



***ILC Apprentice II***

Controllers and Accessories

# Apprentice II

## Lighting Control System

ENERGY SAVING LIGHTING CONTROLS



INTELLIGENT LIGHTING CONTROLS, INC.  
5229 Edina Industrial Boulevard  
Minneapolis, Minnesota 55439



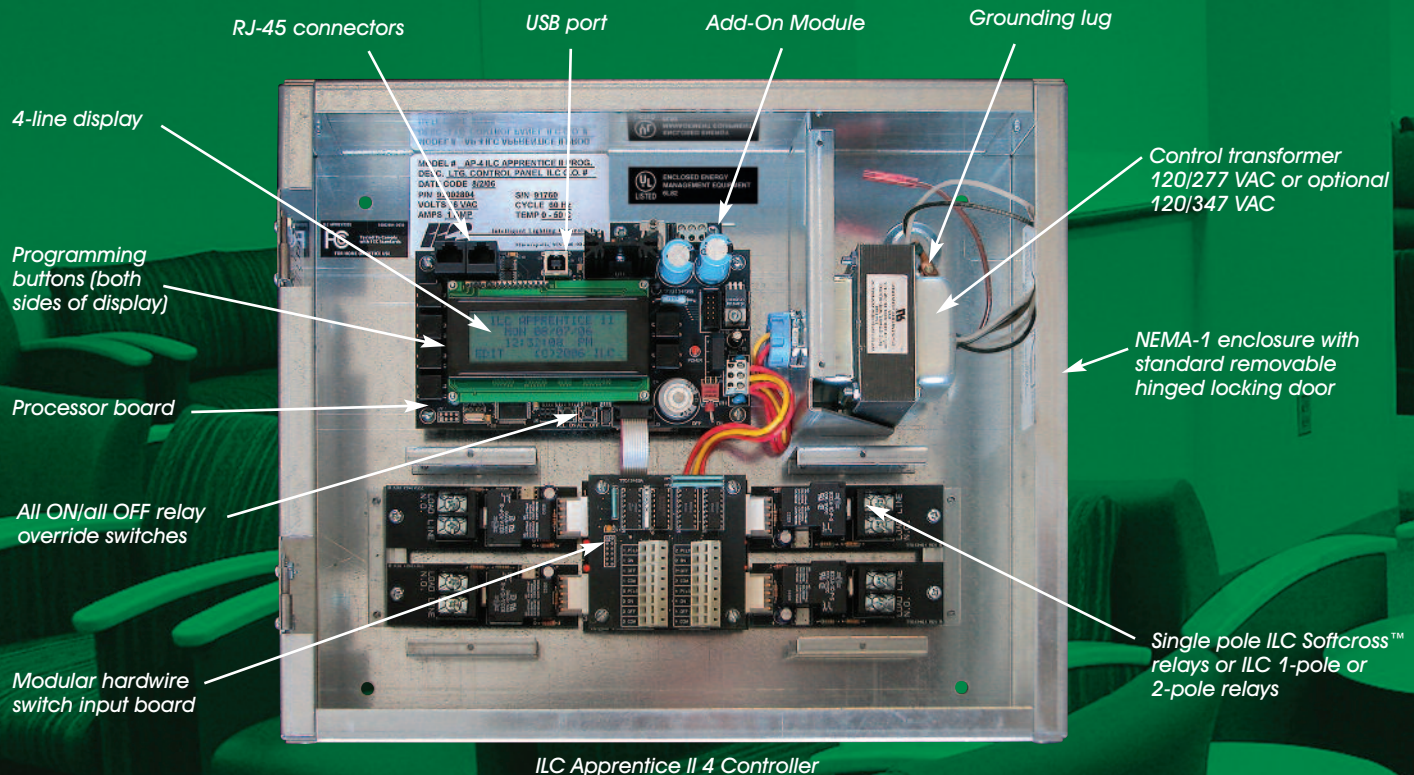


# Meet the ILC Apprentice II

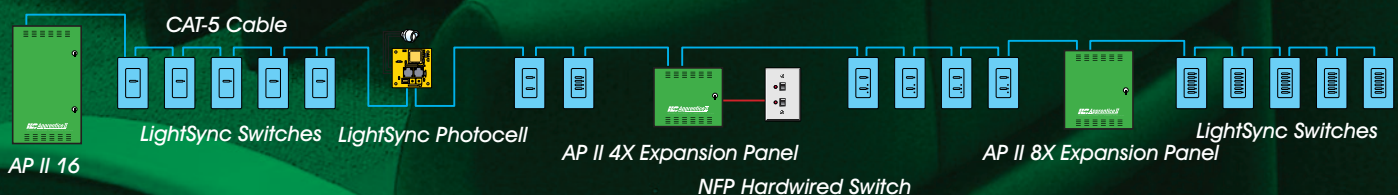
The ILC Apprentice II lighting controller is a microprocessor-based, programmable lighting controller capable of advanced lighting control as a stand alone panel or take advantage of the Apprentice II's network features. It is an economical controller that can link up to 48 control points and has the capability of using hardwired or LightSync™ data line switches. You can program the switch inputs to control any or all of the relay outputs, relay groups, or presets. The controller uses either single pole ILC Softcross™ relays with true zero-cross switching, ILC 1-pole relays or ILC 2-pole relays. Relay types are automatically recognized by the controller and may be mixed in the panel. With the addition of add-on modules, Apprentice II can interface with BAS systems, DMX systems, accept DTMF control and more.

The Apprentice II ships in four sizes and can expand to meet your changing needs. Creating a network is easy. Standard CAT-5 cable connects a Apprentice II panel and a number of Apprentice II Expansion panels that add up to a maximum of 48 relay outputs. The Apprentice II panel then "sees" the Expansion panels as one expanded controller. The Expansion panels are addressed with a unique node address ranging from 2 to C, and all panels support local hardwired inputs and LightSync™ data line devices (see inside back cover for an overview).

As an alternative to programming from the Apprentice II Keypad, programming may be done via USB or TCP/IP from a personal computer (PC) equipped with proprietary ILC Apprentice II Pro software.



Adding capacity is easy with the Apprentice II's network feature!



# The Apprentice II Panel



## Programmable Lighting Control

- 365-day programmable Lighting Control Panel
- All products Made in the USA
- LightSync™ switch and accessory ready
- Network up to 48 control points
- Available in 4, 8, 16 and 32 relay panel sizes
- Uses reliable zero-cross Softcross™ relay
- Optional add-on modules available
- Programming software provided with every panel
- USB, modem and TCP/IP connectivity available

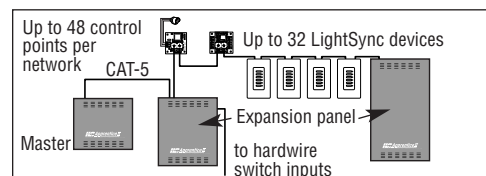


## Overview

The Apprentice II programmable lighting control panel is an energy saving lighting controller. You can network up to 48 control points and 32 LightSync™ devices per network and connect via easy to use RJ-45 ports. Connect and program panels using a USB port on a laptop and our free Apprentice II software. Add-on cards are easy to install and add the following capabilities: BACnet, LonWorks, N2, MODBUS, TCP/IP, or modem interface, DMX control and DTMF telephone switching.

## Features

- **Made in the USA** relays and hardware.
- **Programming Options** are done with an Integrated keypad with 4-line LCD display or using Apprentice II Pro software via USB or TCP/IP.
- **LightSync Data Line Device Ready** utilizing RJ45 connectors and standard CAT-5 cabling for data line.
- **Network capability** allows you to connect panels for up to **48 outputs** and **32 LightSync** devices per network.
- **Internet Capability** to program, monitor, and control panels across the network or internet with the addition of a TCP/IP module.
- **Relay Groups** consist of any relay on the network and can be assigned to any of the **48 available groups** — controlled by any timer, switch, or other external commands.
- **Relay Presets** can be programmed from any relay ON/OFF patterns and be assigned to any of the **48 available presets** — controlled by any timer, switch, or other external commands.
- **Timer Scheduling** for **48 available timers** that can turn relays ON or OFF for Time-of-Day, Astronomical times, and Open/Close.
- **Clock Functions** include Automatic Astronomical calculation of Sunrise and Sunset and Adjustable Daylight Saving Time and Enable/Disable.
- **Switching Inputs** accepts virtually any type of switch input, momentary or maintained, 2- or 3-wire switch and directly powers data line switches and devices.
- **Add-On Modules** can be added to each controller, including BACnet IP, BACnet MSTP, Modbus RTU, Modbus ASCII, N2, LonWorks, DMX512, TCP/IP, DTMF telephone switching and modem.
- **Expansion panels** with 4 to 16 relays are available to expand the number of relay outputs on a standard panel.



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www.ilc-usa.com



# The Apprentice II Panel



Programmable Lighting Control

## Specifications

### Relays:

- **Single pole** zero-cross Softcross™ relays control 120 or 277VAC @ 20 Amps for ballasts and resistive loads. Available in normally open or normally closed.
- **1 Pole relays** with the same footprint as the single pole control up to 347VAC @ 20 Amps for ballasts, resistive and general loads. Available with normally open contacts.
- **2 Pole relays** with the same footprint as the single pole control up to 277VAC per pole @ 20 Amps for ballasts, resistive and general loads. Available with normally open contacts.

### Safeguards:

- **Power surge and spike suppression** up to 123 volts on the 24VAC power input
- **Memory retention** for firmware and programming up to 50 years
- **Real-Time-Clock time retention** 45 days or greater without power

### Physical:

- NEMA1 galvanized enclosure
- Double sided construction for wiring on both sides
- Provided with pre-drilled mounting holes
- Painted removable hinged locking door for flush or surface mounting
- High voltage barriers separate Normal/Emergency and Class 2 wiring

### Electrical:

- 120/ 277 VAC or optional 120/ 347 VAC
- 1 Amp

### Capacities:

- 4, 8, 16, or 32 relays

### Operating Environment:

- Location: Interior space
- Operating Temp.: 0° to 40° C
- Humidity: 10% - 90% Non-condensing
- Vibration: Stationary

### Certifications and Approvals:

- UL CUL
- FCC Part 15
- FCC Part 68
- Title 24
- ASHRAE compliant

## Ordering

Order the ILC Apprentice II controller

**ILC-APII** - 1 - 2 - 3 - 4 - SR1 - NO - 5 - SR1 - NC - 6 - 1PR - 7 - 2PR - 8

Sample: Order No. ILC-APII-04-0-A-0-4-0-0-0 = ILC Apprentice II standard controller in a size 4 enclosure with 120/277 VAC, standard Softcross NO relays.

- ① Consult the chart to determine the enclosure size required. All enclosures are NEMA-1 type with hinged locking cover standard. Fill in the size panel your installation requires; 4, 8, 16 or 32.

Enclosure Size Options				
Enclosure Type	Relays	Width	Height	Depth
ApprenticeII-4	4	14 in.	12 in.	4 in.
ApprenticeII-8	8	14 in.	16 in.	4 in.
ApprenticeII-16	16	14 in.	24 in.	4 in.
ApprenticeII-32	32	16 in.	42 in.	4 in.

- ② Number of additional 4-input hardwire switch interface boards (if required – panels ship with one APII 4-input board installed); 08 will accept one additional, 16 will accept three, and APII-32 will accept seven. (not applicable for 04 size)
- ③ Indicate if this is to be a standard (with display and keypad) or a network expansion panel (no display or keypad).  
A= Standard controller panel  
X= Network expansion panel (4,8,or 16size)
- ④ Control Transformer Voltage  
Blank= 120/ 277 VAC  
347= 120/ 347 VAC

### SoftCross Relay(s)

- ⑤ Series: SR1-NO= single pole 277VAC MAX  
Default state: NO= Normally Open  
NOTE: Relays are shipped as NO unless otherwise specified

SR1-NO Quantity:

- ⑥ Series: SR1-NC= single pole 277VAC MAX  
Default state: NC= Normally Closed  
NOTE: Relays are shipped as NO unless otherwise specified

SR1-NC Quantity:

### Relay(s)

- ⑦ Series: 1PR = 1 pole 347VAC MAX  
1PR Qty:

- ⑧ Series: 2PR = 2 pole 277VAC MAX/Pole  
2PR Qty:

*A full line of compatible products including control software, photosensors, a wide variety of momentary or maintained switches, custom engraved plates and more are available. Consult factory or your local ILC Representative for more information.*



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# Switch Input Types

Switch Input Types available when programming the Apprentice II Controller

<p><b>Momentary ON/OFF:</b> When momentary contact is made between ON and COM, relay outputs controlled by this input are turned ON. When momentary contact is made between OFF and COM relay outputs controlled by this input are turned OFF.</p> <p>MOMENTARY</p>	<p><b>Momentary Push- Button:</b> When momentary contact is made between ON and COM, relay outputs controlled by this input are turned ON and OFF alternately each time contact is made.</p> <p>MOMENTARY</p>	<p><b>Maintained ON/OFF:</b> When contact is made between ON and COM relay outputs controlled by this input are turned ON. When contact is broken between ON and COM, relay outputs controlled by this input are turned OFF.</p> <p>MAINTAINED</p>	<p><b>Maintained Multi-Way:</b> When contact is either made or broken between the ON and COM, relay outputs controlled by this input will be toggled between ON and OFF conditions. This function is similar to that of standard 3- and 4-way switches.</p> <p>MAINTAINED</p>	<p><b>Set Preset:</b> When momentary contact is made between ON and COM, the selected preset will be activated.</p> <p>MOMENTARY</p>	<p><b>Timed ON/Cleaning Switch:</b> When momentary contact is made between COM and ON, relay outputs are turned ON. When contact is broken, a timed ON duration from 5-999 minutes starts at close and/or open. Contact between OFF and COM will turn relays OFF.</p> <p>MOMENTARY</p>
<p><b>Two-Step Group:</b> When the switch is closed, group A (relay outputs) turn ON and group B (relay outputs) turn OFF. When the input is activated again, group A turn OFF and group B turn ON. The pattern repeats with successive switch activations.</p> <p>MOMENTARY</p>	<p><b>Four-Step Group:</b> The first time the switch is activated, group A (relay outputs) turn ON and group B (relay outputs) turn OFF. The second time the switch is activated, group A turn OFF and group B turn ON. The third time, both groups turn ON. The fourth time, both groups turn OFF. The fifth actuation begins a repeat of the 4 steps.</p> <p>MOMENTARY</p>	<p><b>Input Disable:</b> When contact is made between ON and COM, selected input or inputs will be ignored.</p> <p>MAINTAINED</p>	<p><b>Timer Disable:</b> While contact is made between ON and COM, selected timer or timers will be ignored.</p> <p>MAINTAINED</p>	<p><b>Output Override:</b> While contact is made between ON and COM, relay outputs controlled by this input are turned ON, OFF or held in their current state and all other control commands are ignored. <b>All inputs/timers are ignored for controlled relay outputs.</b></p> <p>MAINTAINED</p>	<p><b>Photo Sensor Inputs:</b> LightMaster controllers can be connected to either momentary or maintained output photo sensors as shown below.</p> <p>MOMENTARY Programmed as "Momentary"</p> <p>MAINTAINED Programmed as "Maintained ON/OFF input"</p>
<p><b>Motion Sensor Inputs:</b> LightMaster controllers can be connected to either momentary or maintained output motion sensors as shown below.</p> <p>MOMENTARY Programmed as "Momentary"</p> <p>MAINTAINED Programmed as "Maintained ON/OFF input"</p>	<p><b>Fire Alarm System Inputs:</b> LightMaster controllers can be easily connected to building Fire Alarm Systems to force selected controlled lighting circuits to the ON, OFF or HOLD state and lock out all other forms of control when a Fire Alarm signal is present (contacts CLOSED).</p> <p>MAINTAINED Programmed as "Output Override input"</p>	<p><b>Dry Contact Interface:</b> Virtually any control system or device can be interfaced to a LightMaster controller through the use of a simple dry contact interface utilizing any of the available switch types.  Please consult factory for any special requirements.</p> <p>MAINTAINED</p>	<p><b>Force Timer:</b> A switch input can be mapped to force a LightMaster Timer activation.</p> <p>MOMENTARY</p>	<p><b>HID Bi-Level:</b> Operation of Bi-level HID Ballasts. First contact between COM and ON will turn ON power and High/Low relay. (High/Low relay is locked ON for 15 minutes for warm up period) Additional activations of ON terminal will toggle High/Low relay. Contact between OFF and COM will turn relays OFF.</p> <p>MOMENTARY</p>	

NOTE: Switch Enable-Disable: Inputs may be enabled or disabled based on Time of day

Relay Time Types available when programming the Apprentice II Controller

### General Notes

- Any Timer may control any or all Relay Outputs
- Timers may cause Relay Outputs to be turned ON or OFF
- Any Timer may control any or all Group(s) of Relay Outputs
- Timers may cause Group(s) of Relays Outputs to be turned ON or OFF
- Timer may cause any Preset(s) to be activated

### Standard Timer/Relay Types:

<p><b>ON:</b> The ON Timer Function will Turn ON Relay Outputs assigned to a specific Timer.</p>	<p><b>OFF with Blink:</b> Each relay output within the LightMaster may be individually programmable to blink (OFF/ON) prior to being turned OFF by a Timer. This will warn occupants of the upcoming OFF event. The time window from the blink alert to the scheduled OFF time are adjustable between 2 and 99 minutes in 1-minute increments. If an ON command is received during the blink alert time the relay output will be overridden and left ON for the override time. Override times are adjustable from 5 to 999 minutes in 1-minute increments.</p>
<p><b>OFF:</b> The OFF Timer Function will Turn OFF Relay Outputs assigned to a specific Timer.</p>	

