RELAYRACK

INSTALLATION & USER MANUAL

STR-76412A

IMPORTANT INFORMATION

Warnings and Notices

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

a. **READ AND FOLLOW ALL SAFETY INSTRUCTIONS**.

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

c. Do not mount near gas or electric heaters.

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

e. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.

f. Not for residential use. Do not use this equipment for other than intended use.

g. Refer service to qualified personnel.

SAVE THESE INSTRUCTIONS.

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 voltages 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 personnel.

WARNING: This equipment is intended for installation in accordance with the National Electric Code® and local regulations. It is also intended for installation in indoor applications only. Before any electrical work is performed, disconnect power at the circuit breaker or remove the fuse to avoid shock or damage to the control. It is recommended that a qualified electrician perform this installation.

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
6443 Ridings Road
Syracuse, NY 13206-1111 USA
1-800-93USITT
www.usitt.org

Limited Two-Year Warranty

Vari-Lite offers a two-year limited warranty of its products against defects in materials or workmanship from the date of delivery. A copy of the Vari-Lite two-year limited warranty containing specific terms and conditions can be obtained from the Vari-Lite web site at www.vari-lite.com or by contacting your local Vari-Lite office.

TABLE OF CONTENTS

PREFACE

1. About this Manual

The document provides installation and operation instructions for the following product:

- Relayrack Relay Panel (catalog number 76412)

Please read all instructions before installing or using this product. *Retain this manual for future reference*. Additional product information and descriptions may be downloaded at www.vari-lite.com.

2. Getting Started

Unpack the Relay Panel

Unpack the relay panel from the shipping packaging and check that the condition of the relay panel for any shipping damage If the unit shows any shipping damage, please contact the freight forwarder / shipping carrier and your nearest Strand Lighting office.

Figure 1: Relayrack Relay Panel

Included Items

- Relayrack Relay Panel
- Installation & User's Manual - *this document*

RELAYRACK RELAY PANEL OVERVIEW

1. Relayrack Relay Panel Components

Overview

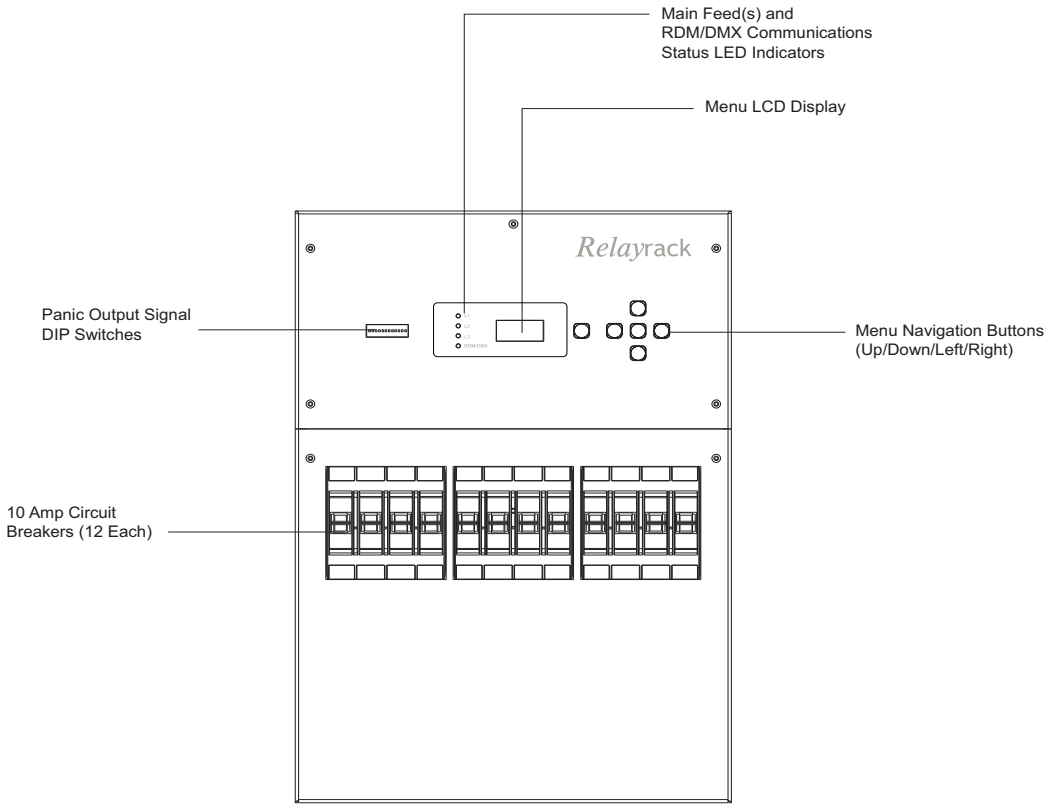


Figure 2: Relayrack Relay Panel Components

Note: For more information on Menu LCD Display and Navigation Buttons, see "Menu System" on page 13. For more information on LED indicators, see "LED Status Indicators" on page 16

INSTALLATION AND SET UP

1. Power Requirements

Power Input Requirements

The Relayrack Relay Panel operates on 230 / 240 volts AC at 50 Hz. It is powered via either:

- Single Phase - 230VAC, 50/60 Hz, 120 Amps (max.)
- Three Phase - 400VAC/230VAC, 50/60 Hz, 3-Phase Star, 40 Amps per Phase (max.)

Installing Unit

To install unit:

WARNING! You must mount unit according to your local and national codes and requirements. For more information on mounting and operational requirements, refer to "Warnings and Notices" on page 1.

Step 1. Locate a suitable location to have free access to make wiring connections.

Step 2. Measure back of unit for mounting dimensions using supplied mounting holes as illustrated in **Figure 3**.

