



Installation Guide

XBX-CTRF-44 (sold pre-paired)

Industrial Wireless ZigBee Relay



Overview

The Industrial Wireless Relay (IWR) provides long range control between I/O devices (such as lights, switches, sensors, pumps, fans, PLCs, etc.). Control inputs are compatible with either dry contacts or DC signal voltages, logic signals, etc. In an ILLUMRA Hybrid: EnOcean + ZigBee system, the IWR is connected to ILLUMRA 4 Channel Low Voltage Relay Receivers (E3R-R04FP-4).

Compatible Devices

- Any Low Voltage Wiring Device
- Most Wired Sensors
- Most Load Types

Components Included

The following items are included with this product:

- (2) ILLUMRA Industrial Wireless ZigBee Relay

Required Power Supply (Not Included)

- Power Pack w/ Relay (NWO-R12-R27NP) 120, 220, or 277VAC. Outputs 24VDC
- Wall Adapter (NWO-P9VPG) 120VAC. Output 9VDC
- Any 8-28VAC or 8-30VDC Power Adapter

Optional Accessories

- 2.4 GHz - 7dbi gain WiFi Antenna (articulating joint) Part # A24-7ACRSM
- Non-metallic NEMA Enclosure for weather-proofing

Installation

To install the Industrial Wireless Relay (IWR), follow the directions below. See wiring diagrams for installation examples.

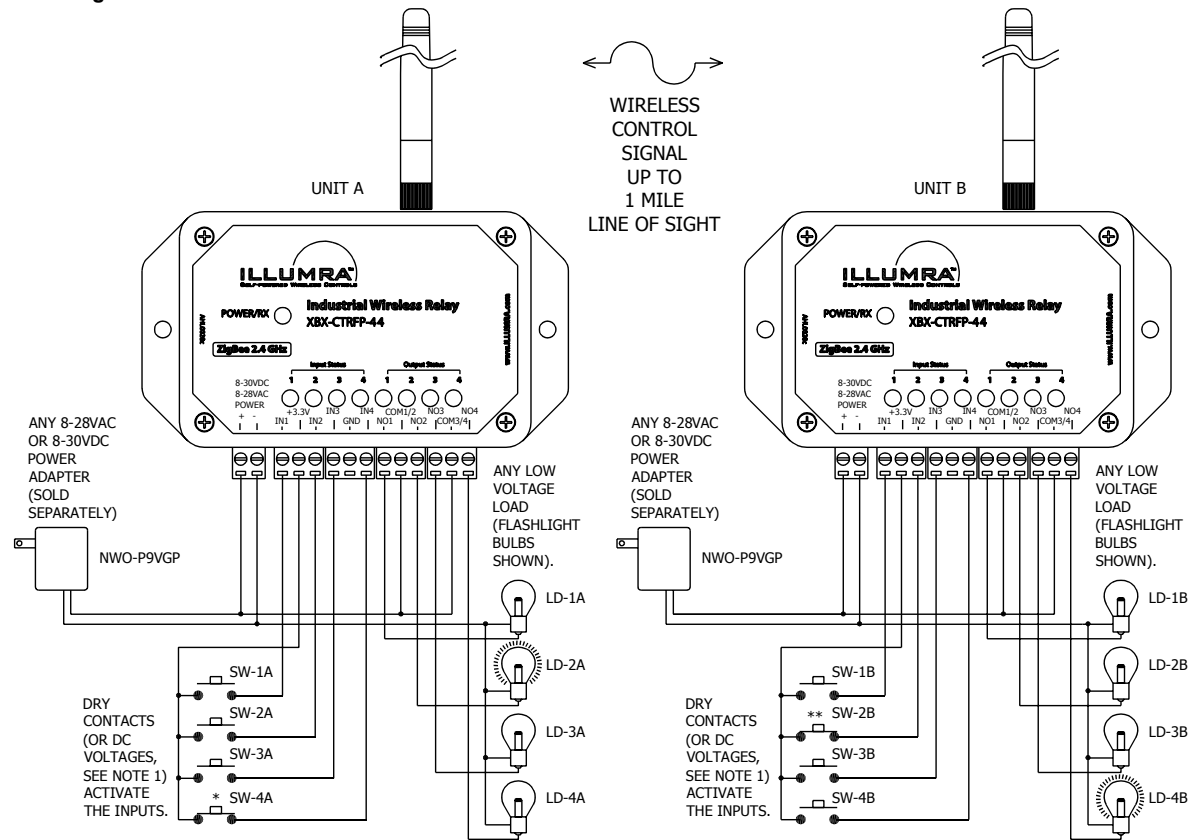
CAUTION/NOTES:

