

IL Area Controller

Applies to Model #s:

ILS-0010	ILM-2201	ILM-0041	ILM-4000	ILL-4400
ILS-1100	ILM-2200	ILM-3000	ILM-4001	ILL-4401
ILS-0020	ILM-2111	ILM-3001		
ILS-2000	ILM-2110			



WARNING



Risk of Fire, Electrical Shock, Cuts or other Casualty Hazards- Installation and maintenance of this product must be performed by a qualified electrician. This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and hazards involved. For continued protection against shock hazard replace all covers and guards after field wiring is completed.



Before installing or performing any service, the power **MUST** be turned OFF at the branch circuit breaker. According to NEC 240-83(d), if the branch is used as the main switch for a fluorescent lighting circuit, the circuit breaker should be marked with "SWD". All installations should be in compliance with the National Electric Code and all state and local codes.



Risk of Fire and Electric Shock- Make certain power is OFF before starting installation or attempting any maintenance. Disconnect power at fuse or circuit breaker. WaveLinx Wired models may contain circuits from more than one power source.



Risk of Burn- Disconnect power and allow fixture to cool before handling or servicing.



Risk of Personal Injury- Due to sharp edges, handle with care. Always use at least two people when lifting and mounting heavy or large units

Failure to comply with these instructions may result in serious injury (including death) and property damage.

DISCLAIMER OF LIABILITY: Cooper Lighting Solutions assumes no liability for damages or losses of any kind that may arise from the improper, careless, or negligent installation, handling or use of this product.

IMPORTANT: Read carefully before installing fixture. Retain for future reference.

NOTICE: Fixture may become damaged and/or unstable if not installed properly.

Note: Specifications and dimensions subject to change without notice.

ATTENTION Receiving Department: Note actual fixture description of any shortage or noticeable damage on delivery receipt. File claim for common carrier (LTL) directly with carrier. Claims for concealed damage must be filed within 15 days of delivery. All damaged material, complete with original packing must be retained.

NOTICE: If a room is wired for two circuits using two separate hot leads, it is very important to connect only one circuit per relay. Both circuits must be fed from the same phase.

NOTICE: Ensure that all modules are firmly seated on the DIN rails before beginning field wiring.

NOTICE: The high voltage supply should be fed to the cabinet via an external isolation breaker with sufficient capacity for the planned installation.

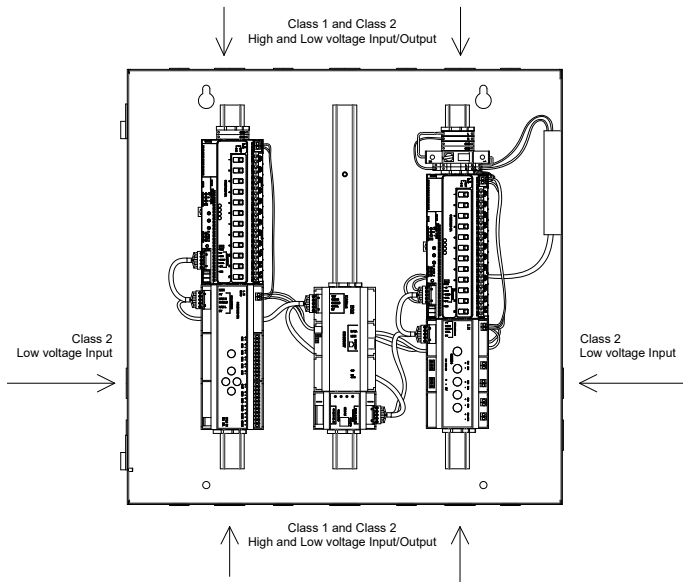
NOTICE: Ensure that the supply is fully isolated at an external breaker before opening doors. Test that power has been removed before starting to handle conductors.

NOTICE: Ensure that high voltage and low voltage wiring remains separate.

NOTICE: All new wiring must be fully verified before applying power.

NOTICE: Designed for indoor installation and use only. Dry location rated.

