

Phase Adaptive Control From a 0-10 V Controller

Overview

Lutron offers a wide variety of controls for any load type. However, there are applications where adding more controls would be difficult or cost-prohibitive. For these instances, Lutron provides a variety of load interfaces that can convert one control type to another. This application note describes how to use load interfaces to convert a 0-10 V \Rightarrow output to a phase adaptive output using load interfaces.

Discussion

The BCI-0-10 is a device that takes in a 0-10 V \Rightarrow signal, and outputs a 3-wire fluorescent signal. The BCI-0-10 is capable of accepting a 120–277 V \sim Line/Hot, and providing a dimmed hot with the same voltage. If the BCI-0-10 is being fed with 120 V \sim , the standard PHPM-WBX-DV-WH can be used in conjunction with the BCI-0-10. If the BCI is being fed with 277 V \sim , the custom PHPM-WBX-277/DV-CPN6127 must be used.

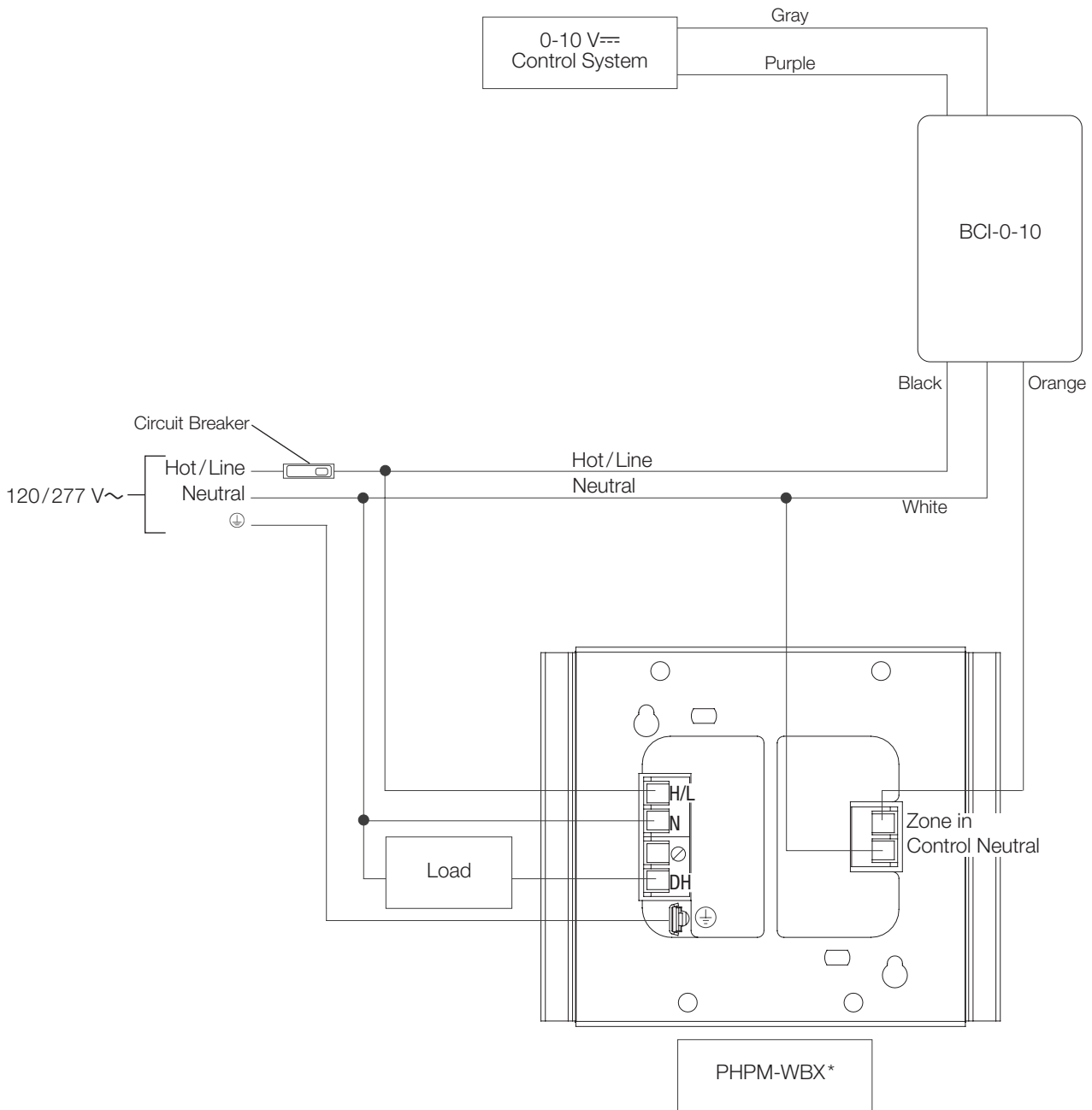
The PHPM-WBX units take in a 3-wire fluorescent signal and output a phase-adaptive signal. In addition to the dimmed hot feed from the BCI-0-10, the PHPM-WBX units also accept a separate 120–277 V \sim constant hot load feed. This separate load feed is used to provide the phase adaptive signal to the load.

