JACKSON SYSTEMS
Controls Done Right™

DISTECH CONTROLS™
AUTHORIZED PARTNER

Submittal
23 09 13-1

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Project Data

Date: 10/04/2024
Project Number: 24184
Project Name: Danville High School
Owner: Danville Community School Corporation

Customer

A.A. Huber & Sons, Inc.
500 North Jackson Street
Greencastle, IN 46135
United States

Customer PO Number: Contract 21544

Contracting Team

Project Manager: Ryan Jackson
Project Engineer: Dave Moor

Engineer

Barton-Coe-Vilamaa
225 Airport North Office Park
Fort Wayne, IN 46825
United States

Architect

Barton-Coe-Vilamaa
225 Airport North Office Park
Fort Wayne, IN 46825
United States

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.

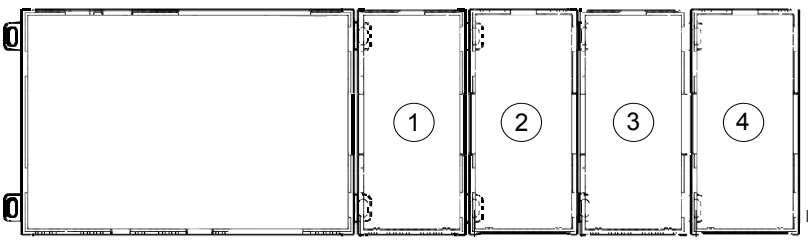
Expansion Modules

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

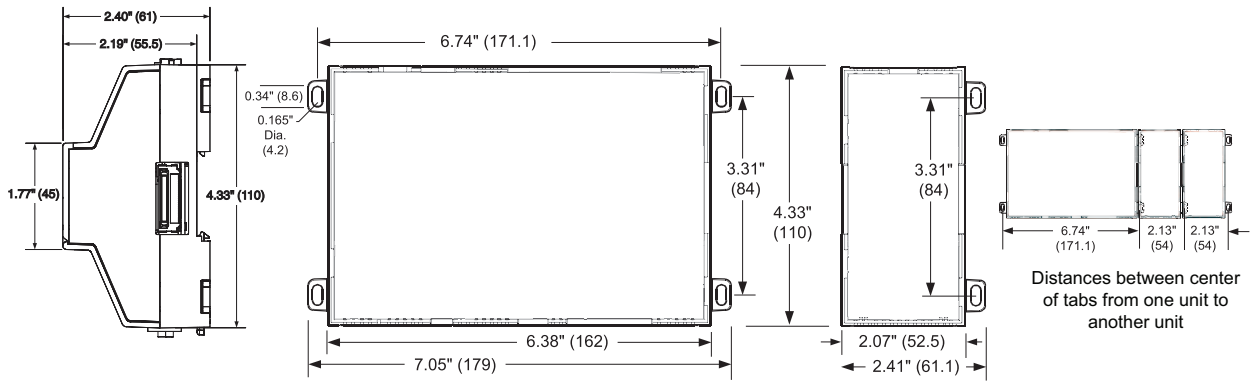
Operating Temperature	-20 to 60ºC (-4 to 140 ºF)
Storage Temperature	-40 to 85ºC (-40 to 185 ºF)
Relative Humidity	5% to 95% - Non condensing
Shipping and Vibration	ASTM D4169, Assurance Level II
MTTF	10 years+

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



EC-BOS-9 Controller

Optional Expansion Module

Global Head Office - 4205 place de Java, Brossard, QC, Canada, J4Y 0C4 - EU Head Office - ZAC de Sacuny, 558 avenue Marcel Mérieux, 69530 Brignais, France

data SHEET

EISK8-100T Skorpion Switch

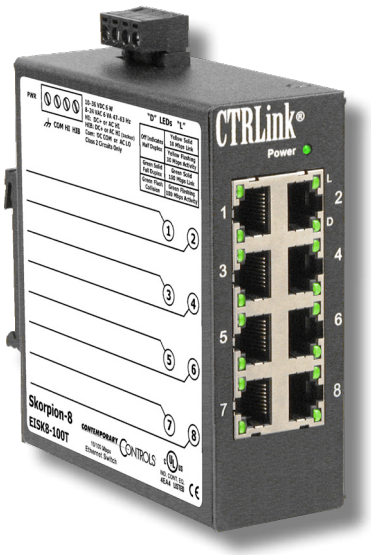
Cost Effective, 100 Mbps-speed — Compact Size

The EISK8-100T Skorpion Switch is an eight-port unmanaged Ethernet switch that provides 100 Mbps performance on all ports to accommodate a range of control devices and workstations commonly found in an automation project. For 10 Mbps legacy devices, the switch will automatically reduce its port-speed accordingly. This low-cost compact unit utilizes a rugged metal enclosure and is intended for installation in control panels using DIN-rail mounting.

This is a plug-and-play Ethernet switch that requires no configuration. All ports automatically configure their data rate and duplex using the Auto-negotiation protocol. Depending on the capability of the link partner, communication is set at 10 or 100 Mbps and at either half- or full-duplex. Each port accommodates either a straight-through or crossover cable using the Auto-MDIX protocol.

The unit is powered from a choice of low-voltages (AC or DC). Redundant power connections are provided for back-up power schemes. LEDs assist in troubleshooting.

- Plug-and-Play operation
- 10BASE-T/100BASE-TX
- Shielded RJ-45 connectors
- Auto-negotiation of speed and duplex
- Auto-MDIX supports cable inversion



- DIN-rail mounting
- Rugged metal enclosure
- Diagnostic LEDs
- Enhanced EMC compliance
- UL 508 listed, c-UL listed, CE mark
- 24 VAC/VDC powered

CTRLink®

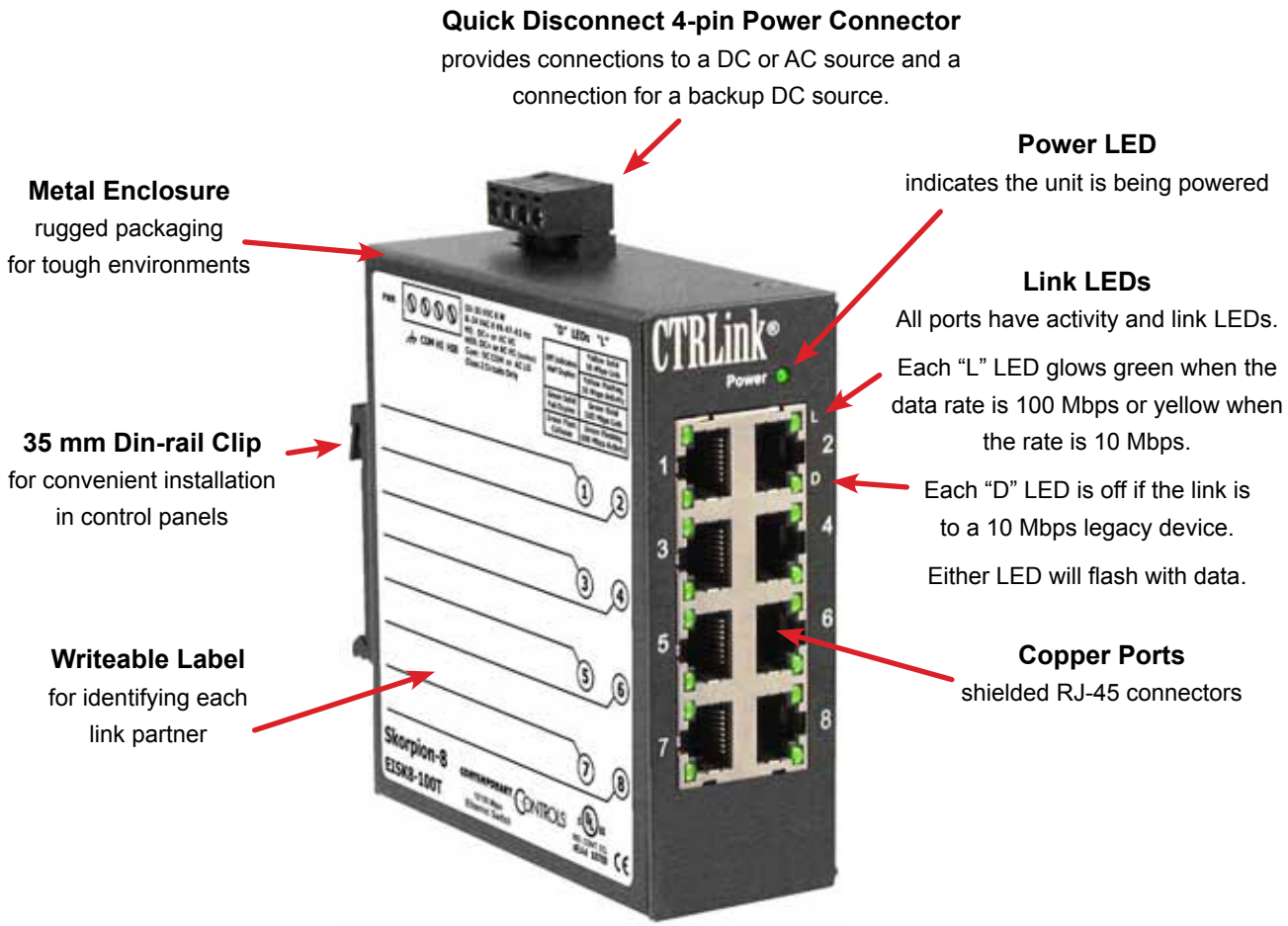
Overview

The Skorpion Switch is intended for control panel installations where DIN-rail space is at a premium by requiring a width of only 41 mm of rail space. A metal DIN-rail clip attached to the aluminium enclosure can survive the toughest installation. A writable side label allows the installer an opportunity to document field cabling locations right on the unit.

The switch can powered from either a 10–36 VDC or 24 VAC (±10%) source. Its half-wave rectified low-voltage power supply allows the sharing of power with other 24 VAC/VDC control devices from a common power supply. With redundant power connections, a backup power scheme can be supported. A removable power connector facilitates the servicing of the unit.

LEDs built into the connector indicate data rate and activity on each of the eight ports — greatly assisting in troubleshooting connection issues.

The switch is UL 508 Listed and c-UL Listed for Industrial Control Equipment. It complies with CFR 47 Part 15 Class A, and carries the CE Mark. It is RoHS compliant.

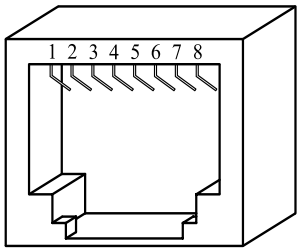


Specifications

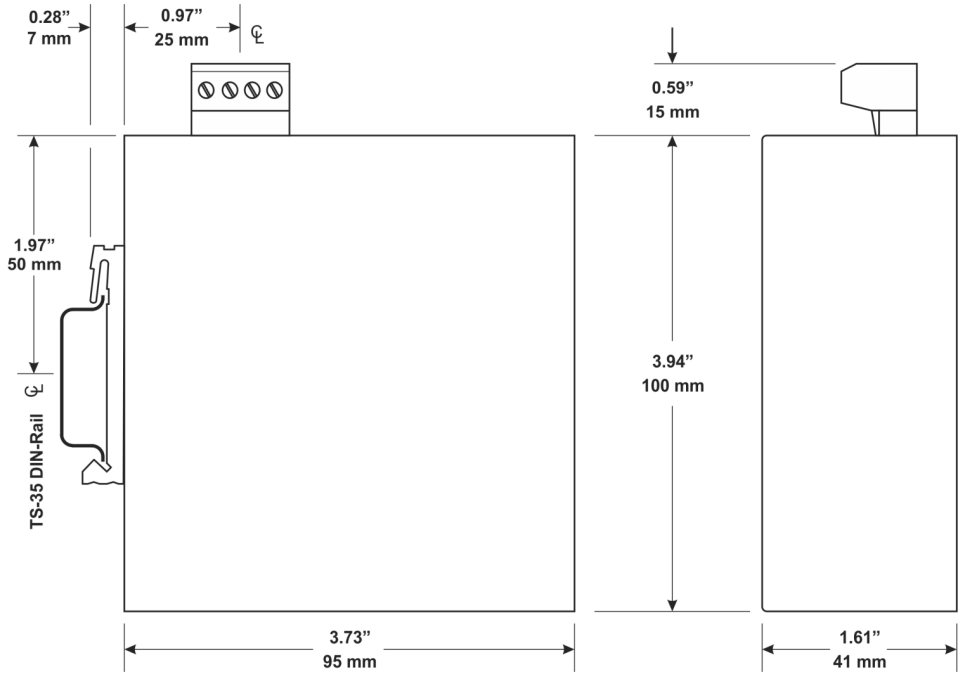
Power Requirements	10–36 VDC 5 W or 24 VAC ±10% 7 VA 47–63 Hz
Operating Temperature	0°C to 60°C
Storage Temperature	–40°C to 85°C
Relative Humidity	10–95%, non-condensing
Protection	IP30
Mounting	TS-35 DIN-rail
Shipping Weight	1 lb (0.45 kg)
Ethernet Communications	IEEE 802.3 10/100 Mbps data rate using RJ-45 connectors, 100 m (max)
LEDs	Power — Green = power OK "L" LEDs — Green = 100 Mbps communication established Yellow = 10 Mbps communication established Flashing = data transmissions occurring "D" LEDs — Green = Full-duplex communication established Off = Half-duplex communication established
Regulatory Compliance	CE Mark; CFR 47, Part 15 Class A; RoHS; UL 508 Industrial Control Equipment

RJ-45 Connector Pin Assignments

Pin	Function
1	TD+
2	TD–
3	RD+
4	Not Used
5	Not Used
6	RD–
7	Not Used
8	Not Used



Mechanical Drawing

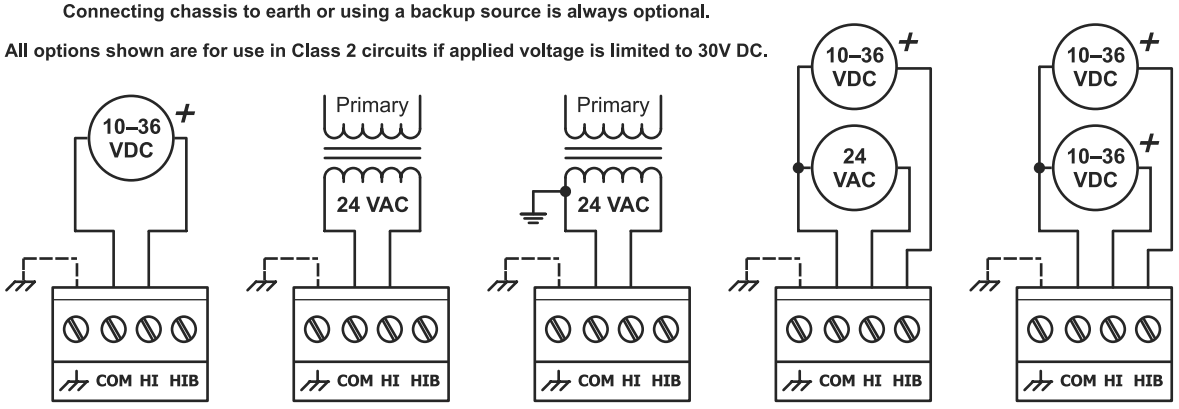


Power Considerations

Applied voltage must be in the specified range and deliver a current commensurate with power consumption. The recommended size for solid power conductors is 16–20 AWG; and for stranded conductors use 16–18 AWG. Zero volts (COM) is isolated from chassis (earth). Input connections are reverse-polarity protected.

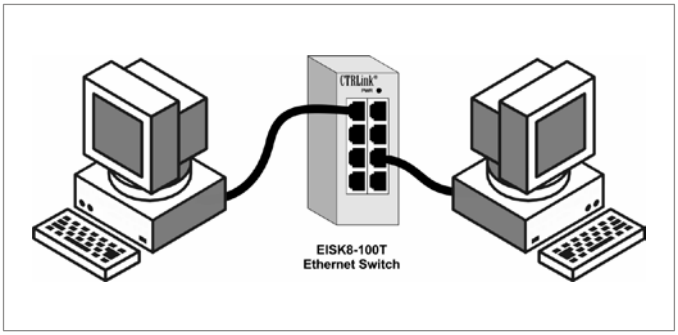
Input power: 10–36 VDC or 24 VAC ± 10%, 47–60 Hz.
Connecting chassis to earth or using a backup source is always optional.

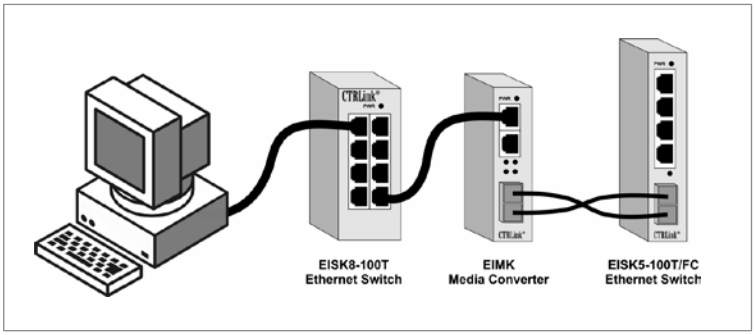
All options shown are for use in Class 2 circuits if applied voltage is limited to 30V DC.



DC Powered | AC Powered | AC Powered with Grounded Secondary | AC Powered with DC Backup | Redundant DC Powered

Typical Switch Installations





Ordering Information

Model	*Description*
EISK8-100T	Skorpion 8-Port 10/100Mbps Switch

United States
Contemporary Control Systems, Inc.
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Fax:+1 630 963 0109

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Fuggerstraße 1 B
04158 Leipzig
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Fax: +49 341 520359 16

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www.ccontrols.eu

Product Description

The iO-BAC-RTR from iO HVAC Controls is a BACnet/IP to BACnet MS/TP router with built-in Modbus gateway. This compact device is din-rail mountable which makes it ideal for panel mounting. It can be powered by a hard wired 12-24V ac or dc supply or via USB connection.

Product Features

- One ethernet port
- Two RS-485 connections
- 12-24Vac/dc power with screw terminal connections
- mini USB power connection
- Ethernet 10/100 Mbps half/full duplex with auto-negotiation and auto-MDIX
- Indicator LEDS monitor signal and power

Product Specifications

Power Supply:	12-24V ±10% ac/dc (removable 2-wire terminal block) 5Vdc, mini USB socket
Current draw:	60mA (typical) / 120mA (max) @ 24Vdc
Power Consumption:	3W max
Operating Temperature:	14 to 176°F (-10 to 80°C)
Storage Temperature:	-40 to 194°F (-40 to 90°C)
Operating Humidity:	0 to 95% non-condensing
Protection:	IP30
Dimensions:	4.76” x 2.95”W x 1.14”D (121 x 75 x 29 mm)
Weight:	0.5 lb. (0.2 kg)
DIN Mount:	35 mm
Enclosure:	Metal
Ethernet:	IEEE 802.3 10/100 Mbps data rate Half/full duplex 10BASE-T, 100BASE-TX physical layer RJ45 Ethernet Jack 100m (max) CAT5 cable length
RS485:	ANSI/ASHRAE 135 (ISO 16484-5) Baud rates: 9600, 19200, 38400, 57600, 76800, 115200 1500V isolated EIA-485 interface TVS and PTC for 15kv air/8kv contact ESD protection 1/8 device load, 3937 ft. (max) cable length (2952 ft. on 115200bps) Removable 2-wire screw terminal block DIP switch for 120Ω bus terminator DIP switch for 519Ω bus biasing
Accessory:	Three 2-wire screw terminals, 3 ft. mini USB cable
Regulatory Compliance:	CE Mark; CFR 47, Part 15 Class B

Website: www.jacksonsystems.com
E-mail: info@jacksonsystems.com
5418 Elmwood Avenue
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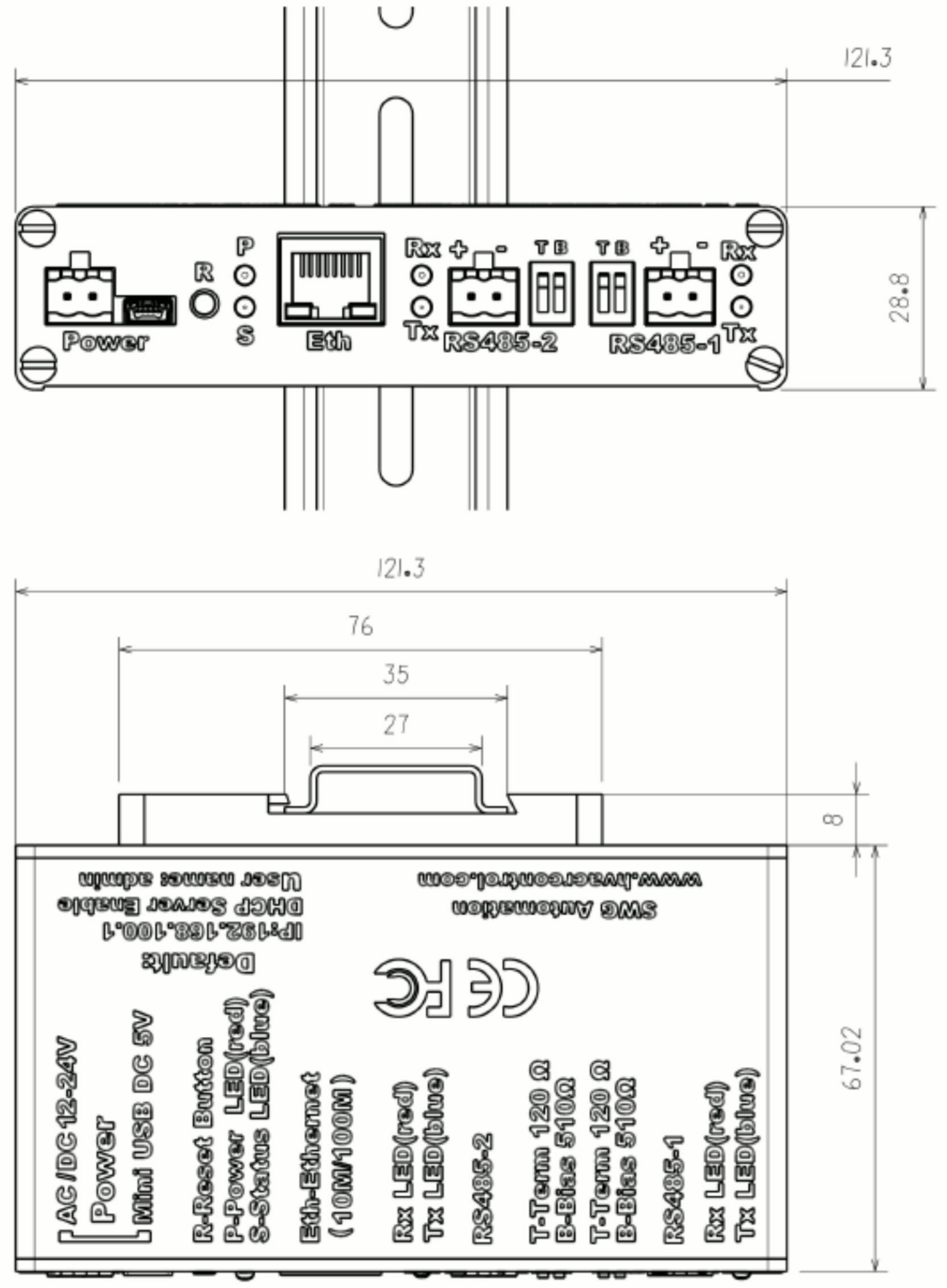
Toll-Free: 888.652.9663
Fax: 317.227.1034

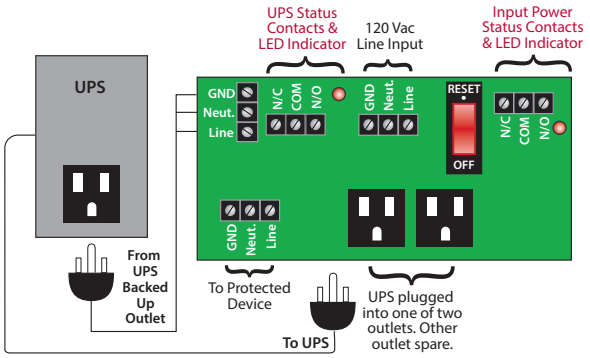
Product Dimensions (in millimeter)



UNINTERRUPTIBLE POWER SUPPLY IN KIT

PSH850-UPS-STAT

Kit Consisting of Enclosed Power Control Center Model PSH2C2RB10-L (10 Amp Switch / Circuit Breaker, Two (2) 120 Vac Outlets, Terminals, 120 Vac Input) with a 850 VA UPS. (Status Contacts)



SINUSOIDAL OUTPUT OR PURE SINE WAVE OUTPUT

Shown Without Cover

Shown With Cover

SPECIFICATIONS

UPS

UPS: 850VA
Backup Time: 2 Min. @ Full 850 VA Load
8 Min. @ 1/2 Load
Input: 120 Vac, 12 Amp
Sine Wave Output: 120 Vac, 7.1 Amp
Max Load: 510 Watt
Frequency: 50/60 Hz
Temperature Rating of UPS: 32 to 95° F
UPS Transfer Time: 4ms
Approvals: UL Listed, UL1778
Model: Cyber Power Model 850PFCLCD

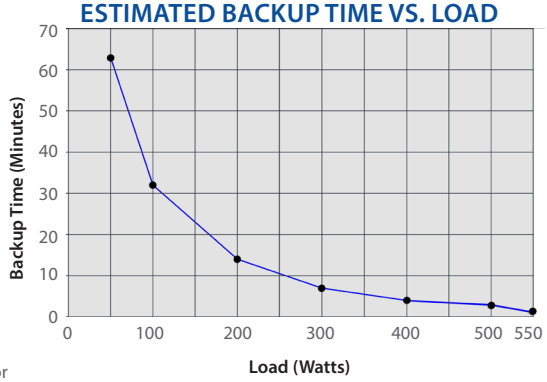
PSH2C2RB10-L

Operating Temperature: -30 to 140° F
Humidity Range: 5 to 95% (noncondensing)
Main Breaker ON/OFF: Switch / Breaker (10 Amp)
Approvals: UL Listed, UL916, C-UL, CE, RoHS
Dimensions: 14.000˝ x 16.000˝ x 6.000˝ Metal Housing with Screw Cover

Line Input Status Contacts and UPS Output Status Contacts Rated:
10 Amp @ 277 Vac General Use
10 Amp @ 30 Vdc (N/O)
7 Amp @ 30 Vdc (N/C)
1/2 HP @ 125 Vac
1/4 HP @ 277 Vac
1000 VA @ 120 Vac Magnetic Ballast (N/C)
C300 Pilot Duty
16.8 VA @ 24 Vac Pilot Duty

Notes:
- To order without UPS, so that any other commercial UPS with appropriate ratings and within housing space limitations may be used, see model PSH2C2RB10-L.
- To order interface board for replacement or for separate use, order model PSMN2C2RB10.
- Typical battery life: 3-6 years, depending on number of discharge/recharge cycles

ESTIMATED BACKUP TIME VS. LOAD



Input Power Status Contacts and LED Indicator
The input power status contacts and LED indicate the presence of normal power. When normal power is present, the relay is energized, and the LED is on. When normal power is lost, the relay is de-energized, and the LED is off.

UPS Status Contacts and LED Indicator
The UPS status contacts and LED indicate power from the UPS. When normal power is present, the relay is energized, and the LED is on. When normal power is lost, the relay will be energized as long as the UPS can sustain it (until the UPS battery is depleted), and the LED is on.

CyberPower

CP850PFCLCD PFC Sinewave UPS

Offers significant energy savings, battery backup and surge protection.

The CyberPower CP850PFCLCD PFC Sinewave UPS System with sine wave output and multifunction LCD safeguards mid- to high-end computer systems, servers and networking hardware that use conventional and Active Power Factor Correction (PFC) power supplies.

Its Automatic Voltage Regulation (AVR) technology delivers clean and consistent AC power, protecting connected equipment and preventing costly business interruptions. This UPS system is ENERGY STAR® qualified with patented GreenPower UPS™ Bypass circuitry to save on energy costs by reducing energy consumption and heat buildup.

This UPS system is ENERGY STAR® qualified with patented GreenPower UPS™ Bypass circuitry to save on energy costs by reducing energy consumption and heat buildup.

A Three-Year Warranty ensures that this UPS has passed our highest quality standards in design, assembly, material and workmanship, further protection is offered by a $250,000 Connected Equipment Guarantee.

Typical Applications

- Desktop Computers
- Home Networking/VoIP
- Personal Electronics
- Home Theater Devices

Features

- 850VA / 510W
- Line Interactive Topology
- Automatic Voltage Regulation
- GreenPower UPS™
- ENERGY STAR® Qualified
- Multifunction LCD Panel
- Mini-Tower Form Factor
- RJ11/RJ45 and Coax RG6 Protection
- 10 Outlets with USB and Serial Ports
- EMI/RFI Filters
- PowerPanel® Personal Edition
- 3-Year Warranty

CP850PFCLCD PFC Sinewave Series UPS

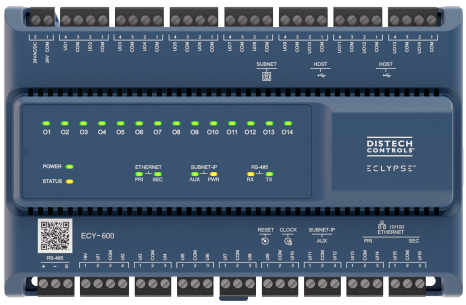
Offers significant energy savings, battery backup and surge protection.