Wiring Flow



Installation steps:

1. Mount enclosure
2. Connect panel power
3. Connect relay wiring
4. Connect 0-10V dimmer wiring
5. Connect 2 wire data bus wiring
6. Connect WaveLinx Wired network wiring
7. Clear all power circuit wiring for errors
8. Energize panel power circuit
9. Energize relay and lighting power circuits
10. Coordinate system startup

Please Read This First

The WaveLinx Wired panels are designed, built and tested to strict safety regulations. By following the steps listed below and elsewhere within this guide, you can ensure safe installation and operation of these controller units.

- The WaveLinx Wired cabinet must be installed only by a qualified electrician
- For continued protection against shock hazard replace all covers and guards after field wiring is completed.
- The installation must comply with the appropriate electrical codes and regulations in force in your area
- The installation must comply with the appropriate electrical codes and regulations in force in your area
- WaveLinx Wired is designed for indoor installation and use only. The units can, however, be used to control appropriately certified exterior lighting fixtures
- Ensure that all wiring used conforms fully to local specifications and is sufficiently rated for the installation

Ensure that all modules are firmly seated on the DIN rails before beginning field wiring. To reset a module simply pull the black tab(s) away from the DIN rail, push down on the side of the module with the tab and allow the tabs to snap back into place

- All new wiring must be fully verified before applying power
- The high voltage supply should be fed to the cabinet via an external isolation breaker with sufficient capacity for the planned installation.

Remove packaging material and discard before field wiring. This includes cardboard spacers in small cabinets and plastic tie wraps used on all SCMR (relay) modules.

SCMR Branch Circuit OCP & SCCR NOTE: Cabinets containing SCMR modules do NOT include branch circuit overcurrent protection for switching relays. Suitable overcurrent protection must be provided by the installer. Each relay has a default 4kA SCCR rating. Bussman KTK-R class CC fuse protection can increase SCCR rating. Cooper Lighting Solutions offers a full line of fusible panelboards to simplify selective coordination and SCCR protection.

- Always use at least two people when lifting and mounting heavy or bulky units
- Ensure that the supply is fully isolated at an external breaker before opening doors. Test that power has been removed before starting to handle conductors
- Ensure that high voltage and low voltage wiring remains separate. The design of the cabinets should allow line voltage field wiring to exit and enter the knockouts provided at the top of the cabinet while low voltage wiring can exit and enter the cabinet through knockouts at the bottom or lower sides of the cabinets.

Important Points For Consideration

- The cabinets are designed for surface mounting. Consult Cooper Lighting Solutions for flush mounting options.
- Use suitable conduits and couplers to link the raceways to the controller chassis
- Allow adequate space for future maintenance of the unit. Do not install in a location that will later be difficult to access
- Cabinets are designed to be mounted vertically
- During operation, the cabinets will produce clicks during relay switching. Take these matters into consideration when deciding on a suitable mounting position.

