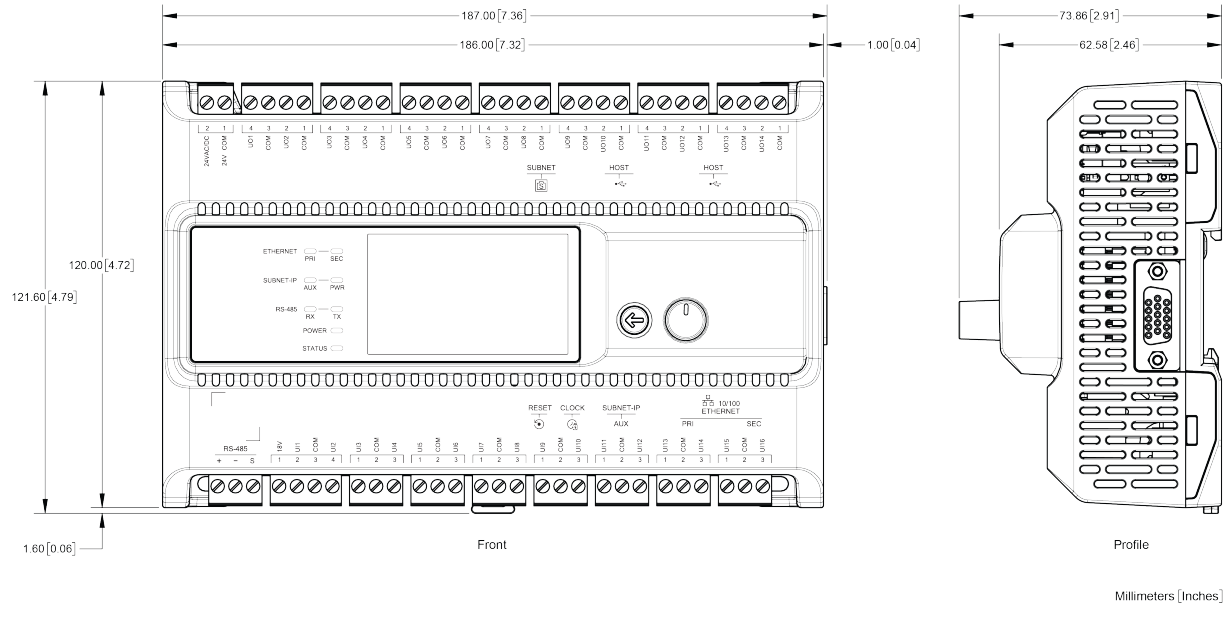
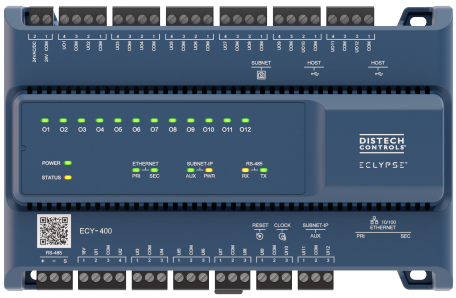
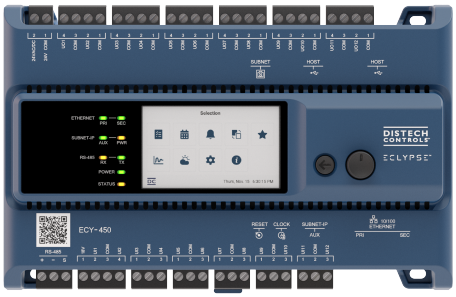


Figure 2: Controllers equipped with an operator interface

ECY-400 Series

ECLYPSE™ Connected Controllers with 24 points





Overview

The ECY-400 Series controllers are designed to control various building automation applications such as air handling units, multi-zone applications, chillers, boilers, pumps, cooling towers, and roof top units. They support BACnet/IP communications and are listed BACnet Building Controllers (B-BC).

These programmable controllers come with an embedded web server that enables web-based application configuration and a visualization interface. They also feature embedded scheduling, alarming, and logging. Control logic and graphic user interface can be customized as required for the application.

Features & Benefits

- More compact architecture and flexible installation. Can be mounted vertically or horizontally; perfect for panel retrofits or applications when limited horizontal space is available
- An optional full-color backlit display with jog dial provides direct access to a wide range of controller functions
- Flexible networking using options for isolated applications and fail-safe daisy-chaining applications. Two Ethernet ports and an AUX port can be configured to create separate networks.
- Software-configurable IOs reduce controller manipulation.
- Different communication protocols such as BACnet MS/TP, BACnet/SC, BACnet/IP, MQTT, Modbus RTU, Modbus TCP, and M-Bus are supported to ensure ease of communication, authentication, and error detection.
- Connectivity packs enable remote devices to be added to a connector in ECLYPSE Building Intelligence to provide flexibility and expandability to customize your project needs.
- Readily supports Atrius Facilities that simplifies installation and maintenance of systems and increases the efficiency of building operations.

Model and Connectivity Selection

Model Selection

Example: ECY-*450*

Series	Model
ECY-	***400***: 24-Points, 24VAC/DC Power Supply, 12 UI, 12 UO
	450: 24-Points, 24VAC/DC Power Supply, 12 UI, 12 UO, Color display

Connectivity Packs

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

BACnet Network Values in EC-*gfx*Program are available without connectivity packs.

Connectivity		Device ratios			
		1:1	2:1	8:1	100:1
Connectivity pack	Connections (device load)	BACnet devices (IP or MS/TP)	Modbus devices (TCP/IP or RTU)	M-Bus devices	Global point count
C1*	1	1	2	8	100
C3	3	3	6	24	300
C5	5	5	10	40	500
C10	10	10	20	60	1000
C25	25	25	50	60	2500
C50	50	50	100**	60	5000

*Minimum Connectivity Pack required to enable BACnet routing, MS/TP “Client”, integration, use of RS485 port

**Modbus RTU limited to 32 devices/RS-485 port, 96 devices total

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-Bus (8:1) = 40 M-Bus with C5

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:

20 BACnet + (3 Modbus ÷ 2) + (6 M-bus ÷ 8) = 22.25

Select C25 (25 connections, 2500 points)

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

Accessories

ECLYPSE Wi-Fi Adapter	Wi-Fi Adapter for ECLYPSE Connected Controllers.
ECx-Subnet-Adapter	Required for daisy-chaining the ECx-Display or the EC-Multi-Sensor with other subnet devices
RTC Battery Adapter	Adapter to add a size CR2032 coin cell battery (not included)

Recommended Applications

Model	ECY-400 / 450
Air Handling Unit	■
Multi-Zone Application	■
Chiller	■
Boiler	■
Cooling Tower	■

Product Specifications

Power Supply Input (24VAC)

Input Voltage Range	24VAC; ±15%; Class 2
Power Consumption	100VA maximum; internal and external loads included 12VA typical, no load
Recommended Transformer Size	100VA
Frequency Range	50 to 60Hz

Power Supply Input (24VDC)

Input Voltage Range	24VDC; ±15%; Class 2
Power Consumption	60W maximum; internal and external loads included[1] 5W typical, no load
Recommended Power Supply Size	60W

1. Powering external devices through the Subnet-IP does not work if input supply is in VDC.

Current Limits

Power Supply Input	4A (internal fuse)
18V	240mA
Subnet-IP	180mA (10W)
Subnet	450mA (6.75W)
USB 2.0	500mA per port