- Always follow local electrical codes when installing this device. Installation should be performed by a qualified electrician.
- ILLUMRA IWR's are intended only for use indoors, in dry locations, and with permanently installed fixtures.

- ILLUMRA Relay Receivers should NOT be installed in a location where the unit will be in close proximity to the light bulb(s) or other sources of heat, such as above a ceiling hugger fixture, particularly with higher wattage loads. (See "Operating Temperature" on specifications table.)
 - Exceeding the voltage or current ratings of the IWR will void the warranty and may damage the unit.
 - For optimal radio performance do not mount or place receivers close to the floor or inside a metal housing.
- Step 1: Connect the power supply to the power terminals of the Industrial Wireless Relay (IWR).
- Step 2: Reference the IWR Wiring Diagram (Figure A) for appropriate wiring.
- Step 3: Review and adjust jumper locations (Figure B) as necessary. The jumpers are located inside the device and are accessed by removing the four screws securing the cover. The jumpers are set at the factory in the most common configuration, but can be customized in the field to suit a wide variety of wiring scenarios, including solar powered applications.

Diagrams

Figure A: Network Diagram



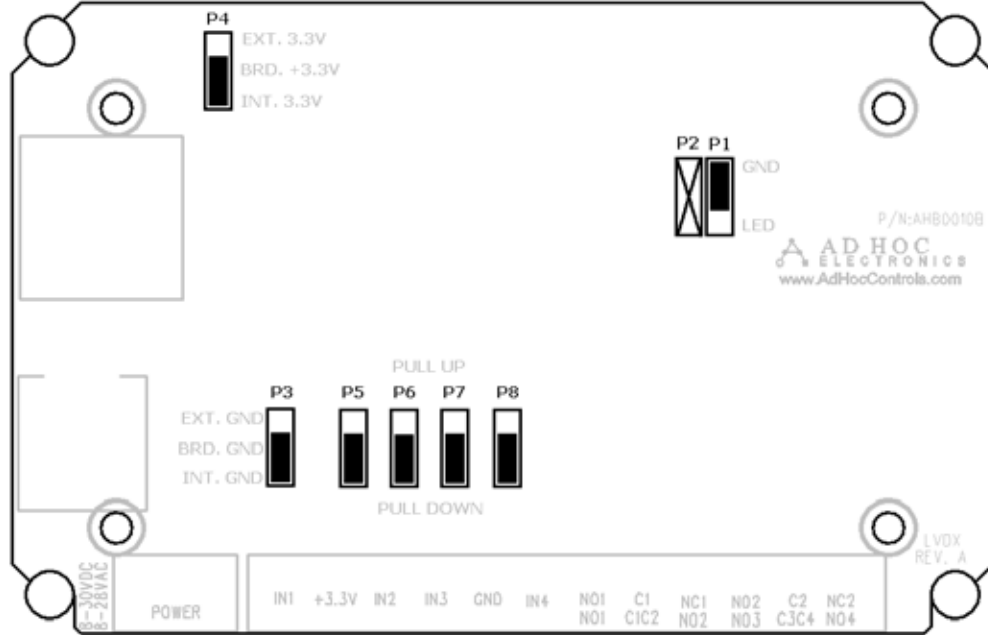
NOTE 1:
IF AN INPUT IS ACTIVATED WITH A DC VOLTAGE, CONNECT THE NEGATIVE SIDE TO GND (LOCATED BETWEEN IN3 AND IN4) AND CONNECT THE POSITIVE SIDE TO THE INPUT (IN1, IN2, IN3, OR IN4). REVERSE POLARITY MAY CAUSE DAMAGE TO THE UNIT.

