VARI✳LITE

RIGDIM ENCLOSURE

INSTALLATION & OPERATION GUIDE

120V / 277V

1 PREFACE

ABOUT THIS GUIDE

Read all instructions before installing or using this product. Retain this manual for future reference. Additional product information and descriptions may be found on the product specification sheet.

The document provides installation and operation instructions for the following RigDim Enclosure products:

RigDim Enclsoure

- 53805-111 - 6 module (24ch) RigDim 120V enclosure (incl. UL924)
- 53805-112 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 60A Main Breaker)
- 53805-113 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 100A Main Breaker)
- 53805-114 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 150A Main Breaker)
- 53805-211 - 6 module (24ch) RigDim 120V enclosure (incl. UL924)
- 53805-212 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 60A Main Breaker)
- 53805-213 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 100A Main Breaker)
- 53805-214 - 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 150A Main Breaker)

For complete specifications, refer to .

Please read all instructions before installing or using this product. Retain this guide for future reference.

ADDITIONAL RESOURCES

RigDim Enclosures may be populated with either 120V or 277V modules, but not both.

RigDim Enclosures may be ordered factory configured for UL924 circuits.

120V and 277V modules are not interchangaeble, and must be installed in the appropriate voltage RigDim Enclosure.

Indvidual installation documents are available for each RigDim Relay and Dimming Module.

Manuals may be downloaded at www.vari-lite.com.

ADDITIONAL RESOURCES FOR DMX512

For more information on installing DMX512 control systems, the following publication is available for purchase from the United States Institute for Theatre Technology (USITT), "Recommended Practice for DMX512: A Guide for Users and Installers, 2nd edition" (ISBN: 9780955703522).

USITT Contact Information:

USITT

315 South Crouse Avenue, Suite 200

Syracuse, NY 13210-1844 USA

1-800-938-7488 or 1-315-463-6463

www.usitt.org

WARNINGS AND NOTICES

When using electrical equipment, basic safety precautions should always be followed including the following:

• For indoor, dry locations use only. Do not use outdoors.

• Do not mount near gas or electric heaters.

• Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

• The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition and void warranty.

• Do not use this equipment for other then intended use.

• Refer service to qualified personnel.

• Use 75° C copper wire only! Aluminum wire may not be used.

• Review this document completely before starting the installation.

• You must have access to a main circuit breaker or other power disconnect device before installing any wiring. Be sure that power is disconnected by removing fuses or turning the main circuit breaker off before installation. Installing the device with power on may expose you to dangerous voltage and damage the device. A qualified electrician must perform this installation.

• Refer to National Electrical Code® and local odes for cable specifications. Failure to use proper cable can result in damage to equipment or danger to persons.

• To reduce the risk of fire or shock hazard, do not expose this equipment to rain or moisture.

Compliance:

• Safety: UL 60730, CSA C22.2 60730, EN IEC 60730

• Emergency: UL 924, CSA C22.2 No 141

• EMC: FCC 47CFR 15 Supart B, ICES-003, EN IEC 55032

2 * OVERVIEW

ABOUT RIGDIM ENCLOSURES

RigDim Enclosures are high-performance, wall mounted lighting control panels which offer a wide range of dimming and relay modules to accommodate any lighting control application. All RigDim Enclosures accept any combination or mixture of LED, incandescent, and fluorescent dimming or non-dim modules to fit any project needs.

RigDim Enclsoures IGBT Dimming Modules contain an on-board, intelligent microprocessor that adjusts and maintains proper voltage and current in response to changes detected in the load and electrical service, which serves to extend lamp life. The microprocessor also automatically suppresses surges, and protects against short circuits. IGBT dimmers significantly reduce neutral harmonics and when configured to operate in Low Harm® mode.

INSTALLATION OVERVIEW

The following steps are required to successfully install this product:

Step 1.   Review this document completely before starting the installation.

Step 2.   Unpack and inspect equipment. Compare the equipment you received with your packing list. If these do not match, contact Vari-Lite Customer Service at 1-214-647-7880.

Step 3.   Gather tools. Refer to Tools List below.

Step 4.   Chose an appropriate location for installation. The Lighting Control Panel(s) should be installed in an area of "office" level cleanliness. The room in which it is installed should have sufficient volume to allow exhaust air to circulate and cool. For more details and clearance requirements, refer to Locations and Clearances below.

Step 5.   Plan the wire routings and connection order. Decide where the Feed, Load, and Control wiring will enter the panel(s).

Step 6.   Remove access panels and knock-outs as required for conduit or busway entry. Perform all conduit connections to the panel before it is permanently installed. Be sure to remove all knock-out pieces and debris.

Step 7.   Securely mount the RigDim Enclosure and terminate all Feed, Load, and Control wiring following the directions in this manual. Clean up the work site and RigDim Enclsoure(s).

Step 8.   Contact Vari-Lite when RigDim Enclosure(s) is installed and ready for checkout.

TOOLS LIST

The following is a basic list of tools that may be required for this installation:

- Drill (for mounting holes)
- Pencil
- Wire stripper
- Digital voltmeter/True RMS
- Ratchet and assorted sockets
- Small flat screwdriver
- Hammer (for removing knock-outs)
- Knife
- Heat shrink tubing (if required)
- Adjustable wrench
- Conduit and fittings
- Wire cutter
- Phillips screwdriver

LOCATION AND CLEARANCES

When installing this product, the location site MUST meet the following requirements:

- Wall must be capable of supporting the weight of the fully loaded panel.
- Minimum clear ventilation spacing for side-by-side mounting: 6 inches
- Minimum clear ventilation spacing for mounting next to an adjacent wall: 6 inches
- **All cabinets require 12 inches of clear ventilation space above and below.**
- Do not recess (flush mount) the panel. Panel must be surface mounted to provide proper ventilation.
- Do not hang the panel horizontally. Panel must be installed vertically to provide proper ventilation.
- Indoor Use Only: The unit MUST be installed indoors.
- Dry Locations Only: The unit can only be installed in an "office clean" area that is never exposed to moisture of any kind. Strand Lighting is not responsible for damage to equipment caused by moisture, paint, dust, solvents or cleaning supplies.
- Installation location should have sufficient volume to allow exhaust air to circulate and cool.
- Refer to National Electrical Code® and local codes to determine whether additional requirements must be met.

⚠ **CAUTION**: Enclosures should never be stacked due to thermal requirments.

COMPONENTS

FRONT VIEW

3D VIEW
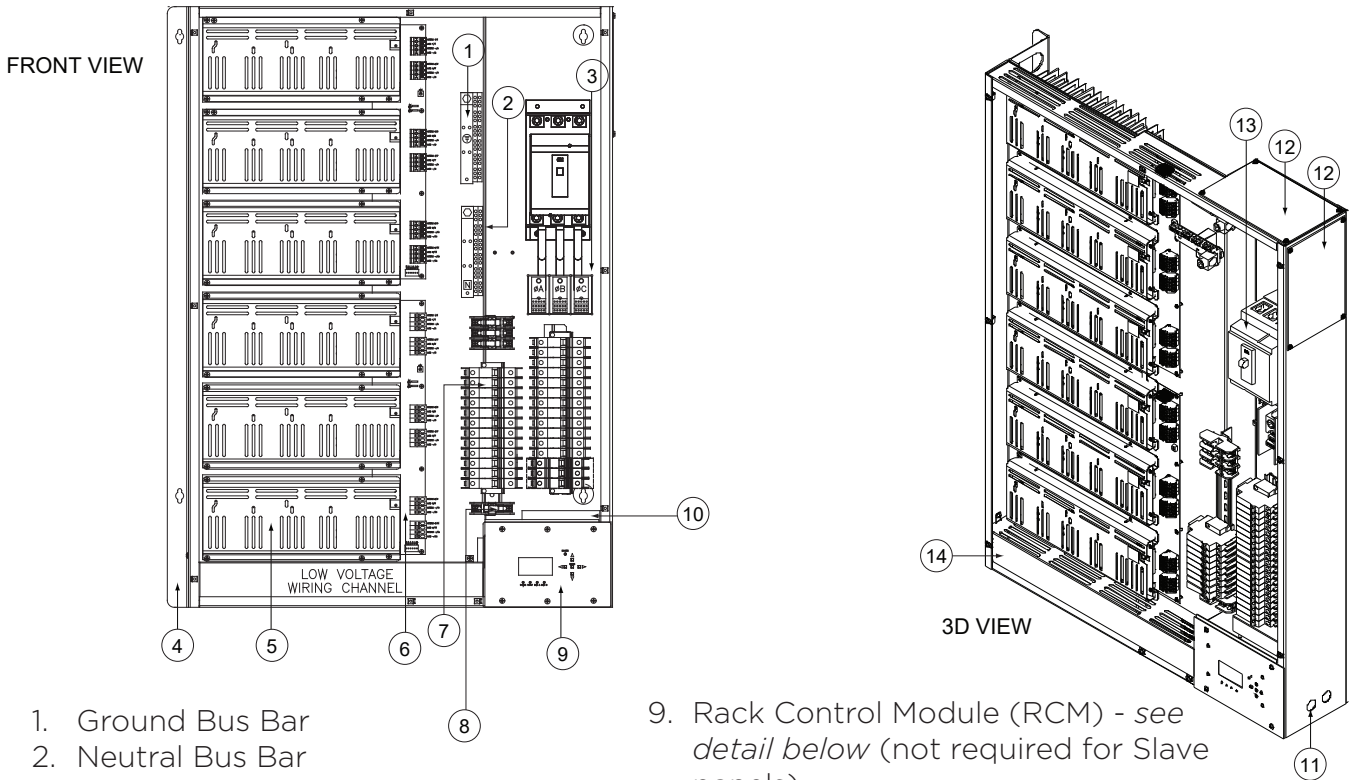
1. Ground Bus Bar
2. Neutral Bus Bar
3. Main Feed Terminal Block
4. Mounting Bracket
5. Dimmer Module - *see detail below*
6. Backplane PCB
7. Circuit Breakers
8. Power Supply Fuse

9. Rack Control Module (RCM) - *see detail below* (not required for Slave panels)
10. Power Supply
11. Knockouts (for low voltage control wiring)
12. Removable Panels (for feed and load wiring)
13. Main Circuit Breaker (optional)
14. Control Cable Wireway (low-voltage)

Dimmer Module (typical)

3D VIEW   BACK VIEW
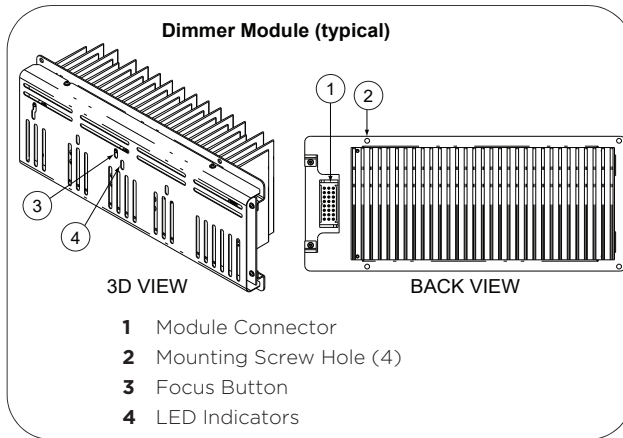
1 Module Connector
2 Mounting Screw Hole (4)
3 Focus Button
4 LED Indicators

Rack Control Module (RCM)
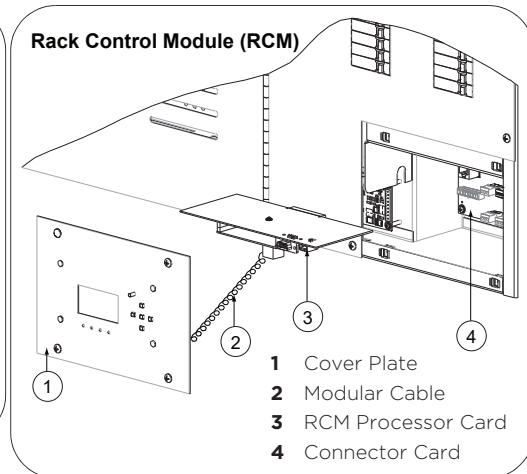
1 Cover Plate
2 Modular Cable
3 RCM Processor Card
4 Connector Card

FIGURE 1.   RIGDIM OVERVIEW

3 INSTALLATION

MOUNTING THE PANEL

RigDim Enclosures are intended for wall mounting for un-obstructed, natural convection cooling.

