ECLYPSE™ Connected System Controller

ECLYPSE™

Overview

The ECLYPSE Connected System Controller is a modular and scalable platform used to control a wide range of HVAC applications. It supports multi-protocol communications, including BACnet/IP, and is a listed BACnet Building Controller (B-BC).

The ECLYPSE Connected System Controller consists of a control, automation and connectivity server, power supply, and I/O extension modules.

This programmable Connected System Controller provides advanced functionality, such as customizable control logic, Web-based design and visualization interface (ENVYSION embedded), logging, alarming, and scheduling.

Applications

The ECLYPSE Connected System Controller is typically used as:

- A controller for medium/large sized Air Handling Units (AHU), central plant, lighting, power monitoring, and other applications.
- Small building server and equipment controller with embedded ENVYSION. For example, it can be used to control and serve a boiler room.

Features & Benefits

Connectivity

The different types of connections supported by the Connected System Controller are as follows:

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.

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
- *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 System 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.

Open to Web Services

With the RESTful API, the Connected System 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.

HTML5 Visual Interface

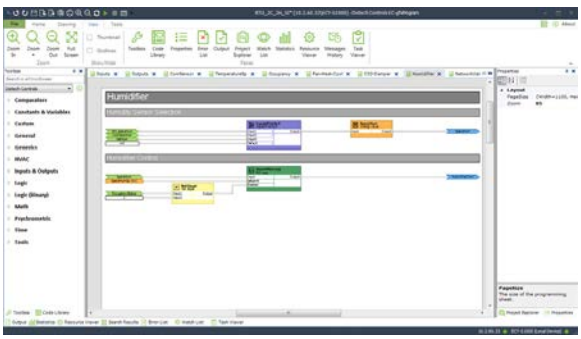
The ECLYPSE Connected System Controller comes embedded with both ENVYSION Studio and Viewer, and xpressENVYSION.

ENVYSION – Web-based graphic design and visualization interface

ENVYSION is a web-based graphic design and visualization interface used to create and deliver interactive graphical user interfaces and an optimal user experience for building owners and facility managers to better manage facility data.

Programmability

Supports Distech Controls' EC-*gfx*Program, 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 / 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.

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.

Scalable and Modular

The Connected System Controller is sized to cost-effectively meet the requirements of any HVAC application from small to medium to large systems. The most capable Connected System Controller model can be expanded to support up to 20 input/output (I/O) modules (up to 320 I/Os) while being able to adapt to new requirements as the need arises.

A range of I/O modules are available that have universal inputs and outputs, digital inputs with fast pulse support for use with energy meters and counters, 24VAC triac outputs for use with smaller load applications (up to 1 amp) such as electric fans and motors/actuators and relay outputs for larger load/high power applications such as electric heat and high power actuators.

The Connected System Controller's recurrent power supply concept can be used when more power is required to power a series of I/O modules. A 100 to 240VAC power supply module eliminates the need for a line voltage to 24VAC power transformer to save installation costs and time. A 24 VAC / VDC power supply module is equally available.

An ECY-RS485 communication module adds two extra RS-485 trunks to support more BACnet MS/TP and Modbus RTU devices.

A connecting cable is used to connect successive rows of modules within a controls' cabinet to provide power and communication.

BACnet/IP Device (pending)

The Connected System 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.

Multi-Protocol Support

The Connected System Controller supports a range of communication protocols such as BACnet MS/TP, Modbus RTU, and Modbus TCP.

BACnet MS/TP and Modbus RTU communications are made by connecting directly to separate RS-485 ports. The Connected System Controller integrates up to three RS-485 ports when equipped with one ECY-RS485 extension module allowing the controller to support more than one trunk or communication protocol at a time.

MS/TP to IP routing

Integrate full MS/TP trunks into a supervisory system like the EC-Net^{AX} Supervisor, without the need for other hardware components such as an external BACnet MS/TP to IP router.

Modbus RTU and TCP

Modbus RTU and TCP communication can be used to 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.

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.

Weather Forecast

The weather forecast is directly available from the internet to be shown on a connected ECx-Display or to be used by the controller's code.

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.

