



RA121 RACK MOUNT ARCHITECTURAL DIMMER

OWNER'S MANUAL

Version 1.1
06/01/2023

RA121 RACK MOUNT ARCHITECTURAL DIMMER

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RA121 UNIT DESCRIPTION

The RA121 is a Forward Phase dimmer that consists of a processor and 12 dimmer channels of 1.2KW each. Each dimmer channel is protected by a 10 amp magnetic circuit breaker. Heavy duty filtering chokes are used to reduce lamp noise. Dimmer channel semiconductors exceed a 200% load carrying capacity overhead allowance. The RA121 conforms to UL standards as they apply to industrial control equipment. There are four options for channel output connection panels. Options include Duplex outlet panel with one outlet per channel, External terminal strip (includes knockout cover), Socapex connector panel (wiring per customer selection) and Patchbay panel with four powerlock connections per channel. The RA121 may be operated by DMX controllers and several types of wall remote stations. Additional specifications are provided on page 18 of this manual.

EXTERNAL CONTROLS

The RA121 can communicate with remotely located control equipment in several ways.

A USITT DMX-512 protocol bus is provided so the unit may be used with any DMX lighting controller. The RA121 is fully patchable with respect to the DMX bus.

The RA121 may also be controlled by several types of wall mounted smart remote stations. Smart remotes communicate with the RA121 over LitNet. This is a Lightronics proprietary low voltage RS-485 bus. This bus is completely separate from the DMX bus. Smart remotes are used to activate scenes which have been stored in the RA121. There are several types of smart remote stations. Multiple smart remotes of the same or different types may be chained together on the LitNet bus. Multiple AR / AB / RA dimmers and architectural controllers may also be daisy chained together on LitNet.

The RA121 may additionally be controlled by an arrangement of one or more momentary contacts (simple remotes). These contacts may be used to control a specific set of scenes stored in the RA121.

The RA121 follows a "Last Takes Precedence" priority between DMX, LitNet and simple remote operation.

REAL TIME CLOCK EVENT SYSTEM

The RA121 contains an internal clock and timer subsystem. This subsystem may be used to create events which activate and switch between preset

lighting scenes based upon times, days, and dates. A total of 128 events may be programmed.

POWER REQUIREMENTS

The RA121 may be operated from 50/60 Hz, 120/208 VAC, three phase power or from 50/60 Hz, 120/240 VAC, single phase power. Input power to the unit must be capable of delivering 40 amps per line if using three phase power or 60 amps per line if using single phase power.

The RA121 can operate using only two phases of a three phase power service. This is NOT recommended since it causes an unbalanced load to the power feed source.

When using three phase power, the RA121 must be used with a WYE connection power source. A NEUTRAL line and a separate GROUND line are required.

INSTALLATION**PHYSICAL LOCATION**

The unit is intended for INDOOR OPERATION ONLY and should not be subjected to excessive moisture or heat. The unit should be installed where a supply of circulating air is available. The RA121 is designed to be installed in a standard 19 inch equipment rack. Support should be provided at the rear of the unit if it is installed in a rack.

The RA121 is fan cooled. Air is drawn in from the vent slots at each side and exits the unit at the bottom of the front panel. Be sure these areas are not restricted.

POWER INPUT CONNECTIONS


WARNING

**MAKE CERTAIN POWER IS REMOVED
FROM THE FEED CIRCUITS
BEFORE YOU BEGIN INSTALLATION.**

Consult applicable electrical codes to determine the proper wire type and methods.

The RA121 operates using either three phase 120/208 VAC or single phase 120/240 VAC power. The unit is shipped from the factory as a THREE PHASE unit. It can be field converted to a SINGLE PHASE unit.

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THREE PHASE POWER CONNECTIONS

 **WARNING** 
**MAKE CERTAIN POWER IS REMOVED
 FROM THE FEED CIRCUITS
 BEFORE YOU BEGIN INSTALLATION.**

REQUIREMENTS

True 120/208VAC three phase power must be supplied to operate the RA121 in the three phase configuration. This means the voltage across any two lines must be 208 VAC. All three phases must be supplied. The feed circuit must be able to supply 40 amps for each hot line.

THE UNIT WILL NOT OPERATE IN THREE PHASE CONFIGURATION USING ONLY TWO LINES OF A THREE PHASE 120/208 VAC POWER SOURCE. SEE THE SINGLE PHASE POWER CONNECTIONS FOR INSTRUCTIONS.

CONNECTIONS

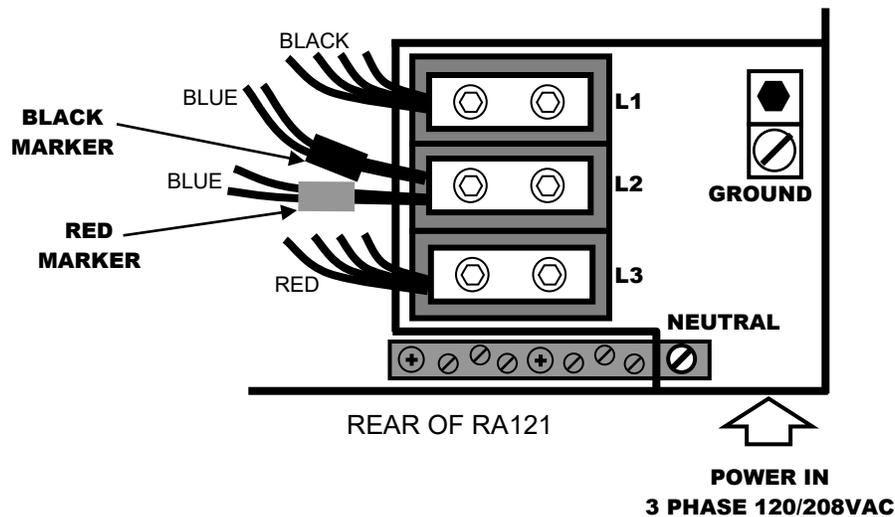
Connect the feed ground to the GROUND lug.

Connect the feed neutral to the NEUTRAL bus bar.

Connect the 3 input hot feed lines to the 3 terminals on the input power terminal block (L1, L2, L3).

See the section SYSTEM POWER SETUP for operation using three phase connections.

HIGH VOLTAGE CIRCUITRY IS EXPOSED WHEN THE CHASSIS COVER IS REMOVED. DO NOT ALLOW THE UNIT TO OPERATE OR HAVE POWER APPLIED TO IT WHILE THE COVER IS REMOVED.

THREE PHASE POWER CONNECTIONS

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SINGLE PHASE POWER CONNECTIONS


WARNING

**MAKE CERTAIN POWER IS REMOVED
FROM THE FEED CIRCUITS
BEFORE YOU BEGIN INSTALLATION.**

REQUIREMENTS

The RA121 requires two separate 120V feed circuits from opposite phases. The single phase 120V feed circuits must each be able to supply 60 amps for the RA121.