NOTE 2:
INTERNAL JUMPERS ALLOW USER TO CONFIGURE EACH DEVICE. SEE JUMPER TABLE IN USER MANUAL.

OUTPUTS ON "UNIT A" ARE CONTROLLED BY CORRESPONDING INPUTS ON "UNIT B". **NOTE: LD-2A IS ON, BECAUSE INPUT 2 ON "UNIT B" IS ACTIVATED BY SW-2B.

OUTPUTS ON "UNIT B" ARE CONTROLLED BY CORRESPONDING INPUTS ON "UNIT A". *NOTE: LD-4B IS ON, BECAUSE INPUT 4 ON "UNIT A" IS ACTIVATED BY SW-4A.

Figure B: Default Jumper Location and Table



P4	Selects between internal 3.3VDC regulated supply and external 3.3VDC supply	EXT.	Device uses a ground provided externally. Device MUST be powered from a REGULATED 3.0-3.3VDC supply! Correct polarity MUST be observed!	Use extreme caution in this position. If the supply voltage exceeds 3.3VDC, the device will be damaged! Useful in battery/solar powered installations where minimum quiescent current is a requirement. P3 must also be in EXT. GND position. Polarity of regulated 3.3VDC power must be applied properly or damage will result (see wiring diagram).
		INT. (default)	Device can be powered from any external 8-30VDC or 8-28VAC supply. Polarity insensitive	Normally, this position is used.
P5 P6 P7 P8	Selects between internal pull-up or pull-down on input 1, 2, 3, or 4 (respectively)	PULL-UP	Pulls-up input	Connect dry contact between GND and IN1. Alternatively, the input can be driven with a DC voltage in the range 0-1VDC (TTL and CMOS compatible).
		PULL-DOWN (default)	Pulls-down input.	Connect dry contact between +3.3V and IN1. Alternatively, the input can be driven with a DC voltage in the range 3-30VDC (TTL and CMOS compatible).

JUMPER	PURPOSE	POSITIONS	FUNCTION	NOTES, CAUTIONS, WARNINGS
P1	Enable / disable LED indicators	GND (default)	LED indicators enabled	LED indicators are enabled all the time and will illuminate when and input/output is active
		LED	LED indicators disabled	LED indicators are disabled, but will briefly illuminate during radio transmissions
		Not Installed	LED indicators disconnected	LED indicator will never illuminate, which is useful in applications where minimum power consumption is desired (i.e. battery-powered / solar-powered installations).
P2	Reserved for future use	Not installed	Reserved for future use	Reserved for future use
		Not installed		
P3	Selects between internal ground and external ground	EXT. GND	Device uses a ground provided externally. Device MUST be powered from a REGULATED 3.0-3.3VDC supply! Correct polarity MUST be observed!	Use extreme caution in this position. If the supply voltage exceeds 3.3VDC, the device will be damaged! Useful in battery/solar powered installations where minimum quiescent current is a requirement. P4 must also be in EXT. position. Polarity of regulated 3.3VDC power must be applied properly or damage will result (see wiring diagram).
		INT. GND (default)	Device uses its own internal ground. Polarity insensitive	Normally, this position is used.