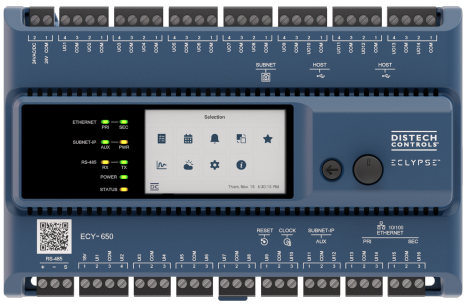
GENERAL	
UPS Topology	Line Interactive
Energy Saving	GreenPower UPS™ Bypass Technology
ENERGY STAR® Qualified	Yes
Active PFC Compatible	Yes
INPUT	
Voltage	90Vac - 139Vac
Adjustable Voltage Range	78Vac - 142Vac
Automatic Voltage Regulation	12%
Frequency	57Hz - 63Hz
Plug Type	NEMA 5-15P
Plug Style	Right Angle, 45° Offset Right
Cord Length	5′
OUTPUT	
VA	850
Watts	510
On Battery Voltage	120Vac ± 5%
On Battery Frequency	60Hz ± 1%
On Battery Waveform	Sine Wave
Outlets - Total	10
Outlet Type	NEMA 5-15R
Outlets - Battery & Surge Protected	5
Outlets - Surge-Only Protected	5
USB Charge	No
Overload Protection	Internal circuitry limiting / circuit breaker
Transfer Time	4ms
BATTERY	
Runtime at Half Load (min)	10
Runtime at Full Load (min)	2
Battery Type	Sealed Lead-Acid
Battery Size	12V/8.5AH
Hot-Swappable	No
Replacement Battery	RB1280A
Battery Quantity	1
User Replaceable	Yes
Typical Recharge Time	8 Hours
SURGE PROTECTION & FILTERING	
Surge Suppression	1,030 Joules
Phone RJ11 / Ethernet RJ45	1-In, 1-Out (Combo)
Coax Protection RG6	1-In, 1-Out

MANAGEMENT & COMMUNICATIONS	
Multifunction LCD Panel	Displays: Current/Load Level, Runtime, Battery Level, AVR In Use, Battery In Use, Input Voltage, Output Voltage, Output Frequency, Overload, Wiring Fault, Silent Mode
HID Compliant USB Port	Yes
Serial Port	Yes
EPO Port	No
Management Cable	USB Cable
LED Indicators	Power On, Wiring Fault
Audible Alarms	On Battery, Low Battery, Overload, Fault
Software	PowerPanel® Personal Edition
PHYSICAL	
Form Factor	Mini-Tower
Dimensions (WxHxD) (in.)	3.9 x 9.1 x 10.4
Weight (lbs.)	14.9
ENVIRONMENTAL	
Operating Temperature	32°F to 104°F / 0°C to 40°C
Operating Relative Humidity	0% - 90% non-condensing
CERTIFICATIONS	
Safety	UL1778, cUL 107.3, FCC DOC Class B
Environmental	RoHS Compliant
WARRANTY	
Product Warranty	3 Years Limited
Connected Equipment Guarantee	Lifetime
CEG Amount	$250,000

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

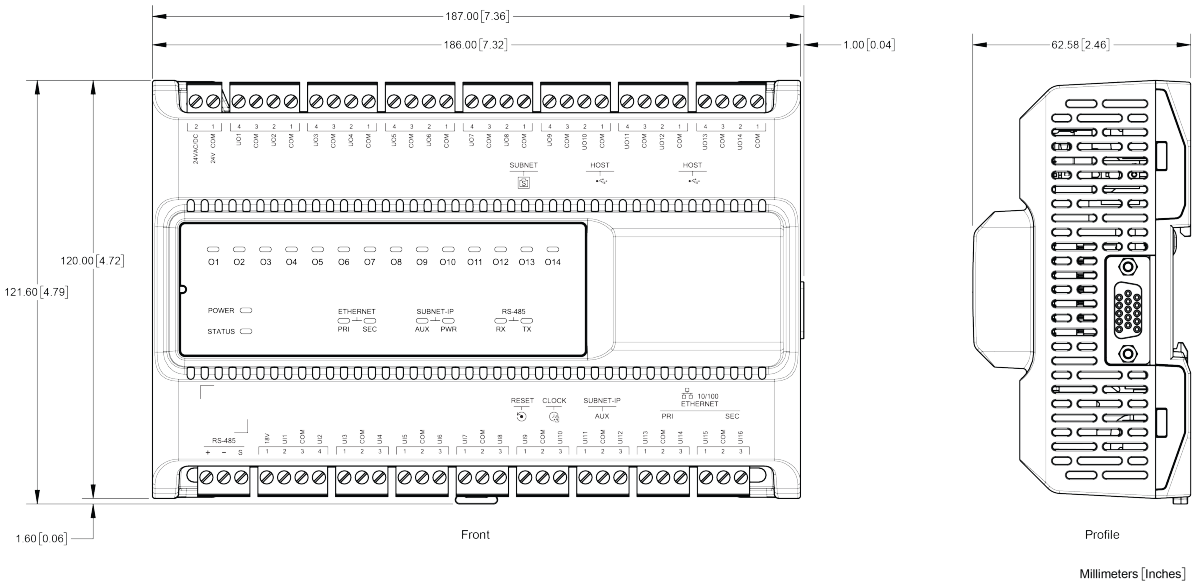


Figure 1: Controllers not equipped with an operator interface

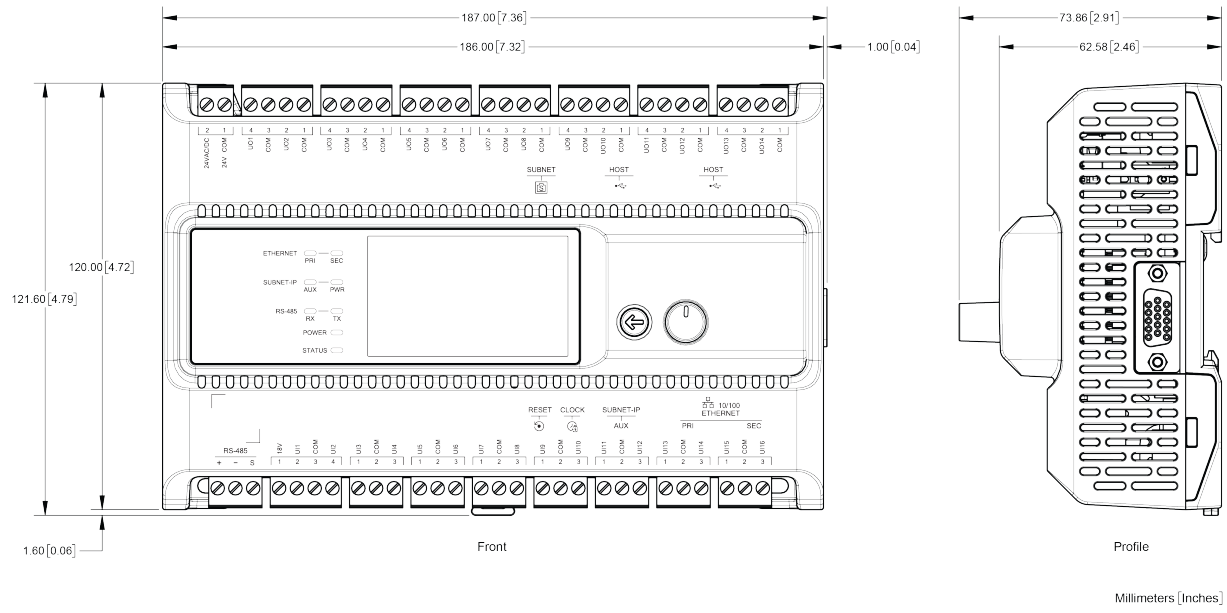
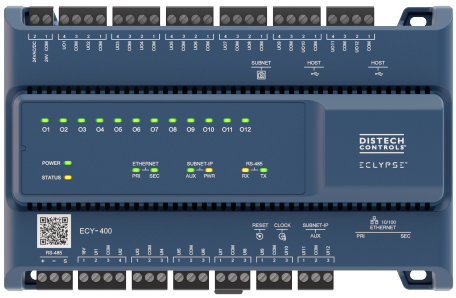
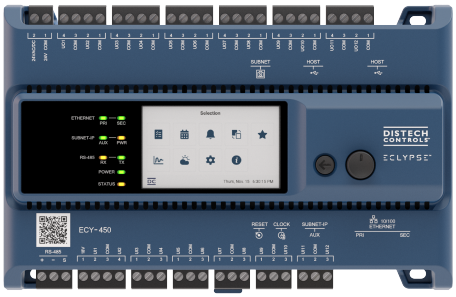


Figure 2: Controllers equipped with an operator interface

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

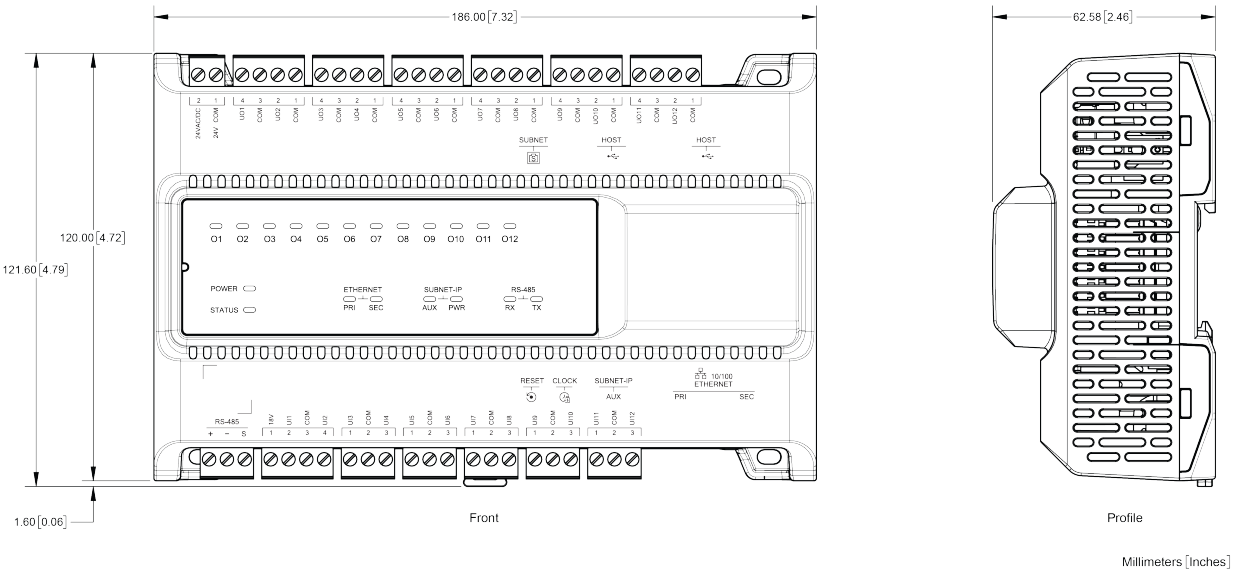


Figure 1: Controllers not equipped with an operator interface

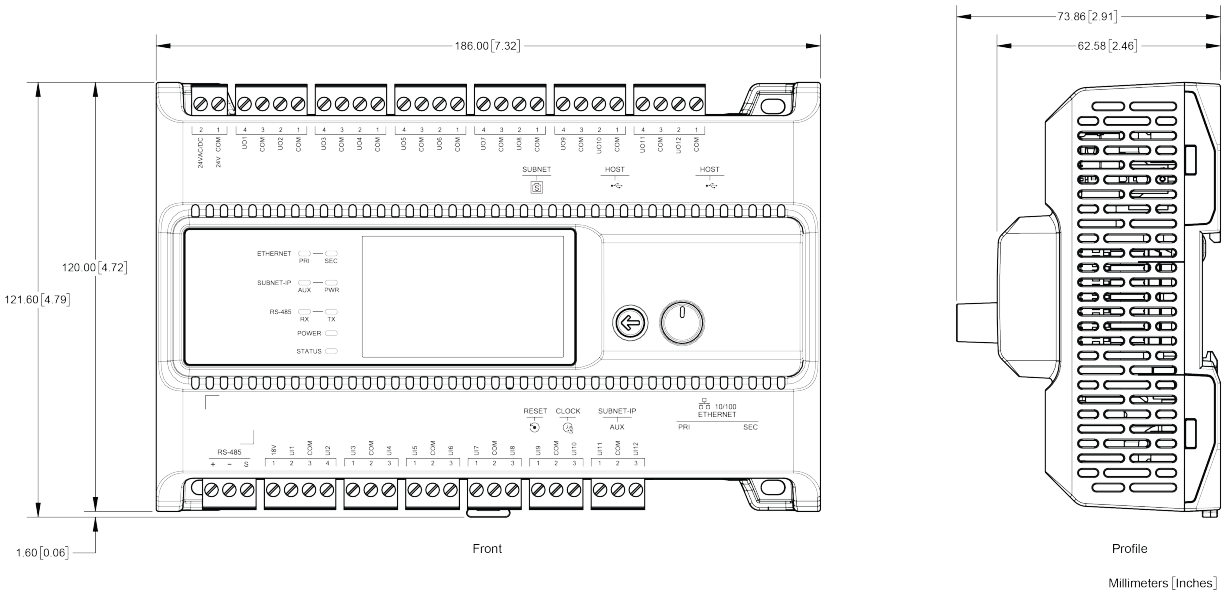


Figure 2: Controllers equipped with an operator interface

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

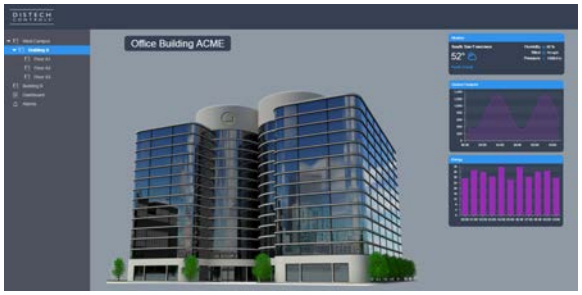
The Connected Equipment Controller is a plug and play device that saves time and money since no programming or graphic design is needed as it comes with ENVYSION™ Viewer and the associated preloaded rooftop unit applications and graphics pre-installed.

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

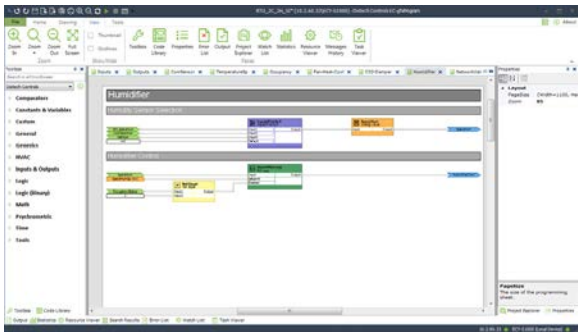
xpressENVYSION offers a simplified and streamlined experience in a workflow oriented, drag & drop GUI environment while ENVYSION still offers the full customization features and editing environment.

- 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

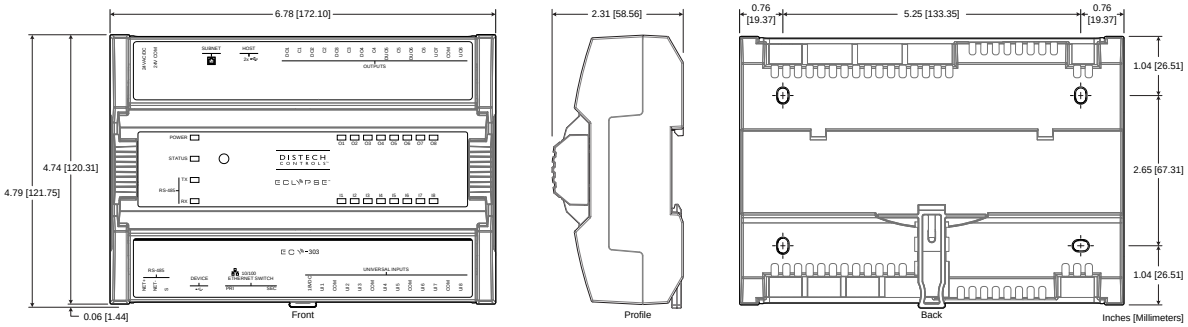
Communications Ports:

- ☐ 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.

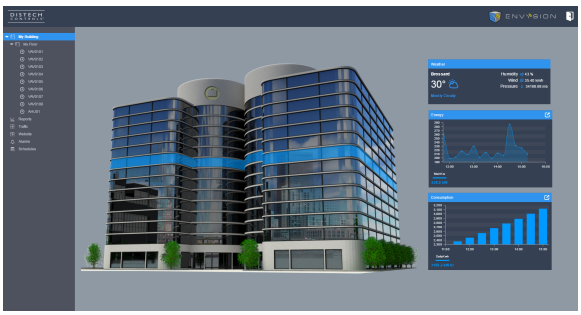
All standard terminal applications, such as fan coil units, chilled beams and ceilings, are included.

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

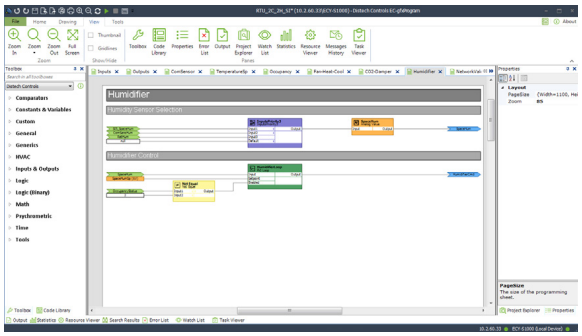
The embedded ENVYSION viewer provides fast loading of visual applications through native web pages with absolutely no browser plug-ins. Host and view preloaded graphics, and access schedules, alarms, and trend logs directly from your ECLYPSE Connected Terminal Unit Controller.

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

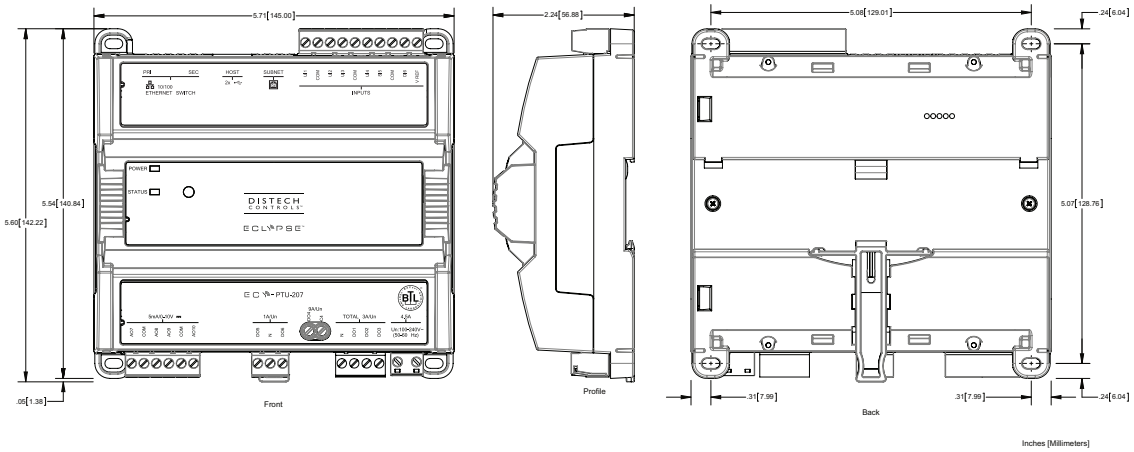
- ☐ USB Connections — 2 × USB 2.0 Ports
  1 × Micro-USB 2.0 Port
- ☐ Subnet — RJ-45

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

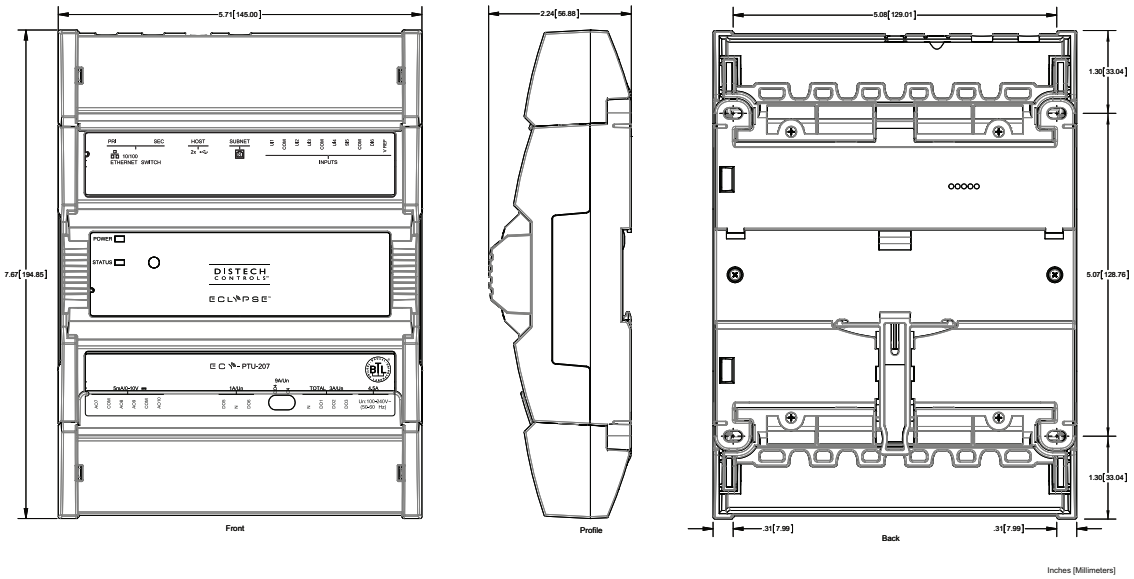
Mechanical

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

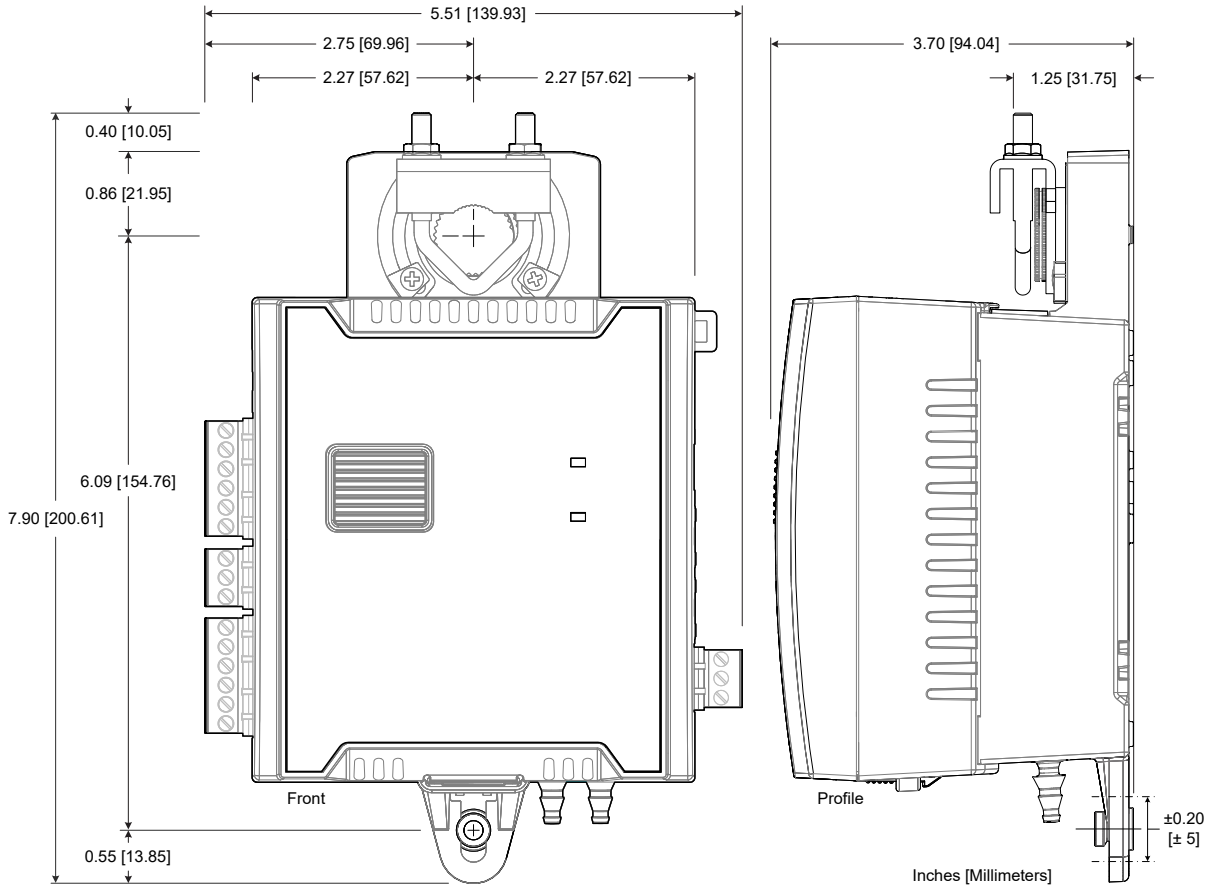


Figure 1: ECY-VAV Controller Dimensions

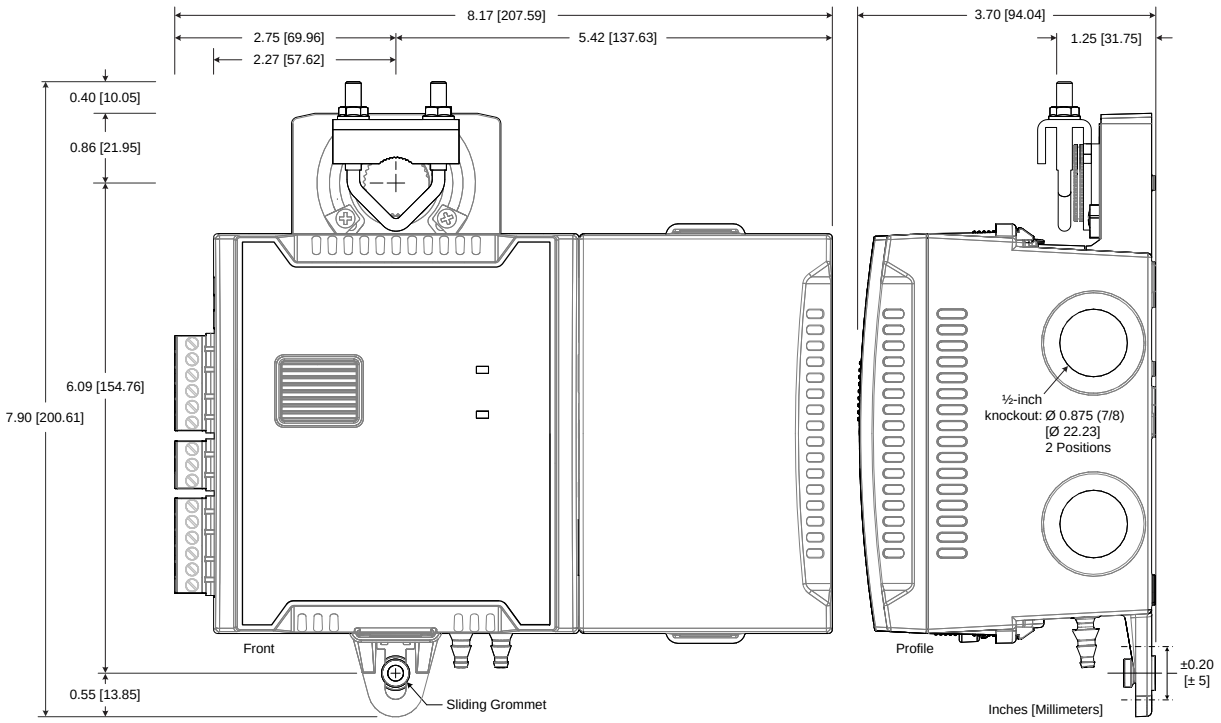


Figure 2: ECY-VAV-PoE Controller Dimensions

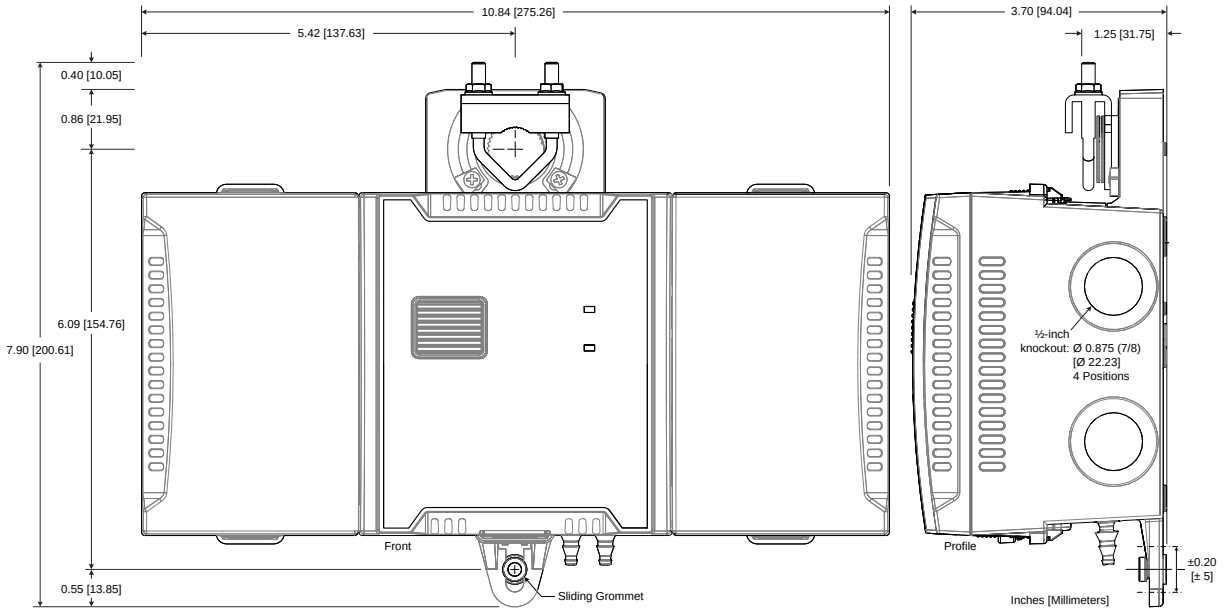


Figure 3: ECY-VAV Controller with Terminal Covers Dimensions

JACKSON SYSTEMS
Controls Done Right™

Distech LCD Display Communicating Sensor

Allure EC-Smart-Vue
Product Data

Product Description

The Allure EC-Smart-Vue is specifically designed to interface with Distech Controls' ECL and ECB controllers. This communicating sensor with backlit display provides precision local temperature sensing, displays system status, and provides a variety of control functions that can be accessed by room occupants.

The innovative ECO-Vue™ leaf pattern, graphically indicates energy consumption in real time to promote an occupant's energy-conscious behavior. The more leaves appear in the LCD display, the more energy efficiency is being achieved, while less leaves encourages the occupant to take corrective action to optimize the system's environmental performance.

Through its user-friendly interface, occupants can view and adjust environmental settings to their liking, for example, view the space temperature, outside air temperature, occupancy status, adjust the setpoint and apply occupancy overrides.

The Allure EC-Smart-Vue can be customized using the EC-gfxProgram tool where you can fully adapt the display for the targeted application and setup.

A fully configurable password protected technician mode allows an installer to perform commissioning and troubleshooting. When connected to an ECB-VAV or ECL-VAV series controller with its pre-loaded application, commissioning can start immediately after installation. The Allure EC-Smart-Vue sensor can be used as a hand-held tool to select the appropriate controller application for the type of HVAC equipment to be controlled, to perform air balancing of the system without requiring an onsite controls engineer, and to troubleshoot the system.

Product Features

- "4-in-1" communicating sensors—one wire, one connection.
- Encourage occupants to have greener habits with the ECO-Vue icon while reducing energy costs.
- Optimize energy use according to the actual building's conditions:
- Commission VAV controllers immediately after installation by selecting the built-in controller application and performing system air balancing with the Allure EC-Smart-Vue sensor to get the HVAC system up and running right away.
- Occupants can override the HVAC mode and view and adjust the setpoint and fan speed for improved personal comfort.
- Slim, compact style, and clean lines are well received by architects and building owners.
- Clear and bright LCD display provides real-time access to temperature and other system information such as setpoint, occupancy status, HVAC mode, etc.
- Both power and communications pass through a single Cat 5e cable for reduced installation costs and for easier installation or system retrofit.

Product Applications

Zone control for Absolute comfort:

- Precise environmental control
- Occupancy override allows the system to adjust to individual needs

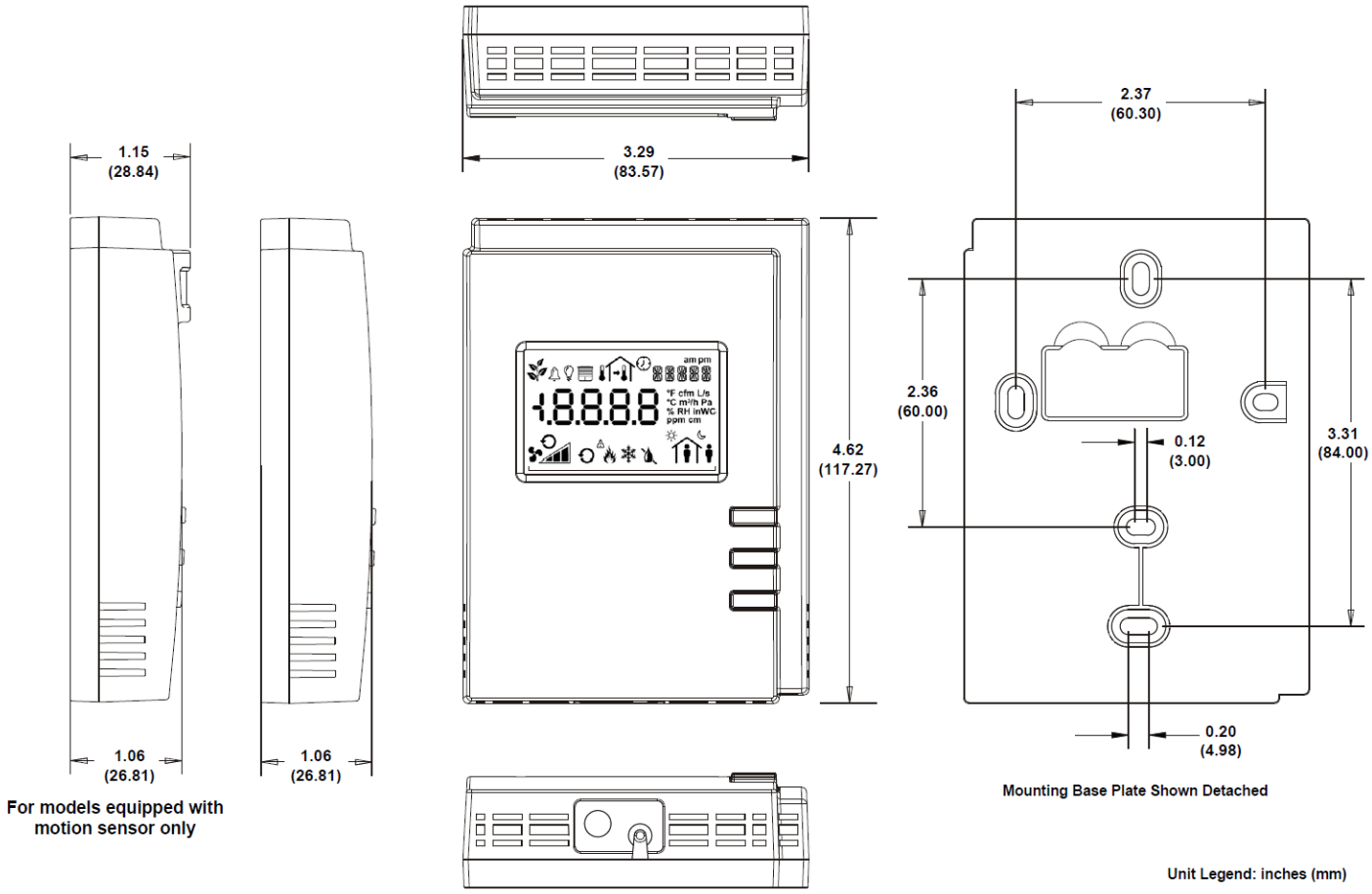
Related Products

- ECL Series LonWorks Controllers
- ECB Series BACnet Controllers

Website: www.jacksonsystems.com
E-mail: info@jacksonsystems.com
5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

Allure EC-Smart-Vue
Distech LCD Display Communicating Sensor
Product Data

Product Dimensions



Product Specifications

General

Part Number:	PDITE-SMRTVUE-01
Voltage:	16Vdc maximum, Class 2
Power:	1.0 VA
LCD Display:	1.85” x 1.18” (47 mm x 30 mm) w/backlight
Operating Temp.:	41°F to 104°F (5°C to 40°C)
Storage Temp.:	-4°F to 122°F (-20°C to 50°C)
Relative Humidity:	0 to 95% Non-condensing
Material:	ABS
Color:	White
Dimensions:	3.29” x 4.62” x 1.06” (83.57mm x 117.27mm x 26.81mm)
Shipping Weight:	0.4 lb (0.18 kg)
Mounting:	Wall mounting through mounting holes (see figure above for hole positions)

Communications

Rate:	38400 bps
Type:	RS-485
Wiring:	Cable length: 600’ (180 m) maximum
Cable Type:	T568B Cat 5e network cable, 4 twisted pairs
Connectors:	IN: RJ-45, OUT: RJ-45 (pass-through for daisy chain connection Network Access Jack: 1/8” (3.5mm) stereo plug connector

Website: www.jacksonsystems.com
E-mail: info@jacksonsystems.com
5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

Product Specifications (continued)

Temperature Sensor

Type:	10KΩ NTC Thermistor
Range:	41°F to 104°F (5°C to 40°C)
Accuracy:	±0.9°F; ±0.5°C
Resolution:	0.18°F; 0.1°C

Agency Approvals

UL Listed:	UL916 Energy management equipment
Material:	UL94V-1

Electromagnetic Compatibility

CE:	EN 61000-6-3:2007 EN 61000-6-1:2007
FCC:	Part 15, subpart B, class B

1. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

Product Warranty & Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards and carry a two-year warranty. Distech Controls is an ISO 9001 registered company. Distech Controls' products provide both the contractor and the end user with the flexibility of using “best-of-breed” products in system design.