These wiring instructions are also applicable if the only available feed circuits are two legs of three phase power. This is **NOT RECOMMENDED** since it causes an unbalanced load to the power source.

CONNECTIONS

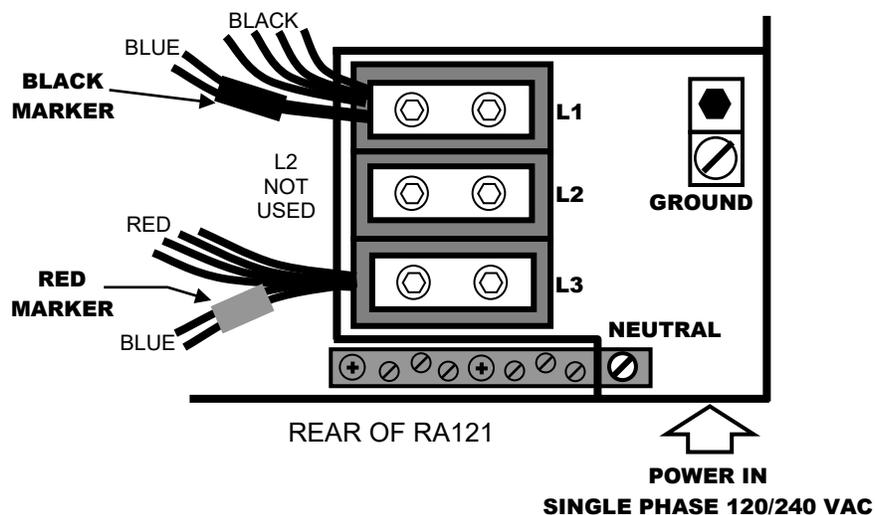
Connect the feed ground to the GROUND lug.

Connect the feed neutral to the NEUTRAL bus bar.

There are three terminals on the input terminal power block (L1, L2, L3). When operating the RA121 on single phase power, the center (L2) terminal is not used. The blue wires connected to the left side of the L2 terminal contain color coded sleeves (RED and BLACK). These wires must be moved and distributed to the L1 and L3 terminals. Remove the wires from the L2 terminal and connect them to L1 and L3 such that the sleeve color matches the wire colors on L1 and L3.

See the section SYSTEM POWER SETUP for operation using single phase connections.

HIGH VOLTAGE CIRCUITRY IS EXPOSED WHEN THE CHASSIS COVER IS REMOVED. DO NOT ALLOW THE UNIT TO OPERATE OR HAVE POWER APPLIED TO IT WHILE THE COVER IS REMOVED.

SINGLE PHASE POWER CONNECTIONS

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LOAD CONNECTIONS

The RA121 is supplied with one of several different load connection rear panels. In all cases, the lowest number dimmer channel output connection is on the left when the unit is viewed from the rear panel. See page 19 for layout.

CONTROL SIGNAL CONNECTIONS

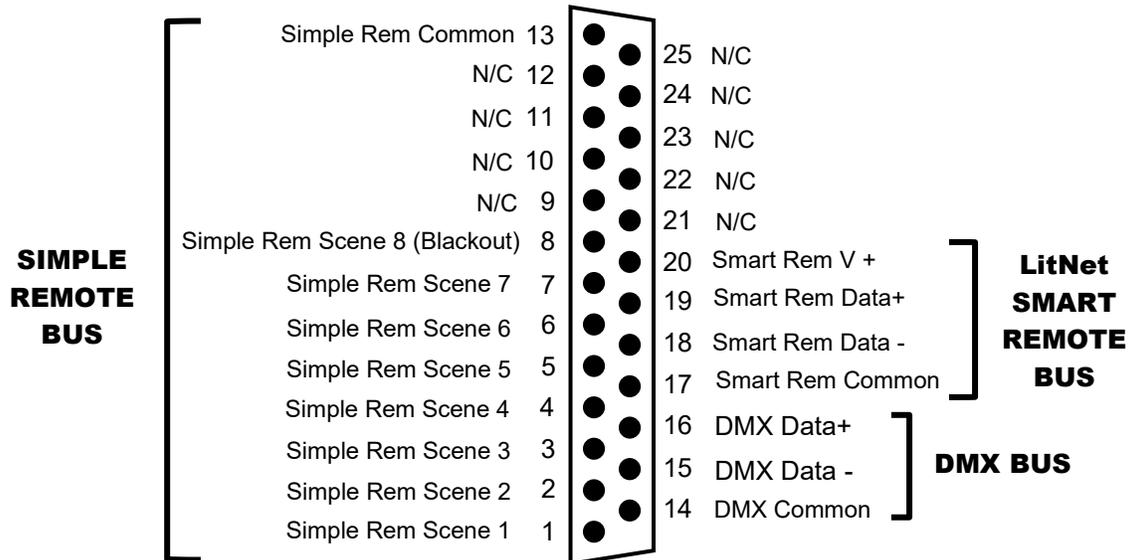
Two male DB25 connectors are provided at the rear of the RA121 to accommodate all external control signals. Specific pins on the DB25 connector are used to connect each different type of control device. Control devices include a DMX controller, LitNet smart remote stations, and simple remote stations.

One of the connectors is used for control signal input, the other is to pass the control signals to another RA121. The connectors are "hardwired" together, so either one can be used for "in" or "out".

The RA121 is supplied with a ribbon cable which can be used to chain multiple RA dimmers together in a rack. A cable mount, female, DB25 connector is also provided to accommodate all external control signals. Both of these will be shipped inside of the RA121 dimmer.

Wiring pin-out for the DB25 connectors is shown below.

CONTROL SIGNAL CONNECTOR (DB25)



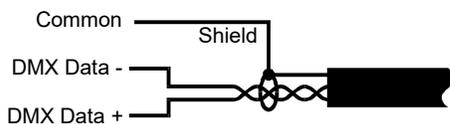
DMX CONTROLLER CONNECTIONS

DMX control signals to the RA121 should be transmitted over a twisted pair, shielded, low capacitance cable. Wiring data for DMX cabling is shown below. A DMX controller typically transmits from a female, 5 Pin XLR Connector.

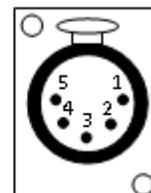
DMX 5 PIN XLR CONNECTOR SIGNALS

PIN #	FUNCTION
1	DMX COMMON
2	DMX DATA -
3	DMX DATA +
4	NOT USED
5	NOT USED

DMX CABLE CONDUCTOR ARRANGEMENT FOR TWISTED PAIR, SHIELDED CABLE



5 PIN FEMALE XLR CONNECTOR



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DMX TERMINATION

A DMX bus should be terminated (only) at the last receiving device on the chain. This is done by connecting a 120 ohm, 1/4 watt resistor across the DMX DATA - and DMX DATA + lines.