Phase adaptive technology is a dimming method that uses integrated circuitry to analyze the line feedback from the load connected to it, and select forward or reverse phase based on what it sees. This technology will run in reverse phase unless it sees specific loads (namely MLV) that require a forward phase signal to run well. At that point, the phase adaptive device will switch into forward phase mode.

For more details regarding these individual products, please see their individual spec sheets.

Wiring

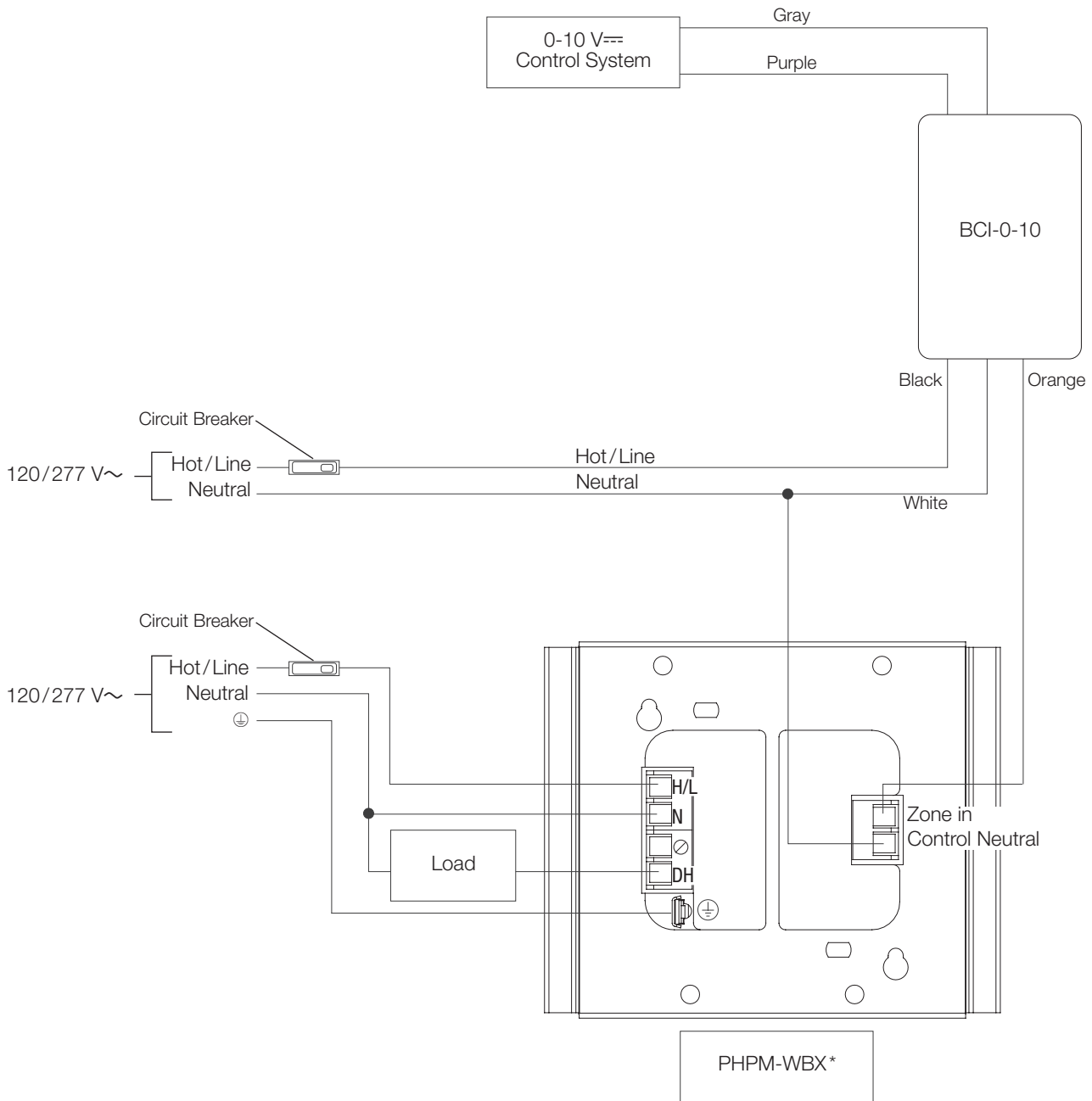
For a 120/277 V~ load, being fed off of the same distribution circuit as the BCI-0-10:



* When the BCI-0-10 is being fed with 120 V~, use the PHPM-WBX-DV-WH. When the BCI-0-10 is being fed with 277 V~, use the PHPM-WBX-277/DV-CPN6127.

Wiring (continued)

For a 120/277 V~ load, being fed off of a different distribution circuit than the BCI-0-10:



* When the BCI-0-10 is being fed with 120 V~, use the PHPM-WBX-DV-WH. When the BCI-0-10 is being fed with 277 V~, use the PHPM-WBX-277/DV-CPN6127.

Special Considerations

This combination of interfaces should not be put on the same 0-10 V_{DC} output as other 0-10 V_{DC} fixtures. The difference in dimming curves can cause differing light outputs. In addition to that, the ability to independently adjust the low-end trim of the two fixtures will be lost. This could present an issue when resolving low-end performance issues.

Please note that up to 3 PHPM-WBX-DV-WH units can be controlled by a single BCI-0-10.

For questions regarding this application note or any other design assistance, please contact Lutron.

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Lutron Contact Numbers

WORLD HEADQUARTERS USA

Lutron Electronics Co., Inc.
7200 Suter Road
Coopersburg, PA 18036-1299
TEL: +1.610.282.3800
FAX: +1.610.282.1243
Toll-Free: 1.888.LUTRON1
Technical Support: 1.800.523.9466
intsales@lutron.com

EUROPEAN HEADQUARTERS United Kingdom

Lutron EA Ltd.
6 Sovereign Close
London, E1W 3JF United Kingdom
TEL: +44.(0)20.7702.0657
FAX: +44.(0)20.7480.6899
FREEPHONE (UK): 0800.282.107
Technical Support: +44.(0)20.7680.4481
lutronlondon@lutron.com

ASIAN HEADQUARTERS Singapore

Lutron GL Ltd.
15 Hoe Chiang Road
#07-03, Tower 15
Singapore 089316
TEL: +65.6220.4666
FAX: +65.6220.4333
Technical Support: 800.120.4491
lutronsea@lutron.com

North & South America Technical Hotlines

USA, Canada, Caribbean:
1.800.523.9466
Mexico:
+1.888.235.2910
Central/South America:
+1.610.282.6701

Asia Technical Hotlines

Northern China: 10.800.712.1536
Southern China: 10.800.120.1536
Hong Kong: 800.901.849
Indonesia: 001.803.011.3994
Japan: +81.3.5575.8411
Macau: 0800.401
Taiwan: 00.801.137.737
Thailand: 001.800.120.665853
Other Countries: +65.6220.4666