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JACKSON SYSTEMS
Controls Done Right™

Distech LCD Display Communicating Sensor

Allure EC-Smart-Vue-C
Product Data

Product Description

The Allure EC-Smart-Vue-C is specifically designed to interface with Distech Controls' ECL and ECB controllers. This communicating sensor with backlit display provides precision local temperature and CO2 sensing, displays system status, and provides a variety of control functions that can be accessed by room occupants.

The innovative ECO-Vue™ leaf pattern, graphically indicates energy consumption in real time to promote an occupant's energy-conscious behavior. The more leaves appear in the LCD display, the more energy efficiency is being achieved, while less leaves encourages the occupant to take corrective action to optimize the system's environmental performance.

Through its user-friendly interface, occupants can view and adjust environmental settings to their liking, for example, view the space temperature, outside air temperature, occupancy status, adjust the setpoint and apply occupancy overrides.

The Allure EC-Smart-Vue can be customized using the EC-gfxProgram tool where you can fully adapt the display for the targeted application and setup.

A fully configurable password protected technician mode allows an installer to perform commissioning and troubleshooting. When connected to an ECB-VAV or ECL-VAV series controller with its pre-loaded application, commissioning can start immediately after installation. The Allure EC-Smart-Vue sensor can be used as a hand-held tool to select the appropriate controller application for the type of HVAC equipment to be controlled, to perform air balancing of the system without requiring an onsite controls engineer, and to troubleshoot the system.

DISTECH CONTROLS™

CE FC RoHS

Product Features

- "4-in-1" communicating sensors—one wire, one connection, four (4) sensing capabilities (temperature and CO2).
- Encourage occupants to have greener habits with the ECO-Vue icon while reducing energy costs.
- Commission VAV controllers immediately after installation by selecting the built-in controller application and performing system air balancing with the Allure EC-Smart-Vue sensor to get the HVAC system up and running right away.
- Occupants can override the HVAC mode and view and adjust the setpoint and fan speed for improved personal comfort.
- Slim, compact style, and clean lines are well received by architects and building owners.
- Clear and bright LCD display provides real-time access to temperature and other system information such as setpoint, occupancy status, HVAC mode, etc.
- Both power and communications pass through a single Cat 5e cable for reduced installation costs and for easier installation or system retrofit.
- The patented ABC Logic self-calibration system eliminates the need for manual CO2 calibration in most applications.
- Lifetime CO2 calibration guaranteed when using ABC Logic.

Product Applications

Zone control for Absolute comfort:

- Precise environmental control
- Occupancy override allows the system to adjust to individual needs

Related Products

- ECL Series LonWorks Controllers
- ECB Series BACnet Controllers

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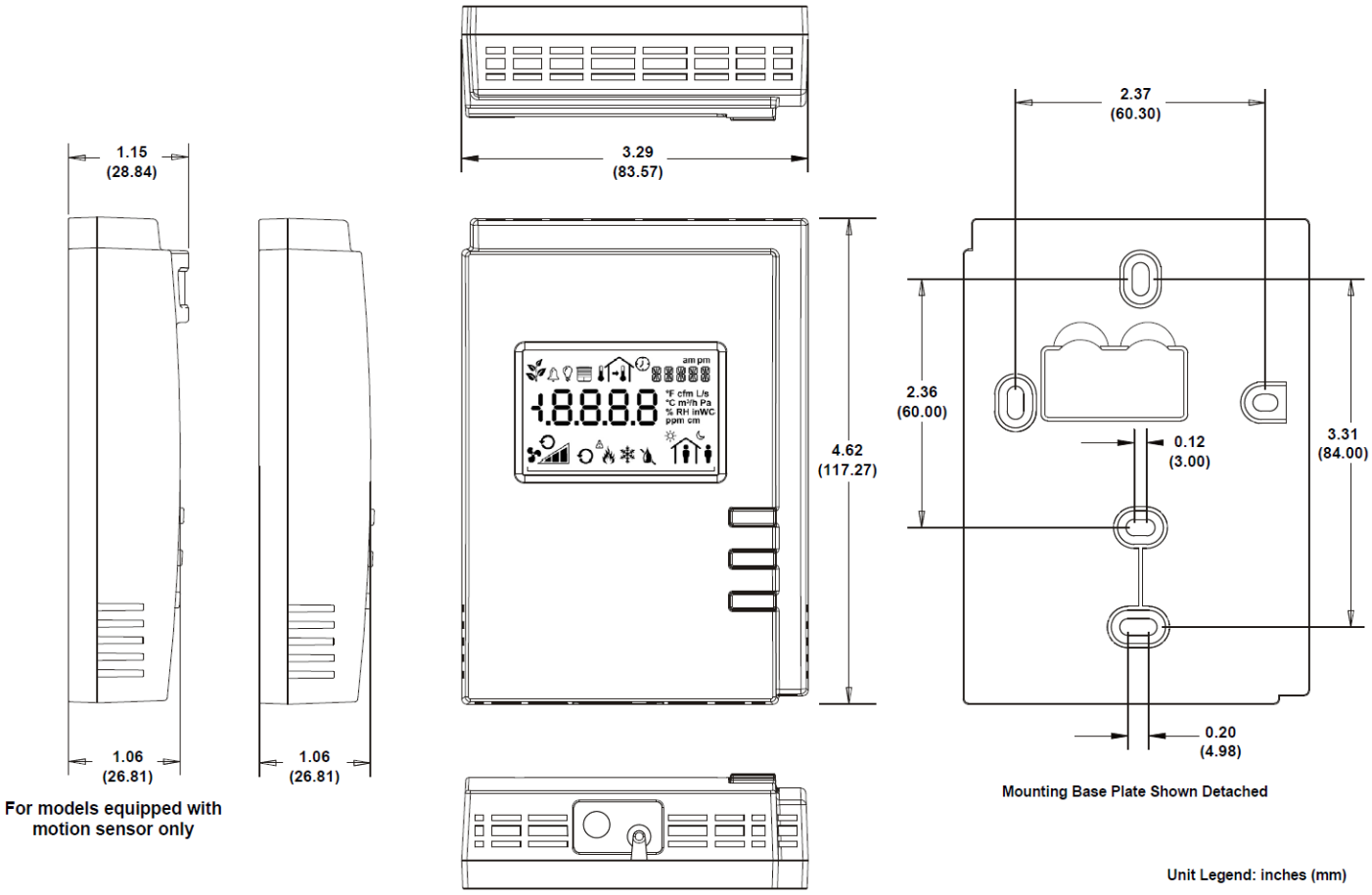
Allure EC-Smart-Vue-C
Distech LCD Display Communicating Sensor
Product Data

Product Dimensions



Product Specifications

General

Part Number:	PDITE-SMRTVUC-00
Voltage:	16Vdc maximum, Class 2
Power:	5.25 VA
LCD Display:	1.85” x 1.18” (47 mm x 30 mm) w/backlight
Operating Temp.:	41°F to 104°F (5°C to 40°C)
Storage Temp.:	-4°F to 122°F (-20°C to 50°C)
Relative Humidity:	0 to 95% Non-condensing
Material:	ABS
Color:	White
Dimensions:	3.29” x 4.62” x 1.06”/1.15” (83.57mm x 117.27mm x 26.81/28.80mm)
Shipping Weight:	0.44 lb (0.2 kg)
Mounting:	Wall mounting through mounting holes (see figure above for hole positions)

Communications

Rate:	38400 bps
Type:	RS-485
Wiring:	Cable length: 600’ (180 m) maximum
Cable Type:	T568B Cat 5e network cable, 4 twisted pairs
Connectors:	IN: RJ-45, OUT: RJ-45 (pass-through for daisy chain connection Network Access Jack: 1/8” (3.5mm) stereo plug connector

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Product Specifications (continued)

Temperature Sensor

Type:	10KΩ NTC Thermistor
Range:	41°F to 104°F (5°C to 40°C)
Accuracy:	±0.9°F; ±0.5°C
Resolution:	0.18°F; 0.1°C

Electromagnetic Compatibility

CE:	EN 61000-6-3:2007 EN 61000-6-1:2007
FCC:	Part 15, subpart B, class B

Agency Approvals

UL Listed:	UL916 Energy management equipment
Material:	UL94V-1

CO_2 Sensor

Measurement Range:	PDITE-SMRTVUCHM-00
Operating Elevation:	16Vdc maximum, Class 2
Warm-up Time:	<2 min. (operational), 10 min. (maximum)
CO2 Accuracy:	400-1250 ppm ±30 ppm or 3% of reading, whichever is greater[1] 1250-2000 ppm ±5% of reading +30 ppm[1]
Temperature Dependence:	0.11% of FS per °F (0.2% per °C)
Stability:	<2% of FS over life of sensor (15 years)
Pressure Dependence:	0.135% of reading per mm Hg; Software adjustable
Sensing Method:	Non-dispersive infrared (NDIR) absorption Gold-plated optics
Calibration Method:	Patented ABC Logic self calibration algorithm

1. Tolerance based on span gas of ±2% and ABC Logic enabled.
2. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

Product Warranty & Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards and carry a two-year warranty. Distech Controls is an ISO 9001 registered company. Distech Controls' products provide both the contractor and the end user with the flexibility of using “best-of-breed” products in system design.

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Allure EC-Smart-Vue-CH
Distech LCD Display Communicating Sensor
Product Data

Product Description

The Allure EC-Smart-Vue-CH is specifically designed to interface with Distech Controls' ECL and ECB controllers. This communicating sensor with backlit display provides precision local temperature, humidity, and CO2 sensing, displays system status, and provides a variety of control functions that can be accessed by room occupants.

The innovative ECO-Vue™ leaf pattern, graphically indicates energy consumption in real time to promote an occupant's energy-conscious behavior. The more leaves appear in the LCD display, the more energy efficiency is being achieved, while less leaves encourages the occupant to take corrective action to optimize the system's environmental performance.

Through its user-friendly interface, occupants can view and adjust environmental settings to their liking, for example, view the space temperature, outside air temperature, occupancy status, adjust the setpoint and apply occupancy overrides.

The Allure EC-Smart-Vue can be customized using the EC-gfxProgram tool where you can fully adapt the display for the targeted application and setup.

A fully configurable password protected technician mode allows an installer to perform commissioning and troubleshooting. When connected to an ECB-VAV or ECL-VAV series controller with its pre-loaded application, commissioning can start immediately after installation. The Allure EC-Smart-Vue sensor can be used as a hand-held tool to select the appropriate controller application for the type of HVAC equipment to be controlled, to perform air balancing of the system without requiring an onsite controls engineer, and to troubleshoot the system.

Product Features

- "4-in-1" communicating sensors—one wire, one connection, four (4) sensing capabilities (temperature, humidity, CO2, and motion).
- Encourage occupants to have greener habits with the ECO-Vue icon while reducing energy costs.
- Commission VAV controllers immediately after installation by selecting the built-in controller application and performing system air balancing with the Allure EC-Smart-Vue sensor to get the HVAC system up and running right away.
- Occupants can override the HVAC mode and view and adjust the setpoint and fan speed for improved personal comfort.
- Slim, compact style, and clean lines are well received by architects and building owners.
- Clear and bright LCD display provides real-time access to temperature and other system information such as setpoint, occupancy status, HVAC mode, etc.
- Both power and communications pass through a single Cat 5e cable for reduced installation costs and for easier installation or system retrofit.
- The patented ABC Logic self-calibration system eliminates the need for manual CO2 calibration in most applications.
- Lifetime CO2 calibration guaranteed when using ABC Logic.

Product Applications

Zone control for Absolute comfort:

- Precise environmental control
- Occupancy override allows the system to adjust to individual needs

Related Products

- ECL Series LonWorks Controllers
- ECB Series BACnet Controllers

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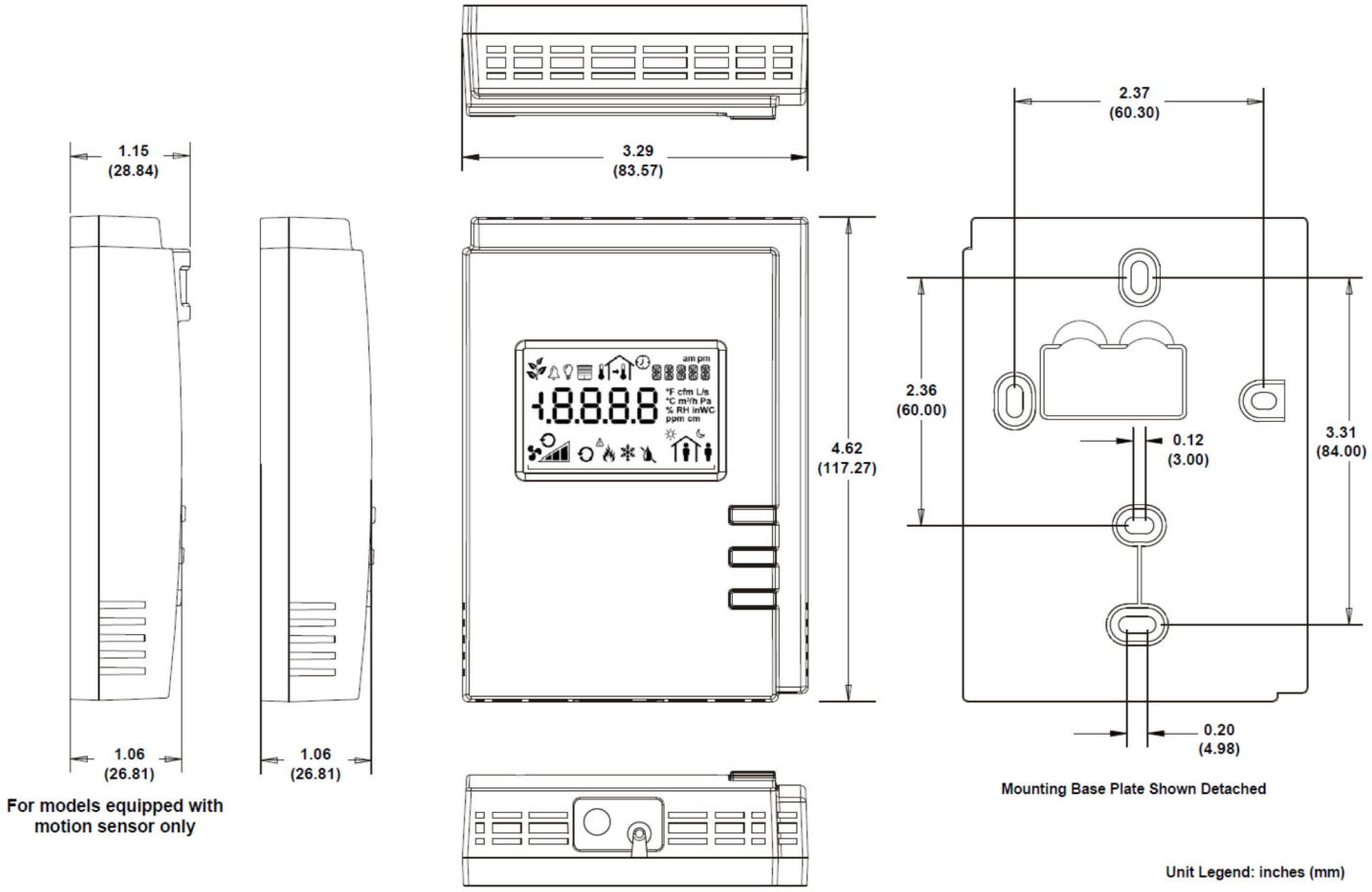
Allure EC-Smart-Vue-CH
Distech LCD Display Communicating Sensor — Product Data

Product Dimensions



Product Specifications

General

Part Number:	PDITE-SMRTVUCH-00
Voltage:	16Vdc maximum, Class 2
Power:	5.25 VA
LCD Display:	1.85” x 1.18” (47 mm x 30 mm) w/backlight
Operating Temp.:	41°F to 104°F (5°C to 40°C)
Storage Temp.:	-4°F to 122°F (-20°C to 50°C)
Relative Humidity:	0 to 95% Non-condensing
Material:	ABS
Color:	White
Dimensions:	3.29” x 4.62” x 1.06”/1.15” (83.57mm x 117.27mm x 26.81/28.80mm)
Shipping Weight:	0.44 lb (0.2 kg)
Mounting:	Wall mounting through mounting holes (see figure above for hole positions)

Communications

Rate:	38400 bps
Type:	RS-485
Wiring:	Cable length: 600’ (180 m) maximum
Cable Type:	T568B Cat 5e network cable, 4 twisted pairs or 4 conductor twisted shielded-pair cable
Connectors:	IN: RJ-45, OUT: RJ-45 (pass-through for daisy chain connection IN: Screw terminals (optional) Network Access Jack: 1/8” (3.5mm) stereo plug connector

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Product Specifications (continued)

Temperature Sensor

Type:	10KΩ NTC Thermistor
Range:	41°F to 104°F (5°C to 40°C)
Accuracy:	±0.9°F; ±0.5°C
Resolution:	0.18°F; 0.1°C

CO_2 Sensor

Measurement Range:	0-2000 ppm
Operating Elevation:	0-16000 ft (4877 m)
Warm-up Time:	<2 min. (operational), 10 min. (maximum accuracy)
CO2 Accuracy:	400-1250 ppm ±30 ppm or 3% of reading, whichever is greater[1] 1250-2000 ppm ±5% of reading +30 ppm[1]
Temperature Dependence:	0.11% of FS per °F (0.2% per °C)
Stability:	<2% of FS over life of sensor (15 years)
Pressure Dependence:	0.135% of reading per mm Hg; Software adjustable
Sensing Method:	Non-dispersive infrared (NDIR) absorption Gold-plated optics
Calibration Method:	Patented ABC Logic self calibration algorithm

Humidity Sensor

Accuracy:	±3%
Resolution:	1%

Agency Approvals

UL Listed:	UL916 Energy management equipment
Material:	UL94V-1

Electromagnetic Compatibility

CE:	EN 61000-6-3:2007 EN 61000-6-1:2007
FCC:	Part 15, subpart B, class B

1. Tolerance based on span gas of ±2% and ABC Logic enabled.
2. All materials and manufacturing processes comply with the RoHS directive and are marked according to the Waste Electrical and Electronic Equipment (WEEE) directive.

Product Warranty & Total Quality Commitment

All Distech Controls product lines are built to meet rigorous quality standards and carry a two-year warranty. Distech Controls is an ISO 9001 registered company. Distech Controls' products provide both the contractor and the end user with the flexibility of using “best-of-breed” products in system design.

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Allure™ EC-Smart-Air Series

Communicating sensors

Overview

The Allure EC-Smart-Air communicating sensors combine a precise environmental sensing in a discrete and alluring enclosure: temperature, humidity and CO_2.

Applications

The Allure EC-Smart-Air sensor series is compatible with the ECL series LonWorks® Controllers, ECB series BACnet® Controllers and ECLYPSE™ series BACnet/IP and Wi-Fi Controllers, including the Smart Room Control solution.

Features & Benefits

Installation and Servicing Cost Savings

Free up controller inputs

The Allure EC-Smart-Air sensor is wired to the dedicated subnet port of ECL series LonWorks Controllers, ECB series BACnet Controllers and ECLYPSE series BACnet/IP and Wi-Fi Controllers, freeing up controllers' inputs.

Reduce wiring lengths

Daisy-chain Allure EC-Smart-Air communicating sensors to one controller for increased range while using less wire thereby reducing material costs in large open space and in multi zone applications.

One cable for fast and reliable wiring

As a communicating sensor, both power and communications pass through a single Cat 5e cable, for reduced installation costs and for easier installation or system retrofit.

Quick-link connectors

The EC-Smart-Air features quick link connectors, accelerating installation time by up to 75% and reducing potential wiring errors.

Versatile mounting

The Allure EC-Smart-Air sensor supports various mounting scenarios, including on dry wall or on a North American, European, Swiss, or Asian style switch box.

Save commissioning time

The Allure EC-Smart-Air is simple to configure and to commission: simply drag and drop the sensor's block into your EC-*gfx*Program code, for a plug-and-play installation.

ABC Logic self-calibration system

The patented ABC Logic self-calibration system eliminates the need for manual CO_2 calibration in most applications.

ABC Logic guarantees lifetime CO_2 calibration.

Air Quality and Optimised Energy Efficiency.

Temperature sensing

All models come with an on-board temperature sensor for a precise feedback based temperature control.

Humidity sensing

Optimize the occupants' well-being by measuring the current relative humidity to maintain an ideal level for comfort.

CO_2 sensing

Achieve energy efficiency with a CO_2 sensor as a part of the demand-controlled ventilation strategy that adjusts the amount of outdoor air intake.

Model Selection

	Temperature	Humidity	CO_2
Allure EC-Smart-Air	■		
Allure EC-Smart-Air-H	■	■	
Allure EC-Smart-Air-C	■		■
Allure EC-Smart-Air-CH	■	■	■

Product Specifications

Power Supply Input

Voltage	16 VDC maximum, Class 2
Power Consumption	At the connected controller, an additional 0.5 VA per CO_2 sensor model (peak consumption: 1.5 VA) and 0.25 VA per non-CO_2 sensor model

Communications

Rate	38 400 bps
Communications	RS-485
Wiring	Cable length: 180 m (600 ft) maximum
Cable Type	T568B Cat 5e network cable, 4 twisted pairs
Connectors	
▫ IN	RJ-45
▫ OUT	RJ-45 (pass-through for daisy chain connection to other room devices)

Sensors

Temperature Sensor

▫ Type	10 kΩ NTC Thermistor
▫ Range	5°C to 40°C; 41°F to 104°F
▫ Accuracy	± 0.5°C; ± 0.9°F
▫ Resolution	0.1°C; 0.18°F

Humidity Sensor

▫ Accuracy	± 3%
▫ Resolution	1%

CO_2 Sensor

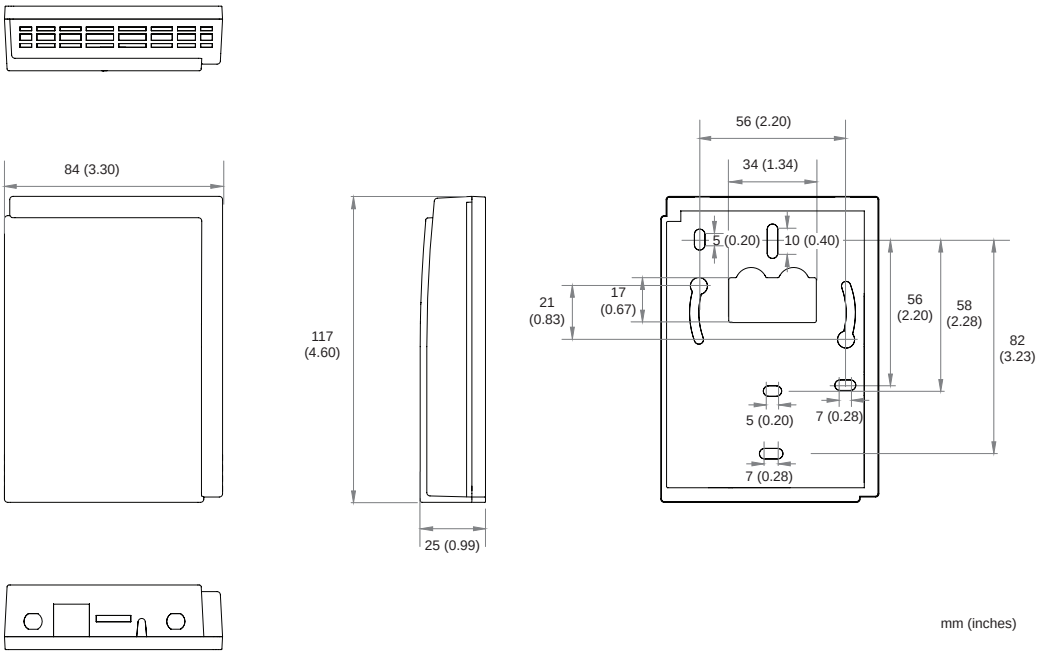
▫ Measurement Range	0 to 2000 ppm
▫ Operating Elevation	0 to 16000 ft (4877 m)
▫ Warm-up Time	< 2 minutes (operational), 10 minutes (maximum accuracy)
▫ CO_2 Accuracy	400-1250 ppm ± 30 ppm or 3% of reading, whichever is greater 1250-2000 ppm ± 5% of reading + 30 ppm[1]
▫ Temperature Dependence	0.2% FS per °C (± 0.11% per °F)
▫ Stability	< 2% of FS over life of sensor (15 years)
▫ Pressure Dependence	0.135% of reading per mm Hg; software adjustable
▫ Sensing Method	Non-dispersive infrared (NDIR) absorption, Gold-plated optics
▫ Calibration Method	Patented ABC Logic self-calibration algorithm

Environmental

Operating Temperature	5ºC to 40ºC (41ºF to 104°F)
Storage Temperature	-20ºC to 50ºC (-4ºF to 122ºF)
Relative Humidity	0 to 95% Non-condensing
Ingress Protection Rating	IP20
Nema Rating	1

Mechanical

Dimensions — 84 × 117 × 25 mm (3.30 W × 4.60 H × 0.99” D)



Mounting — Dry wall or switch box (North American / European / Asian / Swiss)
Enclosure Material[1] — ABS
Enclosure Rating — Plastic housing, UL94-V0 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 — IEC61000-6-3: 2006 + A1: ed.2010 Generic standards for residential, commercial and light-industrial environments
- Immunity — IEC61000-6-1: 2005; Generic standards for residential, commercial and light-industrial environments

UL Listed (CDN & US): *(Pending)*

- UL 916 — Safety Requirements For Energy Management Equipment
- CSA C22.2 No. 205-12 — Safety Requirements For Signal Equipement
- File number — E228719

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

Product Description

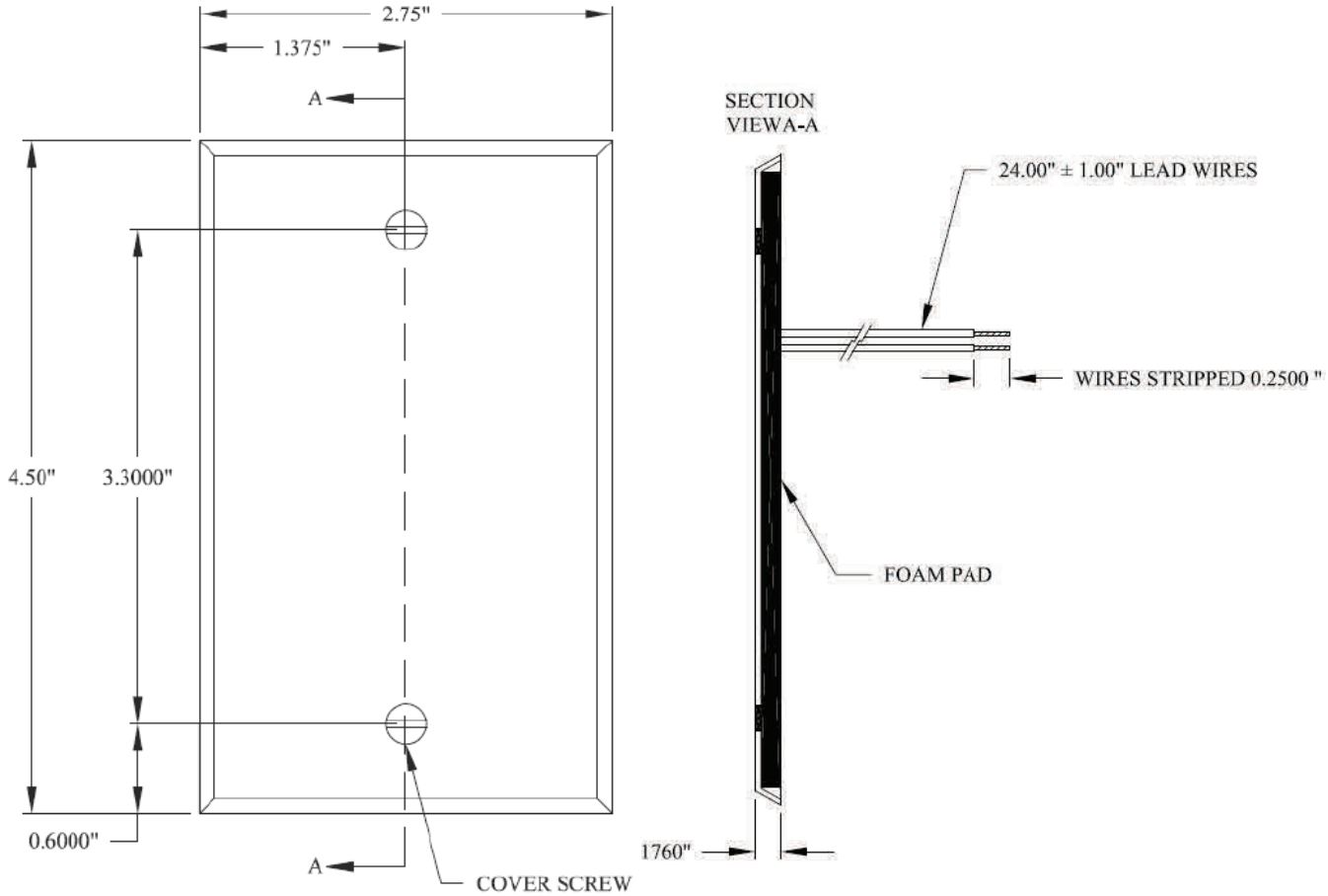
The A/CP-SP is a stainless steel flat plate thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

MADE IN USA

Product Specifications

Output:	10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range:	-40 to 302°F (-40 to 150°C)
Interchangeability:	+/-0.2°C (0 to 70°C)
Dissipation Constant:	3 mW/°C
Accuracy:	+/-0.2°C (0 to 70°C)
Operating Humidity:	10 to 90% RH non-condensing

Product Dimensions



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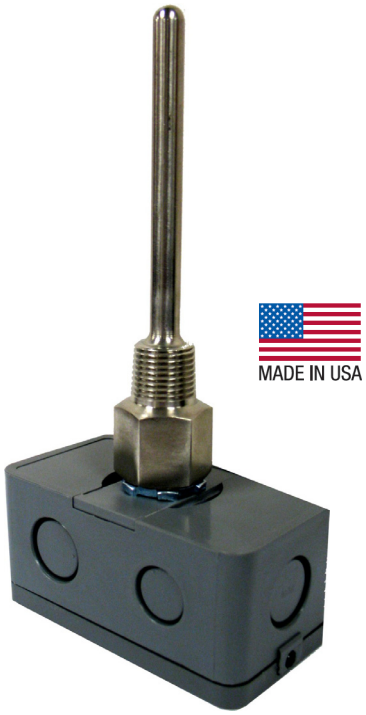
Product Description

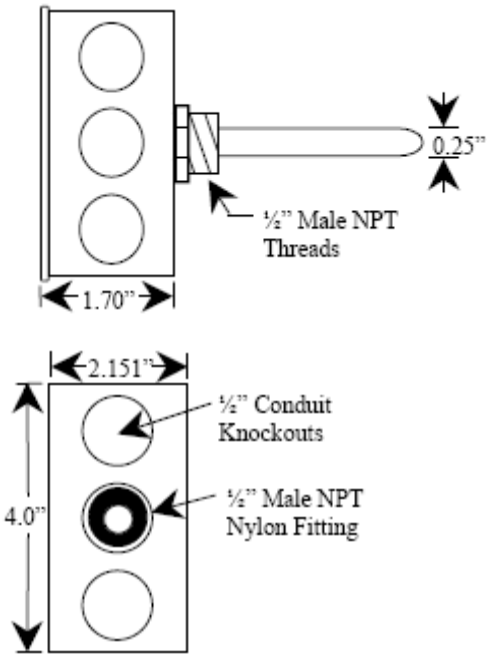
The A/CP-I-4-PB is an immersion thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

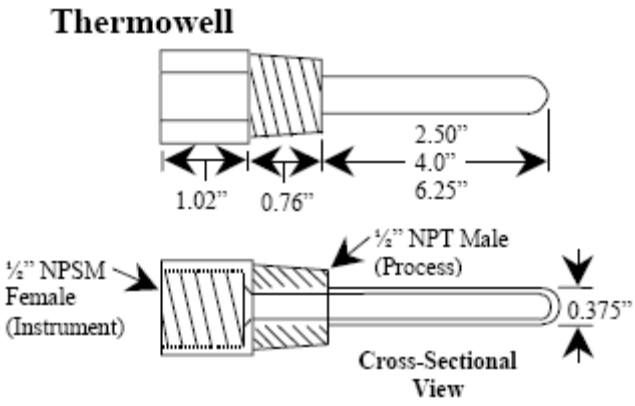


Product Specifications

Output:	10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range:	-40 to 302°F (-40 to 150°C)
Interchangeability:	+/-0.2°C (0 to 70°C)
Dissipation Constant:	3 mW/°C
Accuracy:	+/-0.2°C (0 to 70°C)
Operating Humidity:	10 to 90% RH non-condensing

Product Dimensions





Specifications are subject to change without notice.