A DMX bus should be daisy chained to all its receiving units. It should NOT be connected in a star configuration with multiple separate runs.

SMART REMOTE CONNECTIONS (LitNet)

CAUTION
 REMOVE ALL POWER FROM THE RA121
 BEFORE MAKING OR CHANGING SMART
 REMOTE CONNECTIONS.

There are two types of smart remotes (push button and fader) which can be used with the RA121. There are multiple models of each type. They all connect to LitNet, which is a proprietary RS-485 bus that can be controlled by an RA121. Additional AR / AB / RA dimmers may also be connected on the same bus and serve as a LitNet host. One of them will be set as a master bus controller by setting the UNIT ADDRESS ASSIGNMENT.

Smart remote signals to the RA121 are transmitted over a shielded, two twisted pair, low capacitance cable. One pair carries the LitNet signal and the other provides low voltage power and common to the remotes.

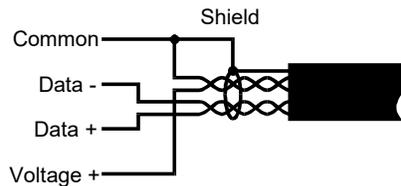
The LitNet bus should be daisy chained to all of its receiving units. It should NOT be connected in a star arrangement with multiple separate runs.

Each smart remote has a 4 pin connector with screw down terminals to connect to the LitNet bus. You must get the exact wiring pinout information for each remote unit from its respective owner's manual. The connection at the RA121 end is made through the rear panel DB25 connector. Refer to the CONTROL SIGNAL CONNECTIONS section in this manual for exact connection pinout information.

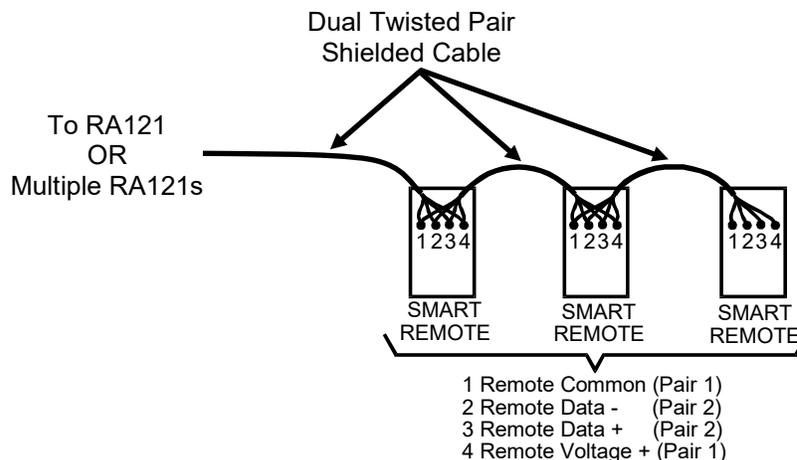
Examples of currently available pushbutton or IR Smart remotes are AK1005, AC1109, AC2116 and AI1001. Examples of currently available fader remotes are AF2104, AF3107 and AF5113.

An example of smart remote connections is shown below.

SMART REMOTES CABLE ARRANGEMENT



SMART REMOTES CONNECTIONS



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SIMPLE REMOTES CONNECTIONS

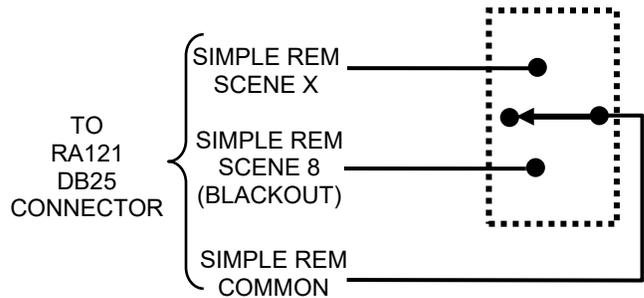
CAUTION
 REMOVE ALL POWER FROM THE RA121
 BEFORE MAKING OR CHANGING SIMPLE
 REMOTE CONNECTIONS.

Scenes 1 - 7 (stored in the RA121) may be accessed by simple remotes. A BLACKOUT FUNCTION may also be accessed. A simple remote is any switch which can provide a momentary contact closure that can be applied to a specific pin on the RA121 CONTROL SIGNAL CONNECTOR (DB25 connector).

The SIMPLE REMOTE COMMON is routed to the remote switch. When the switch is operated, the closure brings the signal back to the applicable simple scene number connection point at the RA121 CONTROL SIGNAL CONNECTOR (DB25 connector).

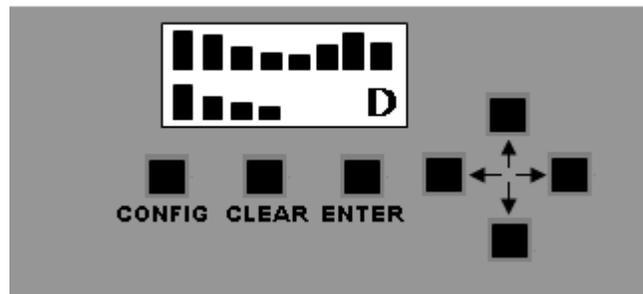
Since these are contact closures almost any available low voltage wire may be used.

An example of a simple remote connection using a Lightronics APP01 is shown below.



RA121 UNIT SETUP

FRONT PANEL (PARTIAL VIEW)



The RA121 must be set up (configured) as part of the installation process in any application. This process is done from the front panel of the unit using five menus which are described below.

SYSTEM SETUP should be done first. It includes setting the System Mode, System ID, and System Power Setup.

DIMMER SETUP should be done next. It includes Channel Limiting and Dim/Non-Dim selection.

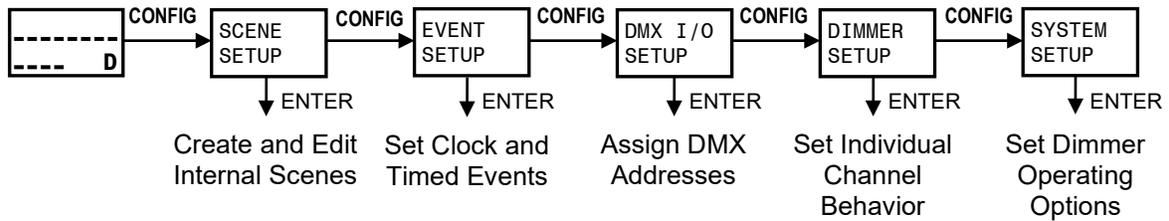
DMX I/O SETUP must be performed if the unit will be used with a DMX controller. This setup assigns (patches) dimmer channels to DMX addresses and can lockout the remote wall stations.

SCENE SETUP must be performed to create scene presets to be activated from the remote control stations or by the clock/timer subsystem.

