ILLUMRA™
SELF-POWERED WIRELESS CONTROLS

Installation Guide

E3X-D02FP
(With wireless capability)

E3X-D02FP-M
(Master Wireless Dimmer)

NWO-D02FP
(Without wireless capability)

Wireless Constant Voltage LED Dimmer, Constant Voltage LED Dimmer

Overview

ILLUMRA Constant Voltage LED Dimmers are designed to control dimmable low-voltage fixtures, such as LED fixtures. The Wireless Dimmer (E3X-D02FP) responds to self-powered wireless light switches, self-powered wireless sensors, wired sensors, and wired switches. The Wired Dimmer (NWO-D02FP) responds to wired sensors or wired control switches. The ILLUMRA dimmers have a PWM output which dims the fixture. For Manual-ON/Auto-OFF applications, the dimmer can respond to wireless (E3X-D02FP only) and hard-wired sensors.

Compatible Devices

- Single Rocker Self-powered Wireless Light Switch; E3T-S1Axx
- Dual Rocker Self-powered Wireless Light Switch; E3T-S2Axx
- Handheld Self-powered Wireless Light Switch; E3T-S2Hxx
- Key Card Access Switch; E3T-CxAWH
- SLT Wireless Sensor; E3T-Rxx-2INTP
- Self-powered Wireless Occupancy Sensor; E3T-Mxx-SB24
- More transmitters available

Components Included

- A -- (1) ILLUMRA Wireless Constant Voltage LED Dimmer

or

- B -- (1) ILLUMRA Constant Voltage LED Dimmer

Tools Needed for Installation

- Non-conductive stylus (pencil or ballpoint pen)
- Electrical tape
- Screwdriver
- #6 sheet metal screw or double-sided adhesive tape
- Wire nuts

Installation: Wireless Constant Voltage LED Dimmer (E3X-D02FP, Constant Voltage LED Dimmer (NWO-D02FP)

To install either Dimmer, follow the instructions For transmitter installation instructions, see appropriate installation guide(s).

CAUTION/NOTES:

- Always follow local electrical codes when installing this device. Installation should be performed by a qualified electrician.
- Depending on the circumstances, it may be convenient to pre-program the receiver prior to final installation.
- ILLUMRA Constant Voltage Dimmers are intended only for use indoors, in dry locations, and with permanently installed fixtures.
- **ILLUMRA Constant Voltage Dimmers should NOT be installed in a location where the unit will be in close proximity to light bulbs or other sources of heat, particularly with higher wattage loads. Installation in close proximity to light bulbs or other heat sources may subject the receiver to temperature exceeding the operating temperature rating (see specifications table).**
- Installation in metallic enclosures or near lage metal objects will typically reduce radio range of the Wireless Dimmer (E3X-D02FP). If possible, install wireless transmitters and seceivers in plastic or fiber enclosures for best performance.

Teach/Learn Procedure (a Transmitter *teaches* a Receiver, a Receiver *learns* a Transmitter)

The receiver must be powered when teaching. After teaching a receiver, settings are retained when power is disconnected. The receiver sensitivity is reduced when in Learn Mode to prevent unintentionally teaching unwanted transmitters to the receiver. Transmitters should be within 15 feet (5 meters) of the receiver when teaching. Teach the receiver in any of the modes below.

Note: When the device is not in a learn mode and is operational, the CLR button can be pressed quickly to toggle the output. This is convinent in the Scene Mode application (See Below).

