

### Emergency PowerHUBB™ Node - Master/Control/Tunable White

**POWERHUBB™**  
PoE LIGHTING & CONTROL



Project Name \_\_\_\_\_

Catalog No. \_\_\_\_\_

Date \_\_\_\_\_

The Hubbell Control Solutions' (HCS) PowerHUBB node provides power distribution architecture and data connectivity to create a fully functioning Power over Ethernet (PoE) lighting control system.

PowerHUBB emergency network nodes (-EM) are a key component to installing a Power over Ethernet emergency lighting system. These nodes are UL 924-FTBR listed for use as emergency LED drivers. When combined with a central emergency power source such as a generator, inverter or Uninterrupted-Power-Supply (UPS\*) they provide a code compliant emergency lighting solution. During normal operation these nodes offer full range dimming and control of the LED fixtures and automatically switch into emergency lighting mode when normal building power is lost.

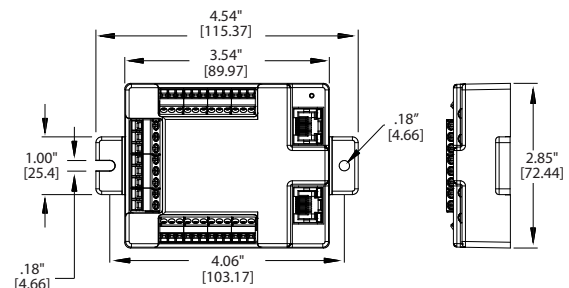
In addition to the emergency lighting functionality, PowerHUBB Master Nodes also act as an intelligent hub for the PoE lighting network. Master Nodes receive data and power from the PoE network switch. These nodes then pass along the power and data downstream to any daisy-chained Satellite node(s). Connected nodes/luminaires are automatically discovered by the Gateway, expediting commissioning and administering immediate feedback. Each Master node is DHCP-enabled and will automatically receive an IP address from the local network to simplify installation and setup.

**\*Emergency power source equipment must be UL 924 listed and adequately sized to provide minimum 90-minute runtime based on lighting load.**

#### Compliance and Certification



#### Dimensional Data



#### Product Features

- Replaces standard electronic AC driver in luminaire
- Capable of Tunable White utilizing a 2-channel LED Board
- Programmed for optimized performance of LED
- Bi-directional communication
- Node is discovered immediately by Gateway software
- Low voltage inputs for control devices
- Provides dimming function down to 1%
- Direct connection to PSE device (PoE switch or midspan)
- DHCP-enabled
- Suitable for indoor applications
- Class 2 electrical device
- Plenum Rated
- UL924 listed
- Made in the USA

**Ordering Information** (Example: PHM4PC-100-1C-IND-1W100-EM<sup>1</sup> or PHM4PC-450-2C-12TW-1W300-2R150-EM<sup>1</sup> or PHM4PC-800-4C-14TW-1W200-2R200-3G200-4B200-EM<sup>1</sup>)