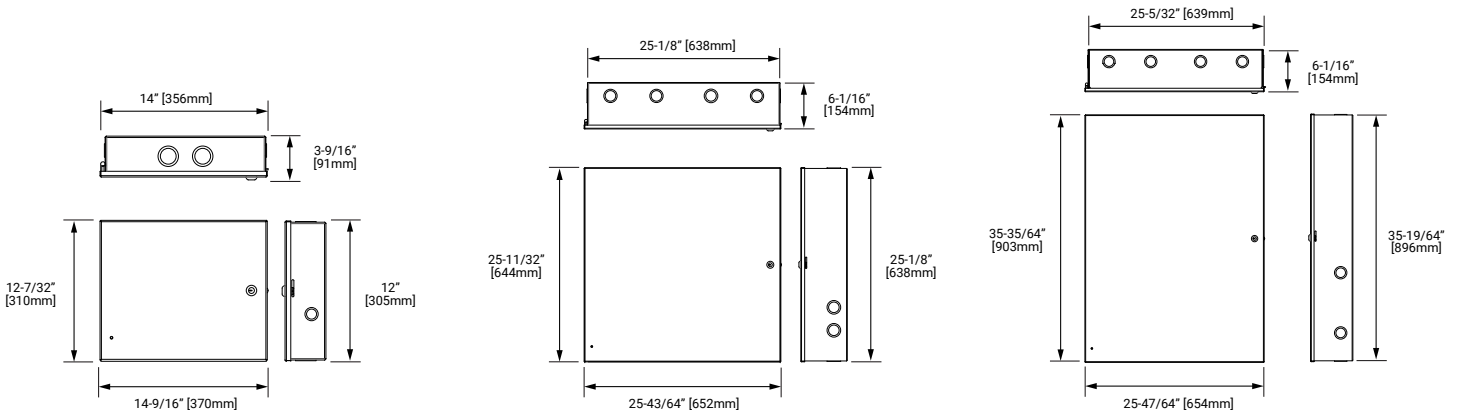
General Information

Cabinet Dimensions

ILS-*: Small Enclosure (two DIN rail modules)

ILM-*: Medium Enclosure (four DIN rail modules, plus optional ethernet)

ILL-*: Large Enclosure (eight DIN rail modules, plus optional ethernet)



Mounting the Enclosure

The WaveLinx Wired modules consist of an enclosure with interior DIN rail modules. Interior DIN rail modules include:

- SCMR1220-NA: twelve 20A latching relays
- SCMH1200-NA: twelve 0-10V dimmers
- SCMD4: four two wire addressable buses
- EG2: Ethernet gateway
- CR1-RJ: PC network connection

Note: Ensure at least three(3) inches of air space around the WaveLinx Wired enclosure.

Location and Spacing

The WaveLinx Wired models are all fully convection cooled; therefore it is vitally important to ensure that each unit is installed in a ventilated location that permits sufficient airflow and provides the correct operating conditions.

The cabinets do not contain fans. Allowing airflow around the panel will enhance the reliability and longevity of all models. Locating panels away from heat generating equipment will also benefit long term reliability. Also ensure that the stated ambient atmosphere requirements are not exceeded.

Ambient Atmosphere Requirements

Temperature 32° F to 104° F (0° C to +40° C)

Humidity 0 to 95% non-condensing

Mounting Considerations

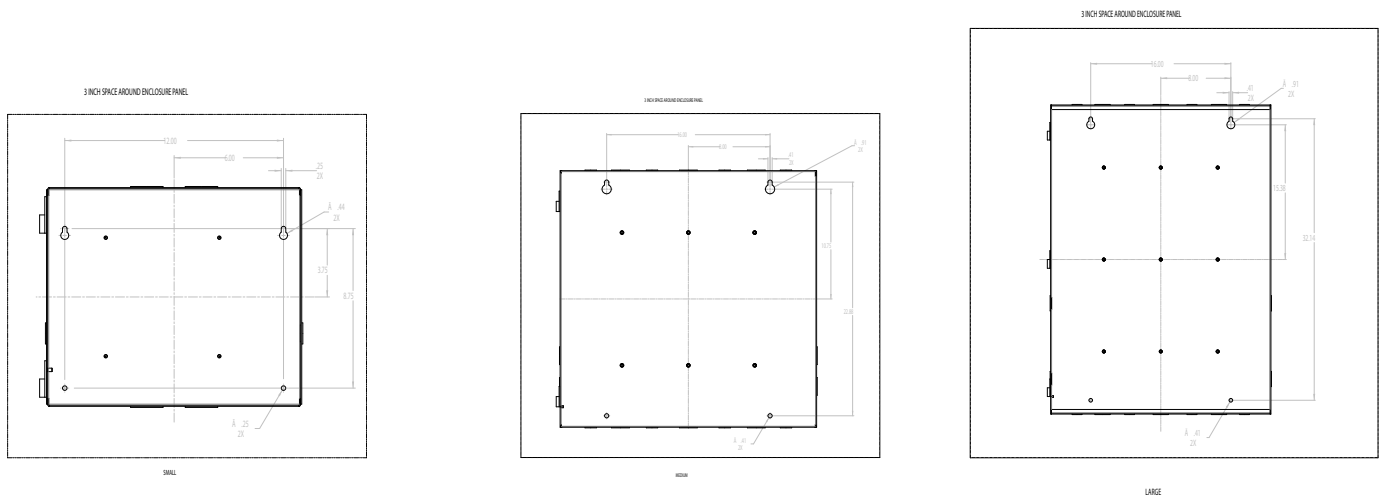
- A minimum of 14 inches (360 mm) must be maintained from the front of the chassis to any other components or walls. Please make sure to check and follow local code requirements if additional clearance is needed per code in your area
- Allow adequate space for future maintenance of the unit. Do not install in a location that will later be difficult to access
- The WaveLinx Wired panel is designed to be mounted vertically
- Use suitable conduits and couplers to link the raceways to the controller chassis