### Special Application Timer/Relay Types:

<p><b>Alarm ON:</b> Relays are capable of performing a momentary ON function. Relays programmed for this function will turn ON for a programmed duration (1 to 99 seconds) and then return to the OFF state. <b>Application:</b> Mechanically Latching Contactor</p>	<p><b>Alarm OFF:</b> Relays are capable of performing a momentary OFF function. Relays programmed for this function will turn OFF for a programmed duration (1 to 99 seconds) and then return to the ON state. <b>Application:</b> Sentry Switch or The Watt Stopper® AS-110 Automatic Control Switch compatible</p>	<p><b>Alarm Pulsed ON:</b> During the ON pulse period (1 to 99 seconds programmable) the relay is cycled ON and OFF at 1 second intervals. Relay returns to OFF state when complete. <b>Application:</b> Alarm or buzzer signal applications, classroom bell systems. Used in conjunction with HID applications for settable blink alert operation.</p>	<p><b>Alarm Pulsed OFF:</b> During the OFF pulse period (1 to 99 seconds programmable) the relay is cycled OFF and ON at 1 second intervals. Relay returns to ON state when complete. <b>Application:</b> Settable blink alert operation.</p>
<p><b>After Hour Timer OFF Sweeps:</b> To minimize the programming of after hours OFF sweeps, the user may specify a after Close and before Open time window, and OFF sweeps will occur every 1, 2 or 3 hours automatically</p>	<p><b>HID Delay:</b> The relays designated as HID Delay Timer operation will observe the blink alert waiting period and an override without blinking (turning OFF and ON) the HID fixture</p>	<p><b>Power-Up State:</b> Relays may be configured to provide one of the following functions at power-up of the controller ON, OFF, ON if Input 1 closed, OFF if input 1 closed or NO ACTION. (Input 1 may be wired to a security or fire alarm system as an output override)</p>	<p><b>Open/Closed Time Control:</b> Relay Groups or Timers may be controlled in relation to OPEN/CLOSE times of the facility. The open/closed times may vary for different days per day of the week and may be programmed for each day of the year if necessary.</p>

# Softcross™ Relay Board



Controller Add-ons

- Single pole lighting control
- True zero cross switching
- Easy installation
- Controls 120 or 277V circuits
- UL listed
- Available Normally Open (NO) or Normally Closed (NC) types
- Type automatically recognized in controller



## Overview

The ILC Softcross™ relay is designed for the Apprentice II lighting control panels. This relay features true zero cross switching that eliminates arcing on the contacts, thus enhancing relay endurance and reliability. The relay board's circuitry is designed to prolong its life to an average of 10,000,000 cycles. Softcross relays are electrically held and are available in NO (normally open) and NC (normally closed) types, and relay types can be mixed in the lighting controller. Softcross relays are mounted in the panel with a push-on connector interface and a single screw.

## Features

### General Information

- UL listed
- Mounts in panel with a push-on connector and a single screw

### High Voltage Characteristics

- Contacts are electrically held SPST
- Available in two types (NO or NC)
- Screw type terminals handle #14–10AWG solid or stranded copper wire



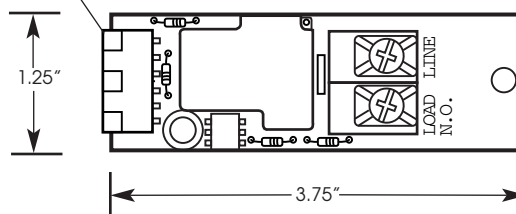
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[www.ilc-usa.com](http://www.ilc-usa.com)

## Dimensions



Connector to  
I/O board



## Specifications

### Physical:

- 3.75"W x 1.25"H x .87"D
- Plug-in module designed for mounting directly to Apprentice II I/O board(s)

### Electrical:

- 20 amp ballast
- 20 amp resistive
- 120 or 277 VAC
- 50 to 60 Hz

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 40° C
- Relative Humidity 10% to 90%
- Atmosphere Non-condensing, Non-explosive, Non-corrosive
- Vibration Stationary application, NEMA Level A

### Certifications:

- UL CUL
- FCC approval for commercial and residential use

### How to Order

Ordering a **Softcross SRI Relay**  
Order No. SRI - NO (sample)

**SRI - \_ \_**

Normally  
Open (NO),  
Normally  
Closed (NC)



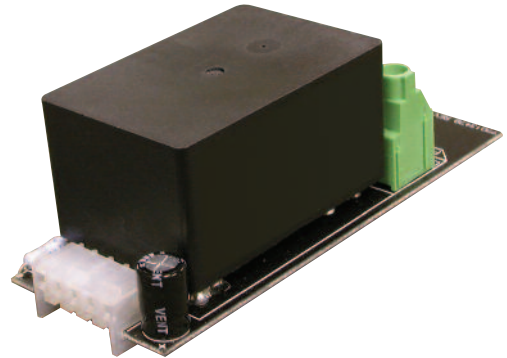
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# 1-Pole Relay Board

- 1 pole lighting control relay
- Easy installation
- Controls up to 347 VAC circuits
- UL listed
- Available with Normally Open (N.O.) contacts
- Mounts directly in panel



## Overview

The 1 Pole Relay Board mounts directly in Apprentice II lighting control panels and is designed to control up to 347 VAC loads. This one pole relay assembly mounts directly in place of the Softcross™ single pole relay board. The relays are electrically held, are available in N.O. (normally open) contacts, and can be mixed in the lighting controller with Softcross™ relay boards. These relay boards are easily mounted in the Apprentice II panel with a push-on connector interface and a single screw.

## Features

### General Information

- UL Listed
- Mounts in the panel with a push-on connector and a single screw.

### High Voltage Characteristics

- Contacts are electrically held SPST
- NO (Normally Open) contacts
- Screw type terminals handle #10AWG solid or stranded copper wire

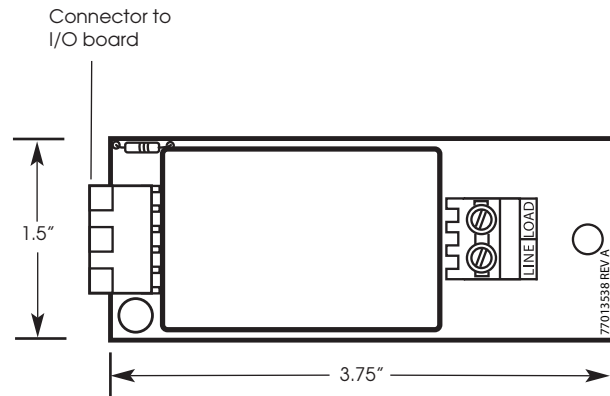
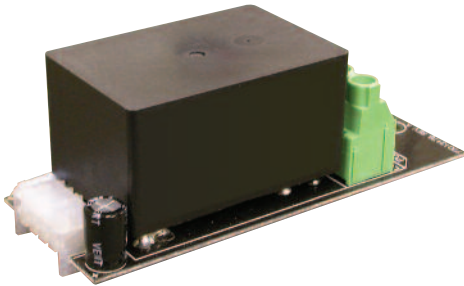


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# 1-Pole Relay Board

## Dimensions



## Specifications

### Physical:

- 3.75"W x 1.5"H x 1.3"D
- Plug-in module designed for mounting directly to Apprentice II I/O board(s)

### Electrical:

- 20 amp ballast
- 20 amp resistive
- 20 amp general
- 50 to 60 Hz
- Up to 347 VAC circuits

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 40° C
- Relative Humidity 10% to 90%
- Atmosphere Non-condensing, Non-corrosive
- Vibration Stationary application NEMA Level A

### Certifications:

- UL CUL
- FCC approval for commercial and residential use

**NOTE:** The High Voltage barrier in the panel needs to be replaced with the installation of the 2 pole relay. Order part number 78001567 for the 4 size panel, 78001568 for the 8 and 16 size, or 78001608 for the 32 size.

### How to Order

Ordering a **1 Pole Relay Board**  
Order No. 1PR (sample)

**1PR**

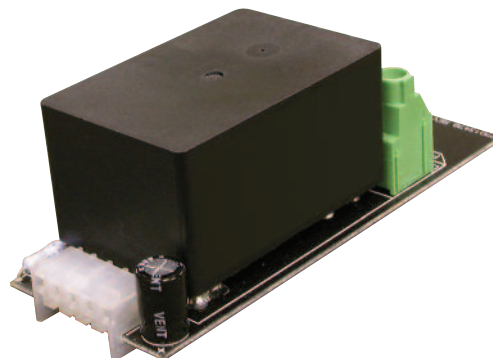


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# 2-Pole Relay Board

- 2 pole lighting control relay
- Easy installation
- Controls 208/240/480 circuits
- UL listed
- Available with Normally Open (N.O.) contacts
- Mounts directly in panel
- Requires only one space



## Overview

The 2 Pole Relay Board mounts directly in Apprentice II lighting control panels and is designed to control 208/240/480 VAC loads. This two pole relay assembly mounts directly in place of the Softcross™ single pole relay board. The relays are electrically held, are available in N.O. (normally open) contacts, and can be mixed in the lighting controller with Softcross™ relay boards. These relay boards are easily mounted in the Apprentice II panel with a push-on connector interface and a single screw.

## Features

### General Information

- UL Listed
- Mounts in the panel with a push-on connector and a single screw.

### High Voltage Characteristics

- Contacts are electrically held DPST
- NO (Normally Open) contacts
- Screw type terminals handle #10AWG solid or stranded copper wire



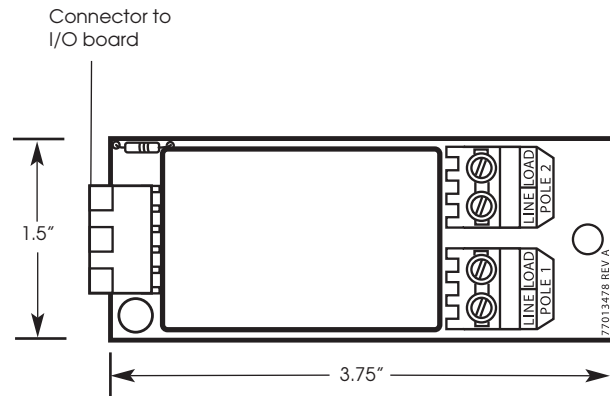
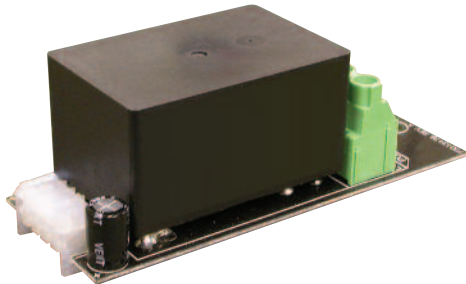
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# 2-Pole Relay Board

## Dimensions



## Specifications

### Physical:

- 3.75"W x 1.5"H x 1.3"D
- Plug-in module designed for mounting directly to Apprentice II I/O board(s)

### Electrical:

- 20 amp ballast
- 20 amp resistive
- 20 amp general
- 50 to 60 Hz
- Up to 277 VAC per pole controlling 208/240/480 VAC circuits

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 40° C
- Relative Humidity 10% to 90% Non-condensing
- Atmosphere Non-explosive, Non-corrosive
- Vibration Stationary application NEMA Level A

### Certifications:

- UL CUL
- FCC approval for commercial and residential use

**NOTE:** The High Voltage barrier in the panel needs to be replaced with the installation of the 2 pole relay. Order part number 78001567 for the 4 size panel, 78001568 for the 8 and 16 size, or 78001608 for the 32 size.

### How to Order

Ordering a **2 Pole Relay Board**  
Order No. 2PR (sample)

**2PR**



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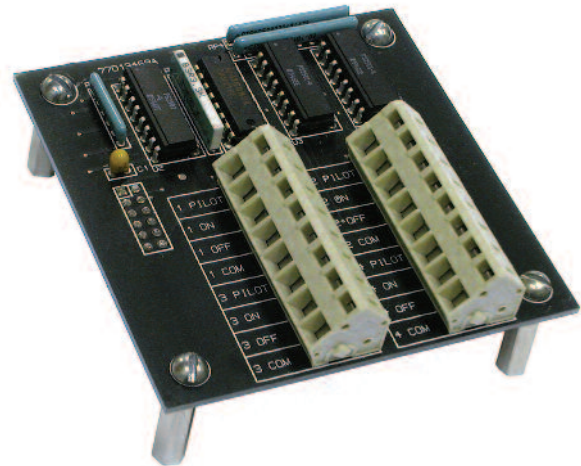
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# Apprentice II Input Board



Controller Add-ons

- Provides hardwired inputs for control switch interface
- Mounts directly onto Apprentice II relay output boards
- Provides 4 inputs per board
- Each input has 3-wire control
- Provides a pilot status output for each input
- Features quick connect connectors
- Inputs clearly labeled on board
- Opto-isolated inputs and pilot outputs



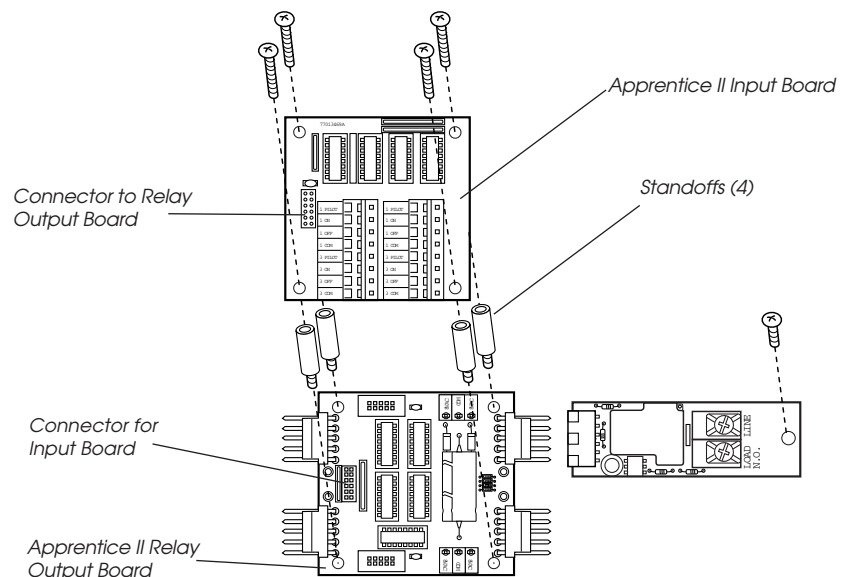
## Overview

The Apprentice II Input Board is designed for Apprentice II lighting control panels. Each add-on board supplies four (4) low-voltage inputs, allowing hardwiring a variety of switch types to control the panel's relays. The board can accept momentary or maintained switch inputs with 2- or 3-wire configurations. Each input on the board has an associated pilot status output, designed to light a status LED at the respective switch location.

## Features

### General Information

- Provides 4 inputs per board
- Each input has 3-wire control
- Provides a pilot status output for each input
- Provided with quick connect connectors
- Clearly labeled at connections
- Opto-isolated inputs and pilot outputs



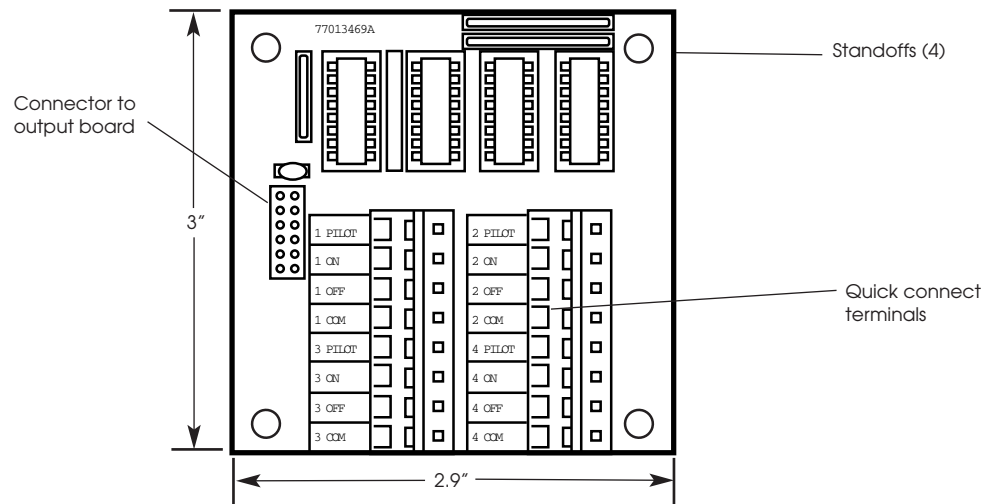
Apprentice II Input Board Placement



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## Dimensions



## Specifications

### Physical:

- 2.9"W x 3.0"H
- Plug-in module designed to mount directly onto the output board

### Electrical:

- Powered from controller panel
- Input voltage 16-18 VDC

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C
- Relative Humidity 10% to 90%
- Atmosphere Non-condensing, Non-corrosive
- Vibration Stationary application, NEMA Level A

### Certifications:

- UL CUL
- FCC approved for commercial applications

### How to Order

Ordering a **Apprentice II Input Board**  
Order No. APIB-4

**APIB-4**

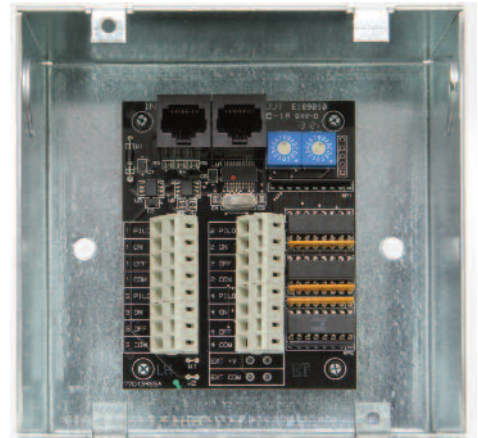


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FAX 952 829 1901  
1-800-922-8004  
www.ilc-usa.com



- Provides hardwired inputs
- Remote mount input module assembly
- 4 inputs per module
- Made in the USA
- Easy non-screw push-to-connect terminals
- Optically isolated inputs protect electronics
- Accepts dry contact closures or optional 12-24 VDC signals
- LED pilot outputs for true relay, group, or preset status



## Overview

The LightSync Input Module is designed to accept up to 4 hardwired switch inputs. Each input accepts a 2 or 3 wire dry contact switch closure or an equivalent open collect signal from any source. Each input module can also be configured to accept a 12-24 VDC signal from security or BAS systems. Any input can be programmed to control any relay(s), group(s), or preset(s) in any or all panels. Each input has an associated pilot status LED output that indicates the true status of any relay, group, or preset. It may also be programmed to a reverse status (LED is On if the relay is OFF) or On always. Inputs have a time-of-day or open/close time of action function which could disable the input or change the input type.