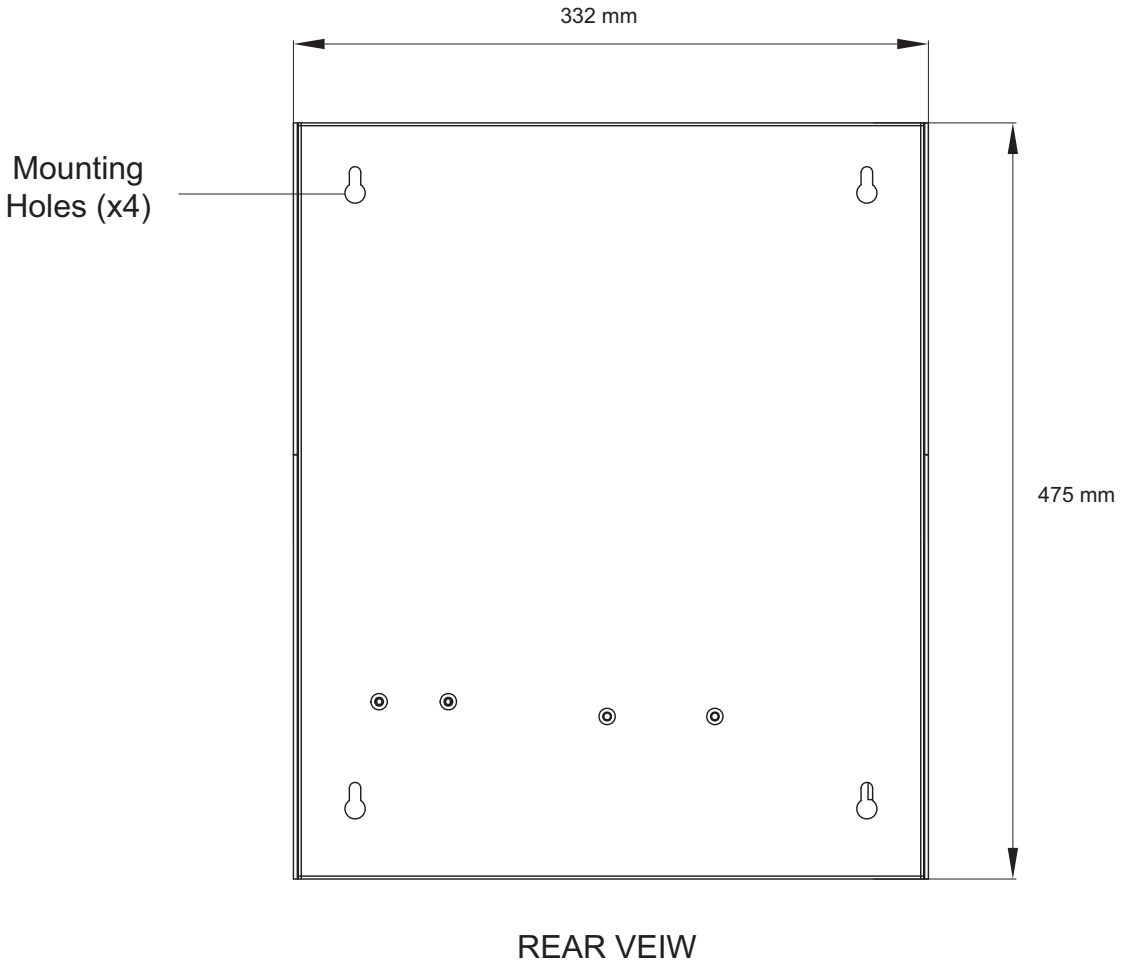


Figure 3: Relayrack Dimensions

Step 3. Secure unit to wall according to local and national codes and requirements.

2. Connections

Acceptable Load Types

The Relayrack Relay Panel can provide switching (on and off operation) of the following load types (up to its specified ratings - Normal Resistive Loads: 10A per Circuit / Inductive Loads: 8A per Circuit):

- Incandescent (Tungsten, Halogen)
- Magnetic Low-Voltage
- Electronic Low-Voltage
- Neon
- Non-Dim Fluorescent
- HID
- LED

For other types of loads, please consult factory.

Control Systems

Relayrack Relay Panels may be controlled by the following methods:

- DMX512/ RDM Control Systems
- Vision.net Lighting Control System
- Auxiliary Input: Panic Control or Fire Alarm Signal

Connecting Input Power, Control Systems and Loads

To connect input power, control systems and loads:

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.

Step 1. Mount unit according to instructions provided in "Installing Unit" on page 5.

Step 2. As shown in **Figure 4**, remove four screws securing front panel.

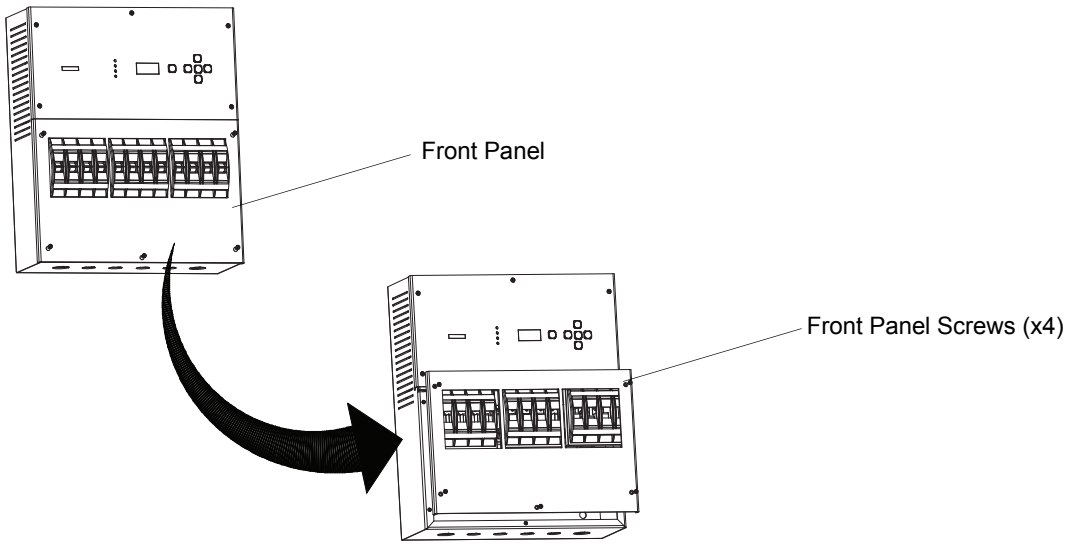


Figure 4: Relayrack Relay Front Panel Removal

Step 3. Referring to **Figure 5**, note Relayrack Panel's connections for Input Power, Loads, and Control Signals.\