To Mount the Enclosure

1. Choose a dry location convenient to the circuit breaker panel that meets the operating temperature requirements.
2. Mount the panel on a firm surface using the predrilled holes.
3. Connect the enclosure to the circuit breaker panel using conduit.
4. Remove all cuttings and dirt.

Note: Make certain that high voltage and low voltage load wiring enters the enclosure separately. High voltage wiring should be brought into the enclosure through the left and right sides or the top right and top left wiring channels. Low voltage wiring can be brought into the enclosure from the top-middle or bottom middle location of the enclosure.

Note: Ensure at least three(3) inches of air space around the WaveLinx Wired enclosure.



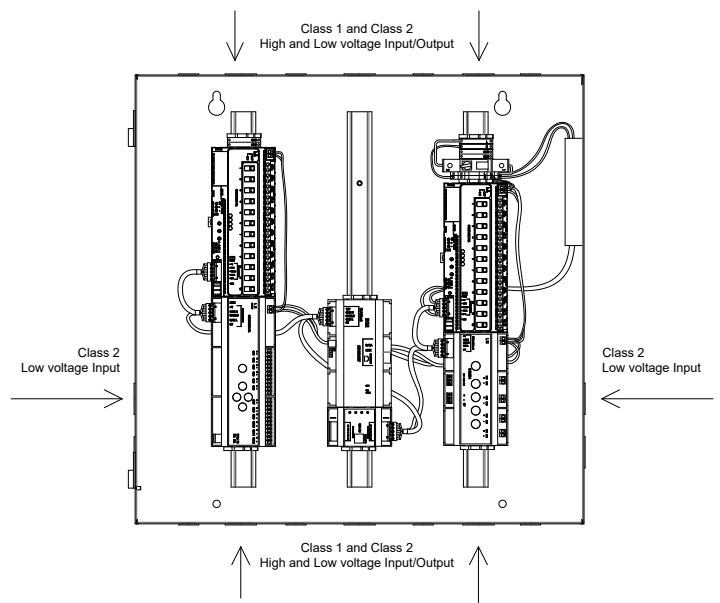
Wiring Flow

All cabinets have been designed to provide a clear layout and logical progression for all power circuits.

The main supply conductors enter at the top panel. Input power is then fed to the modules inside the cabinet.

Field wiring for branch circuits that are connected to the SCMR relay modules also enter from the top of the cabinet. Ground connections are provided at the top of the cabinet for landing grounding conductors.

Note: Check the stated voltage rating of the controller before connecting to the supply and check that it matches the supply voltage. All cabinets are 120-277V universal input

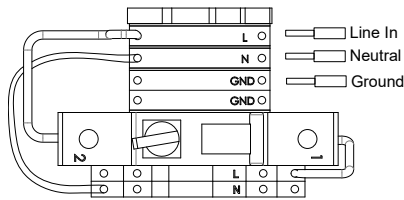


Connecting the Supply

The suggested entry point for the supply wiring is via the rightmost knockout on the top panel of the chassis. This provides immediate access to the circuit breaker that supplies the modules with power. Use a suitable conduit and coupler to feed the source wiring safely into the chassis.