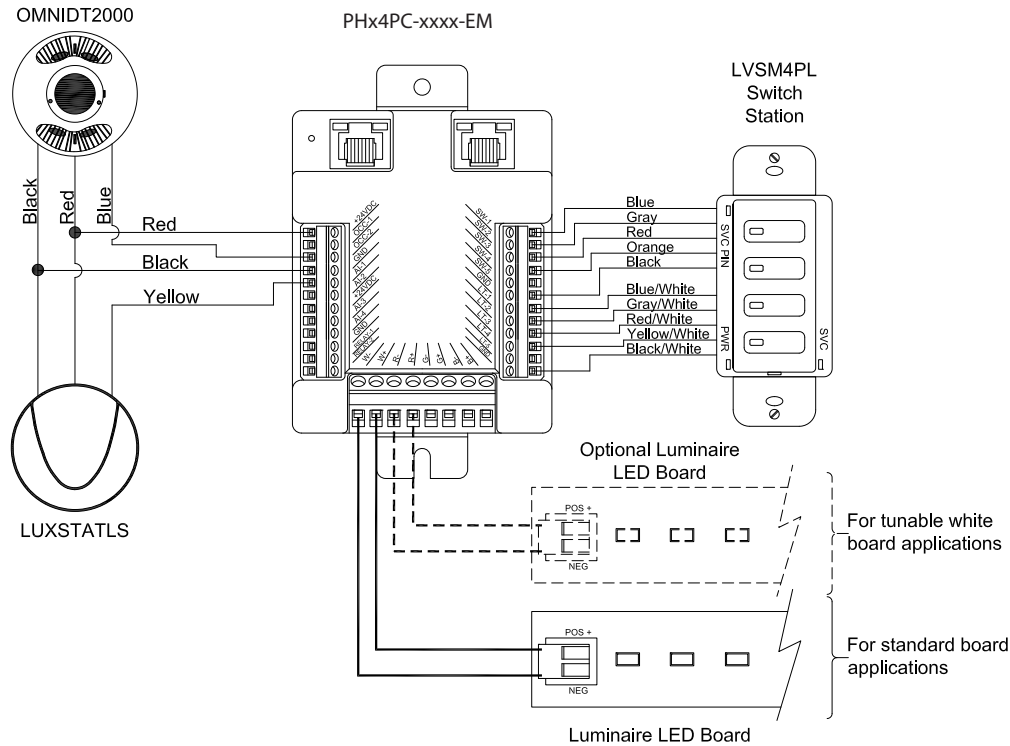
SERIES	TYPE	OUTPUT	PORTS	TOTAL PROGRAMMED VALUE (mA)	TOTAL CHANNELS	DISTRIBUTION SCHEME
PH PowerHUBB	M Master S Satellite	4 Four	PC Power and Control	XXX0 <sup>2</sup> Total milliamps for node	1C Single Channel 2C Dual Channel 3C Tri-Channel 4C Quad Channel	IND Independent 12TW Channels 1 & 2 perform tunable white 12TW31 Channels 1 & 2 perform tunable white; Channel 3 is independent 12TW34I Channels 1 & 2 perform tunable white; Channels 3 & 4 are independent 14TW Channels 1 & 2 perform tunable white; Channels 3 & 4 perform tunable white
DIST. VALUE	DIST. VALUE	DIST. VALUE	DIST. VALUE	EM Emergency Node		
1Wxxxx <sup>2</sup> Channel Value	2Rxxxx <sup>2</sup> Channel Value	3Gxxxx <sup>2</sup> Channel Value	4Bxxxx <sup>2</sup> Channel Value			

<sup>1</sup> True values are dependent on LED board and lumen package desired to be coordinated prior to ordering.

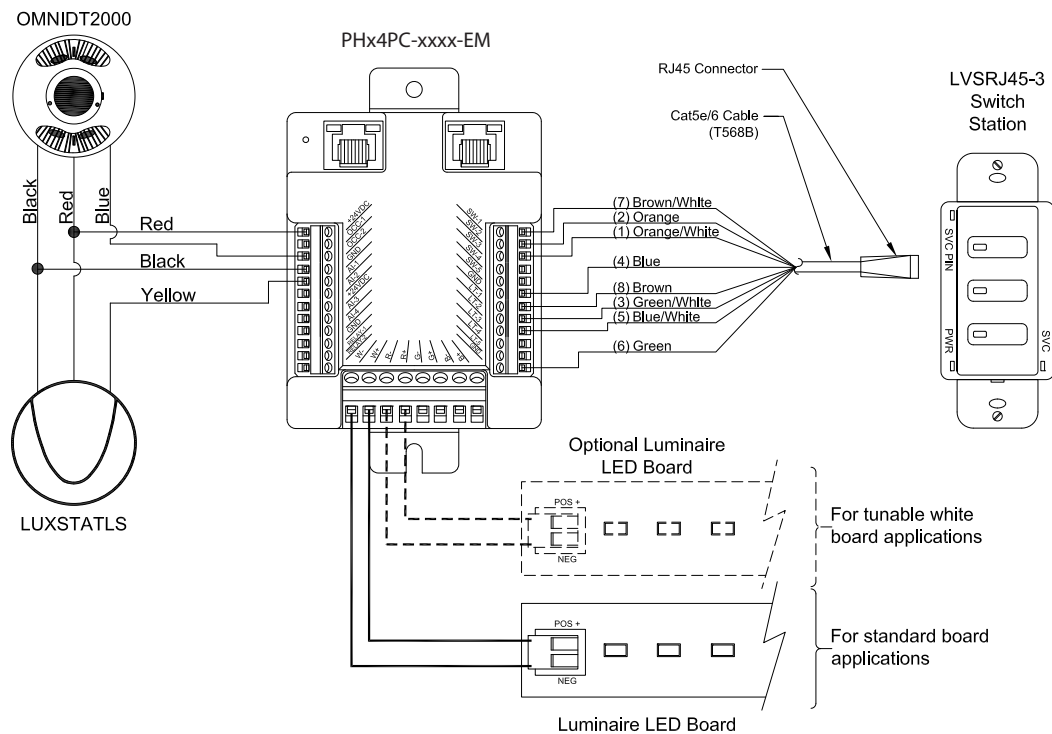
<sup>2</sup> Please replace xxxx with desired mA programmed value in increments of 10 starting at 100 to 1750.