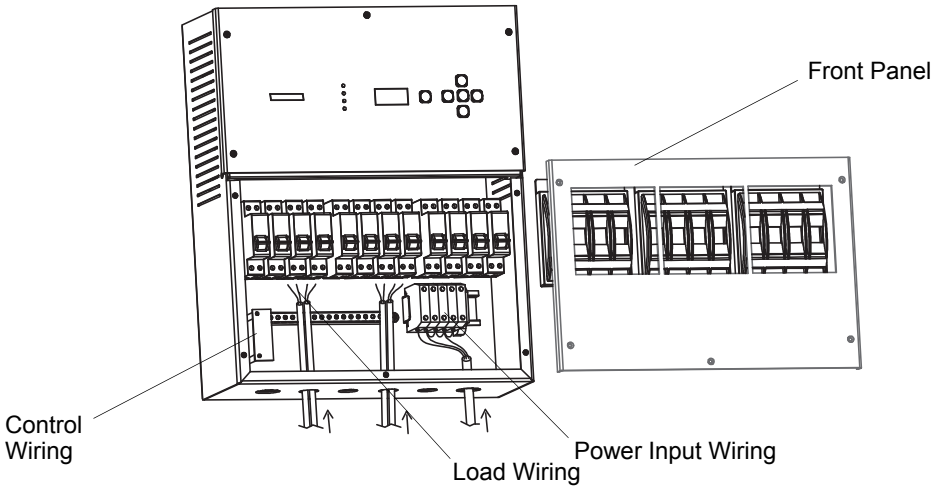


Figure 5: Relayrack Panel Wiring

Step 4. Make all wiring connections as shown in **Figure 6**.

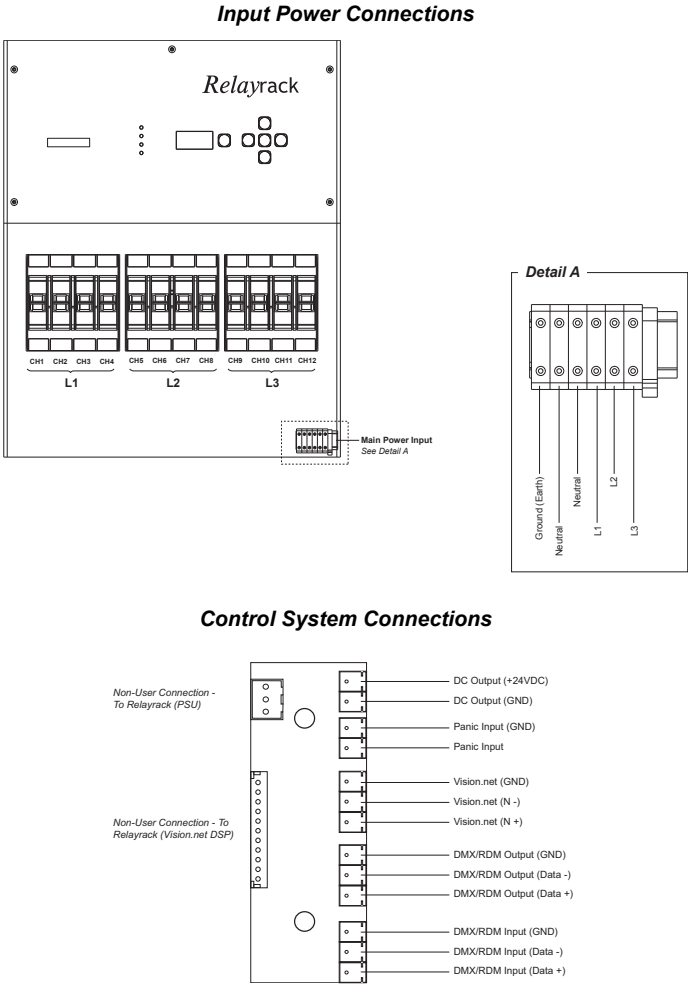


Figure 6: Relayrack Panel Wiring Connections (Detail)

3. Connecting a DMX512 / RDM Networks

DMX512 Connections

Basic DMX512 installation consists of connecting a Relayrack Relay Panel to a DMX512 controller in "daisy-chain" fashion. A cable runs from the DMX512 controller to a Relayrack Relay Panel and to other DMX512 devices in the system. Note, the Relayrack Relay Panel does not have to be first device in the DMX512 signal chain.