## Features

### General:

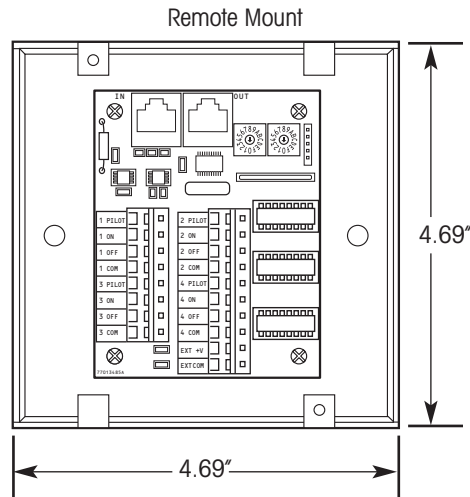
- **4 hardwire inputs** and status outputs per module
- **Made in the USA**
- **Digitally addressable** device for a unique address
- **RJ45 connectors** for remote mounting module
- **Terminals** are an easy non-screw push-to-connect type
- **Optically isolated** inputs that protect the electronics
- **Accepts** dry contact closures or open collector outputs
- **Accepts** 2 or 3 wire momentary or maintained switches
- **Associated LED pilot output** is provided for each output
- **True status pilot** for relay, group, or presets
- **Remote mount** anywhere on the LightSync network
- **Self powered** from the network
- **Great choice** for a central switch control station. Eliminates wiring individual switches to panels - only a data line required



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## Physical



## Specifications

### Safeguards:

- Optically isolated inputs eliminate connection issues

### Physical:

- Enclosure: 4.69"W x 4.69"H x 2.00" D
- Cover included
- Easy non-screw push-to-connect terminals
- Digital addressing switches
- RJ45 connectors

### Electrical:

- Powered from the panel or from the LightSync network

### Operating Environment:

- Location: Interior space
- Operating Temp.: 0° to 50° C
- Humidity: 10% - 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

### Certifications:

- UL CUL
- FCC

## How to Order

Ordering a **Apprentice II LightSync Input Module**

Order No. LSIM-R-D (sample)

**LSIM - R -** \_\_\_\_\_

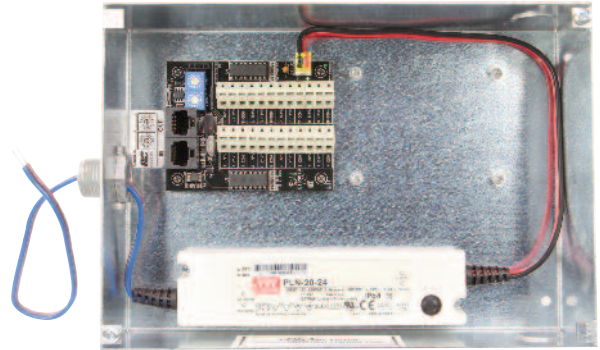
Module Type:  
Standard Dry  
Contact (D)  
VDC Input (V)



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- Provides power and inputs for occupancy sensors
- 8 inputs per module that accept 24V signals
- Optically isolated inputs protect electronics
- Connect multiple sensors to each input
- Eliminates need for expensive power packs
- Works with major manufacturers' sensors
- Made in the USA



## Overview

The LightSync Occupancy Sensor 8 Input module is designed to power and receive signals from multiple sensors on each of its 8 independent inputs. Eliminate expensive power packs by simply direct-wiring the sensors into the inputs. This module mounts remotely in a location central to the sensors. Each independent input can control any relay(s), group(s), or preset(s) throughout the network.

## Features

### General:

- **Provides power and inputs** for occupancy sensors
- **Made in the USA**
- **Digitally addressable** device for a unique address
- **RJ45 connectors** for remote mounting module
- **Connectors** are an easy non-screw push-to-connect type
- **Optically isolated** inputs that protect the electronics
- **Sensor signals** accepted directly on module
- **Connect master and slave** sensors to each input
- **Works** with most major manufactured sensors
- **Remote mount** anywhere on the LightSync network
- **Powered** from a 120 or 277VAC supply
- **Great choice** for centrally locating the module with sensors



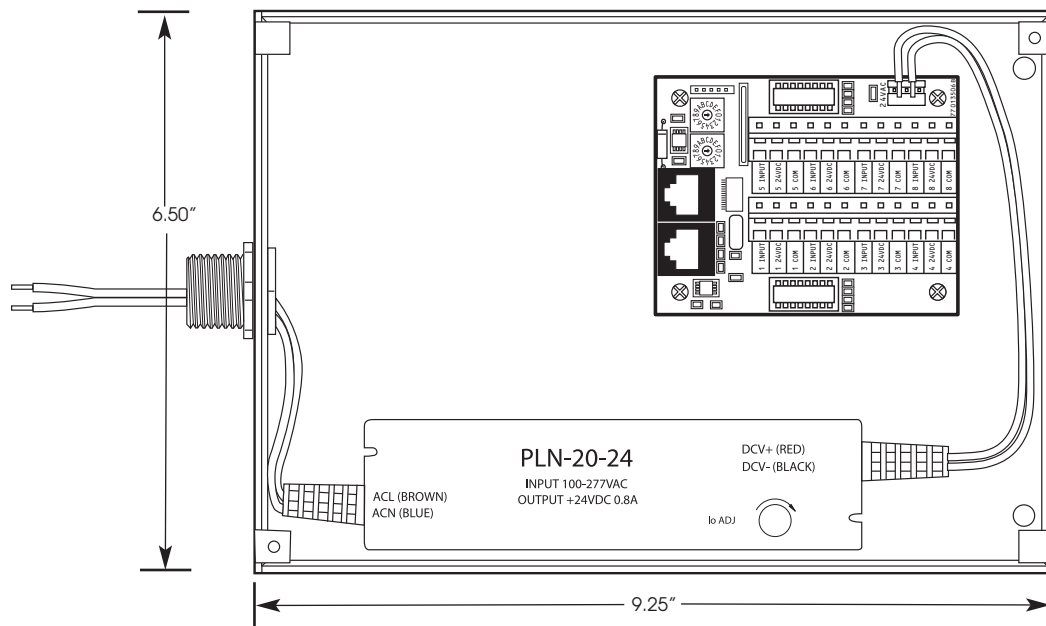
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## Remote Mount

### Physical



### Specifications

#### Safeguards:

- Optically isolated inputs protect electronics

#### Remote Mount Physical:

- Enclosure: 6.50" x 9.25" x 2.50" with screw cover
- 1/2" nipple for mounting to an electrical box
- 6" wire leads provided for high voltage connection
- Push-to-connect low voltage connections
- Provided with pre-drilled mounting holes
- Digital addressing switches
- RJ45 connectors for remote mounting option

#### Electrical:

- Electronics powered from LightSync data line
- Sensors powered from 120/277VAC power supply
- Current: 800mA
- Voltage: 24VDC
- Current limited circuit

#### Operating Environment:

- Location: Interior space
- Operating Temp.: 0° to 50° C
- Humidity: 10% - 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

#### Certifications:

- UL CUL
- FCC

### How to Order

Ordering a **Apprentice II LightSync Occupancy Sensor 8 Input Module**

Order No. LSO8I-R-D (sample)

**LSO8I - R**



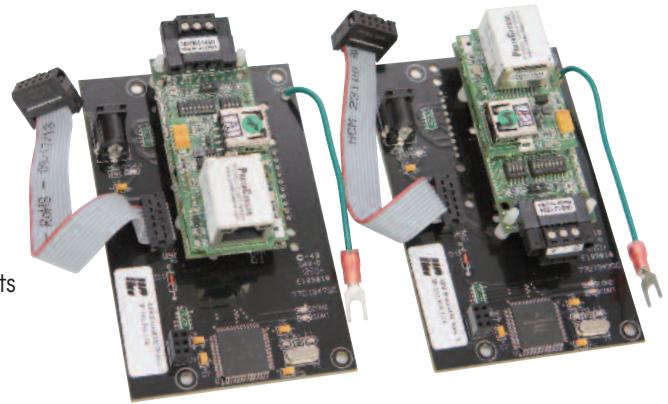
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# Apprentice II BACnet Interface **Apprentice II**

## Controller Add-ons

- Use either BACnet MSTP or BACnet IP
- Connect directly to the TCP/IP ethernet or the BACnet bus
- Allows status reporting and direct control of relays
- Able to send commands to force timer options
- Allows status of the Apprentice II hardwired inputs
- Able to send commands to enable/disable hardwired inputs



BACnet MSTP Board

BACnet IP Board

## Overview

The Apprentice II BACnet interface add-on module can easily be added to any Apprentice II programmable lighting control panel to provide integration with your BACnet control system, allowing the panel to become a slave node on the BACnet network.

## Features

### Configuration

- Factory set configuration
- Fully configurable via downloadable file
- Connect via RJ45 ethernet connection

### Control and Status

- Force relays ON or OFF
- Force relays ON or OFF with timer options
- Monitor hardwired ON or OFF inputs for closures
- Enable or disable hardwired inputs



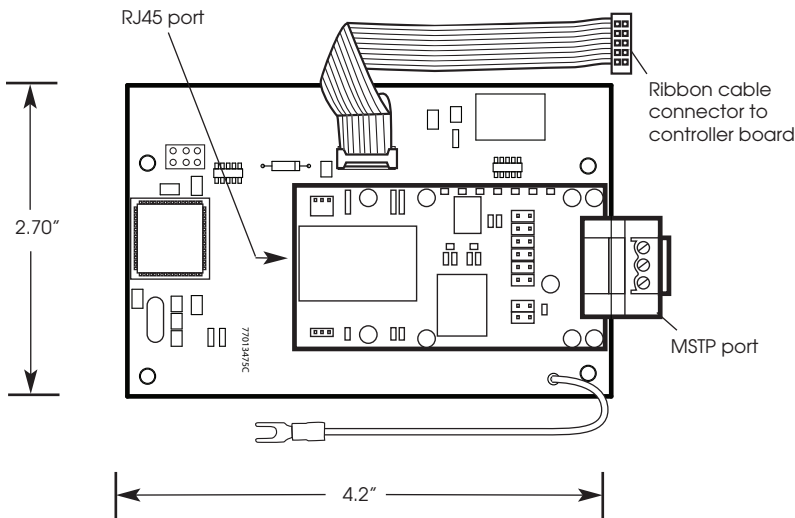
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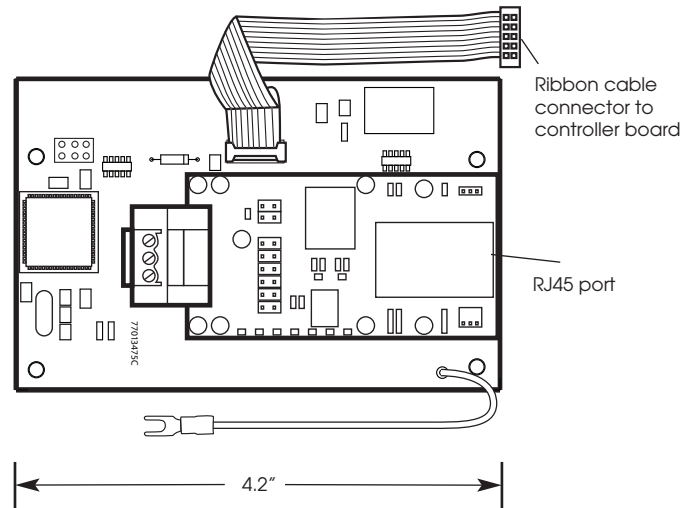
# Apprentice II BACnet Interface

## Controller Add-ons

**Apprentice II BACnet MSTP Add-on Module**



**Apprentice II BACnet IP Add-on Module**



## Specifications

### Physical:

- 2.70"W x 4.2"H x 1.25"D
- Plug-in module designed for mounting in the Apprentice II master panel

### Electrical:

- Power consumption: 252mA @ 5VDC
- Power provided by external wall mount transformer

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- Full protocol compliance
- UL CUL
- FCC Approved for commercial use
- BTL Mark

## How to Order

Ordering a **Apprentice II BACnet Add-on Module**

Order No. BC-MSTP (sample)

**BC** \_ \_

Specify  
BACnet MSTP  
or BACnet IP



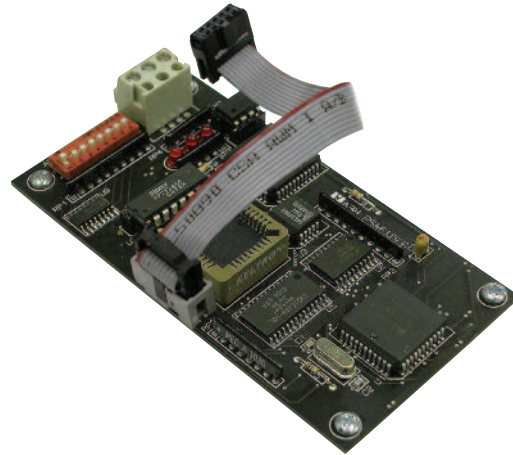
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# Apprentice II MODBUS Interface

Controller Add-ons

- Uses standard ASCII or RTU control protocol
- Connect directly to the MODBUS RS 485 bus
- Allows status reporting and direct control of relays
- Adjustable protocol settings
- Used in Apprentice II controllers
- Only one required per network of panels



## Overview

The Apprentice II MODBUS interface add-on module can easily be added to any Apprentice II programmable lighting control panel to provide for integration to your MODBUS communication and control system, allowing the Apprentice II panel to become a slave node on the MODBUS network.

## Features

### Configuration

- The MODBUS card can be addressed between 1 and 255. The network cable is a RS485 two-wire shielded twisted pair

### Supported Commands

- 01 Read coil status
- 02 Read input status
- 05 Force single coil
- 15 Force multiple coils

### Input and Output Options

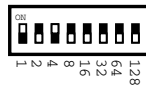
- Normal ON/OFF
- ON/OFF with Timer Options (Blink, Alarm)
- Input Enable/Disable

### Adjustable Protocol Settings

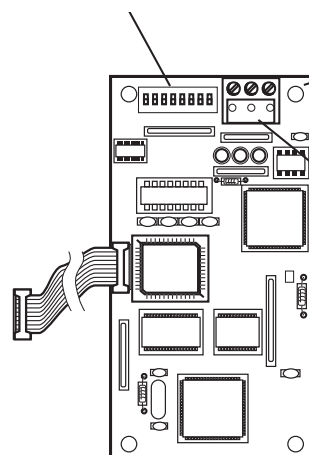
- Protocol: ASCII or RTU
- Baud rate: 4800, 9600, 19200 or 38400
- Parity adjustment: ODD, EVEN, or NONE

For more information refer to Modicon Modbus Protocol Reference Guide (PI-MBUS-300)

### DIP Switch Addressing

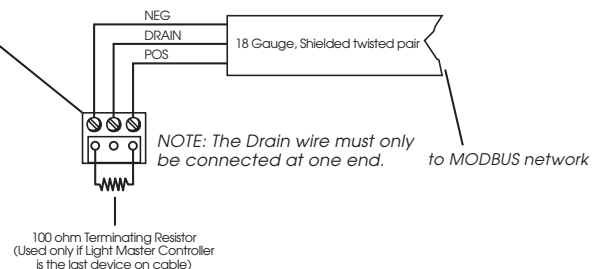
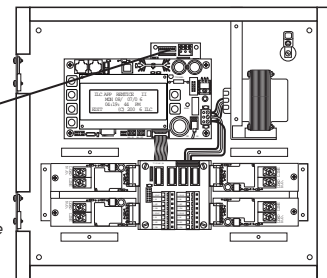


Add the value of each ON switch to determine the address (address 05 shown).