Figure C: Long Range Egress Lighting w/ 15 Minute Auto Off Timer

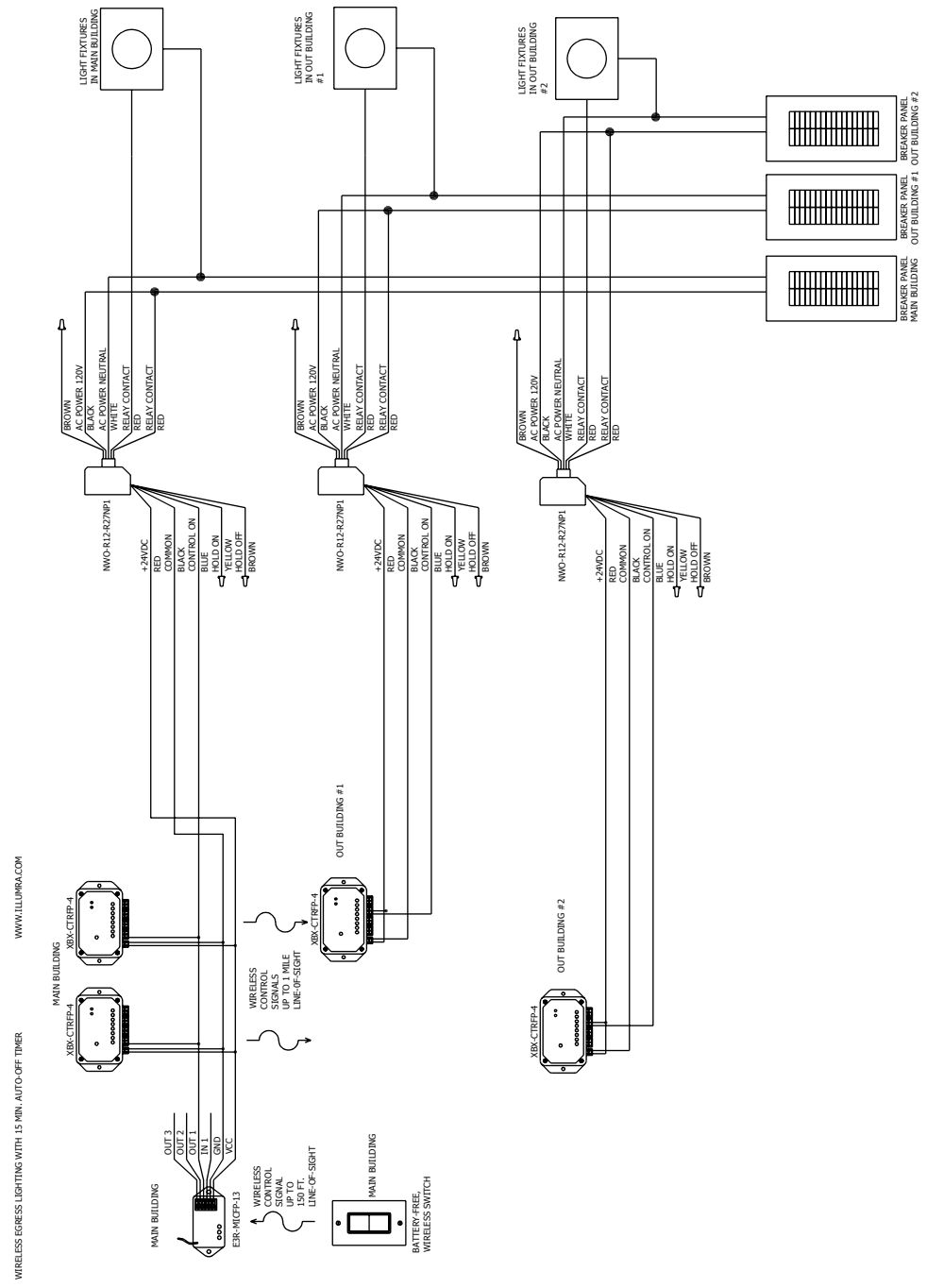