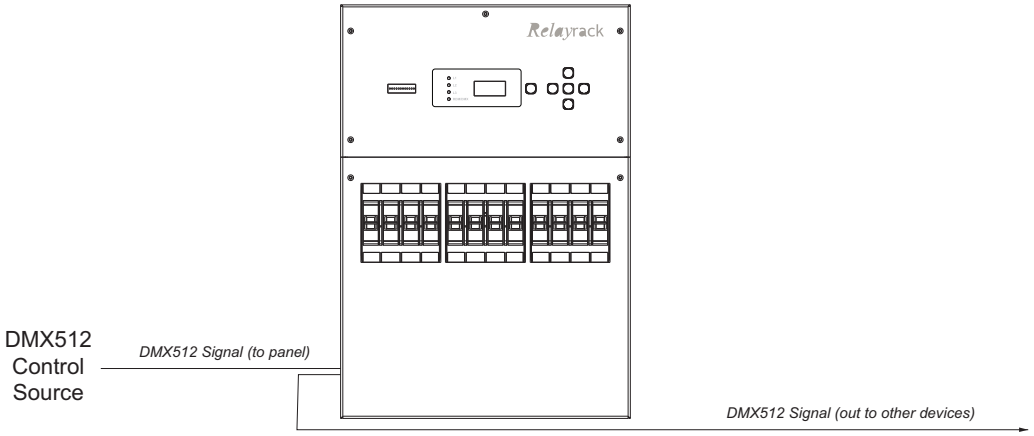


Figure 7: Sample DMX Network

Note: For more information on DMX512 networking and systems, refer to "Additional Resources for DMX512" on page 1. For Relayrack Relay Panel DMX512 menu operation, refer to "OPERATION" on page 13.

As shown in **Figure 8**, the Relayrack Panel's DMX512 connections can be either an input or output. Note, at least one connection (to the Relayrack Panel) must be an input (from a DMX512 controlling source).

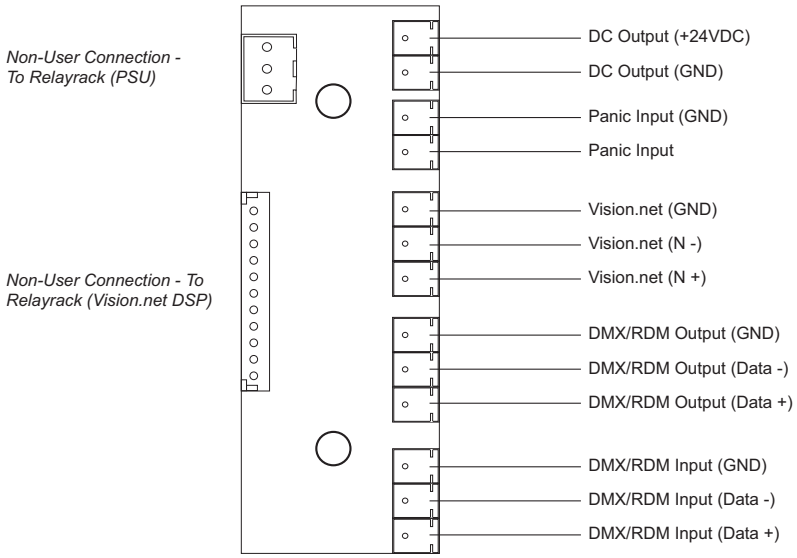


Figure 8: Relayrack Panel DMX512 Connections

RDM Connections

Like DMX512, RDM installation consists of connecting a Relayrack Relay Panel to a RDM / DMX512 controller in "daisy-chain" fashion. A cable runs from the DMX512 controller to a Relayrack Relay Panel and to other DMX512 devices in the system. Note, the Relayrack Relay Panel does not have to be first device in the signal chain.

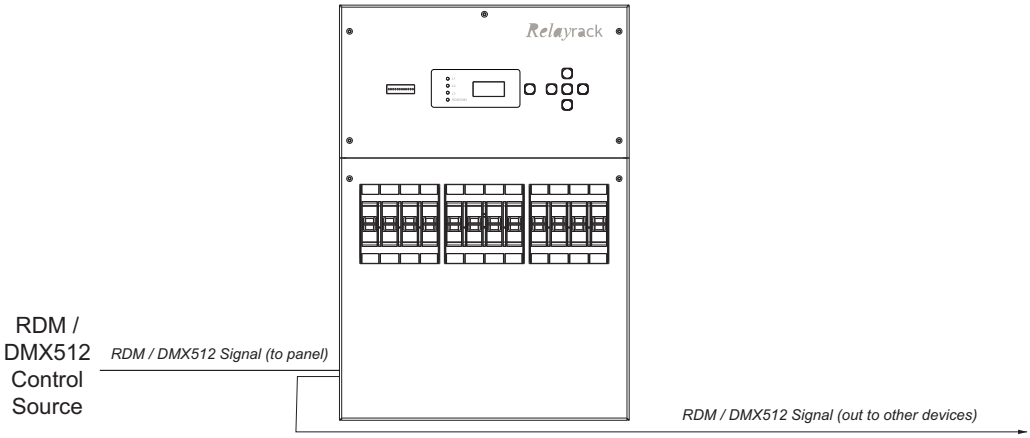


Figure 9: Sample RDM / DMX Network

Note: For more information on DMX512 networking and systems, refer to "Additional Resources for DMX512" on page 1. For Relayrack Relay Panel RDM / DMX512 menu operation, refer to "OPERATION" on page 13.

As shown in **Figure 10**, the Relayrack Panel's DMX512 connections can be either an input or output. Note, at least one connection (to the Relayrack Panel) must be an input (from a RDM / DMX512 controlling source).

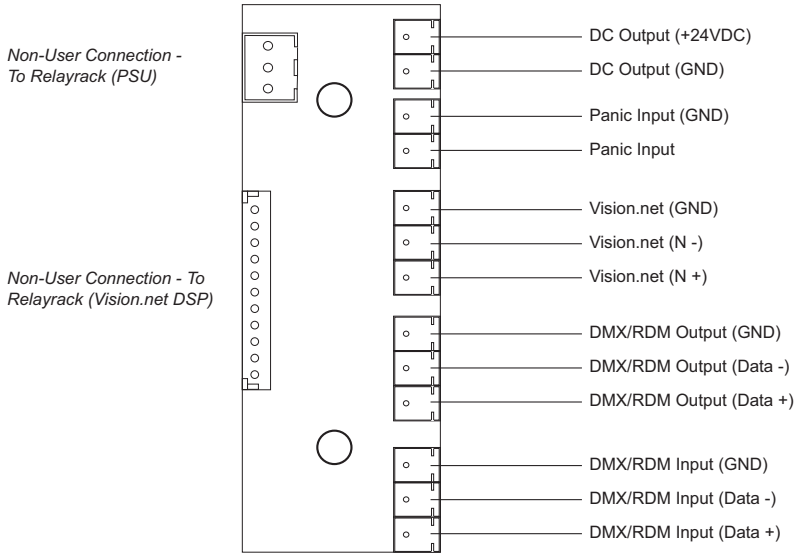


Figure 10: Relayrack Panel RDM Connections

Relayrack RDM Parameter IDs

The following tables outline and describe all the RDM parameters IDs associated with the Relayrack Relay Panel.