Communications

Ethernet Connection Speed	10/100 Mbps
Cable Type	Cat 5e, 8 conductor twisted pair (unshielded)
Addressing	IPv6, IPv4, or Hostname
BACnet Profile	BACnet Building Controller (B-BC))
BACnet Listing	BTL (B-BC)
BACnet Interconnectivity	BBMD forwarding capabilities BACnet MS/TP to BACnet/IP and BACnet/SC routing
BACnet Transport Layer	IP, BACnet/SC & MS/TP (optional)
Web Server Protocol	HTML5
Web Server Application Interface	REST API
BACnet MS/TP or Modbus RTU	1 × RS-485 serial communications ports
RS-485 Wiring	1-pair + Common/shield
RS-485 EOL Resistor	Built-in
RS-485 Baud Rates	9600, 19 200, 38 400, or 76 800 bps
RS-485 Addressing	Controller's Web Configuration Interface
Modbus TCP	Devices must be on the same subnet
Wireless Adapter	Optional, USB Port Connection
Wi-Fi Communication Protocol	IEEE 802.11g/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[1]	12
Allure EC-Smart-Vue Series[2]	12
Allure EC-Smart-Comfort Series	6
Allure EC-Smart-Air Series[2]	6
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
Maximum number of Bluetooth low energy room devices per controller combined [3]	6
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_2 sensor. Any remaining connected sensors must be without a CO_2 sensor.
3. A mixed architecture with standard room devices and Bluetooth low energy enabled devices is not recommended.

Subnet-IP

Subnet-IP Connection Speed	10/100 Mbps
Cable Type	Cat 5e, 8 conductor twisted pair
Subnet-IP Voltage	55VDC[1]

1. Powering external devices through the Subnet-IP does not work if input supply is in VDC.

Hardware

Processor	Sitara ARM processor
CPU Speed	1GHz
Memory	4GB Non-volatile Flash (applications & storage) 512MB RAM
Co-processor[1]	STM32 (ARM Cortex M0+) MCU 32-bit
MCU Speed	64 MHz
MCU Memory	512KB Non-volatile Flash (system) 144KB 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 MS621T coin cell battery; an adapter is available to add a size CR2032 coin cell battery with the external connector
Ethernet	3 switched RJ-45 Ethernet ports (Supported Protocols: BACnet/IP, Modbus TCP, NTP, and REST)

1. Dedicated for IO control and MSTP

	Primary and secondary Ethernet ports with integrated fail-safe for daisy-chain operation
USB Connections	2 × USB 2.0 Ports
RS-485 Serial Communications	Screw terminals (Supported Protocols: BACnet MS/TP or Modbus RTU)
Subnet	RJ-45
Green LED	Power status, I/O, Ethernet Traffic, Subnet-IP AUX, and RS-485 TX
Orange LED	Controller status, Subnet-IP PWR, RS-485 RX

1. Dedicated for IO control and MSTP

Environmental

Operating Temperature [1]	ECY-400: -40 to 158°F (-40 to 70°C)[2] ECY-450: -4 to 122°F (-20 to 50°C)[3]
Storage Temperature	ECY-400: -40 to 185°F (-40 to 85°C) ECY-450: -22 to 176°F (-30 to 80°C)
Relative Humidity	0 to 90% non-condensing
Ingress Protection Rating	IP20
Nema Rating	1

1. Some applications may be limited at high operating temperatures.
2. For controllers not equipped with an operator interface, the internal temperature must not exceed 185°F (85°C).
3. For controllers equipped with an operator interface, the internal temperature must not exceed 158°F (70°C).

Mechanical

Dimensions (H × W × D)	*ECY-400:* 4.79 ×7.32 × 2.46" (121.60 × 186.00 × 62.58 mm) *ECY-450:* 4.79 ×7.32 × 2.91" (121.60 × 186.00 × 73.91 mm)
Shipping Weight	1.40lbs (0.64kg)
Mounting	DIN rail or screw mounting
Enclosure Material	Flame retardant/Polycarbonate (FR/PC)
Enclosure Rating[1]	Plastic housing, UL94-5VB flammability rating

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 and Regulations

CE Emission	EN61000-6-3 (2007) A1 (2001) AC (2012)
CE Immunity	EN61000-6-1 (2007)
IEC	IEC 63044-5-1 (2019) IEC 63044-5-2 (2019)
FCC	Compliance with FCC rules part 15, subpart B, class B
ICES Compliance	ICES-003
UL Listed (CDN & US)	UL916 Energy management equipment

ECY-450 Display

Display Type	Backlit-color LCD
Display Resolution	400 W x 240 H pixels (WQVGA)
Effective Viewing Area (W × H)	2.26 × 1.36" (57.3 × 34.54mm) diagonal: 2.63" (66.9mm)
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	18VDC; maximum 240mA
Auto-reset fuse	Provides 24VAC over voltage protection

Contact

Type	Dry contact

Pulse/Counter

UI1 to UI4:

Pulse Input	SO output compatible
Maximum Frequency	100Hz maximum
Minimum Duty Cycle	5ms On / 5ms Off

UI5 to UI12:

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

0 to 10VDC

Range	0 to 10VDC (40kΩ input impedance)

0 to 5VDC

Range	0 to 5VDC (high input impedance)

0 to 20mA

Internal Resistor	249 ohm
External Resistor	249 ohm

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 @ 77ºF; 25ºC)
Platinum	Pt1000 (1KΩ @ 32ºF; 0ºC)
Nickel	RTD Ni1000 (1KΩ @ 32ºF; 0ºC) RTD Ni1000 (1KΩ @ 69.8ºF; 21ºC)