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

Hand/Off/Auto Switches and Potentiometers

The front assembly of Hand/Off/Auto (HOA) equipped I/O models allow users to override the control outputs for commissioning and maintenance purposes.

Universal outputs have potentiometers providing manual analog signal and output control to override voltage or current signal.

High-Efficiency Design

The power supply uses the latest high-efficiency switch-mode circuitry to make more power available to operate additional modules and for cooler operation.

Hot-Swappable Tool-Less Design and Unique Latching Mechanism

The I/O modules are hot-swappable for replacement without interrupting power and communications to other modules.

The front assembly of I/O modules separate from the wiring base by pushing the two latches up to unlock a module's front assembly and then opening and pulling the hinged gull-wing covers. The latch design locks the front assembly to the wiring base.

The hinged gull-wing design protects and cover the stacked dual row I/O terminal strips.

Ease of Installation

The Connected System Controller modules are plug & play devices. They are equipped with HD-15 connectors that transmits power and communications to the next module for fast and easy assembly.

I/O Status LEDs

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

Auto-Addressing

The auto-addressing feature eliminates the need to manually assign an address to each I/O module therefore reducing installation and configuration time.

Digital Inputs Up to 120Hz

The ECY-16DI module supports pulsed signals up to 120Hz for equipment status monitoring and alarm point monitoring, commonly used in energy metering applications.

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/O modules are protected against mis-wiring and faults to prevent damage caused by incorrect wiring or other mishaps.

The power supply module contains over-voltage and over-current output protection to protect the electronics in unstable power supply conditions and against mis-wiring.

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

The ECLYPSE Connected System Controller consists of a power supply, a control, automation and connectivity server, I/O extension modules, and communication modules to create a controller tailored to its application. The different models for each are shown in the tables below.

Power Supply

A power supply module must be added after each HD15 cable (see Accessories below).

ECY-PS24	24VAC/VDC power supply module for the ECLYPSE Connected System Controller.
ECY-PS100-240	100 to 240VAC power supply module for the ECLYPSE Connected System Controller.

Control, Automation and Connectivity Servers

Connected System Controller for medium/large sized AHU and plant applications and small building server/controller applications.

Model	With Embedded ENVYSION	Application	Maximum Number of Points Supported	BACnet MS/TP to IP Routing Support – Maximum Number of BACnet MS/TP Devices	Maximum Number of Modbus Devices (RTU or TCP)
ECY-S1000-28		Small size equipment such as a large rooftop unit or a small AHU.	28	No[1]	3
ECY-S1000E-28	■				
ECY-S1000-28-MS			28	Yes[2]	3
ECY-S1000E-28-MS	■				
ECY-S1000-48		Medium size equipment such as an AHU or a small size plant room	48	No[1]	10
ECY-S1000E-48	■				
ECY-S1000-48-MS			48	Yes[2]	10
ECY-S1000E-48-MS	■				
ECY-S1000		Large size equipment such as large plant rooms and large data centers.	320[4]	Yes[2]	96[3]
ECY-S1000E	■				

1. Upgrade and enable the functionality of your ECLYPSE controller's RS-485 ports with our capacity-based upgrade to ECYS1000-48MS.
2. Up to 50 BACnet MS/TP devices recommended on each RS-485 port.
3. Up to 32 Modbus RTU devices recommended on each RS-485 port.
4. The ECY-S1000 models support a maximum of 320 points OR up to a maximum of 20 IO modules.