<sup>3</sup> IND means distributed channels function as a separate LED board and will be controlled independently from another, pertains to all channels based on TOTAL CHANNELS. 1C is default independent. Distribution is based on channels being used.

## Wiring Diagrams



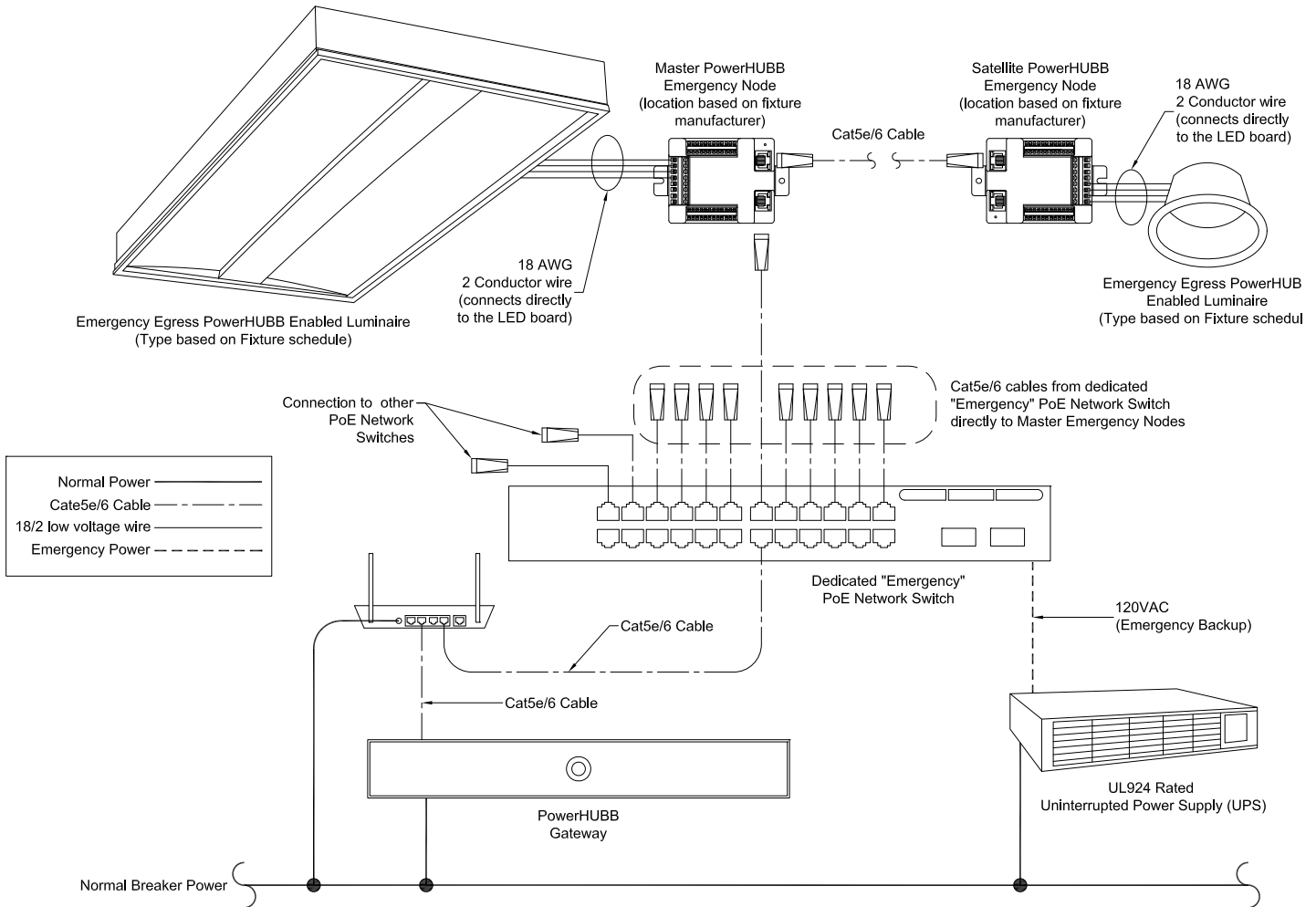
PowerHUBB 4 Channel Node with optional use of two channels for tunable white applications utilizing an occupancy sensor, daylight sensor and a low voltage, 4 button switch station.