EVENT SETUP must be done if the clock/timer subsystem will be used. It includes Setting the Clock and Programming Events.

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TOP LEVEL MENUS LAYOUT



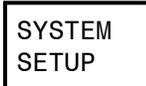
USING THE MENU SYSTEM

The **CONFIG** button steps through the five display menus. When one of these menus is shown, you can push **ENTER** to access that function. The **CLEAR** button will return the unit to its normal operating mode and cause the display to show the channel level bar graph. The **CLEAR** button DOES NOT clear entered values. The arrow buttons are used to set values for menu selections.

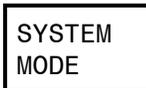
SYSTEM MODE

The RA121 currently uses only the NORMAL setting for system mode.

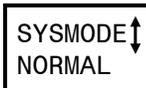
At the RA121 front panel - push **CONFIG** until the System Setup menu appears on the status display.



Push **ENTER**. The System Mode menu will be shown.



Push **ENTER**. The System Mode Selection menu will be shown.



Use the ↑ and ↓ buttons to select the NORMAL mode. Push **ENTER** when finished.

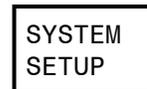
SYSTEM POWER SETUP

CAUTION

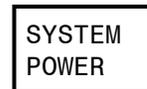
TURN OFF ALL CHANNELS AND OPEN ALL CHANNEL CIRCUIT BREAKERS BEFORE CHANGING THE INPUT POWER SETUP.

In addition to making the correct power connections for the power source at your installation, the RA121 must be set up to correctly respond to the power type.

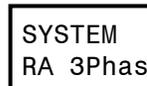
At the RA121 front panel - push **CONFIG** until the System Setup menu appears on the Status display.



Push **ENTER**. Then push **CONFIG** until the System Power menu appears on the status display.



Push **ENTER**. The display will show the current power configuration. For example:



Use the ↑ and ↓ buttons to select a configuration corresponding to the actual power being supplied to the RA121. Push **ENTER** when the correct power type is shown. See the available choices below.

- RA 3Phas 120/208V 3 Phase Power Source
- RA 2Phas 120/240V Single Phase Power Source
- OR
- 2 Phases of 120/208V 3 Phase Source

NOTE: There are several other settings available in this menu. These other choices do not apply to the RA121 dimmer.

UNIT ADDRESS ASSIGNMENT

When using a single RA121 unit in a system, the unit address **MUST BE SET TO 00**. One (and only one) unit in a multiple unit system must be set to unit address 00. Other units should be assigned in a consecutive order.

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At the RA121 front panel - push **CONFIG** until the System Setup menu appears on the status display.

```
SYSTEM
SETUP
```

Push **ENTER**. Then push **CONFIG**. The System ID Set menu will be shown.

```
SYSTEM
ID SET
```

Push **ENTER**. The display shows the unit address.

```
SET UNIT
ID ↑ 00
```

Set the desired address by pushing the ↑ and ↓ buttons.

Push **ENTER**. Then push **CLEAR** to return to the normal operating mode.

DIMMER CHANNEL SETUP

Individual channels within the RA121 dimmer can be set for different behaviors. Any channel may be limited to a user selected maximum intensity level. Limiting applies to manual, scene, and DMX operation. Any channel may also be set to run as NON-DIM to act simply in an on/off manner.

CHANNEL LIMITING

At the RA121 front panel - push **CONFIG** until the Dimmer Setup menu appears on the display.

```
DIMMER
SETUP
```

Push **ENTER**. The Channel Limit menu will be shown.

```
←01→LMT
255 ↑
```

Use the ← and → buttons to select a channel. Then use the ↑ and ↓ buttons to set its limiting value. Push **ENTER** when finished. The limit range on the menu is between 10 and 255 which corresponds to lighting intensity of between 4 and 100 percent.

CHANNEL DIMMING MODE

Each channel can be operated in either a DIMMER mode or a NON-DIM mode. The NON-DIM mode still uses the triacs in the RA121 to control power but operates in more of an on/off manner. Other options are found in this menu but are not widely used.

Push **CONFIG** until the Dimmer Setup menu appears on the display.

```
DIMMER
SETUP
```

Push **ENTER**. Then push **CONFIG**. The display will show the menu.

```
←01→ CRV
DIMMER ↑
```

Use the ← and → buttons to select a channel. Then use the ↑ and ↓ buttons to switch between DIMMER and NON-DIM. Push **ENTER** when finished.

DMX I/O SETUP

DMX I/O Setup consists of two functions, dimmer channel assignment and remote lockout.

DIMMER CHANNEL ASSIGNMENT

Dimmer channel assignment is used to assign individual RA121 channels (circuits) to a DMX address. Each dimmer channel (1 - 12) is fully patchable to any 512 DMX addresses.

At the RA121 front panel - push **CONFIG** until the DMX I/O Setup menu appears on the display.

```
DMX I/O
SETUP
```

Push **ENTER**. The display shows RA121 dimmer channels on the top line. The currently assigned DMX address is shown on the lower line prefixed by "DMX."

```
DMR ←01→
DMX ↑ 001
```

Use the ← and → buttons to select a dimmer channel. Then use the ↑ and ↓ buttons to assign it to a DMX address. Push **ENTER** after each channel assignment.

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Push **CLEAR** to exit from the menu. It will not clear your settings.

DMX LOCKOUT

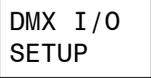
You can set any dimmer channel output to ignore DMX signal inputs from a DMX controller by assigning it to DMX address 000. This feature can be used with house lights or other special lighting. The channel will still respond to wall remotes, but the DMX input signal will be ignored.

SMART REMOTE LOCKOUT

The Smart Remote Lockout function prevents the RA121 from responding to the smart remote wall stations when a DMX signal is present. Simple remote stations will still function.

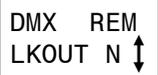
NOTE: When feature is active, any active scenes will be turned off once DMX is applied.

At the RA121 front panel - push **CONFIG** until the DMX I/O Setup menu appears on the display.



DMX I/O
SETUP

Push **ENTER**. Then push **CONFIG**. The display will show the Remote Lockout menu.



DMX REM
LKOUT N ↓

Use the ↑ and ↓ buttons to select Y (yes) or N (no). Push **ENTER** when the desired state is shown.

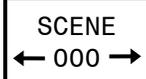
CREATING AND EDITING SCENES

At the RA121 front panel - push **CONFIG** until the SCENE SETUP menu appears on the display.



SCENE
SETUP

Push **ENTER**. The display shows the current scene number.



SCENE
← 000 →

Use the ← and → buttons to select the scene you want to set up and push **ENTER**. Scene 00 controls blackout fade time. Scene 01 is the first actual scene.

