

Light Corp. Technical Description

Overview: The Light Control Module (LCM) is part of a system that allows wireless control of light fixtures in an industrial or warehouse environment. Each light fixture in the facility has one LCM attached to it which controls the states of the ballasts. The LCM's also communicate wirelessly to each other, repeat messages for each other and communicate to a node called the gateway. Each system has one gateway that can talk both wirelessly to the LCMs and over the internet. The gateway sends messages to the LCMs telling them what state their ballasts should be in.

The LCMs communicate wirelessly using the zigbee protocol. This protocol is based off of IEEE 802.15.4. The LCMs transmit on a channel between 2405 MHz and 2475 MHz. Each channel is 5 MHz wide. The channel that the nodes transmit on is selected during installation. Once the channel is chosen, it does not normally change. The transmit protocol employs a digital modulation scheme.

The LCMs are powered by 120VAC to 277 VAC. This is regulated down to 7.5 VDC by a switching regulator circuit. The 7.5 VDC is again regulated down to 3.3 VDC by a linear regulator.

The LCM can accept an input from an occupancy sensor or a light sensor.

The LCM contains an EM260 RF Transceiver. The EM260 transceiver handles all RF responsibilities and contains a zigbee stack supplied by the manufacturer, Ember Corporation. Its clock is supplied by a 24 MHz external crystal oscillator. It communicates over SPI to a PIC16F886 microcontroller. The microcontroller's clock is supplied by an internal 8 MHz oscillator.