I/O Modules Selection

	Inputs										Outputs									
		Digital			Analog							Digital					Analog			
	Quantity	Contact	Counter	120Hz Pulse Counting	0 to 10VDC	0 to 5VDC	0 to 20mA	Resistance	Thermistor	18VDC Power Supply	Quantity	0-277VAC / 0-30VDC Form-C, 10A	24VAC Triac, 0.5 A	0 or 12VDC	PWM	Floating	0 to 10VDC[1]	0 to 20mA[1]	HOA	Basic Power Consumption[2], W
ECY-8UI	8	■	■		■	■	■	■	■	■										0.94
ECY-16DI	16	■	■	■																0.94
ECY-6UO											6			■	■	■	■	UO1 UO2 UO3		0.94
ECY-6UO-HOA											6			■	■	■	■	UO1 UO2 UO3	■	0.94
ECY-8DOR											8	■								0.94
ECY-8DOR-HOA											8	■							■	0.94
ECY-4UI4UO	4	■	■		■	■	■	■	■	■	4			■	■	■	■	UO1 UO2 UO3		0.94
ECY-4UI4UO-HOA	4	■	■		■	■	■	■	■	■	4			■	■	■	■	UO1 UO2 UO3	■	0.94
ECY-8UI6UO	8	■	■		■	■	■	■	■	■	6			■	■	■	■	UO1 UO2 UO3		0.94
ECY-8UI6UO-HOA	8	■	■		■	■	■	■	■	■	6			■	■	■	■	UO1 UO2 UO3	■	0.94
ECY-8UI6DOT	8	■	■		■	■	■	■	■	■	6		■		■	■				0.94
ECY-8UI6DOT-HOA	8	■	■		■	■	■	■	■	■	6		■		■	■			■	0.94

1. 0 to 10VDC is available on UO1 to UO6. 0 to 20 mA is available on UO1, UO2, and UO3; this option is individually selected through an on-board DIP switch setting.
2. External loads excluded. See the ECLYPSE Selection Tool to calculate the number of Input/Output Extension Modules that can operate with a power supply.

Communication Modules Selection

Communications Module	Description
ECY-RS485	ECLYPSE Communication module with two RS-485 ports for Modbus RTU or BACnet MS/TP.
ECY-nLight	ECLYPSE nLight Interface Module

Accessories

ECLYPSE HD15 Cable	6ft (1.8m) cable for Connected System Controller 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.
ECLYPSE Wi-Fi Adapter	Wi-Fi Adapter for ECLYPSE Connected Controllers.

Product Specifications

Power Supply (ECY-PS24)

Power Supply Input

Voltage Range	24VAC/DC; ±15%; Class 2
Power Consumption	60VA
Frequency Range	50 to 60Hz
Overcurrent Protection	Field replaceable fuse
Fuse Type	4A, fast-acting, 5 × 20mm (GMA-4A)

Power Supply Output

DC Voltage	18VDC regulated
Rated Current Range	0 to 1.6A
Rated Power	30W[1]

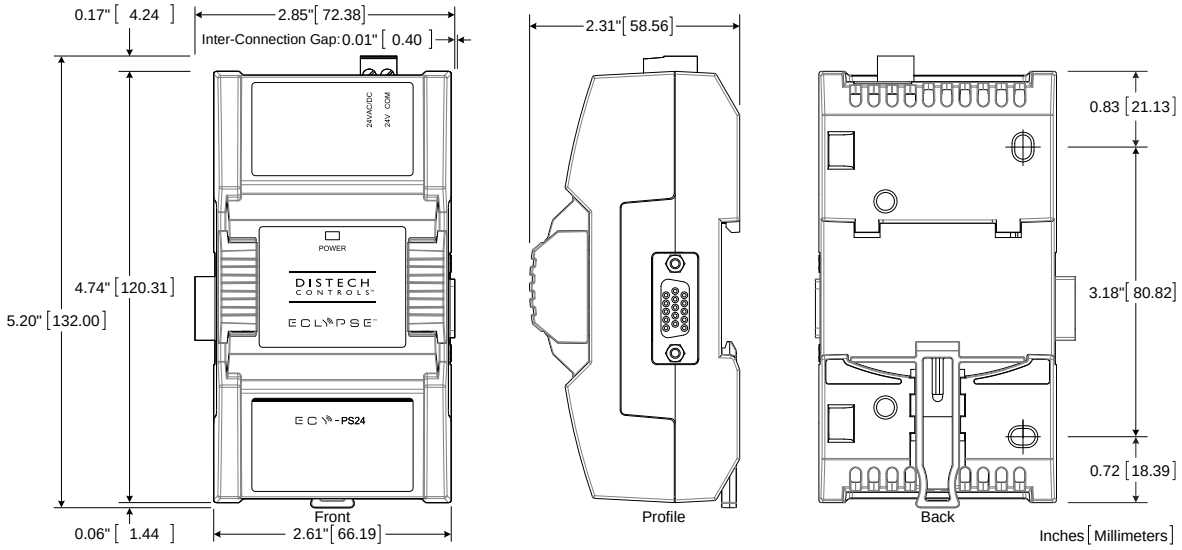
1. The total power consumption of all modules connected to the right of this power supply, and up to the next connected power supply, including any connected loads, must be less than this value. A separate transformer rated at 60VA minimum and 100VA maximum must be used for each ECY-PS24 power supply for it to operate at full capacity.