Step 1: Determine the Desired Behavior

= Press and Release = Press and Hold = Release

★ = most popular behavior

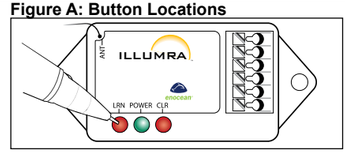
Learn Mode	SWITCHES	OCCUPANCY SENSOR	KEY CARD READER	VING(TM) CARD READER	SLT
1	★ROCKER Top of the rocker turns on load. Bottom of the rocker turns off load. Teach either the top or the bottom; the other half is automatically taught.	MANUAL ON/ ★ AUTO OFF 15 min Turn on load manually. Load turns off automatically if no motion is sensed for 15 minutes. California Title-24 compliant.	FUTURE USE	FUTURE USE	★A-B CIRCUIT INTERLOCK POWER SLT POWER SLT When SLT is energized by circuit A, load on circuit B turns on. When SLT is de-energized by circuit A, load on circuit B turns off.
2	MOMENTARY Press and hold one side of the rocker to turn on load. Release to turn off. Each side of the rocker must be learned separately.	AUTO ON/ AUTO OFF 15 min Load turns on automatically if motion is sensed. Load turns off automatically if no motion is sensed for 15 minutes.	★ HOTEL GUEST CARD Insert card to turn on load. Remove card to turn off load. Works with all seven punch patterns.	★ HOTEL GUEST CARD Insert card to turn on load. Remove card to turn off load.	FUTURE USE
3	TOGGLE Press/release once to turn on load. Press/relese again to turn off. Each side of the rocker must be learned separately.	WALK THROUGH 2-15 min Load turns on automatically when motion is sensed. Load turns off automatically if no motion is sensed for 2-15 minutes. Very aggressive energy-saving timer.	FUTURE USE	FUTURE USE	FUTURE USE
4	SCENE Press/release one side of the rocker to recall a preset scene that can involve multiple loads. Each side of rocker must be taught separately.	FUTURE USE	FUTURE USE	FUTURE USE	FUTURE USE

Scene mode is used to teach a receiver to recall a specific relay state when a transmitter (which has been taught to the receiver) is triggered. Typically, scene mode is used when you want a signal transmitter action to affect multiple receivers. To teach a receiver to recall a specific state, set the receiver to the desired state by learning a rocker switch in mode 1. Once the receiver is in the desired lighting state, enter learn mode 4 by following the instructions in step two, which will complete the learn process.

Step 2: Teach the Receiver

Clear All Instructions: The CLR button can be used to clear all of the memory in the receiver (erases all previously learned transmitters). Press and hold the clear button (CLR) for several seconds. When the light starts to blink, this indicates that the memory has been cleared and that the receiver is in learn mode one.

Figure A: Button Locations



PART	ACTION	RESULT	NOTES
A Enter Learn Mode 1	LRN CLR Press LRN 0.5 SEC, Release	1 Device Output flashes pattern.	This blinking pattern represents a light connected to the normally open output. If a light were connected to the normally closed output, it would blink opposite of that shown. More than one transmitter can be learned by each receiver. To do this, learn each transmitter as explained to the left. After the 3 second learn (light on) indication, teach another transmitter, and so on. A transmitter can also be unlearned by a receiver by repeating part C. Instead of a 3 second learn indication (light on) the receiver will give a 3 second unlearn indication (light off). Step 2 can be used for all transmitters and wired devices including: Motion Sensors, Door Sensors, SLT, etc. The "CTL IN +" is a +0-10VDC used to control the dimming level.
B Select Learn Mode Skip this step if you wish to use Learn Mode 1	LRN CLR Press LRN 3 SEC, Release This advances to Learn Mode 2. Repeat to advance to Learn Mode 3 or 4.	2 3 4	
C Learn Transmitter	Press "Teach" button **ONCE**	3 SEC — Resume Blinking Learn indication light is on for three seconds, then resumes blinking Learn Mode Pattern. Transmitter has been learned. Learn another transmitter (Part C), select another mode (Part B), or exit (Part D).	
C2 Learn Wired "MOT IN"	MOTION See note below	3 SEC — Resume Blinking Light is on for three seconds, then resumes blinking Learn Mode Pattern. The "MOT IN" signal has been learned. Learn another wireless transmitter (Part C1), another wired transmitter (Part C2), select another mode (Part B), or exit (Part D).	
D Exit Configuration	Wait 30 SEC (or press LRN 2 SEC, Release)	Lights stop blinking. Device is configured and ready to use.	

Note for learning the wiring terminal called: Motion IN:

Some wired motion sensors indicate that motion has been seen by adjusting the voltage from low to high, (0V to 8-28VDC). Other motion sensors indicate that the motion has been seen by adjusting the voltage from high to low (8-28VDC to 0V). The ILLUMRA Constant Voltage Dimmers can respond to both types of signals, but the dimmer needs to be set up to interpret the motion sensor that is being used. To do this, attach the motion sensor and make sure that it is not detecting motion. Then clear the dimmer by holding down the clear button ("CLR") until the output begins to blink (about 1 sec).