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

0 to 20mA

Range	0 to 20mA
Type	Current source

Dimensions

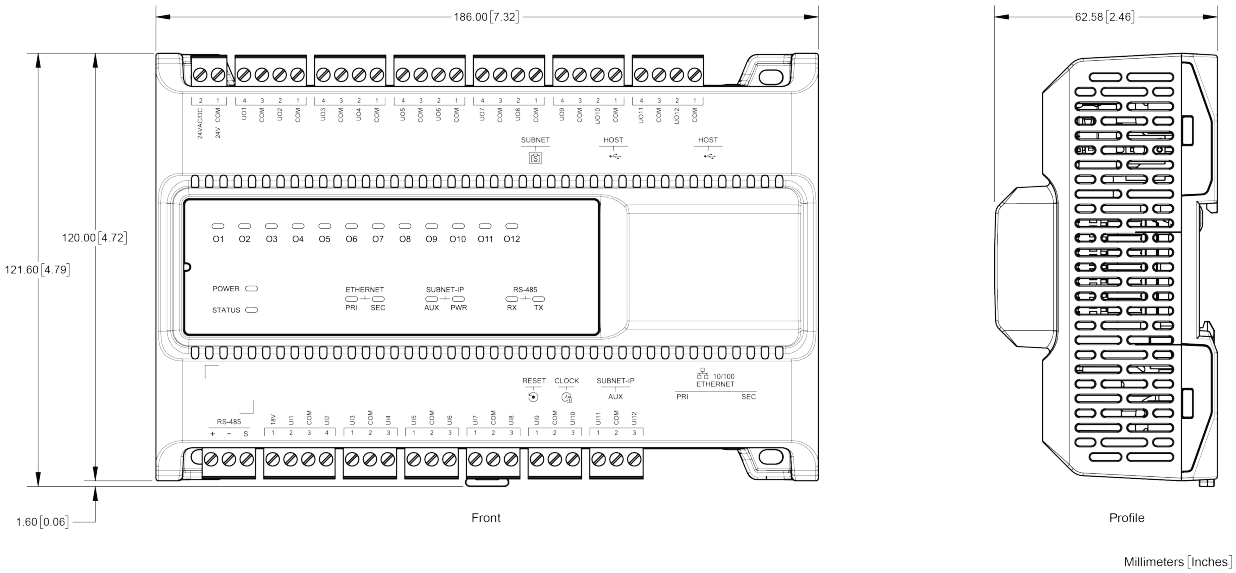


Figure 1: Controllers not equipped with an operator interface

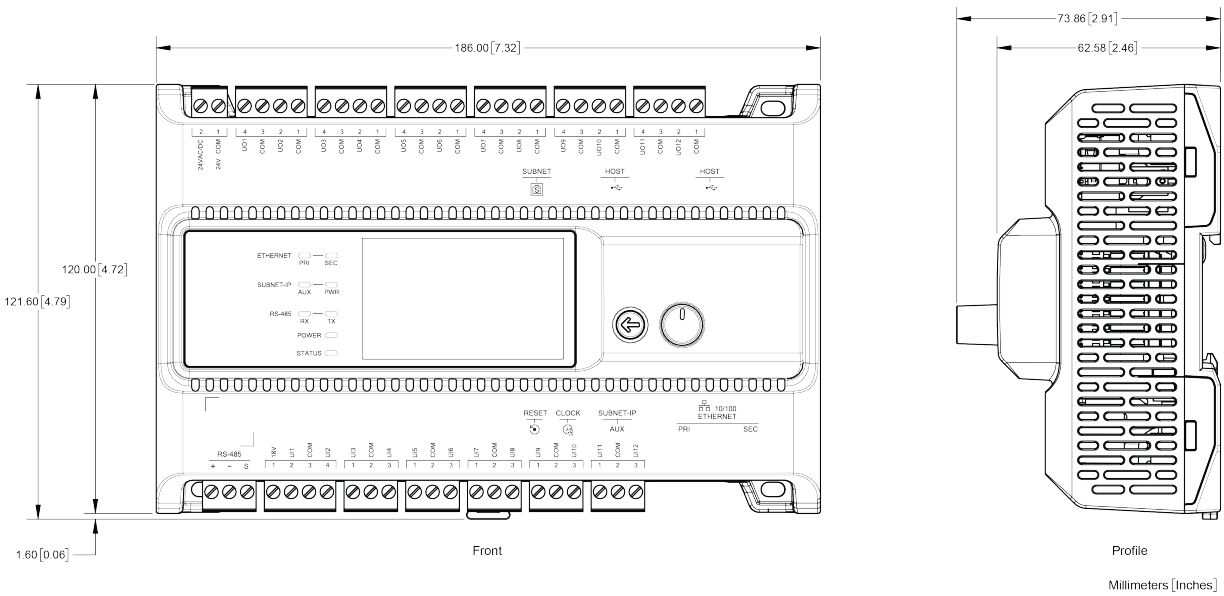


Figure 2: Controllers equipped with an operator interface

ECLYPSE™ Connected Equipment Controller

ECLYPSE™

Overview

The ECLYPSE Connected Equipment Controller is designed to satisfy the needs of a wide range of HVAC applications such as small and medium terminal applications. It integrates a control, automation and connectivity server, power supply, and I/O in one convenient package. It supports BACnet/IP communications and is a listed BACnet Building Controller (B-BC). In addition, the ECY-303-M3 model supports Modbus to connect to meters, Variable Frequency Drives, etc.

This programmable controller comes with an embedded web server that enables web-based application configuration and a visualization interface. It also features embedded scheduling, alarming, and logging. Control logic and graphic user interface can be customized as required for the application.

Applications

The ECLYPSE Connected Equipment Controller meets zone application requirements, including:

- Rooftop unit, fancoil unit, small air handling unit, heat pump, and chilled beam
- Lighting, power monitoring, and other applications.

Features & Benefits

Connectivity

The different types of connections supported by the Connected Equipment Controller 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.

IP wireless (Wi-Fi) connection

The following types of Wi-Fi connections are possible when using the ECLYPSE Wi-Fi Adapter:

- 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.
- Wi-Fi Mesh - allowing multiple controllers to communicate with each other over a robust, self-healing network, with multiple communication paths. Wi-Fi mesh is ideal for areas where there is no line of sight or where radio signals are intermittently blocked and it also allows for a larger wireless coverage area.

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, allowing you to 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
- *my*DC Control to view, edit, and configure system operating parameters

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 Connected Equipment Controller 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.
- The controller can be part of a Wi-Fi mesh network that increases wireless network reliability and robustness that allows for a larger coverage area. Wi-Fi mesh is ideal for areas where there is no line of sight or where radio signals are intermittently blocked.
- Hostname management allows the controller to be addressed by a nickname to facilitate network management.

Open RESTful API

With the RESTful API, the Connected Equipment Controller'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.

Preloaded Application and Graphics

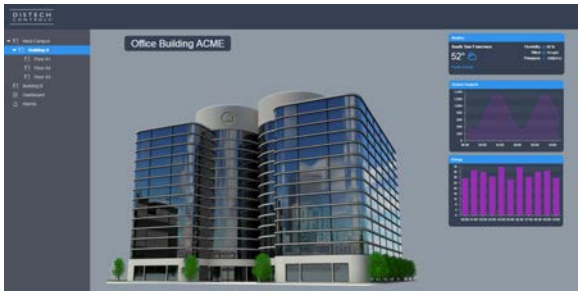
The Connected Equipment Controller is a plug and play device that saves time and money since no programming or graphic design is needed as it comes with ENVYSION™ Viewer and the associated preloaded rooftop unit applications and graphics pre-installed.

Also, no additional tools are required; only a web-browser is needed when you are using the pre-loaded application through ENVYSION. If the pre-loaded application does not meet the application requirements, you can program it using EC-*gfx*Program.

xpressENVYSION – Workflow Oriented Graphical User Interface Configuration

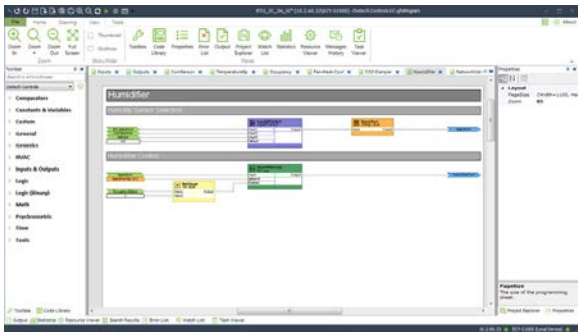
xpressENVYSION offers a simplified and streamlined experience in a workflow oriented, drag & drop GUI environment while ENVYSION still offers the full customization features and editing environment.

- The ECLYPSE Connected Equipment Controller comes embedded with ENVYSION Viewer and xpressENVYSION.



Programmability

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



Batch EC-*gfx*Program Projects and Firmware Download

EC-*gfx*Program projects can be downloaded in batch to multiple controllers, for greater time savings. Batch firmware update can also be performed on multiple controllers.

Xpress*Network* Utility

The Xpress*Network* Utility saves you time and expense by giving you increased control over multiple ECLYPSE controllers through device discovery and batch operations such as configuring and updating multiple ECLYPSE controllers on the network. In addition, with the embedded step by step Configuration Wizard, all configuration operations can be setup and applied in one go.