To mount panel:

Step 1.   Determine position and spacing for RigDim Enclosure. Refer to **Location and Clearances on page 5** and **Appendix B Specifications on page 28**.

Step 2.   Ensure that wall is capable of supporting the weight of the enclosure.

Step 3.   Remove front cover.

Step 4.   Mark hole placement on wall.

Step 5.   Using four 1/4" bolts (not included), secure enclosure in place.
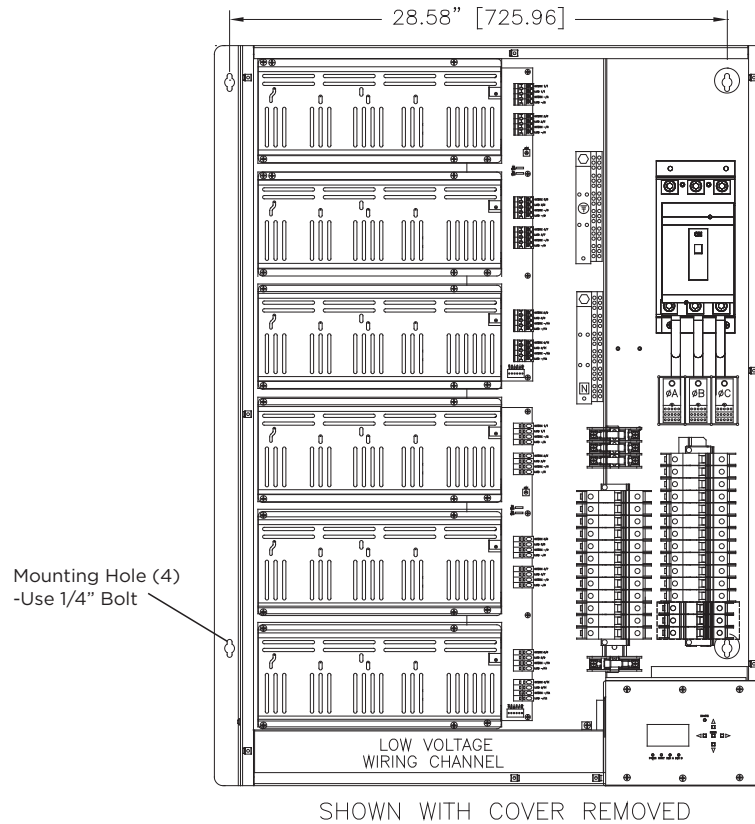
Step 6.   Repeat for all other enclosures.

FIGURE 2.   PANEL MOUNTING HOLES

CONNECTING LINE POWER WIRING

⚠️ **WARNING**: You must have access to a main circuit breaker or other power disconnect device before installing any wiring. Be sure that power is disconnected by removing fuses or turning the main circuit breaker off before installation. Installing the device with power on may expose you to dangerous voltage and damage the device. A qualified electrician must perform this installation.

WARNING: Refer to National Electrical Code® and local codes for cable specifications. Failure to use proper cable can result in damage to equipment or danger to persons.

CAUTION: Wire openings MUST have fittings or lining to protect wires/cables from damage. Use 90° C copper wire only! Aluminum wire may not be used.

CAUTION: Use a separate wire for each neutral. **DO NOT use common neutrals.**

CAUTION: Failure to use the proper torque when tightening the set screws will cause premature failure of the equipment!

To connect feed wiring:

Step 1. Disconnect main power to RigDim Enclosure.

Step 2. Route FEED wires from power source to top or side of panel. (Feed wires connot be fed through bottom of unit.)

Step 3. Remove wire access panel(s) as required.

Step 4. Install conduit fittings or insert lining materials in the access panel opening.

Step 5. Replace wire access panel if using conduit.

Step 6. Pull feed cables through prepared openings.

Step 7. Strip 1-3/8 inches of insulation from end of each cable.

Step 8. Strip 7/16 inch of insulation and connect Phase, Neutral, and Ground wires to appropriate terminals. (Line connections are labled A, B and C.)

Step 9. Tighten main lug set screws to poper torque termination as shown in the table below:

TERMINAL	TIGHTENING TORQUE
Neutral Bus	350kcmil - #6 AWG Torque @ 275 in-lbs #4-14 AWG Torque @ 45 in-lbs
Ground Bus	350kcmil - #6 AWG Torque @ 275 in-lbs #4-14 AWG Torque @ 45 in-lbs
Power Distribution Block	375kcmil - #6 AWG Torque @ 275 in-lbs #10-14 AWG Torque @ 15 in-lbs

Step 10. Remove all knockout pieces and debris.

Note: Refer to Figure 4 for complete feed wiring diagram.

Removable panels may be punched
for FEED and LOAD wiring

Knockouts provided for low
voltage CONTROL wiring

FIGURE 3.   WIRING INPUTS

Feed wiring on terminals for RigDim are wired for Quad. Dual modules may be installed as well.

NEUTRAL

GROUND

øA
øB
øC

120/208V 3-Phase 4-Wire & Ground Feed (120V Panels & Modules), *or*

277/480 3-Phase 4-Wire & Ground Feed (277V Panels & Modules)

Mod 1

Mod 2

Mod 3

Quad slot equipped with four circuit breakers to accommodate four circuit relay or dimmer module.

120V Panel Color Code:

A Phase - Black
B Phase - Red
C Phase - Blue

Neutral - White
Ground - Green

277V Panel Color Code:

A Phase - Brown
B Phase - Orange
C Phase - Yellow

Neutral - Gray
Ground - Green

Mod 4

Mod 5

Mod 6

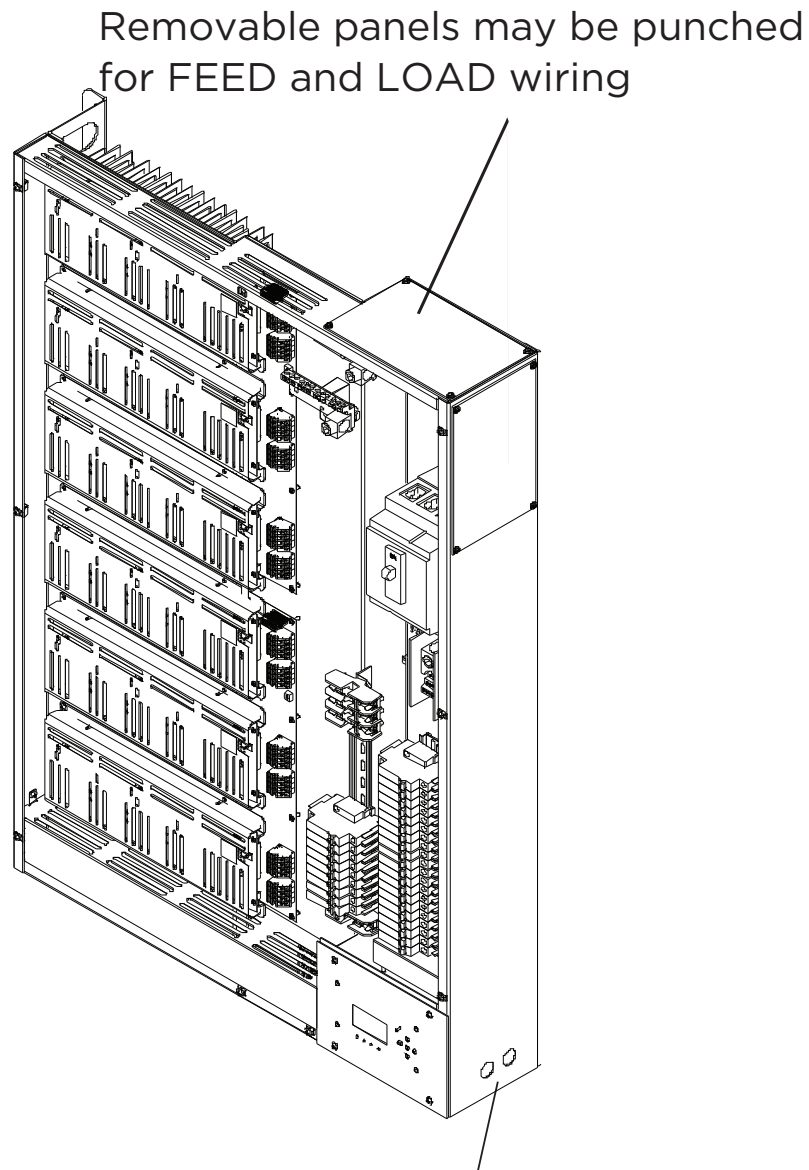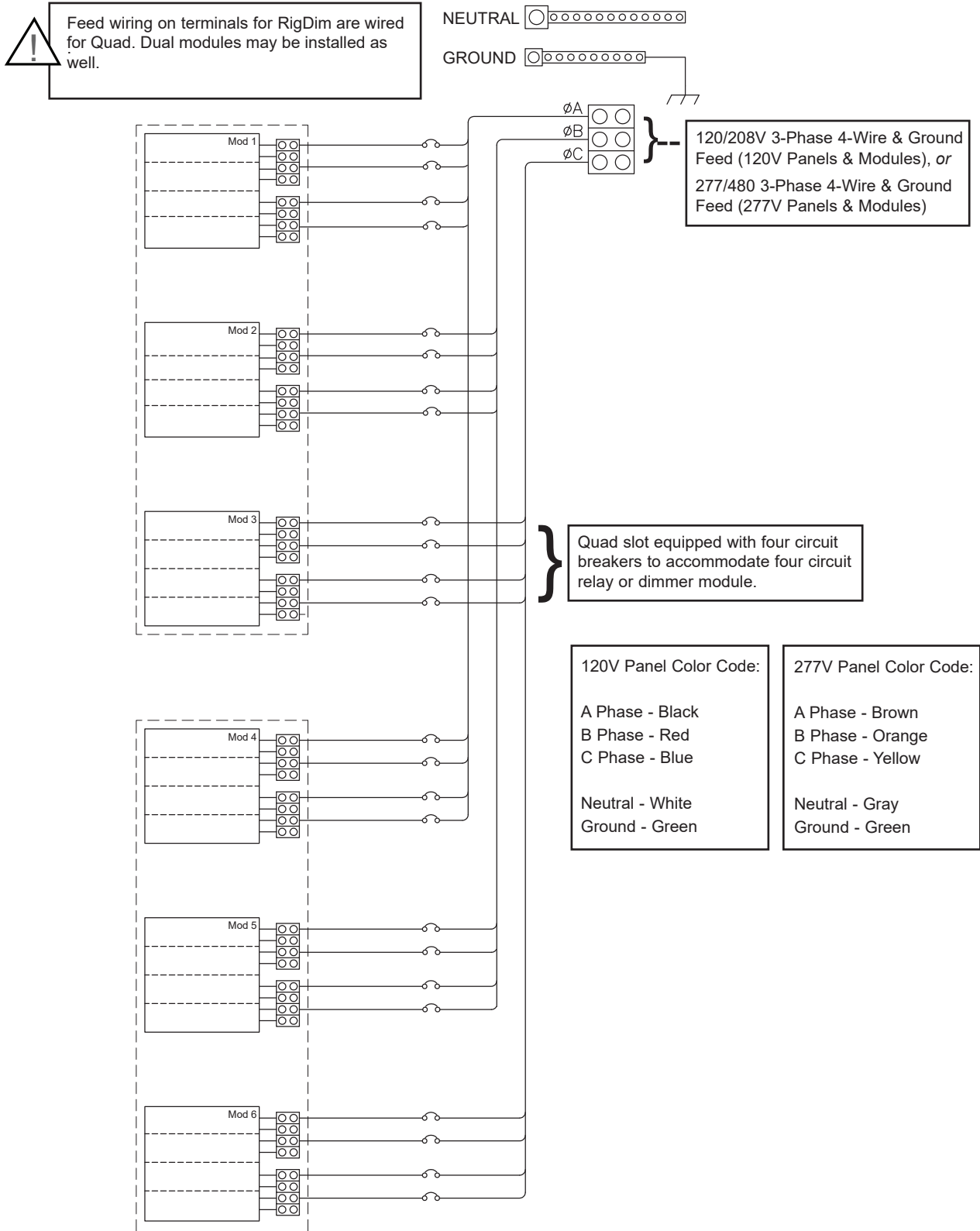**FIGURE 4.   FEED WIRING DIAGRAM**