PowerHUBB 4 Channel Node with optional use of two channels for tunable white applications utilizing an occupancy sensor, daylight sensor and a low voltage, 3 button, RJ45 enabled switch station.

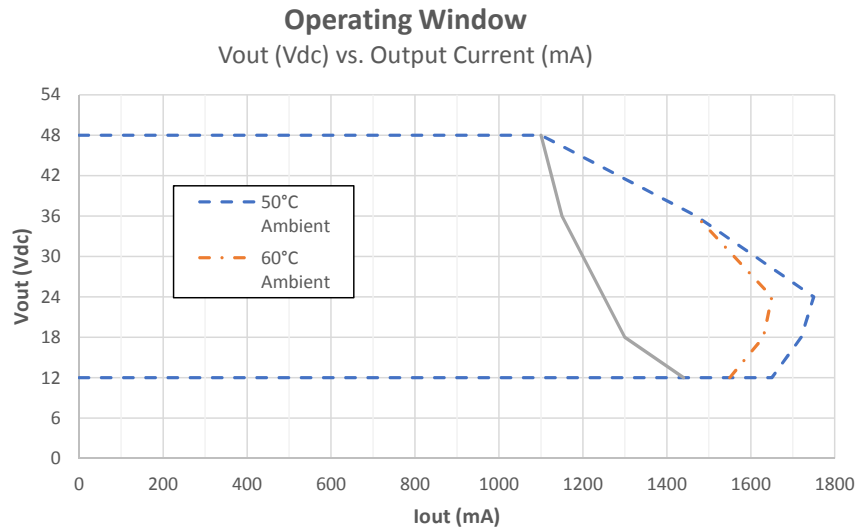
## PowerHUBB Emergency Architecture

1. Placement of PowerHUBB node is based on fixture manufacturer design.
2. Emergency fixtures are to be placed according to emergency egress requirements.
3. The Gateway is required to receive normal power. Emergency mode is activated when the Gateway experiences loss of normal power or upon loss of network connectivity.
  - a. The Gateway sends a pulse down the communication line every 10 seconds to Emergency nodes signaling normal power is being used and to perform normal functionality.
  - b. When the Gateway pulse is no longer being sent every 10 seconds, the nodes ignore programming and go to emergency output ignoring any commands until the pulse is restored.
4. Optional Emergency Satellite nodes are to be connected via PHN port, daisy chained off the Master node.
5. The location on the network of the "Emergency" PoE switch is up to the user/designer preference.
6. The Uninterrupted Power Supply, (UPS) is to be UL924 listed and sized accordingly to provide power and duration dictated by code for emergency loads connected to the dedicated PoE switch.



## Operating Window

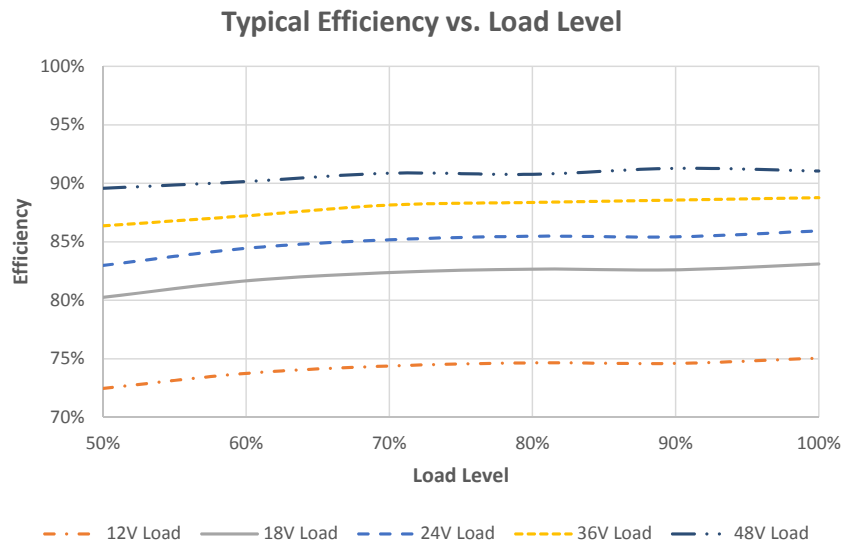
**Figure 1** shows the recommended output voltage and current ranges from the PowerHUBB Master and Satellite Nodes based on the specified node ambient temperatures. Driver performance cannot guarantee outside the operating window.