Apprentice II MODBUS Add-on Card

MODBUS Add-on Card mounted in Apprentice II Controller (under main board)



Apprentice II MODBUS Set-Up

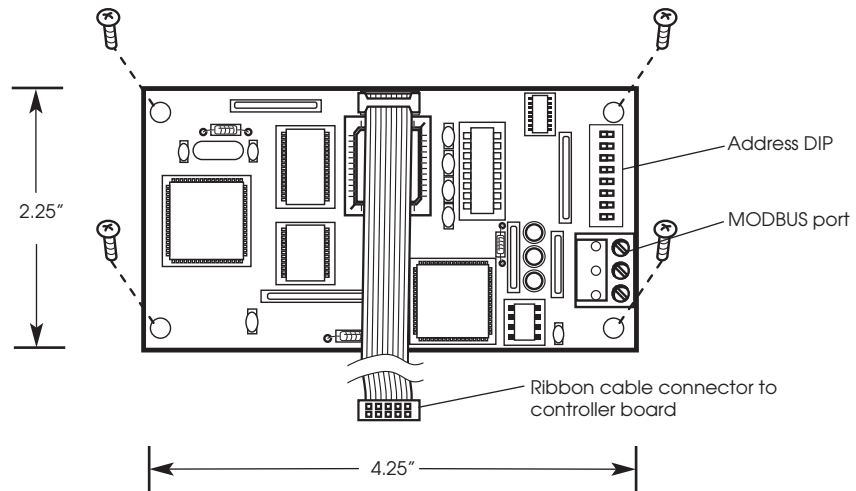


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## Dimensions



## Specifications

### Physical:

- Plug-in module designed for mounting in the Apprentice II master panel

### Configuration:

- DIP switch and soft configuration for Protocol Type, Baud Rate and Parity

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- UL CUL
- FCC Approval for commercial and residential use

## How to Order

Ordering a **Apprentice II MODBUS Add-on Module**

Order No. MB (sample)

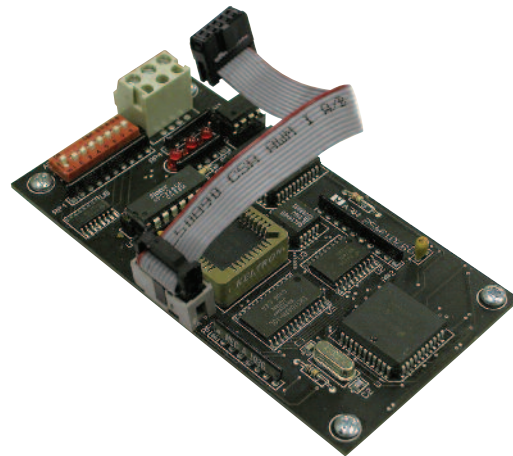
**MB**



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- Use Metasys® N2 control protocol
- Connects directly to the Metasys N2 RS 485 bus
- Allows status reporting and direct control of relays
- Metasys® Connectivity Partner
- Used in Apprentice II lighting controllers
- Only one required per network of panels



## Overview

The Apprentice II Controller can be integrated into a Building Automation System (BAS) that uses the N2 communications protocol. The host system can then poll the status of the Apprentice II Controller inputs and outputs and issue ON/OFF commands to the Apprentice II's relay outputs.

## Features

### Configuration

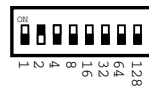
- The Apprentice II must be equipped with a N2 add-on module that can be addressed between 1 and 255. The network cable is a RS 485 two-wire shielded twisted pair
- Once plugged into the lighting control panel, BAS software can be programmed to control relays in the Apprentice II panel

- All local control features for the relay panel will continue to be operable

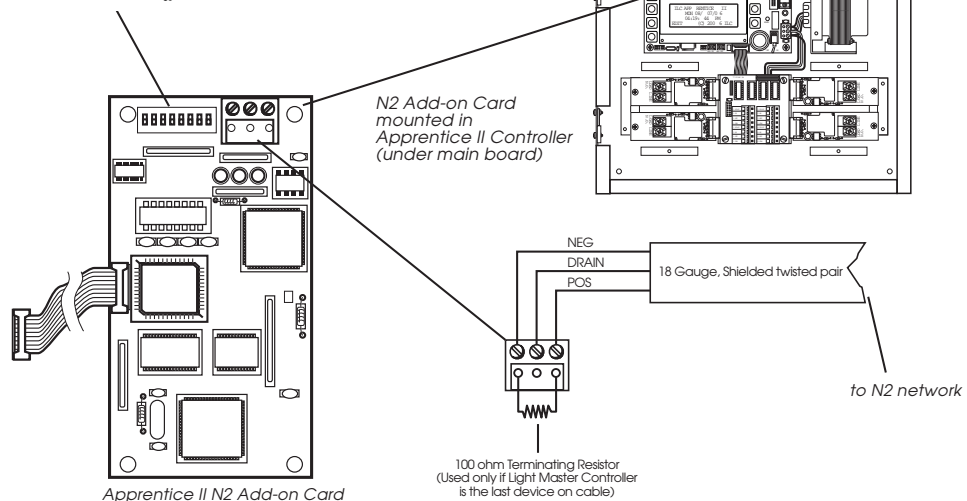
### N2 Point Control

- BI for input status
- BO for relay status and control with Blink and Alarm Timer options
- BO for disabling and enabling input control

### DIP Switch Addressing



Add the value of each ON switch to determine the address (address 02 shown).

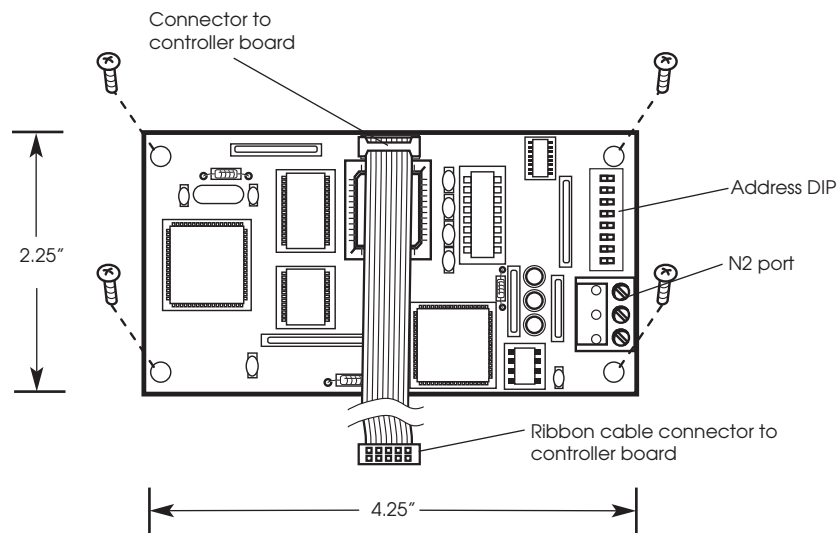


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Apprentice II N2 Set-Up

## Dimensions



## Specifications

### Physical:

- Plug-in module designed for mounting in the Apprentice II master panel

### Configuration:

- DIP switch

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- UL CUL
- Metasys® Connectivity Partner
- FCC Approval for commercial and residential use

## How to Order

Ordering a **Apprentice II Metasys N2 Serial Interface**

Order No. N2 (sample)

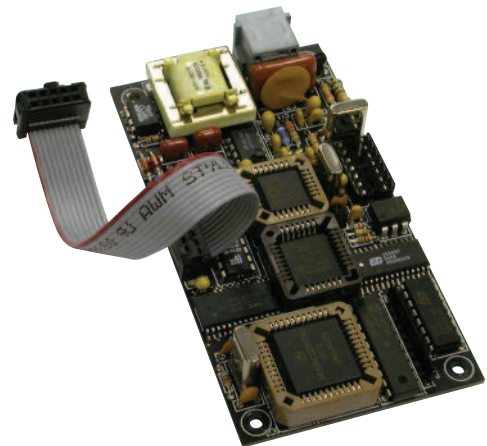
**N2**



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- Control any relay, group of relays or preset scene from any touch-tone telephone
- As easy to use as your voice mail
- Voice prompted commands and instructions
- Simple plug-and-play installation



## Overview

The Apprentice II DTMF telephone add-on module can easily be added to any Apprentice II programmable lighting control panel to provide Voice Prompted DTMF touch-tone telephone control and monitoring. DTMF control allows any touch-tone telephone to become a lighting control station. Through the use of DTMF control signals the system user can command relays or groups of relays ON or OFF or activate preset scenes, all from the convenience of any touch-tone telephone including cellular phones. With voice prompting, it's as easy to use as a voice mail system. There is never a need to remember complex commands or cryptic codes in order to operate the system.

## Features

### Programming Options:

- Once plugged into the Apprentice II processor board, user has access to control and status via voice prompted commands. No programming required

### DTMF Functions:

#### Remote Control and Monitoring

- Turn ON or OFF any relay or group of relays
- Activate preset scenes

### True Status Reporting (Via Voice)

- Get voice status of any switch input or relay output from any touch-tone telephone

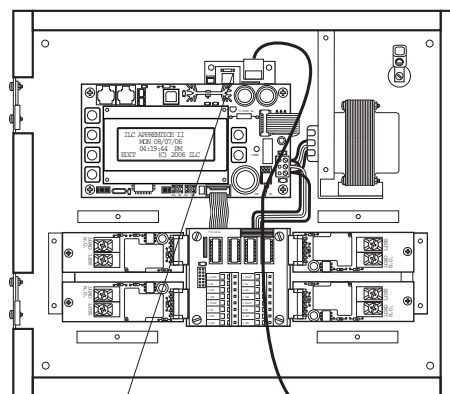
### Online Operational Instructions and Prompting

- DTMF commands and control functions are supported by true voice prompting that can guide the user through operational commands and give instructions as to the use of the system



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DTMF Card installed in master panel (under main board)

Apprentice II 04 with DTMF Telephone Add-On Module installed



Analog Telephone

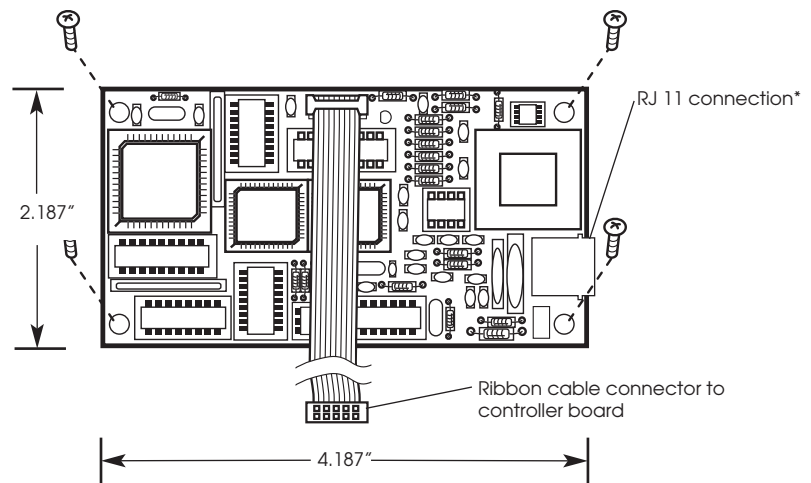
RJ11 Phone Jack

Telephone System

RJ11 Phone Jack



## Dimensions



## Specifications

### Physical:

- Plug-in module designed for mounting in the Apprentice II master panel

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- UL CUL
- FCC Approval for commercial and residential use

**\*NOTE:** requires standard analog telephone line for operation

### How to Order

Ordering a **Apprentice II Telephone Interface Add-on Module**

Order No. TI (sample)

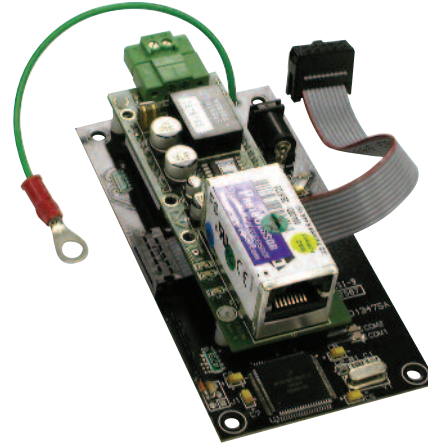
**TI**



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- Connect directly to the LonWorks network
- Allows status reporting and direct control of relays
- Able to send commands to force timer options
- Allows status of the Apprentice II hardwired inputs
- Able to send commands to enable/disable hardwired inputs



## Overview

The Apprentice II LonWorks interface add-on module can easily be added to any Apprentice II programmable lighting control panel to provide integration with your LonWorks control system, allowing the panel to become a slave node on the LonWorks network. This will give the system status and control of relays and hardwired inputs.

## Features

### Configuration

- Factory set configuration
- Fully configurable via downloadable file
- Connect directly to LonWorks network
- No configuration necessary in Apprentice II panel

### Control and Status

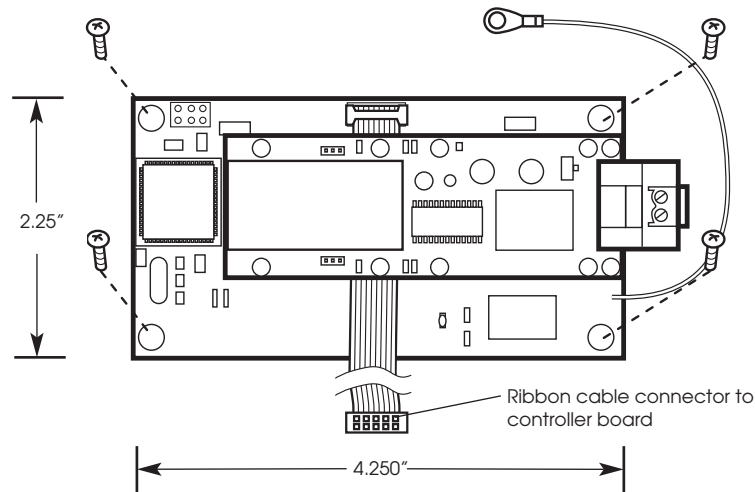
- Force relays ON or OFF
- Force relays ON or OFF with timer options
- Monitor hardwired ON or OFF inputs for closures
- Enable or disable hardwired inputs



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## Dimensions



## Specifications

### Physical:

- 2.25"W x 4.25"H x 1.25"D
- Plug-in module designed for mounting in the Apprentice II master panel

### Electrical:

- Power consumption: 252mA @ 5VDC
- Power provided by external wall mount transformer

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- Full protocol compliance
- UL CUL
- FCC Approved for commercial use
- LonMark Certified

## How to Order

Ordering a **Apprentice II LonWorks Add-on Module**

Order No. LN (sample)

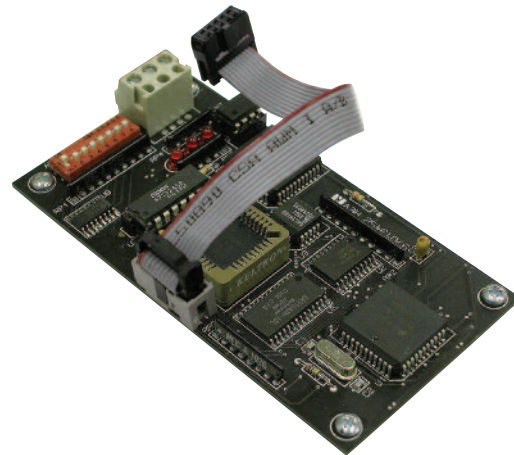
**LN**



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- Use USITT standard DMX 512 control signals
- Connect directly to any DMX controller
- Adjustable ON and OFF set points
- Support full 512 channels of DMX
- Cost effective alternative to non-dims
- Adjustable DMX frame filter
- Adjustable Lock ON/Lock OFF feature



## Overview

The Apprentice II DMX interface add-on module can easily be added to any Apprentice II programmable lighting control panel to provide for direct control of ON/OFF lighting or other loads from any DMX control device. Any of the available 512 DMX control channels may be mapped to control individual relays.