INSTALLING DIMMER MODULES

Any combination of RigDim dimming and relay modules may be installed in the Enclosure. RigDim enclosures may be populated with either 120V or 277V Dimmer Modules, but not both. Blank covers (53805-041) MUST be installed in any unused spaces.

Note: If Dimmer Modules were not included with the initial installation package, proceed directly to Load Wiring section. Dimmer Modules may be installed at a later time.

The RigDim Enclosure has been shipped from the factory with shorting plugs installed on all circuits. These shorting plugs are located in the load connection terminal blocks (the shorting plug is the red tab protruding from the green terminal block). The shorting plugs allow circuits to be energized by operating the associated circuit breaker, even if a dimmer module has not been installed.

For proper operation of the RigDim Dimmer Modules, shorting plugs must be removed prior to use.

To remove a shorting plug:

Step 1.   Disconnect main power to RigDim Enclosure.

Step 2.   Open the dimmer module side of the panel's front cover.

Step 3.   Identify the circuits that will require removal of the shorting plug.

Step 4.   Firmly grasp the exposed red tab of the shorting plug. **FIGURE 5. Installing modules and blank covers on page 11.**

Step 5.   Gently pull on the tab of the shorting plug.

Step 6.   It is recommended that all shorting plugs be saved for future use. (In the event service is needed on any module, the jumper can be re-installed to provide constant power to the load circuit.

Step 7.   Close panel cover.

Step 8.   Engergize panel.

Note: Shorting plugs may be left in all empty dimmer slots and may be used as constant current circuits within the approved current rating of the circuit breaker.

FIGURE 5.   INSTALLING MODULES AND BLANK COVERS

To install modules:

Step 1.   Unpack module and properly recycle or discard pachaging materials. (Be sure to keep the instructions sheet for future use.)

Step 2.   Disconnect main power to RigDim Enclosure.

Step 3.   Open the dimmer module side of the panel's front cover.

Step 4.   Determine proper mounting locations for the Dimmer Module. When possible, lower modules should be installed first.

Step 5.   If present, remove blank cover (53805-041) from location where module is to be installed. **FIGURE 5. Installing modules and blank covers on page 11.**

Step 6.   Gently insert module into lighting control panel, heatsink first. Secure module using four screws (provided).

Step 7.   **For Mark 0-10V dimmer modules only**: Connect violet/grey control wire to screw terminal on module. (Circuit #1 on module will be top screw.) Tighten screw to a torque of 5 in-lbs.
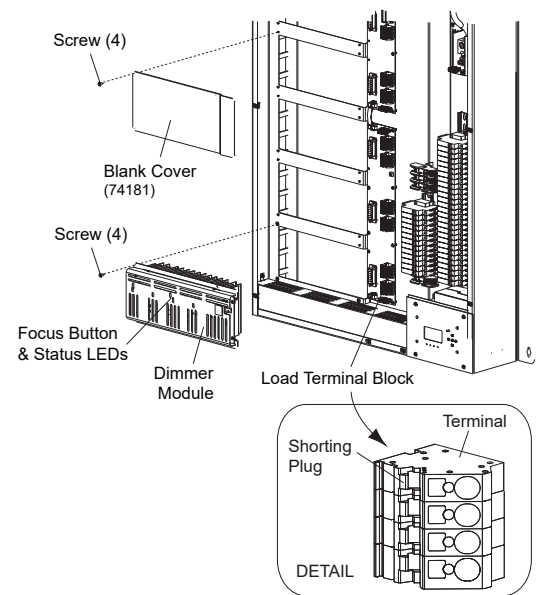
Step 8.   Close panel cover.

LOAD WIRING

WARNING: You must have access to a main circuit breaker or other power disconnect device before installin any wiring. Be sure that power is disconnected by removing fuses or turning the main circuit breaker off before installation. Installing the device with power on may expose you to dangerous voltage and damage the device. A qualified electrician must perform this installation.

WARNING: Refer to National Electrical Code® and local codes for cable specifications. Failure to use proper cable can result in damage to equipment or danger to persons.

CAUTION: Wire openings MUST have fittings or lining to protect wires/cables from damage. Use 90° C copper wire only! Aluminum wire may not be used.

CAUTION: Use a separate wire for each neutral. DO NOT use common neutrals.

CAUTION: Failure to use the proper torque when tightening the set screws will cause premature failure of the equipment!

The RigDim Enclosure will need to be wired for the Load circuits. Use #10 AWG Solid Core or #12 AWG Stranded Core Max.

To connect load wiring:

Step 1.   Disconnect main power to RigDim Enclosure.

Step 2.   Route all LOAD wiring to side of panel. (Load wires cannot be fed through bottom of unit.)

Step 3.   As required, remove wiring covers or knockout holes to accommodate wiring. **FIGURE 3. Wiring inputs on page 9**

Step 4.   Route LOAD GROUND wires, if any, to Ground Bus. Strip 7/16 inch of insulation and terminate using torque values as shown in the table below.

Step 5.   Separate LOAD NEUTRAL wires and route to Neutral Bus **FIGURE 1. Rigdim overview on page 6**. Strip 7/16 inch of insulation and terminate using torque values as shown in the table.

Step 6.   Route LOAD HOT wires to their individual terminals located on the Backplane PCB (**FIGURE 6. Backplane load Wiring Terminals on page 12**). Strip 7/16 inch of insulation and terminate in spring-cage terminals using small flat screwdriver (no torque setting required).

CAUTION: Do not attempt to "push" load wires into spring-cage terminals without first inserting the screwdriver into the appropriate slot (**FIGURE 6. Backplane load Wiring Terminals on page 12**). Failure to install load wires as directed may damage the spring-cage connector, and may void manufacturers warranty!

TERMINAL	TIGHTENING TORQUE
Neutral Bus	#4-14 Torque @ 45 in-lbs
Ground Bus	#4-14 Torque @ 45 in-lbs
Backplane PCB	Spring-Cage Connection (no torque required)

Wire (Solid or Stranded)

Screwdriver

FIGURE 6.   BACKPLANE LOAD WIRING TERMINALS

0-10V

Quad Module

BREAKER A
LOAD A (CONTRACTOR WIRING)
BREAKER B
LOAD B (CONTRACTOR WIRING)

BREAKER C
LOAD C (CONTRACTOR WIRING)
BREAKER D
LOAD D (CONTRACTOR WIRING)

Dual Module

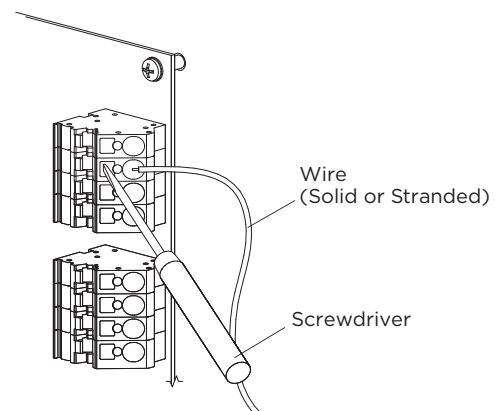BREAKER A
LOAD A (CONTRACTOR WIRING)
N/A
N/A

BREAKER B
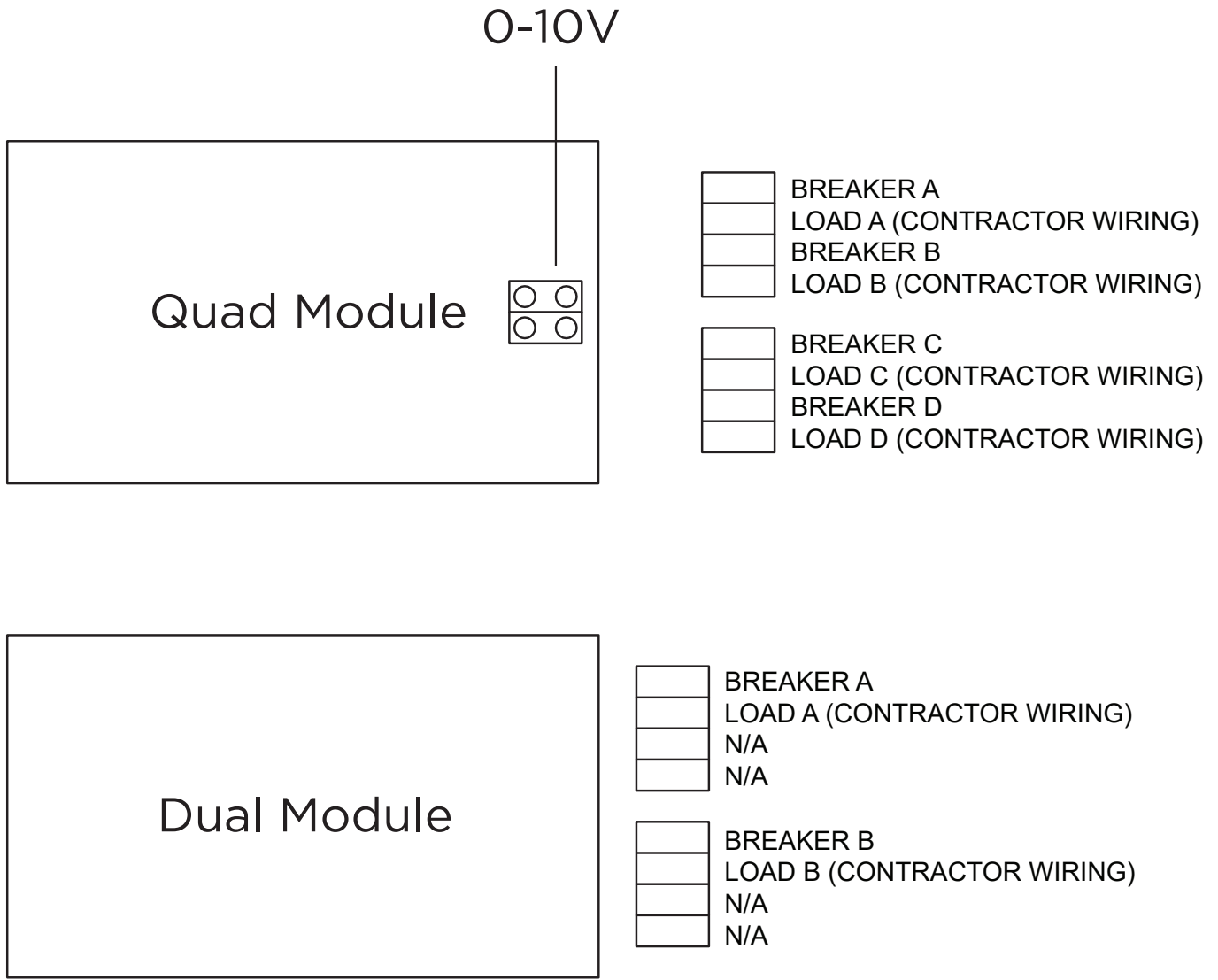LOAD B (CONTRACTOR WIRING)
N/A
N/A

FIGURE 7.   MODULE LOAD WIRING

CONTROL WIRING

RigDim Enclosures may be controlled by the following methods:

- DMX512
- Vision.net
- Optional ShowNet Ethernet (10/100BaseT)
- Auxiliary inputs: Panic Control Module (RCM)

For approved wire types per control method, refer to **Appendix A standard wiring on page 25**

Each RigDim Enclosure contains a Control PCB for connection of control wiring. The Control PCB also contains jumpers for termination of DMX512 signal and connection to Slave panels**.**

To connect control wiring:

Step 1.   Route control wiring from source to side of RigDim Enclosure.

