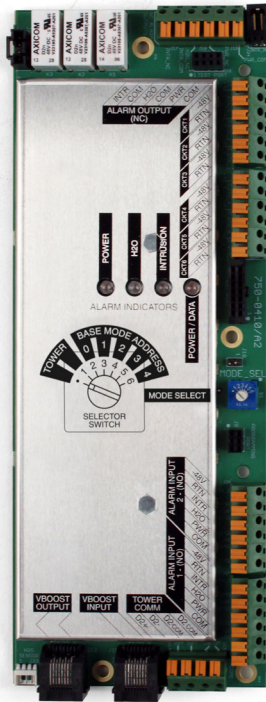


Installation Instructions: 3315-ALM-RS485



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1.0 Copyright

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1.1 Disclaimer

The information in this document is subject to change without notice and describes only the product defined in the introduction of this documentation. This documentation is intended for the use of Raycap customers only for the purposes of the agreement under which the document is submitted, and no part may be used, reproduced, modified or transmitted in any form or means without the prior written permission of Raycap. The documentation has been prepared to be used by professional and properly trained personnel, and the customer assumes full responsibility when using it. Raycap welcomes customer comments as part of the process of continuous development and improvement of the documentation.

This product is suitable for OSP.

Raycap has made all reasonable efforts to ensure that the instructions contained in this document are adequate and free of material errors and omissions. Raycap will, if deemed necessary, explain issues which may not be covered by this document.

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Raycap shall have no liability for any error damage of any kind resulting from the use of this document.

1.2 Warnings

Before using the product, read all instructions and cautionary markings on the product and on any equipment connected to the product.

CAUTION – Unless otherwise noted, product usage that is not recommended or sold by the product manufacturer can result in risk of fire, electric shock, or injury to persons.

CAUTION – Do not operate the product if it has been damaged in any way. Return damaged products to their manufacturer for repair or replacement.



ATTENTION – Electrostatic sensitive devices. ESD mitigative procedures, such as wearing wriststraps are to be used during installation and maintenance.

2. Introduction

In a split Radio Base Station (RBS) architecture the typical RBS consists of a Base Band Unit (BBU) and Remote Radio Heads (RRH) connected by cabling. Power to the RRH is provided through copper cables traveling from the base station to the top of the tower or roof top. This creates a conductive path, making the active equipment at the top and the base of the site vulnerable to damage by direct lightning strikes. Protection systems installed in front of both the BBU and the RRH must be able to withstand direct lightning currents in order to protect the sensitive equipment. Raycap's RRH solutions featuring Strikesorb® SPD technology significantly enhance the reliability & availability of the RRH site by providing superior electrical protection at the RRH and BBU, and also enable flexible fiber optic and power cable management solutions.

The 3315-ALM-RS485 is suitable for installation for Network Telecommunications Facilities, (Central Office), Outside Plant (Remote Terminal Facilities), and locations where the NEC applies (Customer Prem Locations).

3.1 Prerequisites

Installers of Raycap's RRH surge protective and fiber/power management solutions must be industry professionals who have attended training on the proper installation of the equipment by Raycap and/or the mobile operator. Installers are required to read this installation guide thoroughly prior to installation of the Raycap RRH protection equipment.

Installers shall obey all general and regional installation and safety regulations related to work on high voltage installations, as well as regulations covering correct use of tools and personal protective equipment. Use this equipment only for the purpose specified by the manufacturer. Do not carry out any modifications or fit any parts that are not recommended by the manufacturer. This could cause electric shock or other injuries.

3.2 Required Tools

#2 Phillips head screwdriver
ESD Strap
Torque wrench
¼" Nut Driver

3.3 Kit Contents

Alarm/Voltmeter PCB Assembly
Anti-Static Wrist Strap
Installation Instructions

For conditions other than those described above, please contact a Raycap Account Representative at +1 (208) 777-1166, (800) 890-2569, info@raycap.com, or www.raycap.com

Pre-wiring Preparation Procedure

- 4.1 Ensure the lanyard from enclosure lid to enclosure base is secure.

Note: Use metal mounting frame to secure hoist when lifting to tower top.

Warning: Holes in lid for lanyard and padlock must NOT be used as hoist locations.