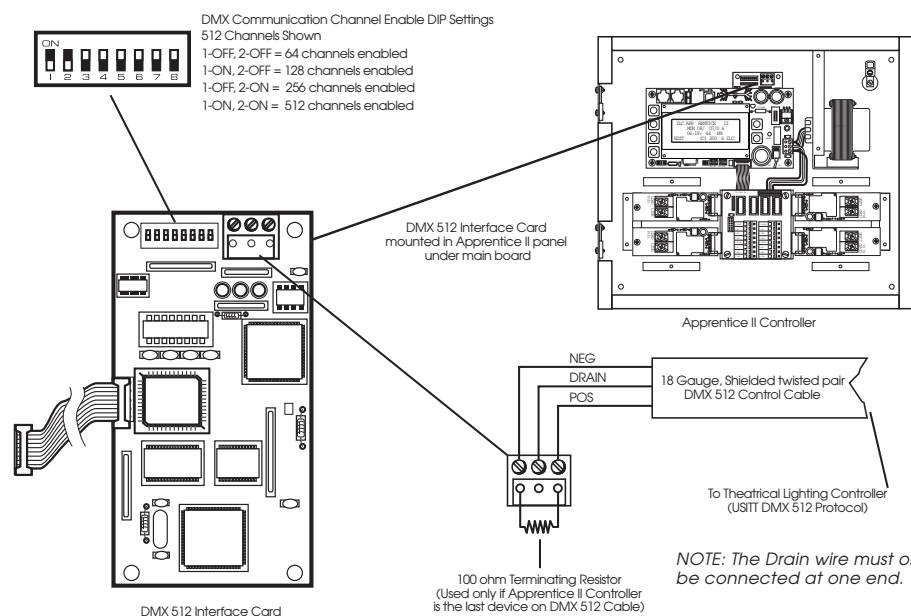
## Features

### Programming

- Once plugged into the lighting control panel, DMX control functions can be programmed and reviewed directly from the lighting panel's keypad

### DMX 512 Control

- Adjustable ON and OFF set points
- Each relay may be locked ON/OFF based on DMX levels
- Map any relay to any DMX control channel
- Adjustable DMX frame filter



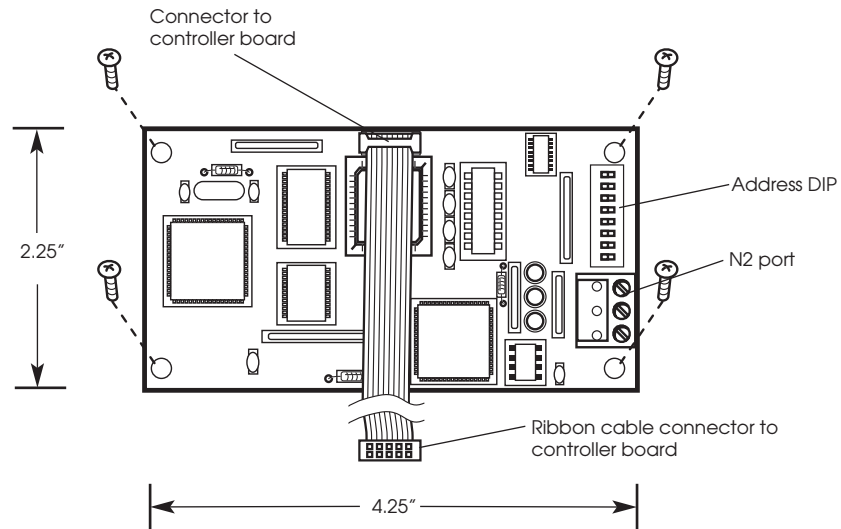
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DMX Interface Hardware Features



## Dimensions



## Specifications

### Physical:

- Plug-in module designed for mounting in the Apprentice II master panel

### Configuration:

- Soft configuration

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 10% to 90% Non-condensing

### Certifications:

- UL CUL
- FCC Approval for commercial and residential use

## How to Order

Ordering a **Apprentice II DMX Add-on Module**

Order No. MX (sample)

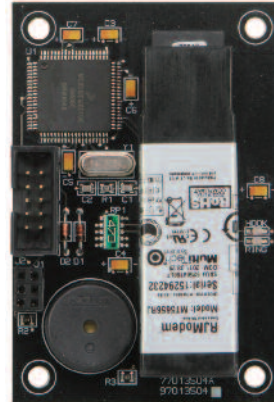
**MX**



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- Analog modem interface
- Connects up to 56K Baud
- Allows remote interface with Apprentice II Pro software
- Upload/download programming
- FCC Part 64 certified
- Made in the USA



## Overview

The Apprentice II telephone modem add-on module can easily be added to any Apprentice II lighting controller to provide a connection from a remote computer equipped with a modem and Apprentice II Pro software. Over a standard analog telephone line, you have the ability to monitor, program, back up and control the lighting controller from a remote location. Only one module per Apprentice II network is required.

## Features

### General:

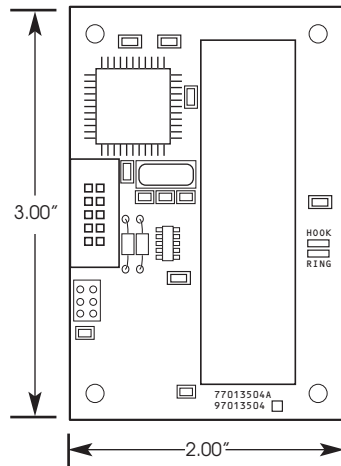
- Mounts directly in the Apprentice II panel
- RJ11 jack for phone line connection
- Powered directly from panel
- Connects at 56K baud rate
- For use with Apprentice II Pro software
- Allows remote monitoring, programming, back up and control
- Only one module required per Apprentice II network
- Supplied with all required mounting hardware



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## Dimensions



## Specifications

### Physical:

- 2.00" Wide X 3.00" High
- RJ11 connectors for analog phone line communications
- Audible sounder

### Electrical:

- Powered from the controller

### Operating Environment:

- Location: Interior space
- Operating Temp.: 0° to 50° C
- Humidity: 10% - 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

### Certifications and Approvals:

- UL60950-1
- FCC Part 15 Class B
- FCC Part 68

**\*NOTE:** requires standard analog telephone line for operation

### How to Order

Ordering a **Apprentice II Modem Add-on Module**

Order No. MD (sample)

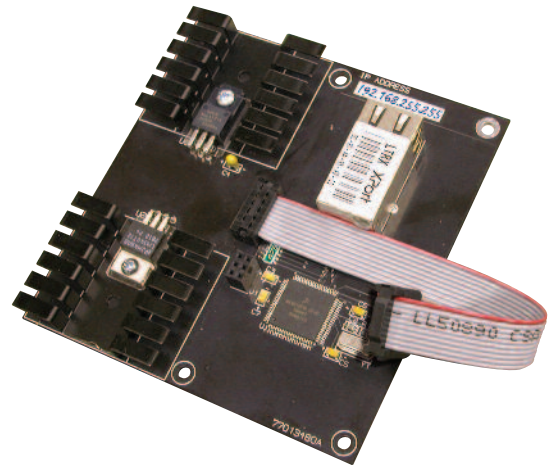
**MD**



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www.ilc-usa.com

- Mounts directly in the lighting controller
- No external power required
- Supports 10/100Base-T Ethernet
- IP address is configurable
- Can be factory pre-configured via embedded web page
- Enables communications on a LAN or WAN
- Only one module required per network of panels



## Overview

The TCP/IP module gives the ILC Apprentice II lighting controller the ability to have an IP address on a 10/100Base-T Ethernet network. With this feature you can connect to the panels, monitor, and program and using the Apprentice II Pro software. With this module you can connect from anywhere on the local area network or from the wide area network. The module is IP address configurable through an internal web page using a common web browser to meet the facilities requirements. Only 1 module is required per network of panels and installs in minutes.

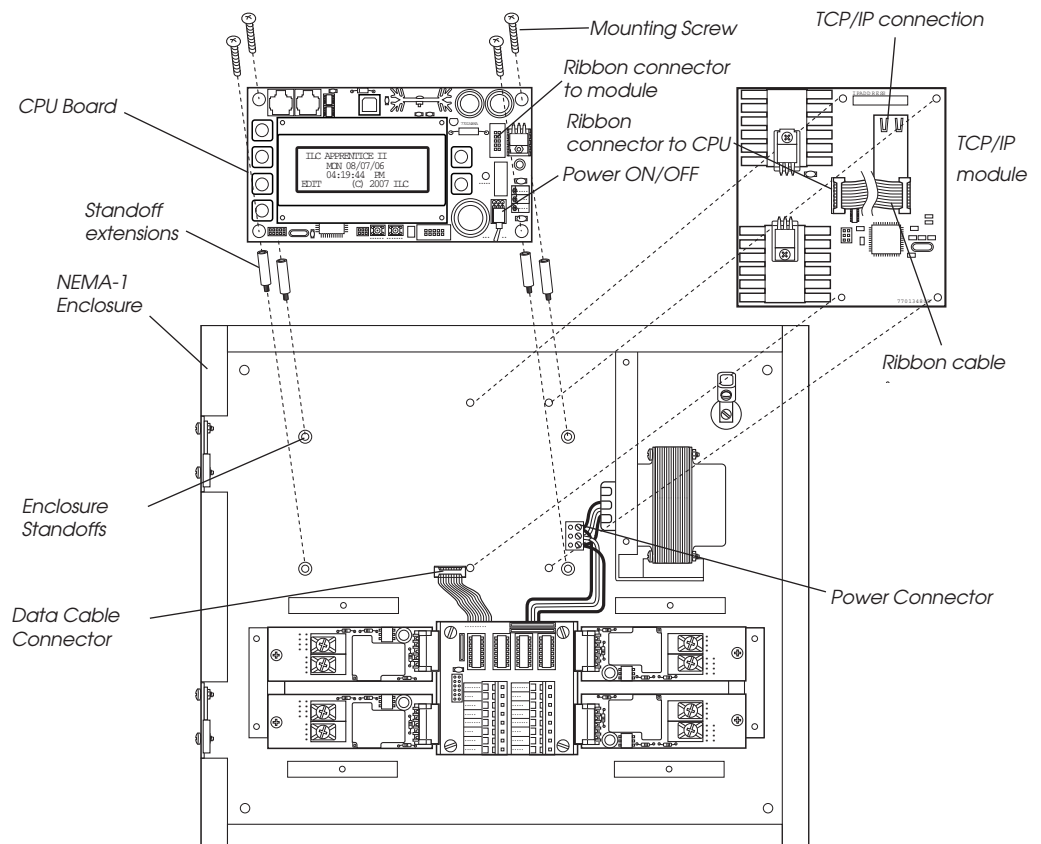
## Features

### General Information

- Mounts directly in the lighting controller
- Ribbon cable interface attached

### Communication Characteristics

- Ethernet 2.0/IEEE 802.3
- Speed 10/100Base-T

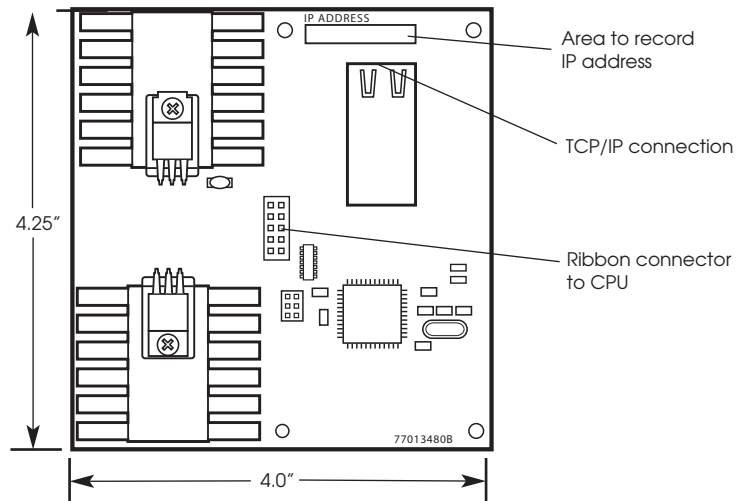


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## Dimensions



## Specifications

### Physical:

- 4"W x 4.25"H x .87"D
- Plug-in module designed for mounting directly in master panel

### Electrical:

- Powered from panel controller

### Ethernet Communication:

- Compatibility Ethernet 2.0/IEEE 802.3
- Speed 10/100Base-T
- Connector RJ45(1)

### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 60° C (32° to 112° F)
- Relative Humidity 10% to 90%
- Atmosphere Non-condensing, Non-corrosive
- Vibration Stationary application, NEMA Level A

### Certifications:

- UL CUL
- FCC

### How to Order

Ordering a Apprentice II **TCPIP Interface**  
Order No. IP (sample)

**IP**



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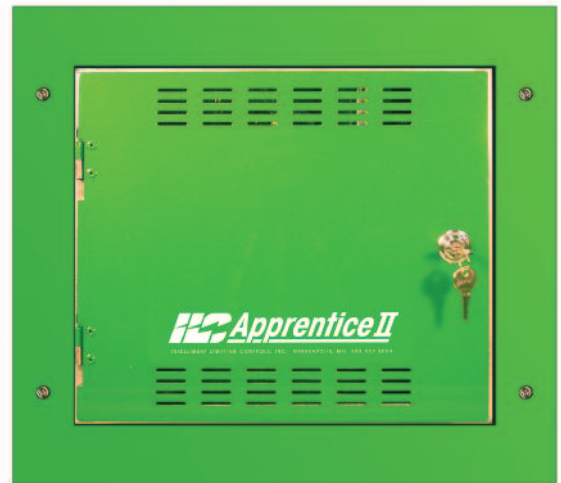
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# Apprentice II Trim Ring

**ILC** *Apprentice II*

Controller Add-ons

- Matching trim ring for flush mounted panels
- Available to match 4, 8, 16, and 32 panel sizes
- Mounting hardware provided



*Apprentice II 4 with Trim Ring*

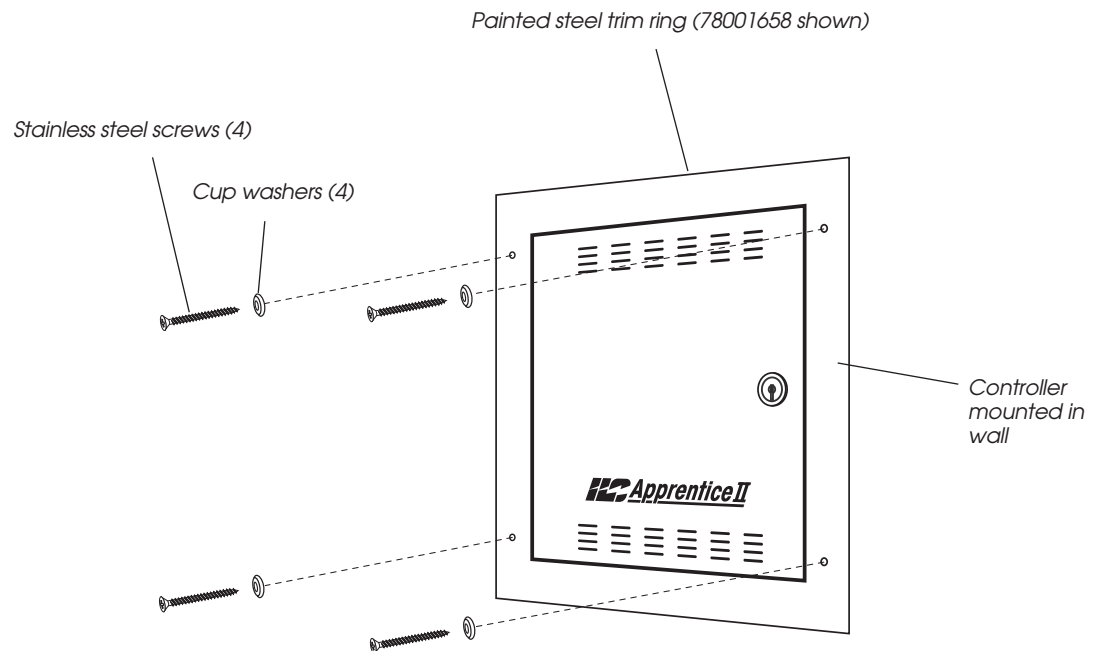
## Overview

Apprentice II trim rings are designed to provide a clean appearance for flush mounted controllers with a two inch border that matches the door. Simply fit the trim ring over the controller mounted in the rough opening and fasten to the wall with the stainless steel hardware included.

## Features

### General Information

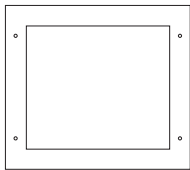
- Provides a clean trimmed look for panels
- Available in four sizes
- Color matched to panel



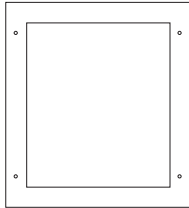
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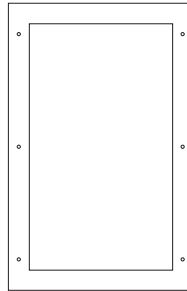
## Physical



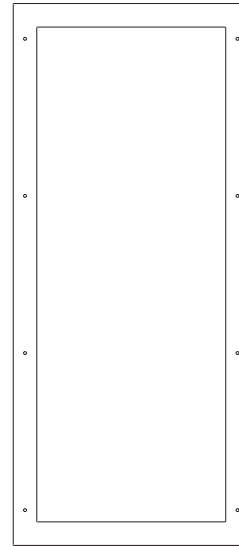
Trim Ring for APII-4:  
Part No. FT-4



Trim Ring for APII-8:  
Part No. FT-8



Trim Ring for APII-16:  
Part No. FT-16



Trim Ring for APII-32:  
Part No. FT-32

## Specifications

### Physical:

- APII 04 16"H x 18"W
- APII 08 20"H x 18"W
- APII 16 28"H x 18"W
- APII 32 46"H x 20"W
- 18 GA painted steel

### How to Order

Ordering a **Apprentice II Trim Ring**

Order No. FT-4 (sample)

**FT-4 (APII 04 size)**

**FT-8 (APII 08 size)**

**FT-16 (APII 16 size)**

**FT-32 (APII 32 size)**



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- RJ 45 connectors for CAT-5 cable wiring convenience
- Digitally addressable device
- 1 to 6-button configuration
- Mounts in standard single-gang box spacing
- LED switch locator indicator
- LED status indicators provide true relay group/preset status
- Fits standard Decora® type plate
- Available in White, Ivory, and Gray
- Removable face plate
- Custom engraving available

LIGHT  
*Sync*



Available in White, Ivory, and Gray

## Overview

The LightSync G2 data line switch from ILC offers all the functionality of the standard LightSync switch and is even more affordable and flexible. Whether connected to a ILC controller in stand alone or network use, a LightSync Switch provides the flexibility that you need for your lighting control application. Each switch button may be individually programmed to control any single relay, group of relays or presets within an individual panel or a network of panels on the LightSync data line network. Switches are equipped with common CAT-5 cable RJ-45 connectors for quick and easy installation on a LightSync data line network.