Figure D: Long Range Gate Motion Control

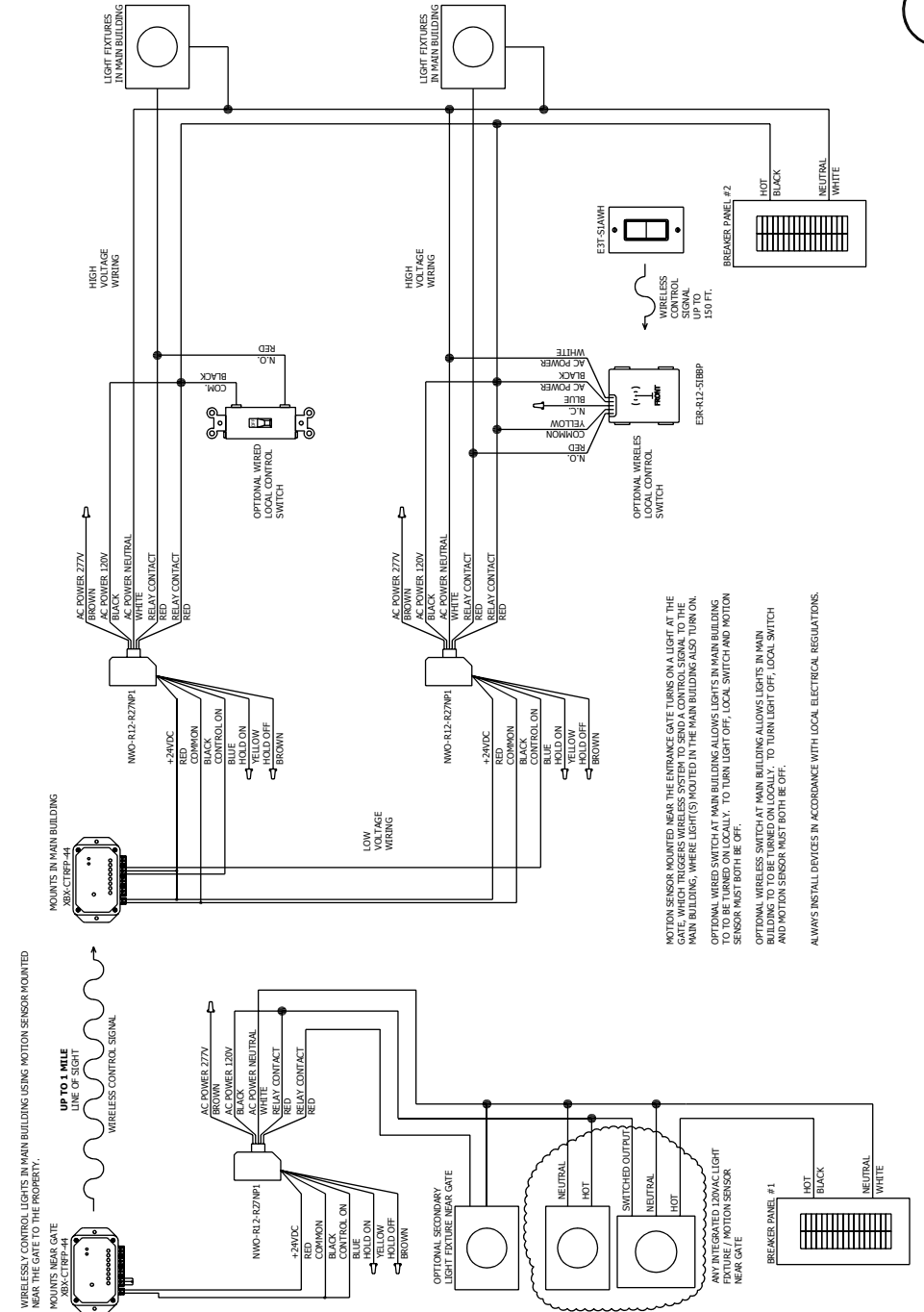


Figure E: 8 Long Range Wireless Control of Lighted Sign