Table 2-1: Relayrack Relay Panel RDM Product Parameters IDs

Model ID	Manufacturer	Model Description	Product Category
0x103		Relayrack12 Control	0x0500

Table 2-2: Relayrack Relay Panel RDM UID

UID					
MSB of ESTA 73H	LSB of ESTA 6cH	MSB of 01H	LSB of 03H	MSB of Unique Seq.	LSB of Unique Seq.

Table 2-3: Relayrack Relay Panel RDM Parameters IDs

Get Allowed	Set Allowed	RDM Parameter IDs	Value	Comment	Implemented
		Category - Network Management			
		DISC_UNIQUE_BRANCH	0x0001		■
		DISC_MUTE	0x0002		■
		DISC_UN_MUTE	0x0003		■
■		PROXIED_DEVICES	0x0010		
■		PROXIED_DEVICES_COUNT	0x0011		
■	■	COMMS_STATUS	0x0015		
		Category - Status Collection			
■		QUEUED_MESSAGE	0x0020		■
■		STATUS_MESSAGES	0x0030		■
■		STATUS_ID_DESCRIPTION	0x0031		■
	■	CLEAR_STATUS_ID	0x0032		■
■	■	SUB_DEVICE_STATUS_REPORT_THRESHOLD	0x0032		
		Category - RDM Information			
■		SUPPORTED_PARAMETERS	0x0050	*Support required only if supporting Parameters beyond the minimum required set.*	■
■		PARAMETER_DESCRIPTION	0x0051	*Support required for Manufacturer-Specific PIDs exposed in SUPPORTED_ PARAMETERS message.*	■
		Category - Product Information			
■		DEVICE_INFO	0x0060		■
■		PRODUCT_DETAIL_ID_LIST	0x0070		
■		DEVICE_MODEL_DESCRIPTION	0x0080		■
■		MANUFACTURER_LABEL	0x0081		■
■	■	DEVICE_LABEL	0x0082		■
■	■	FACTORY_DEFAULTS	0x0090		
■		LANGUAGE_CAPABILITIES	0x00A0		
■	■	LANGUAGE	0x00B0		
■		SOFTWARE_VERSION_LABEL	0x00C0		■
■		BOOT_SOFTWARE_VERSION_ID	0x00C1		
■		BOOT_SOFTWARE_VERSION_LABEL	0x00C2		

Table 2-3: Relayrack Relay Panel RDM Parameters IDs

Get Allowed	Set Allowed	RDM Parameter IDs	Value	Comment	Implemented
Category - DMX512 Setup					
■	■	DMX_PERSONALITY	0x00E0		■
■		DMX_PERSONALITY_DESCRIPTION	0x00E1		■
■	■	DMX_START_ADDRESS	0x00F0	*Required if device uses a DMX Slot*	■
■		SLOT_INFO	0x0120		■
■		SLOT_DESCRIPTION	0x0121		■
■		DEFAULT_SLOT_INFO	0x0122		
Category - Sensors 0x02xx					
■		SENSOR_DEFINITION	0x0200		
■	■	SENSOR_VALUE	0x0201		
	■	RECORD_SENSORS	0x0202		
Category - Dimmer Settings 0x03xx - FUTURE USE					
Category - Power / Lamp Settings 0x04xx					
■	■	DEVICE_HOURS	0x0400		
■	■	LAMP_HOURS	0x0401		
■	■	LAMP_STRIKES	0x0402		
■	■	LAMP_STATE	0x0403		
■	■	LAMP_ON_MODE	0x0404		
■	■	DEVICE_POWER_CYCLES	0x0405		
Category - Display Settings 0x05xx					
■	■	DISPLAY_INVERT	0x0500		
■	■	DISPLAY_LEVEL	0x0501		
Category - Configuration 0x06xx					
■	■	PAN_INVERT	0x0600		
■	■	TILT_INVERT	0x0601		
■	■	PAN_TILT_SWAP	0x0602		
■	■	REAL_TIME_CLOCK	0x0603		
Category - Control 0x10xx					
■	■	IDENTIFY_DEVICE	0x1000		■
	■	RESET_DEVICE	0x1001		
■	■	POWER_STATE	0x1010		
■	■	PERFORM_SELFTEST	0x1020		
■		SELF_TEST_DESCRIPTION	0x1021		
	■	CAPTURE_PRESET	0x1030		
■	■	PRESET_PLAYBACK	0x1031		

Table 2-4: Relayrack Relay Panel RDM Manufacturer Status IDs

Manufacturer Specific messages are in the range of 0x8000 - 0xFFDF. Each Manufacturer-specific Status ID shall have a unique meaning, which shall be consistent across all products having a given Manufacturer ID. See Table B-2, ANSI E1.20-2010.				
Status ID Message	**Value**	**Data Value 1**	**Data Value 2**	**Status ID Description**
8100H		00H	00H	ALL OK

Table 2-5: Relayrack Relay Panel RDM Manufacturer Specific PIDs

Get Allowed	Set Allowed	RDM Parameter IDs	Type	Length	Unit	Prefix	Min	Max	Default	Description
Category - Manufacturer Defined PIDs - Range is 0x8000-0xffdf (See ANSI E1.20-2010 Standard, Table A-3)										
■	■	8100H	U8	1	None	None	00H	1H	1H	Relay Act On / Off
■	■	8101H	U8	1	None	None	00H	FFH	FFH	CH Value From
■	■	8102H	U8	1	None	None	00H	FFH	FFH	CH Value To

4. Panic Signals

Panic Input Signal Connection

The Relayrack Panel offers one contact input for fire alarm or panic input closure. The connection is made as shown in **Figure 12** (below the DMX512 / RDM connections as shown in **Figure 10**). The input signal is Dry Contact Input only and can be Normally Open or Normally Closed.