BACnet/IP Device

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

Multi-Protocol Support

The Connected Equipment Controller optionally supports both Modbus TCP devices by connecting them to the controller's IP network and Modbus RTU devices by connecting them directly to the controller's RS-485 port.

Controllers with the Modbus communications option can integrate a wide variety of Modbus devices such as power and water meters, Variable Frequency Drives, air flow sensors, and more, without the need for additional hardware such as a gateway.

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 (DALI, on/off or dimming) and shades/sunblinds (up/down and angle rotation).
- Multi-sensor combining motion and luminosity (Lux) sensors and equipped with an Infrared receiver that works with a convenient remote control.
- Wireless (infrared) personal remote control for increased occupant comfort.
- Allure™ Series Communicating Sensors for increased occupant comfort settings.

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 sensors feature a backlit-display and graphical menus that provide precise environmental zone control, with any combination of the following: temperature, humidity, CO_2, and motion sensor.
- Allure EC-Smart-Comfort sensors feature colored LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and an occupancy override push button. This sensor can also be expanded with a combination of up to 4 add-on push button modules for lighting and shade/ sunblind control.

- Allure EC-Smart-Air sensors combine precise environmental sensing in a discreet and alluring enclosure for temperature, humidity, and CO_2.

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:

- ENVYSION web-based graphic design and visualization interface
- EC-*gfx*Program graphical programming interface
- *my*DC Control mobile application

Software Configurable Outputs

For greater flexibility, two of the controller's outputs can be software configured to function either as a universal output (0 or 12VDC, PWM, Floating, 0 to 10VDC, 0 to 20mA) or as a digital 24VAC triac output.

I/O Status LEDs

The status LEDs allows the user to confirm the status of the inputs/outputs and facilitate commissioning and troubleshooting.

Color-Coded, Rising Cage Terminals

Terminal blocks are uniquely identified and color-coded for clarity and to prevent wiring mistakes. The rising cage clamp terminal block connectors offer a more robust and secure wire connection, designed to withstand activity and vibrations.

Robust Protection

The I/Os are protected against mis-wiring and faults to prevent damage caused by incorrect wiring or other mishaps.

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.

Model Selection

Connected Equipment Controller

				
Model	ECY-303 (SI)	ECY-303 (IMP)	ECY-303-M3 (SI)	ECY-303-M3 (IMP)
Points	16-Point	16-Point	16-Point	16-Point
Universal hardware inputs	8	8	8	8
18 Vdc power supply	■	■	■	■
Universal output	2	2	2	2
Digital (triac) outputs	4	4	4	4
Digital / Universal outputs	2	2	2	2
Modbus TCP & RTU Devices Supported	0	0	3	3
ENVYSION Viewer	■	■	■	■
Preloaded Apps in SI (Metric) units	■		■	
Preloaded Apps in Imperial (US) units		■		■

Accessories

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

Product Specifications

Power Supply Input

Voltage Range	24VAC; ±15%; Class 2
Power Consumption:	
☐ Nominal	18VA; all external loads excluded, no USB peripherals
☐ Full Load	36VA; external 24VAC loads excluded
Frequency Range	50 to 60Hz
Overcurrent Protection	Field replaceable fuse
Fuse Type	2A, fast-acting, 5 × 20mm (GMA-2A)
Power Factor	>90%

Communications

Ethernet Connection Speed	10/100 Mbps
☐ Addressing	IPv4 or Hostname
BACnet Profile	BACnet Building Controller (B-BC), AMEV Certified (AS-A profile)
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

Supported Wireless Connectivity:

☐ Wireless Adapter	Optional, USB Port Connection
☐ Wi-Fi Communication Protocol	IEEE 802.11b/g/n and 802.11s
☐ Wi-Fi Network Types	Client, Access Point, Hotspot, Mesh
☐ Wi-Fi Mesh	Max. 30 devices on a single channel

Subnetwork

Communication	RS-485
Cable	Cat 5e, 8 conductor twisted pair
Connector	RJ-45
Connection Topology	Daisy-chain Configuration
Maximum number of supported devices per controller combined	4
☐ Allure EC-Smart-Vue Series	Up to 4[1]
☐ Allure EC-Smart-Comfort Series	Up to 4
☐ Allure EC-Smart-Air Series	Up to 4[1]
☐ EC-Multi Sensor	Up to 4[2]
☐ ECx-Light-4 / ECx-Light-4D / ECx-Light-DALI	Up to 2[2]
☐ ECx-Blind-4 / ECx-Blind-4LV	Up to 2[2]

1. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO_2 sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO_2 sensor.
2. For supported quantities, see the **VAV-Smart Room Control Device Calculator.xlsm** spreadsheet file available for download from SmartSource.

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

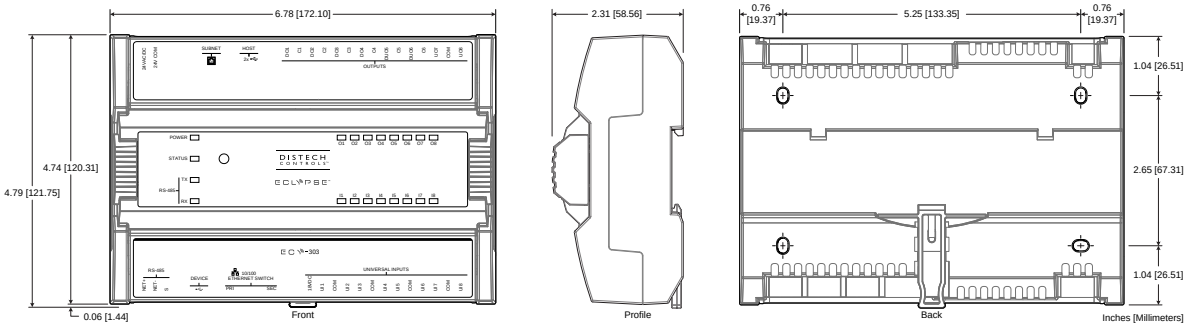
Communications Ports:

- ☐ Ethernet — 2 switched RJ-45 Ethernet ports
  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
- ☐ Supported Protocols — BACnet/IP, Modbus TCP, NTP, and REST
- ☐ USB Connections — 2 × USB 2.0 Ports
  1 × Micro-USB 2.0 Port
- ☐ RS-485 Serial Communications — Screw terminals
- ☐ Subnet — RJ-45

Status Indicators — Green LED: Power status, Subnet TX, and Ethernet Traffic
Orange LED: Controller status, Subnet RX, and Ethernet Speed

Mechanical

Dimensions (H × W × D) — 4.74 × 6.78 × 2.31" (120.31 × 172.10 × 58.56mm)



Shipping Weight — 1.20lbs (0.55kg)

Enclosure Material[1] — FR/ABS

Enclosure Rating — Plastic housing, UL94-5VB flammability rating
Plenum rating per UL1995

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 — -4 to 122°F (-20 to 50°C)

Storage Temperature — -40 to 158°F (-40 to 70°C)

Relative Humidity — 0 to 90% non-condensing

Ingress Protection Rating — IP20

Nema Rating — 1

Standards and Regulations (Pending)

CE:

- Emission — EN61000-6-3: 2007+A1:2011; Generic standards for residential, commercial and light-industrial environments
- Immunity — EN61000-6-1: 2007; Generic standards for residential, commercial and light-industrial environments

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

UL Listed (CDN & US) — UL916 Energy management equipment

Specifications - Universal Inputs (UI)