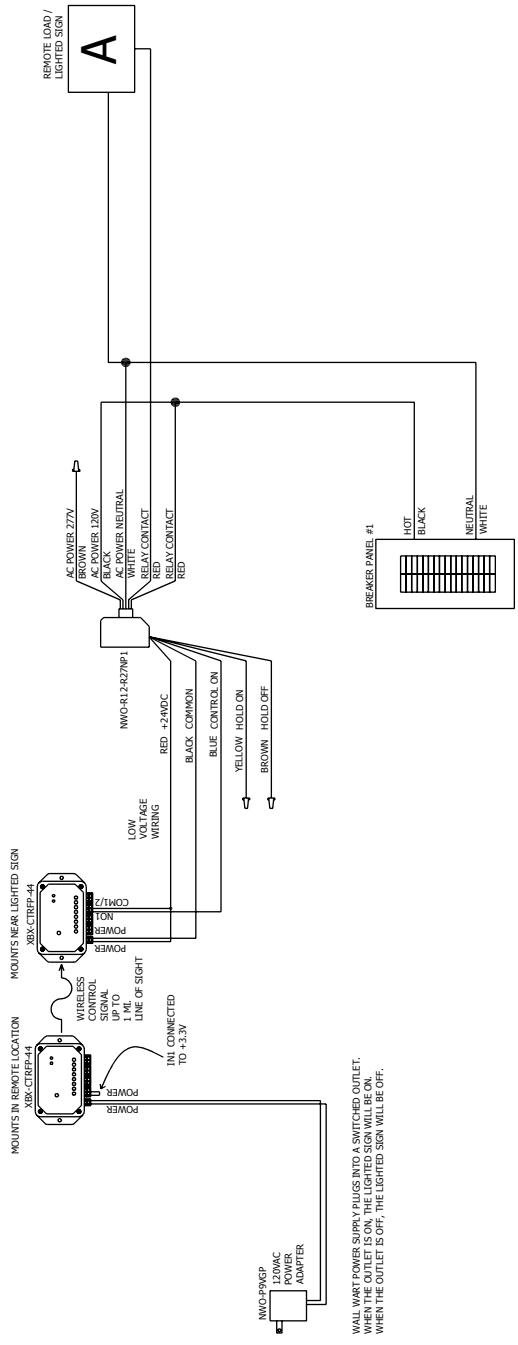


Figure F: Wireless Control of Lights in Out Building