## Features

### General Information

- Mounts in standard wall boxes
- LED switch locator for finding switch in a dark room
- Status LED for each button provides true relay group/preset status, not just programmed switch status
- Standard Lexan® screw plate provided
- Program LightSync switches to any number of relays in any number of panels
- RJ 45 connectors for CAT-5 cable
- Add LightSync switches anywhere along the data cable
- Available colors: White, Ivory, and Gray
- Custom engraving available

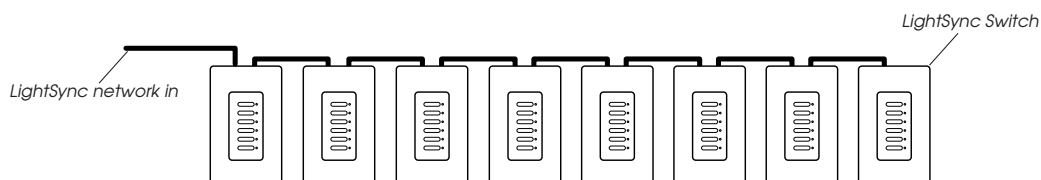
### Characteristics

- Contacts: Momentary pushbuttons
- Termination: RJ-45 connector with standard CAT-5 cable
- Set node address on back of switch
- Supplied with standard Lexan® screw plates
- Quiet “click” provides both tactile and audible feedback when actuated
- Switches are digitally addressable on LightSync data line
- Engraving on removable face plate

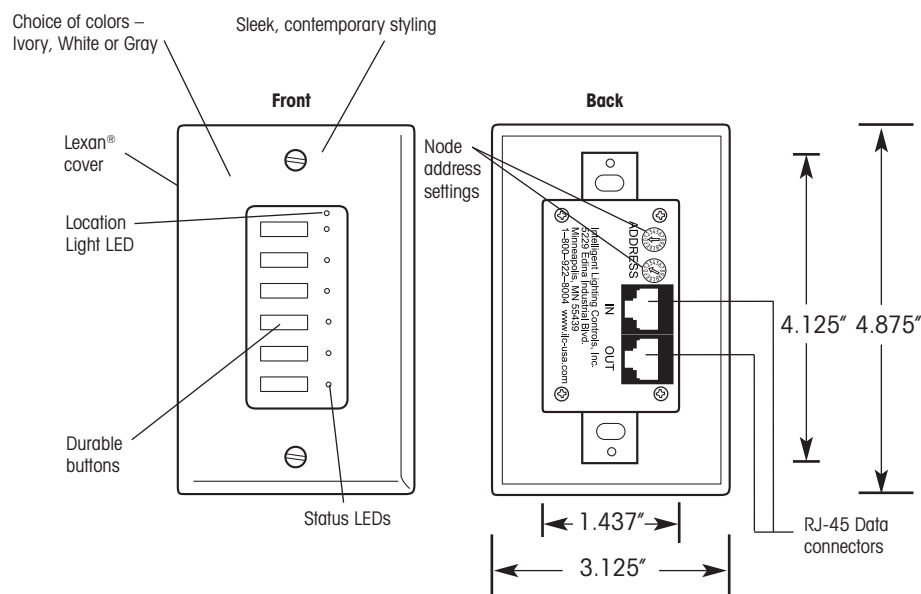


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## Dimensions



## Specifications

### Physical:

- Plate material:
  - Lexan®
- Mounts in standard one gang box spacing
- Mounting screws provided
- Device face colors:
  - Ivory — White — Gray
- Switch Identification:
  - Optional engraved (10 char. max.)
- Removable face plate

### Electrical:

- Powered from LightSync data line

### Operating Environment:

- Location: Interior space
- Operating Temperature: 0° to 50° C (32° to 112° F)
- Relative Humidity: 10% to 95%
- Atmosphere: Non-condensing, Non-corrosive
- Vibration: Stationary application, NEMA Level A

### Certifications:

- UL CUL
- FCC

## How to Order

### LightSync G2 Switch button positions



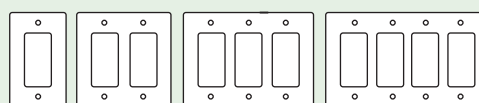
### Ordering a LightSync G2 Switch

Order No. G2-IV-4 (Sample)

**G2** - - - -

Insert color: Ivory (IV),  
White (Wh), Gray (Gy)  
Number of  
Buttons (1 to 6)

### LightSync G2 Switch plates 1-4 gang



### Ordering a LightSync Plate

Order No. LS-PL-S-IV-3 (Sample)

**LS** - - - - **S** - - - -

LightSync  
Switch Plate (PL)  
Plate color: Ivory (IV),  
White (Wh), Gray (Gy)  
Number of  
Gangs (1 to 4)



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# LightSync™ Classic Switch



- RJ 45 connectors for CAT-5 cable wiring convenience
- Digitally addressable device
- 1 to 6-button configuration
- Mounts in standard single-gang box spacing
- LED status indicators provide true relay group/preset status
- Architectural design with matching screwless wall plate standard
- Fits standard Decora® type plate
- Connects to LightSync data line using standard RJ-45 connectors, optional direct wire to panel input version available
- Key Switch version available
- FCC approved for commercial/industrial applications
- Available in 4 colors, stainless steel and brushed aluminum

## Control Devices

LIGHT  
Sync



Standard cover



Optional painted steel plate with visible screws



Optional stainless steel screwless plate

## Overview

Whether you use the LightSync Switch with on a Apprentice II lighting control network or with a standalone Apprentice II lighting control panel, the LightSync Switch provides the flexibility that you need for your lighting control application. Each switch button may be individually programmed to control any single relay, group of relays or presets within an individual panel or a network of panels on the LightSync data line network. LightSync Switches are equipped with common CAT-5 cable RJ-45 connectors for quick and easy installation on the Apprentice II network.

## Features

### General Information

- Mounts in standard wall boxes
- Status LED for each button provides true relay group/preset status, not just programmed switch status
- Matching screwless architectural wall plate standard - screw type plate optional
- Program LightSync switches to any number of relays in any number of panels
- RJ 45 connectors for CAT-5 cable
- Also available in a direct wired configuration to the controller's switch inputs
- Add LightSync switches anywhere along the data cable
- Custom engraving available
- Available colors: Black, White, Ivory, Gray, Stainless Steel and Brushed Aluminum
- UL Listed, FCC approved

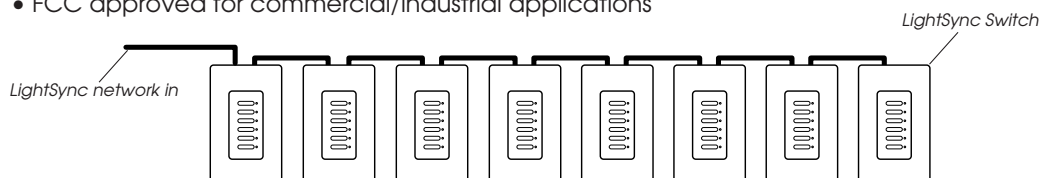
### Characteristics

- Contacts: Momentary pushbuttons
- Termination: RJ-45 connector with standard CAT-5 cable
- Set node address on back of switch
- Plates available in standard Lexan® plastic construction available in four colors and stainless steel (painted steel with visible screws optional)
- Quiet "click" provides both tactile and audible feedback when actuated
- Switches are digitally addressable on LightSync data line
- Engraved labeling on device face
- FCC approved for commercial/industrial applications

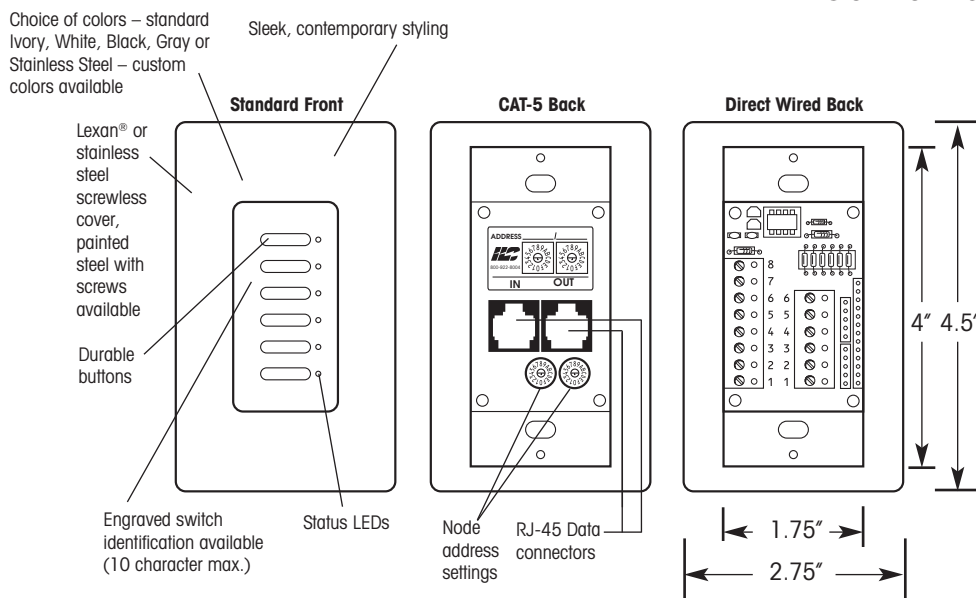


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### Dimensions



### Specifications

#### Physical:

- Plate material:
  - Lexan® (screwless)
  - Brushed Aluminum (visible screws)
  - Stainless Steel (screwless/visible screws)
  - Painted steel (visible screws)
- Mounts in standard one gang box spacing
- Mounting screws provided
- Device face colors:
  - Ivory
  - Gray
  - White
  - Stainless Steel
  - Black
  - Brushed Aluminum
- Switch Identification:
  - Optional engraved (10 char. max.)

#### Electrical:

- Powered from LightSync data line

#### Operating Environment:

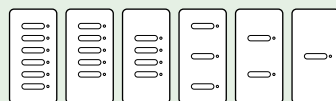
- Location: Interior space
- Operating Temperature: 0° to 50° C (32° to 112° F)
- Relative Humidity: 10% to 95%
- Atmosphere: Non-condensing, Non-explosive, Non-corrosive
- Vibration: Stationary application, NEMA Level A

#### Certifications:

- UL CUL
- FCC

### How to Order

#### LightSync Switch button positions



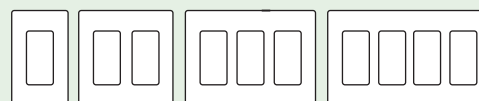
#### Ordering a LightSync Switch

Order No. LS-PB-C-IV-4 (Sample)

LS -

Standard Button  
Switch (PB)  
CAT-5 cable (C)  
Direct wired (WB)  
Insert color:  
Ivory (IV) White (WH);  
Black (BL) Gray (GY);  
Stainless Steel (SS) or  
Brushed Aluminum (AL)  
Number of  
Buttons (1 to 6)

#### LightSync Switch plates 1-4 gang



#### Ordering a LightSync Plate

Order No. LS-PL-S-IV-3 (Sample)

LS -

LightSync  
switch plate (PL)  
Plate Cover:  
Plain (P), Screws (S)  
Plate color:  
Ivory (IV) White (WH);  
Black (BL) Gray (GY);  
Stainless Steel (SS) or  
Brushed Aluminum (AL)  
Number of  
Gangs (1 to 4)

Contact factory for available custom color and options



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- Secure switching and control
- Momentary or Maintained key switch with LED pilot light
- Durable painted aluminum or stainless steel plate
- Available in standard configurations
- Engraved lettering
- Mounts to standard electrical gang boxes.
- Custom options such as special colors or material available upon request
- Connects to LightSync data line using RJ45 connectors, optional direct wire available

LIGHT  
*Sync*



Standard cover



Optional  
painted  
steel plate  
with visible  
screws



Optional  
stainless  
steel  
screwless  
plate

## Overview

Key Switch switch plates provide an extra level of security and limit access to lighting control functions to those who possess the appropriate key. Key Switch control stations can be used in public areas where access to control functions must be limited. Key Switch control station plates and switches can be ordered with engraved labeling to clearly identify the purpose of each switch. With LED pilot light and a choice of colors and materials, Key Switch control station plates and switches provide a secure solution to your low voltage switching requirements.

## Features

### Switches

- Key Switch control stations are supplied with heavy-duty Single Pole Double Throw (SPDT), Momentary or Maintained Key Switches
- Maintained: double action center OFF SPDT  
Momentary: double action center OFF SPDT

### Switch Identification

- Engraved: Lettering is engraved directly into plate surface

### LED Pilot Light

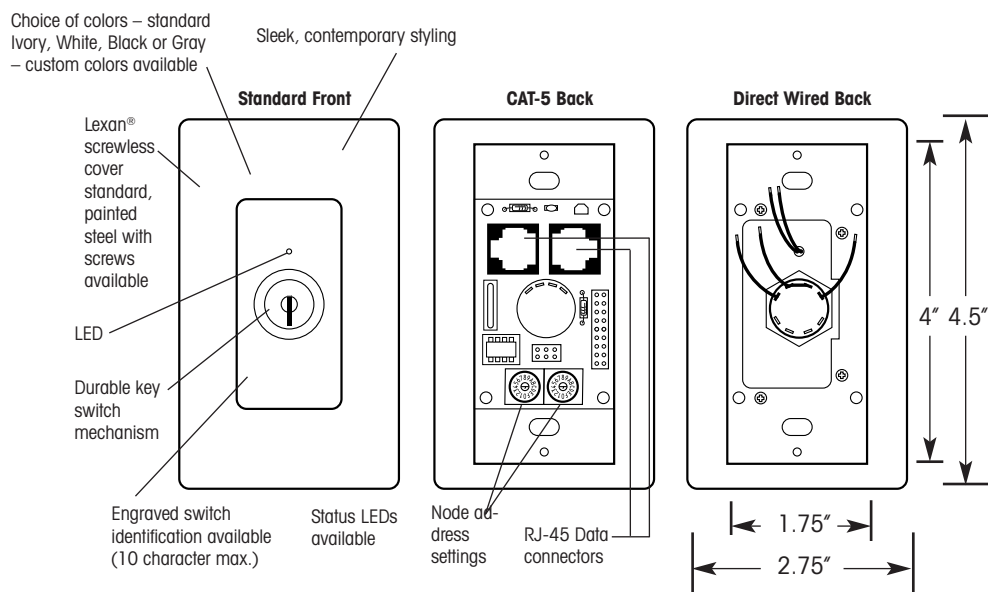
- LED pilot light gives true visual confirmation of current control status of a relay, group of relays or a preset. The LED can also be a static "ON" to provide a locator for the switch



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### Dimensions



### Specifications

#### Physical:

- Plate material:
  - Lexan®
  - Stainless Steel
  - Painted steel/visible screws
- Mounts in standard one gang box spacing
- Mounting screws provided
- Switch colors:
  - Ivory
  - White
  - Black
  - Gray
  - Stainless Steel
- Switch Identification:
  - Optional engraved (10 char. max.)

#### Electrical:

- Switch plates provided with with momentary or maintained key switches for ON/OFF operation

- Single Pole Double Throw (SPDT), Momentary or Maintained Key Switches
- Powered from LightSync data line or direct wired

#### Operating Environment:

- Location Interior space
- Operating Temperature 0° to 50° C (32° to 112° F)
- Relative Humidity 105 to 95%
- Atmosphere Non-condensing
- Vibration Stationary application
- NEMA Level A

#### Certifications:

- UL CUL
- FCC

#### How to Order

##### Ordering a LightSync Key Switch

Order No. LS-KS-C-IV-MOM (Sample)

LS - - - - -

Key Switch (KS)  
CAT-5 cable (C)  
Direct wired (W)  
Insert color: Ivory (IV)  
White (WH), Black (BL),  
Gray (GY) or Stainless  
Steel (SS)  
Momentary (MOM)  
Maintained (MNT)

##### Ordering a LightSync Plate

Order No. LS-PL-S-IV-3 (Sample)

LS - - - - -

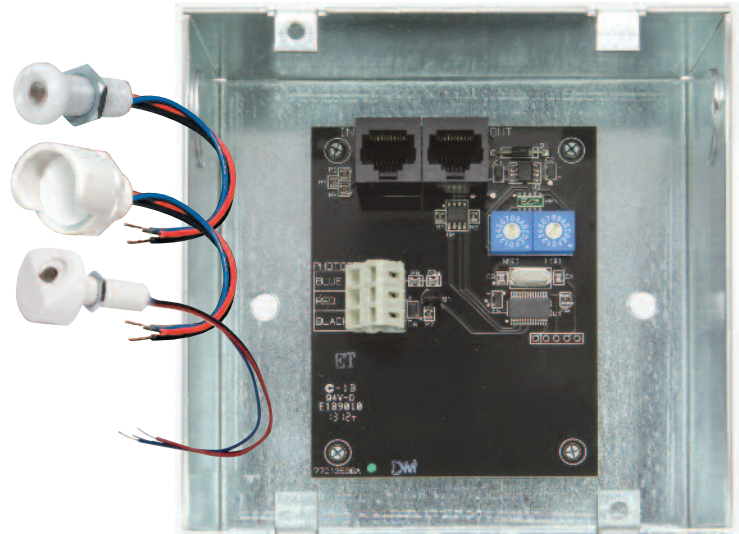
LightSync  
Switch Plate (PL)  
Plate Cover:  
Plain (P), Screws (S)  
Insert color: Ivory (IV)  
White (WH), Black (BL),  
Gray (GY) or Stainless  
Steel (SS)  
Number of  
Gangs (1 to 4)



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- Monitors light levels indoors or outdoors
- Light range from 1 to 1800 foot candles
- Communicates directly on the data line
- 8 individually adjustable on and off control points
- Adjustable photocell filter
- Made in the USA
- Powered directly from the data line



## Overview

The LightSync Photo Sensor provides 256 light to dark levels, allowing the user to select 8 individual set points for OFF and ON. Each set point features a selectable range of deadband and is programmable to individual relays or groups of relays. The LightSync Photo Sensor allows the indoor or outdoor photocell to operate as a fully programmable global switch on the LightSync network.