General

Input Type — Universal; software configurable

Input Resolution — 16-bit analog to digital converter

Power Supply Output — 18-20VDC; 80mA maximum

Protection — Auto-reset fuse for 24VAC protection

Contact

Type — Dry contact

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)

0 to 5VDC

Range — 0 to 5VDC (high input impedance)

0 to 20mA

Range — 0 to 20mA

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 @ 77ºF; 25ºC)
- Platinum — Pt1000 (1KΩ @ 32ºF; 0ºC)
- Nickel — RTD Ni1000 (1KΩ @ 32ºF; 0ºC)

RTD Ni1000 (1KΩ @ 69.8ºF; 21ºC)

Specifications - 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

Auto-reset fuse for 24VAC protection

Output is internally protected against short circuits

0 or 12VDC (On/Off)

Range — 0 or 12VDC

Source Current — Maximum 20 mA at 12VDC (minimum resistance 600Ω)

PWM

Range — Adjustable period from 2 to 65seconds

Thermal Actuator Management — Adjustable warm up and cool down time

Floating

Minimum Pulse On/Off Time — 500milliseconds

Drive Time Period — Adjustable

0 to 10VDC

Source:

- Voltage Range — 0 to 10VDC linear
- Source Current — Maximum 20 mA at 10VDC (minimum resistance 600Ω)

Sink:

- Voltage Range — 0 to 10VDC linear[1]
- Sink Current — Maximum 2.5 mA at 1VDC (minimum resistance 4kΩ)

Specifications - Digital Output (DOT)

General

Output Type — 24VAC Triac; software configurable

Maximum Current — 0.5A continuous

1A @ 15% duty cycle for a 10 minute period

Power Source — External power supply

0 or 24VAC (On/Off)

Range — 0 or 24VAC

PWM

Range — Adjustable period from 2 to 65seconds

Floating

Minimum Pulse On/Off Time — 500milliseconds

Drive Time Period — Adjustable

Specifications – Digital-Universal Outputs (DUO)

General

Output Type — Universal or digital triac;

Mode — Software configurable

Specifications:

- ☐ Universal Output Mode — See Universal Output (UO)
- ☐ Digital Output Mode — See Digital Output (DOT)

ECLYPSE™ Connected Terminal Unit Controller

ECLYPSE™

Overview

The ECLYPSE Connected Terminal Unit Controller 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 Connected Terminal Unit Controller 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 ECLYPSE Connected Terminal Unit Controller 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 ECLYPSE Connected Terminal Unit Controller 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

The following types of Wi-Fi connections are possible when using the ECLYPSE Wi-Fi Adapter:

- 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, allowing you to 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
- *my*DC Control to view, edit, and configure system operating parameters

BACnet/IP Device (pending)

The ECLYPSE Connected Terminal Unit Controller 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 (pending)

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 ECLYPSE Connected Terminal Unit Controller is a plug and play device that saves time and money since no programming or graphic design is needed as it comes with ENVYSION™ Viewer and the associated preloaded applications and graphics are pre-installed.

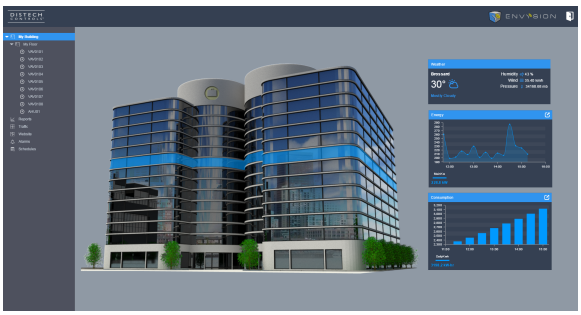
All standard terminal applications, such as fan coil units, chilled beams and ceilings, are included.

Direct web access

Also, no additional tools are required; only a web-browser is needed when you are using the pre-loaded application through ENVYSION. 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-*gfx*Program to program it.

HTML5 Visual Interface

The ECLYPSE Connected Terminal Unit Controller comes embedded with ENVYSION Viewer and xpressENVYSION.



ENVYSION Viewer – Web-based graphical user interface

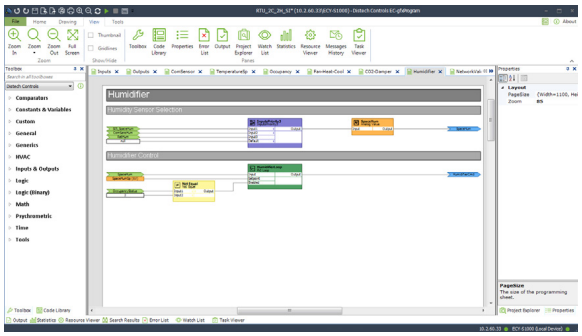
The embedded ENVYSION viewer provides fast loading of visual applications through native web pages with absolutely no browser plug-ins. Host and view preloaded graphics, and access schedules, alarms, and trend logs directly from your ECLYPSE Connected Terminal Unit Controller.

xpressENVYSION – Workflow oriented graphical user interface configuration

xpressENVYSION offers a simplified and streamlined experience in a workflow oriented, drag & drop GUI environment while ENVYSION still offers the full customization features and editing environment.

Programmability

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



Simplified Network Commissioning

The Xpress*Network* Utility saves you time and expense by giving you increased control over multiple ECLYPSE controllers through device discovery and batch operations such as configuring 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 xpress*Network* 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 xpress*Network* Utility.

Open to Web Services

With the RESTful API, the ECLYPSE Connected Terminal Unit Controller'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:

- ENVYSION web-based graphic design and visualization interface
- EC-*gfx*Program graphical programming interface
- *my*DC Control mobile application
- Xpress*Network* 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 (DALI, on/off or dimming) and shades/sunblinds (24 VDC or 100-240 VAC, up/down and angle rotation).
- Multi-sensor combining motion and luminosity (Lux) sensors and equipped with an Infrared receiver that works with a convenient remote control.
- Wireless (infrared) personal remote control for increased occupant comfort.
- Allure™ Series Communicating Sensors for increased occupant comfort settings.

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 sensors feature a backlit-display and graphical menus that provide precise environmental zone control, with any combination of the following: temperature, humidity, CO_2, and motion sensor.
- Allure EC-Smart-Comfort sensors feature colored LED indicators to provide user feedback, rotary knobs to adjust the setpoint offset and fan speed, and an occupancy override push button. This sensor can also be expanded with a combination of up to 4 add-on push button modules for lighting and shade/ sunblind control.
- Allure EC-Smart-Air sensors combine precise environmental sensing in a discreet and alluring enclosure for temperature, humidity, and CO_2.

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 *(typ. Electric Heater)*	1	1	1	1
Relay Outputs *(typ. Fan Speeds)*	3 (Line-Powered	3 (Line-Powered	3 (Line-Powered	3 (Unpowered)
Powered Triac Outputs *(typ. Valves)*	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.