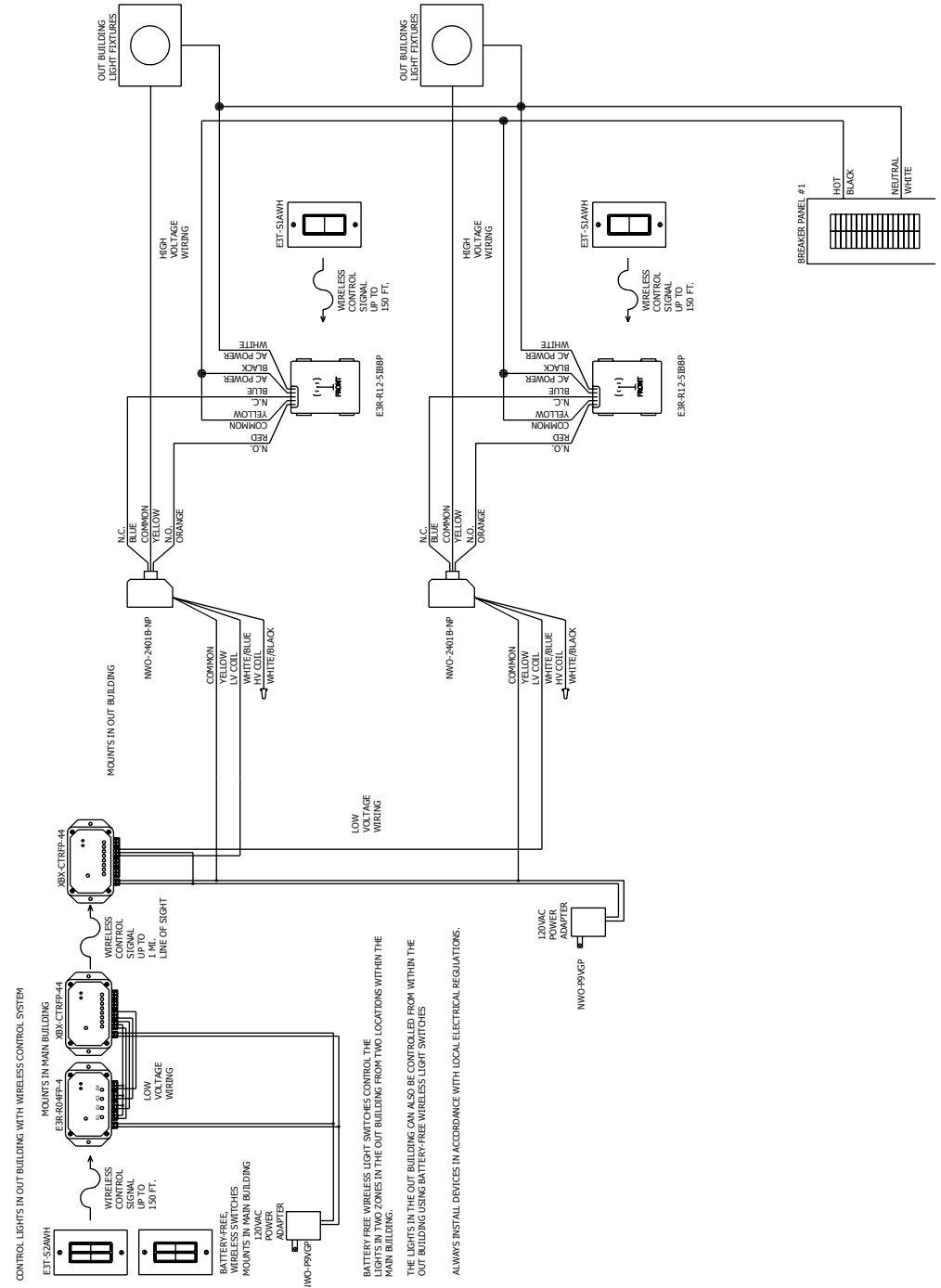
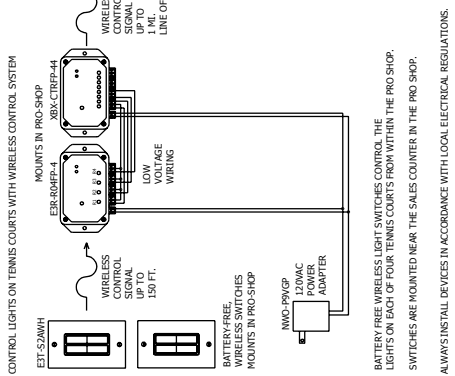
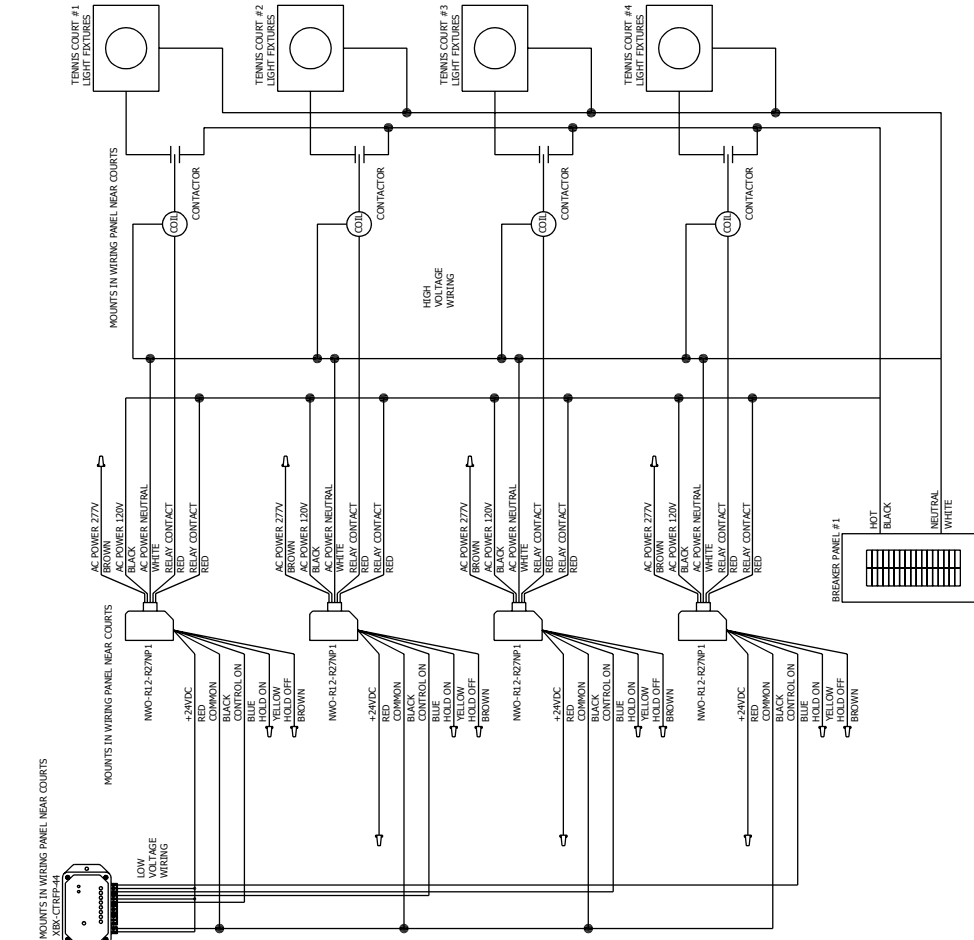