## Features

### Sensors

- Digital sensor for reliable measurement of foot candle level
- Indoor or Outdoor
- 8- individual ON/OFF control inputs with 256 levels, and individual deadband each
- 0-1800 fc sensor range

### Adjustments

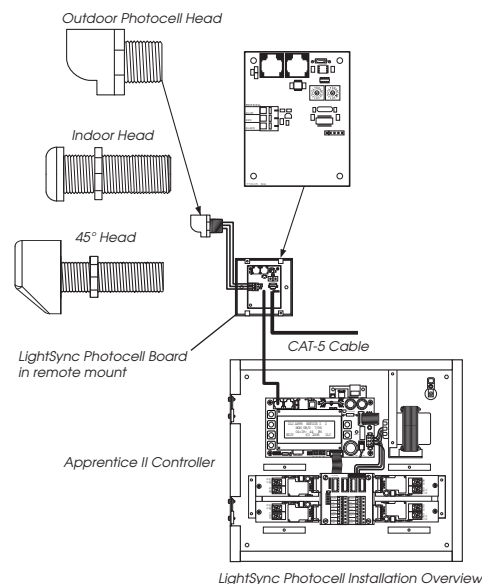
- Individually adjustable ON/OFF set points
- All variable settings may be configured from Apprentice II keypad or Apprentice II Pro software
- Photocell filter time

### Capacities

- 1 ILC Photocell head (Indoor or Outdoor)

### Output and Interfacing

- LightSync data line connection (RJ45 connection/ CAT-5 cabling)



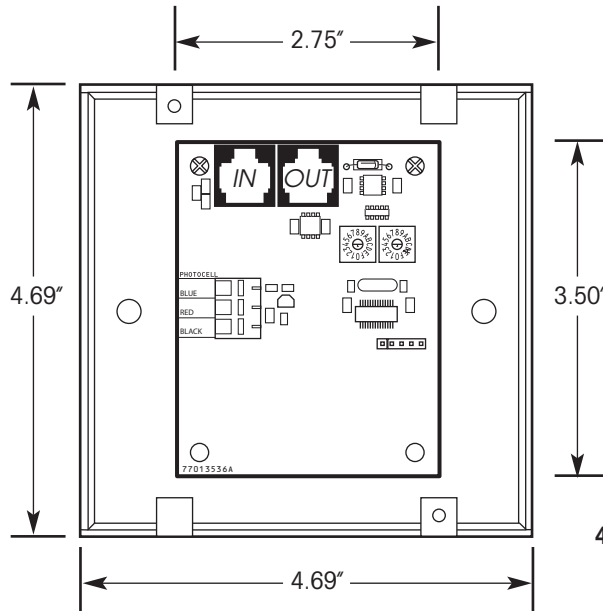
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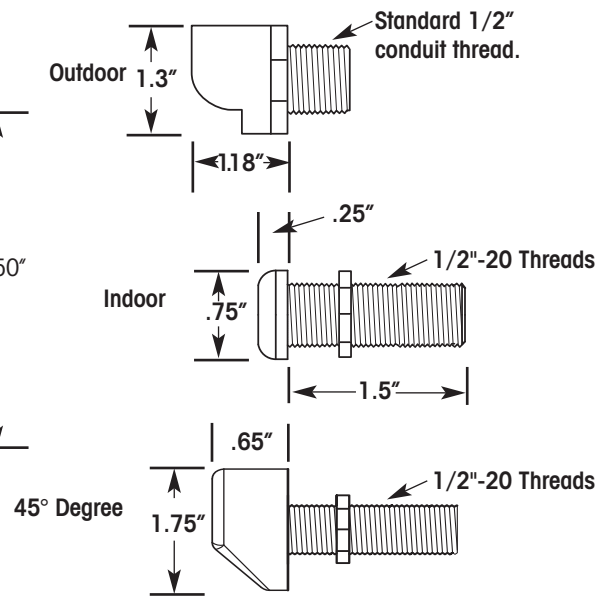


## Dimensions

LightSync Photocell controller in remote mount



## Control Devices



## Specifications

### Controller

- Remote mount has RJ45 connectors easy data line connections
- Remote mount provided with a 4.69" x 2.25" deep steel box with cover
- Push-to-connect photo sensor input

### Photocell:

#### Outdoor Sensor

- Designed to be mounted to building exterior using 1/2" LB or junction fitting
- UV stabilized

#### Indoor Sensor

- Indoor photocell mounts to ceiling tile or other structure
- UV stabilized

#### Indoor 45 Degree Sensor

- Indoor photocell mounts to ceiling or other structure
- Angled for light harvesting
- UV stabilized

### Electrical:

- Powered from the LightSync data lines

### Controller Operating Environment:

- Location: Interior Space
- Operating Temp.: 0° to 50° C
- Humidity: 10% to 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

### Photocell Operating Environment:

- Location: Interior/Exterior Space
- Operating Temp.: -35° to 50° C
- Humidity: 10% to 100% Condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

### Certifications:

- UL CUL
- FCC

## How to Order

Ordering a **LightSync Photo Sensor Controller**

Order No. LSPSC-OUT-R (sample)

**LSPSC- \_\_\_\_\_ - R**

IND= Indoor  
IND45= Indoor 45 Degree  
OUT= Outdoor



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- Extends both power and data to the CAT-5 network cable run feeding LightSync devices
- Allows splitting LightSync data line ("T" operation)
- Data repeater function extends LightSync network data run length by 3000 feet (combined length of both PSR output runs)
- Extends LightSync network device capacity by providing power for up to 20 additional LightSync devices
- No programming required
- Remote mounting

LIGHT  
*Sync*



## Overview

The LightSync Power Supply Repeater operates on the LightSync data line and is both a power supply and data repeater. Its primary purpose is to repeat data (3000 feet combined end to end per each of 2 ports) and provide a bridge to another data line. This device has one incoming and two outgoing RJ45 ports, enabling the data line to be split into two different directions. The PSR will also power up to 20 LightSync devices for an additional 3000 cumulative feet.

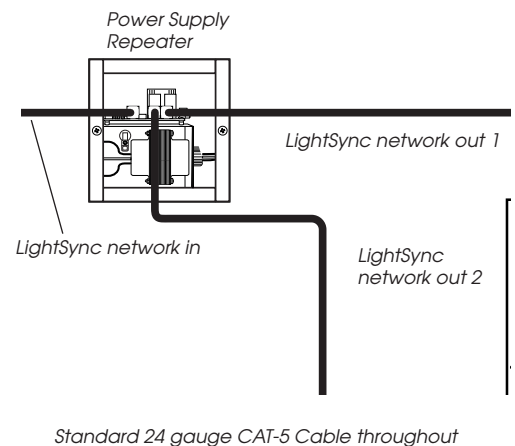
## Features

### General Information

- UL Listed
- Mounts in standard NEMA enclosure
- Operates in any position

### Characteristics

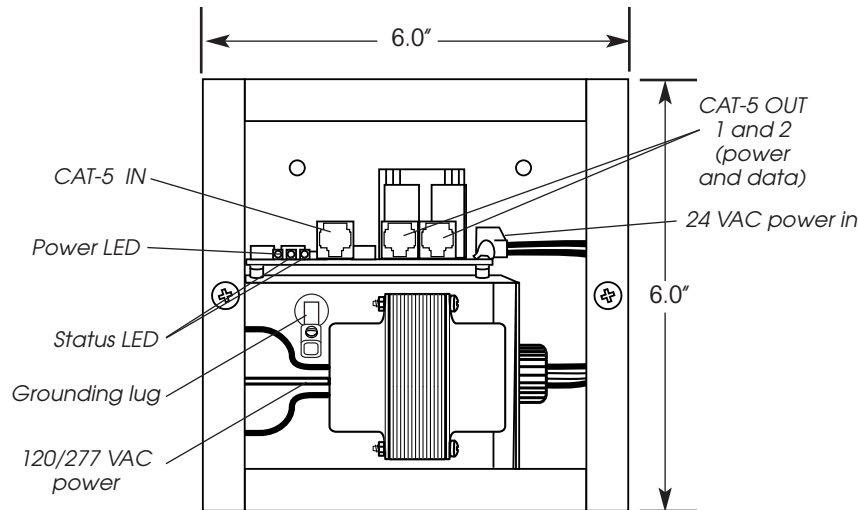
- Adds power for up to 20 additional LightSync control devices to LightSync network run an additional 3000 cumulative feet
- CAT-5 connectivity
- Extend network data length by 3000 feet combined output (2) end to end
- Allows "T" splitting of CAT-5 cable path
- No Programming Required



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## Dimensions



## Specifications

### Physical:

- Mounted in 6" x 6" x 4" standard NEMA-1 enclosure
- Operates in any position

### Electrical:

- 120/277 VAC transformer
- Optional 120/347 VAC

### Capacities:

- Powers up to 20 additional LightSync devices 3000 feet cumulative
- Extends network data cable run 3000 feet across the combined (2) outputs
- Refer to ILC Technical Bulletin #TB 1408 for LightSync cable run distance detail

### Operating Environment:

- Location: Interior Space
- Operating Temperature: 0° to 50° C (32° to 112° F)
- Relative Humidity: 10% to 95%
- Atmosphere: Non-condensing, Non-corrosive
- Vibration: Stationary application, NEMA Level A

### Certifications:

- UL CUL

## How to Order

Ordering a **LightSync Power Supply Repeater**

Order No. PSR-0 (sample)

**PSR-** \_\_\_\_\_

120/ 277 VAC=  
Blank  
120/ 347 VAC=



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CONTROLS, INC.

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Minneapolis, Minnesota 55439  
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1-800-922-8004  
www.ilc-usa.com

- Extends power **ONLY** to the CAT-5 network cable run feeding LightSync devices, acts as a pass-through for data
- Extends LightSync network device capacity by providing power for up to 20 additional LightSync devices
- No programming required
- Remote mounting

**LIGHT**  
*Sync*

**NOTE:** The LightSync Power Supply provides power **ONLY** to a network expansion and **DOES NOT** repeat data. To extend the data network beyond 3000 cumulative feet, a LightSync Power Supply Repeater is required. See PSR page.



## Overview

The LightSync Power Supply operates on the LightSync data line and extends power only to up to 20 additional LightSync devices. This device has one incoming and one outgoing RJ45 port and is the most efficient option to compensate for voltage drop from multiple LightSync devices on the data line. The PS will power up to 20 LightSync devices for an additional 3000 cumulative feet. Note that a PS provides power only and does not affect data.

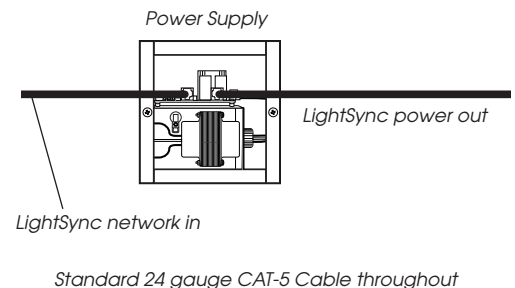
## Features

### General Information

- UL Listed
- Mounted in standard NEMA enclosure
- Operates in any position

### Characteristics

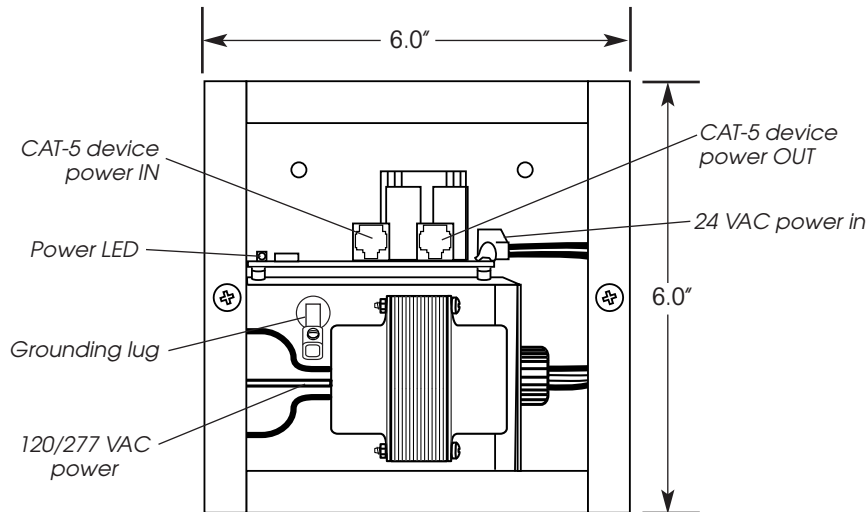
- Adds power for up to 20 additional LightSync control devices in the LightSync network run
- CAT-5 connectivity
- No Programming Required



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## Dimensions



## Specifications

### Physical:

- Mounted in 6" x 6" x 4" standard NEMA-1 enclosure
- Operates in any position

### Electrical:

- 120/277 VAC transformer
- Optional 120/347 VAC

### Capacities:

- Powers up to 20 additional LightSync devices an additional 3000 cumulative feet
- Refer to ILC Technical Bulletin #TB 1408 for LightSync cable run distance detail

### Operating Environment:

- Location: Interior Space
- Operating Temperature: 0° to 50° C (32° to 112° F)
- Relative Humidity: 10% to 95%
- Atmosphere: Non-condensing, Non-corrosive
- Vibration: Stationary application, NEMA Level A

### Certifications:

- UL CUL

## How to Order

Ordering a **LightSync Power Supply**

Order No. PS - 0 (sample)

**PS** - \_ \_ \_

120/277 VAC=  
Blank  
120/347 VAC=



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- Up to 8 Switches and LED pilot light on a single 2-gang plate
- Plate available in durable anodized brushed aluminum, stainless steel or painted white
- 1 to 8 Momentary center OFF rocker switches with or without LED pilot
- Available in 12 standard configurations
- Phenolic or engraved lettering (optional)
- Mounts to standard electrical gang boxes
- Switch available in black, white, or gray
- Custom options such as special colors or material available upon request



Shown with optional LED

## Overview

NFP series switch plates are an attractive space-saving alternative to standard electrical wall switches. In addition to taking up less space than conventional wall switches (up to 8 switches on a 2-gang plate), NFP plates and switches can be ordered with either phenolic or engraved labeling to clearly identify the purpose of each switch. With optional LED pilot lights and a choice of colors and materials, NFP plates and switches provide an economical solution to many low voltage switching requirements.

## Features

### Plates

- Anodized Brushed Aluminum
  - Standard: Natural anodized finish
  - Optional: Anodized colors available upon request
- Stainless Steel
- Painted
  - Standard white
  - Optional: Additional paint colors available upon request

### Switches

- NFP switch plates are supplied with heavy-duty Single pole double throw (SPDT), Momentary center OFF rocker switches
- Each switch is designed to provide a tactile feel and click to confirm to the user that the switch has been depressed
- Switch size: 9/16 x 13/16
- Colors: Black, White, or Gray

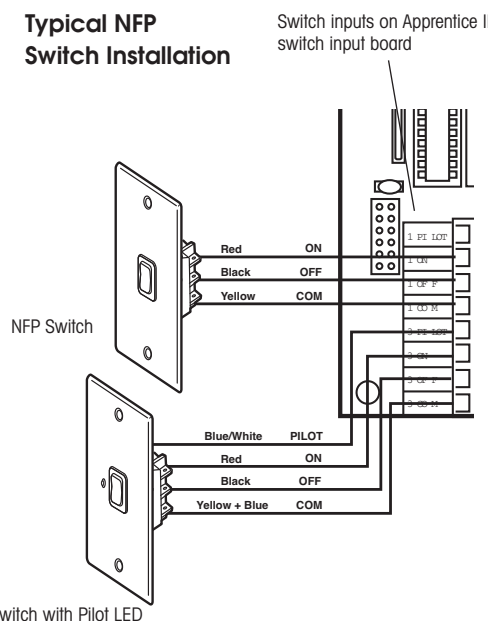
### Switch Identification

- Phenolic labels: Lettering is engraved into phenolic material attached to plate surface.
- Engraved: Lettering is engraved directly into plate surface.