When preparing to learn the wired "MOT IN", the motion sensor must not be detecting motion while entering one of the learn modes. Once the desired learn mode has been selected, then cause the motion sensor to detect motion, which will cause the signal level to change. This change in signal level is interpreted and learned by the room controller as "Motion".

Master Wireless LED Dimmer (E3X-D02FP-M) Features

The master wireless LED dimmer is used to set remote slave wireless LED dimmers (E3X-D02FP) to the same brightness level as the master. This is useful when there are several dimmers which must remain sychronized with each other. The master can be taught to a remote dimmer in a similar way that a switch is taught. Follow the procedures in Step 2. In part C of step 2, press the learn (LRN) button briefly on the master dimmer. This will send a teach signal to the remote dimmer. Now follow the guide to exit learn mode on the remote dimmer. The master dimmer will now set the brightness level of the remote dimmer.

The master dimmer will transmit its current brightness level to the remote dimmers after set delay following a change to the brightness level. After the level has settled, the master will retransmit the brightness level every 20 seconds. When a remote dimmer receives a new brightness level from a master dimmer, the remote dimmer will dim to the new level with a smooth 1 second dim rate.

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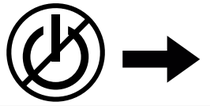
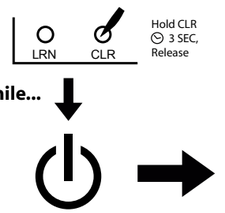
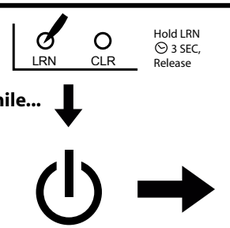
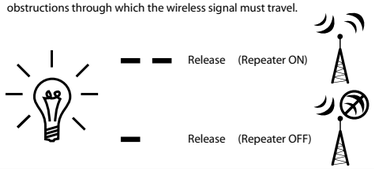
Step 3: (Optional) Activate Other Features

