POWERHUBB™
PoE LIGHTING & CONTROL

EMERGENCY POWERHUBB NODE
INSTALLATION AND OPERATION GUIDE

MODEL NUMBERS
PHM4PC-xxxx-EM PHS4PC-xxxx-EM

PRECAUTIONS

- Read and understand all instructions before beginning installation
- NOTICE: Follow National and/or local Electrical Codes for installation of line voltage and low voltage components.
- NOTICE: Do not install if product appears to be damaged
- PowerHUBB nodes are only capable of being programmed to values in increments of 10, from 100mA to 1400mA.
- 5 Maximum total nodes on a daisy-chain from the Power Supply Equipment port.
- These products are classified as to FIRE and SHOCK hazards only.
- **WARNING:** Risk of fire or electric shock. Install nodes only in luminaires that have the construction features and dimensions capable of maintaining the PowerHUBB node and where the input rating of the node does not exceed the input rating of the luminaire.
- Do not leave open holes in an enclosure of wiring or electrical components.
- Do not make or alter any open holes in an enclosure of wiring or electrical components during installation.
- **WARNING:** Risk of fire or electric shock. Luminaire wiring and electrical parts may be damaged when drilling for installation of PoE LED driver. Check for enclosed wiring and components.
- **WARNING:** Risk of fire or electric shock. Removal of existing line voltage driver requires knowledge of luminaires electrical systems. If not qualified, do not attempt removal. Contact a qualified electrician.
- **WARNING:** To prevent wiring damage or abrasion, do not expose wiring to edges of sheet metal or other sharp objects.
- **WARNING:** LED lamps are sensitive to Electrical Static Discharge (ESD). Care should be taken to avoid direct contact with the LEDs. Installers should be grounded using a wrist strap or other suitable method of grounding. Failure to ground the installer may cause pre-mature failures and void the fixture warranty.
- **WARNING:** To avoid potential fire or shock hazard, do not retrofit nodes in luminaires employing shunted bi-pin lamp holders. Note: Shunted lamp holders are found only in fluorescent luminaires with Instant-Start ballasts. Instant-start ballasts can be identified by the words "Instant Start" or "I.S." marked on the ballast. This designation may be in the form of a statement pertaining to the ballast itself, or may be combined with the marking for the lamps with which the ballast is intended to be used, for example F40T12/IS. For more information, contact the LED luminaire manufacturer.

MATERIAL NEEDED:

- (2) #8 self-tapping screws

TOOLS REQUIRED:

Wire cutter/stripper	Small Phillips screw driver	¼" hex socket driver
Cordless drill with 9/64 drill bit	Personal safety equipment	

SAVE THESE INSTRUCTIONS!

DESCRIPTION

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.**

NOTE

1. Emergency lighting, Power Source Equipment (PSE) is to only power the -EM nodes.
2. PowerHUBB nodes that are not UL924 listed are not to be connected to emergency lighting PSE.
3. The Gateway is to be energized by normal power and is required to go offline to enable emergency lighting behavior.
4. Upon loss of normal power, -EM nodes will ignore programming and maintain emergency lighting level until normal power is restored.

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SPECIFICATIONS

Electrical	PoE Interface: Master Node only	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)
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	

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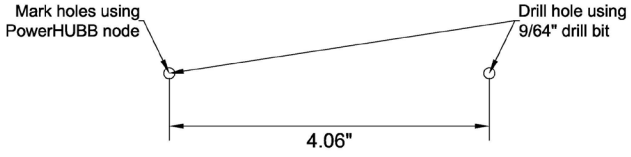
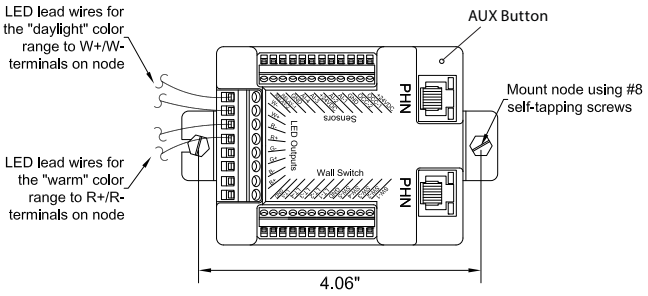
Safety & EMC	Safety standards:	UL 2108, CAN/CSA C22.2 No. 9
		UL 1598C, CAN/CSA C22.2 No. 250.0-08, CSA B-79A
		UL 2043, Suitable for Use in Air Handling Spaces (Plenum Rated)
		UL 924, CAN/CSA C.22.2 No. 141-15-Emergency Lighting
	EMC emissions:	Compliance to EN 55015:2013
	EMC immunity:	Compliance 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	