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
□ 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 (pending)
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 supported room devices per controller combined — 4

Supported room devices:

- ☐ Allure EC-Smart-Vue Series[1]
- ☐ Allure EC-Smart-Comfort Series
- ☐ Allure EC-Smart-Air Series[1]
- ☐ EC-Multi-Sensor Series

Supported expansion modules per controller:

- ☐ ECx-Light-4 / ECx-Light-4D / ECx-Light-4DALI — 2
- ☐ ECx-Blind-4 / ECx-Blind-4LV — 2

1. A controller can support a maximum of two Allure Series Communicating Sensor models equipped with a CO_2 sensor. The remaining connected Allure Series Communicating Sensor models must be without a CO_2 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:

- ☐ Ethernet — 2 switched RJ-45 Ethernet ports

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

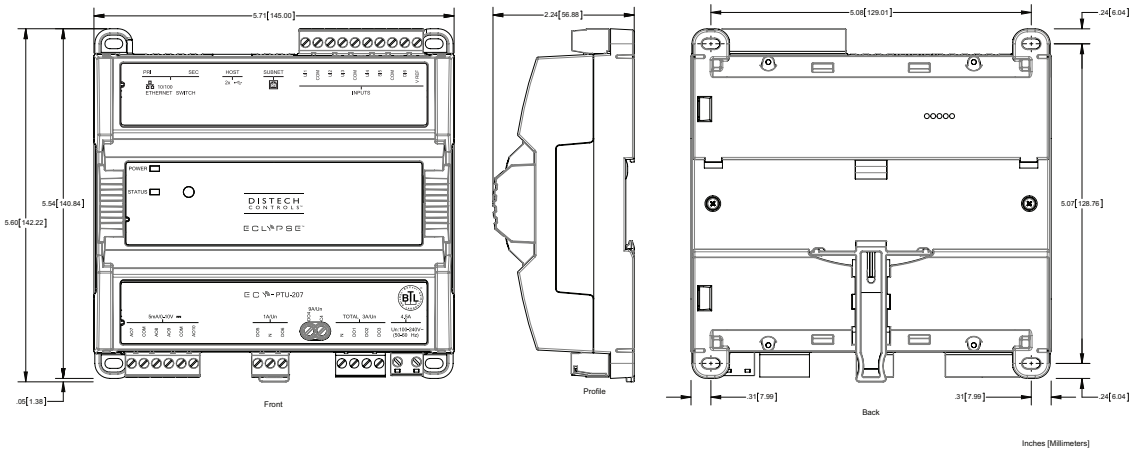
- ☐ USB Connections — 2 × USB 2.0 Ports
  1 × Micro-USB 2.0 Port
- ☐ Subnet — RJ-45

Status Indicators — Green LEDs: Power status, and Ethernet Traffic
Orange LEDs: Controller status, and Ethernet Speed

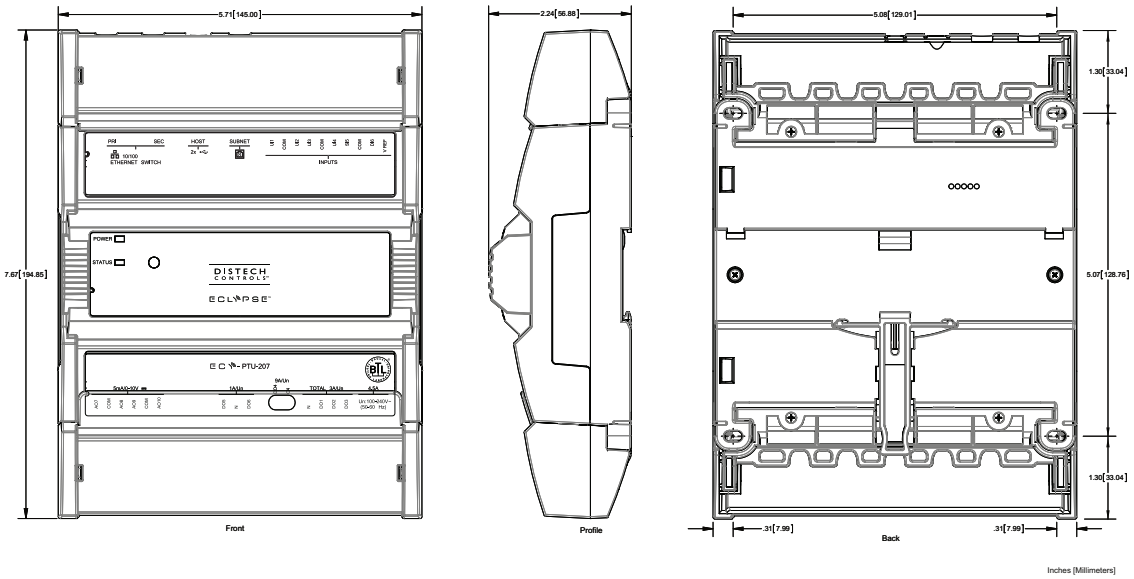
Mechanical

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 (pending)

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

CE - Immunité — EN 61000-6-1: 2007; Generic standards for residential commercial and light-industrial environments

UL Listed (CDN & US) — UL 61010-1 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use – Part 1: General Requirements

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 kΩ input impedance)

Resistance/Thermistor

Type — 10 kΩ Type II, III (10 kΩ @ 25ºC ; 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 kΩ Type II, III (10 kΩ @ 25ºC ; 77°F)

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

Digital Inputs (DI)

General

Input Type — Digital; software configurable

Contact

Type — Dry contact (0-3.3 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.

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; ± 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

ECLYPSE™ Connected VAV Controller

ECLYPSE™

Overview

The ECLYPSE Connected VAV Controller (ECY-VAV) is designed to control any variable air volume (VAV) box. It supports BACnet/IP communication and is a listed BACnet Building Controller (B-BC).

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

Features & Benefits

- Uses BACnet/IP and IT standards, delivering empowered IP connectivity and open integration with building management systems
- Uses cryptographic modules making it FIPS 140-2 "Inside"
- Via its RESTful API, data can be accessed from different applications, such as energy dashboards, analytics tools, and mobile applications
- Comes with ECLYPSE Designer 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-*gfx*Program, 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
- Robust hardware design featuring metallic pitot terminal barbs as well as metallic anchor point and mounting bracket
- ECLYPSE edge analytics automates the commissioning process, saving up to 30-45 minutes per device

Model Selection

Example: ECY-VAV ***(SI)***

ECY-VAV ***(IMP) Plenum-rated***

Series[1]	Model	Units	Option
ECY-VAV	[blank] : Standard 24VAC/DC power supply ***-PoE*** : Power Over Ethernet	***(SI)*** : Preloaded Apps in SI (Metric) units ***(IMP)*** : Preloaded Apps in Imperial (US) units	***Plenum-rated*** : UL2043 plenum-rated with standard 24VAC/DC power supply (only for North America, not available with PoE model).
11-points, 4 UI, 2 UO, 4 DO, 18 Vdc power supply output, built-in flow sensor, integrated damper actuator, ENVYSION viewer			

1. SEP models (single Ethernet port) have secondary Ethernet port factory disabled

Accessories

ECLYPSE Wi-Fi Adapter	Wi-Fi Adapter for ECLYPSE Connected Controllers.
ECLYPSE Open-To-Wireless™ Adapter	EnOcean communication protocol adapter for ECLYPSE Connected Controllers.
Terminal covers	Terminal cover designed to conceal the wire terminals of the ECY-VAV Series controllers. Required to meet local safety regulations in certain jurisdictions.

Product Specifications

Power Supply Input (ECY-VAV Models)

Voltage Range[1]	24VAC/DC; ±15%; Class 2
Nominal Power Consumption	7VA; all external loads excluded, no USB peripherals
Full Load Power Consumption	20VA; external 24VAC loads excluded
Frequency Range	50 to 60Hz
Overcurrent Protection	Field replaceable fuse
Fuse Type	3A, fast-acting, 5 × 20mm (GMA-3A)
Power Factor	>90%

1. 24VDC does not support DO (triac outputs).