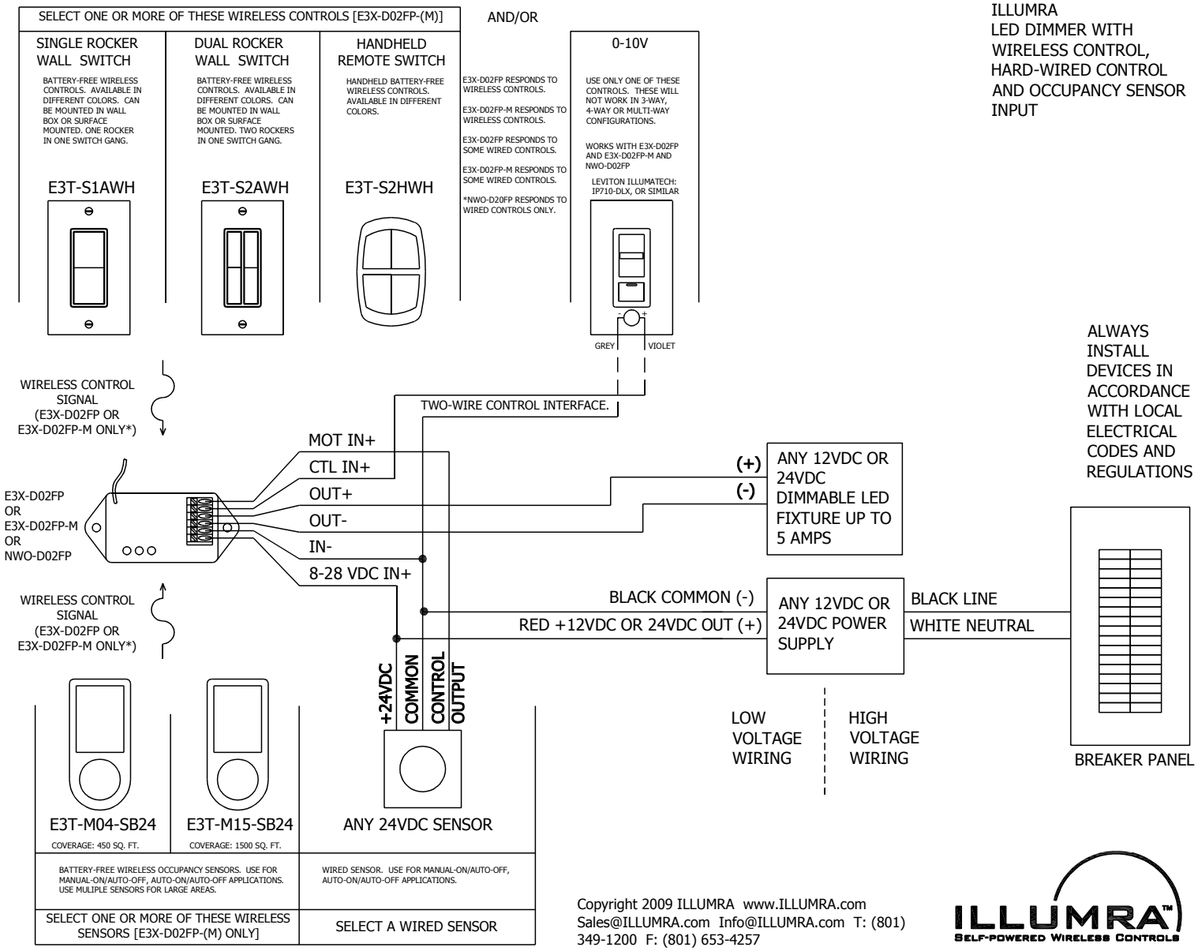
PART	ACTION	RESULT	NOTES
A Turn power to dimmer off		 It is important to understand that the entire device needs to be powered down. This can be done with a switch or breaker, or other means.	This may be a difficult task as the CLR/LRN button needs to be held pressed while powering up the device. This is easiestly done before installation or with two people. As the device powers up the output will blink twice, quickly, then will switch one last time as the CLR/LRN button is released. If this process is repeated the output will invert back to its original state and will only blick once instead of twice, then once more as the CLR/LRN button is released just as it did the first time.
B Press and hold CLR While... Turn power to dimmer on with CLR held		**Non dimming Feature** In the default configuration the device output will ramp up in a dimming fastion with the press of an on switch and dim off with an off switch. The device can be set to a non dimming mode. In this mode the device output will not dim but switch on quickly as a relay output. To switch back to dimming mode repeat this part again. The number of device LED blinks (1 or 2) will indicate the current state. 	
C Press and hold LRN While... Turn power to dimmer on with LRN held		**Repeater Feature** A repeater re-transmits a copy of every signal received, and many repeaters also function as receivers. It is recomended that no more than two repeaters are active within range of any ILLUMRA transmitter or reciever. Repeaters should be installed high above the floor in a central location, minimizing the number of walls or other obstructions through which the wireless signal must travel. 	

Specifications

	E3X-D02FP, E3X-D02FP-M	NWO-D02FP
Range	50-150 feet (typical)	N/A
Frequency	315 MHz	NA
Power Supply Input Rating	8-28V	
Sensor Input Rating	0-28VDC, <1V is Low, >3V is High (do not apply voltage greater than the supply voltage)	
Output Rating	5A	
Input Channels	1 motion detector / sensor input, 1 wired controls	
Output Channels	1 output PWM	
Operating Temperature	13° to +140°F (-25° to +60°C)	
Storage Temperature	-40° to +140°F (-40° to +60°C)	
Dimensions (enclosure)	2.88"(W) x 1.30"(H) x 0.67"(D) 7.32cm x 3.30cm x 1.70cm	
Radio Certification	FCC (United States): SZV-TCM2XXC I.C. (Canada): 5713A-TCM2XXC	N/A
LED Load Type(s)	Constant voltage (12 or 24VDC, 5A max)	