See the diagram below for connection details. The main earth terminal is located near to the neutral lug. The earth connection is bonded to the main backplane of the chassis and the outer panels.

Please consult the image below for details about the maximum permissible supply wire gauges for the various controller models.



Wiring Information:

Strip wire: 3/8" to 1/2"
Wire size: 10-12AWG
Solid/stranded copper only

*Note: Bring dedicated circuit to power iLumin Plus lighting panel. Main power circuit should not also power lighting. iLumin Plus is pre-wired to power all modules once main power is connected and energized.

Connecting Relay Loads

The relay modules (SCMR1220-NA) will be pre-mounted on the interior DIN rail per the order specifications. Unless otherwise specified, latching relays (single pole) will be provided for connection to lighting loads.

Prior to relay connection, test the load directly connected to the branch circuit breaker to verify that there are no shorts. Remove all wire cuttings from the enclosure.

Relays are numbered 1-12 on each SCMR1220-NA module. Using the WaveLinx Wired programming software each relay can be programmed to meet control requirements. The table below indicates the minimum wires size to be used with various load currents.

Minimum AWG	For loads up to
10	20A
12	16A
14	12A
Use 75C wire insulation minimum. Use copper conductors only.	
20A max load per channel	
192A max load per SCMR1220-NA	

Connecting 0-10V Dimmer Loads

Temperature 32° F to 104° F (0° C to +40° C)

Humidity 0 to 95% non-condensing

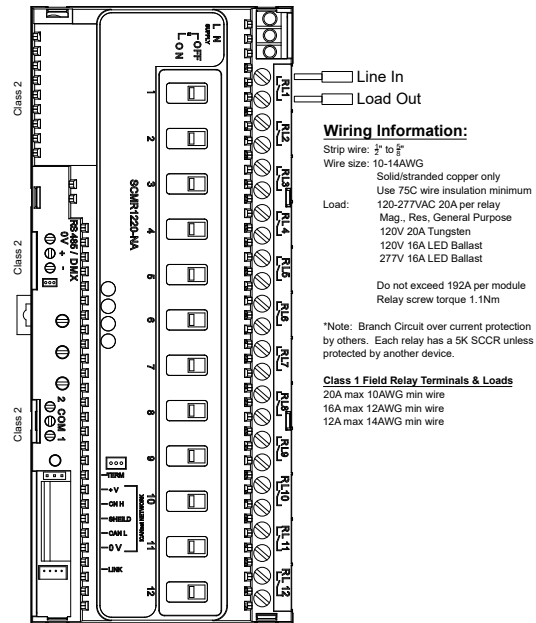
The dimmer modules (SCMH1200-NA) will be pre-mounted on the interior DIN rail per the order specifications. Each 0-10V dimmer requires a corresponding relay from the SCMR1220-NA to turn the lighting load ON/OFF. This mapping is performed during programming.

Prior to dimmer connection, test each load to verify there are no shorts and 0-10V polarity is correct. Remove all wire cuttings from the enclosure.

0-10V dimmers are number 1-12 on each SCMH1200-NA module. Each 0-10V dimmer can be programmed to be either source or sink the 10VDC, by default the dimmers are sink type.