There are three ways to create or set up a scene:

1. Set each channel intensity manually (EDIT SCENE).
2. Copy another existing scene (COPY SCENE). You can then edit the results.
3. Record a snapshot of the current channel intensities (RECORD LIVE NOW).

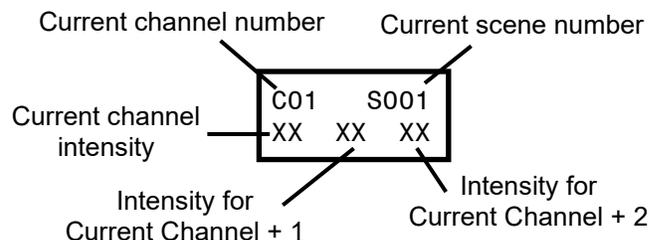
Push **CONFIG** to select the menu for one of the three methods described above. The display will show the corresponding menu.

TO CREATE A SCENE MANUALLY

Push **ENTER** when EDIT SCENE is shown.

The current channel number is shown on the display upper left. The current scene number (which was selected in the previous step) is shown on the display upper right. The settings for three channels are shown on the lower display row.

The LEFT channel on the display is the current dimmer channel (the channel which you will set the intensity level for).



Use the ↑ and ↓ buttons to set the channel output intensity. The display shows the intensity setting as a number between 0% and 99%. A 100% setting is indicated by "FL". A "XX" setting means the channel will be ignored for the current scene. This is useful when stacking of scenes is desired.

Push **ENTER** after the channel level is set.

Use the ← and → buttons to proceed to the next channel to be set up. The lower row of the display will shift to the left. Repeat the channel intensity selection for that channel.

Push **CLEAR** when all the channels for the selected scene are set. This will not clear your scene settings.

To setup another scene - repeat the process above using a different scene selection.

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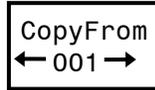
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TO COPY A SCENE

Push **ENTER** when COPY SCENE is shown. The display will show a menu so you can select an existing scene to copy from.



Use the ← and → buttons to select a scene. Then push **ENTER**. The scene will be copied, and you will be transferred to the EDIT SCENE menu where you can further adjust the scene if desired. Push **ENTER** to save these settings.

TO RECORD A LIVE SCENE

A scene may be created by recording the current channel intensity levels.

Push **ENTER** when RECORD LIVE NOW is shown.

The existing channel intensities will be copied to the scene. You will be transferred to the EDIT SCENE menu where you can adjust the scene if desired. Push **ENTER** to save these settings.

SCENE FADE TIME

A fade time may be set individually for each scene. This is the time elapsed between a scene fully active and the next scene fully active. The factory default fade time is 3 seconds.

Fade time may be set between .5 and 99.5 seconds and is set from the SCENE SETUP menu (usually as you set channel intensities for the scene).

1. To set a scene fade time - Access the EDIT SCENE menu for the desired scene.
2. Use the ← and → buttons to move BEYOND the last channel (CHANNEL 16) for the scene. The display will indicate the current fade time for the scene.
3. Use the ↑ and ↓ buttons to set the desired fade time. Then push **ENTER**.
4. Push **CLEAR** to select another scene for fade time set up.

SCENE BLACKOUT FADE TIME

Fade time for the remote station blackout function is set as an independent function.

The procedure is similar to that for other scenes, except the blackout fade time is accessed by selecting SCENE 00 from the SCENE SETUP menu. Factory default fade time is 3 seconds. Blackout fade time may be set between 0.5 and 99.5 seconds. To select a fade time - use the ↑ and ↓ buttons. Push **ENTER** when the desired time is shown.

OPERATION**OVER TEMPERATURE CONDITION**

The RA121 has a temperature sensing element which will shut down all operating channels if the temperature rises above 175°F. A message "OVERTEMP SHUTDOWN" will be shown on the front panel display in this case. This shutdown cannot be reset, except by allowing the unit to cool down.

COOLING FAN

The RA121 is cooled by a fan which is controlled by the dimmer's internal circuitry. It will begin running when the unit is powered up. After a short initialization period, the fan will run if any dimmer channels are at a non-zero intensity and will time out and turn off after approximately 15 minutes of an "all channels off" condition.

MANUAL OPERATION

Individual dimmer channels may be operated from the RA121 front panel. This is useful during testing and setup operations. If the channel intensity bar graph is not on the display screen, push **CLEAR** to return to this screen. Use the ← and → buttons to select a channel. The associated channel on the bar graph display will begin flashing. Use the ↑ and ↓ buttons to raise/lower the lighting intensity for the selected channel.

Manual operation combines with DMX and remote stations settings but does not lock them out.

The **CLEAR** button will turn off all channels when operating manually.

DMX CONTROLLER OPERATION

If a DMX signal is present when the RA121 is turned on, it will automatically respond to it. A "D" will be shown in the lower right corner of the LCD display if a valid DMX signal is present. Channel intensity levels will be shown on the bar graph display.

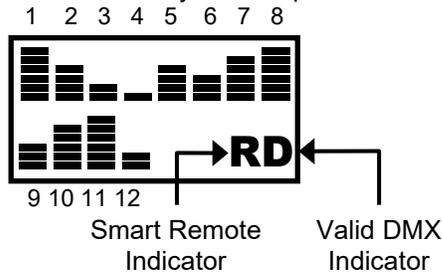
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Channel Intensity Bar Graph

**SMART REMOTES OPERATION**

The RA121 can store 100 preset scenes which may be activated by smart remotes. See the section "Creating and Editing Scenes" for information about programming the scenes. These scenes are grouped according to which type of smart remote can access them. Scenes 1 - 48 are reserved for push button and IR remotes. Scenes 51 - 86 are used with fader remotes. If multiple LitNet host units are connected to a smart remote, then each LitNet host will activate its own corresponding scene.

For a single RA dimmer system, when activity on the smart remote bus is sensed by the RA, an "R" will be displayed on the screen. If multiple dimmers are connected together, the RA assigned to Unit ID 00 will indicate "R" only when there is activity from a smart remote station. RA dimmers with a Unit ID of 01 or higher show an "R" continuously as long as they have communication with the Unit ID 00 dimmer.

Both, push button and fader remotes, may be connected on the same smart remote bus.

BUTTON AND IR SMART REMOTES OPERATION

These remotes activate individual scenes within a block of scenes which have been stored in the RA121. Generally, users only have one scene on at a time. However, scenes can be stacked with the use of "X" as a setting for channels of each scene that will have a value assigned in other scenes being used together.

The remotes are set to specific blocks of scenes to be activated by the remote. You can select which block of scenes will be activated when ordering the remote. You may also contact Lightronics technical support to reprogram the remote. For instance, an AC1109 can be set to control scenes 1 - 8, 9 -16, or other blocks of 8 consecutive scenes. There is a total of six scene blocks available covering scenes 1 thru 48. Multiple remotes of this type may be, but are not required to be, set to the same block of scenes.