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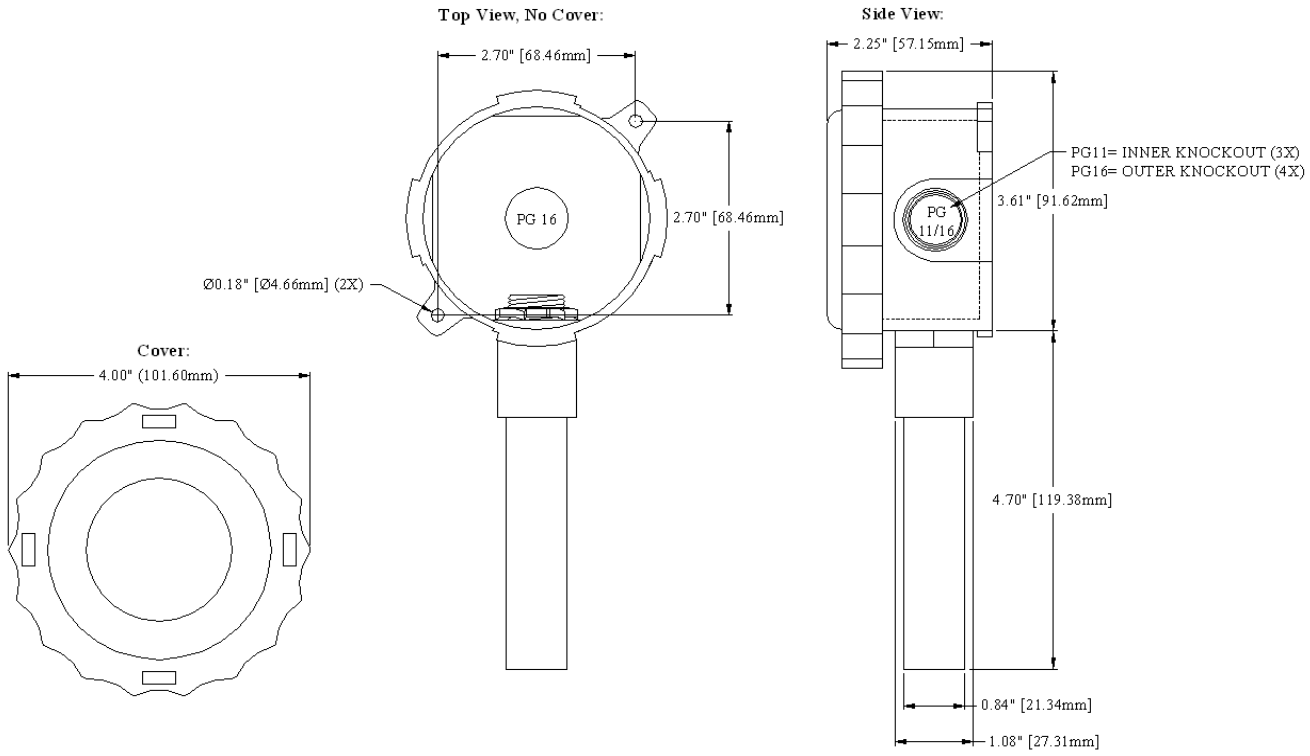
Product Description

The A/CP-O is an outdoor mounted thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

Product Specifications

Output:	10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range:	-40 to 302°F (-40 to 150°C)
Interchangeability:	+/-0.2°C (0 to 70°C)
Dissipation Constant:	3 mW/°C
Accuracy:	+/-0.2°C (0 to 70°C)
Operating Humidity:	0 to 90% RH non-condensing

Product Dimensions



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Humidity/Temperature Combination Sensors

A/RH3-CP-O
Product Data

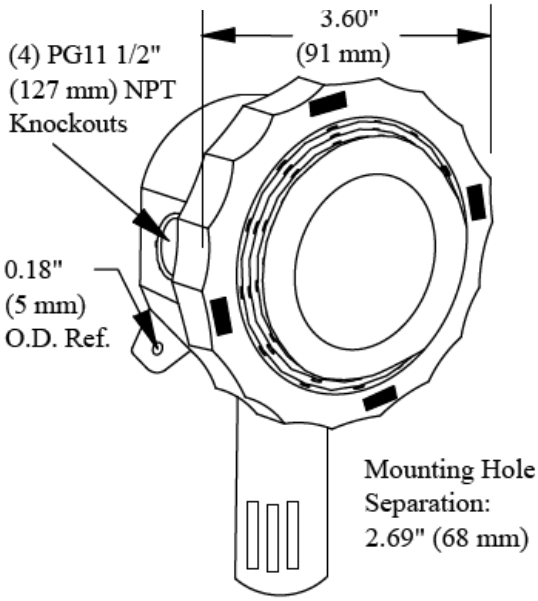
Product Description

The A/RH3-CP-O is an outdoor relative humidity transmitter with a 10,000 Ohm type 2 thermistor. It converts a resistance to a linear 4 to 20 mA, 0 to 5 VDC, or 0 to 10 VDC output. The current signal may be transmitted over long distances on unshielded twisted-pair wire and will not be affected by the lead wire resistance or electrical noise. The Advanced Ceramic Technology design overcomes the limitations of other resistance-based humidity sensors that utilize water soluble polymer coatings. The Advanced Ceramic Technology enables these sensors to recover fully from condensation. This allows the sensor to maintain its accuracy over a longer period of time. Despite its accuracy, the Advanced Ceramic Technology sensor and related circuitry is economical. Accuracy is maintained over the entire operating range, using a thermistor for temperature compensation.

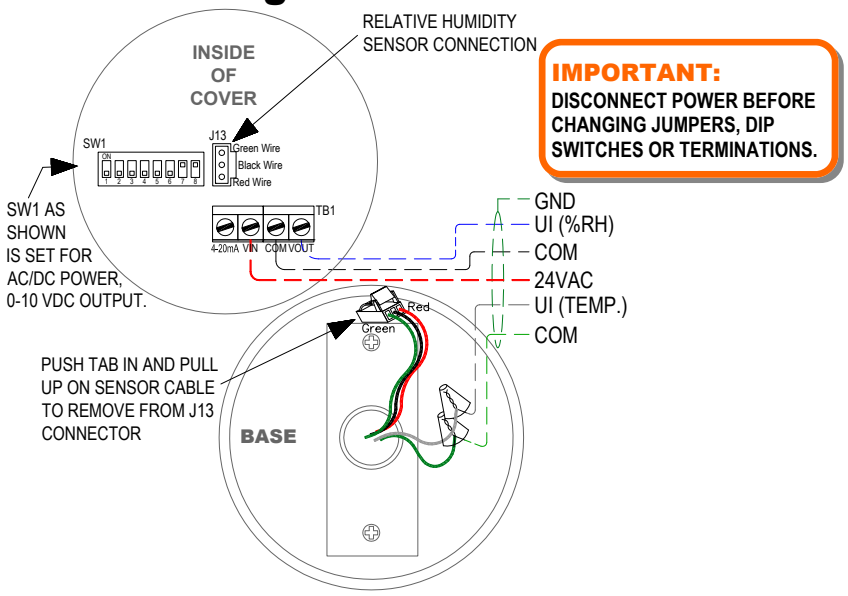
Product Specifications

Supply Voltage:	250 Ohm Load: +15 to 36 Vdc / 24 Vac 500 Ohm Load: +18 to 36 Vdc / 24 Vac
Power Consumption:	1 VA max.
RH Measurement Range:	0 to 100% RH
RH Output Signal:	2-wire; 4 to 20mA, 3-wire; 0 to 5 or 0 to 10 Vdc
Temperature Sensor Output:	2-wire, 10,000 Ohm Type 2 thermistor
Accuracy @ 77°F (25°C):	+/- 1% over 20% Span between 20 to 95% RH
Repeatability:	0.5% RH
Hysteresis:	Less than 0.4% RH
Long Term Stability:	Less than 2% RH Drift / 5 Years
Response Time:	110 seconds for 63% Step
Saturated Response Time:	10 minutes for 63% Step
Operating Temperature Range:	-10 to 122°F (-23.3 to 50°C)
Operating RH Range:	0 to 100% RH

Product Dimensions



Product Wiring



IMPORTANT:
DISCONNECT POWER BEFORE CHANGING JUMPERS, DIP SWITCHES OR TERMINATIONS.

Specifications subject to change without notice

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A/CP-A-24'-PB
Product Data

Product Description

The A/CP-A-24'-PB is a 24' duct averaging thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

Product Specifications

Output: 10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range: -40 to 302°F (-40 to 150°C)
Interchangeability: +/-0.2°C (0 to 70°C)
Dissipation Constant: 3 mW/°C
Accuracy: +/-0.2°C (0 to 70°C)
Operating Humidity: 10 to 90% RH non-condensing

Product Dimensions

End View:

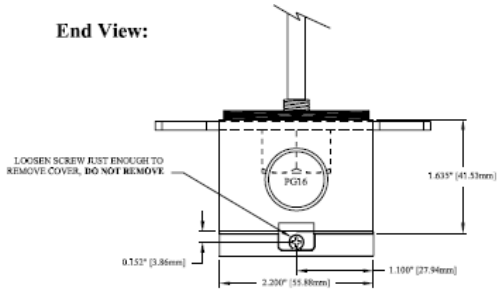
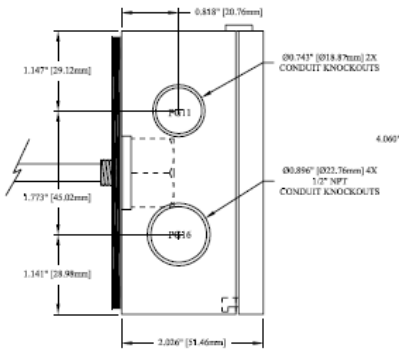


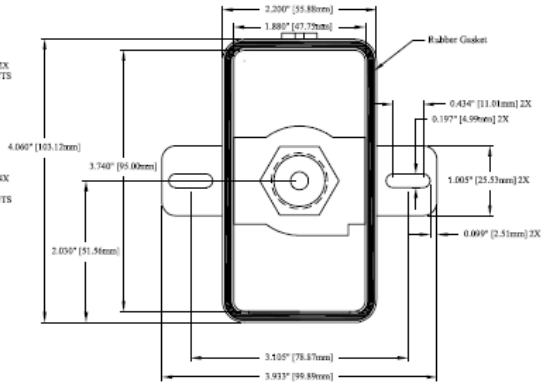
TABLE A

Standard Copper Averaging Lengths	Ref A (Insertion Length)
8'	8.0' ± 5.0"
12'	12.0' ± 5.0"
24'	24.0' ± 5.0"

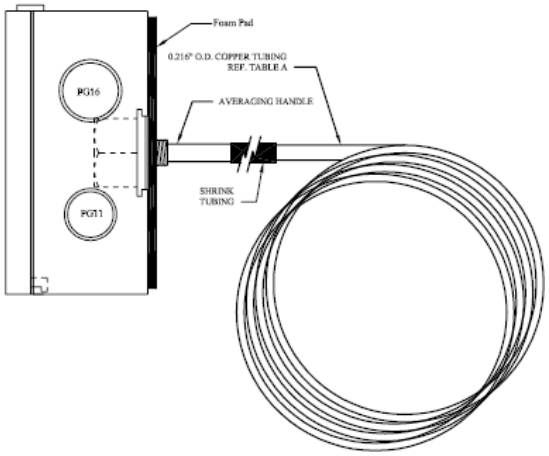
Left Side View:



Top View, No Cover:



Right Side View:



Specifications are subject to change without notice.

Website: www.jacksonsystems.com
E-mail: info@jacksonsystems.com
5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

A/CP-BP-6'-CLL2
Product Data

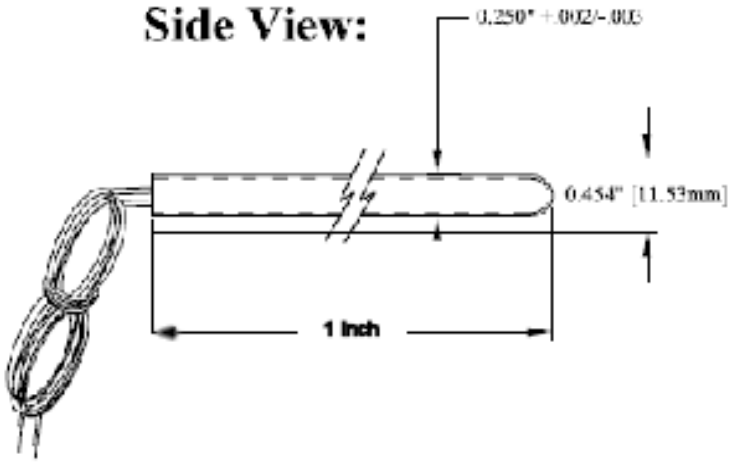
Product Description

The A/CP-BP-6'-CLL2 is a 1" bullet thermistor type temperature sensor with a 6' cable. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

Product Specifications

Output:	10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range:	-40 to 302°F (-40 to 150°C)
Interchangeability:	+/-0.2°C (0 to 70°C)
Dissipation Constant:	3 mW/°C
Accuracy:	+/-0.2°C (0 to 70°C)
Operating Humidity:	10 to 90% RH non-condensing

Product Dimensions



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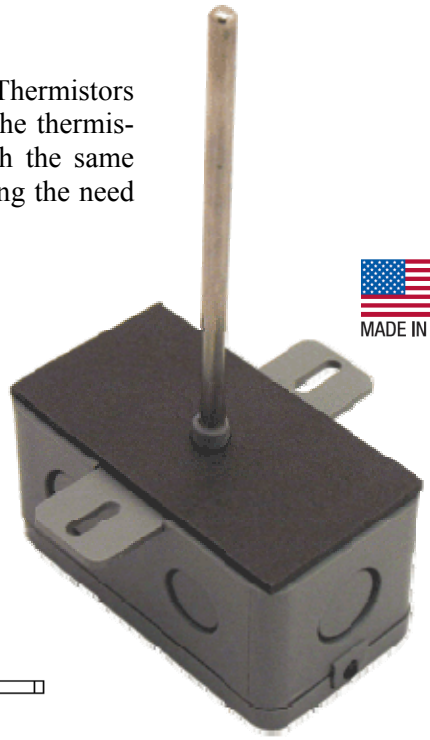
Fax: 317.227.1034

A/CP-D-8-PB
Product Data

Product Description

The A/CP-D-8-PB is an 8" duct probe thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor's high resistance relative to Platinum RTD's creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

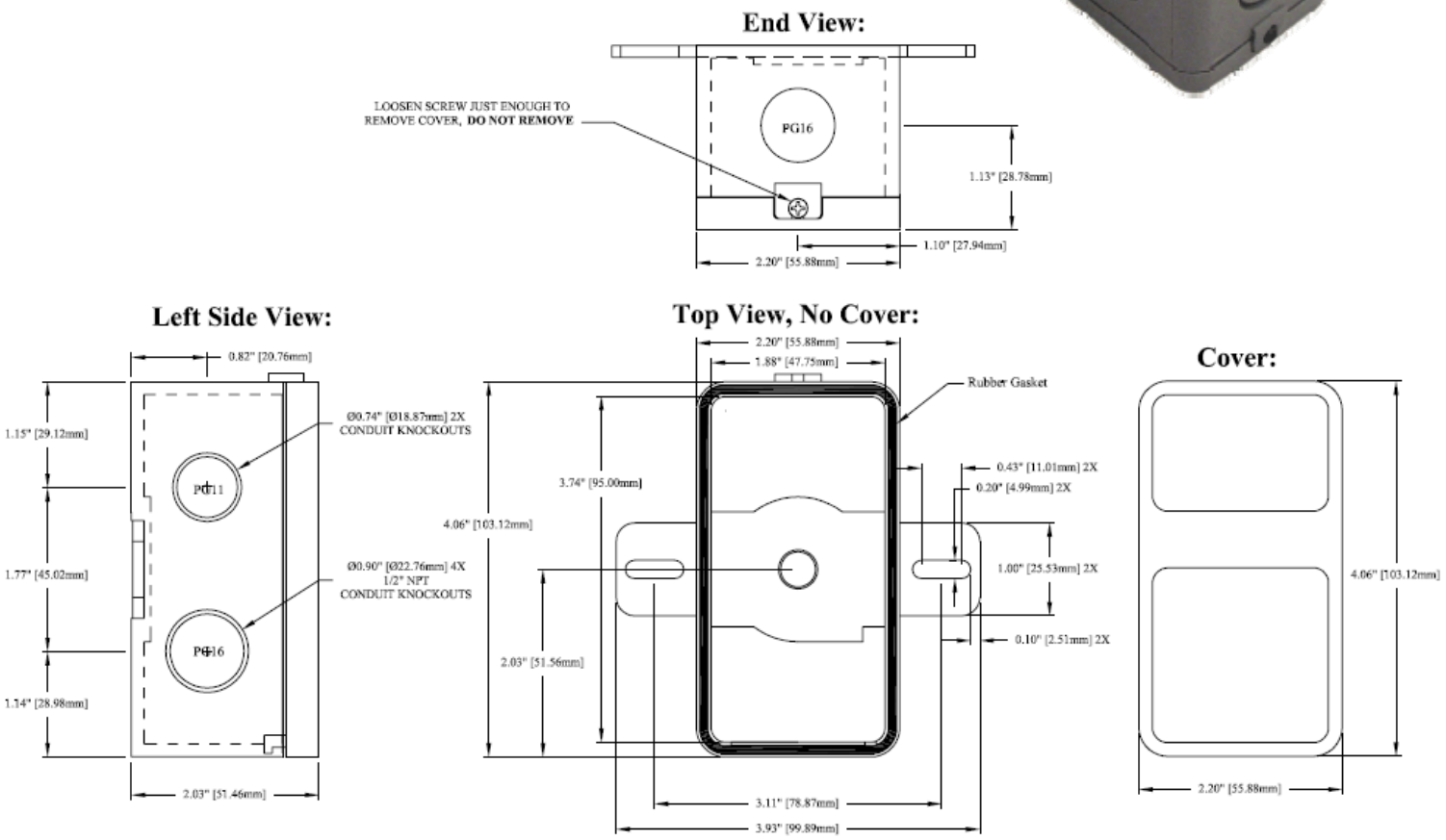


MADE IN USA

Product Specifications

Output:	10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range:	-40 to 302°F (-40 to 150°C)
Interchangeability:	+/-0.2°C (0 to 70°C)
Dissipation Constant:	3 mW/°C
Accuracy:	+/-0.2°C (0 to 70°C)
Operating Humidity:	10 to 90% RH non-condensing

Product Dimensions



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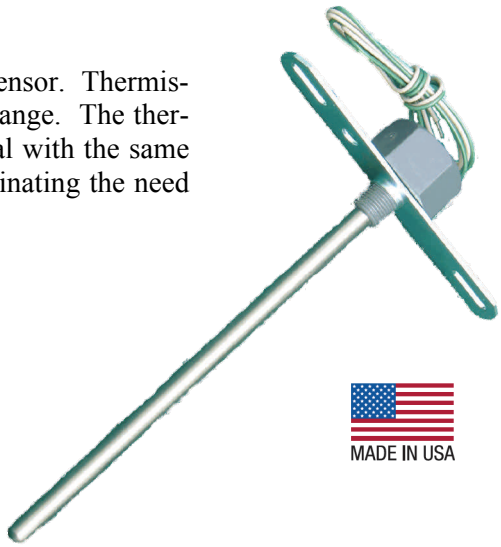
5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

A/CP-DO-4-6 CL2P
Product Data

Product Description

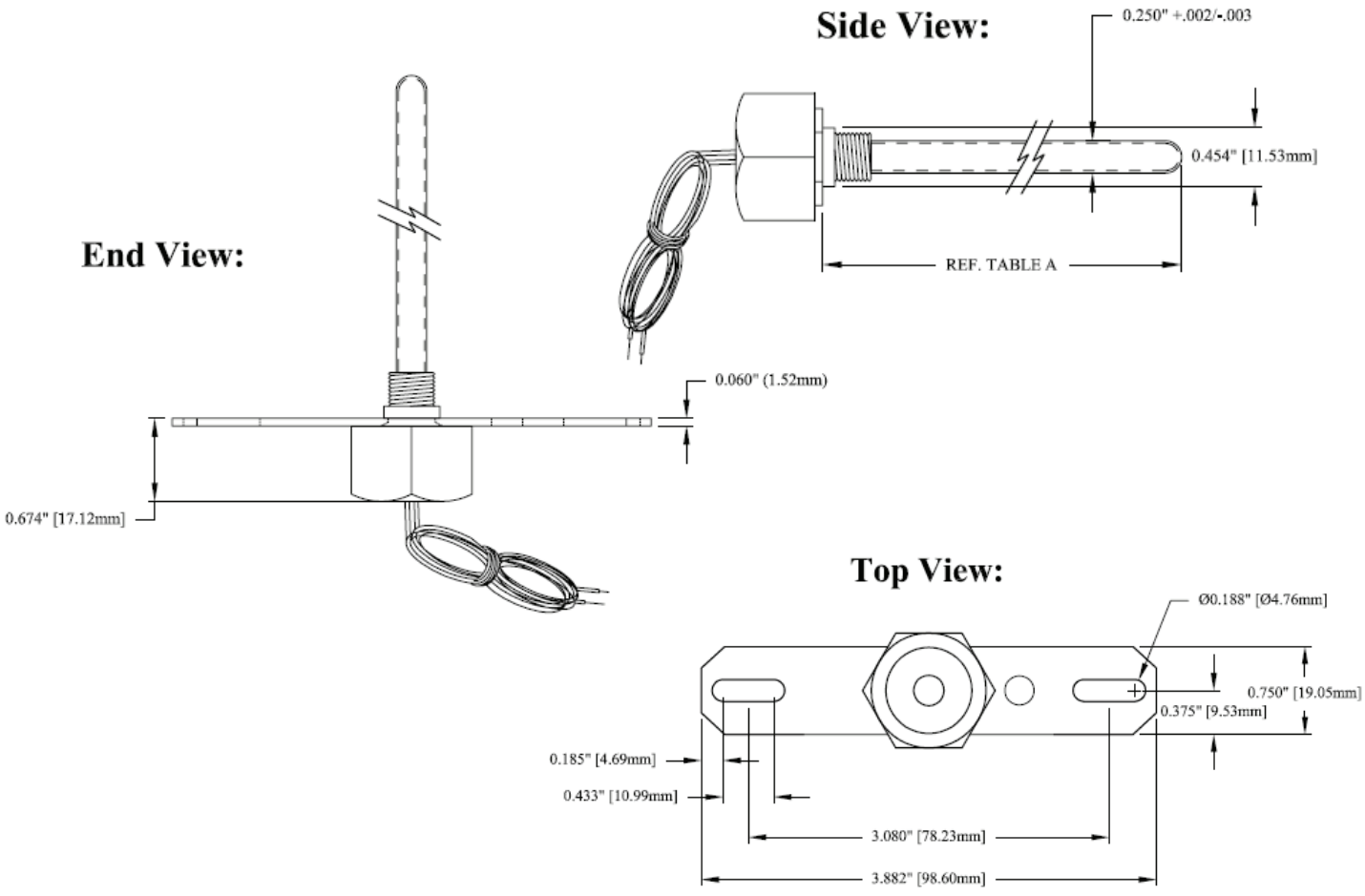
The A/CP-DO-4-6 CL2P is a 4” duct probe thermistor type temperature sensor. Thermistors offer high accuracy and interchangeability over a wide temperature range. The thermistor’s high resistance relative to Platinum RTD’s creates a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.



Product Specifications

Output: 10,000 Ohm @ 77°F (25°C), Type 2
Temperature Range: -40 to 302°F (-40 to 150°C)
Interchangeability: +/-0.2°C (0 to 70°C)
Dissipation Constant: 3 mW/°C
Accuracy: +/-0.2°C (0 to 70°C)
Operating Humidity: 10 to 90% RH non-condensing

Product Dimensions



Specifications are subject to change without notice.

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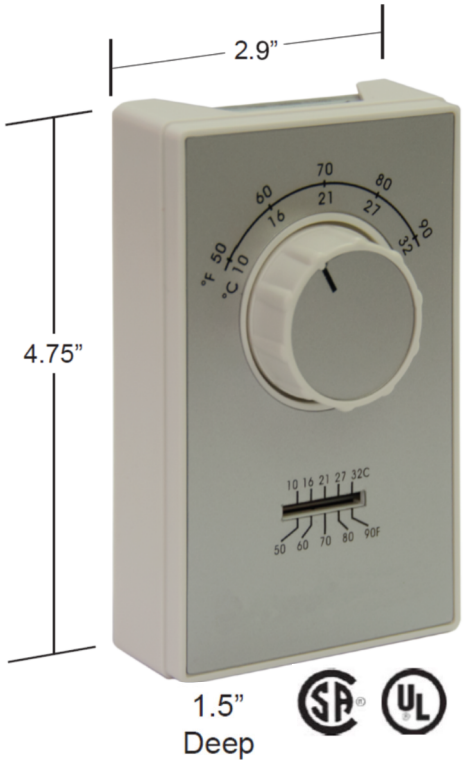
Product Description

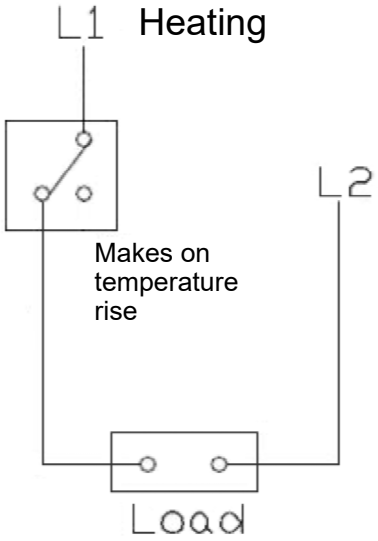
The ETD9STS is a heating/cooling line voltage thermostat for controlling ventilation equipment.

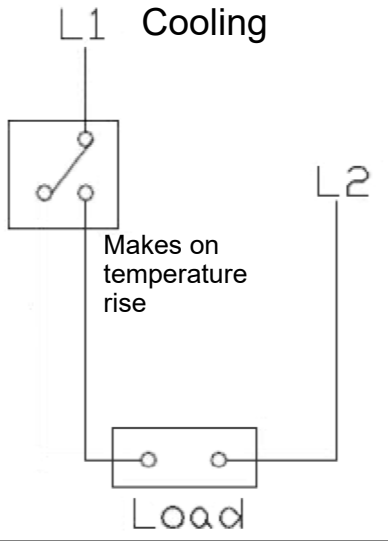


Product Specifications

Output:	SPDT contact
Contact Rating (Voltage):	120-277 Vac
Contact Rating (Current):	22 Amps, Resistive Max.
Motor HP Rating:	3/4HP @ 125 Vac; 1-1/2HP @ 250/277 Vac
Connections:	Screw terminals
Set-point Range:	50 to 90°F (10 to 32°C)
Rated Differential:	2 to 4°F
Housing Size:	4.75"H x 2.9"W x 1.5"D
Housing Materials:	Molded plastic
Color:	Off white
Agency Approvals:	CSA and UL Listed

Product Wiring





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A19 Series

Remote Bulb Control

Description

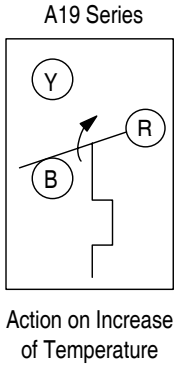
The A19 Series are single-stage temperature controls that incorporate environmentally friendly liquid-filled sensing elements.

Features

- wide temperature ranges available
- constant differential throughout the entire range
- compact enclosure
- fixed or adjustable differential available
- variety of sensing element styles
- unaffected by cross-ambient conditions

Applications

The A19 is suitable for temperature control in heating, ventilating, air conditioning, and refrigeration.



A19 Series
Terminal Arrangement for SPDT

A19ABC-24

Selection Charts

A19 Series Remote Bulb Control[1]

Code Number	Switch Action	Range °F (°C)	Diff F° (C°)	Bulb and Capillary	Bulb Well No. (order separately)	Range Adjuster	Max. Bulb Temp. °F (°C)
Adjustable Differential (Wide Range)							
A19ABA-40C [2]	SPST Open Low	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver Slot	140 (60)
A19ABC-4C	SPDT	50 to 130 (10 to 55)	3 1/2 to 14 (1.9 to 8)	3/8 in. x 5 in., 8 ft. Cap.	WEL14A-603R	Knob	170 (77)
A19ABC-24C [3]	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 8 ft. Cap.	WEL14A-602R	Convertible	140 (60)
A19ABC-36C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 20 ft. Cap.	WEL14A-602R	Convertible	140 (60)
A19ABC-37C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 10 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ABC-74C	SPDT	-30 to 100 (-34 to 38)	3 to 12 (1.7 to 6.7)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
Fixed Differential							
A19AAF-12C	SPDT	25 to 225 (-4 to 107)	3 1/2 (1.9)	3/8 in. x 3 in., 10 ft. Cap.	WEL14A-602R	Screwdriver slot	275 (135)
Fixed Differential (Case Compensated)							
A19AAC-4C	SPDT	0 to 80 (-18 to 27)	5 (2.8)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19AAD-12C	SPST Open Low	-30 to 50 (-34 to 10)	2 1/2 (1.4)	3/8 in. x 4 in., 7 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
Fixed Differential (Close)							
A19AAD-5C [4]	SPST Open Low	30 to 50 (-1 to 10) (**Bulk Milk Cooler**)	2 1/2 (1.4)	3/8 in. x 2 5/8 in., 6 ft. Cap.	WEL16A-601R	Screwdriver slot	190 (88)
A19AAF-20C	SPDT	-30 to 100 (-34 to 38)	2 1/2 (1.4)	3/8 in. x 4 in., 6 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19AAF-21C	SPDT	40 to 90 (4 to 32)	1 1/2 (0.8)	3/8 in. x 5 3/4 in., 6 ft. Cap.	WEL14A-603R	Screwdriver slot	140 (60)
Manual Reset							
A19ACA-14C	SPST Open Low	-30 to 100 (-34 to 38)	Manual Reset	3/8 in. x 4 in. 6 ft .Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ACA-15C	SPST Open Low	-30 to 100 (-34 to 38)	Manual Reset	3/8 in. x 4 in. 10 ft. Cap.	WEL14A-602R	Screwdriver slot	140 (60)
A19ADB-1C	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 3 1/2 in. 6 ft. Cap.	WEL14A-602R	Knob	290 (143)
A19ADN-1C	SPST Open High	100 to 240 (38 to 116)	Manual Reset	3/8 in. x 4 in. 6 ft. Cap.	WEL14A-602R	Screwdriver slot	290 (143)

1. Specify the control model code number, packing nut code number (if required), and bulb well code number (if required).
2. Replaces White-Rodgers 1609-101
3. Replaces White-Rodgers 1609-12, -13; Ranco 010-1408, -1409, - 1410, -1490, 060-110; Honeywell L6018C-1006, L6021A-1005, T675A-1011, -1508, -1516, -1821, T4301A-1008, T6031A-1011, T6031A-1029
4. Case-Compensated

 www.johnsoncontrols.com

Remote Bulb Control (Continued)

Selection Charts (Continued)

Replacement Parts

Code Number	Description
CVR28A-617R	Concealed adjustment cover
CVR28A-618R	Visible scale cover
KNB20A-602R	Replacement Knob Kit

Accessories

A packing nut is available for closed tank application.
Specify the part number **FTG13A-600R**.

Bulb wells (WEL14A Series) are available for liquid immersion applications.
Refer to the selection chart or to *Bulb Wells Catalog Page, LIT-1922135*.

Technical Specifications

Electrical Ratings

Motor Ratings VAC	120	208	240
Wide Range – Adjustable Differential			
AC Full Load A	16.0	9.2	8.0
AC Locked Rotor A	96.0	55.2	48.0
Non-Inductive A [1]	22 A, 120 to 277 VAC		
Pilot Duty – 125 VA, 24 to 600 VAC			
Fixed Differential and Close Differential			
AC Full Load A	6.0	3.4	3.0
AC Locked Rotor A	36.0	20.4	18.0
Non-Inductive A	10 A, 24 to 277 VAC		
Pilot Duty – 125 VA, 24 to 277 VAC			
Case Compensated – Fixed Differential A19AAC-4			
AC Full Load A	16.0	9.2	8.0
AC Locked Rotor A	96.0	55.2	48.0
Non-Inductive A [1]	22 A, 120 to 277 VAC		
Pilot Duty – 125 VA, 24 to 600 VAC			
A19AAD-12			
AC Full Load A	6.0	3.4	3.0
AC Locked Rotor A	36.0	20.4	18.0
Non-Inductive A	10 A, 24 to 277 VAC		
Pilot Duty – 125 VA, 24 to 277 VAC			
Manual Reset			
AC Full Load A	16.0	9.2	8.0
AC Locked Rotor A	96.0	55.2	48.0
Non-Inductive A	16.0	9.2	8.0
Pilot Duty – 125 VA, 24 to 600 VAC			

1. SPST and N.O. contact of SPDT control;
SPDT N.C. contact- 16 amps 120 to 277 VAC

Product Description

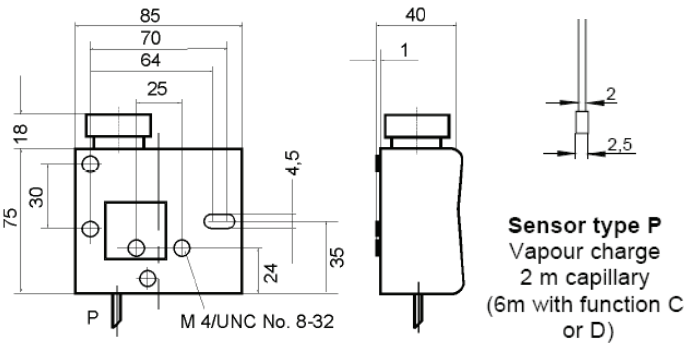
The TS1-C0P is an automatic reset low limit controller. This device is designed for use on HVAC equipment requiring low-temperature cutout protection.