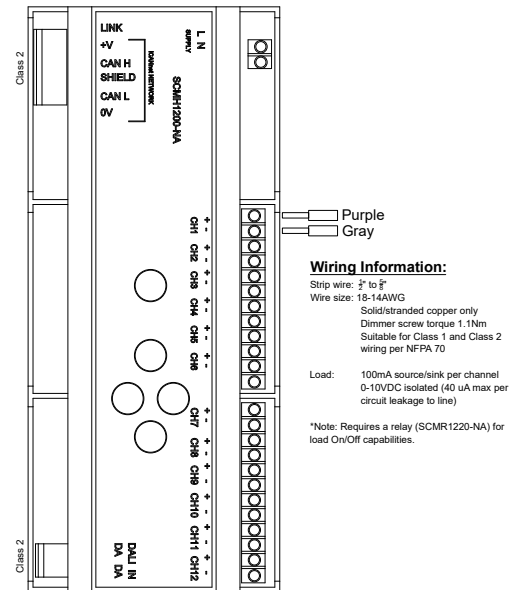
Relay Load Wiring Detail

Twelve: 20A Latching Relays



0-10V Dimmer Wiring Detail

Twelve: 0-10V Dimmers



Connecting two wire addressable Bus

The two wire addressable bus is used for user interface devices and individually addressable smart LED drivers. Each two wire module (SCMD4) will be pre-mounted on the interior DIN rail per the order specifications and provide four (4) two wire addressable buses. Each two wire addressable bus supports up to 64 addresses per bus.

Use 14AWG cable for the two wire addressable bus and do not exceed 300 meters (984ft). The two wire addressable bus is polarity and topology free.

The two wire addressable bus provides 250mA per bus to power addressable devices. The following table provides information on devices that can be connected to the two wire addressable bus.

Device type	Current draw	Max per bus	# of addr
Lighting driver or ballast	2mA	64	1
2 wire wallstation	3.75mA	64	1
2 wire relay	3.75mA	64	1
2 wire multi sensor	3.75mA	8	1
2 wire high bay sensor	3.75mA	8	1
2 wire 0-10V fixture control	3.75mA	64	1

Follow these rules when connecting the two wire addressable bus:

- Torque = 0.4N-M (XXX in-lbs)
- Wire Sizes: 18-12AWG solid/stranded copper only
- Load to: 200mA maximum draw
- Acceptable for Class 1 or Class 2 wiring per NFPA 70 section 725.XX and CEC 16.1000 if wiring methods per 16.114 are used

Connecting to the lighting network

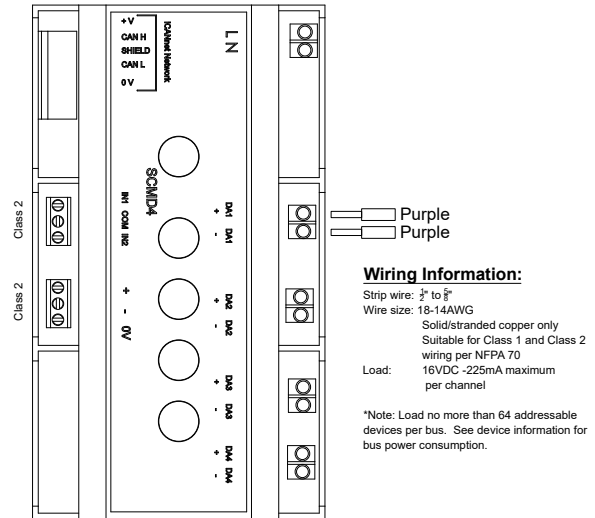
Medium and large WaveLinx Wired panels include the CR1-RJ PC connection device. A PC can be connected to the WaveLinx Wired panel using the SW2 cable kit plugging into the RJ port on the CR1-RJ. If this WaveLinx Wired panel is connected to the lighting network the PC will have access to all WaveLinx Wired devices on the lighting network.

In a medium or large WaveLinx Wired panel one side of the CR1-RJ will not have wires connected. This terminal is used to connect to other WaveLinx Wired panels. The lighting network is a daisy-chain and requires one in and one out connection. The lighting network also requires a terminating jumper installed at the two ends of the network