The scene activation buttons will toggle. In other words, a scene will go OFF if you push its button while the scene is active.

The OFF button invokes a BLACKOUT for all scenes associated with that remote's scene block ID. Refer to the smart remote manual for specific information on scene addressing.

FADER SMART REMOTES OPERATION

These remotes activate specific individual scenes which have been stored in the RA121 on a "pile on" basis. In other words, multiple scenes will merge together in a "greatest of" fashion. This means that the intensity of any given channel will go to the highest level of all the scenes which use it. If multiple stations are in use in the system, the RA121 will follow a "last takes precedence" protocol for common scenes between fader stations. The OFF Button invokes a BLACKOUT for all scenes associated with that remote's scene block ID.

Fader remotes are scene block addressable, so you can select which scenes it activates. There are three scene blocks available. Each block includes 16 scenes. The first block starts at scene 51. This refers to the lowest numbered fader on the remote. The other faders on that remote will use the next consecutively numbered scenes (52, 53, 54, etc.). The second and third scene blocks begin at scene 67 and 83 respectively. Multiple remotes of this type may be, but are not required to be, set to the same block of scenes. Refer to the smart remote owner manual for specific information on scene block addressing.

SIMPLE REMOTES OPERATION

Scenes 1 - 7 (stored in the RA121) may be accessed by simple remotes. A BLACKOUT FUNCTION may also be accessed. A simple remote is any switch which provides a momentary contact closure that can be applied to a specific pin on the RA121 Control Signals Connector (DB25 connector). Lightronics currently offers an APP01 simple remote. This is a "center off, single pole, double throw, momentary contact toggle switch". It can be used as an entrance switch to activate a scene when someone enters/exits an area. Alternative devices such as relays, timers, and motion sensors can be used as simple remotes. These are available from various manufacturers.

The momentary completion of a circuit path between the simple common terminal and one of the scene terminals will activate the respective scene.

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EVENT SYSTEM OPERATION

The RA121 includes an internal clock and timer subsystem. This subsystem may be used to create events which activate and switch between preset lighting scenes based upon times, days, and dates. A total of 128 events may be programmed.

The clock will still operate without AC power for approximately two weeks and does not require a battery. Event settings are retained in non-volatile memory; therefore, they will not be lost if the RA121 is powered off.

An event is used to trigger any one of 100 scenes which have been previously created and stored in the RA121. Any scene may be used by multiple events. Any scene may be set to turn ON, turn OFF, or be ignored by an event.

An event may be set to trigger based on a date of the year and a time. This enables scene activation for one time or infrequent occurrences such as holidays.

An event may also be set to trigger on a daily, or multiple times per day, basis. Additionally, specific days of a week can be designated to be used or skipped. This is a more common type of operation where events are triggered on a regular schedule.

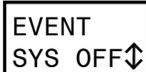
EVENT SYSTEM ENABLE

Events programmed in the RA121 will not trigger unless the event system is set to ON. If the event system is OFF, you can still set the clock and program event times and dates, but they will never be triggered.

Setting events to OFF is used to prevent inadvertent triggers which may have been forgotten about, incorrectly set, or when events are no longer required.

TO CONTROL EVENT TRIGGERING

Push **ENTER** from the Event Setup menu. The display will show the event system ON/OFF menu.



Use the ↑ and ↓ button to select ON or OFF. Push **ENTER** when the desired ON/OFF state is shown.

SETTING THE INTERNAL CLOCK

The clock must be set to the correct date, time, and day of the week in order to operate correctly. This is performed from the RA121 Event Set Clock menu.

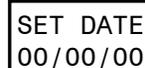
At the RA121 front panel - push **CONFIG** until the Event Setup menu appears on the display.



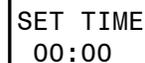
Push **ENTER**. Then push **CONFIG**. The Event Set Clock menu will be shown.



Push **ENTER**. The Set Date menu will be shown.


SETTING THE DATE

Use the ← and → buttons to select the month, day, or year and then use the ↑ and ↓ buttons to set the value. Push **ENTER** after setting each value. Push **CONFIG** to proceed to the Set Time menu.

SETTING THE TIME OF DAY


Use the ← and → buttons to select either hours or minutes and then use the ↑ and ↓ buttons to set the value. The format for hours is 00 to 23, not AM/PM. Push **ENTER** after setting each value.

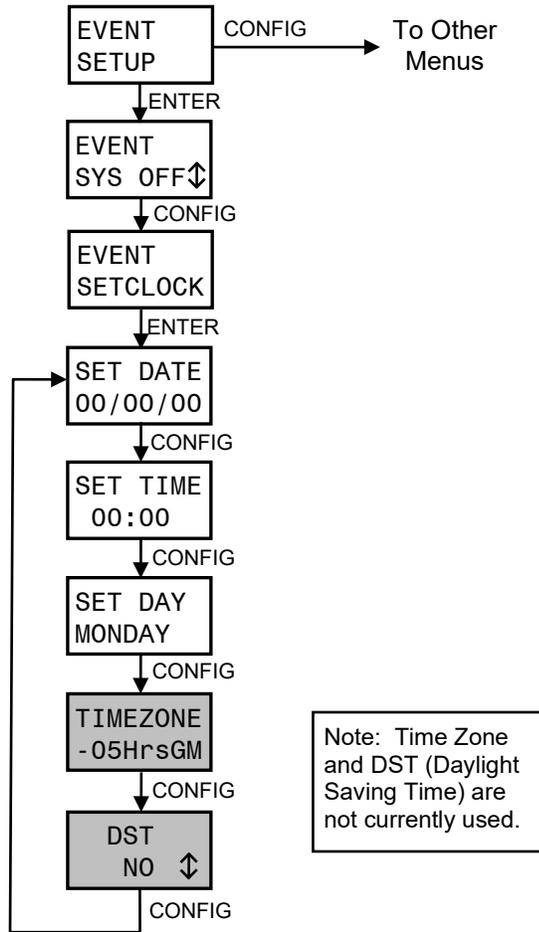
Push **CONFIG** to proceed to the Set Day menu.


SETTING THE DAY OF THE WEEK

The day of the week **MUST BE SET** when setting or changing the date. It does not automatically synchronize to the date setting. Once the day is correctly set, it will continue to track the date.

Use the ↑ and ↓ buttons to select the day so that it corresponds correctly to the previously set date. Push **ENTER** when the correct day is shown.

