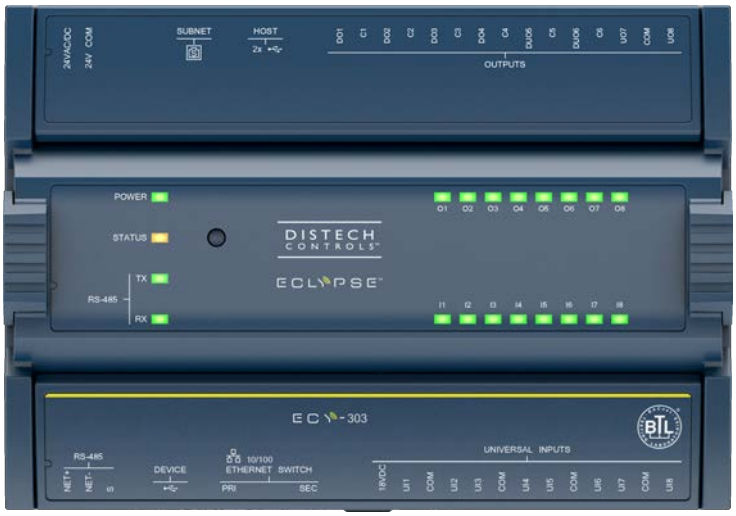
ECLYPSE™ Connected Equipment Controller



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.

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.

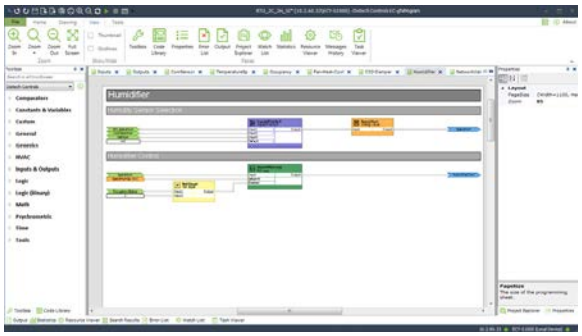
xpressENVYSION – Workflow Oriented Graphical User Interface Configuration

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 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.

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.

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 & 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 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.

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

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)

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 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

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 **ECLYPSE USER GUIDE** 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

Cryptographic Module — FIPS 140-2 Level 1 Compliant

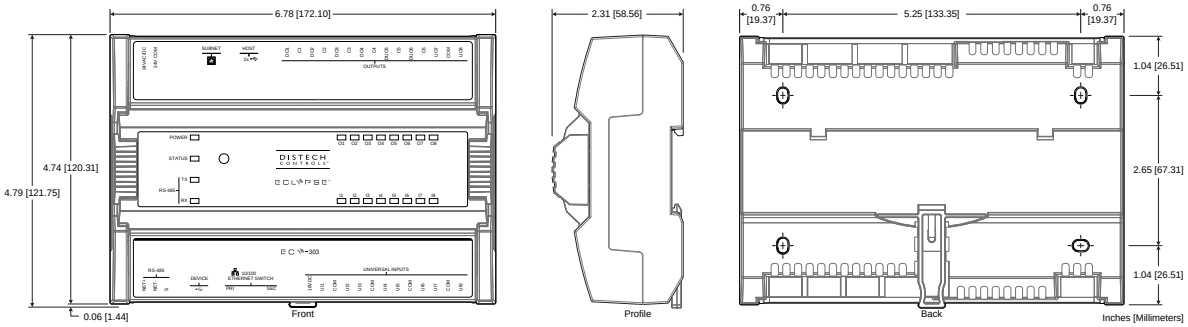
Communications Ports:

- 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
- 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 × 58.56 mm)



Shipping Weight — 1.20lbs (0.55 kg)

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 — -40 to 122°F (-40 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)