Figure 12: Contact (Panic) Input Connection

Note: When the external panic signal is sent to the Relayrack Panel, all relays / channels will go On.

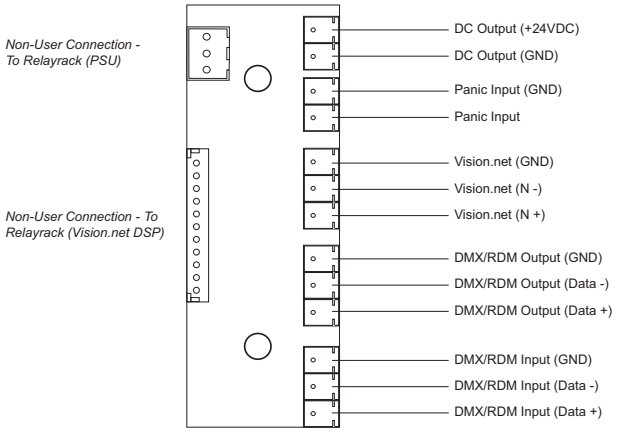
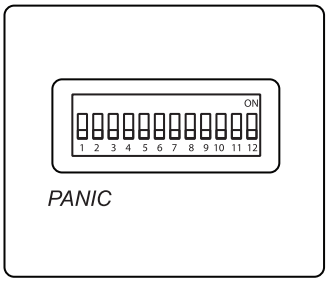


Figure 11: Contact (Panic) Input Connection

Panic Signal DIP Switch Settings

The Relayrack Relay Panel has the capability to designate one or multiple relays to be set to NORMALLY CLOSED and open in the event of power loss to connect to an alert or panic system.

On the front panel of the Relayrack Relay Panel, there are twelve user-selectable DIP Switches. Each individual DIP Switch corresponds to a relay (i.e., DIP Switch 1 equates to Relay 1, etc.). When DIP Switch 1 is set to ON, Relay 1 opens (creates an open circuit) when power is lost.



OPERATION

1. Overview

The Relayrack Relay Panel offers simple switching operation of its connected loads.

Control Functions

The Relayrack Relay Panel is controlled via the following control protocols:

- DMX512
- RDM (E1.20-2006)

2. Menu System

Menu System Overview

To navigate the menus, press the four navigation buttons as required (**Figure 13**).

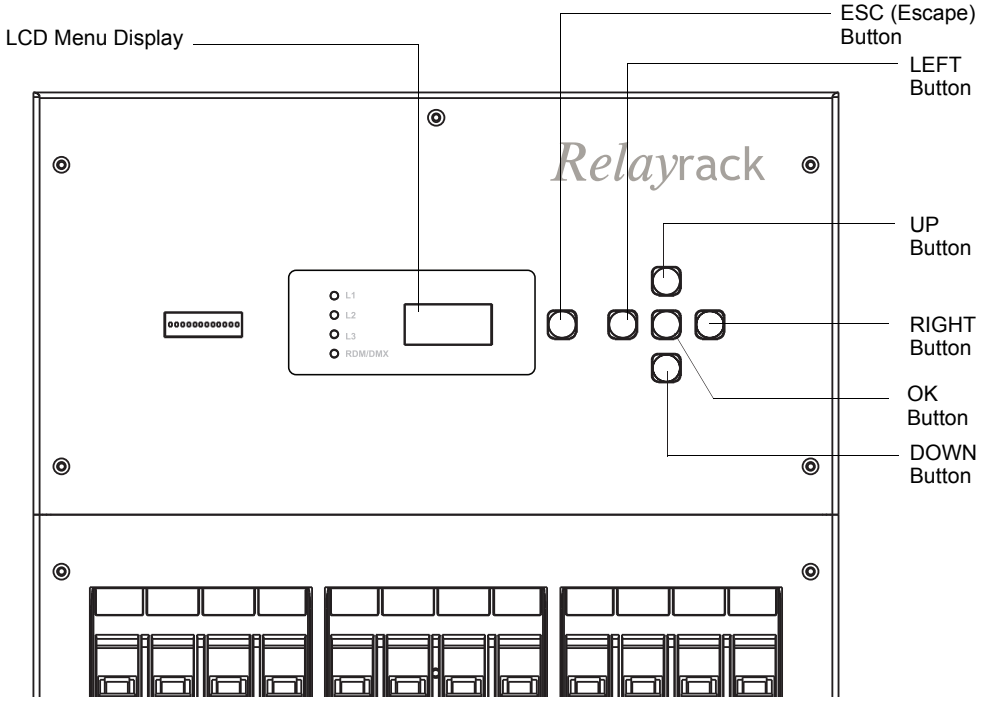


Figure 13: Relayrack Menu LCD Display and Buttons

When the desired menu is reached, press [OK] to display the menu options. Use navigation, [OK], and [ESC] buttons to view status and configure the rack. The menu system consists of several main categories as shown in "Menu System Options and Settings" on page 14.

Note: If buttons are not pressed for more than one minute, the LCD Display will automatically return to the main menu. To go directly to the main menu, press the [ESC] button.