Layout diagram of the menu for setting the clock:



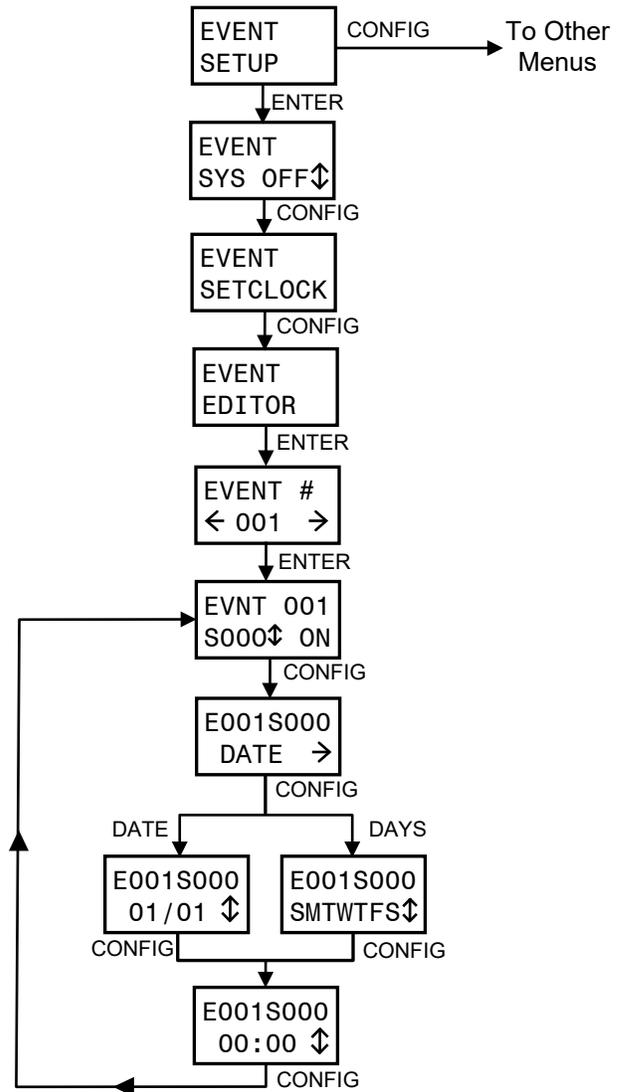
PROGRAMMING EVENTS

Events are programmed using the RA121 Event Editor menus.

Programming an event consists of four steps:

1. Select the event you want to set up (1 - 128).
2. Assign a scene (0 - 100) to the event.
3. Select what action is to be performed for that scene (Turn it ON, turn it OFF, or IGNORE IT).
4. Assign the DATE / TIME or DAY(S) / TIME for the event to be triggered.

Layout diagram of the menu for editing events:



SELECTING AN EVENT

From the Event Editor menu - Push **ENTER**. The display will show the Event Selection menu as follows.



If an event already has a scene assigned to it, the event number will be followed by an asterisk (*).

Use the ← and → buttons to select the event number. Then push **ENTER** to proceed to the scene number and scene action menu. If you push and hold down the ← or → button, the event number will skip to the next programmed event and stop.

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ASSIGNING A SCENE AND SCENE ACTION

The top row of this menu shows the number of the event you are working on. The bottom row shows the assigned scene and the action to perform.

```
EVNT 001
S000 ↓ ON
```

Use the ← and → buttons to select either the scene number or action. Your selection is indicated by flashing that part of the menu. Use ↑ and ↓ buttons to change the value. Scenes 0 - 100 may be assigned. Available actions are ON, OFF, and XXX (IGNORE). Push **ENTER** once a value has been selected. A setting of XXX disables the event even if a scene for it has been set.

Push **CONFIG** to proceed to the next menu or push **CLEAR** to revert to the Event Number selection menu.

CHOOSING DATE OR DAY BASED EVENTS

This menu enables selection of either DATE based, or DAY based operation. The menu will show either:

```
E001S000    OR    E001S000
DATE →       DAYS →
```

The top row shows the event number and scene number you are working on.

Use the ← and → buttons to switch between DATE and DAYS. Push **CONFIG** to proceed to the next menu for setting the date or day and the time of day. Push **CLEAR** to revert to the Event Number selection menu.

SETTING DATE BASED TRIGGERS

The top row of these menus show the event and scene number you are working on.

The bottom row is used to set the trigger date and the time of day.

To set the date:

```
E001S000
01/01 ↓
```

Use the ← and → buttons to select either the month or day of the month. Your selection is indicated by flashing that part of the menu. The date format is MM/DD (month on the left). Use the ↑ and ↓ buttons to change the value. Push **ENTER** once a value has been selected.

CAUTION: If you set an invalid date (such as February 30th), there will be no warning and the event will NEVER trigger.

Push **CONFIG** to proceed with setting the trigger time or push **CLEAR** to revert to the Event Number selection menu.

To set the trigger time:

```
E001S000
00:00 ↓
```

Use the ← and → buttons to select hours or minutes. Your selection is indicated by flashing that part of the menu. The format for hours is 0 - 23 (NOT AM/PM). Use the ↑ and ↓ buttons to change the value. Push **ENTER** once a value has been selected.

Push **CONFIG** to revert to the Scene Number and Scene Action menu or push **CLEAR** to revert to the Event Number selection menu.

SETTING DAY BASED TRIGGERS

The top row of these menus show the event number and scene number you are working on. The bottom row is used to set the trigger days and the time of day.

To set days of the week:

```
E001S000
SMTWTFSD
```

The bottom menu row shows the days. If a day shows as a solid block (■) instead of a character, then the event will be skipped (will not trigger on that day).

Use the ← and → buttons to select a weekday. Then use the ↑ and ↓ buttons to change between trigger and skip. Push **ENTER** once a value has been selected. Push **CONFIG** to proceed with setting the trigger time or push **CLEAR** to revert to the Event Number selection menu.

To set the trigger time:

```
E001S000
00:00 ↓
```

Use the ← and → buttons to select hours or minutes. Your selection is indicated by flashing that part of the menu. The format for hours is 0 - 23 (not AM/PM).

Use the ↑ and ↓ buttons to change the value. Push **ENTER** once a value has been selected.

Push **CONFIG** to revert to the Scene Number and Scene Action menu or push **CLEAR** to revert to the Event Number selection menu.

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MAINTENANCE AND REPAIR**WARNING****TROUBLESHOOTING**

Note: Annotate current settings prior to making changes.

Channels not dimming properly.

1. Check System Setup - System Power.
2. Check Dimmer Setup - Channel Mode.

No power from individual channels.

1. Verify channel breaker position.
2. Check Dimmer Setup - Channel Limit.
3. Use Manual Operation to determine if this is actually a DMX/remote control issue.

No response from DMX.

1. Confirm there is a "D" on the display screen.
2. If there is no "D", check for operation of other DMX equipment in the system.
3. Check DMX I/O Setup - Dimmer Channel Assignment.
4. Check DMX settings in the DMX controller.

No Smart Remote operation.

1. Check System Setup - System Mode.
2. Check System Mode - System ID.
3. Check DMX I/O Setup - DMX Remote Lockout.
4. Verify Scene Setup programming.