The TS1-C0P is responsive to the lowest temperature sensed along any 1 foot section of 20' capillary element. Set-point is visible through the front cover and is adjustable from the top of the controller case. The sensing element is a tin-plated, vapor-filled, copper capillary tube measuring 5/64 in. in diameter (2mm) with an overall length of 20' (6096mm). A test lever is used for manual operation during checkout.

Product Specifications

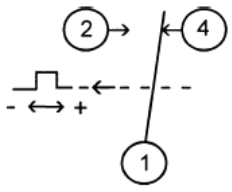
Sensing Element:	20 foot, Vapor filled, tin-plated, copper capillary tube
Output:	SPDT automatic reset
Contact Rating (Inductive):	24 A @ 120 Vac F.L.A., 144 A @ 120 Vac L.R.A.
Contact Rating (HP):	2 HP @ 120 Vac, 3 HP @ 240 Vac
Contact Rating (Pilot Duty):	720 VA max. @ 120 - 600 Vac, 144 VA max. @ 24 Vac
Contact Material:	$CuAg^3$
Set-point Range:	35 to 68°F (2 to 20°C) field adjustable
Set-point Differential:	4.5°F (2.5°C), fixed
Operating Temp. Range:	-60 to 160°F (-51 to 71°C)
Sensing Element Max. Temp.:	300 °F (149 °C)
Housing Materials:	Polycarbonate cover / steel, yellow chromated frame
Protection EN 60529/IEC 529:	IP44 (w/o off-switch), IP30 (with off-switch)
Agency Approvals:	UL/CUL file number E85974, VDE 0631/0660, TÜV,

Product Dimensions (mm)



Sensor type P
Vapour charge
2 m capillary
(6m with function C or D)

Product Wiring



TS1-DOP/COP
SWITCH ACTION ON DECREASE IN TEMPERATURE
(Contact 1 to 4 Opens;
Contact 1 to 2 Closes)

BELIMO

Technical data sheet 01DTS-5..

Low Temperature Detection Sensor

For monitoring the temperatures of water/air heaters in ventilation and air-conditioning systems to prevent frost damage to the cooling registers. Manual or automatic reset versions and adjustable setpoints. The frost alarm is provided with a single-pole double-throw (SPDT) changeover switch.

5-year warranty

Type Overview

Type	Output signal frost protection switch	Additional features	Capillary
01DTS-504	Changeover	Auto reset	10 ft [3 m]
01DTS-504X	Changeover	Manual reset	10 ft [3 m]
01DTS-505	Changeover	Auto reset	20 ft [6 m]
01DTS-505X	Changeover	Manual reset	20 ft [6 m]

Technical data

Electrical Data	Cable entry	Cable gland with strain relief M16x1.5 mm, for cable ø4...10 mm
Functional Data	Application	air
	Output signal frost protection switch note	1 x SPDT (4 A @ AC/DC 24 V)
Measuring Data	Measured values	Temperature Frost
	Measuring range temperature	14...59°F [-10...15°C]
	Accuracy temperature active	±0.9°F [±0.5°C]
Materials	Cable gland	Bottom: PA, grey
	Housing	Bottom: PA, grey Seal: NBR70, black cover ABS, transparent
	Probe material	Copper/vapor filled R507
Safety Data	Protection class IEC/EN	III, Protective Extra-Low Voltage (PELV)
	Degree of protection IEC/EN	IP65
	Degree of protection NEMA/UL	NEMA 4
	EU Conformity	CE Marking
	Certification IEC/EN	IEC/EN 60730-1
	Quality Standard	ISO 9001
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-30...160°F [-35...70°C]
	Fluid temperature	-30...160°F [-35...70°C]

Safety Notes

This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorized modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

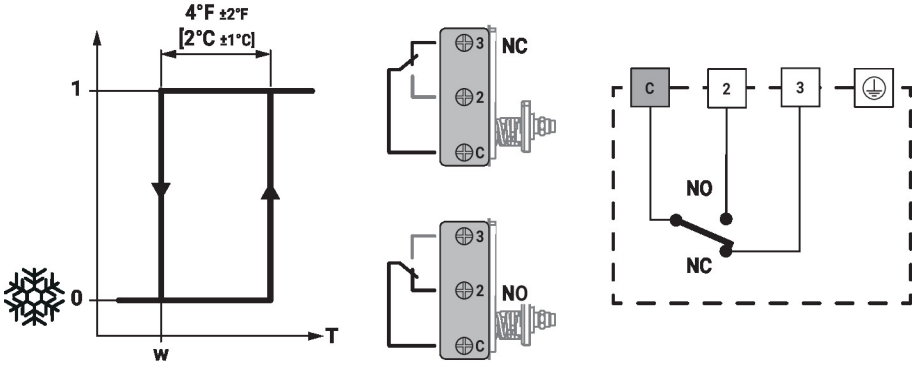
The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Parts included

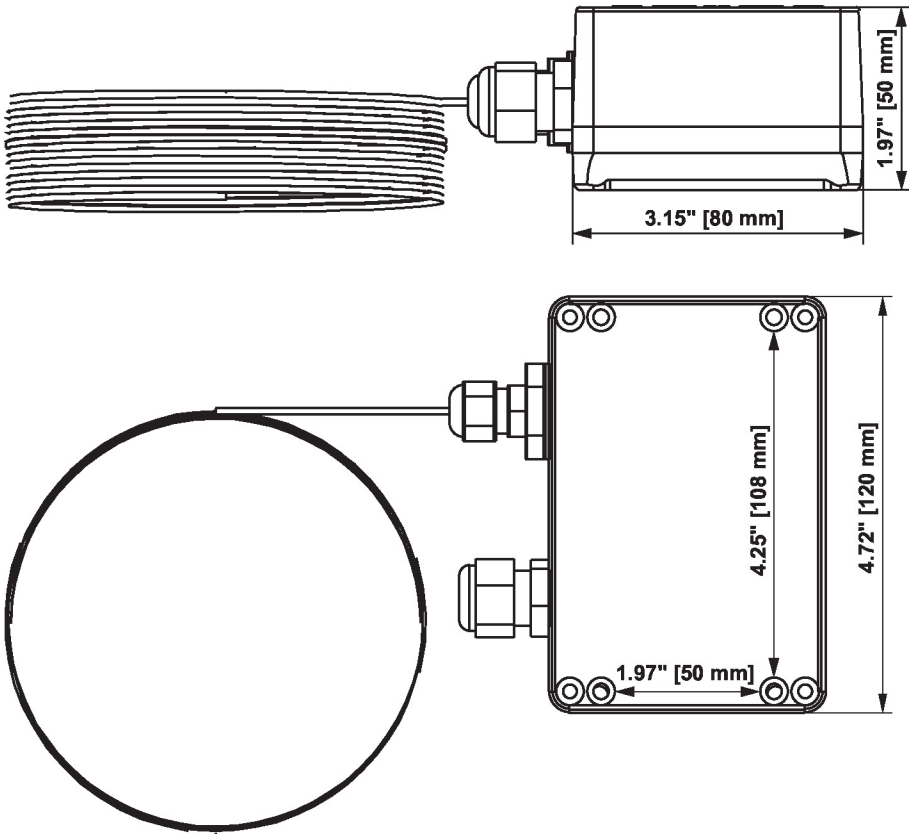
Parts included	Description	Type
	Mounting kit, with 6 mounting brackets	A-22D-A08

Wiring Diagram



set point range (factory setting 41°F [5°C])
If the capillary leaks, the switch changes to the frost position.

Dimensions



Type	Weight
01DTS-504	0.89 lb [0.41 kg]
01DTS-504X	0.89 lb [0.41 kg]
01DTS-505	1.01 lb [0.46 kg]
01DTS-505X	1.01 lb [0.46 kg]

Further documentation

• Installation instructions

MK7-B-CR-0/10
Product Data

Product Description

The MK7-B-CR-0/10 Outdoor Celestial Self-Contained Ambient Light Sensor develops a variable output voltage that corresponds to the amount of present ambient light. This precise ambient light level measurement unit detects and transmits, via an analog (0-10 Vdc) signal, the amount of light present at its location to the remote analog input point of most building automation controllers. The sensor contain a precision photo-diode type cell that provides an exact, proportional output over a wide range of light levels, allowing for accurate lighting control.

Product Application

Sensors allow most building automation controllers to become sophisticated lighting control computers to control any type of lighting at any light level based on the amount of ambient light available. There are three basic types of sensors:

Designed to mount horizontally in a 1/2" conduit fitting to monitor the outside ambient light levels for parking garages, security lighting, sign lighting, etc., the sensor generally is mounted on the rooftop, facing the northern sky. It features an adjustable maximum range from 50-750 fc at the sensor face and is completely weather tight and temperature stable. At very low ambient temperatures (below 13°F), the sensor will still function but will lose some accuracy and light level sensitivity.

Product Features

- Factory calibrated
- 0-10 Vdc
- Wide range of light level monitoring
- Compatible with most BAS controllers
- Extremely accurate and reliable

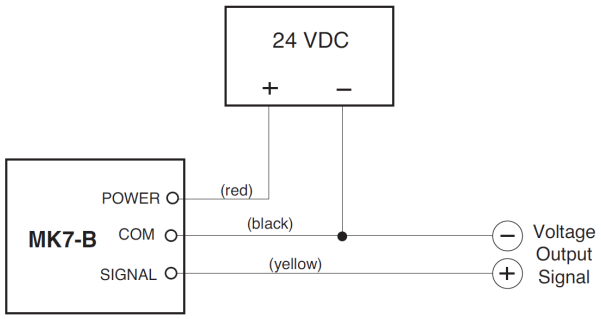
Product Operation

The sensor head contains patented solid-state circuitry designed to be extremely accurate, adjustable, and flexible. The standard three-wire sensors operate from any input volt-age between 12-24 VDC and give a return output signal of 0-10 Vdc. The sensor comes factory calibrated. The sensor is equipped with a variable range potentiometer, but calibration equipment, such as a foot-candle meter, would be required to change the range of the unit. Note: There is a charge for recalibration of the unit by the manufacturer.

Product Specifications

Output:	0-10 Vdc
Factory Calibration:	0-250 fc
Adjustable Range:	0 fc min, 50-750 fc max
Accuracy:	±1% @ room temp., ±2.5% @ 100°F
Sensor Type:	Blue-enhanced photo-diode
Power Supply:	12-24 Vdc
Power Consumption:	20 mA max.
Wiring:	Three-wire, 18 AWG, stranded
Operating Temp.:	13° to 140°F (-10° to 60°C)

Product Wiring



CAUTION: To prevent electrical shock and possible equipment damage, disconnect power coming from the controller prior to hookup. Wiring from the sensor to the controller should be with 18- or 22-gauge stranded wire. Do not run the low-voltage wire with or near power wiring. For long wire runs or where there is excessive electrical noise, shielded cable or cable in conduit is required. Cable length should not exceed 500' (152m). Wire the sensor to the appropriate analog port of the controller according to the controller manufacturer's instructions and the specific details of the particular sensor listed on this page.

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A/MLP2-D10-W-B-A-C-0P

Differential Pressure Transducer — Product Data

Product Description

The A/MLP2-D10-W-B-A-C-0P is a din rail mountable, extremely versatile and highly accurate transmitter for monitoring differential pressure. This high quality compact sensor is ideal for panel mounting.

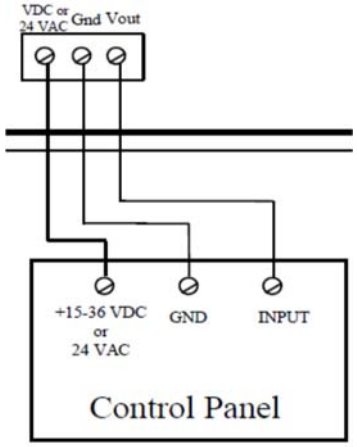
MADE IN USA

Product Specifications

Media Types:	Dry air or inert non-conductive gases
Accuracy[1]:	±0.5% of FSO
Thermal Effects[2]:	±0.056% FSO per °F
Operating Temperature:	32 to 185°F (0 to 85°C)
Operating Humidity:	10-95% RH, non-condensing
Compensated Temperature Range:	32 to 122°F (0 to 50°C)
Pressure Ranges:	±0.1" WC
Proof Pressure:	270"WC (67.2 kPa)
Burst Pressure:	415"WC (103.3 kPa)
Supply Voltage:	24 Vac (±10%) 50/60 Hz, +16 to 36 Vdc
Supply Current (Power):	5 mA maximum (0.18 VA)
Output Signal:	0-10 Vdc, 3-wire (Output limited to 10.25 Vdc)
Warm Up Time:	15 Minutes
Response Time (T95):	8 seconds
Output Update Rate:	1 second
Zero Function:	Pushbutton Zero Function (Recommended after 15 minutes warm up)
Electrical Connections:	3 Position de-pluggable screw terminal block | accepts 14-24 AWG wires
Terminal Block Torque Rating:	4.43 to 5.31 in-lb. (0.5 to 0.6 Nm)
Weight:	0.17 lbs (0.078 kg)
Pressure Fitting Material:	Brass
Tubing Size Accepted:	0.250" (6.35mm) O.D. x 0.170" (4.318mm) I.D. Push-On Flexible Poly Tubing
Dimensions:	4.210" (106.94mm) x 2.085" (52.96mm) x 1.340" (34.04mm)
Enclosure Rating:	Polycarbonate; UL94V-0 flammability rating
Agency Approvals:	CE, Reach, RoHS2, WEEE

Note[1]: Accuracy includes Hysteresis, Linearity, and Repeatability at 71°F (21.5°C) Typical | Note[2]: Shift is relative to 77°F (25°C)

Product Wiring



ZERO FUNCTION

The DLP unit should be "ZEROED" before pressure is applied to the unit. The zero button is used to cancel out any offsets caused by installation and sensor drift.

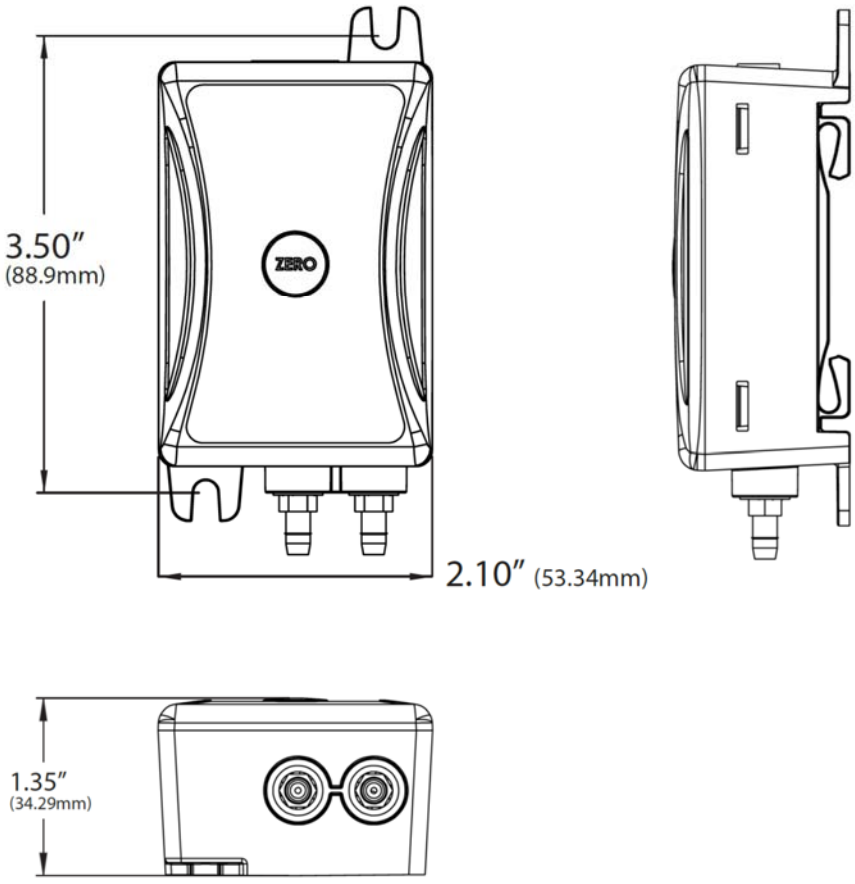
The Zero adjustment must be performed with NO pressure applied to either side of the sensor.

- Remove the tubing connected to the H(High) and/or L(Low) pressure fittings.
- Push "Zero" button for more than three seconds before installation or whenever necessary.

Specifications are subject to change without notice.

Website: www.jacksonsystems.com
E-mail: info@jacksonsystems.com
5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

Product Dimensions



SPECIFIED CONTROLS

Differential Pressure Transducer

A/DLP-010-W-U-N-A-3
Product Data

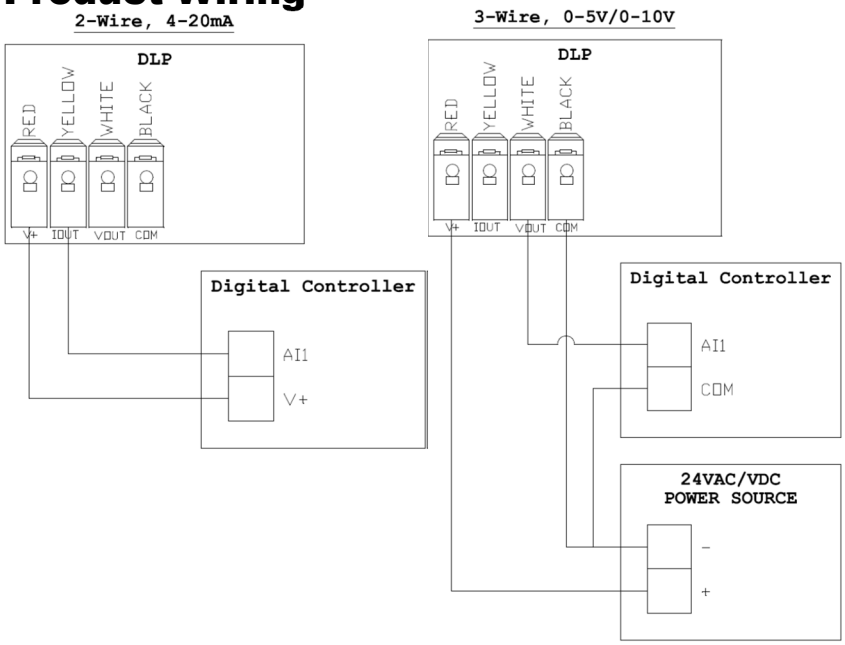
Product Description

The A/DLP-010-W-U-N-A-3 is an extremely versatile and highly accurate transmitter for monitoring duct static pressure. This high quality sensor is loaded with features such as: field selectable pressure ranges, field selectable output ranges, and field selectable power. Product is shown here with the optional display.

Product Specifications

Service:	Dry air or inert non-conductive gases
Accuracy:	±0.5% of FSO
Thermal Effects:	±0.067% FSO per °F
Operating Temperature:	-4 to 185°F (-20 to 85°C)
Operating Humidity:	10-95% RH, non-condensing
Compensated Temperature Range:	32 to 122°F (0 to 50°C)
Pressure Ranges:	±1", ±2", ±5", ±10" WC
Proof Pressure:	350"WC (87.12 kPa)
Burst Pressure:	550"WC (136.9 kPa) for 10"WC (2490.8 Pa)
Supply Voltage:	4-20 mA Output: 16-36 Vdc (250Ω Load max.) / 22-36 Vdc (500Ω Load max.) 0-5 Vdc / 0-10 Vdc Outputs: 16 to 36 Vdc / 24 Vac (±10%)
Supply Current:	4-20 mA Output: 24 mA minimum 0-5 Vdc / 0-10 Vdc Output: 6 mA maximum
Output Signals (field selectable):	Current Output: 4-20 mA, 2-wire loop powered (Standard); (Limited to 21.4 mA max) Voltage Signals: 0-5 Vdc / 0-10 Vdc, 3-wire; Output limited @ 5.25 & 10.5 Vdc)
Response Time (0-100% FSO):	8 seconds
Output Update Rate:	1 second
Electrical Connections:	Finger Pushbutton (spring) terminal blocks; accepts 16-24 AWG wires
Conduit Knockouts:	Watertight Cordgrip Installed (1/2" NPT conduit fittings accepted when Cordgrip removed)
Sensing Probe:	8 1/8" probe
Weight:	0.80 lbs (0.363 kg)
Dimensions:	6.125" H x 4.25" W x 2.25" D
Enclosure Rating:	Flame retardant polycarbonate; UL94-5VA flammability rating
Agency Approvals:	CE, Reach, RoHS2, WEEE

Product Wiring



ZERO FUNCTION

The DLP unit should be "ZEROED" before pressure is applied to the unit. The zero button is used to cancel out any offsets caused by installation and sensor drift.
The Zero adjustment must be performed with NO pressure applied to either side of the sensor.

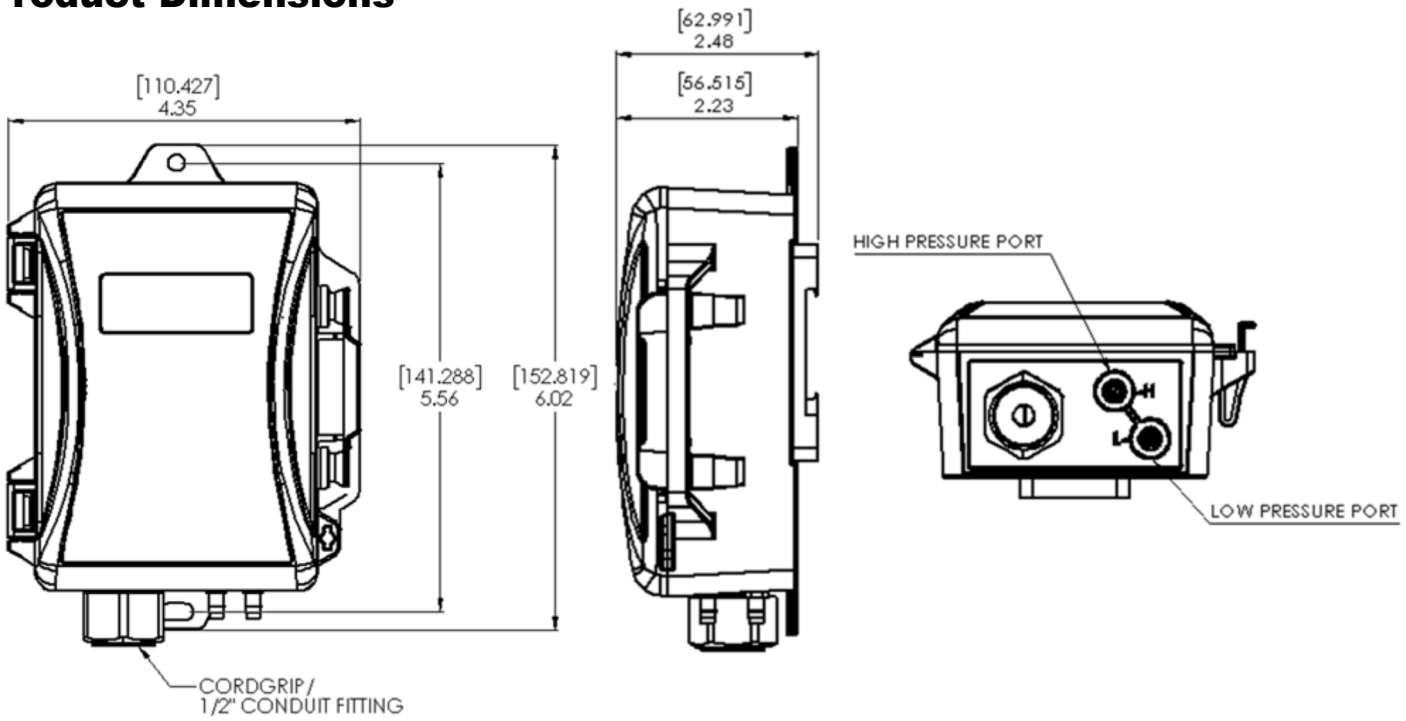
- Remove the tubing connected to the H (High) and/or L(Low) pressure fittings.
- Push "Zero" button for more than three seconds before installation or whenever necessary.

IMPORTANT!
DO NOT SWITCH PRESSURE RANGE OR OUTPUT MODE WHEN POWER IS ON. MAKE SURE POWER TO THE UNIT IS OFF. FAILURE TO DO SO WILL NOT ALLOW ANY NEW SWITCH SETTINGS TO TAKE PLACE.

Specifications are subject to change without notice.

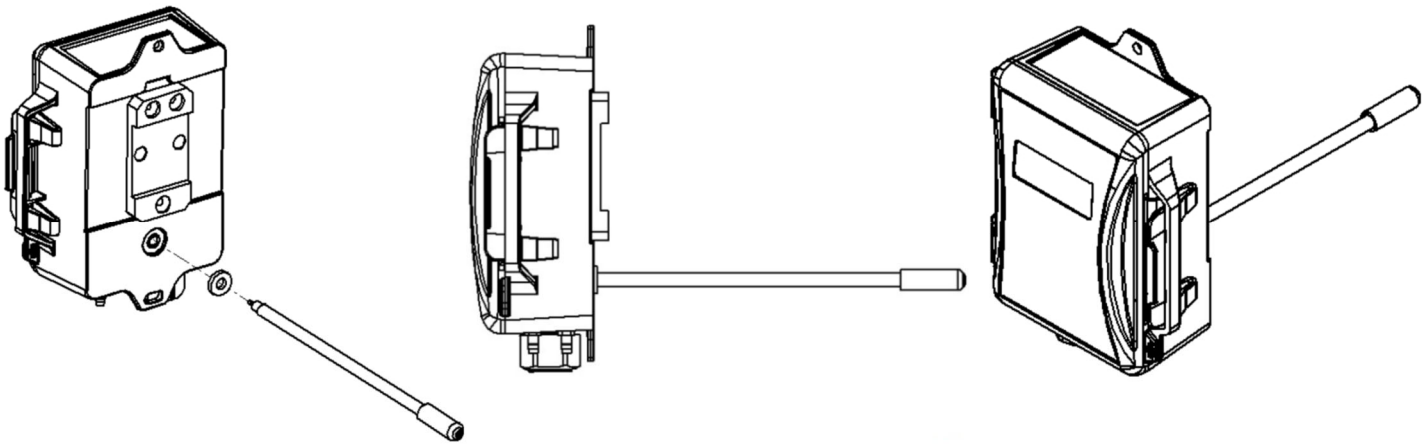
Website: www.specifiedcontrols.com 5351 East Thompson Road, Suite 128 Indianapolis, IN 46237 Tech Support: 888.359.0365 Main: 317.361.0830

Product Dimensions



Pitot Tube Installation

Slip the rubber washer over the threaded end of the pitot tube, keeping the washer as closed to the threaded end as possible. Fasten the pitot into the threaded insert on the back of the enclosure. Press the rubber washer against the enclosure.



Liquid Gauge Pressure Transducers

A/GP-050-20-N4
Product Data

Product Description

The A/GP-050-20-N4 gage pressure transducer is designed with a single sensor that converts a pressure range of 0-50 psig to a 4-20 mA signal and is factory mounted in a NEMA 4 rated enclosure. This unit provides excellent accuracy and reliability in commercial, industrial, and process control applications. The enclosed pressure transducer has been manufactured in accordance with QS-9000 Compliant manufacturing system and procedures.

The stainless steel construction with no O-rings makes this pressure transducer compatible with a wide range of gasses and liquids. The A/GP pressure transmitter offers a combined repeatability, hysteresis, and non-linear factor that is typically below +/- 0.15% of full scale. It is also EMC compliant and reverse polarity protected.

Product Applications

- **Pump Monitoring**
- **Chiller Monitoring**
- **Variable Volume Chilled/Hot Water Systems**
- **HVAC Systems**

Product Features

- **Excellent long-term stability**
- **high accuracy**
- **All stainless steel sensor construction**
- **NEMA 4 enclosure**
- **EMC compliant**
- **Reverse polarity protected**
- **10X full scale or 15,000psi burst pressure**

Product Specifications

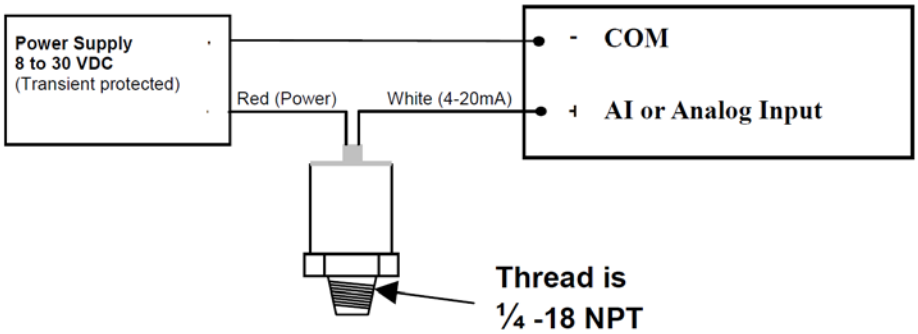
Supply Voltage:	8 to 30 Vdc
Output:	4-20 mA (2-wire)
Pressure Ranges:	0-50 psig
Accuracy: (Non-linearity, Hysteresis, Repeatability)	+/-1% FSO for 15 to 50 psi
Thermal Error (-40 to 105°C):	+/-1% FSO for 15 to 50 psi
Stability:	+/-1% FS
Operating Temp. Range:	-40 to 221°F (-40 to 105°C)
Response Time:	< 1 ms
Burst Pressure:	10X full scale or 15,000 psi
Proof Pressure:	3X full scale
Process Fitting:	1/4-18 NPT male 304L Stainless Steel
Sensor Case:	304L Stainless Steel
Enclosure:	NEMA 4
EMC Compliance:	10 V/M (EN61000-4-3)
Dimensions:	2.56”L x 0.875”W x 0.875”H

Product Wiring Details

2 foot cable assembly - 2 wire:

Red = Power

White = 4-20mA Signal



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Liquid Differential Pressure Transducer

A/WPR2-100-10’
Product Data

Product Description

The A/WPR2-100-10’ Wet-Wet pressure transmitter is designed with dual sensors that enable it to accept high differential pressures in the range of 0 PSI to 100 PSI. All models can handle proof pressure 3X the maximum full scale range and burst pressure of 1500 psi.

Features include field selectable pressure ranges and output signal types for the most flexible applications. Typical HVAC applications include monitoring of water differential pressure. The output signal is factory calibrated and temperature compensated for the highest start-up accuracy.

The A/WPR2 Series Remote Wet to Wet Differential Pressure Sensor is designed to reduce installation time and to provide mounting flexibility, often eliminating the need for additional plumbing.

Product Applications

- **Pump Monitoring**
- **Filter Monitoring**
- **Chiller Monitoring**
- **Variable Volume Chilled/Hot Water Systems**
- **HVAC Systems**

Product Features

- **Excellent long-term stability and high accuracy**
- **Four field selectable ranges:**
  ⇒ 0-15 psi, 0-25 psi, 0-50 psi, 0-100 psi
- **Field selectable outputs:**
  ⇒ 4-20 mA, 0-5 Vdc, 0-10 Vdc
- **All stainless steel sensor construction**
- **Uni-directional or bi-directional pressure range selection**
- **IP66 hinged enclosure**
- **Pushbutton and remote zeroing terminal**

Product Specifications

Supply Voltage (4-20mA):	16 to 36 Vdc 2-wire 4-20mA
Supply Current (4-20mA):	25mA max. (current output)
Supply Voltage (V out):	16 to 36 Vdc, 24 Vac (±20%)
Supply Current (V out):	6mA max. (voltage output)
Output:	3-wire: 0-5 Vdc, 0-10 Vdc 2-wire: 4-20 mA
Pressure Ranges:	0-15/25/50/100 psi
Proof Pressure:	Max. 300 psi (3X F.S.)
Burst Pressure:	Max. 1500 psi
Temp. Comp. Range:	32 to 140°F (0 to 85°C)
Sensor Operating Range:	-22 to 248°F (-30 to 120°C)
Enclosure Temp. Range:	32 to 167°F (0 to 75°C)
Operating RH Range:	10 to 90% RH non-condensing
Accuracy: (linearity, Hysteresis, Repeatability)	±1.0% FSO
Thermal Effects:	±2.0% FSO from 32-140°F (0-60°C)
Zero Adjust:	Push-button, auto. & digital input
Fittings:	1/4”-18” NPT male (304 SS)
Enclosure:	NEMA 4X/IP66 Rated
Dimensions:	5.1”Wx3.93”Hx3.0”D (145x100x64mm)

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5418 Elmwood Avenue
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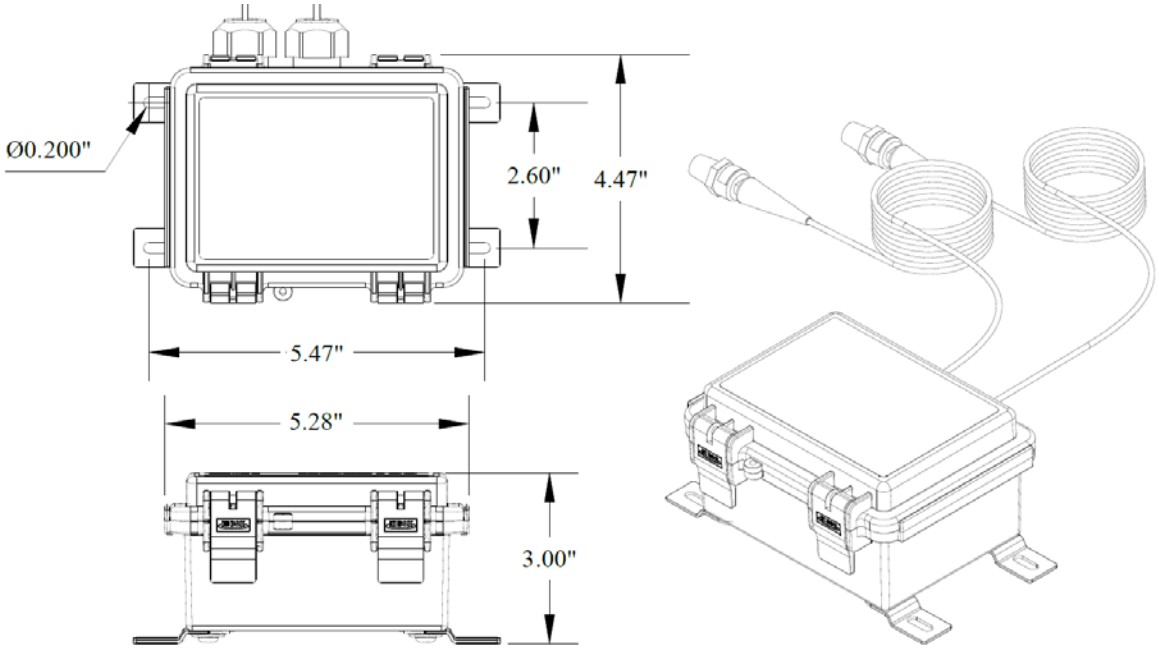
Product Dimensions

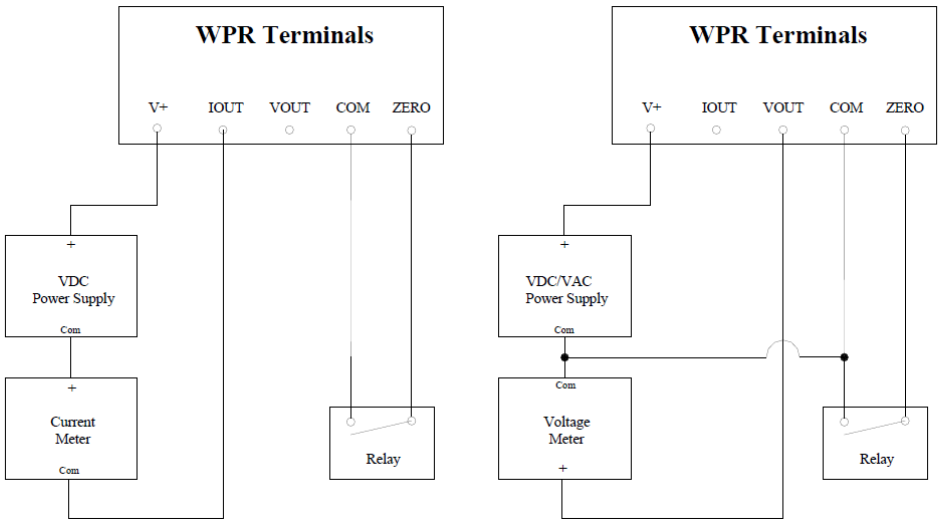


Product Wiring Details

Shielded cable with 16 to 22AWG conductors is recommended. Use the Wiring Connections table below to determine the proper wiring for your application.