Enable / Disable Button Lock

To Disable or lock the buttons (so settings cannot be changed), press and hold Left and Right Buttons (refer to **Figure 13**) simultaneously. With buttons Disabled or locked, repeat this action to Enable or unlock the buttons.

Menu System Options and Settings

RACK 001 *(rack number)*

Setting DMX Address

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
DMX ADDRESS *(Default DMX Address is 001)*	START ADDRESS	START DMX=001	PLEASE CONFIRM	Sets the DMX address for the Relayrack Relay Panel. You must confirm settings.
	INDEP ADDRESS	RELAY 01 = 001		Sets the DMX address for individual relays.

Setting Relay Trigger Levels (On / Off)

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
TRIGGER LEVEL	TRIGGER ALL	TRIGGER ALL=01%	PLEASE CONFIRM	Sets the trigger ON level for all relays in Relayrack Relay Panel. You must confirm settings. *(Default for ON is 1%)*
	TRIGGER INDEP	TRIGGER 01 = 001		Sets the trigger ON level for individual relays. Range is 01 to 99%. 0% is always OFF and 100% is always ON.

Setting Relayrack Relay Panel ID

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
SETUP CONFIG	SET RACK NO.	RACK NO. = 001		Sets the Relayrack Relay Panel rack number. After changing the Vision.net Address (ID), this number will automatically change to the same 3-digit ID. *(Default is 001)*

Configuring Input Control Signals and Operation

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
INPUT CONFIG	INPUT OPTIONS	INPUT XXXXXX		Sets the control input signal the Relayrack Relay Panel will be controlled by. XXXXX = VN (Vision.net) or RDM/DMX or BOTH. *(Default = BOTH)*
	INPUT PRIORITY	RELAY 01 XXXXXXX		If multiple input control signals are used, this option sets HTP for operation. XXXXXX can be set to: ***VN + DMX*** *or* ***DMX > VN*** when input = ***BOTH*** *or* ***DMX ONLY*** when input = ***RDM/DMX*** *or* ***VN ONLY*** when input = ***VN*** *(Default = VN + DMX)*

Channel Parking

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
PARK CHANNEL	PARK 01 = INPUT			Channels 1 to 12 can be set (override) to "either "INPUT", "ON" or "OFF". *NOTE: If any channel parked and the main menu will display "CH PARK" in second row.*

DMX Hold Setting

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
DMX HOLD	DMX HOLD ON (or OFF)			Sets DMX hold setting if DMX signal is lost. ON = hold last DMX command / OFF = do not hold last DMX command. *(Default is ON)*

Continued next page

Menu System Options and Settings (continued)

Continued from previous page

Configuring Vision.net Operation

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
VN CONFIG	SET VN ID	VN ID = 001		Sets Vision.net ID (from 001 to 999) for the Relayrack Relay Panel. *(Default ID is 001)*
	VN PATCH	VN START CH	START RM01CH01	Sets the Room (RM) and Channel (CH) for Vision.net Operation for the entire relay rack. You must confirm settings. *(Default is RELAY 01~12 = VN RM01CH01~12)*
		VN INDEP CH	RELAY 01 RM01CH01	Sets the Room (RM) and Channel (CH) for Vision.net Operation for a specific relay. *(NOTE: RM00CH00 means this relay not under VN control)*
	RECORD VN PRESET	RECORD RM01 P01	PLEASE CONFIRM	Records the preset levels - in a Room (RM) and Preset (P). You must confirm settings. *(NOTE: You can record up to 32 presets in each room. You can only RECORD VN PRESET setup in rooms that have at least one of the relays assigned.)*
	RECALL VN PRESET	RECALL RM01 P01	PLEASE CONFIRM	Recalls the preset levels - in a Room (RM) and Preset (P). You must confirm settings. *(NOTE: You can only RECALL VN PRESET setup in rooms that have at least one of the relays assigned.)*
	POWER PRESET	POWER UP P01	PLEASE CONFIRM	Sets the Preset (P) that all rooms will go to during power up. You must confirm settings. *(Default Power Up Preset = 0)*

System Information (status information shown, no user-selectable options

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
SYSTEM INFO	FIRMWARE VERSION	FIRMWARE V.1.0.0		Displays the current version of software in the Relayrack Relay Panel.
	TEMP	TEMP=XXC		Displays the current operational temperature (in Celsius) of the Relayrack Relay Panel.

Resetting the Relayrack Relay Panel to Factory Default Settings

Menu Item	*Level 1*	*Level 2*	*Level 3*	*Comments*
FACTORY DEFAULT	DEFAULT YES *(or NO)*	ARE YOU SURE		Resets the Relayrack Relay Panel to the original factory (default) settings. You must confirm this action. *Factory Default Values:* *DMX Start Address = 001* *ON = 1%* *Rack No. 001* *VN ID = 1* *DMX HOLD = ON* *POWER UP PRESET = 0* *RELAY 01~12 = VN RM01CH01~12*

3. LED Status Indicators

The Relayrack Relay Panel has several LED indicators to show current status of the panel's connections and control signals. Refer to **Figure 14** for more information.