Step 2.   Remove knockout(s) as required. See **FIGURE 1. Rigdim overview on page 6**

Step 3.   Install conduit fittings or insert lining materials in the knockout opening.

Step 4.   Pull control wiring through prepared openings.

CAUTION: Wire openings must have fittings or linnings to protect wire and cable insulation.

Step 5.   Prepare cabling as shown in **Appendix A standard wiring on page 25**

Step 6.   Connect wiring to appropriate location on Control PCB.

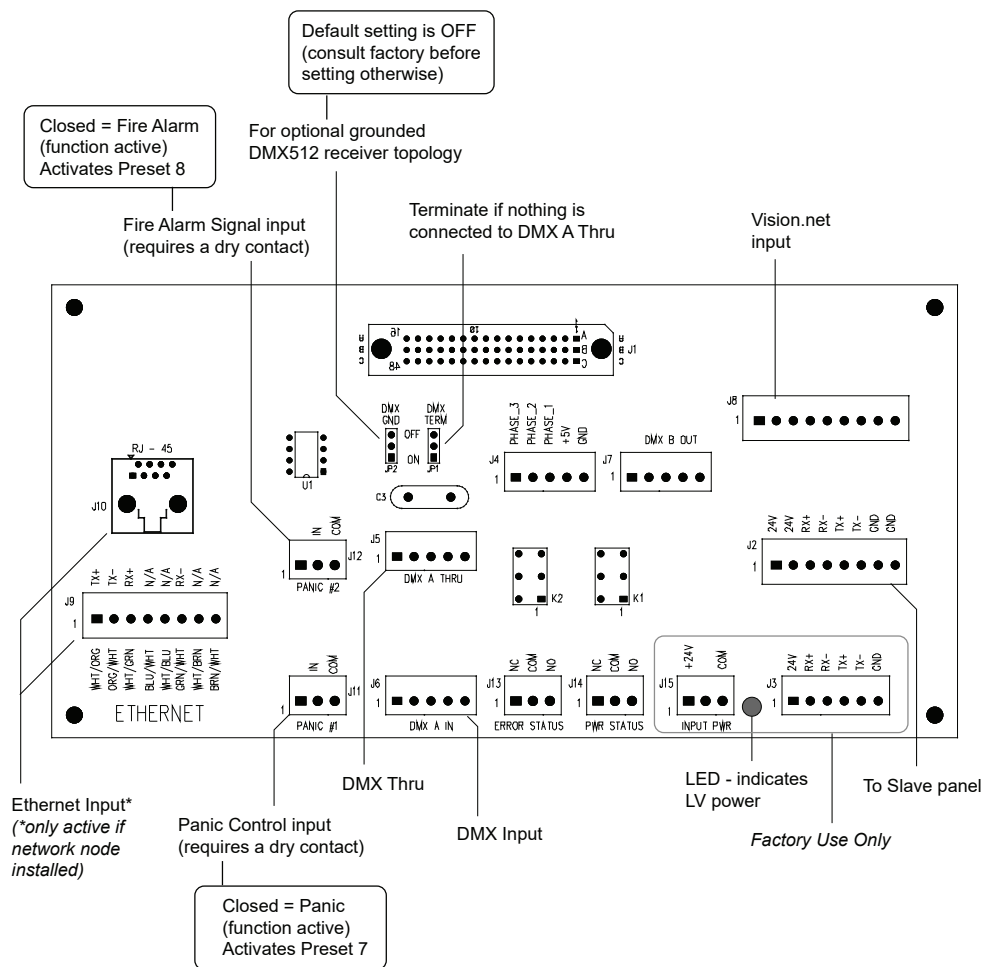Step 7.   Set DMX A Thru termination jumper as required.

FIGURE 8.   CONTROL PCB

NOTE: Refer to **Appendix A standard wiring on page 25** for complete control wiring pin-out and termination requirements.

INSTALLING RACK CONTROL MODULE

NOTE: Not required for slave enclosures.

RigDim Enclosures are controlled by the RigDim Rack Control Module (RCM).

To install RDM:

Step 1.   At required panel, remove control module cover plate by removing four screws. (**Figure 9)**.

Step 2.   Install RCM.

Step 3.   Connect modular cable from RCM board to display board on cover plate.

Step 4.   Re-install head-end cover plate and secure with four screws.

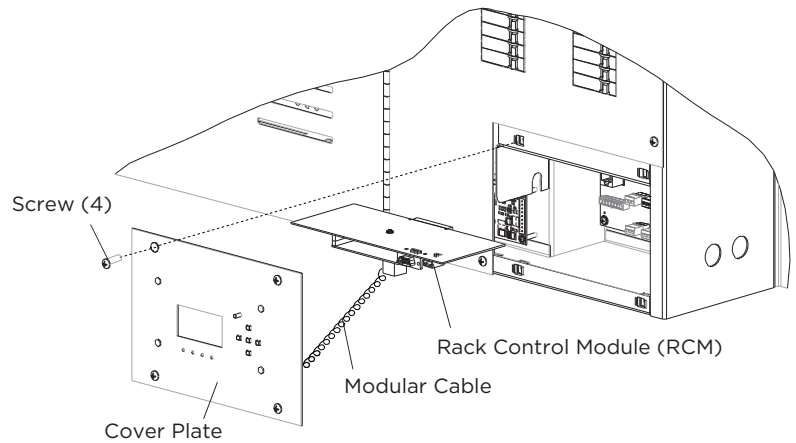**Note:** Slave Cabinets do not require an RCM to be installed.

Screw (4)

Rack Control Module (RCM)

Modular Cable

Cover Plate

FIGURE 9.   INSTALLING RACK CONTROL MODULE

ADDRESSING/CONFIGURING THE BACKPLANES

Note: Backplane PCBs are pre-configured for your application at the factory. This information is included as reference only in the event a Backplane PCB requires re-configuration or changing in the future.

RigDim Dimmer Modules are connected to a Backplane PCB(s), which is pre-installed in the panel. Each Backplane PCB accommodates up to three module connections. Depending on your dimming system, there may be up to 16, three-module Backplane PCBs connected together, and cannot contain more than 96 dimmers (Dual Dimmer Module = 2 dimmers; Quad Dimmer Module = 4 dimmers) total when panels are used in a Master/Slave configuration. Before any dimmer modules are installed, it will be necessary to address the Backplane PCB(s).

- Each Backplane has a rotary switch that is used to set the Backplane's address (0-15).
- Each Backplane has a set of jumpers that allow it to be configured as a Dual or a Quad Backplane. Set to Dual only if all dimmer modules to be connected to the backplane are Dual dimmers.
- Each Backplane also has a termination header. The termination is set to Term only on the first and last Backplane (all others are set to Thru).

The first Backplane is the top Backplane in the cabinet that contains the A21 Rack Control Module (RCM). The Backplanes will be addressed from top to bottom in the first cabinet. If another slave cabinet (no RCM) is to be added, continue the addressing from top to bottom as well. Continue this method of addressing until the last Backplane in the last cabinet is connected. Slave cabinets are connected to the first cabinet and to additional slave cabinets using an 8-conductor (CAT5e UTP) cable, no longer than 1000 feet system wide.

To address/configure Backplanes:

First Backplane:

Step 1.   Set rotary switch of first Backplane to 0. (Refer to Figure 10.)

Step 2.   Set Backplane configuration jumper to either Dual or Quad.

Step 3.   If final backplane, set Termination jumper to Term.

         If additional backplanes, set to Thru and continue below.

Next Backplane:

Step 1.   a) If previous Backplane is set to Dual, then set rotary switch on this Backplane to the previous Backplane's setting plus 1. Example: If previous setting was 0, then set this switch to 1.

         b) If previous Backplane is set to Quad, then set rotary switch on this Backplane to previous Backplane's setting plus 2. Example: If previous setting was 0, then set this switch to 2.

Step 2.   Set Backplane configuration jumper to either Dual or Quad.

Step 3.   If this is not the last Backplane to be configured, then set Termination jumpers to Thru. If this is the last Backplane to be configured, then set the Termination jumpers to Term.

Step 4.   Repeat the above 3 steps for all Backplanes.

Quad/Dual Jumper

Rotary Switch (Cabinet #)

Thru/Term Jumper

FIGURE 10.   **BACKPLANE PCB**

R2

JP2

TERM   THRU

TERMINATION

R1

THRU - NOT final backplane

R2

JP2

TERM   THRU

TERMINATION

R1

TERM - Final Backplane

R2

JP2

TERM   THRU

TERMINATION

R1

INCORRECT PLACEMENT
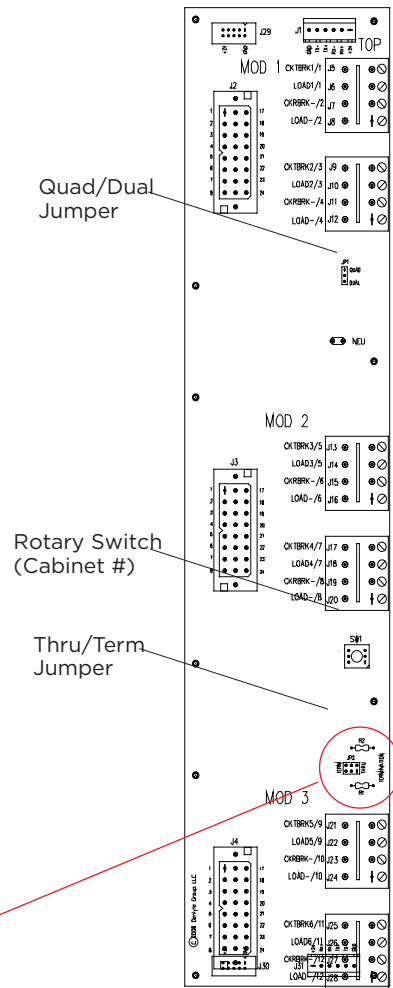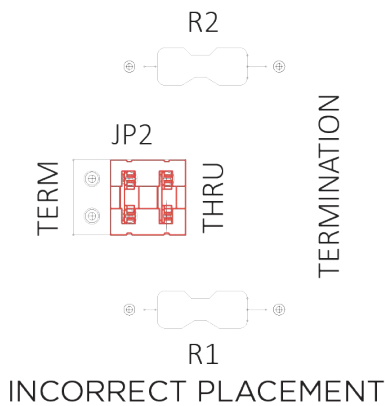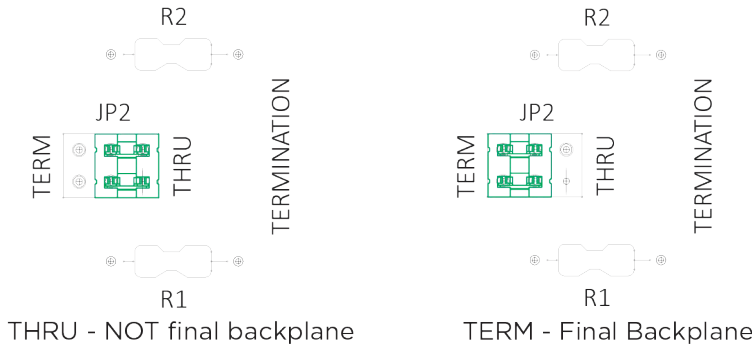
NOTE - jumpers should be installed in a horizontal position for either TERM or THRU. They should never be installed in the vertical position (in relation to the cabinet).