OWNER MAINTENANCE

FRONT PANEL FUSES: The RA121 has two fuses. The left fuse is 1 amp. The right fuse is 1/4 amp. Both are 250V, 1.25 x .25 inch, fast acting fuses. These fuses provide protection for the internal electronic control circuitry and the fan. They may be replaced **ONLY** by fuses of identical type and size.

There are no user serviceable parts inside the unit.

The best way to prolong the life of your unit is to keep it cool, clean, and dry. It is important that the cooling intake and exit vent holes are clean and unobstructed.

Service by other than Lightronics authorized agents may void your warranty.

OPERATING AND MAINTENANCE ASSISTANCE

If service is required, contact the dealer from whom you purchased the equipment or contact Lightronics, Service Department, 509 Central Drive, Virginia Beach, VA 23454 TEL 757 486 3588.

Lightronics recommends that you record the serial number of your unit for future reference.

SERIAL NUMBER _____

WARRANTY INFORMATION AND REGISTRATION – CLICK LINK BELOW

www.lightronics.com/warranty.html

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RA121 UNIT SPECIFICATIONS

CHANNELS/CAPACITY:	12 @ 1200 watts each
POWER REQUIREMENTS:	120/208VAC three phase, 40 amps each line OR 120/240VAC single phase, 60 amps each line
POWER DEVICES:	One 40 amp Triac/channel
POWER CONNECTOR:	Terminal strip
OUTPUT PANELS:	Edison Plug External Terminal Strip Socapex Patchbay
CHANNEL CIRCUIT BREAKERS:	10 amp magnetic
MINIMUM LOAD:	15 watts per channel
CURVE:	Modified square law
FILTER RISE TIME:	350 usec. minimum
OUTPUT FUNCTION:	DIMMER or NONDIM selectable
CONTROL INPUT:	DMX-512 U.S.I.T.T. standard
FRONT PANEL:	8 character x 2 line LCD display
REMOTE NETWORK (LITNET):	RS-485, 62.5 Kbaud, bidirectional 9 bit network
LOCAL PRESETS:	100 scenes standard, expandable to 255 scenes
CLOSURE INPUT:	8 inputs for single, dual button, or combine stations
REMOTE STATIONS:	Total of 32 remote stations with unique system addresses
MULTIPLE UNITS:	Up to 31 additional units may be added
SIZE:	3.5"H x 19"W x 13"D
WEIGHT:	27 pounds

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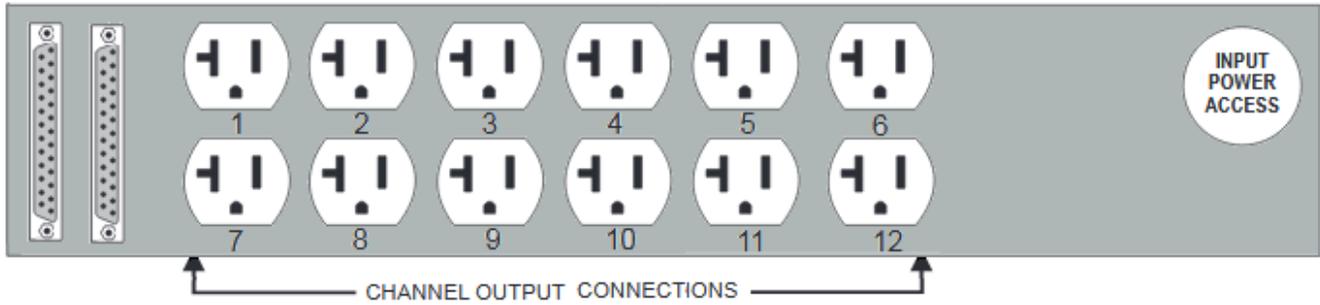
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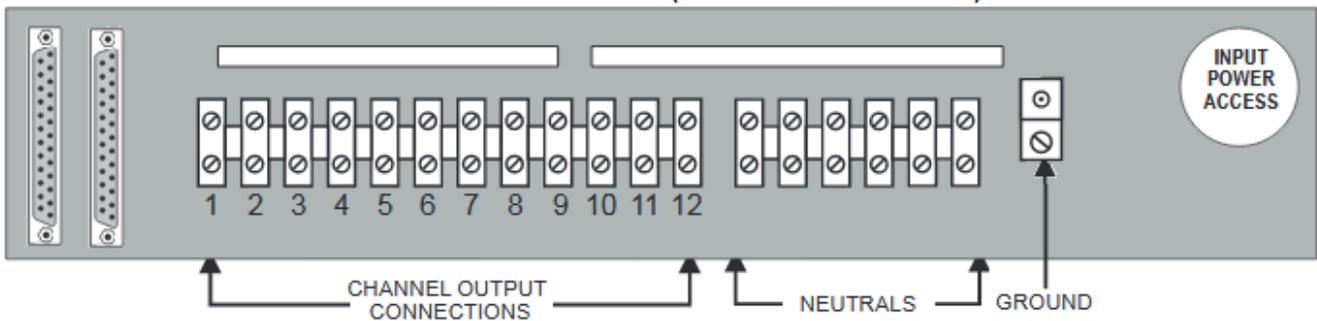
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REAR PANEL OPTIONS

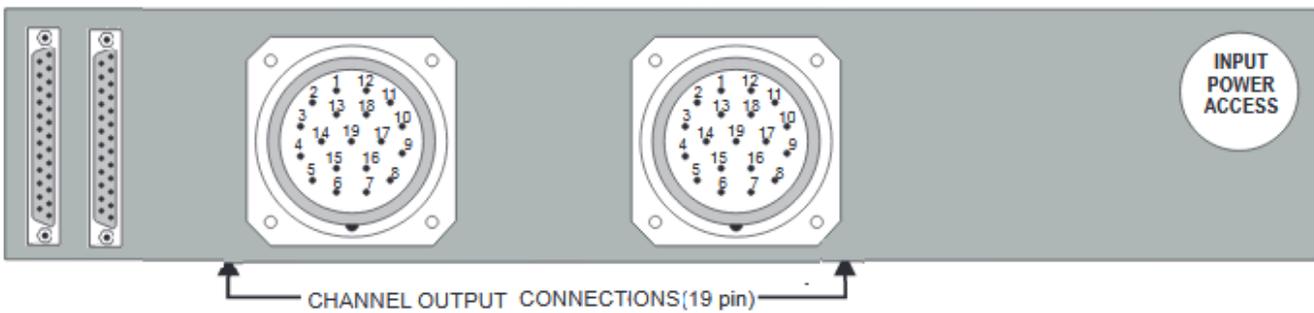
DUPLEX OUTPUT PANEL



EXTERNAL TERMINAL STRIP (includes knockout cover)



SOCAPEX CONNECTOR PANEL



PATCH BAY PANEL