Figure G: Long Range Control of Tennis Court Lights from Pro-shop with Local Contactors



BATTERY FREE WIRELESS LIGHT SWITCHES CONTROL THE LIGHTS ON EACH OF FOUR TENNIS COURTS FROM WITHIN THE PRO SHOP. SWITCHES ARE MOUNTED NEAR THE SALES COUNTER IN THE PRO SHOP. ALWAYS INSTALL DEVICES IN ACCORDANCE WITH LOCAL ELECTRICAL REGULATIONS.

Specifications

	XBX-CTFRP-44
Range, Typical	up to 1 mile (RF line-of-sight) w/ optional high gain antenna up to 1,000 ft. (Residential) up to 300 ft. (urban/industrial)
Operating Frequency	2.4 GHz (DSSS - Direct Sequence Spread Spectrum)
Transmit Power	60mW (100mW EIRP w/ included antenna)
Power Supply Input Rating	8-30 VDC, 8-28 VAC (3.3 V option available – see installation guide)
Relay Output Rating	4 Each: 2A, 0-30 VAC or VDC, Form A (normally open, SPST)
Interface	4 Each: Inputs - dry or wet contact. Outputs - dry contact (see installation guide)
Typical Latency	5 ms (input to output between units)
Polling Update Rate	1 second
Receiver Timeout	10 seconds (if connection is lost for this long, all relays will open)
Typical Supply Current	18 mA min, 120 mA max
Operating Temperature	-22°F to 140°F (-30°C to 60°C)
Storage Temperature	-40°F to 140°F (-40°C to 60°C)
Dimensions	4.2"(W) x 2.8"(H) x 1.125"(D) or 10.7cm x 7.2cm x 2.9cm
Radio Certifications	FCC: OUR-XBEEPRO, IC: 4214A-XBEEPRO

Warranty

Please refer to www.ILLUMRA.com for updated warranty information

This device or certain aspects thereof is protected by at least one U.S. or international patent or has at least one such patent application pending.

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