Power Supply Input (ECY-VAV-PoE Models)

Power over Ethernet Link Powered	IEEE 802.3at
PoE Switch	Must be listed as Limited Power Source (LPS) per UL60905
Overcurrent Protection	Field replaceable fuse
Fuse Type	3A, fast-acting, 5 × 20mm (GMA-2A)
Powering External Devices	Up to 15 Watts maximum (power is available from the controller's power supply input terminals)

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/SC routing (Beta)
BACnet Transport Layer	IP, BACnet/SC (Node; Beta)
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 [1]	4
Allure EC-Smart-Vue Series[2]	4
Allure EC-Smart-Comfort Series	4
Allure EC-Smart-Air Series[2]	4
EC-Multi Sensor	4
ECx-Light-4 / ECx-Light-4D / ECx-Light-4DALI [1]	2
ECx-Blind-4 / ECx-Blind-4LV / ECx-Blind4SMI / ECx-Blind-4SMI-LoVo [1]	2
Maximum number of Bluetooth low energy room devices per controller combined [3]	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_2 sensor. Any remaining connected sensors must be without a CO_2 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 (ECY-VAV)	2 × switched RJ-45 Ethernet ports with integrated fail-safe for daisy-chaining
Ethernet (ECY-VAV-PoE)	1 × RJ-45 PoE+ Ethernet port 1 × switched RJ-45 Ethernet port
USB Connections	2 × USB 2.0 Ports 1 × Micro-USB 2.0 Ports
Subnet	RJ-45
Green LED	Power status, Subnet TX, and Ethernet Traffic
Orange LED	Controller status, Subnet RX, and Ethernet Speed

Open-to-Wireless Adapter

Communication Protocol	EnOcean wireless standard [1]
Connector Type	USB
Number of Wireless Inputs	Unlimited[2]

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.

Integrated Damper Actuator

Motor	Belimo brushless DC motor
Torque	45 in-lb, (5 Nm)
Degrees of Rotation	95º adjustable
Shaft Diameter	5/16 to 3/4” (8.5 to 18.2mm)
Acoustic Noise Level	< 35 dB (A) @ 95º rotation in 95 seconds

Mechanical

ECY-VAV Dimensions (H × W × D)	7.90 × 5.51 × 3.70" (200.61 × 139.93 × 94.04 mm)
ECY-VAV-PoE Dimensions (H × W × D)	7.90 × 8.17 × 3.70" (200.61 × 207.59 × 94.04 mm)
Dimensions with Terminal Covers (H × W × D)	7.90 × 10.84 × 3.70" (200.61 × 275.26 × 94.04 mm)
ECY-VAV Shipping Weight	2.00lbs (0.90 kg)
ECY-VAV-PoE Shipping Weight	2.50lbs (1.14 kg)
Terminal Cover Shipping Weight (one side, bulk packaged)	0.30lbs (0.14 kg)
Enclosure Material[1]	FR/ABS
Enclosure Rating	Plastic housing, UL94-5VB flammability rating

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	32 to 122°F (0 to 50°C)
Storage Temperature	-4 to 122°F (-20 to 50°C)
Relative Humidity	0 to 90% non-condensing
Ingress Protection Rating	IP20 (IEC 60552)
Nema Rating	1

Standards and Regulations

CE Emission	EN61000-6-3: 2007+A1:2011
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 UL2043 Suitable for use in air handling spaces (for Plenum-rated models only)

On-Board Air-Flow Sensor

Differential Pressure Range	±2.0 in. W.C. (±500 Pa) Polarity-free high-low sensor connection
Input Resolution	0.00007 in. W.C. (0.0167 Pa)
Air Flow Accuracy	±4.0% @ > 0.05 in. W.C. (12.5 Pa) ±1.5% once calibrated through air flow balancing @ > 0.05 in. W.C. (12.5 Pa)
Pressure Sensor Accuracy	±(0.2 Pa +3% of reading)

Universal Inputs (UI)

General

Input Type	Universal; software configurable
Input Resolution	16-bit analog to digital converter
Power Supply Output	18VDC; 80mA maximum
Protection	Auto-reset fuse for 24VAC protection

Contact

Type	Dry contact

Counter

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

0 to 10VDC

Range	0 to 10VDC (40kΩ input impedance)

0 to 5VDC

Range	0 to 5VDC (high input impedance)

0 to 20mA

Range	0 to 20mA 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 @ 77ºF; 25ºC)
Platinum	Pt1000 (1KΩ @ 32ºF; 0ºC)
Nickel	RTD Ni1000 (1KΩ @ 32ºF; 0ºC) RTD Ni1000 (1KΩ @ 69.8ºF; 21ºC)

Universal Outputs (UO)

General

Output Type	Universal; software configurable
Output Resolution Converter	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
Auto-reset Fuse	Provides protection from accidental 24VAC connection

0 or 12VDC (On/Off)

Range	0 or 12VDC
Source Current	Maximum 20 mA at 12VDC (minimum resistance 600Ω)

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

Source:

Voltage Range	0 to 10VDC linear
Source Current	Maximum 20 mA at 10VDC (minimum resistance 600Ω)

Sink:

Voltage Range	0 to 10VDC linear[1]
Sink Current	Maximum 2.5 mA at 1VDC (minimum resistance 4kΩ)

1. When the VAV is not powered, there is no default sink voltage.

Digital Output (DO)

General (ECY-VAV Models)

Output Type	24VAC Triac; software configurable
Maximum Total Current for all Outputs	2A
Power Source,	External or internal (jumper selectable)
Maximum Current per Output	0.5A continuous
	1A @ 15% duty cycle for a 10 minute period

General (ECY-VAV-PoE Models)

Output Type	24VAC Triac; software configurable
Power Source	External or internal (jumper selectable)

Internal Power Source

Network Switch	802.3at
Maximum Total Power for all Digital Outputs	15W
Maximum Current per Output	0.5A continuous, power supply limited
Waveform	24 VAC square wave

External Power Source

Voltage	24VAC from external source
Maximum Current per Output	0.5A continuous
	1A @ 15% duty cycle for a 10 minute period

