

LinkLite Communication Protocol Explained

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The Last Write Wins (LWW) protocol implemented in our LinkLite project allows for seamless syncing of data across the proprietary wireless communication protocol ESP-NOW by Espressif Systems. It uses 2.4GHz, similar to WiFi and Bluetooth, however it does not need to create a network or authenticate, which saves power and time when communicating wirelessly.

Packet Anatomy

ID - 4 bytes	Channel - 1 byte	Logical Timer - 4 bytes	Brightness - 1 byte	Warmth - 1 byte
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ID - A preset 4 byte number that LinkLites listen for to filter out unknown messages on the same channel.

Channel - The selected LinkLite channel, this allows for 2 LinkLites to be independent if the user wishes. Currently, there are 3 channels, but this number could go up to 255.

Logical Timer - Essential to the syncing protocol, more on it below.

Brightness/Warmth - The brightness/warmth value of the LinkLite from 0-255.

The Logical Timer and “Last Write Wins”

Think of the Logical Timer as a version number. Each time the brightness or warmth changes from the user, the logical timer value increases by 1. The LinkLite's are constantly broadcasting and receiving, and when they receive a packet from the same channel that contains a logical timer higher than their own, the LinkLite will then copy the incoming packet's brightness, warmth, and logical timer to itself, and begin broadcasting those new values.

If the LinkLite is switched to another channel, it will reset its logical timer to 0 in order to ensure it sync's to the LinkLite already on that channel if there is one.