INSTALLATION

1. Disconnect power to existing LED fixture during installation and before servicing.
2. Only install in LED fixtures with a compatible forward voltage range of 24-48VDC (Class 2) and maximum current values of 1400mA or less. Consult with Hubbell Control Solutions or LED fixture manufacturer to verify LED voltage and current requirements.
3. Open the LED fixture and remove existing line voltage driver. The only remaining wiring should be the LED lead wires.
4. Dispose of line voltage driver in accordance with environmental requirements.
5. Use existing mounting holes, if available, or mark and drill mounting holes for HCS PowerHUBB node.
6. Connect LED lead wires to W+/W- terminals on node. Be sure to observe correct polarity. In a tunable white fixture connect the "daylight" range to the W+/W- terminals.





7. In a tunable white fixture connect LED lead wires for the "warm" color range to R+/R- terminals on node. Be sure to observe correct polarity.
8. Re-assemble LED fixture.
9. PoE ports connect to PSE only, PHN ports connect to other PHN ports.

AUX BUTTON

1. If held when the node boots, forces the node into programming mode.
2. If held for 10 seconds, erases the EEPROM.

DO NOT PRESS

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.

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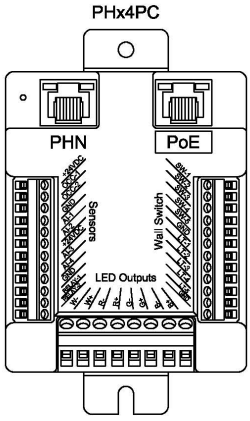
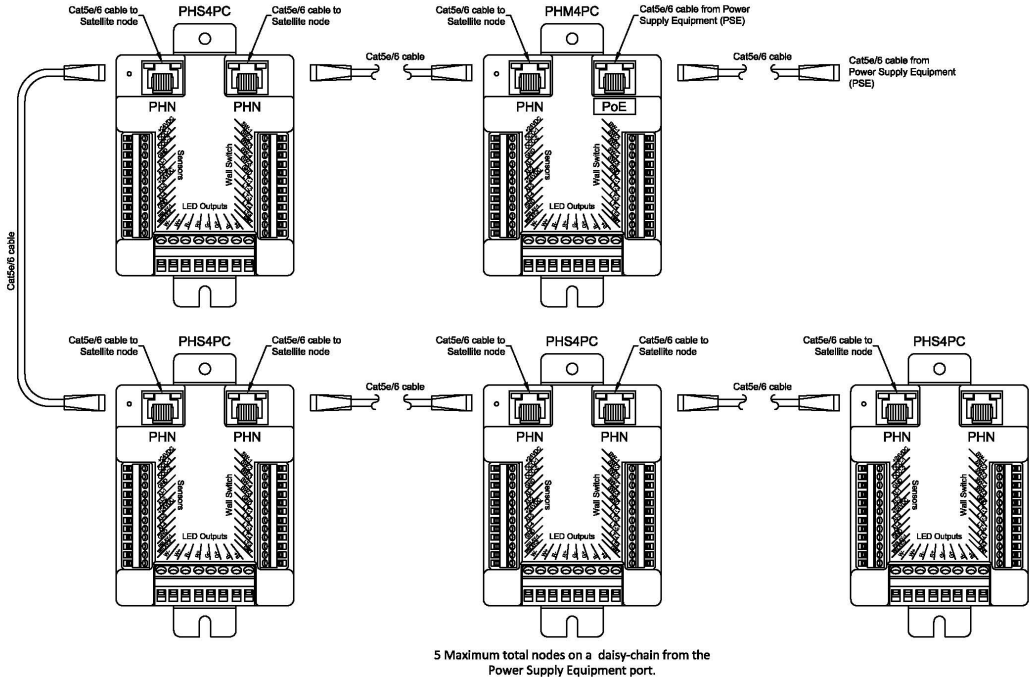
Remote Mounting		AWG WIRE SIZES					
		12	14	16	18	20	22
OUTPUT CURRENT (mA)	350	900	566	356	224	141	89
	500	630	396	249	157	99	62
	700	450	283	178	112	70	44
	100	315	198	125	78	49	31
	1100	286	180	113	71	45	28
	1400	225	141	89	56	35	22
	1750	180	113	71	45	28	18
Max allowed distance between node and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