4 CONFIGURATION USING RCM LCD MENU

OVERVIEW

The RigDim Enclosure can be configured directly at the Rack Control Module (RCM) using the built-in LCD Menu.

Please note that while the built in LCD menu will display all system status information, it provides only basic configuration capabilities. Dimmer.net software provides an advanced interface for configuring RigDim Enclosure options. Where applicable, refer to the Dimmer.net manual for full explanations of each configuration option. Dimmer.net software and manuals may be downloaded at www.vari-lite.com.

MENU OPERATION

The RCM LCD Menu provides local control for accessing all system status information and for making a limited amount of configuration changes to that particular RCM. (If there are multiple RCMs in the system, changes would need to be made at each RCM.)

Upon power up, the LCD Menu will display the logo followed by the current RCM software version and RCM name. After briefly displaying this information, the MAIN MENU will appear.

Note: To return to the power up screen after boot up, press the [Escape] button.

Escape Button -
Backs up one menu level.

Right/Left/Up/Down Buttons
Navigates menu system.

Menu

ESCAPE

Arrow Indicator -
Indicates menu can be
scrolled to view more
choices.

MAIN MENU:
↓ System Status
Dimmer Status
Select Local Preset
Menu Configuration
System Configuration

POWER   FAULT   DMX A   DMX B

Status LEDs
(refer to Troubleshooting section)

Enter Button -
Accesses details, activates a field, or
enters a setting, depending on current menu.
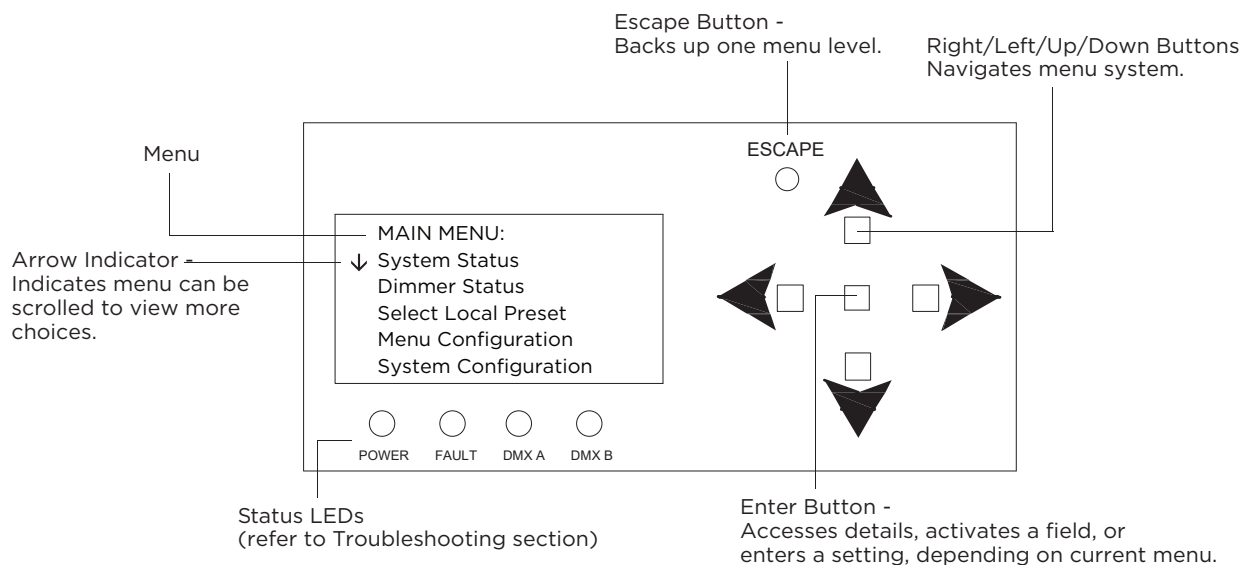
FIGURE 11.   LCD MENU

LCD MENU SYSTEM

The Head-End Processor LCD Display Menu system consists of eight main categories. To navigate the menus, press the four navigation buttons as required (Figure 11). When the desired menu is reached, press [Enter] to display the menu options. Use navigation and [Enter] buttons to view status and configure the LCD Menu as required.

LCD Menu Structure

MAIN MENU

- System Status (SYSTEM STATUS)
- Dimmer Status (DIMMER STATUS)
- Sel ect Local Preset (SELECT PRESET)
- Menu Conf iguration (MENU CONFIG)
- System Configurat ion (SYSTEM CONFIG)
- Dimmer Options Config (DIMMER OPTIONS)
- Dimmer Input Config (DIMMER INPUT)
- Dimmer Presets Config (EDIT PRESETS)

MAIN MENU:
↓ System Status
  Dimmer Status
  Select Local Preset
  Menu Configuration
  System Configuration

SYSTEM STATUS (status information shown, no user-selectable options)

Sub Menu	Options	Comments
Type	N/A	Displays product type
Dimmer Status	N/A	Displays either OK (no errors) or Errors
Dimmer Present	N/A	Displays the number of dimmers in the dimmer cabinet
Dimmers with Errors	N/A	Displays the number of dimmers with errors
Firmware	N/A	Displays Processor's current firmware version as: 86- **XXXX** ν**X.XX**

DIMMER STATUS (status information shown, no user-selectable options)

Sub Menu	Options	Comments
Slot	N/A	Displays dimmer information being viewed (and its DMX512 address)
Level	N/A	Displays dimmer's current operational level (in percentage)
TMP	N/A	Displays current temperature of dimmer (displayed in both C and F)
Line	N/A	Displays input line voltage (in VAC)
Load	N/A	Displays connected load to dimmer (displayed in watts)
Status	N/A	Status of dimmer Normal, Non-Dim, or Breaker Off? (if no power to dimmer)
Errors	N/A	Displays if the dimmer is experiencing any errors
Mod	N/A	Displays module type
Version	N/A	Displays dimmer's firmware version

If [Enter] button is pressed, the following fields change in Dimmer Status as follows:

Level	N/A	[0] to [255]
Status	N/A	[00] Config: [XX]
Errors	N/A	[00] Panel: [XX]

Continued next page

LCD Menu Structure (continued)

Continued from previous page

SELECT PRESET

Sub Menu	Options	Comments
Select a Preset	**None / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8**	**Manually selects a preset via the unit's processor (as in testing processor communication and dimmer operation)**

MENU CONFIG

Sub Menu	Options	Comments
Backlight On (min) *(in minutes)*	**Always (always on) / 1 to 60 minutes (in 1 minute increments)**	**Sets the amount of time the unit's processor LCD display backlight is on after the last button press**
LED ON (MIN)	**Always (always on) / 1 to 60 minutes (in 1 minute increments)**	**Set the amount of time the status LEDs flash during operation. The Power LED normally flashes (as a heartbeat) when set to Always. When the option is set to a specific time, the LED will only flash in the time increment (e.g., every five minutes).**
Display Contrast (%)	**0 to 100% (in 1% increments)**	**Sets the contrast level of the LCD Display**

SYSTEM CONFIG

Sub Menu	Options	Comments
DMX A	**Enabled / Disabled**	**Enables or disables the DMX A port**
DMX B (Pathport)	**Enabled / Disabled**	**Enables or disables the DMX B port**
Vision.net Network	**Enabled / Disabled**	**Enables or disables the Vision.net Network port**
Vision.net Station ID	**Off / 1 thru 255**	**Sets Vision.net Station ID for the unit**
DMX Hold (hh:mm) *(in hours:mins)*	**None / 0:01 / 0:05 / 0:10 / 0:15 / 1:00 / 2:00 / 4:00 / 12:00**	**Sets the amount of time the dimmer cabinet will keep and adhere to the last DMX512 levels**
Power-up Preset	**None / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8**	**Sets what preset the dimmers go to when dimmer cabinet is initially powered**
Power-up Hold	**Forever / 0:01 / 0:05 / 0:10 / 0:15 / 1:00 / 2:00 / 4:00 / 12:00 / 24:00**	**Sets the amount of time the dimmers will go and stay at the preset level (if set) when the dimmer cabinet is initially powered. Will follow DMX512 commands at anytime.**
Preset Clear	**None / DMX**	**Sets how Presets are cleared either never or via DMX512**
Config Port	**Ethernet / RS232**	**Sets configuration port to Ethernet or RS232 input**
Panic Inputs	**Normally Open / Normally Closed**	**Sets panic inputs to open or closed**

LCD Menu Structure (continued)

DIMMER OPTIONS

Sub Menu	Options	Comments
Slot	N/A	Displays dimmer (1 through X) for the dimmer to be configured, and its DMX512 address (DMX XXX)
Mode	RPC (Reverse Phase Control) / FPC (Forward Phase Control) / Non-Dim / LED - RPC, LED-FPC	Sets dimmer operation. Also allows user to set the dimmer to Non-Dim operation (as a On or Off device). LED mode is for line voltage LED fixtures that require locked reverse phase control dimming (set at 400μS).
Non-Dim%	0 to 100%	When dimmer is in non-dim mode, this option sets the dimmer's threshold level (selection 0 to 100%). Levels below this will turn the dimmer off and levels equal to or above this percentage will turn them on.
Voltage at Full (VAC)	100 / 110 / 115 / 120	Sets dimmer operational voltage. Using a lower voltage than lamp specification can prolong lamp life.
Transition (μS) *(in microseconds)*	400 / AUTO*	Options available (in both FPC and RPC) are either 400μS (set) or AUTO (automatically and continuously adjusts between 400μS to 800μS)
	*Note, when "LED" option is selected in "Mode", the dimmer is set to 400 μS and cannot be changed to AUTO.	
Response (ms) *(in milliseconds)*	N/A	Sets response time in milliseconds
Dimmer Curve	Linear / Square Law / Invert / Slow Bottom / Fast Bottom / Fast Top / Full at 1 / Out at 100 / Preheat 5% / Preheat 10% / Hot Patch / Adv Mark 10 (Advance Mark 10 fluorescent ballasts)	Sets dimmer curve (dimming operation) for each dimmer in the dimmer cabinet
High Trim	1 to 100%	Sets the top end of the dimmer operational limit
Low Trim	0 to 99%	Sets the low end of the dimmer operational limit
Always On	Yes or No	If set to "Yes", then the dimmer stays on to the Low Trim setting.
Preheat	Yes or No	Allows dimmer to be set to preheat mode. Normally preheat mode is used to "speed up" large wattage lamps so they behave more like smaller ones

