Lighting Communications Development Platform

Intelligent Lighting & Control Solutions

Summary

Irrespective of the lighting technology, the ability to effectively control the light source is essential. Beyond a simple on/off switch, advanced lighting control provides the opportunity to provide additional intelligence and increased energy savings.

The ability to dim any light source is the most common requirement of a light controller—but is a potential obstacle. Most legacy dimmers are simple triac dimmers that can vary the light output of an incandescent light source from 0–100%. These vary the brightness by “chopping” the AC line voltage and controlling the effective power to the lamp, thereby varying the light output. These methods function well with incandescent sources, as well as some specially designed CFL ballasts, but do not function properly with most existing drivers or ballasts. In order to effectively dim LED and fluorescent, specialized methods such as varying PWM frequency or variable current is required—this is easily implemented with electronic dimming controllers.

Functions such as dimming and timers are common, but intelligent control provides opportunities to enrich the user experience and increase value. Incremental energy savings can be provided by potentially integrating elements such as energy management and harvesting (ie. solar), ambient light compensation (reducing light output based on other localized light sources), and occupancy or motion sensing. Further intelligence includes the ability to create lighting networks that communicate both locally, as well as to remote locations. This allows for the ability to increase energy savings further and reduce maintenance cost via items such as fixed light output in lighting arrays (ie. street lamps, large rooms, etc.), monitoring light output, and providing real-time operating issues. Additionally, this offers the ability to integrate lighting into other system topologies such as security systems or automation & control. Aesthetically, lighting control offers the ability to support custom mood lighting by varying brightness, color, and color temperature—across large lighting arrays.

Features

The Lighting Communications Development Platform provides a universal lighting development platform for the creation of communications enabled lighting applications.

The Lighting Communications Development Platform consists of:

- Main communications board
- Prototyping board
- Communications interface adapters (DALI, DMX512A, future protocol support (eg. RF))

The following is required:

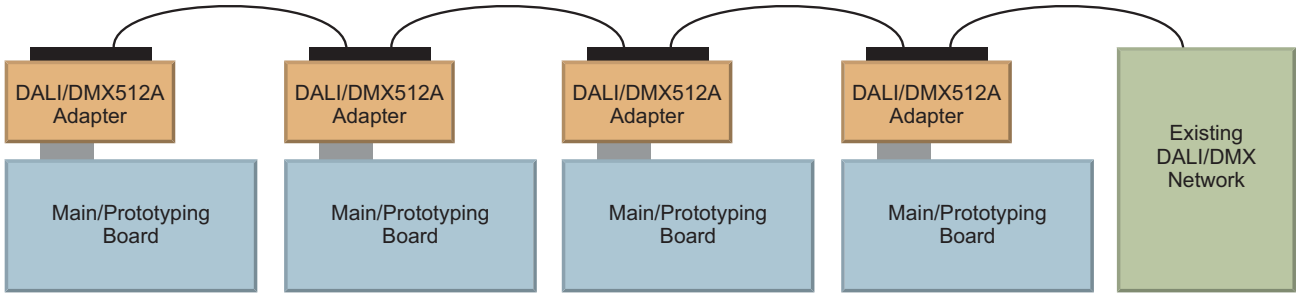
- Minimum of (2) main or (2) prototyping boards
- Minimum (2) adapters
  - Connected via appropriate cabling
    - RJ45 patch cable
    - DMX512A 5-pin barrel cable
    - DALI 2-wire

The communication platform is compatible with commercially available DALI/DMX512A products and can be integrated into existing lighting networks during development or utilized with multiple communication platforms to simulate large lighting networks.

To further ease in development, code libraries for both DMX512A and DALI are available as a FREE download. Go to www.microchip.com/lightingcomms to get started.

Learn more about Intelligent Lighting and Control Solutions from Microchip at www.microchip.com/lighting. *Focus products and peripherals, reference designs, and development tools.*

Example Configuration



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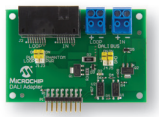
Main Communication Board (DM160214)

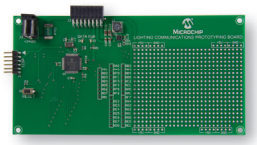
- Populated with PIC16F1947 for user interface, communications, and LED control
  - 4-channel constant current control with RGBW color mixing and dimming
  - Slider potentiometer for dimming control
  - Universal Communications Adapter Interface
    - DALI, DMX512A, and future support
  - Master & Slave support for DALI and DMX512A
  - DALI commissioning and support for custom zones & scenes
  - LCD display & push button user interface
  - Customizable capabilities
- Populated with MCP6004 op amp for current feedback
- Populated with MCP16322 for 5V power conversion
- Populated with Cree XLamp MC-E Color delivering red, green, royal-blue, and white in a single LED—high lumen output in a small form factor
- Populated with LEDnLIGHT collimator LLC19N optic and holder by Gaggione for high quality color mixing and tight beam control
- 9–12V Power supply input

DALI Adapter (DM160214-1)



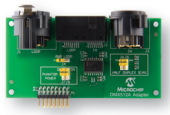
- Screw terminals & RJ45 connectors
- Isolated DALI interface
- Current limited DALI power supply (jumper option)
- FREE DALI 'C' Library
- Demonstration code
- All code resides within the PIC16F1947 on main/prototype board

Prototyping Communication Board (AC160214)



- Populated with PIC16F1947 for user interface and communications
  - Universal Communications Adapter Interface
    - DALI, DMX512A, and future support
  - Master & Slave support for both DALI and DMX512A
  - DALI commissioning and support for custom zones & scenes
  - Customizable capabilities
- Populated with MCP16322 for 5V power conversion
- Bread boarding space for customized lighting development
- 9–12V Power supply input

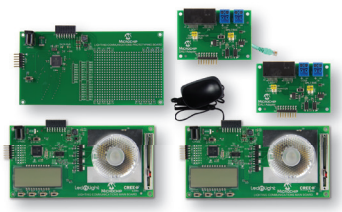
DMX512A Adapter (DM160214-2)



- XLR5 & RJ45 connectors
- Isolated transceiver
- Bi-directional communication termination (jumper option)
- FREE DMX512A 'C' Library
- Demonstration code
- All code resides within the PIC16F1947 on main/prototype board

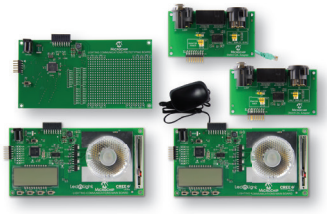
Available separately or as a kit to get started quickly…

DALI Starter Kit (DV160214-1)



- (2) Main boards
- (1) Prototyping board
- (2) DALI adapters
- 9V International power supply
- RJ45 Patch cable

DMX512A Starter Kit (DV160214-2)



- (2) Main boards
- (1) Prototyping board
- (2) DMX512A adapters
- 9V International power supply
- RJ45 Patch cable

Download the latest collateral and FREE DMX512A/DALI code libraries at www.microchip.com/lightingcomms.

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www.microchip.com/lighting

Visit our web site for additional product information and to locate your local sales office.

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