Hardware

Power Distribution Direction	Powered modules are connected to the right
Backplane Bus	Pass-through connection for data and control signals
Status Indicator	Green LED: power status

Mechanical

Dimensions (H × W × D)	4.74 × 2.85 × 2.31" (120.31 × 72.38 × 58.56mm)



Shipping weight	0.75lbs (0.34kg)
Mounting	DIN rail or screw mounting
Enclosure Material[1]	FR/ABS
Enclosure Rating	Plastic housing, UL94-V0 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 — 32 to 122°F (0 to 50°C)

Storage Temperature — -22 to 158°F (-30 to 70°C)

Relative Humidity — 0 to 90% non-condensing

Ingress Protection Rating — IP20

Nema Rating — 1

Standards and Regulations

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

Power Supply (ECY-PS100-240)

Power Supply Input

Voltage Range — 100 to 240 VAC Universal; +10%/-15%

Input Current — 400mA typical

Frequency Range — 50 to 60Hz

Standby Power consumption — <0.5W

Overcurrent Protection — Field replaceable fuse

Fuse Type — 2.5A, Fast-acting, high-breaking, 250VAC, 5 × 20mm (TF2.5AH250V, IEC60127-2)

Power Supply Output

DC Voltage — 18VDC regulated

Rated Current Range — 0 to 2A

Rated Power — 40W[1]

1. The total power consumption of all modules connected to the right of this power supply, and up to the next connected power supply, including any connected loads, must be less than this value.

Hardware

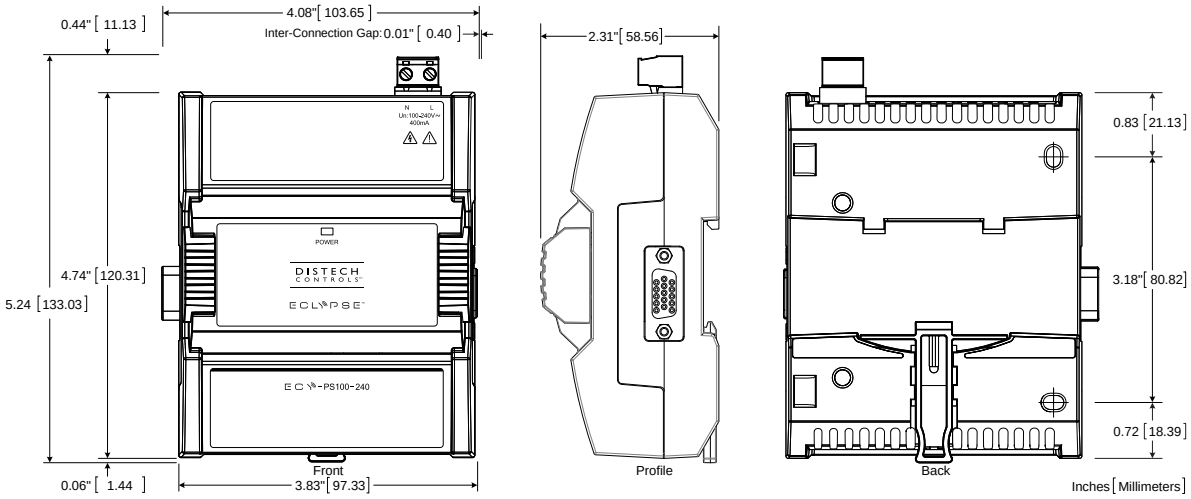
Power Distribution Direction — Powered modules are connected to the right

Backplane Bus — Pass-through connection for data and control signals

Status Indicator — Green LED: power status

Mechanical

Dimensions (H × W × D) — 4.74 × 4.08 × 2.31" (120.31 × 103.65 × 58.56mm)