Output Signal	Supply Voltage	Wire Connections		
VDC	VAC/VDC	V+	COM	VOUT
mA	VDC	V+		IOUT

Table 1: Wiring Connections



Specifications are subject to change without notice.

Q5-CO-250P-0-X
Product Data

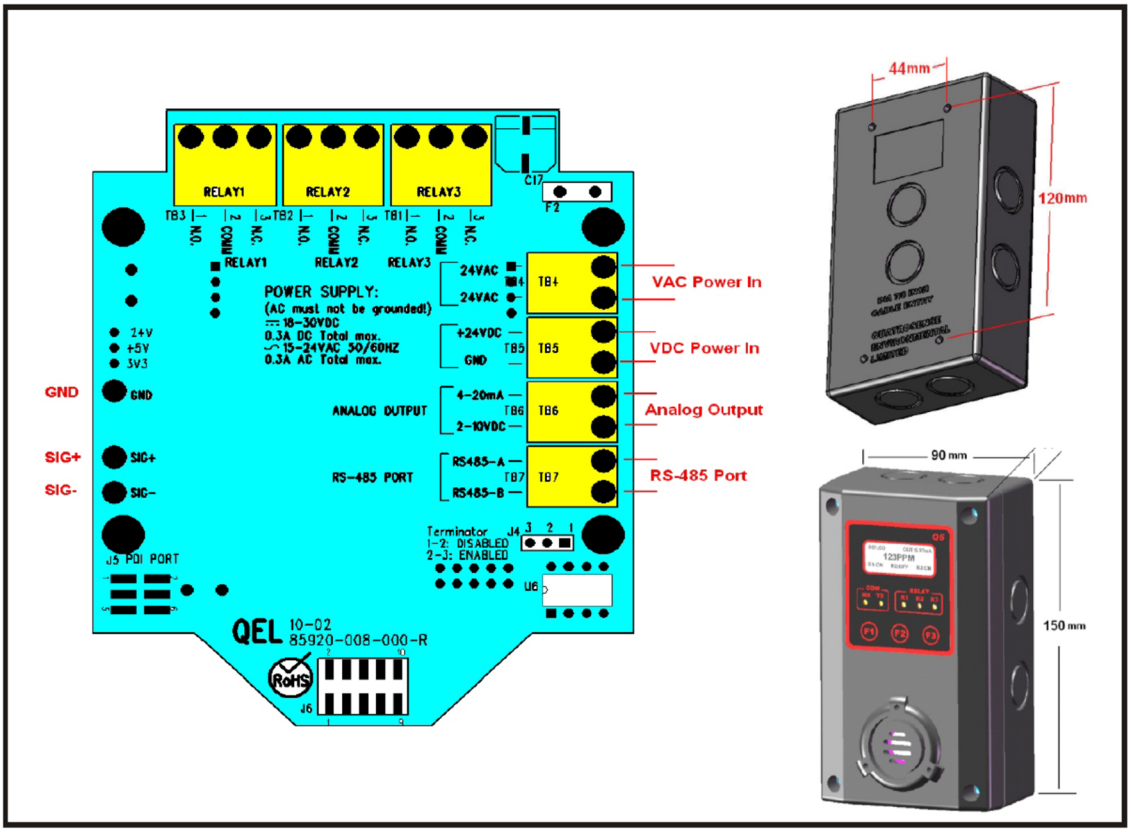
Product Description

The Q5-CO-250P-0-X is a microprocessor based "smart" carbon monoxide gas sensor/ transmitter. Pre-calibrated sensor cartridges can be purchased and installed by the user, thereby reducing calibration costs and minimizing downtime. The user can select from numerous display options, including relay status, time, TWA, STEL, concentration, or nothing at all. All programming and calibration is nonproprietary and is accessed through a user selectable password which protects system integrity.

The Q5 series is covered by ACI's Two (2) Year Limited Warranty. The warranty can be found in the front of ACI's Sensors & Transmitters catalog, as well as on ACI's web site, www.workaci.com

Product Specifications

Supply Voltage AC:	15 to 24 Vac, 0.3A ac max. (AC must not be grounded)
Supply Voltage DC:	18 to 30 Vdc, 0.3A dc max.
Sensor Type:	CO, Electromechanical, 0-250 PPM
Sensor Life Span:	2 to 3 years typical (toxic gas), >5 years in clean environment
Operating Temp. Range:	-4 to 122°F (-20 to 50°C)
Operating Humidity:	5 to 95%, non-condensing
Operating Environment:	Commercial, indoor, extreme temperature environments
Outputs:	Analog: 4-20 mA, 1-5 Vdc, 2-10 Vdc, Digital RS-485, Modbus 3 SPDT relays;1A @ 30Vdc
Sampling Method:	Diffusion or flow through
Visual Indicators:	Backlit LCD graphic display, (5) LED's for Relay and RS-485 status
Audible Alarm:	>80 dB at 10 cm, 2700 Hz with 3 programmable tones
Sensor Coverage Area:	7500 ft^2
Enclosure:	IP66 and NEMA 4, 4X, 12 and 13
Dimensions:	5.9" (H) x 3.4" (W) x 2.55" (D)
Weight:	Less than 0.5 lbs



Specifications are subject to change without notice.

JACKSON SYSTEMS
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Emergency Boiler Stop Station

SS2221ZA-EN
Product Data

Product Description

The ADA Compliant, Emergency Boiler Stop push-button station incorporates a unique, patented design that helps dramatically to stop accidental activation. Manufactured by STI (Safety Technology International), this patented design combined with quality construction throughout, provides outstanding performance for years to come.

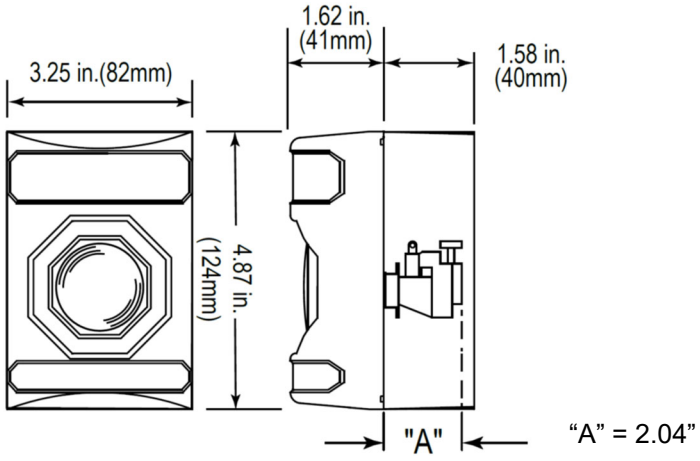
Key Features

- Unique, curved design helps protect against accidental activation
- Station housing molded of tough polycarbonate
- UL Listed to U.S. and Canadian safety standards
- Stainless steel backplate
- ADA Compliant
- 5VA flammability rating on backplate and spacer
- Typical working properties of polycarbonate are –40° to 250°F (-40 to 121°C)
- Protected with STI protective cover

Product Specifications

Text:	EMERGENCY BOILER STOP
Operator Style:	Push / twist-to-reset mushroom switch
Mounting:	Surface mount
Location:	Indoor
Housing Color:	Yellow
Switch Color:	Red
Switch Action:	Maintained
Operations:	Rated for 6,000 Operations
Contacts:	one N.O. and one N.C. (gold-plated, interchangeable or replaceable
Contacts Rating:	6 amps @ 600Vac; 1 amp @ 250 Vdc
Termination Type:	screw terminals
Rated Insulation Voltage:	600 V
Rated Thermal Current:	10 Amp AC, 2.5 Amp DC
Approved or Listed By:	UL/cUL File No. S7255 CSA C22.2 No. 205 ADA Compliant

Product Dimensions



Specifications are subject to change without notice.

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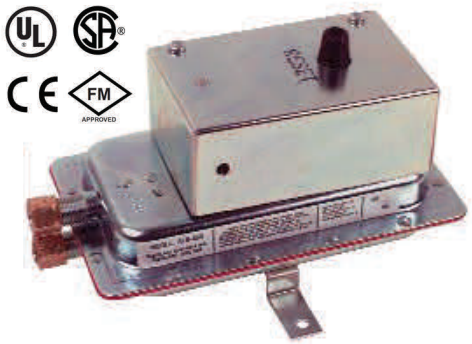
Differential Pressure Switch

AFS-460
Product Data

Product Description

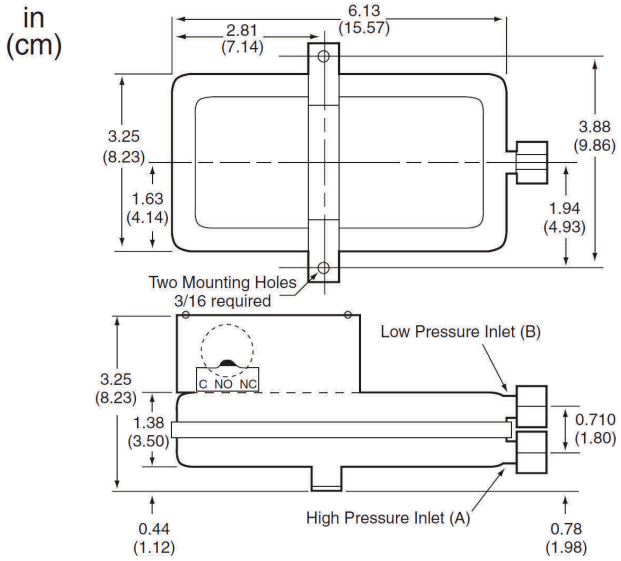
The AFS-460 Adjustable Differential Pressure Switch is designed for pressure, vacuum, and differential pressures. This general-purpose, air -flow proving switch has a manual reset push button. The normally closed switch opens upon pressure rise to setpoint, but will not close until the reset button is pushed. The plated housing contains a diaphragm, calibration spring, and snap-acting SPDT switch. The integral compression ferrule and nut accepts 1/4" OD tubing. The enclosure cover with a 1/2" conduit connection guards against accidental contact with the live switch terminal screws and the setpoint adjustment screw.



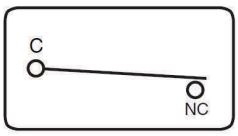
Product Specifications

Service:	Air and non-combustible, compatible gases
Temperature Limits:	Process ambient temperature from –40 to 180°F (-40 to 82°C)
Pressure Range:	0.04" to 12" W.C. (10 to 2989 Pa)
Pressure Limits:	Maximum operating; 0.5 psig (3.5 kPa)
Switch Type:	Single-pole single-throw (SPST)
Electrical Rating:	15 A @ 125-277 Vac 1/4 HP @ 125 Vac 1/2 HP @ 250 Vac 1/2 A @ 125 Vdc
Electrical Connections:	Screw-top terminals with cup washers
Electrical Entry:	1/2" conduit connection
Process Connections:	Ferrule and nut compression type connectors will accept 1/4" OD tubing
Mounting Orientation:	Vertically, with pressure connections pointing downwards
Mechanical Working Life:	6000 cycles
Weight:	2 lb (0.91 kg)
Agency Approvals:	UL listed, FM CSA, CE

Product Dimensions



Product Wiring



Opens on a rise in differential pressure

Specifications are subject to change without notice.

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JACKSON SYSTEMS
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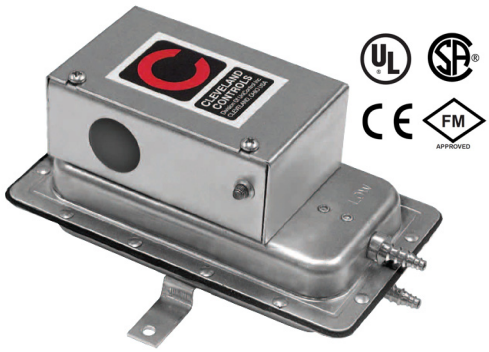
Differential Pressure Switch

AFS-222-112
Product Data

Product Description

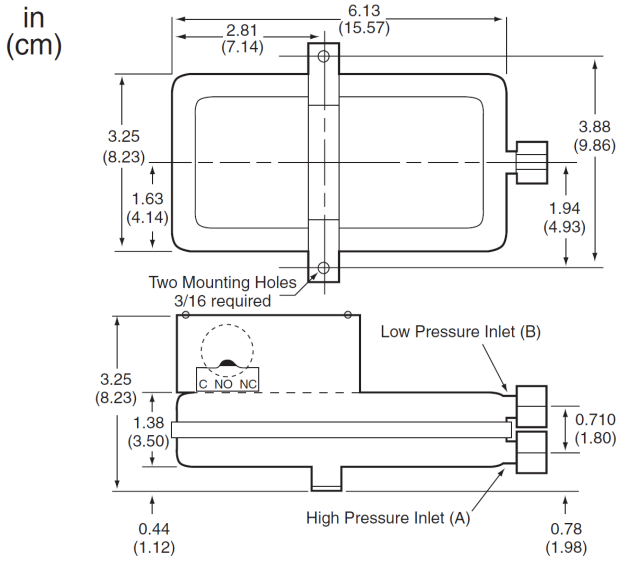
The AFS-222-112 Adjustable Differential Pressure Switch is designed for pressure, vacuum, and differential pressures. The normally open switch opens upon pressure drop below setpoint and closes upon pressure rise above setpoint. The plated housing contains a diaphragm, calibration spring, and snap-acting SPDT switch. The convenient barbed sample line connectors accept flexible tubing. The enclosure cover with a 1/2" conduit connection guards against accidental contact with the live switch terminal screws and the setpoint adjustment screw.



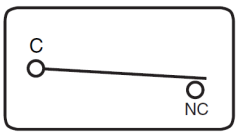
Product Specifications

Service:	Air and non-combustible, compatible gases
Temperature Limits:	Process ambient temperature from –40 to 180°F (-40 to 82°C)
Pressure Range:	0.05" to 12" W.C. (10 to 2989 Pa)
Pressure Limits:	Maximum operating; 0.5 psig (3.5 kPa)
Switch Type:	Single-pole single-throw (SPDT)
Electrical Rating:	15 A @ 125-277 Vac 1/4 HP @ 125 Vac 1/2 HP @ 250 Vac 1/2 A @ 125 Vdc
Electrical Connections:	Screw-top terminals with cup washers
Electrical Entry:	1/2" conduit connection
Process Connections:	1/4" barb pressure connectors
Mounting Orientation:	Vertically, with pressure connections pointing downwards
Mechanical Working Life:	6000 cycles
Weight:	2 lb (0.91 kg)
Agency Approvals:	UL listed, FM CSA, CE

Product Dimensions



Product Wiring



Opens on a rise in differential pressure

Specifications are subject to change without notice.

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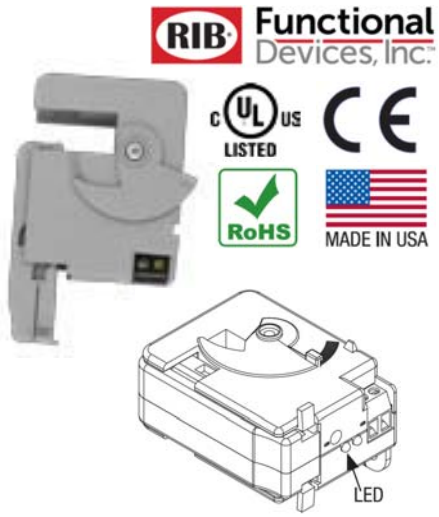
Product Description

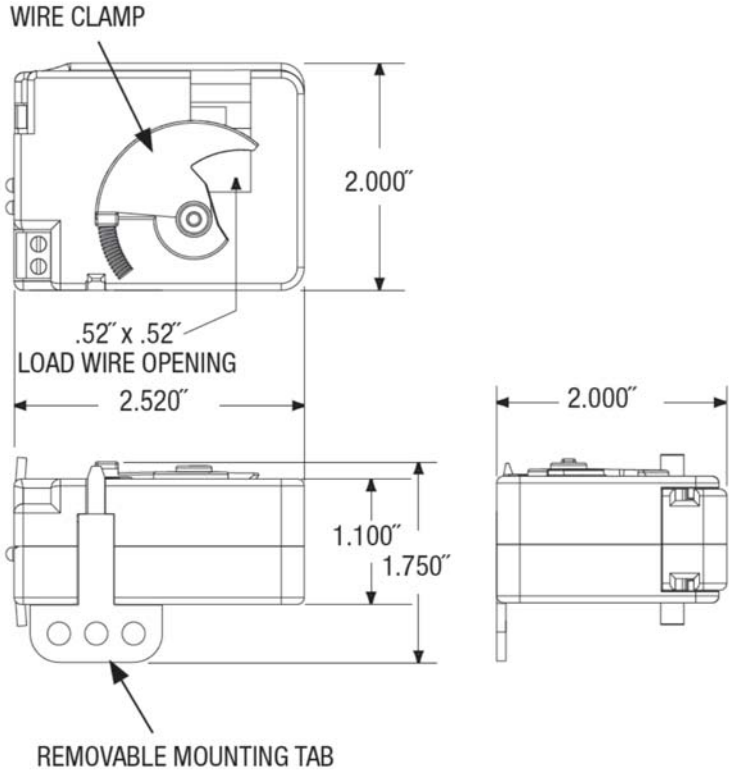
The Functional Devices, Inc.™ RIBXGTF is a split core current sensor with an internal solid state switch. This current sensing relay has been packaged to save the installer the time, trouble and expense of buying separate components (current sensor, relay, socket, mounting rail and housing) and assembling them on the job or at the shop. The split core allows the installer to mount the sensor without removing the load wire from its termination point. A removable mounting tab is provided with the sensor. The wire clamp locks against the load wiring, securing the unit in place.



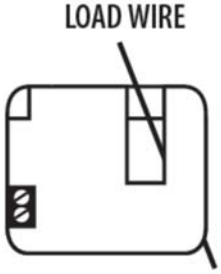
Product Specifications

Type:	Split Core
Range:	.35-150 Amp
Operating Temp.:	-30 to 140°F
Max Sense Volts:	600 Vac
Threshold:	Fixed, 0.35 Amp
Output:	Solid state switch SPST; 30 Vac/dc, 0.4 Amps max
Leakage:	<30 µA @ 30 Vac/dc when current sensor status is off (open)
Voltage Drop:	<0.3 Vac/dc @ 0.1 Amp, < 1.6 Vac/dc @ 0.4 Amp when current sensor is on (closed)
Dimensions:	2.00” x 2.52” x 1.75” with removable mounting tab
Indication:	One over trip point LED
Terminals:	Screw, accepts #14-22 AWG wire
Approvals:	UL Listed, UL916, UL864, C-UL, CE, RoHS
Housing Rating:	NEMA 1, Plenum

Product Dimensions



Product Wiring



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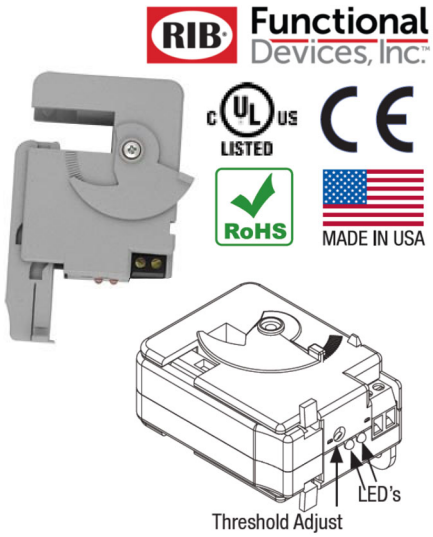
Fax: 317.227.1034

RIBXGTA-ECM
Product Data

Product Description

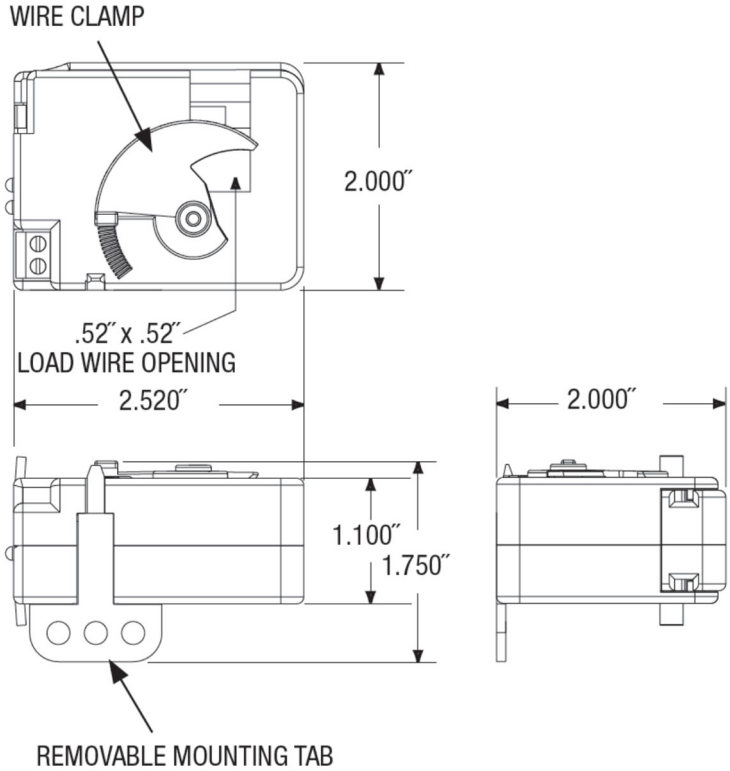
The Functional Devices, Inc.™ RIBXGTA-ECM is a split core current sensor with an internal solid state switch designed for use with EC motors. This current sensing relay has been packaged to save the installer the time, trouble and expense of buying separate components (current sensor, relay, socket, mounting rail and housing) and assembling them on the job or at the shop. The split core allows the installer to mount the sensor without removing the load wire from its termination point. A removable mounting tab is provided with the sensor. The wire clamp locks against the load wiring, securing the unit in place.



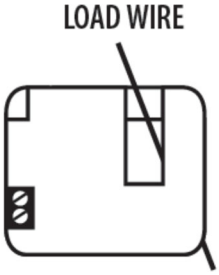
Product Specifications

Type:	Split Core
Range:	.25-150 Amp
Operating Temp.:	-30 to 140°F
Max Sense Volts:	600 Vac
Threshold:	Adjustable
Output:	Solid state switch SPST; 30 Vac/dc, 0.4 Amps max
Leakage:	<30 µA @ 30 Vac/dc when current sensor status is off (open)
Voltage Drop:	<0.3 Vac/dc @ 0.1 Amp, < 1.6 Vac/dc @ 0.4 Amp when current sensor is on (closed)
Dimensions:	2.00" x 2.52" x 1.75" with removable mounting tab
Indication:	One over trip point LED, One under trip point LED
Terminals:	Screw, accepts #14-22 AWG wire
Approvals:	UL Listed, UL916, UL864, C-UL, CE, RoHS, California State Fire Marshal
Housing Rating:	NEMA 1, Plenum

Product Dimensions



Product Wiring



Website: www.jacksonsystems.com
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5418 Elmwood Avenue
Indianapolis, IN 46203-6025
Toll-Free: 888.652.9663
Fax: 317.227.1034

Product Description

The RV8H-L-D12 is a 6mm interface relay and din rail mounted base. It Features 6A contact capacity in a miniature package saving valuable space. This model includes an indicating light and a DC coil.

Product Specifications

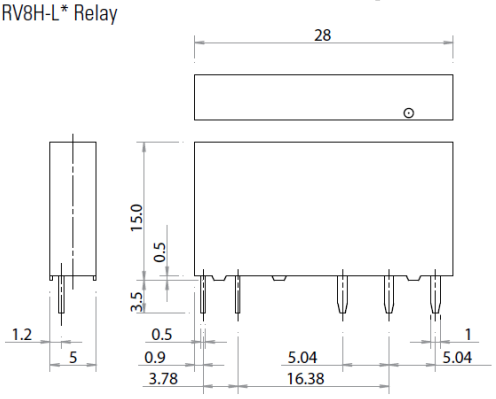
Relay Part Number:	RV8H-L-D12	
Contact Form:	1 form C (SPDT)	
Dimensions:	3.465"L x 0.24"W x 2.92"H (88mm L x 6.1mm W x 74.2mm H)	
Material, Contact:	AgNi (Au plating)	
Dielectric Strength:	Between contact and coil: 4,000 Vac for 1 min. Between pole: 1,000 Vac for 1 min.	
Vibration Resistance:	Operating Extremes:	Frequency 10 to 55 Hz NO: Amplitude 1.0mm NC: Amplitude 0.4mm
	Damage Limits:	Frequency 10 to 55 Hz Amplitude 1.0mm
Shock Resistance:	Operating Extremes:	NO: 49m/s^2 (5G) NC: 29.4 m/s^2 (5G)
	Damage Limits:	980 m/s^2 (10G)
Standards:	UL, CE	
Degree of Protection:	IP20	
Electrical Life:	10,000 operations minimum @ 1800 operations/hour	
Mechanical Life:	Over 10,000,000 operations (without load)	
Operating Temperature:	-40°F to 158°F (-40°C to 70°C)	
Operating Humidity:	5 to 85% (without condensation)	
Termination:	Screw clamp	
Coil Voltage:	12 Vdc	
Coil Rated Current:	14.6 mA (+/-15%)	
Coil Resistance:	820 Ω (+/-10%)	
Contact Voltage Rating:	250 Vac / 30 Vdc	
Contact Current Rating:	6 A	
Power Consumption:	0.2W	
Weight:	30g (approximately)	

CE

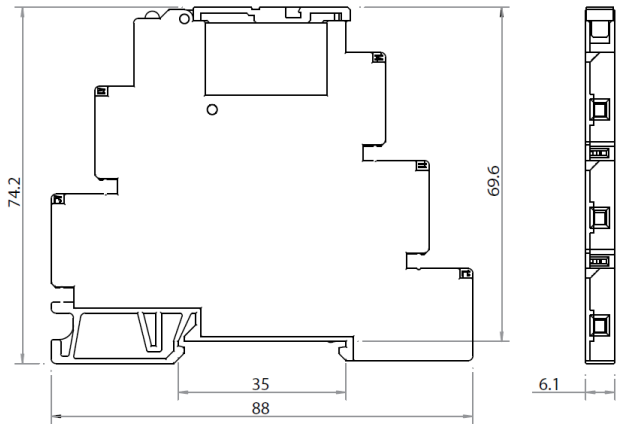
c UL us LISTED
(when using combination of
RV1H relay and SV1H socket)

Product Dimensions (millimeters)

RV8H-L* Relay



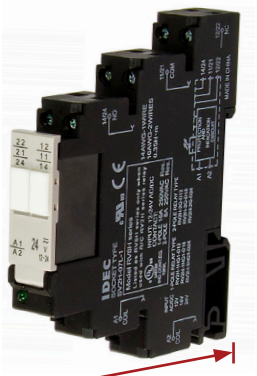
SV1H-07L* Socket



Specifications are subject to change without notice.

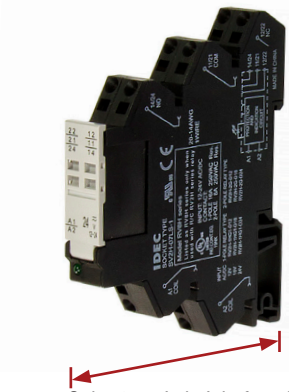
14mm Interface Relays:
RV8 Series

Screw Terminal



Only 70mm in height from DIN rail

Spring Clamp Terminal



Only 70mm in height from DIN rail

SPECIFICATIONS

Number of Poles		1-pole	2-pole
Contact Configuration		1C (SPDT)	2C (DPDT)
Contact Material		AgNi	AgNi (Au-plated)
Degree of Protection		IP20	IP20
Dielectric strength	Between contact and coil	5,000V AC for 1 minute	5,000V AC for 1 minute
	Between contacts of the same pole	1,000V AC for 1 minute	1,000V AC for 1 minute
	Between contact sets	-	2,500V AC for 1 minute
Vibration Resistance	Operating extremes	10 to 55Hz, amplitude 0.75mm (NO contact), 0.175mm (NC contact)	10 to 55Hz, amplitude 0.75mm (NO contact), 0.1mm (NC contact)
	Damage limits	10 to 55Hz, amplitude 0.75mm (NO contact), 0.175mm (NC contact)	10 to 55Hz, amplitude 0.75mm (NO contact), 0.1mm (NC contact)
Shock Resistance	Operating extremes	98m/s² (NO)	98m/s² (NO)
	Damage limits	980m/s²	980m/s²
Electrical Life - Screw terminal		AC load:30,000 operations minimum (250V AC, 16A resistive load, operation frequency 360 operation per hour)	AC load:100,000 operations minimum (250V AC, 8A resistive load, operation frequency 360 operation per hour)
Electrical Life - Spring Clamp terminal		AC load:30,000 operations minimum (250V AC, 12A resistive load, operation frequency 360 operation per hour)	AC load:100,000 operations minimum (250V AC, 6A resistive load, operation frequency 360 operation per hour)
Mechanical Life (no load)		10,000,000 operations minimum (Operation frequency 18,000 operations per hour)	10,000,000 operations minimum (Operation frequency 18,000 operations per hour)
Operating Temperature		RV8H-1L1-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110 : -40 to +70°C (Contact current 12A max, 6A per terminal) no freezing : -40 to +55°C (Contact current 16A max, 8A per terminal) no freezing	RV8H-2L-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110 : -40 to +70°C (Contact current 6A max) no freezing : -40 to +55°C (Contact current 8A max) no freezing
		RV8H-1L1- AD220 : -40 to +55°C (Contact current 16A max, 8A per terminal) no freezing	RV8H-2L- AD220 : -40 to +55°C (Contact current 8A max) no freezing
		RV8H-1S1-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110 : -40 to +70°C (Contact current 12A max, 6A per terminal) no freezing	RV8H-2S-D6, D9, D12, D18, D24, AD12, AD18, AD24, AD48, AD60, AD110 : -40 to +70°C (Contact current 6A max) no freezing
		RV8H-1S1- AD220 : -40 to +55°C (Contact current 12A max, 6A per terminal) no freezing	RV8H-2S- AD220 : -40 to +55°C (Contact current 6A max) no freezing
Operating Humidity		5 to 85% (no condensation)	5 to 85% (no condensation)
Weight		Screw Terminal: Approx.52g Spring Clamp Terminal: Approx. 49g	Screw Terminal: Approx. 52g Spring Clamp Terminal: Approx. 49g

PRODUCT DESCRIPTION

With the addition of a 14mm version, IDEC offers a complete line of RV8 interface relays. Ideal for panels with limited room, these low-profile relays provide up to a 40% reduction in DIN rail space when compared with standard plug-ins. RV8 relays are good for higher load switching applications, panels with high I/O content and commercial HVAC panels. UL listed when paired with a corresponding socket, it's easy to save space with new RV8 models.