Diagrams

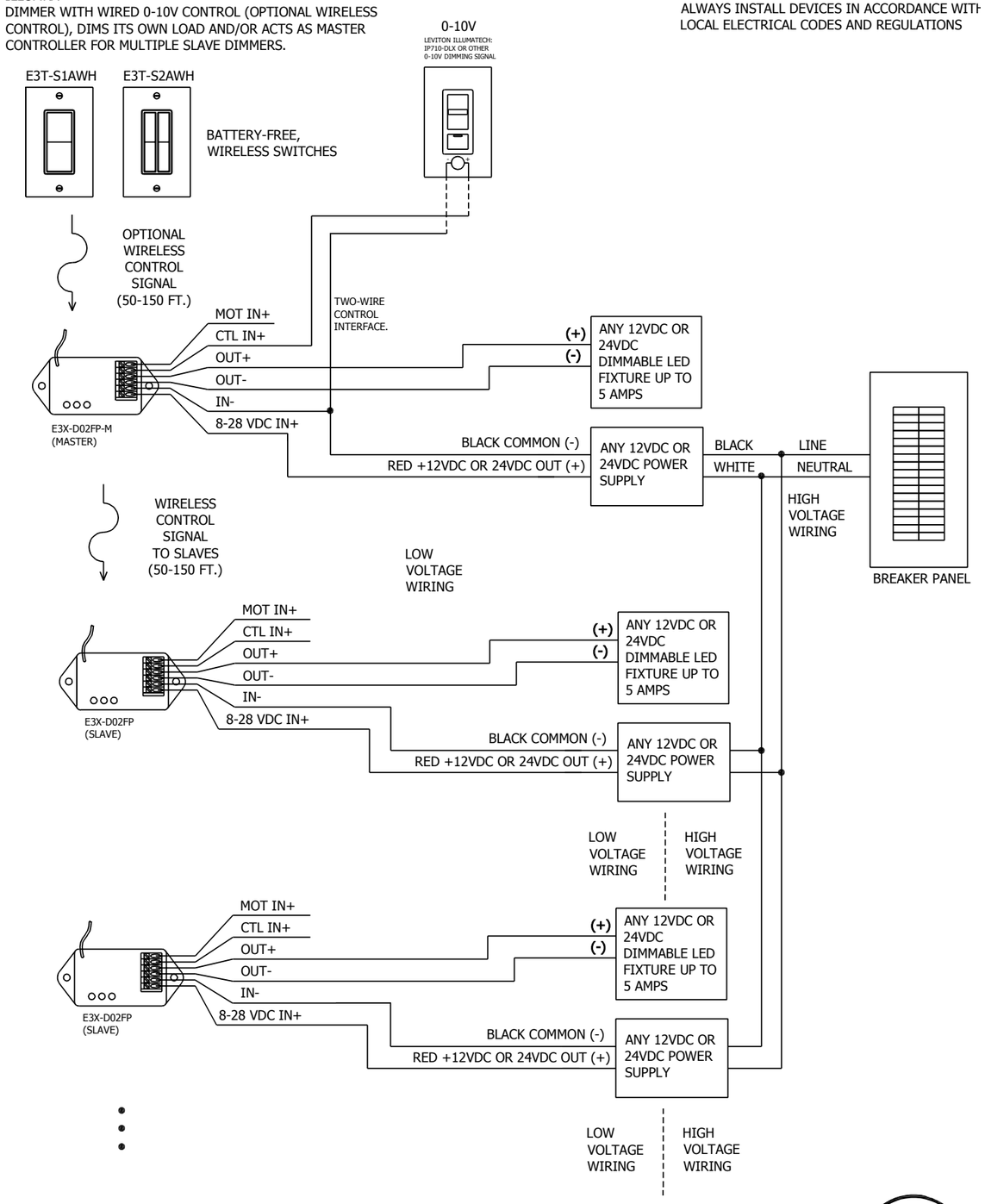
Figure B: Wiring Diagram



ILLUMRA™
SELF-POWERED WIRELESS CONTROLS

ILLUMRA
DIMMER WITH WIRED 0-10V CONTROL (OPTIONAL WIRELESS CONTROL), DIMS ITS OWN LOAD AND/OR ACTS AS MASTER CONTROLLER FOR MULTIPLE SLAVE DIMMERS.

ALWAYS INSTALL DEVICES IN ACCORDANCE WITH LOCAL ELECTRICAL CODES AND REGULATIONS



enocean alliance
No Wires. No Batteries. No Limits.

Contains FCC ID: SZV-TCM2XXC
Contains IC: 5713A-TCM2XXC
The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) this device may not cause harmful interference and (ii.) this device must accept any interference received, including interference that may cause undesired operation.