LCD Menu Structure (continued)

Continued from previous page

DIMMER INPUT

Sub Menu	Options	Comments
Dimmer	N/A	Dimmer number
DMX A	N/A	Dimmer number specified for DMX A
DMX B (Ethernet)	N/A	Dimmer number specified for DMX B
Room	N/A	Room number
Channel	N/A	Channel number
DMX A Priority	None / Primary / Fallback	Sets priority level for DMX A
DMX B Priority	None / Primary / Fallback	Sets priority level for DMX B
Present Priority	None / Primary / Fallback	Sets priority level for Present

EDIT PRESETS

Sub Menu	Options	Comments
Dimmer	N/A	Set dimmer number
Slot	N/A	Displays dimmer (1 through X) for the dimmer to be configured (and its DMX512 address)
Preset	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8	Selects the preset to be programmed
Level (%)	0 to 100% (in 1% increments)	Selects the preset level of the dimmers (each dimmer is individually programmable)
Dimmer Set	One / All / Capture (Yes / No)* * Next selection is "Capture ALL Dimmers? (Yes / No)	Allows users to set preset to one or all dimmers (at the same time) or Capture (snapshot) a look from all dimmers

5 TROUBLESHOOTING

STATUS INDICATORS

LED status indicators located at the Head-End Processor provide feedback for power input, control input, and error conditions.
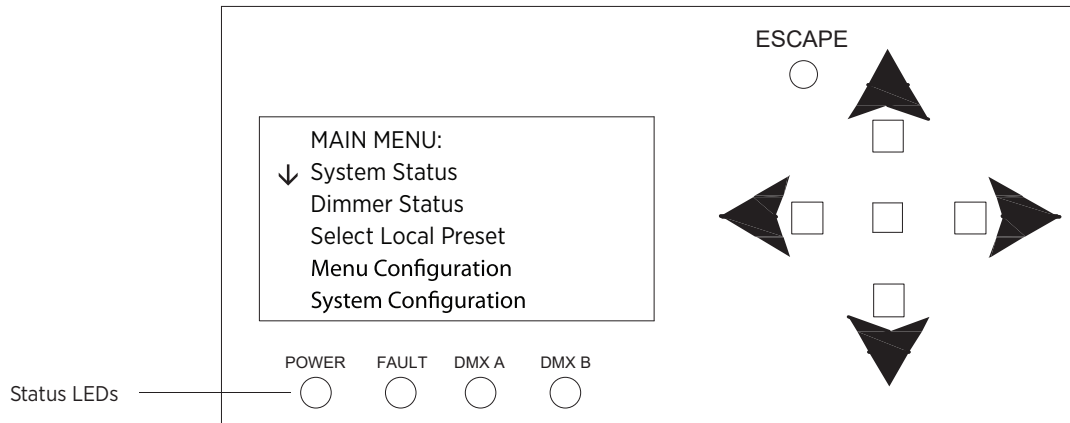
FIGURE 12.   HEAD-END PROCESSOR

The status indications are as follows:

LED	CONDITION	MEANING
POWER	Flashing Green	Indicates power is active to the Rack Control Module (RDM). Fast flash indicates Vision.net command has been received. It will return to a steady blink after completion of Vision.net command.
FAULT	Flashing or Steady Red	Indicates an error condition in the cabinet. If illuminated, remove power to the panel, wait 15 seconds, and re-energize panel. If error condition persists, please contact Vari-Lite Technical Support.
DMX A	Illuminating Yellow	Indicates presence of DMX512 control signal on DMX Input A
DMX B	Illuminating Yellow	Indicates presence of DMX512 control signal on DMX Input B (if Network Node installed.

TROUBLESHOOTING PROCEDURES

To physically examine the system:

Step 1.   Check LEDs at front of RCM. (Refer to **FIGURE 11. LCD Menu on page 17**)

Step 2.   At main circuit breaker(s), check for tripped circuits.

Step 3.   Disconnect power to the system.

Step 4.   Check for damaged or loose control and/or load connections.

To further troubleshoot:

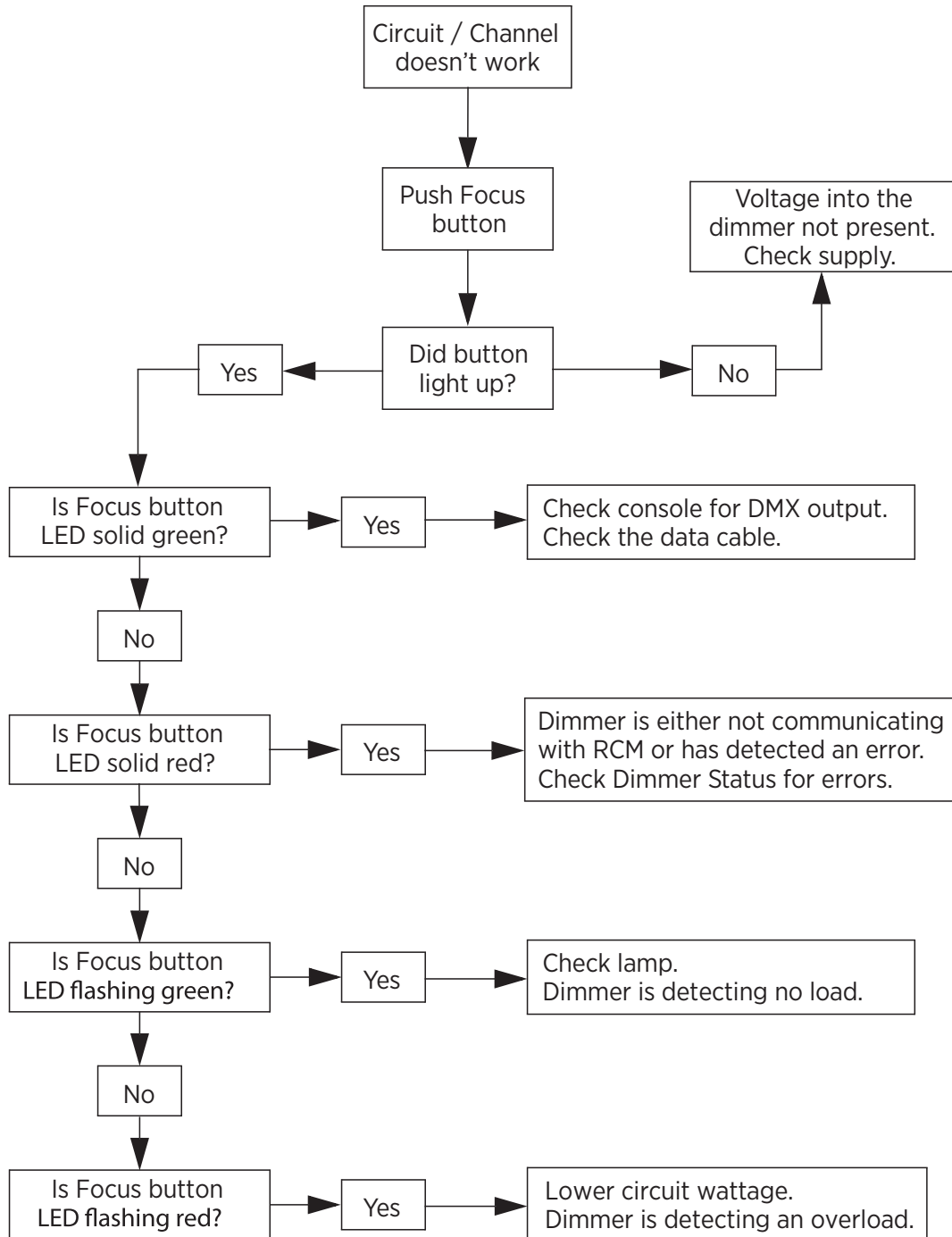Refer to the Troubleshooting Flow Chart below.

```
                        ┌─────────────────┐
                        │ Circuit / Channel│
                        │  doesn't work    │
                        └────────┬─────────┘
                                 │
                        ┌────────▼────────┐        ┌──────────────────┐
                        │  Push Focus     │        │ Voltage into the │
                        │  button         │        │ dimmer not present│
                        └────────┬────────┘        │  Check supply.   │
                                 │                 └──────────────────┘
           ┌─────┐      ┌────────▼────────┐        ┌─────┐
           │ Yes │◄─────│  Did button     │───────►│ No  │
           └──┬──┘      │  light up?      │        └─────┘
              │         └─────────────────┘
              │
     ┌────────▼────────┐       ┌─────┐      ┌───────────────────────┐
     │ Is Focus button │──────►│ Yes │─────►│ Check console for DMX  │
     │ LED solid green?│       └─────┘      │ output. Check the data │
     └────────┬────────┘                    │ cable.                 │
              │                             └───────────────────────┘
           ┌──▼──┐
           │ No  │
           └──┬──┘
     ┌────────▼────────┐       ┌─────┐      ┌───────────────────────────┐
     │ Is Focus button │──────►│ Yes │─────►│ Dimmer is either not       │
     │ LED solid red?  │       └─────┘      │ communicating with RCM or  │
     └────────┬────────┘                    │ has detected an error.     │
              │                             │ Check Dimmer Status for    │
           ┌──▼──┐                          │ errors.                    │
           │ No  │                          └───────────────────────────┘
           └──┬──┘
     ┌────────▼────────┐       ┌─────┐      ┌───────────────────────────┐
     │ Is Focus button │──────►│ Yes │─────►│ Check lamp.                │
     │ LED flashing    │       └─────┘      │ Dimmer is detecting no     │
     │ green?          │                    │ load.                      │
     └────────┬────────┘                    └───────────────────────────┘
              │
           ┌──▼──┐
           │ No  │
           └──┬──┘
     ┌────────▼────────┐       ┌─────┐      ┌───────────────────────────┐
     │ Is Focus button │──────►│ Yes │─────►│ Lower circuit wattage.     │
     │ LED flashing red?│      └─────┘      │ Dimmer is detecting an     │
     └─────────────────┘                    │ overload.                  │
                                            └───────────────────────────┘
```

FIGURE 13.   TROUBELSHOOTING FLOW CHART

6 EMERGENCY LIGHTING

OVERVIEW

When required, the RigDim Enclosure may be used to energize emergency lighting circuits in the event of a loss of power. RigDim may be custom configured at the factory with special software and hardware to allow the unit to comply with UL924 Electronic Bypass. When configured in this mode, the RigDim allows select circuits to be energized at 100% output upon activation by a control signal. Circuits not identified as emergency may be locked "Off" or can "Ignore" the emergency state and still respond to local controls.

When RigDim are used as part of an emergency lighting control system, feed power supplied to the RigDim Enclosure must be switched by a certified (National Recognized Testing Laboratory, UL1008) Transfer Device.

To trigger the RigDim to enter the emergency mode, a control signal (Contact-Closure, open) must be provided to the panel, and connected to the Panic #1 input, located on the Control PCB. Vari-Lite recommends the use of a Phase Loss Sense Panel to monitor normal power and provide the control signal to the RigDim in the event of a disruption of any phase of the normal power feed.

When the RigDim is in an active emergency mode, the LCD display will read EMERGENCY MODE ACTIVE and the display backlight will flash.