KEY FEATURES

- Space-saving 14mm width.
- Universal AC/DC socket with built-in surge suppression and green LED Indicator
- Gold plated contacts (2-pole model only)
- Pre-assembled relay and DIN mount socket
- Universal screw terminals (flat and Philips) or spring clamp terminals
- Only 70 mm in height from DIN rail
- Release lever for easy locking and removal of relay
- Wide input voltage range: 6 to 240V
- High dielectric strength and impulse withstand voltages.
- Reverse polarity protected
- RoHS compliant

CE c UL us
(when using combination of RV relay and SV socket)

PART NUMBERS

	Screw Terminals				Spring Clamp Terminals			
	Complete Unit  Relay Only 				Complete Unit  Relay Only 			
Input voltage	1-pole		2-pole		1-pole		2-pole	
	Complete Part Number	Replacement (Relay Only)	Complete Part Number	Replacement (Relay Only)	Complete Part Number	Replacement (Relay Only)	Complete Part Number	Replacement (Relay Only)
DC 6V	RV8H-1L1-D6	RV2H-1HG1-D5	RV8H-2L-D6	RV2H-2G-D5	RV8H-1S1-D6	RV2H-1HG1-D5	RV8H-2S-D6	RV2H-2G-D5
DC 9V	RV8H-1L1-D9	RV2H-1HG1-D9	RV8H-2L-D9	RV2H-2G-D9	RV8H-1S1-D9	RV2H-1HG1-D9	RV8H-2S-D9	RV2H-2G-D9
DC 12V	RV8H-1L1-D12	RV2H-1HG1-D12	RV8H-2L-D12	RV2H-2G-D12	RV8H-1S1-D12	RV2H-1HG1-D12	RV8H-2S-D12	RV2H-2G-D12
DC 18V	RV8H-1L1-D18	RV2H-1HG1-D18	RV8H-2L-D18	RV2H-2G-D18	RV8H-1S1-D18	RV2H-1HG1-D18	RV8H-2S-D18	RV2H-2G-D18
DC 24V	RV8H-1L1-D24	RV2H-1HG1-D24	RV8H-2L-D24	RV2H-2G-D24	RV8H-1S1-D24	RV2H-1HG1-D24	RV8H-2S-D24	RV2H-2G-D24
AC/DC 12V	RV8H-1L1-AD12	RV2H-1HG1-D12	RV8H-2L-AD12	RV2H-2G-D12	RV8H-1S1-AD12	RV2H-1HG1-D12	RV8H-2S-AD12	RV2H-2G-D12
AC/DC 18V	RV8H-1L1-AD18	RV2H-1HG1-D18	RV8H-2L-AD18	RV2H-2G-D18	RV8H-1S1-AD18	RV2H-1HG1-D18	RV8H-2S-AD18	RV2H-2G-D18
AC/DC 24V	RV8H-1L1-AD24	RV2H-1HG1-D24	RV8H-2L-AD24	RV2H-2G-D24	RV8H-1S1-AD24	RV2H-1HG1-D24	RV8H-2S-AD24	RV2H-2G-D24
AC/DC 48V	RV8H-1L1-AD48	RV2H-1HG1-D48	RV8H-2L-AD48	RV2H-2G-D48	RV8H-1S1-AD48	RV2H-1HG1-D48	RV8H-2S-AD48	RV2H-2G-D48
AC/DC 60V	RV8H-1L1-AD60	RV2H-1HG1-D60	RV8H-2L-AD60	RV2H-2G-D60	RV8H-1S1-AD60	RV2H-1HG1-D60	RV8H-2S-AD60	RV2H-2G-D60
AC/DC 110V - 125V	RV8H-1L1-AD110	RV2H-1HG1-D110	RV8H-2L-AD110	RV2H-2G-D110	RV8H-1S1-AD110	RV2H-1HG1-D110	RV8H-2S-AD110	RV2H-2G-D110
AC/DC 220V - 240V	RV8H-1L1-AD220	RV2H-1HG1-D110	RV8H-2L-AD220	RV2H-2G-D110	RV8H-1S1-AD220	RV2H-1HG1-D110	RV8H-2S-AD220	RV2H-2G-D110

RATINGS

Coil Ratings

Rated Voltage		Operating Characteristics (Against Rated Voltage)						Power Consumption (W)		
		Minimum Pickup Voltage (at 23°C)	Dropout Voltage (at 23°C)	Maximum Allowable Voltage (at 23°C)	Maximum Continuous Applied Voltage (Note 1)	Operation time	Release time	DC	AC (50Hz)	AC (60Hz)
DC	6V	80% max	7% min	120%	110% (Note 2)	15ms max	15ms max	0.45	-	-
DC	9V							0.40	-	-
DC	12V							0.38	-	-
DC	18V							0.43	-	-
DC	24V							0.48	-	-
AC/DC	12V			110%				0.38	0.35	0.35
AC/DC	18V							0.43	0.43	0.43
AC/DC	24V							0.48	0.50	0.50
AC/DC	48V							0.36	0.43	0.43
AC/DC	60V							0.46	0.54	0.54
AC/DC	110V - 125V							0.64	0.73	0.73
AC/DC	220V - 240V							1.10	1.25	1.32

Note 1: At rated operating temperature
Note 2: Rated Voltage AC/DC 240V : 106%

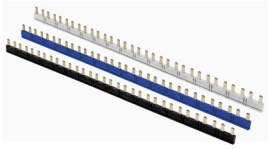
Contact Ratings

		Srew Terminal	Spring Clamp Terminal
Allowable contact power	Resistive load	1-pole 4,000VA	1-pole 3,000VA
		2-pole 2,000VA	2-pole 1,500VA
	Inductive load	B300 (pilot duty)	B300 (pilot duty)
Rated Load	Resitive load	1-pole 250V AC, 16A (8A per terminal) at 55°C, 12A (6A per terminal) at 70°C	1-pole 250V AC, 12A (6A per terminal) at 70°C
		2-pole 250V AC, 8A at 55°C, 6A at 70°C	2-pole 250V AC, 6A at 70°C
	Inductive load	B300 (pilot duty)	B300 (pilot duty)
Allowable Switching Current		1-pole 16A (8A per terminal) at 55°C, 12A (6A per terminal) at 70°C	1-pole 12A (6A per terminal) at 70°C
		2-pole 8A at 55°C, 6A at 70°C	2-pole 6A at 70°C
Allowable Switching Power		1-pole 4,000VA	1-pole 3,000VA
		2-pole 2,000VA	2-pole 1,500VA
Minimum Applicable Load (reference value)		1-pole 6VDC 100mA	1-pole 6VDC 100mA
		2-pole 5VDC 10mA	2-pole 5VDC 10mA

UL Ratings

		Screw Terminal		Spring Clamp Terminal	
	Voltage	1-Pole	2-Pole	1-Pole	2-Pole
Resistive	250V AC	16A (8A per terminal) at 55°C	8A at 55°C	-	-
		12A (6A per terminal) at 70°C	6A at 70°C	12A (6A per terminal) at 70°C	6A at 70°C

ACCESSORIES

Item	Color	Part Number
Jumper (32 combs, with 2-combs per relays, or 16 discrete relays.) Note [1, 2, 4] 	Black	SV9Z-J232B
	Gray	SV9Z-J232W
	Blue	SV9Z-J232S
Spacer (circuit separator) Note 3, 4 	Light Grey	SV9Z-SA2W
Screwdriver 	-	BC1S-SD0

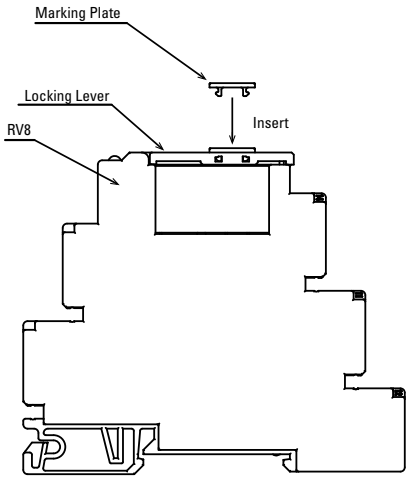
1. Jumper combs come with 16 pairs of combs, if shorter lengths are needed simply cut off the excess points.
2. Ensure that the total current to the jumper does not exceed the overall rated current (Rated current: 6A for spring-clamp terminals and 8A for screw type terminations).
3. Width of spacer: 2mm
4. When using a cut jumper, please use a spacer on the cut side. For additional information see instruction sheet.

Marking Plates (Blank and Pre-marked)

Item	Part Number	Engraving
	SV9Z-PW10	blank
	SV9Z-PW10-①1-10	1-10
	SV9Z-PW10-①11-20	11-20
	SV9Z-PW10-①21-30	21-30
	SV9Z-PW10-①31-40	31-40
	SV9Z-PW10-①41-50	41-50
	SV9Z-PW10-①51-60	51-60
	SV9Z-PW10-①61-70	61-70
	SV9Z-PW10-①71-80	71-80
	SV9Z-PW10-①81-90	81-90
	SV9Z-PW10-①91-100	91-100
	SV9Z-PW10-①A-J	A-J
	SV9Z-PW10-①K-T	K-T
	SV9Z-PW10-①U-Z	U-Z
	SV9Z-PW10-①GROUND	⏚
	SV9Z-PW10-①AC	∿

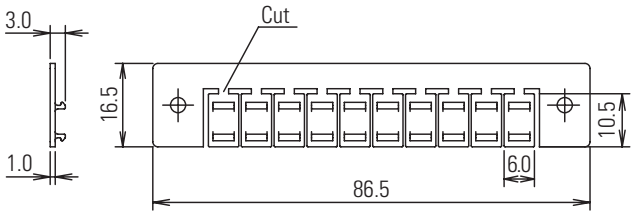
1. In place of ① insert orientation code: V=Vertical, H=Horizontal
2. Each unit has 10 pieces (marking plates).

Marking Plate Placement



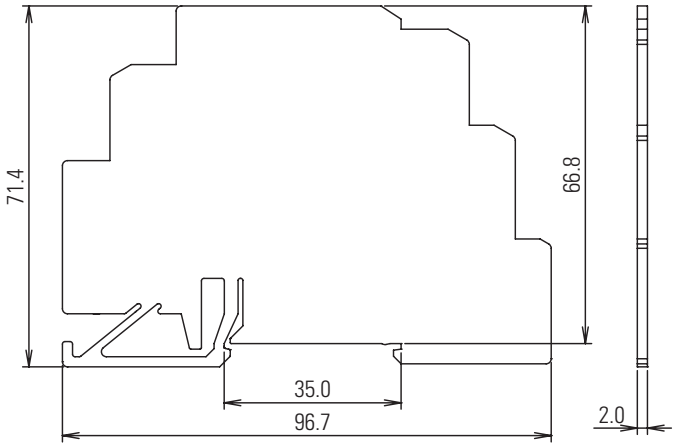
Dimensions (mm)

SV9Z-PW10* Marking Plate

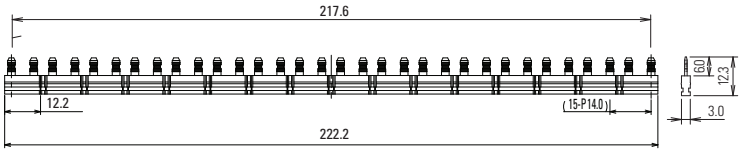


*Available blank or pre-marked.

SV9Z-SA2W Spacer



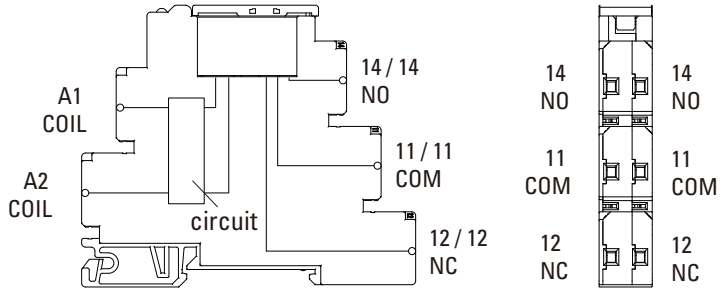
SV9Z-J232* Jumper



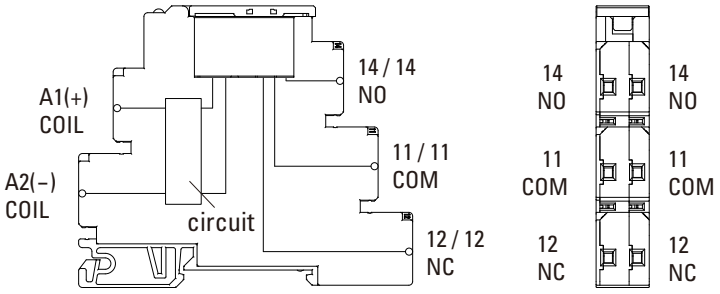
*Available in black, gray and blue.

INTERNAL CONNECTIONS

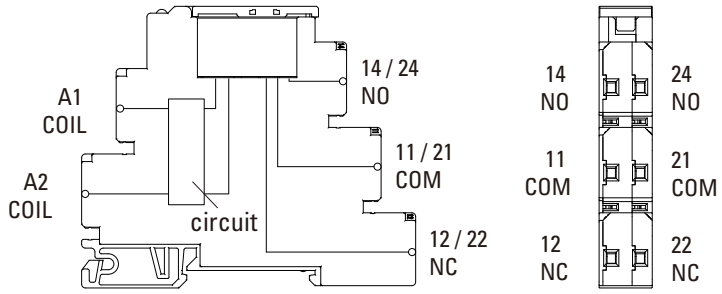
AC/DC Type (1-Pole)



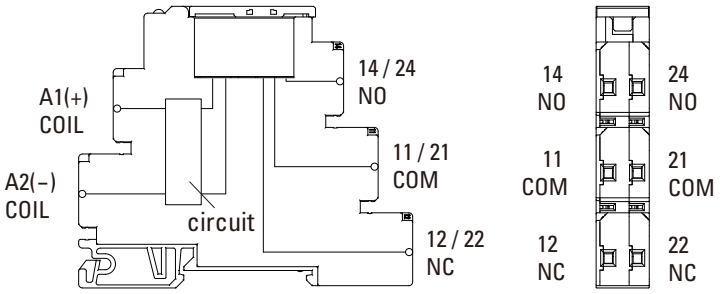
DC Type (1-Pole)



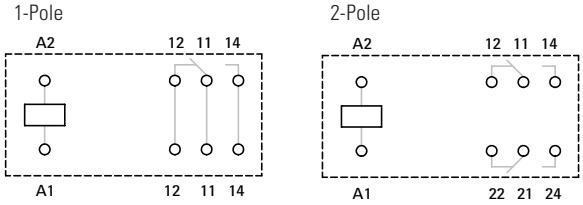
AC/DC Type (2-Pole)



DC Type (2-Pole)

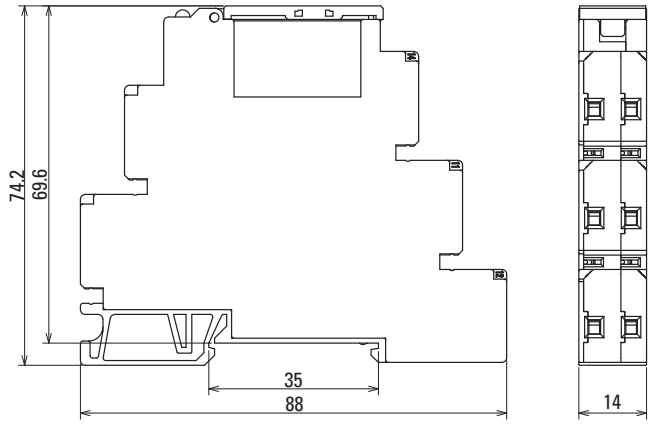


RV2H Replacement Relay

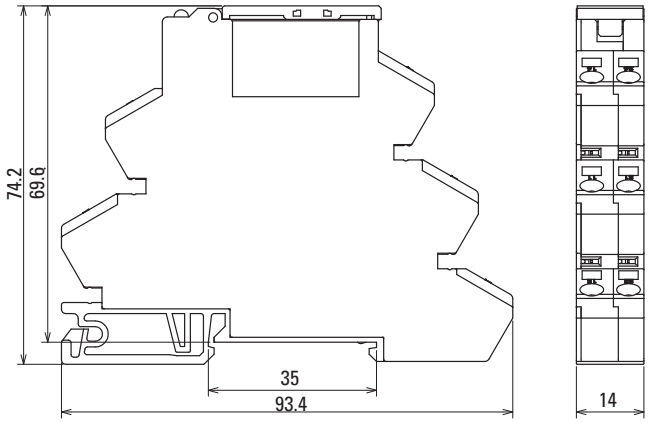


DIMENSIONS (mm)

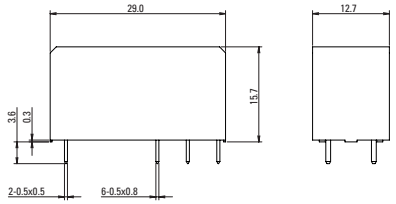
Screw Terminals



Spring Clamp Terminals

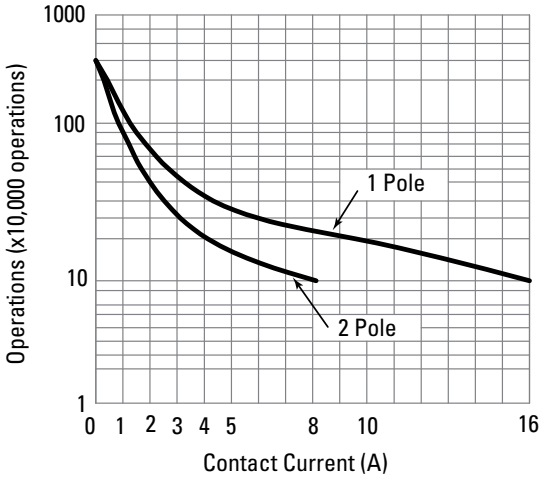


RV2H Replacement Relay (mm)



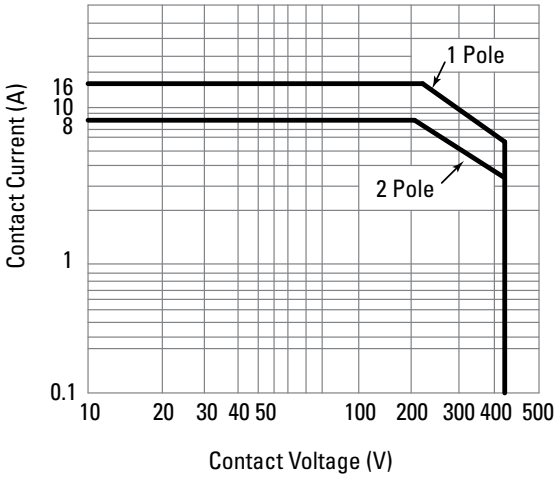
CHARACTERISTICS

Electrical Life Curve (AC Load)

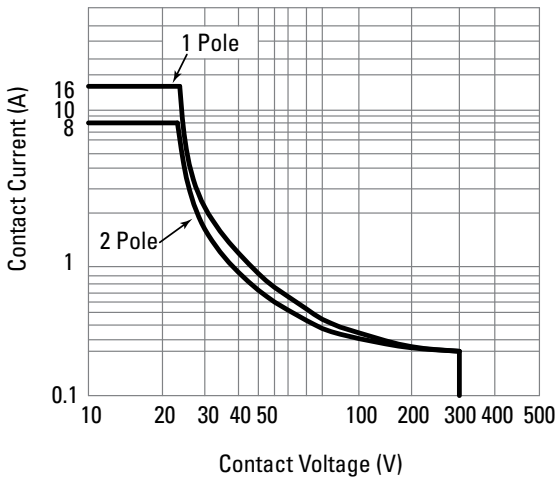


Contact Rating

AC



DC



IDEC Canada • 3155 Pepper Mill Court, Unit 4 • Mississauga, Ontario, L5L 4X7, Canada • 888-317-IDEC (4332) • Fax: 905-890-8562 • www.IDEC.com/canada

RH2B-ULAC120V
Product Data

Product Description

The RH series relay is a miniature power relay with a large capacity. It Features 10A contact capacity in a miniature package saving valuable space. This ULAC model includes an indicating light and an AC coil.

Product Specifications

Relay Part Number:	RH2B-ULAC120V
Contact Form:	DPDT
Contact Current Rating:	10 A
Dimensions:	0.819” L x 1.07” W x 1.39” H
Function:	General Purpose
Material, Contact:	Silver Cadmium Oxide
Relay Type:	Electro Mechanical
Resistance, Coil:	4170 Ohms
Resistance, Contact:	50 milliohms (max.)
Standards:	UL, CSA, CE, TUV
Operating Temperature:	-22°F to 158°F (-30°C to 70°C)
Termination:	Blade
Coil Voltage:	110/120 Vac
Contact Voltage Rating:	240 Vac / 30 Vdc
Power Consumption:	1.2VA (60Hz)
Weight:	37g (approximately)

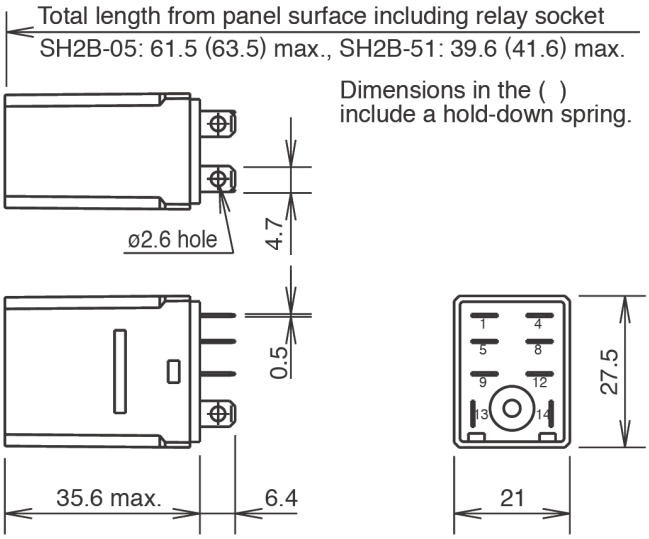
UL Recognized
Files No. E67770
E59804
E64245

CSA Certified
Files No. LR35144

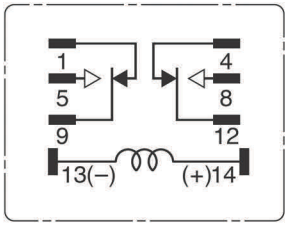
Files No. BL951113332319

Product Dimensions

millimeters



Product Wiring



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Product Description

The SH2B-05 socket is used with the RH2B miniature power relay. It features 10A capacity in a miniature package saving valuable space. This compact DIN rail mount socket make relay installation and replacements easy and fast.

Product Specifications

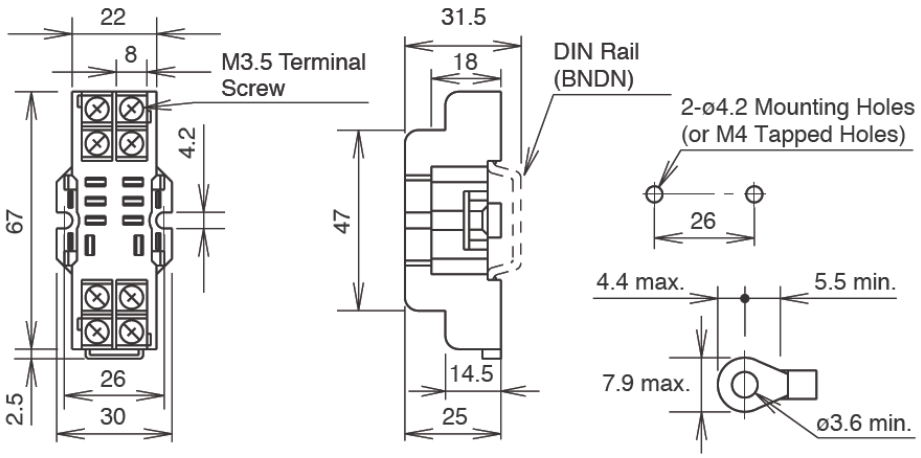
Part Number:	SH2B-05
Mounting:	Standard DIN rail mount
Type:	Blade
Coil Terminal:	M3.5 screws with captive wire clamp
Contact Terminal:	M3.5 screws with captive wire clamp
Electrical Rating:	300V, 10A
Maximum Wire Size:	Two #12 AWG
Torque:	9—11.5 in-lbs
Weight:	0.10 lb (0.05 kg)
Dimensions:	1.17"L x 2.62"W x 0.98"D (30mm L x 67mm W x 25mm D)
Standards:	UL, CSA, CE

UL Recognized
Files No. E62437

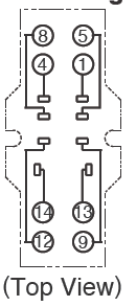
CSA Certified
Files No. LR35144

Product Dimensions

millimeters

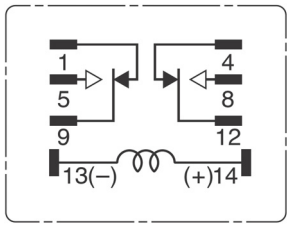


Terminal Arrangement



(Top View)

Product Wiring



RIB24P
Product Data

Product Description

The Functional Devices, Inc.™ RIB24P is a 20 Amp DPDT power control relay enclosed in a housing to save the installer the time, trouble and expense of buying and installing separate components such as relay, LED indicator, socket, mounting rail, transient protection and housing. The relay coil can be powered by 24 Vac/dc. An externally visible LED indicates the status of the relay coil.

Product Specifications

Type:	One (1) DPDT Continuous Duty Coil
Expected Life:	10 million cycles minimum mechanical
Operating Temp.:	-30 to 140°F
Humidity Range:	5 to 95% (non-condensing)
Operate Time:	18mS
Relay Status:	LED On = Activated
Dimensions:	2.30” x 3.20” x 1.80” with .50” NPT nipple
Wires:	16”, 600 V Rated
Approvals:	UL Listed, UL916, UL864, C-UL, California State Fire Marshal, CE, RoHS
Housing Rating:	NEMA 1, Plenum

Contact Ratings:

20 Amp Resistive @ 300 Vac
20 Amp Resistive @ 28 Vdc
20 Amp Ballast @ 277-480 Vac
15 Amp Resistive @ 600 Vac
770 VA Pilot Duty @ 120 Vac
1,158 VA Pilot Duty @ 240 Vac
1,109 VA Pilot Duty @ 277 Vac
1,640 VA Pilot Duty @ 480 Vac
3 HP @ 480-600 Vac
2 HP @ 240-277 Vac
1 HP @ 120 Vac

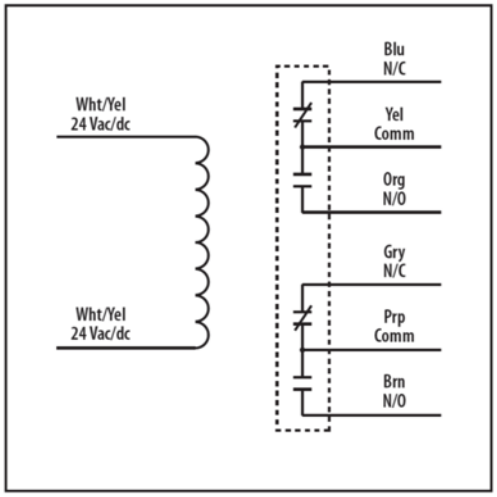
Coil Current:

110 mA @ 20 Vac
138 mA @ 24 Vac
55 mA @ 20 Vdc
55 mA @ 24 Vdc
77 mA @ 30 Vdc

Coil Voltage Input:

24 Vac/dc; 50-60 Hz
Drop Out = 3 Vac / 3.8 Vdc
Pull in = 20 Vac / 20 Vdc

Product Wiring



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RIBU1C
Product Data

Product Description

The Functional Devices, Inc. RIBU1C is a SPDT pilot duty relay enclosed in a housing to save the installer the time, trouble and expense of buying and installing separate components such as relay, LED indicator, socket, mounting rail, transient protection and housing. The relay coil can be powered by 10-30 Vac/dc or 120 Vac. An externally visible LED indicates the status of the relay coil.

Product Specifications

Type:	One (1) SPDT Continuous Duty Coil
Expected Life:	10 million cycles minimum mechanical
Operating Temp.:	-30 to 140°F
Humidity Range:	5 to 95% (non-condensing)
Operate Time:	18mS
Relay Status:	LED On = Activated
Dimensions:	2.30” x 3.20” x 1.80” with .50” NPT nipple
Wires:	16”, 600 V Rated
Approvals:	UL Listed, UL916, UL864, C-UL, California State Fire Marshal, CE, RoHS
Housing Rating:	NEMA 1, Plenum

Contact Ratings:

10 Amp Resistive @ 277 Vac
10 Amp Resistive @ 28 Vdc
480 VA Pilot Duty @ 240-277 Vac
480 VA Ballast @ 277 Vac
Not rated for Electronic Ballast
600 Watt Tungsten @ 120 Vac (N/O)
240 Watt Tungsten @ 120 Vac (N/C)
1/3 HP @ 120-240 Vac (N/O)
1/6 HP @ 120-240 Vac (N/C)
1/4 HP @ 277 Vac (N/O)
1/8 HP @ 277 Vac (N/C)

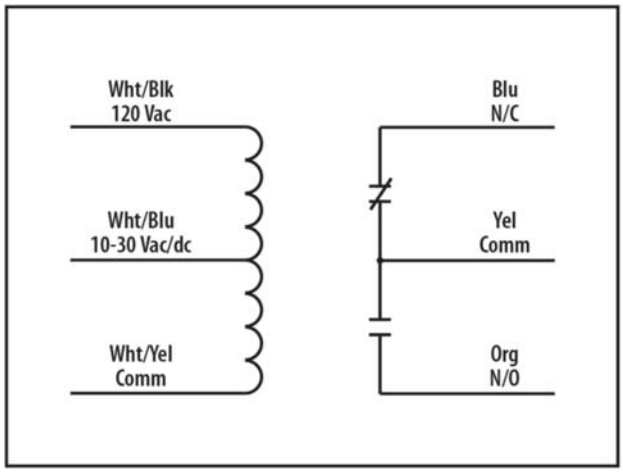
Coil Current:

33 mA @ 10 Vac	13 mA @ 10 Vdc
35 mA @ 12 Vac	15 mA @ 12 Vdc
46 mA @ 24 Vac	18 mA @ 24 Vdc
55 mA @ 30 Vac	20 mA @ 30 Vdc
28 mA @ 120 Vac	

Coil Voltage Input:

10-30 Vac/dc; 120 Vac; 50-60 Hz
Drop Out = 2.1 Vac / 3.8 Vdc
Pull in = 9 Vac / 10 Vdc

Product Wiring



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JACKSON SYSTEMS
Controls Done Right™

Fan Safety Alarm Circuits

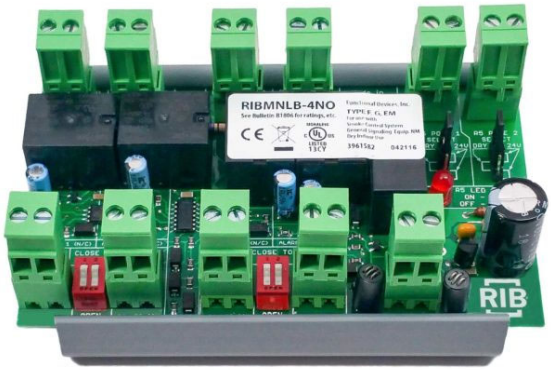
RIBMNLB-4NO
Product Data

Product Description

The Functional Devices, Inc.™ RIBMNLB-4NO is an AHU Fan Safety Alarm and General Purpose Logic Circuit. This simple device combines a common relay-logic function into a small, easy-to-install, and less expensive form.

A master relay opens if any one of the normally-closed (N/C) inputs open. LED status of all inputs, the master relay, and power input is provided. Bypass of un-used inputs is also provided. The RIBMNLB -4NO is provided with mounting track for mounting in user-provided electrical enclosures.

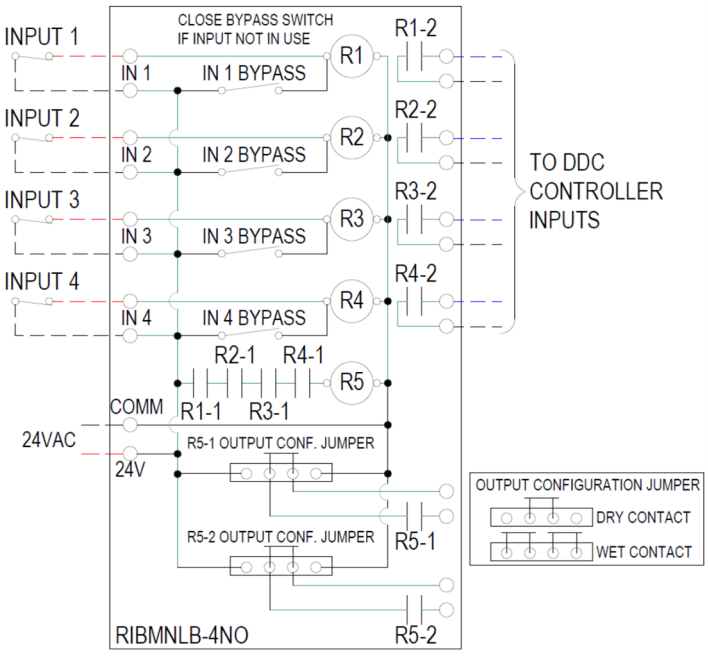
The master relay has two general-purpose outputs: both can be jumper selected at 24 V (sourced from input) or dry contact. The most common application is an Air Handling Unit (AHU) fan-safety-shutdown where the master relay is used to shutdown the fan. Contact closure outputs are provided so that a DDC controller can determine the cause of a shutdown.