SENSOR TERMINAL BLOCK	
LABEL	FUNCTION & RATING
+24VDC	+24VDC power surce for sensors, 500mA total capacity per node
OCC-1	Dry-contact motion sensor input
OCC-2	Motion sensor control return input
GND	Ground Terminal (Sensor Common)
AI-1	Analog Input, 0-10VDC (Photo Sensor)
AI-2	Analog Input, 0-10VDC
+24VDC	+24VDC power surce for sensors, 500mA total capacity per node
AI-3	Analog Input, 0-10VDC
AI-4	Analog Input, 0-10VDC
GND	Ground Terminal
RELAY-1	Relay control output, 24VDC@150mA
RELAY-2	Relay control output, 24VDC@150mA



WALL SWITCH TERMINAL BLOCK	
LABEL	FUNCTION & RATING
SW-1	Dry contact switch input 1
SW-2	Dry contact switch input 2
SW-3	Dry contact switch input 3
SW-4	Dry contact switch input 4
SW-5	Dry contact switch input 5
GND	Switch ground terminal
LT-1	Pilot light 1, 24VDC @ 7.5mA
LT-2	Pilot light 2, 24VDC @ 7.5mA
LT-3	Pilot light 3, 24VDC @ 7.5mA
LT-4	Pilot light 4, 24VDC @ 7.5mA
LT-5	Pilot light 5, 24VDC @ 7.5mA
GND	Switch pilot light ground terminal