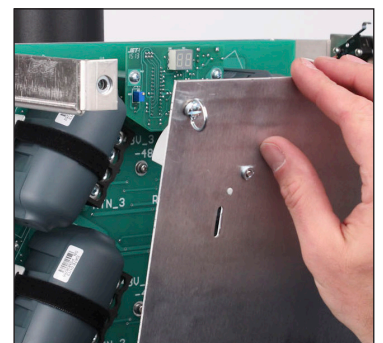
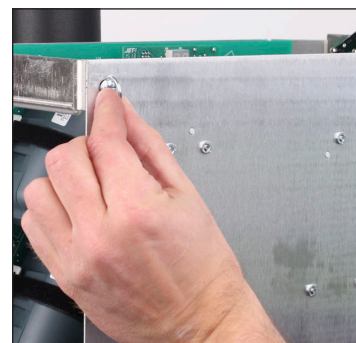
- 4.2 **WARNING – Disconnect or disable the DC power source to the product prior to beginning this installation.**

(Installed cables and wires not shown for clarity)

- 4.3 Open up clamps on all sides of the enclosure cabinet by lifting the hinged clamp tabs.
- 4.4 Carefully slide the copper dome over the top of the assembly and set aside.

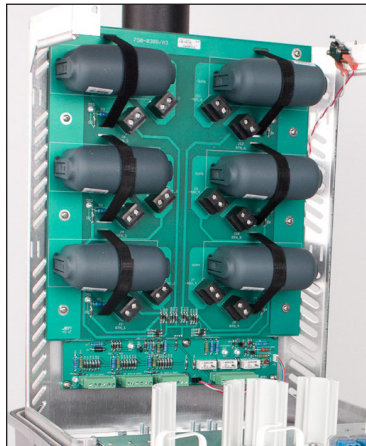


- 4.5 To access power, fiber and alarm wire connections, unclasp 1/4 turn latches, then fold down fiber tray.

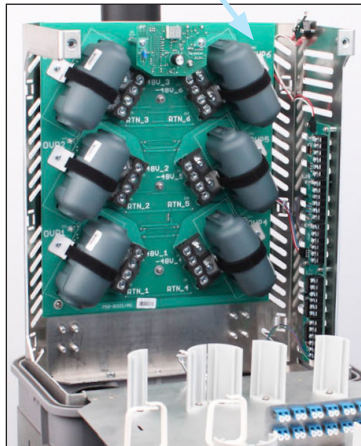


Identifying generation of 3315

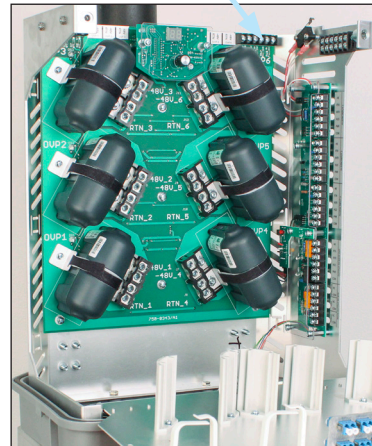
5.1.