Operating Window  
Vout (VDC) vs. Output Current (mA)  
Fig. 1

## Driver Efficiency vs. Load Level

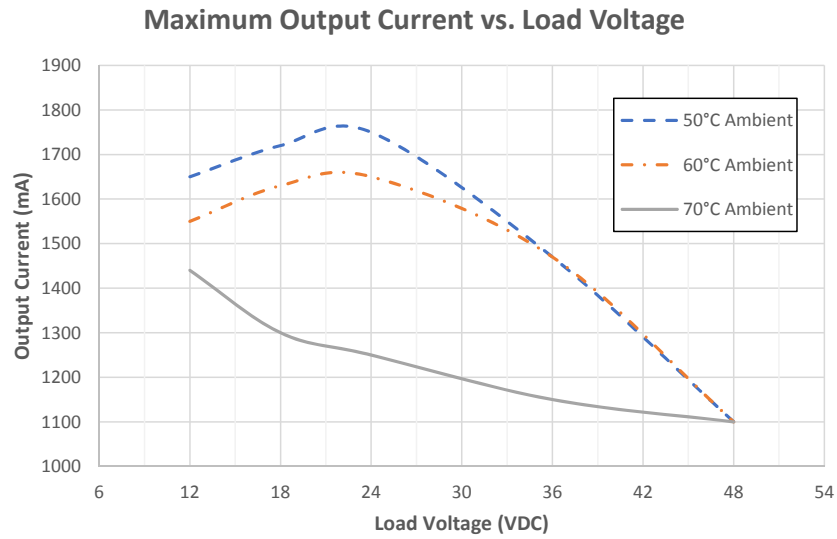
**Figure 2** shows typical driver efficiency values for the full range of supported load voltages



Typical Efficiency vs. Load Level  
Fig. 2

### Output Current vs. Load Voltage

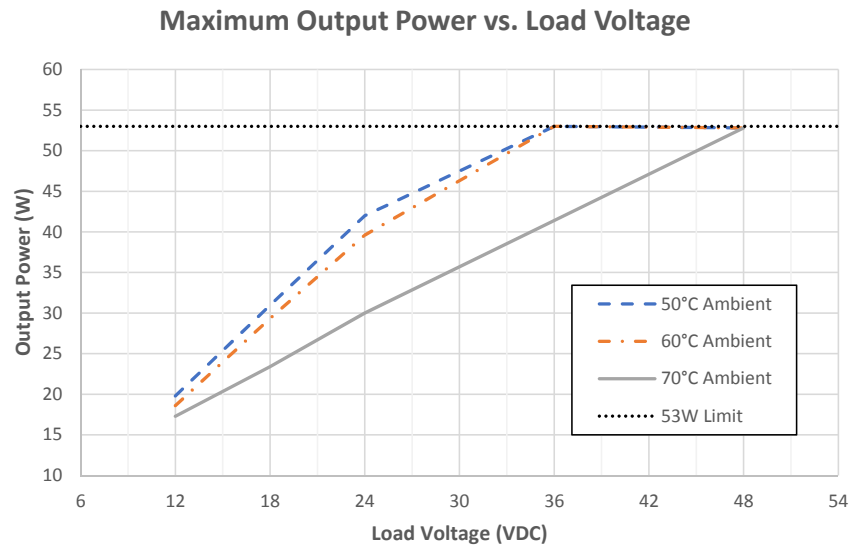
**Figure 3** shows the maximum recommended output current settings based on load voltage and ambient temperature.



Maximum Output Current vs Load Voltage  
Fig. 3

### Output Power vs. Load Voltage

**Figure 4** shows the maximum recommended output power level based on load voltage and ambient temperature.



Maximum Output Power vs. Load Voltage  
Fig. 4

## Remote Mounting

Applications that call for remote mounting of the PowerHUBB nodes separate from the LED luminaire are acceptable. Please follow the maximum wiring distances listed in the table below when selecting an appropriate wire gauge.