IMPORTANT! UL924 operation applies only to RigDim Enclosures which have been configured at the factory for Emergency Lighting Operation. If a previously installed RigDim is required to operate emergency lighting and needs to be updated in the field by a certified Vari-Lite Technician, please contact Vari-Lite Technical Support at 1-214-647-7880.

TESTING PANEL EMERGENCY MODE OPERATION

To test the UL924 operational mode of a RigDim, you must remove the provided Emergency
Bypass Test Connector from the PANIC #1 connector on the Control PCB as shown on **FIGURE 8. Control PCB on page 14** and Figure 14 below.

- When the Emergency Bypass Test Connector is inserted into PANIC #1 connector on Control PCB, the panel will **NOT** operate in Emergency Mode.
- When the Emergency Bypass Test Connector is **NOT** installed **AND** a UL1008 Transfer Switch is **NOT** connected to the panel, a UL924 configured panel will go into emergency mode.
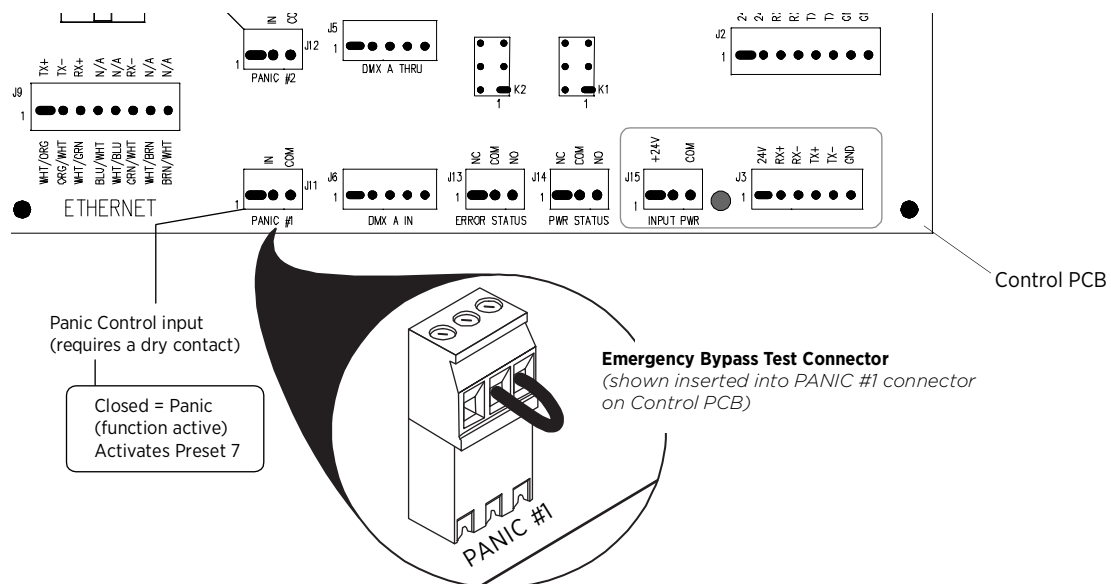

Control PCB

Panic Control input
(requires a dry contact)

Closed = Panic
(function active)
Activates Preset 7

Emergency Bypass Test Connector
(shown inserted into PANIC #1 connector on Control PCB)

PANIC #1

FIGURE 14.   EMERGENCY BYPASS TEST CONNECTOR

APPENDIX A STANDARD WIRING

DMX512

DMX512 TERMINAL	XLR PIN	COLOR CODE			
		WE (E.G., BELDEN #8132)	IECA	BELDEN STANDARD	CATEGORY 5E
GND	1	Drain Wire (Shield)	Drain (Shield)	Drain (Shield)	Brown White/Brown
DMX -	2	White w/ Blue	Black	Black (of Red pair)	Orange
DMX +	3	Blue w/ White	White	Red	White/Orange
AUX -	4	White w/ Orange	Red	Black (of White pair)	Green
AUX +	5	Orange w/ White	Green	White	Green/White

Contractor is Responsible for All Terminations

1. Only approved EIA-485 cable types may be used.

   Approved types include: Belden #9829TMB Proplex #PC224T; An acceptable plenum rated cable is: Belden #89729

2. Category 5e cable may be used for DMX512.

   Approved types include: Belden #1583A and Belden #1585A (Plenum).

3. Cable MUST be terminated exactly as shown here.

4. DMX512 cable runs MUST be routed in a "Daisy-Chain" configuration as shown in your drawing set, if provided. DO NOT convert these cables to home runs.

5. DMX512 cable runs should all be in metal conduit.

   Runs in exposed areas must be in metal conduit. Maximum cable run should not exceed 1000 feet.
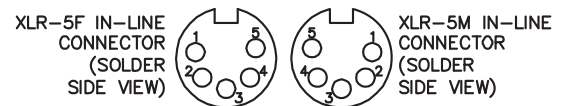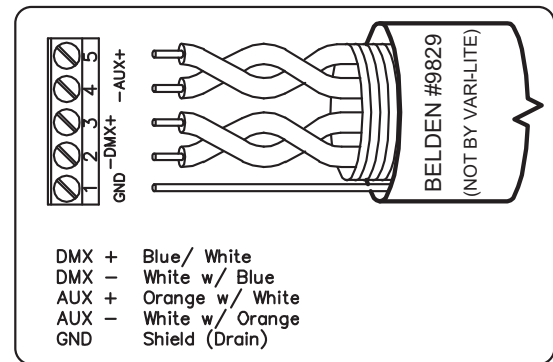
VISION.NET NETWORKS (RS485 OVER CAT5E)

PIN NO.	SIGNAL NAME	SHIELDED CAT5E WIRE COLOR (BELDEN #1624 R OR P)
1	Data +	White w/ Orange
2	Data -	Orange
3	Ground	Shield Ground
4	+24 VDC	White w/ Green
5	Signal GND	Green
6	+24 VDC	White w/ Blue
7	Signal GND	Blue
8	+24 VDC	White w/ Brown
9	Signal GND	Brown
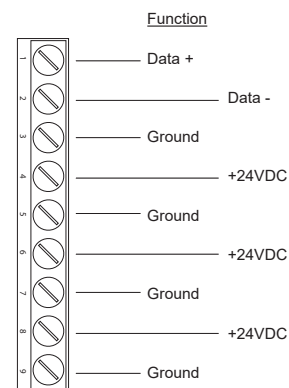
Contractor is Responsible for All Terminations

1. Only approved cable types may be used. Approved types include: Belden #1583A and Belden #1585A.

2. Cable MUST be terminated exactly as shown here. Total length of cable in each Vision.net Network LAN. Wiring must NOT exceed 1000 feet per home run / daisy-chain to powered source.

3. Cable runs should be routed in a "Daisy-Chain" configuration as shown in your drawing set, if provided. DO NOT convert these cables to home runs.

4. Maximum station quantity subject to power supply and system requirements. Please consult factory for specific information.

TERMINATION OF SHIELDED CABLE

DIMENSION	NAME	MINIMUM	MAXIMUM FOR TERMINAL	MAXIMUM FOR XLR (IN-LINE)
A	Remove Cable Jacket	1" (25.4mm)	2-1/4" (60mm)	1-1/4" (31.8mm)
B	Drain Wire Heat-shrink	Dim 'A' - 1/8" (3.2mm)	-	-

To terminate shielded cable:

Step 1. Strip off specified length of outer jacket.

Step 2. Cut shield (foil or braid) flush to outer jacket. DO NOT cut drain wire.

Step 3. Fit specified length of 1/16" heat shrink tubing over the drain wire.

Step 4. For solder connections, fit a 1/2" length of 1/16" heat shrink tubing over each conductor.

Step 5. Fit a 1" length of 3/8" heat shrink tubing over the entire cable. Position it so that 3/4" of its length is over the cable jacketing, and 1/4" of its length is over the loose conductors.

Step 6. Strip 1/8" inch of the insulation from each of the conductors.

Step 7. Terminate the conductors on the terminal block, or solder the terminals as specified.

Step 8. For solder connections, shrink the individual 1/2" lengths of heat shrink tubing over the solder terminals.

Step 9. Shrink the remaining heat shrink tubing.

Step 10. Apply the appropriate ID label to the cable at the end of the outer heat shrink tubing.
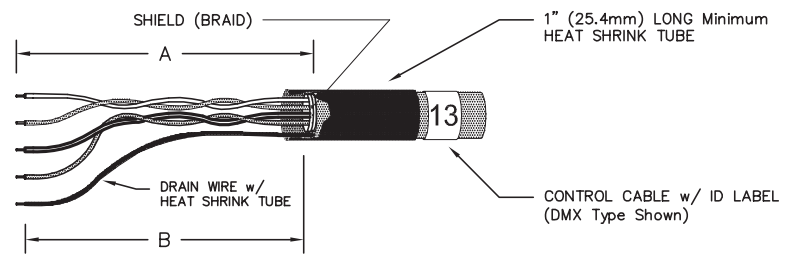
TERMINATION OF ETHERNET CABLE

ETHERNET WIRING BELDEN #1583A		
PIN NO.	FUNCTION	COLOR
1	Data +	White / Orange
2	Data	Orange
3	RD +	White / Green
4	Not Used	Blue
5	Not Used	White / Blue
6	RD	Green
7	Not Used	White / Brown
8	Not Used	Brown
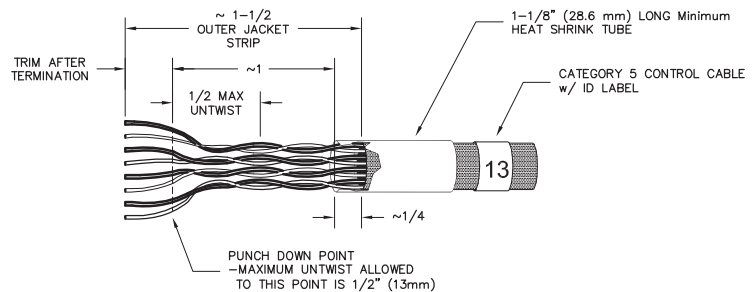
CABLE TYPE (10/100 BASE-T ETHERNET)	DESCRIPTION
Belden #1583A or equal Nominal O.D. 0.214" (5.54 mm)	CATEGORY 5e: Non-plenum rated 4-Unshielded Twisted Pairs (UTP) #24 AWG
Belden #1585A or equal Nominal O.D. 0.206" (5.23 mm)	CATEGORY 5e: Plenum rated 4-Unshielded Twisted Pairs (UTP) #24 AWG

To terminate Ethernet cable:

Step 1.   Strip off outer jacket -approximately 1-1/2" (37.6mm)

Step 2.   Fit a piece of 1-1/8" (28.6mm) long heat shrink tubing over the cable extending out 1/4" (8.25mm) from outer jacket.

Step 3.   Terminate approximately 1/2" (12.2mm) from end of conductors on Type 110 punch down block or connector per schedule (T568B)

- Maximum untwist of conductors to terminations is 1/2" (12.2mm)

- Trim excess leads.

Step 4.   Shrink tubing and add appropriate ID label to the cable at the end of the heat-shrink tubing.

System topology and labelling should follow TIA/EIA-568 and TIA/EIA-606 as applicable and guidelines in ESTA's Recommended Practice For Ethernet Cabling Systems in Entertainment Lighting Applications and Supplement.

Per TIA/EIA-568, Maximum length of any horizontal cable run (i.e. between Ethernet RJ-45 receptacle (work area) and Patch Panel) is 90 meters; Maximum length of any CATEGORY 5e cables at the Ethernet RJ-45 receptacle (work area) is 3 meters.