Shipping weight — 0.71lbs (0.32kg)

Mounting — DIN rail or screw mounting

Refer to Hardware Installation Guide for more information

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 — -22 to 158°F (-30 to 70°C)

Relative Humidity — 0 to 90% non-condensing

Altitude — <6562ft (2000m)

Pollution Degree — 2

Ingress Protection Rating — IP20

(must be mounted in a protective enclosure to conform with electrical installation standards)

Overvoltage — Category II - 2.5 kV

Electrical Protection — DC output is Separated Extra-Low Voltage (SELV);

SELV is implemented through reinforced insulation

Standards and Regulations

CE:

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

UL Listed (CDN & US) — UL 61010-1 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use - Part 1: General Requirements - Edition 2 - Revision Date 2008/10/28

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

Control, Automation and Connectivity Server (ECY-S1000)

Power Supply Input

Voltage — 18VDC

Power Consumption — 8.9W; external loads excluded

Communications

Ethernet Connection Speed — 10/100 Mbps

- Addressing — IPv4 or Hostname

BACnet Profile — BACnet Building Controller (B-BC)), AMEV AS-A and AS-B (pending)

BACnet Listing — BTL, WSP B-BC

BACnet Interconnectivity — BBMD forwarding capabilities
BACnet/IP to BACnet MS/TP routing

BACnet Transport Layer — IP & MS/TP (optional)

Web Server Protocol — HTML5

Web Server Application Interface — REST API

Supported BACnet MS/TP and Modbus RTU and TCP Connectivity:

- BACnet MS/TP or Modbus RTU — 1 × RS-485 serial communications ports
  Each RS-485 port supports one communication protocol at a time
- 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

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

Supported Smart Room Control Components[1]:

Maximum number of supported devices per controller combined — 12

- ☐ Allure EC-Smart-Vue Series — Up to 12[1]
- ☐ Allure EC-Smart-Comfort Series — Up to 6
- ☐ Allure EC-Smart-Air Series — Up to 6[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. For more details about supported quantities, see the **ECLYPSE Selection Tool.xlsm** spreadsheet file available for download from SmartSource.
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.

Hardware

Processor — Sitara ARM processor

CPU Speed — 1GHz

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

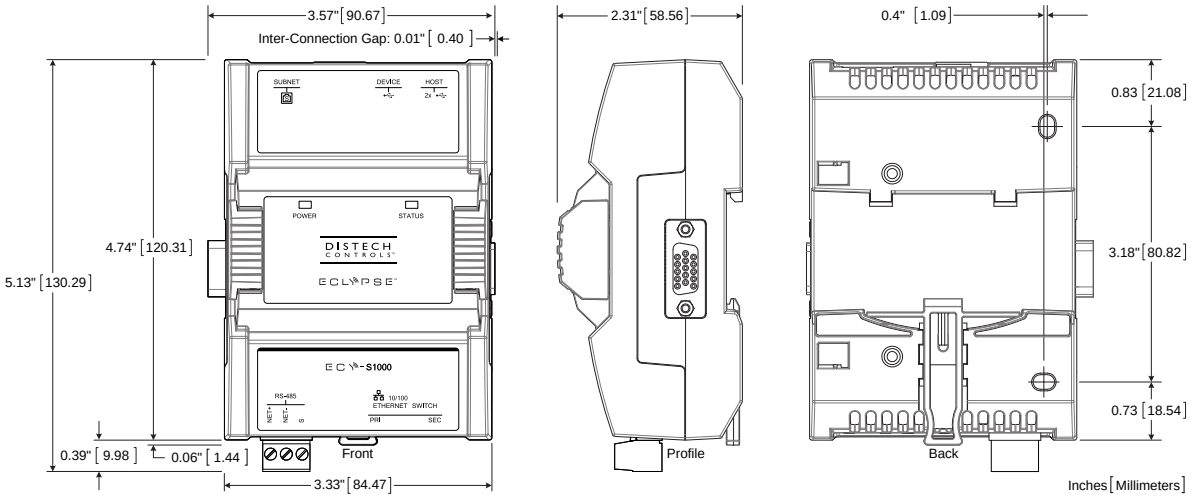
Communications Ports:

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

Status Indicators — Green LED: Power status, Subnet TX, RS-485 TX, and Ethernet Traffic
Orange LED: Controller status, Subnet RX, RS-485 RX, and Ethernet Speed

Mechanical

Dimensions (H × W × D) — 4.74 × 3.57 × 2.31" (120.31 × 90.67 × 58.56mm)



Shipping weight — 0.85lbs (0.39kg)

Mounting — DIN rail or screw mounting

Enclosure Material — FR/ABS

Enclosure Rating[1] — Plastic housing, UL94-V0 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 — 32 to 122°F (0 to 50°C)

Storage Temperature — -22 to 158°F (-30 to 70°C)

Relative Humidity — 0 to 90% non-condensing

Ingress Protection Rating — IP20

Nema Rating — 1

Standards and Regulations

CE:

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- ☐ 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

I/O Modules

Power Supply Input

Voltage — 18VDC

Power Consumption — Calculate power supply requirements with the ECLYPSE Selection Tool

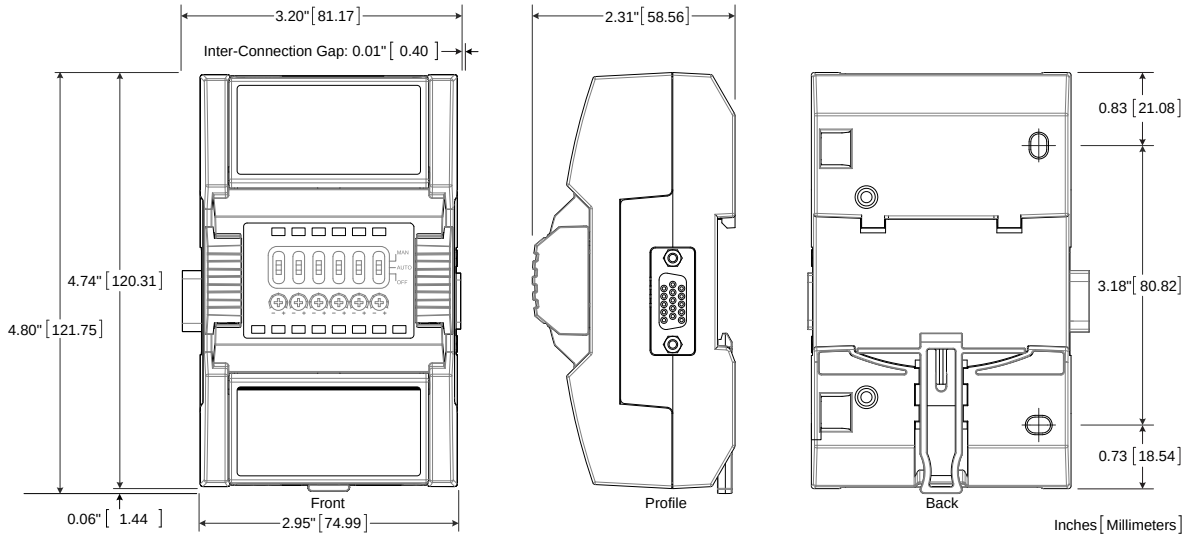
Hardware

Status Indicator — Green LEDs: inputs and outputs

For ECY-8UI, ECY-16DI, ECY-6UO, ECY-6UO-HOA, ECY-4UI4UO, ECY-4UI4UO-HOA, ECY-8UI6UO, ECY-8UI6UO-HOA, ECY-8UI6DOT, & ECY-8UI6DOT-HOA Models:

Mechanical

Dimensions (H × W × D) — 4.74 × 3.20 × 2.31" (120.31 × 81.17 × 58.56mm)



Shipping weight — 0.85lbs (0.39kg)

Mounting — DIN rail or screw mounting

Hot-swappable — Yes

Enclosure Material — FR/ABS

Enclosure Rating[1] — Plastic housing, UL94-V0 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

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

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

I/O Modules - Universal Inputs (UI)

General

Input Type — Universal; software configurable

Current Input Option Selection — DIP switch

Input Resolution — 16-bit analog to digital converter

Power Supply Output — 18VDC; 20mA maximum per 0 to 20 mA input

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 DIP-switch configurable internal resistor