Remote Mounting		AWG WIRE SIZES					
		12	14	16	18	20	22
OUTPUT CURRENT (mA)	350	900	566	356	224	141	89
	500	630	396	249	157	99	62
	700	450	283	178	112	70	44
	100	315	198	125	78	49	31
	1100	286	180	113	71	45	28
	1400	225	141	89	56	35	22
	1750	180	113	71	45	28	18
Max allowed distance between node and LED module in feet (Based on 1V drop)							

## General Specifications

Electrical	PoE Interface:	IEEE 802.3at-2009 PD Type 2, Class 4, Compliant Input with LLDP extensions for negotiating power above 30W using 4 pairs
	Input:	57VDC
	Peak operating power:	60W
	Nominal standby power:	2.0W
	PoE input connection:	Unshielded female RJ45 jack for use with Cat5e/6 cable to PSE device
	BUS connections:	Unshielded female RJ45 jack for use with Cat5e/6 cable to PowerHUBB Master or Satellite node
	Device type:	Class 2 electrical device
LED Driver Outputs	Output channel:	Flexible configuration options for up to (4) individual white fixtures, up to (2) tunable-white fixtures or (1) RGB/RGBW color fixture
	Driver design:	Constant current LED driver design, programmable in 10mA increments from 100mA to 1750mA (Refer to Fig. 1)
	Dimming:	Full range 1% to 100% dimming control in 1% increments via CCR, PWM or Hybrid mode
	Output voltage range:	24VDC - 48VDC @1.4A
	Rated output power:	53W each channel, 53W max total
	Protection:	Short circuit and open circuit protection
	Connections:	Screw terminals; accept 14-26 AWG conductors. Tightening torque: 2.0-3.5 in-lbs. (0.35-0.4 Nm)
Sensor I/O Connections	Power supply:	One +24VDC terminal for powering external sensors, 500mA total capacity
	Occupancy sensor input:	OCC-1 for dry-contact sensor signals and OCC-2 for 24VDC Active-Hi sensor signals
	Analog sensor Inputs:	Four 0-10VDC analog sensor inputs
	Relay Control Outputs:	Two relay control outputs for actuating (1) latching relay or (2) electromechanical relays (24VDC coils)
	Connections:	Screw terminals accept 16-26 AWG conductors. Tightening torque: 2.0-2.2 in-lbs. (0.23-0.25 Nm)
Wall Switch Connections	Switch inputs:	Five momentary dry contact push button inputs
	Pilot light outputs:	Five pilot light outputs, rated for 24VDC@7.5mA each
	Connections:	Screw terminals accept 16-26 AWG conductors. Tightening torque: 2.0-2.2 in-lbs. (0.23-0.25 Nm)

## General Specifications

Environment	For indoor use only	
	IP Rating	IP20
	Sound Rating	<24dB Class A
	Maximum case temperature:	185°F (85°C)
	Operating temperature:	32°F to 158°F (0°C to 70°C)
	Operating humidity:	10% to 80% RH non-condensing
	Storage temperature:	-4°F to 185°F (-20°C to 85°C)
	Storage humidity:	5% to 95% RH non-condensing
Mounting	Mounts inside Fixture can be mounted remotely. (see remote mounting chart)	
Dimensions-Overall	4.54" (115mm) L x 2.87" (73mm) W x 1.10" (28mm) H	
Dimensions-Mounting Tabs Removed	3.54" (90mm) L x 2.87" (73mm) W x 1.10" (28mm) H	
Color	Black	
Safety & EMC	Safety standards:	UL 2108, CAN/CSA C22.2 No. 9
		UL 1598C, CAN/CSA C22.2 No. 250.0-08, CSA B-79A
		UL 2043, Suitable for Use in Air Handling Spaces (Plenum Rated)
		UL 924, CAN/CSA C.22.2 No. 141-15-Emergency Lighting
	EMC emissions:	Compliance to EN 55015:2013
	EMC immunity:	Compliance to EN 61547:2009
	FCC:	Compliance to Title 47 Part 15 Subpart B Section 15.109
	EU:	RoHS Compliant
Rated Lifetime	50,000+ hours	
Origin	Made in the USA	
Warranty	Five year limited	