Ethernet equipment (e.g. Patch Panels, Hubs or Switches) should be maintained in an environment of 18°-24° C (64° -75° F) and 30% - 55% relative humidity per TIA/EIA-569-A.

Maximum length of any segment (cable run - including device cables - between Hub or Switch and Node) is 90 meters. Maximum network diameter (distance between any two Nodes) is 180 meters.

MASTER/SLAVE WIRING (DIM96)

PIN NUMBER	SIGNAL NAME	CAT5E WIRE COLOR
1	+24 VDC	White w/Orange
2	+24 VDC	Orange
3	+ RX	White w/Green
4	- RX	Green
5	+ TX	White w/Blue
6	- TX	Blue
7	GND	White w/Brown
8	GND	Brown

Contractor is Responsible for All Terminations

1. Only approved cable types may be used. Approved types include: CAT5e or Cat 6 UTP

2. Cable MUST be terminated exactly as shown here. Total length of cable in Master/Auxiliary wiring MUST NOT exceed 1000 feet.

3. Cable runs MUST be routed in a "Daisy-Chain" configuration as shown in your drawing set, if provided.

PANIC INPUT

PIN NO.	SIGNAL NAME
1	*Not Used*
2	IN
3	COM

Contractor is Responsible for All Terminations:

1. To be used with PANIC INPUT: Fire Alarm Input or Panic Input Closure.

2. To be used with Dry Contact Input only.

Note: If the Contact Panel is UL924 enabled, the input must be set to Normally Open in the System Configuration.

IMPORTANT! If multiple RigDim Enclosures are to be triggered via the alarm dry contact closure, these closure inputs must be isolated with a distance not to exceed 500 feet.

APPENDIX B SPECIFICATIONS

6 MODULE ENCLOSURE

Number of Circuits:	Up to 24	Load Connection:	Terminal Strip
Maximum Output Voltage:	120VAC or 277VAC	Line Connection:	Main Lug Only
Min/Max Dimmer Load	0.5W to Full Load Rating on Dimmer)	Control Communications:	Vision.net, DMX512 and ShowNet (Optional)
Transition Time (IGBT):	800 μs (Forward or Reverse Phase)	Main Breaker (optional):	60, 100 or 150 Amps
		Branch Circuit Protection:	15 or 20A
A/C Rating:	10,000 AIC @ 120/277V	Cooling	Natural Convection Cooling
Supply Voltage	120VAC or 277VAC Single Phase 3-Wire (optional); Three Phase 4-Wire	Ambient Temperature:	0 to 40 °C
		Relative Humidity:	5 to 95% Non-condensing
Frequency	50/60 Hz	Compliance:	ETL Listed to UL508 and UL924
Load Types	Incandescent (Tungsten, Halogen), Magnetic Low-Voltage, Electronic Low-Voltage, Neon, Non-Dim, Fluorescent, and LED	Weight	130.4 lbs / 59.3 kg*

* The weight specification is for a fully populated cabinet with quad SCR dimmer modules. Actual weight of installed cabinet may be less.

SHOWN WITH COVER REMOVED
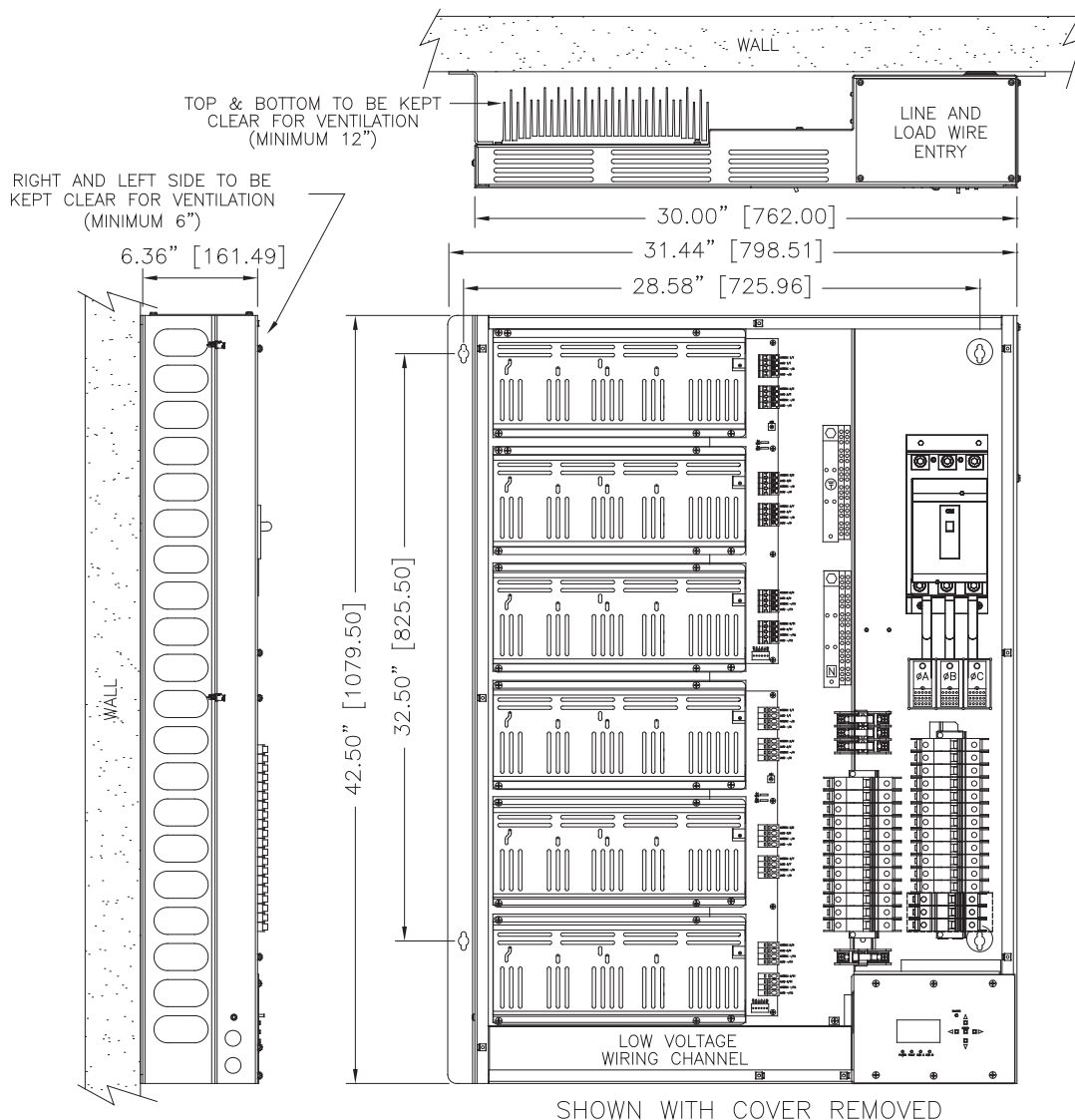
APPENDIX C CATALOG NUMBERS

RIGDIM ORDERING GUIDE

ENCLOSURES
1. **53805-111** 6 module (24ch) RigDim 120V enclosure (incl. UL924)
2. **53805-112** 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 60A Main Breaker)
3. **53805-113** 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 100A Main Breaker)
4. **53805-114** 6 module (24ch) RigDim 120V enclosure (incl. UL924 & 150A Main Breaker)
5. **53805-211** 6 module (24ch) RigDim 277V enclosure (incl. UL924)
6. **53805-212** 6 module (24ch) RigDim 277V enclosure (incl. UL924 & 60A Main Breaker)
7. **53805-213** 6 module (24ch) RigDim 277V enclosure (incl. UL924 & 100A Main Breaker)
8. **53805-214** 6 module (24ch) RigDim 277V enclosure (incl. UL924 & 150A Main Breaker)

MODULES
1. **53805-132** Quad 20A Relay RigDim 120V module
2. **53805-133** Quad 10A IGBT (1000µs) RigDim 120V module
3. **53805-134** Dual 20A IGBT (1000µs) RigDim 120V module
4. **53805-136** Quad 20A 0-10V RigDim 120V module
5. **53805-232** Quad 20A Relay RigDim 277V module
6. **53805-233** Quad 10A IGBT (1000µs) RigDim 277V module
7. **53805-236** Quad 20A 0-10V RigDim 277V module

PROCESSOR
1. **53805-021** Spare RigDim processor

ACCESSORIES
1. **53805-041** Blank RigDim module
2. **53805-142** RigDim 120V retrofit harness kit, 20A, Black
3. **53805-143** RigDim 120V retrofit harness kit, 20A, Red
4. **53805-144** RigDim 120V retrofit harness kit, 20A, Blue
5. **53805-242** RigDim 277V retrofit harness kit, 20A, Black
6. **53805-243** RigDim 277V retrofit harness kit, 20A, Red
7. **53805-244** RigDim 277V retrofit harness kit, 20A, Blue

APPENDIX D NOTICE TO CONTRACTOR

TECHNICAL SERVICES CHECKOUT PROCEDURE

DO NOT APPLY POWER TO THE LIGHTING CONTROL SYSTEM!

No part of this system may be energized or operated until the installation has been approved by a Vari-Lite Technical Services Representative. Violation of this Requirement may damage components and therefore constitute misuse under standard warranty terms. Such misuse may relieve Vari-Lite of any and all further obligations under the terms of this warranty.

Equipment <u>MUST</u> be installed per the Vari-Lite drawings.

All installation and wire terminations <u>MUST</u> be completed per the Vari-Lite drawings prior to the arrival of the Technical Services Representative:

1. Input power must be connected to the system, but not energized.
2. All loads must be connected and all lighting instruments must be lamped.
3. All control wiring must be installed and terminated - including DMX512, Ethernet and Vision.net.
4. All equipment, including controllers, accessories, keys, cables and manuals must be in place.
5. Personnel for training (i.e. the users), as well as any other personnel required by contract and/or specification must be available for training at the completion of the Checkout and Energizing.
6. An owner (or authorized representative), as well as any other personnel required by contract and/or specification will be present to accept the system.

The Technical Services Representative will only be able to:

- Ensure that they system is properly installed and functions correctly, including trougleshooting and providing guidance to the contractor to correct any problems.
- Train personnel in the operation of the Lighting Control System.

The Technical Services Representative will not be able to:

- Install equipment or make electrical connections required of the installing contractor, including DMX512, Ethernet, Vision.net and/or any other connections that require a licensed electrician.
- Return to instruct any personnel who missed the original training session.

If the above requirements have not been met, the Technical Services Representative will be required to leave the job site. Return trips to complete the Technical Services Checkout require a separate Purchase Order and will be invoiced at the cost of travel (including per diem and travel time door-to-door), hourly labor, and a minimum daily on-site charge. Rescheduling will require 3 weeks notice, subject to Technical Services Representative availability.

Please feel free to contact Vari-Lite Technical Support (1-214-647-7880) should there be any questions regarding the installation of the equipment or requirements regarding the Technical Services Checkout.

When all requirements have been met and the system is ready for inspection, please complete a Field Service/Commissioning Request Form (available in Adobe PDF format). This form is available in the Support Section of the web site (**www.vari-lite.com**) or from Vari-Lite Technical Support.

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TECHNICAL SUPPORT

GLOBAL 24HR TECHNICAL SUPPORT:

Call: +1 214 647 7880

entertainment.service@signify.com

NORTH AMERICA SUPPORT:

Call: 877-VARI-LITE (877-827-4583)

entertainment.service@signify.com

EUROPEAN CUSTOMER SERVICE:

entertainment.europe@signify.com