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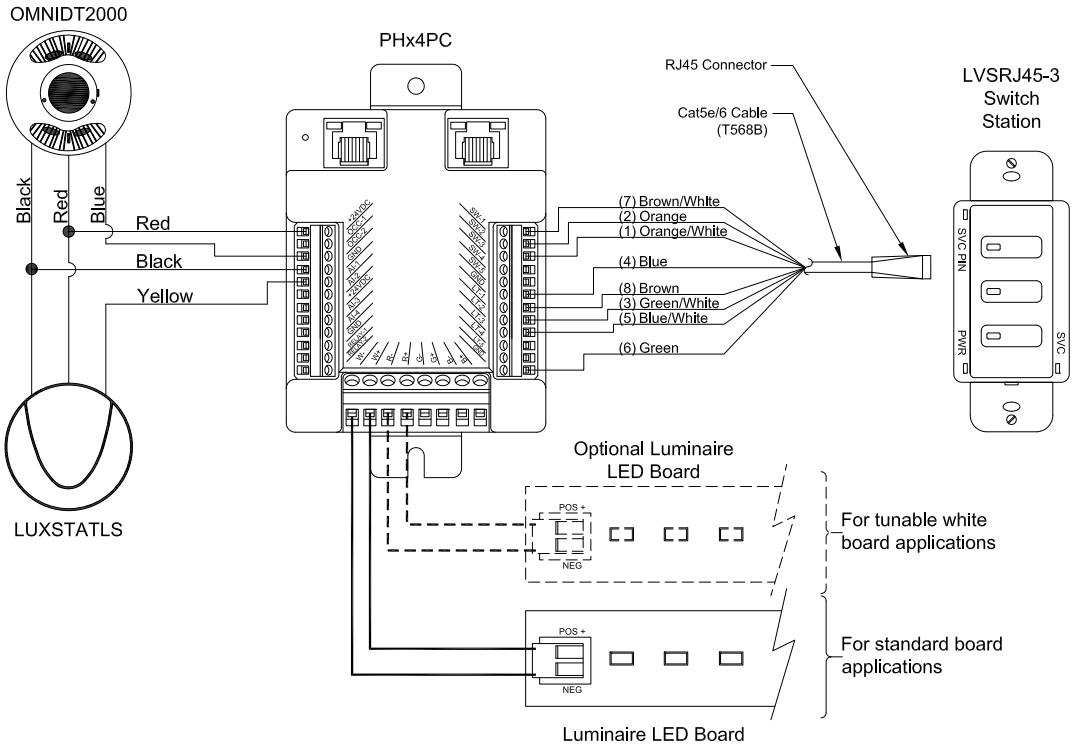
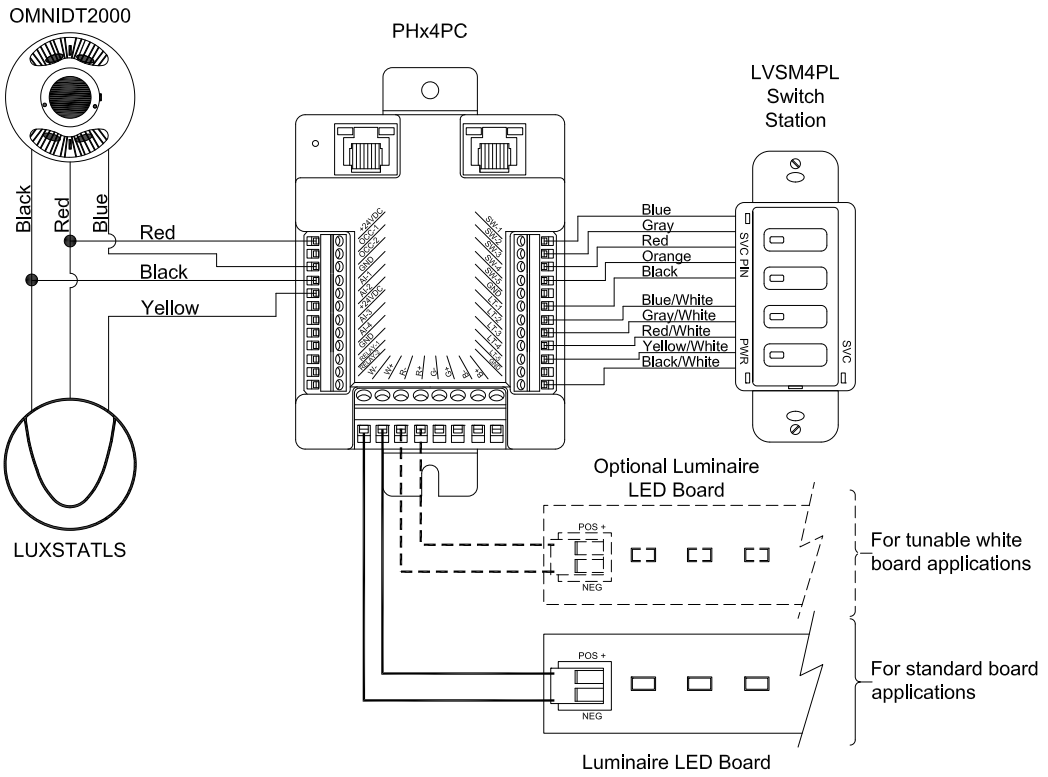
WIRING DIAGRAMS:





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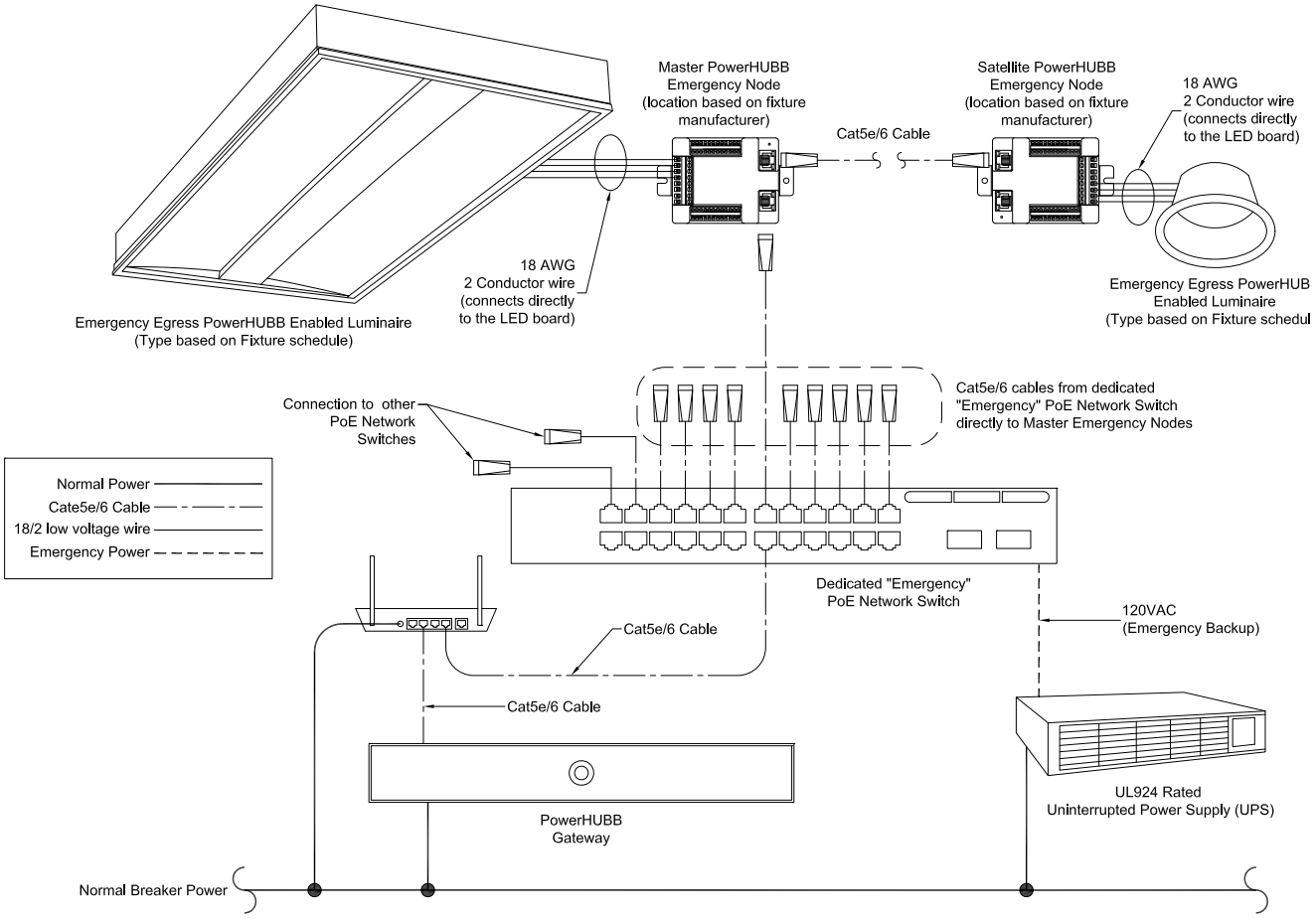
POWERHUBB ARCHITECTURE:



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