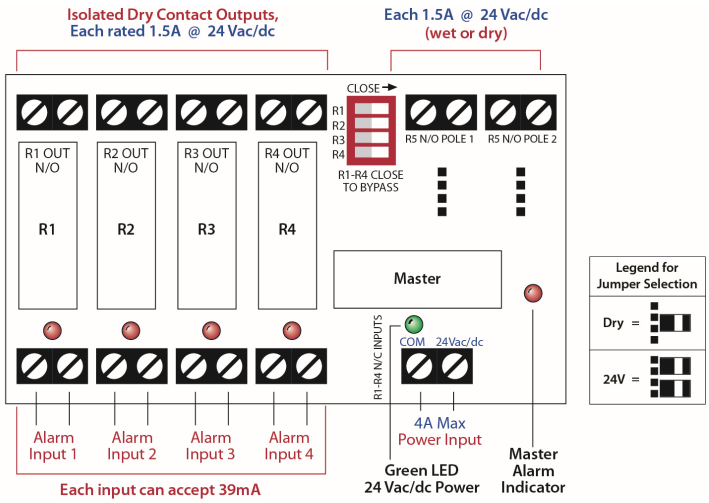


Product Specifications

Expected Life: 10 million cycles minimum mechanical
Operating Temp.: -30 to 140°F
Humidity Range: 5 to 95% (non-condensing)
Operate Time: 8mS
Power Input: 4 Amp max. @ 24 Vac/dc; 50-60 Hz
Alarm Status: LED On = Activated
Dimensions: 4.60" x 2.75" x 1.75"
Track Mount: 2.75", MT212-4 snap track
Approvals: UL Listed, UL916, UL864, C-UL, CE, RoHS, CSFM

Product Wiring





Note:
This is a half wave device. When connecting 24 Vac to both this device and a full-wave device, damage to device can occur. To avoid damage, take measures to isolate this devices power source from full-wave devices.

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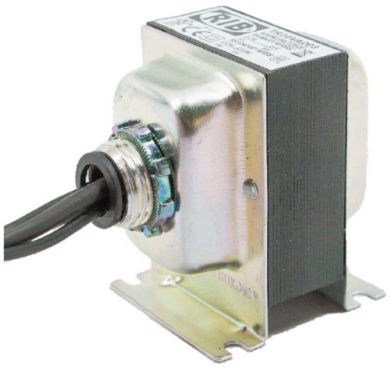
Product Description

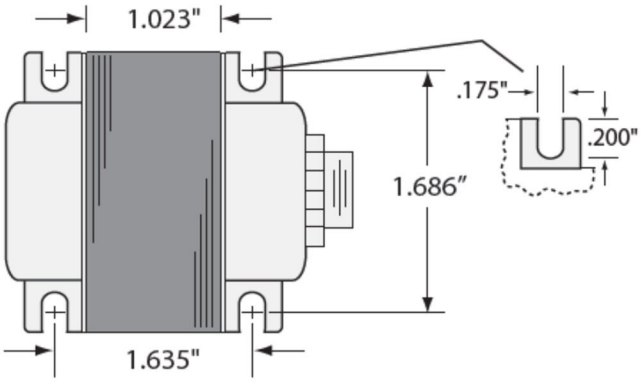
The Functional Devices, Inc.™ TR20VA003 is a 20 VA, 24Vac to 24 Vac Transformer with a foot and single threaded hub mount making this transformer ideal for panel or junction box mounting.

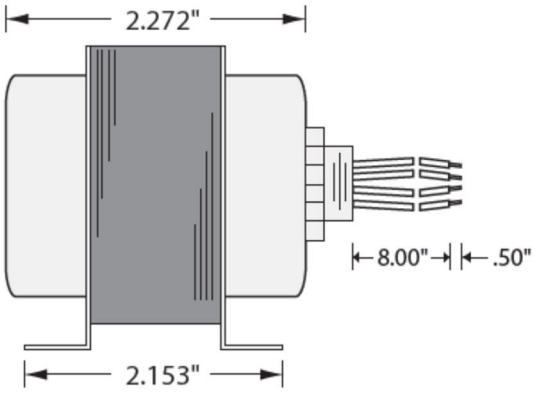


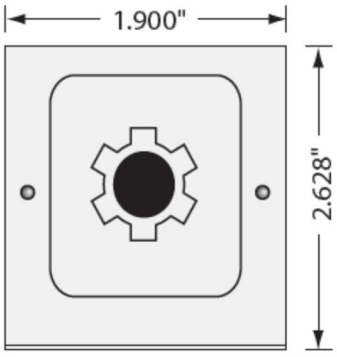
Product Specifications

VA Rating:	20
Frequency:	50/60 Hz
Mounting:	Foot & single threaded hub
Over Current Protection:	Inherently Limited
Dimensions:	2.272” x 1.900” x 2.628” (w/ .500” NPT Hub)
Wire Length:	8” Typical w/ .5” Strip
Operating Temperature:	-30 to 140°F
MTBF:	100,000 Hours @ 77°F
Construction:	Split-Bobbin
Approvals:	UL5085-2 Listed General Purpose C-UL, CE, RoHS

Product Dimensions and Wiring







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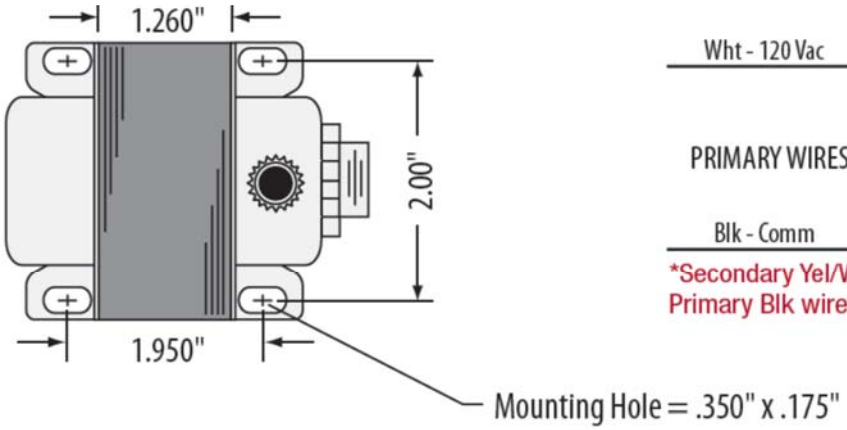
Product Description

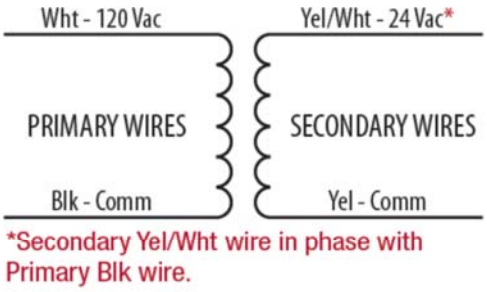
The Functional Devices, Inc.™ TR50VA005 is a Class II, 50 VA, 120 to 24 Vac Transformer with an integral circuit breaker. The foot and single threaded hub mount makes this transformer ideal for panel or junction box mounting.

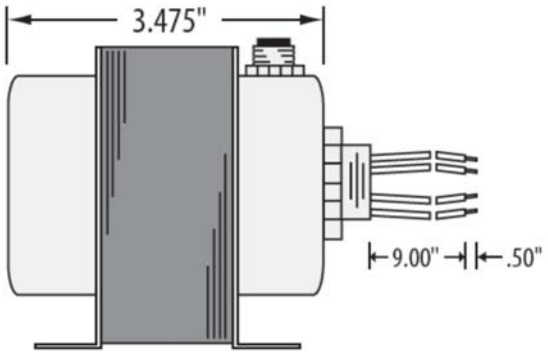
Product Specifications

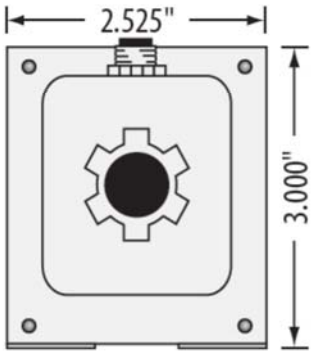
VA Rating:	50
Frequency:	50/60 Hz
Mounting:	Foot & single threaded hub
Over Current Protection:	Circuit Breaker
Dimensions:	3.0” x 2.525” x 3.475” (w/ .500” NPT Hub)
Wire Length:	9” Typical w/ .5” Strip
Operating Temperature:	-30 to 140°F
MTBF:	100,000 Hours @ 77°F
Construction:	Split-Bobbin
Weight:	2.6 lbs.
Approvals:	Class II UL5085-3 Listed, C-UL, CE, RoHS

Product Dimensions









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TR100VA001
Product Data

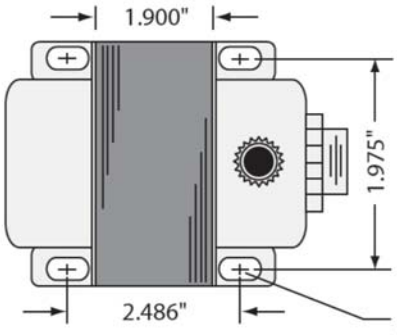
Product Description

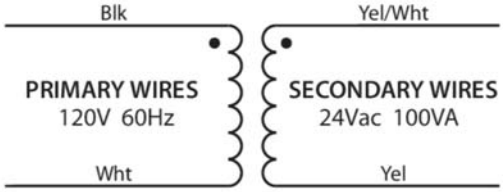
The Functional Devices, Inc.™ TR100VA001 is a Class II, 100 VA, 120 to 24 Vac Transformer with an integral circuit breaker. The foot and single threaded hub mount makes this transformer ideal for panel or junction box mounting.

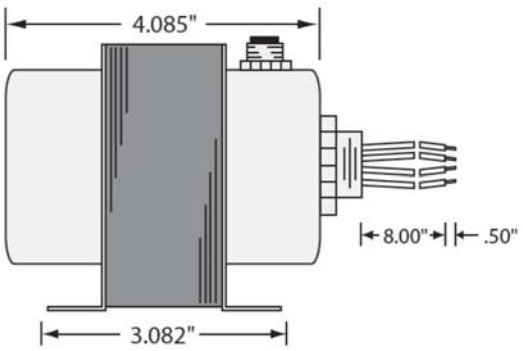
Product Specifications

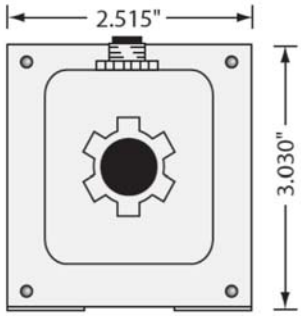
VA Rating:	100
Frequency:	50/60 Hz
Mounting:	Foot & single threaded hub
Over Current Protection:	Circuit Breaker
Dimensions:	3.0" x 2.5" x 4.0" (w/ .500" NPT Hub)
Wire Length:	9.5" Typical w/ .5" Strip
Operating Temperature:	-30 to 140°F
MTBF:	100,000 Hours @ 77°F
Construction:	Split-Bobbin
Weight:	4.06 lbs.
Approvals:	Class II UL5085-3 Listed, C-UL, CE, RoHS

Product Dimensions









Specifications are subject to change without notice.

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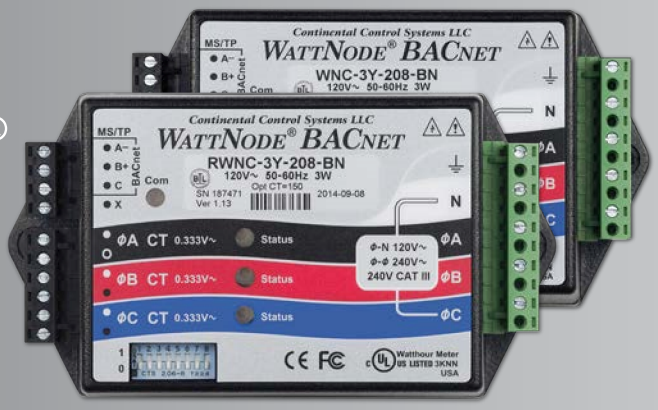
WattNode® BACnet®

Standard and Revenue-Grade



AC Power Measurement for BACnet Networks

The WattNode BACnet is a bidirectional networked energy meter offering energy measurement parameters such as energy (kW), power (kWh), voltage, current, demand, kVAR, kVARh, power factor, line frequency, etc. These energy values are communicated using the BACnet communication protocol over RS-485 as individual phase measurements and sum or average readings. The WattNode BACnet can be assigned MAC addresses from 0 to 63 using front panel DIP switches. Up to 64 WattNode BACnet meters can be daisy-chained on one RS-485 subnet.

The BACnet - (Building Automation Control Network) term is commonly used to refer to the ANSI/ASHRAE Standard 135, adopted and supported by the American Society of Heating, Refrigeration, and Air-Conditioning Engineers (ASHRAE). The BACnet protocol provides auto-discovery which is used for device and object discovery over the network. The WattNode BACnet meter has been independently tested by the BACnet Testing Laboratories (BTL), and is BACnet certified.

The WattNode BACnet is available in standard and revenue-grade accuracy and can be used with any low voltage CT (0.333 Vac output). Revenue-grade system accuracy requires current transformers with class 0.6 or better accuracy. The ACTL series of current transformers is available with Class 0.6 or Class 0.3 accuracy; these CTs are ideal for revenue-grade use for billing purposes, SREC and state revenue-grade requirements. Certificates of calibration are available for the WattNode Revenue meters and the ACTL revenue-grade current transformers.

The WattNode BACnet's compact size permits installation inside most electrical service panels, junction boxes and OEM equipment. The WattNode BACnet is line-powered, therefore does not require a separate powersource. Diagnostic LEDs help ensure fast and correct installation as well as network communication.

The WattNode BACnet family of energy meters measure 1, 2, 3 phases in 2, 3, or 4 wire configurations, 120 to 600 Vac, 50 to 60 Hz. CCS offers a complete line of low-voltage, solid and split-core current transformers for 5 to 6000 amp loads.

Features

- Native BACnet MS/TP (RS-485)
- 50+ measurements (watts, kWh, volts, amps, PF, demand, etc.)
- Supports 64 DIP switch selectable addresses
- Safe, low voltage (0.333 Vac) current transformers
- Line powered
- Single or three phase, wye or delta configurations
- UL, cUL, CE, RoHS compliant
- Small profile, easy installation
- 5 year warranty

Models

Model Number	Model Number	VAC Line to Neutral	VAC Line to Line	Phases	Wires
WNC-3Y-208-BN	RWNC-3Y-208-BN	120	208-240	3	4
WNC-3Y-400-BN	RWNC-3Y-400-BN	230	400	3	4
WNC-3Y-480-BN	RWNC-3Y-480-BN	277	480	3	4
WNC-3Y-600-BN	RWNC-3Y-600-BN	347	600	3	4
WNC-3D-240-BN	RWNC-3D-240-BN	120	208-240	3	3-4
WNC-3D-400-BN	RWNC-3D-400-BN	230	400	3	3-4
WNC-3D-480-BN	RWNC-3D-480-BN	277	480	3	3-4

"R" Designates revenue-grade

Continental Control Systems, LLC

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(888) 928-8663 • Fax (303) 444-2903

WattNode® BACnet

Quantities Measured

- True RMS Power: watts, per phase and sum
- Reactive Power: VARs, per phase and sum
- Power Factor: per phase and average
- True RMS Energy: kWh per phase and sum
- Reactive Energy: VAR hours, sum
- Frequency
- RMS voltage per phase
- RMS current per phase
- Demand and peak demand

User Controlled Inputs

- Set CT size in amps
- Set demand window type and period
- Reset peak demand to zero

Accuracy

- 0.5% nominal (see manual for details)

Electrical

- Operating Voltage Range: 80% to 115% of nominal
- Power Line Frequency Range: 50 to 60 Hz

Environmental

- Operating Temperature: -30°C to +75°C (-22°F to 167°F)
- Humidity: 5 to 90% RH (non-condensing)

Mechanical

- Enclosure: high impact, ABS plastic
- Flame Resistance Rating: 94V-0, IEC FV-0
- Size: 5.63” × 3.34” × 1.5” (143mm × 85mm × 38mm)
- Weight: 10.8 oz (305 gm)
- Connectors: euroblock style pluggable terminal blocks

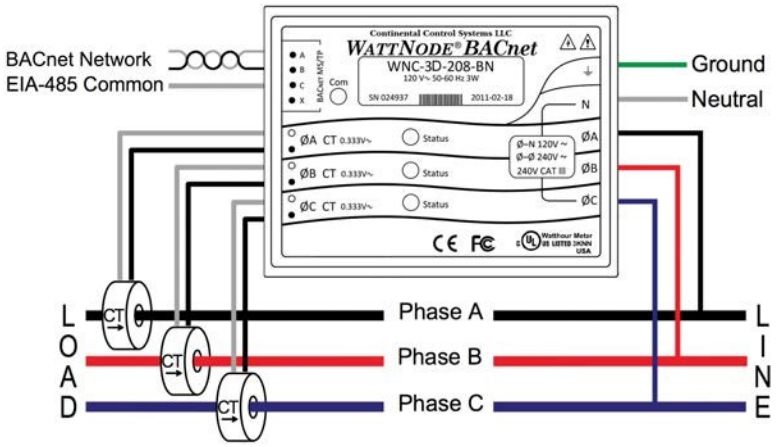
BACnet Communication

- BACnet MS/TP RS-485 interface
- Selectable serial baud rates up to 76.8K
- Duplex: half (two-wire plus common)

Regulatory

- FCC Class B, EN 55022 Class B
- UL and cUL Listed (UL 61010-1)
- CE Mark and RoHS compliant
- Immunity: EN 61326, (industrial locations)

WattNode Wiring Diagram, Three Phase Example



Accu-CT® Split-Core CTs

- Safe, low voltage output, 0.333 Vac
- Primary Ratings: 5 to 600 amps, 600 Vac, 50 or 60 Hz
- UL & cUL, CE, RoHS compliant
- 0.75” and 1.25” opening
- High accuracy options C0.6, C0.3

Standard Split-Core, Solid-Core and Bus Bar Series CTs

- Safe, low voltage output, 0.333 Vac
- Multiple Models: 5 to 6000 amps, 600 Vac, 50/60 Hz nominal
- UL & cUL, CE, RoHS compliant
- Custom sizes available

Rogowski CTs

- Safe, low voltage output, 0.333 Vac
- Multiple Diameters: 3.1", 4.5", 7.5", 12"
- Primary Ratings: 250 to 6000 amps
- UL & cUL, CE, RoHS compliant

CCS Continental Control Systems, LLC

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WNBN-10.30.17: Specifications are subject to change

JACKSON SYSTEMS
Controls Done Right™

Single-Door Wall-Mount Enclosures

BCP-20
Product Data

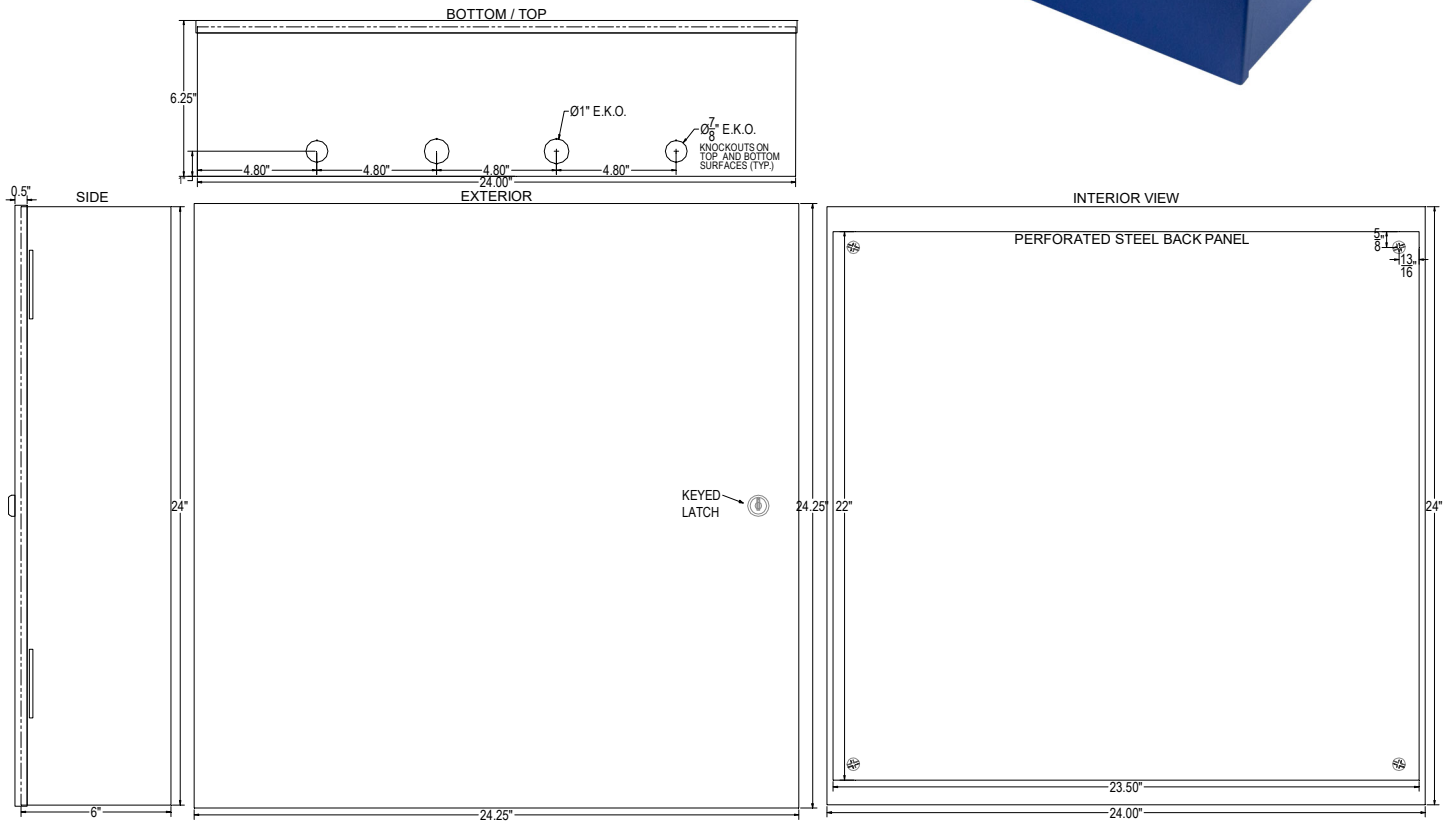
Application

The BCP control panel is designed for easy wall mounting and protection of pneumatic or electrical control devices. This type 1 enclosure comes complete with mounting holes, hinged key locking door, and fully perforated sub-panel.

Construction

Enclosure Dimensions:	24”H x 24”W x 6”D
Sub-Panel Dimensions:	22”H x 23.5”W
Sub-Panel Type:	Fully perforated
Enclosure Body:	16 gauge Steel
Finish:	Dark Blue Powder Coat
Knockouts:	Top and bottom
Door Hinge:	Left or right side (field reversible)
Latch:	Single point latch with keyed lock
Panel mounts:	Collar studs

Enclosure Dimensions



Specification are subject to change without notice

Website: www.jacksonsystems.com
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JACKSON SYSTEMS
Controls Done Right™

Single-Door Wall-Mount Enclosures

BCP-16
Product Data

Application

The BCP control panel is designed for easy wall mounting and protection of pneumatic or electrical control devices. This type 1 enclosure comes complete with mounting holes, hinged key locking door, and fully perforated sub-panel.

Construction

Enclosure Dimensions:	18”H x 14”W x 6”D
Sub-Panel Dimensions:	16”H x 13.5”W
Sub-Panel Type:	Fully perforated
Enclosure Body:	16 gauge Steel
Finish:	Dark Blue Powder Coat
Knockouts:	Top and bottom
Door Hinge:	Left or right side (field reversible)
Latch:	Single point latch with keyed lock
Panel mounts:	Collar studs
Industry Standards:	Type 1

Enclosure Dimensions

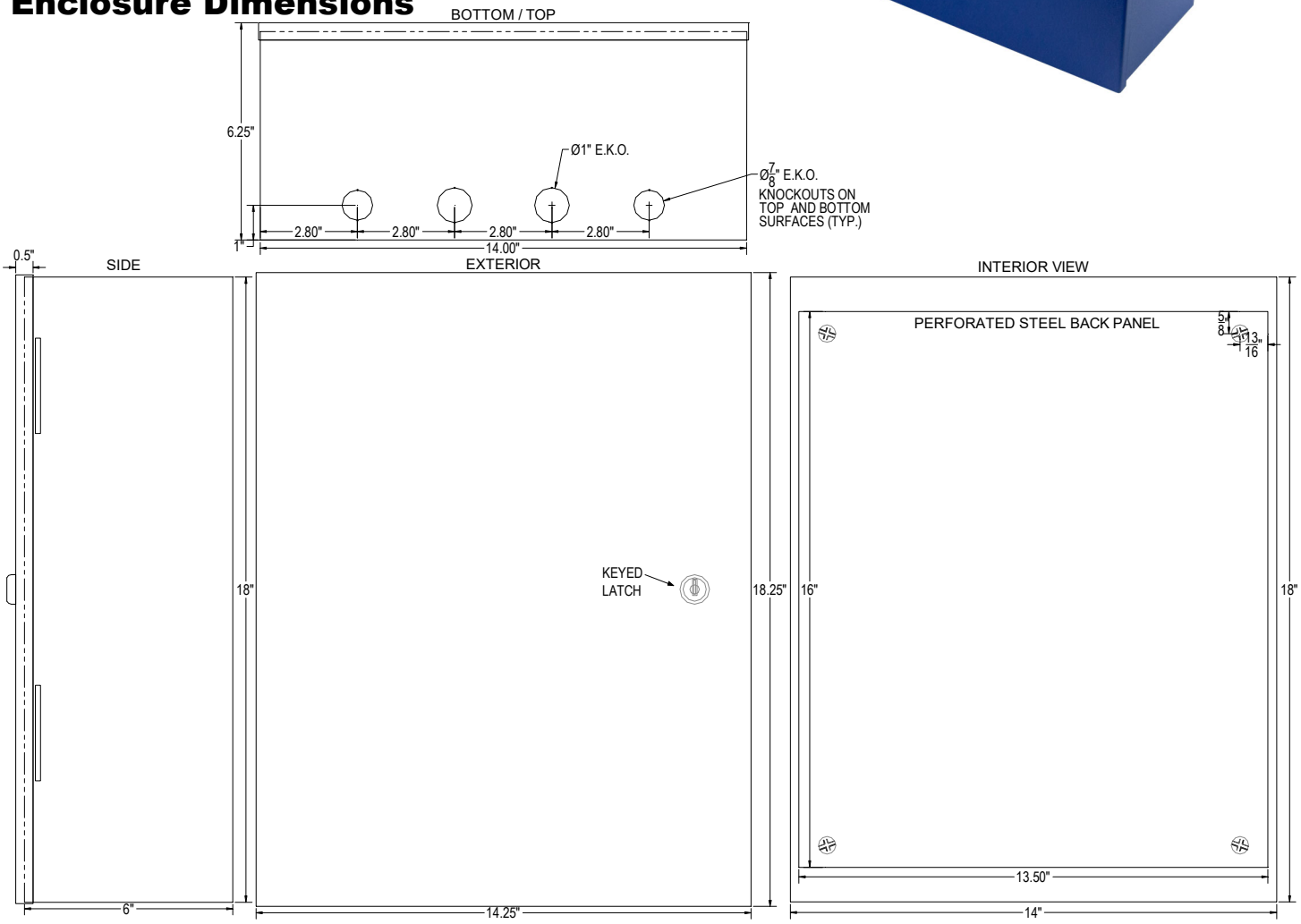

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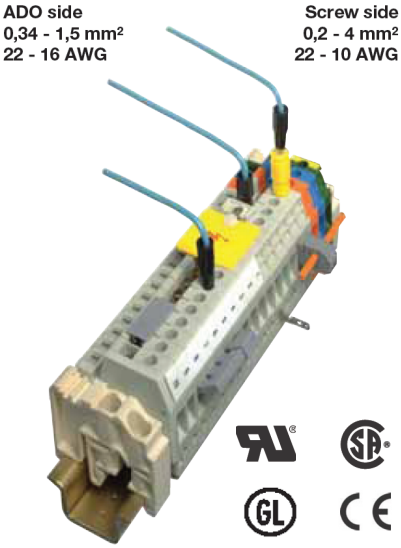
ABB 6 mm Terminal Blocks - ADO / Screw Clamp

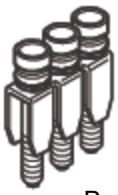
Product Description

The ABB D 4/6.ADO is a corrosion proof terminal block incorporating the ADO System on the factory terminated side and the screw-clamp on the field terminated side. The ADO System technology combines rapid connection with total safety. It is particularly recommended for use in the most difficult environments. As the ADO connections are self-stripping, the conductor requires no prior preparation. Its highly resilient double holding grip insures a vibration proof connection. Using the connecting tool, the quality of all connections is constant and does not depend on variations in operator performance. The ADO connecting tool does not allow its removal from the terminal block until the operation has been completed correctly.

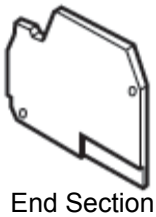


Product Specifications

Terminal Block Type:	D 4/6.ADO
Terminal Block Part #:	1SNA 199 554 R2300
End Section Type:	FEDAD1
End Section Part #:	1SNA 199 336 R2000
Jumper Bar Type:	BJMI6-10
Jumper Bar Part #:	1SNA 176 667 R0400
Jumper Bar Rated Current:	32 A
End Stop Type:	BAM2
End Stop Part #:	1SNA 206 351 R1600
Hand Tool Kit Type:	OUMAD
Hand Tool Kit Part #:	1SNA 179 466 R0600
Rated Current:	17.5 A (IEC), 18 A (UL/CSA)
Rated Voltage:	1000 V (IEC), 600 V (UL/CSA)
Impulse withstand Voltage:	8 kV
Wire Size:	22-16 AWG (ADO), 22-10 AWG (Screw)
Max. Wires Per Termination:	2 (ADO), 2 (Screw)
Color:	Grey
Listings:	UL, CSA, IEC, CE, GL



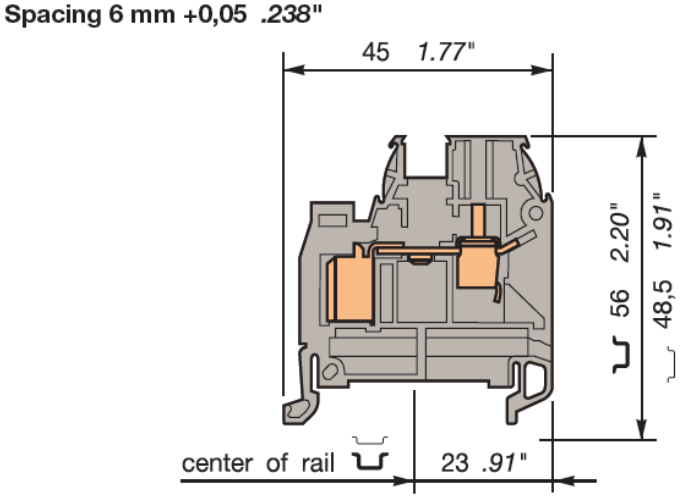
Jumper Bar
BJMI6-10



End Section
FEDAD1

Hand Tool Kit
OUMAD

Product Dimensions



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Eaton/Cutler-Hammer Ground Bar Kit

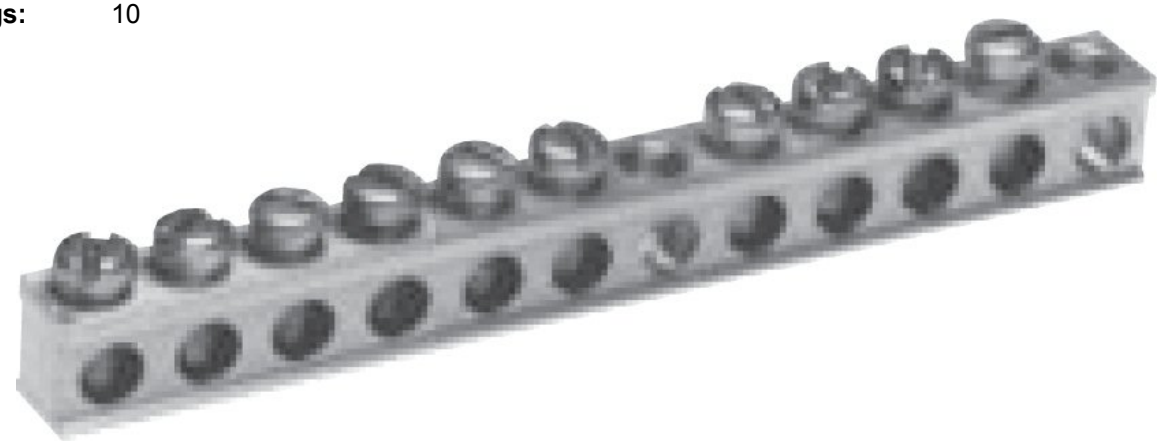
GBK10
Product Data

Product Description

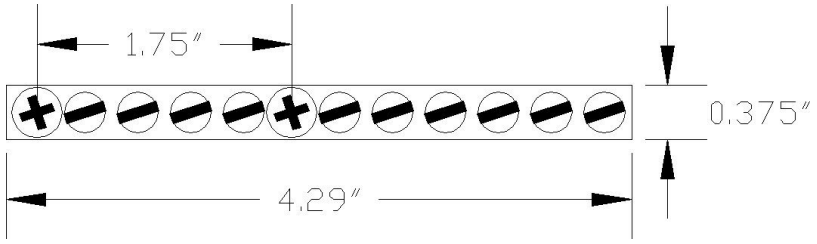
The Cutler-Hammer GBK10 is a grounding bar kit with 10 lugs. It can be used as a panel grounding point and/or signal wire shield grounding point.

Product Specifications

Length: 4.29” (109 mm)
Mounting Holes: (2) mounting holes 3.75” (44.5 mm) apart
Wire Capacity: (3) #14-#10 Cu/Al or (1) #14-#4 Cu/Al
No. of Lugs: 10



Product Dimensions



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