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)

I/O Modules - Digital Inputs (DI)

General

Input Type	Dry contact or Open-Collector
Low Threshold	< 2.5V
High Threshold	> 3.0V

Pulse/Counter

Pulse Input	S0 output compatible
Maximum Frequency	120Hz
Minimum Duty Cycle	4.167milliseconds On / 4.167milliseconds Off

I/O Modules - 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
Load Resistance	Minimum 200Ω for 0 to 10VDC and 0 to 12VDC outputs Maximum 500Ω for 0 to 20mA output
Auto-reset Fuse	60mA @ 140ºF; 60ºC

0 or 12VDC (On/Off)

Range	0 or 12VDC

PWM

Range	Adjustable period from 2 to 65seconds

Floating

Minimum Pulse On/Off Time	500milliseconds
Drive Time Period	Adjustable

0 to 10VDC

Range	0 to 10VDC linear

0 to 20mA

Range	0 to 20mA
Current Source	20mA maximum per 0 to 20 mA output
Ports UO1, UO2, and UO3 only	DIP switch

HOA

Hand-Off-Auto switch	When equipped
	Supervision allows control logic to read the current HOA switch and potentiometer settings
Threshold	Configurable
Potentiometer Voltage Range	0 to 12VDC

I/O Modules - 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

HOA

Hand-Off-Auto switch — When equipped

Supervision allows control logic to read the current HOA switch setting

I/O Modules - Digital Output (DOR)

For ECY-8DOR & ECY-8DOR-HOA Models:

General

Output Type — Relay contact

Relay Type — Form C

Power Source — Dry contact (external power supply)

Operating Voltage — 0 to 277VAC or 0-30VDC ±10%, see HIG for mounting specifications

Maximum Current

- Resistive Load — 10A
- Inductive Load — 6A
- Motor Load — 3A

Protection — Outputs must be protected with max 10 A external circuit breaker

Digital

Range — On/Off

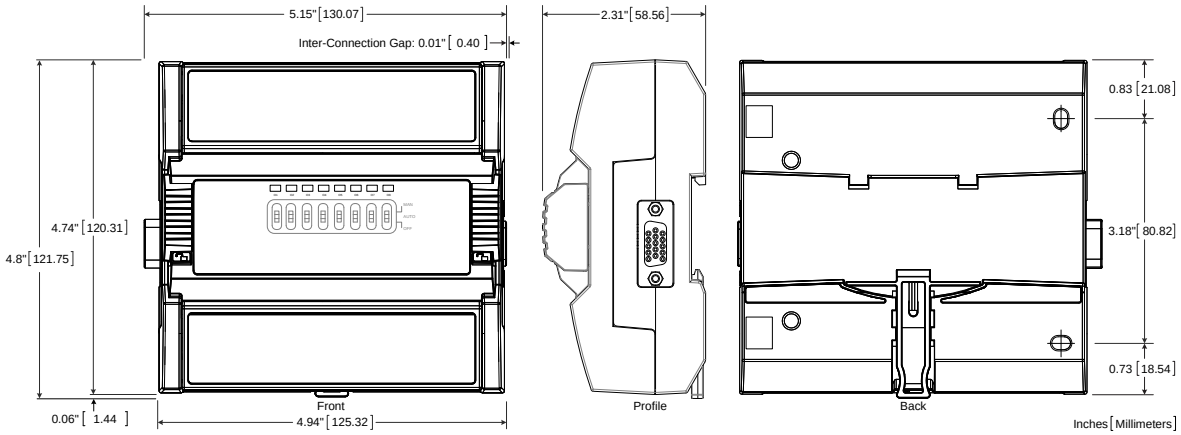
HOA

Hand-Off-Auto switch — When equipped

Supervision allows control logic to read the current HOA switch setting

Mechanical

Dimensions (H × W × D) — 4.74 × 5.15 × 2.31" (120.31 × 130.07 × 58.56mm)



Shipping weight — 0.75lbs (0.34kg)

Mounting — DIN rail or screw mounting

Hot-swappable — Yes (once high voltages have been removed)