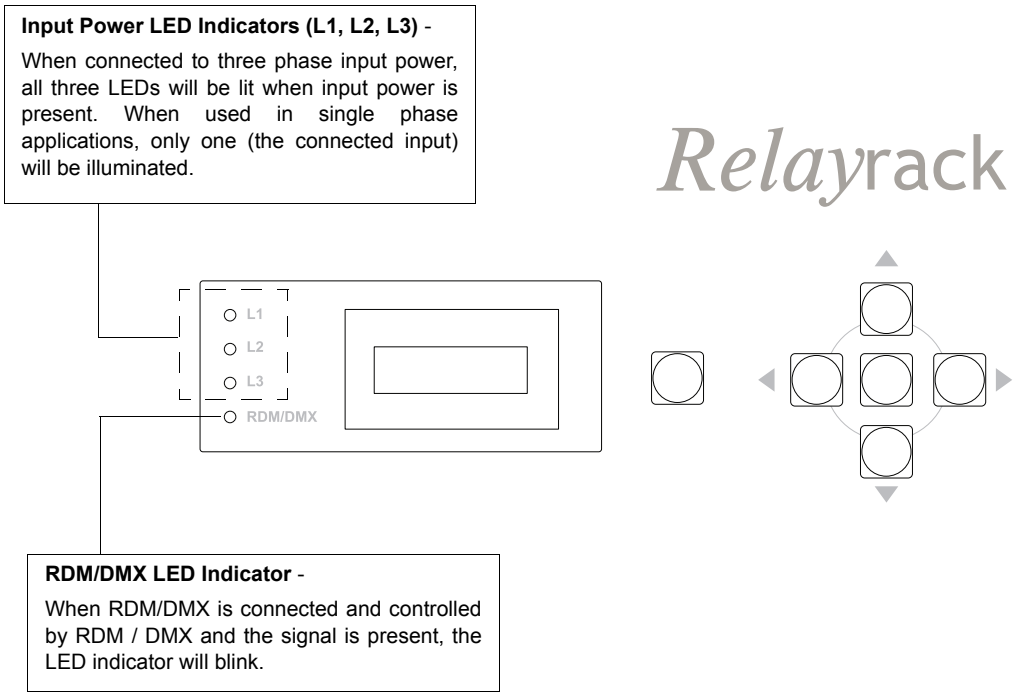


Figure 14: Relayrack Relay Panel LED Indicators

4. Service & Maintenance

WARNING! The Relayrack Panel operates on high voltage. Attempting any installation or service with power applied will expose you to dangerous voltage and injury or death may occur. The Relayrack Relay Panel contains no user-serviceable parts or components. Do not attempt to service the unit.

Should you experience any issues with this unit and require service, disconnect power immediately and contact your local Authorized Service Center, Authorized Dealer or Vari-Lite for repair information. A complete list of Authorized Service Centers and Dealer is found on the web site at www.vari-lite.com.

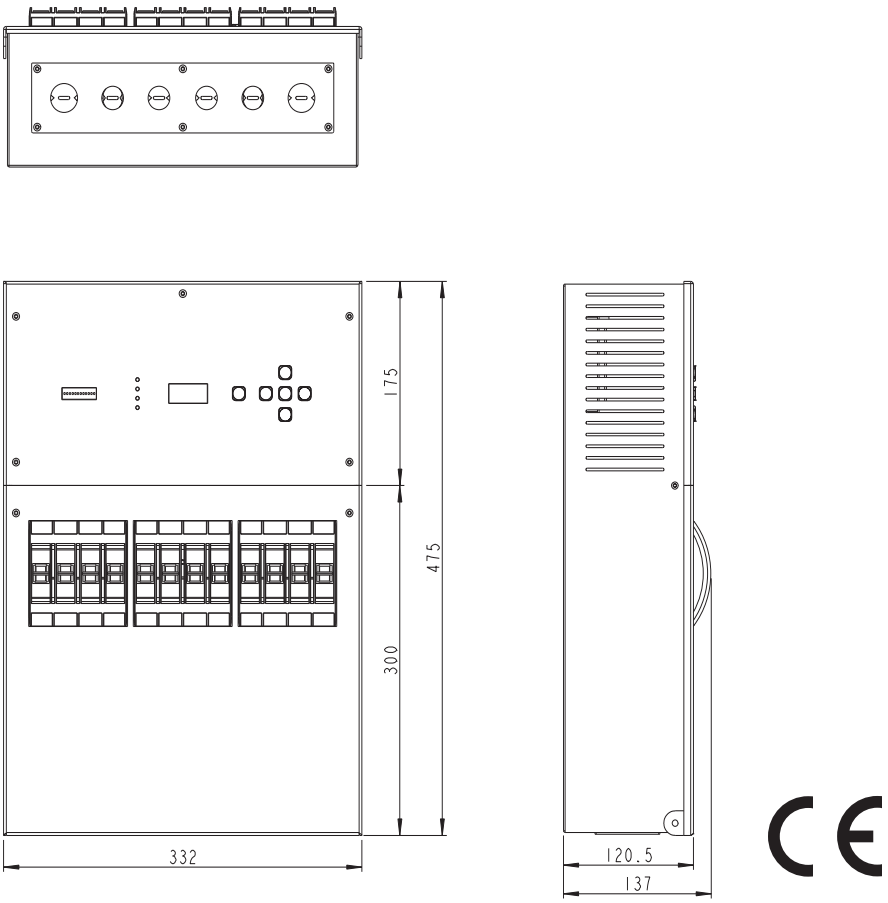
TECHNICAL SPECIFICATIONS

1. Relayrack Relay Panel Specifications

Supply Voltage:	Single Phase - 230VAC, 50/60 Hz, 120 Amps (max.) / Three Phase - 400VAC/ 230VAC, 50/60 Hz, 3-Phase Star, 40 Amps per Phase (max.)
Output:	Normal Resistive Loads: 10A per Circuit / Inductive Loads: 8A per Circuit
Circuit Protection:	10A Circuit Breaker per Channel (over-current protection)
Control Signals:	RDM (E1.20-2006) or DMX512
Control Connections:	2, Either can be input or output
Ambient Temperature:	Operating: -10 to +50°C / Storage: -10 to +70°C
Humidity:	0 to 95% Non-condensing
Weight:	8.3 kg
Construction:	Sheet metal with powder coat finish
Dimensions:	475 (H) x 332 (W) x 137 (D) mm
Compliance:	CE Marked, IP20 Protection Rating

Note: For complete model specifications, features, etc., refer to the product specification sheet or visit the web site at www.vari-lite.com for more details.

2. Relayrack Dimensions



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 CENTER:

Call: +31 (0) 543 542 531
entertainment.europe@signify.com