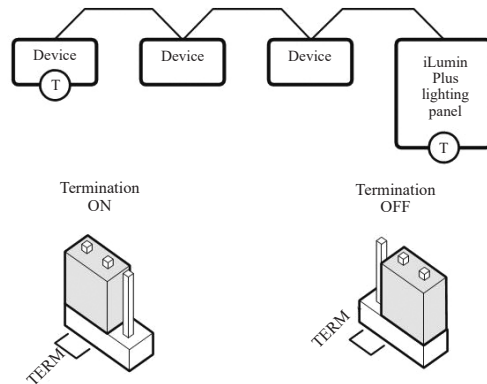
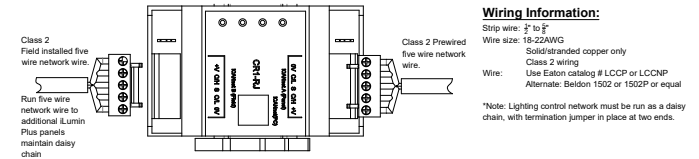
Lighting network wire should use Cooper Lighting Solutions LCCP or LCCNP wire. (alternate: Belden 1502, 1502P)

Two Wire Digital Bus Wiring Detail

Four: Two wire data buses



Lighting Network Wiring Detail



Connecting to the building LAN or VLAN

Medium and large WaveLinx Wired panels may include the EG2 optional ethernet connection device. The EG2 acts as a host for the iLumin series of remote applications including iOS (iPhone/iPad

& Android OS devices). Coupling the EG2 to a Wi-Fi network enables secure scene control, visual feedback and modification from your hand held device. Once configured, the EG2 automatically loads room and scene information to the connected hand held device.

In addition to its handheld device capability, the EG2 houses internal webserver pages that allow for basic scene control functions. These internal pages are accessed through an internet browser and are password protected for security.

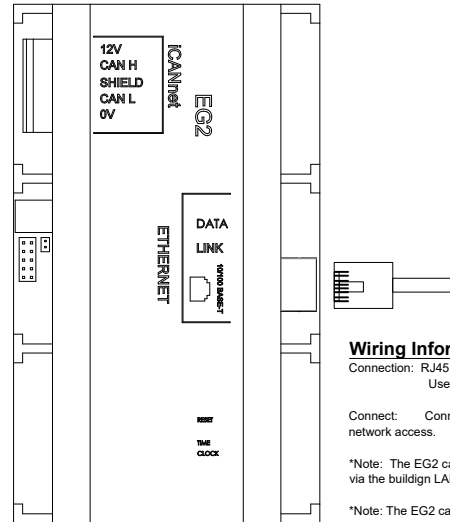
The EG2 also facilitates the commissioning of the WaveLinx Wired system, allowing our factory trained technicians to use the EG2 connection to configure the WaveLinx Wired system using iCANsoft on a LAN or Wi-Fi enabled PC or via the internet rather than by connecting directly into the WaveLinx Wired network.

- Factory default IP settings:
- IP Address: 192.168.0.100
- Mask: 255.255.255.0
- Gateway: 192.168.0.1
- DHCP: OFF

Note: The EG2 default settings are to use a fixed IP address of 192.168.0.100. Any device used to communicate with the EG2 will need to be located within the 192.168.0.x subnet unless IP address settings are changed.

Use the iCANsoft suite software package for the configuration process.

Ethernet Connection



Wiring Information:

Connection: RJ45 connector
Use Category 5 or Category 6 cable minimum

Connect: Connect to building LAN or VLAN for lighting network access.

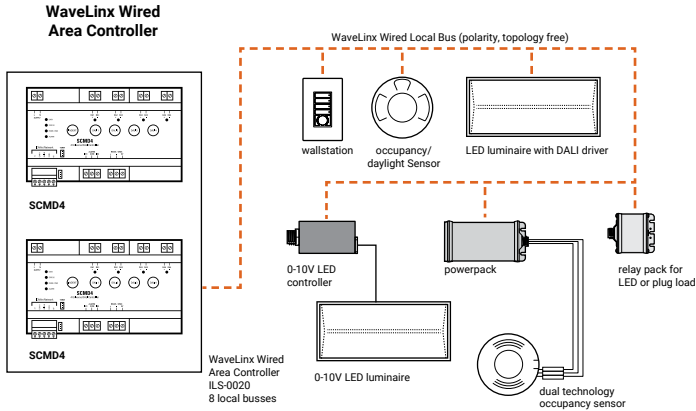
*Note: The EG2 can be used to access the lighting network via the building LAN or VLAN.