### LED Pilot Lights

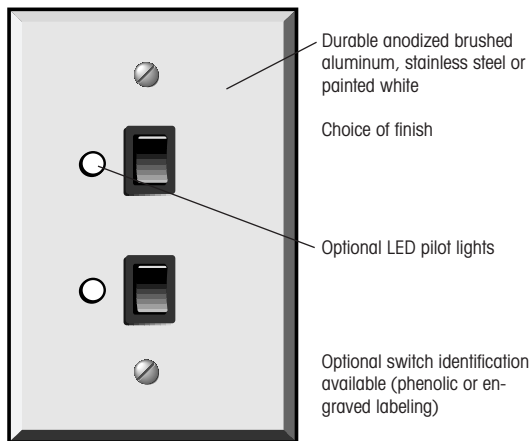
- LED pilot lights give a visual confirmation of current control status. LED ON indicates controlled circuit is ON; LED OFF indicates controlled circuit is OFF.
- Each switch may be provided with a solid state LED pilot light
- Colors: Green or Red

### Typical NFP Switch Installation

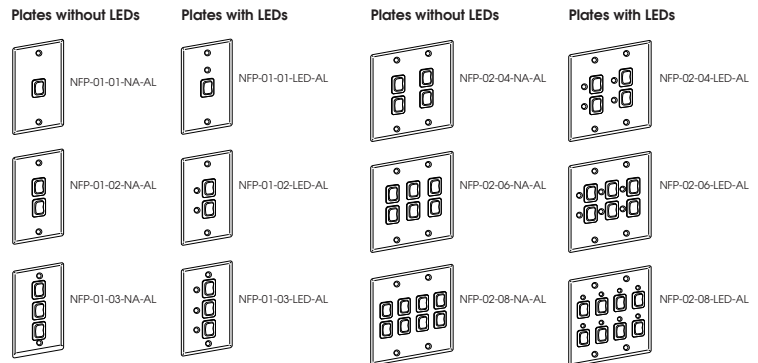


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### NFP SERIES STANDARD CONFIGURATIONS



Other Configurations Available on Request

## Specifications

### Physical:

- Plate material:
  - Aluminum
  - Stainless Steel
  - Painted White
- Mounts to standard electrical 1 or 2 gang switch box
- Mounting screws provided
- Switch size: 9/16 x 13/16
- Switch colors:
  - White
  - Black (standard)
- Switch Identification (optional):
  - Phenolic Labels
  - Engraved

### Electrical:

- Switch plates provided with center OFF momentary rocker switch for ON/OFF operation.
- Single pole double throw (SPDT), momentary
- Quiet "click" provides both tactile and sound feedback when actuated

### Operating Environment:

- Location: Interior space
- Operating Temperature: 0° to 50° C (32° to 112° F)
- Relative Humidity: 10% to 95%
- Atmosphere: Non-condensing, Non-corrosive
- Vibration: Stationary application, NEMA Level A



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### How to Order

Ordering an **NFP Series** Switch Plate  
Order No. NFP-02-04 (sample)

**NFP** - - - - -

No. of gangs: 1 or 2  
Switch Qty and Color:  
or 8/plate  
Color: Black = (BL), White = (W), Gray = (GY)  
Red = (RD)

Status LED:  
Non-limiting (standard) = (LN)  
No LED = (N/A)

Plate Finish:  
Stainless Steel = (SS)  
Aluminum = (AL)  
Painted White = (PW)

Custom configurations  
are available – consult  
factory for custom  
switch plate options

- Secure switching and control
- Made in the USA
- Momentary or maintained switches
- 1 to 8 switch configurations
- Status LEDs available for each switch
- Mounts in a standard electrical switch box
- Engraved switch identification available
- Custom configurations available



## Overview

Key switch stations provide an extra level of security that limits lighting control access to only those with the appropriate key. Switch stations have a high quality 5 tumbler key switch and an optional status LED. Key switches are prewired and ready to install in any standard switch box. Switch plates are available in brushed aluminum, stainless steel, white, or created to your custom requirements.

## Features

### Plates

- Anodized Brushed Aluminum
  - Standard: Natural anodized finish
  - Optional: Anodized colors available upon request
- Stainless Steel
- Painted
  - Standard white
  - Optional: Additional paint colors available upon request

### LED Pilot Lights

- LED pilot lights give a visual confirmation of current control status. LED ON indicates controlled circuit is ON; LED OFF indicates controlled circuit is OFF.
- Each switch may be provided with a solid state LED green pilot light

### Switches

- Momentary SPDT
- Maintained SPDT (on-off-on) key removable in "On" or "OFF" position (Version A)
- Maintained SPDT (on-off-on) key removable in "OFF" position (Version B)

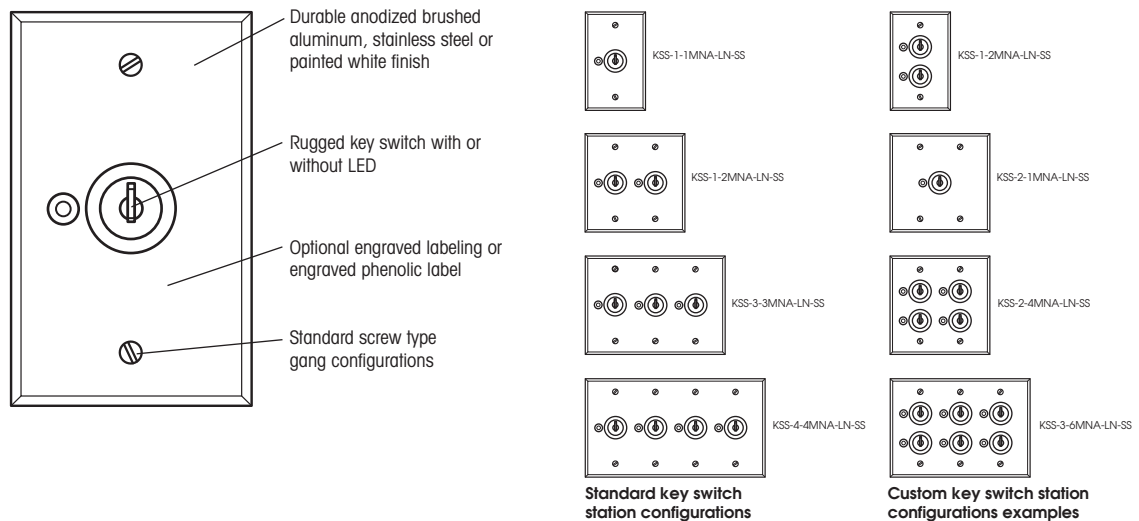
### Switch Identification

- Phenolic labels: Lettering is engraved into phenolic material attached to plate surface.
- Engraved: Lettering is engraved directly into plate surface.



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## Specifications

### Physical:

- Mounts in a standard switch box
- Standard switch plate sizes
- Mounting screws provided
- Switch: 0.87" diameter stainless steel
- Engraving up to 10 characters is available on phenolic labels or directly on plate surface
- Available in brushed aluminum, white, or stainless steel
- Status LED optional

### Switches:

- Momentary SPDT
- Maintained SPDT (on-off-on) key removable in "ON" or "OFF" position (Version A)
- Maintained SPDT (on-off-on) key removable in "OFF" position (Version B)

### Electrical:

- Switch: 10 Amps @ 28 VDC or 125 VAC
- LED non-current limited: for LightLEEDer, LightMaster, or Apprentice II panels with internal limiting
- LED current limited: 30 VAC/VDC

### Operating Environment:

- Location: Interior Space
- Operating Temp.: 0° to 60° C
- Humidity: 10% to 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

### How to Order

Ordering an **Key Switches Station** Switch Plate  
Order No. KSS-02-04 (sample)

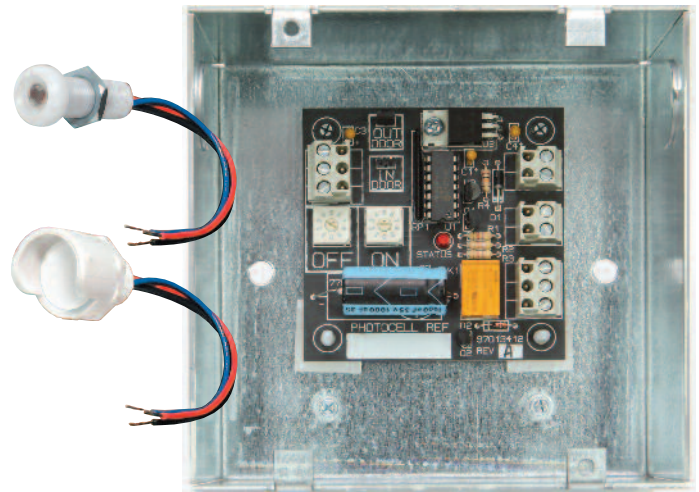
**KSS** - - - - -  
 No. of gangs: 1, 2, 3 or 4  
 Switch Quantity and Type:  
 Type: Maintained Type A = (MNA)  
 (Non-captive key)  
 Maintained Type B = (MNB)  
 Momentary = (MOM)  
 Status LED:  
 Non-limiting (standard) = (LN)  
 Current Limiting = (LC)  
 No LED = (N/A)  
 Plate Finish:  
 Stainless Steel = (SS)  
 Aluminum = (AL)  
 Painted White = (PW)



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- Monitors light levels indoors or outdoors
- Indoor range 1 to 100 foot candles
- Outdoor range 1 to 1000 foot candles
- Remote mount
- Individually adjustable on and off control points
- Hardwired directly to panel
- Additional NO/NC dry contact output
- Made in the USA



## Overview

The Hardwire Photo Sensor monitors light levels and signals the lighting control panel's inputs. Each sensor has 10 adjustable set points for on or off control. Each sensor has a built-in filter to eliminate false triggering from lightning or other sudden light sources. The indoor and outdoor photocell heads convert the analog light levels to a digital form and are UV and weather resistant.

## Features

### General Information

- Light levels are monitored indoors or outdoors to 1000 foot candles
- Made in the USA
- Hardwire directly to panel inputs
- Adjustable for indoor and outdoor ranges
- Control points consist of 10 adjustable On and Off settings
- Analog to digital photocell heads
- Photocell filter to eliminate false triggering of loads
- Photocell head connectors are screw-to-connect type
- Remote controller can be mounted up to 5000 feet from lighting panel
- UV resistant photocell heads
- Encased photocell head protects sensor from the elements

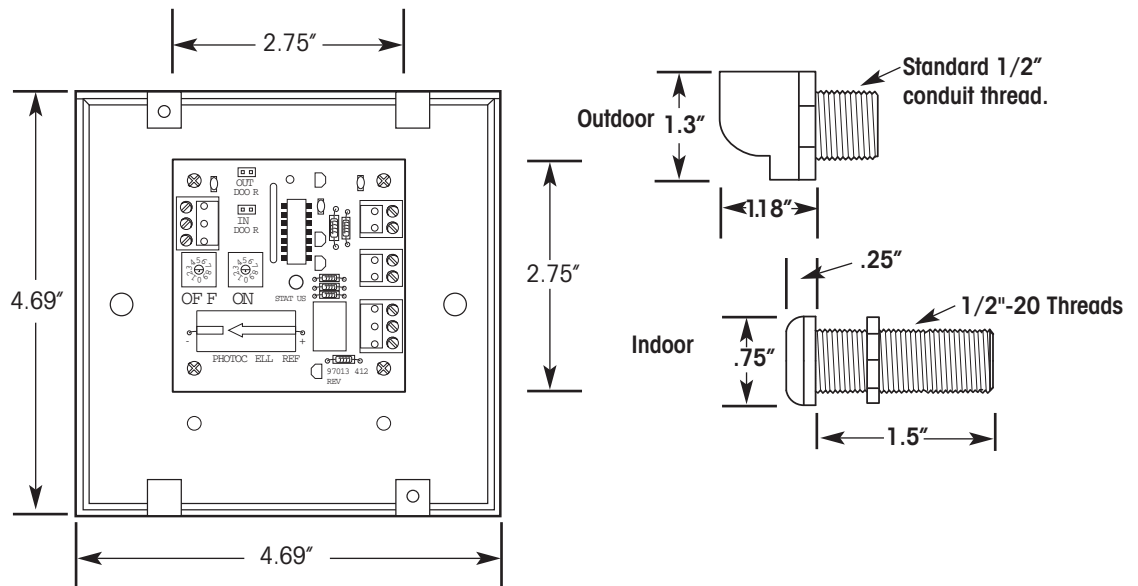


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### Dimensions



### Specifications

#### Safeguards:

- Photocell filter eliminates false triggering of loads

#### Controller Physical:

- Enclosure: 4.69" wide X 4.69" high X 2.00" deep
- Cover Included
- Screw connections
- Clearly marked labels
- Digital output and Form C SPDT output

#### Photocell Heads:

- Outdoor photocell mounts in a 1/2" LB type fitting or junction box
- Indoor photocell mounts to ceiling tile or other structure

#### Electrical:

- Power supply: 25mA max. @ 9 VAC/12 VDC
- Open collector output: 50mA maximum
- Dry contact output: 2 amps @ 30 VDC

#### Controller Operating Environment:

- Location: Interior Space
- Operating Temp.: 0° to 50° C
- Humidity: 10% to 90% Non-condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

#### Photocell Operating Environment:

- Location: Interior/Exterior Space
- Operating Temp.: -35° to 50° C
- Humidity: 10% to 100% Condensing
- Atmosphere: Non-explosive/corrosive
- Vibration: Stationary

#### Certifications:

- UL CUL
- FCC Part 15

### How to Order

Ordering a **Photo Sensor Controller**

Order No. PSC-OUT-R(sample)

**PSC- \_\_\_\_\_ - R**

IND= Indoor  
OUT= Outdoor  
R = Remote Mount



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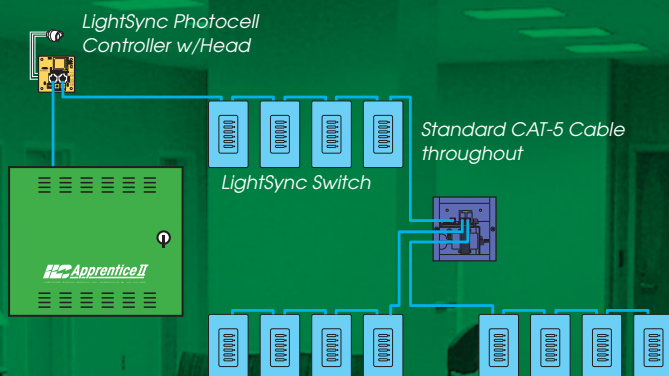
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# Apprentice II and LightSync™ Network

All ILC Apprentice II lighting controllers are capable of supporting a LightSync data line network for controller communications and/or lighting control. The network is simple to install, using standard CAT-5 cable to connect LightSync capable control devices. Once connected, the devices operate together to provide a powerful, flexible lighting control solution for nearly every lighting control application.

The Apprentice II controller may also be connected to Apprentice II expansion panels with standard CAT-5 cable to form a controller network capable of supporting up to 48 relay outputs and an even larger LightSync network.

## Stand Alone Overview



The Apprentice II panel supports up to 8 LightSync devices via RJ-45 ports and more with the addition of a Power Supply Repeater. You can connect to your PC a on-board USB 2.0 port and control via Apprentice II Pro software these are just a few of the updates built into the ILC Apprentice II. Add-on cards are easy to install and add capabilities like DMX control, N2, Modbus, BACnet, LonWorks, TCP/IP, Modem interface, and DTMF telephone switching. The ILC Apprentice II lighting control panel features a friendly interface, solid reliability, the flexibility to easily comply with energy codes and ships complete.

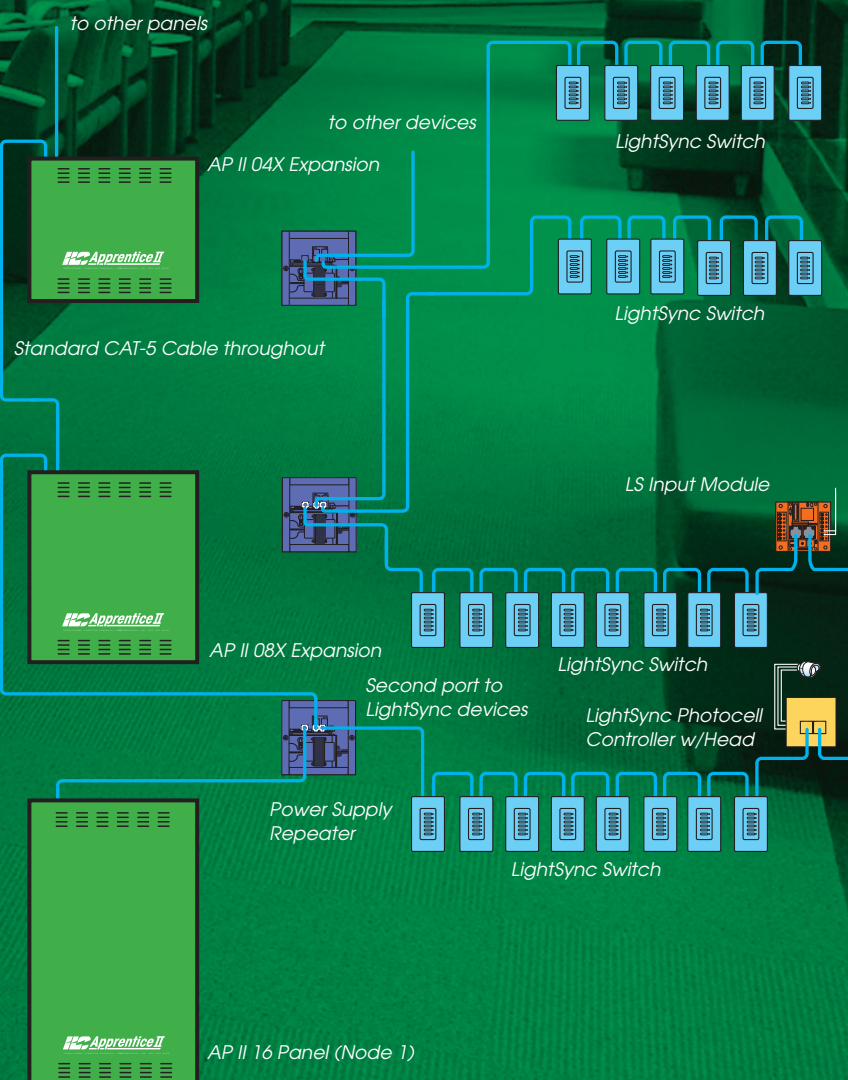
## Network Overview

The Apprentice II expanded network consists of a Apprentice II panel and a number of Expansion panels that add up to a maximum of 48 relay outputs. The Apprentice II panel is always Node 1 and controls the Apprentice II Expansion panels. The Expansion panels are addressed with a unique node address ranging from 2 to C. The data line exits the Node 1 panel's RJ-45 OUT port and enters the IN port of the Expansion panel.

As an alternative to programming from the Apprentice II Keypad, programming may be done from a personal computer (PC) equipped with proprietary ILC Apprentice II Pro software.

Apprentice II LightSync networks feature Device Nodes. These are data switches, photocells and other I/O devices connected to the CAT-5 data line. There can be a maximum of up to 32 device nodes in a the lighting control network.

Installations that require cable distance over 3000' or more devices require the addition of a Power Supply Repeater or Power Supply, depending on the application. The specific use of these devices depends on the project layout.



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