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

Dimensions

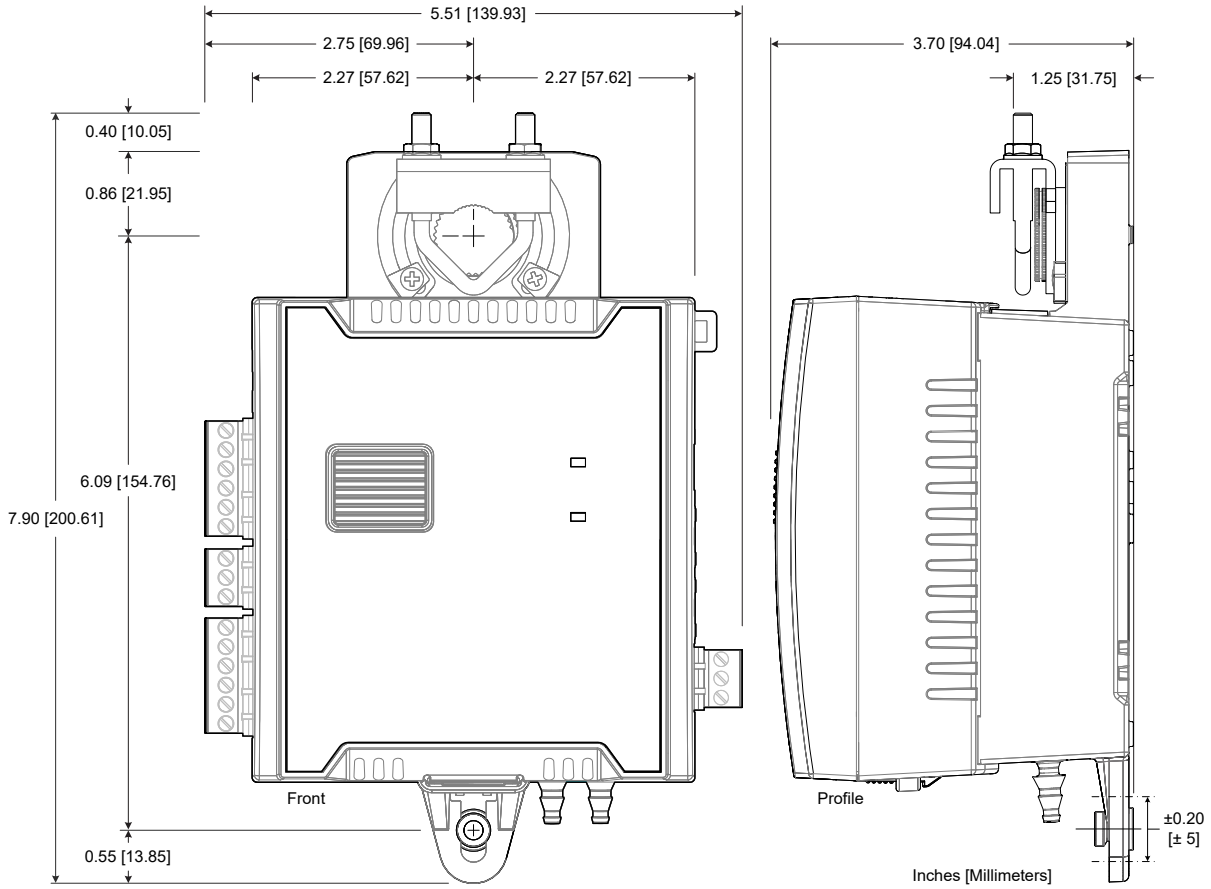


Figure 1: ECY-VAV Controller Dimensions

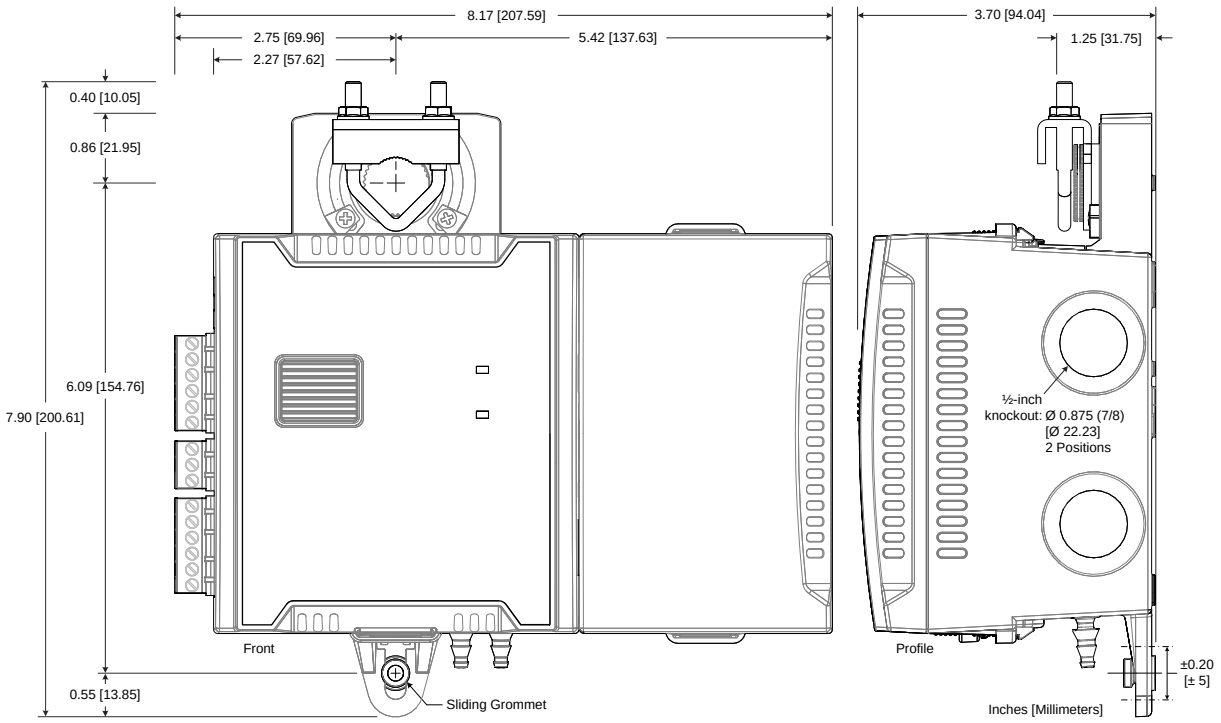


Figure 2: ECY-VAV-PoE Controller Dimensions

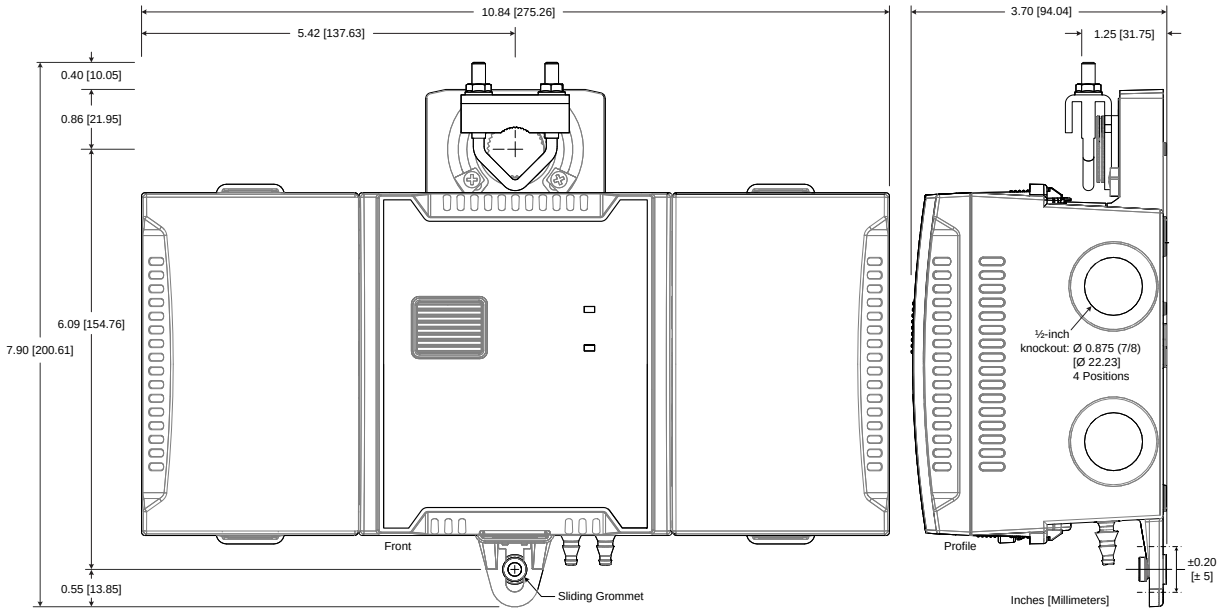


Figure 3: ECY-VAV Controller with Terminal Covers Dimensions