

LUTRON®

For Your Information ...



US requirements for mixing 120 V~ & 277 V~ products in the same wallbox.

Introduction

This application note explains whether the National Electrical Code® (NEC®) allows the placement of both 120 V~ controls and 277 V~ controls (typically fluorescent) within the same wallbox. As a rule of thumb, electricians and inspectors deem this practice as unacceptable because of the common belief that it is not allowed by the NEC®. However, the code clearly states that there are conditions that allow Lutron 120 V~ and 277 V~ products to be ganged together in the same wallbox. The following document will detail these conditions and show how to apply them.

From the NEC® 2005, Article 404-8(B)

“Voltage Between Adjacent Devices. A snap switch shall not be grouped or ganged in enclosures with other snap switches, receptacles, or similar devices, unless they are arranged so that the voltage between adjacent devices does not exceed 300 volts, or unless they are installed in enclosures equipped with identified, securely installed barriers between adjacent devices.”

Explanation

Since the maximum voltage allowed between adjacent devices without a barrier is 300 V~, it is acceptable to gang 120 V~ and 277 V~ devices together in the same wallbox as long as they are on the same phase:

What is the Operating Voltage of the Adjacent Devices Being Ganged Together?	Are the Devices on the Same Phase or Different Phases?	Maximum Voltage Between Adjacent Devices:
120/240 V~ & 120/240 V~ Split-Phase	Same	120 V~
	Different	240 V~
120/208 V~ & 120/208 V~ Three-Phase	Same	120 V~
	Different	208 V~
277/480 V~ & 277/480 V~ Three-Phase	Same	277 V~
	Different	480 V~ (Barrier Required)
120/208 V~ & 277/480 V~ Three-Phase	Same	277 V~
	Different	353 V~ (Barrier Required)

Note: All voltages are expressed in terms of Vrms.

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Recommendation

When combining both 120 V~ and 277 V~ controls in the same wallbox, the following specifications are recommended:

- The installation shall limit the maximum voltage between adjacent devices to 300 V~ by having all devices operate off of the same phase.
- The installation shall utilize wire with **insulation** rated for 600 V~ for all wire runs to this box in accordance with the NEC® 2005, Article 300-3(C).
- The installation shall use conductors that are properly identified (e.g., color-coding, tagging, etc.) to differentiate 120 V~ and 277 V~ wiring, and shall keep all neutrals color-coded in accordance with the NEC® 2005, Article 200-6(D).

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