Enclosure Material — FR/ABS

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

Environmental

Operating Temperature — 32 to 122°F (0 to 50°C)

Storage Temperature — -22 to 158°F (-30 to 70°C)

Relative Humidity — 0 to 90% non-condensing

Altitude — <6562ft (2000m)

Pollution Degree — 2

Ingress Protection Rating — IP20

(must be mounted in a protective enclosure to conform with electrical installation standards)

Overvoltage — Category II - 2.5 kV

Standards and Regulations

CE:

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

UL Listed (CDN & US) — UL 61010-1 Safety Requirements For Electrical Equipment For Measurement, Control, And Laboratory Use - Part 1: General Requirements - Edition 2 - Revision Date 2008/10/28

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

Communications Module

ECY-RS485 Communications Module

Supported Quantity — 1 × ECY-RS485 per ECY-S1000

Power Supply Input

Voltage — 18VDC

Power Consumption — 1.25 W

Communications

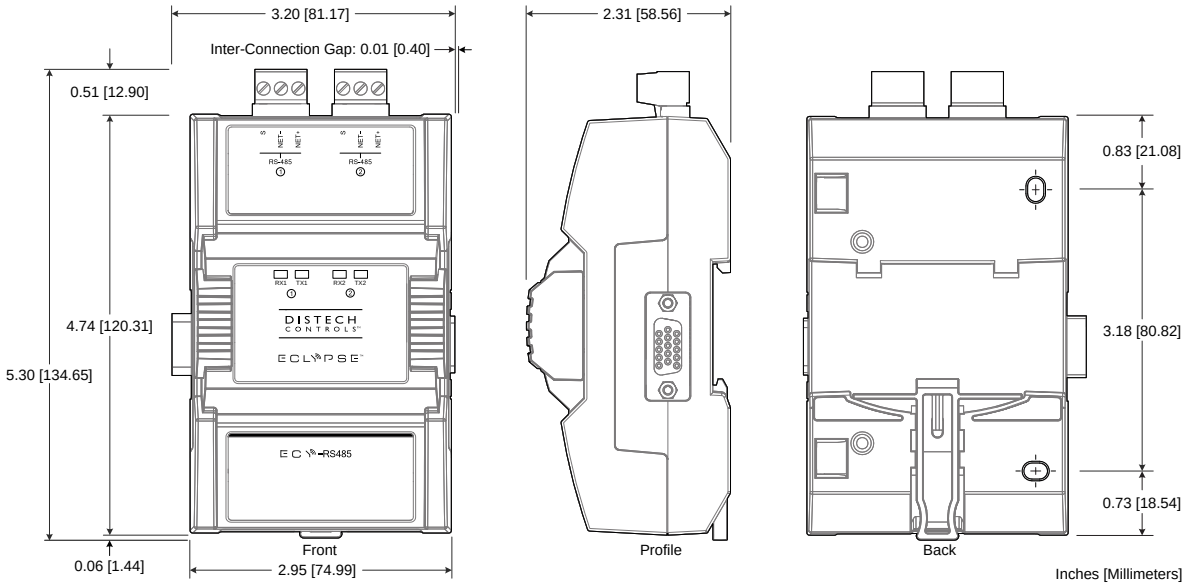
Supported BACnet MS/TP or Modbus RTU Connectivity:

- ☐ BACnet MS/TP or Modbus RTU — 2 × RS-485 serial communications ports
  Each RS-485 port supports one communication protocol at a time
- ☐ RS-485 Wiring — 1-pair + Common/shield
- ☐ Connection Type — Screw terminals
- ☐ 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

Status Indicators — Green LED: TX
Orange LED: RX

Mechanical

Dimensions (H × W × D) — 4.74 × 3.16 × 2.31" (120.31 × 80.19 × 58.56mm)



Shipping weight — 0.55lbs (0.25 kg)

Mounting — DIN rail or screw mounting

Enclosure Material — FR/ABS

Enclosure Rating[1] — Plastic housing, UL94-V0 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	32 to 122°F (0 to 50°C)
Storage Temperature	-22 to 158°F (-30 to 70°C)
Relative Humidity	0 to 90% non-condensing
Ingress Protection Rating	IP20
Nema Rating	1

Standards and Regulations

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