*Note: The EG2 can be used as a LAN bridge to connect different building lighting networks as a single lighting network over the building LAN or VLAN. See EG2 Bridge application note for more information.

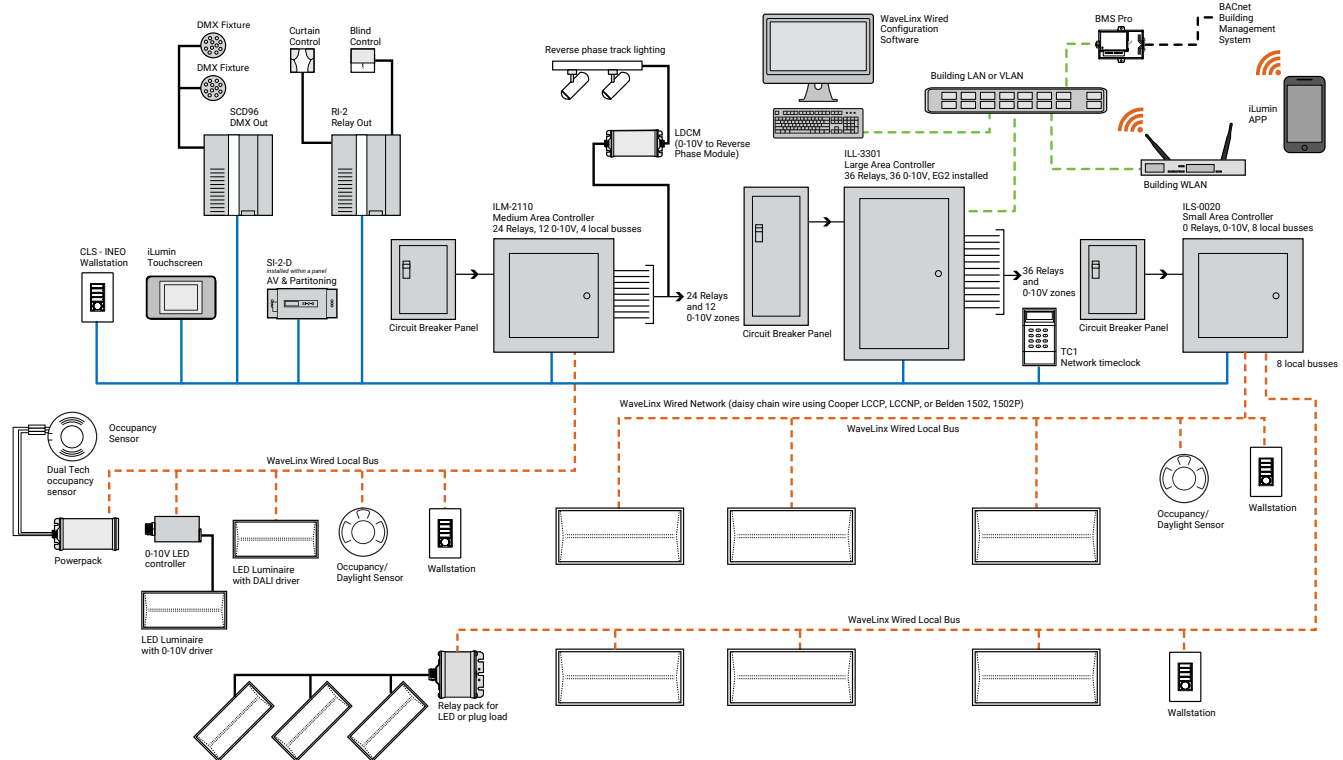
System architecture

Below are some examples of a simple WaveLinx Wired network and a complex WaveLinx Wired network application.

Simple WaveLinx Wired system



Complete WaveLinx Wired system



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