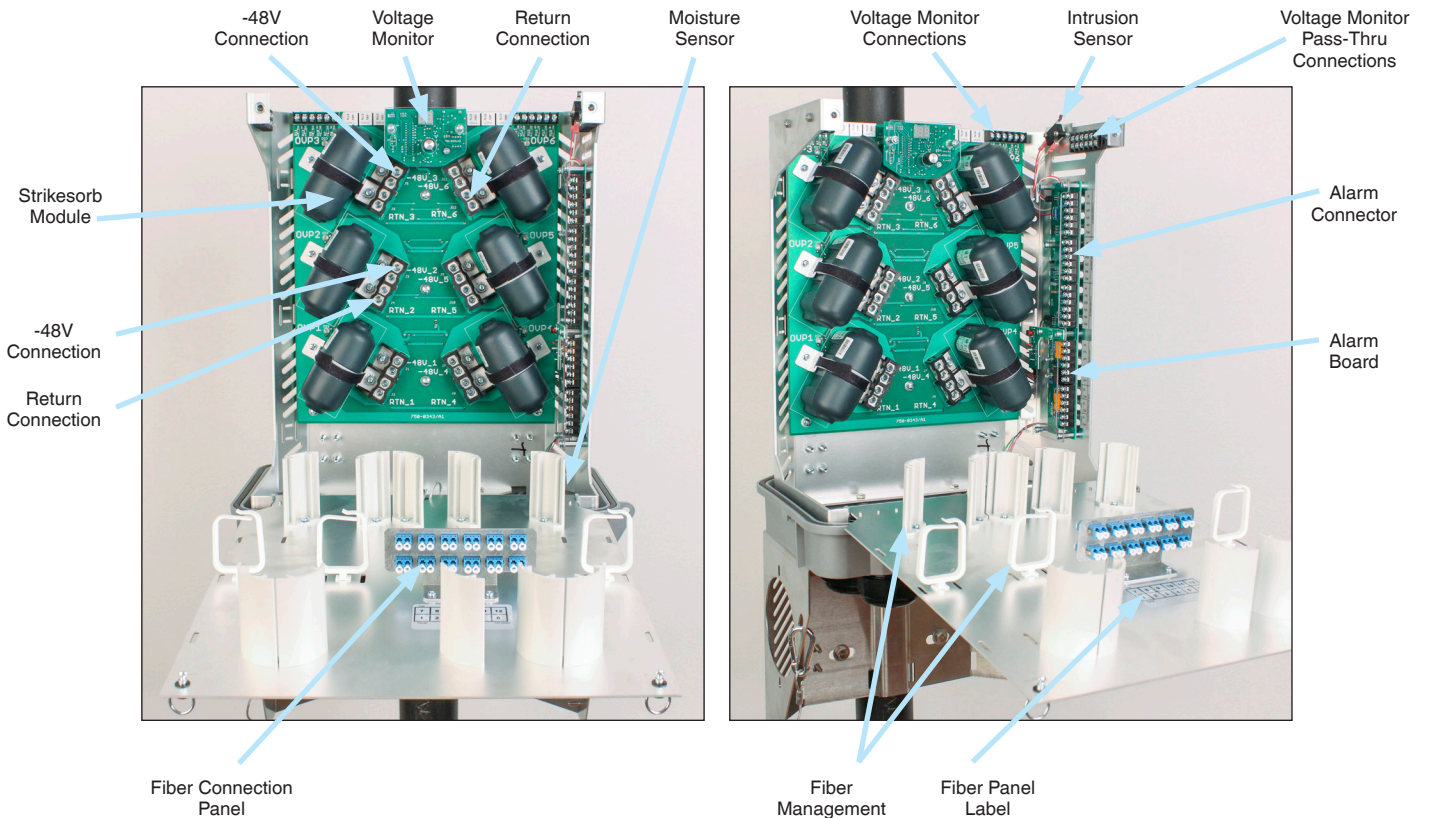
Generation 1
NOT Compatible with
3315-ALM-RS485



Generation 2
Compatible with
3315-ALM-RS485.
Requires steps starting on
page 18.

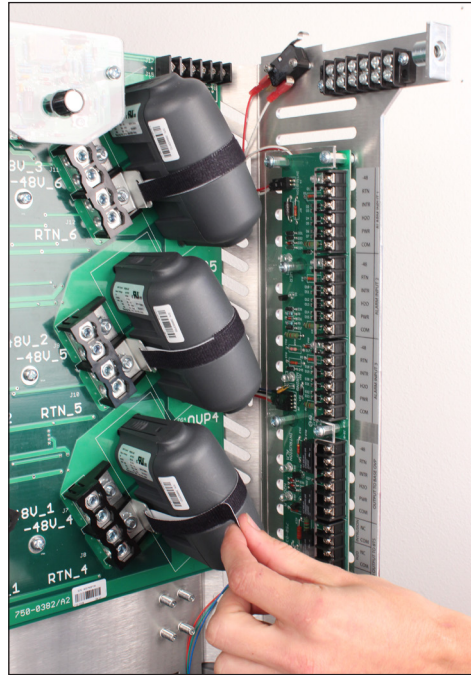


Generation 3
Compatible with
3315-ALM-RS485.
Proceed to Step 6.1



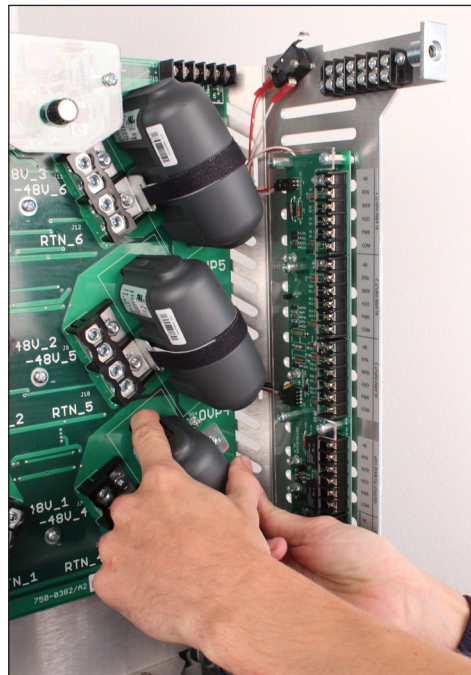
Removing Strikesorb Modules

- 6.1 Remove the 3 Strikesorb Modules located on the right side of the main PCB.
- 6.2 Release and remove Velcro strap from Strikesorb module.



- 6.3 Grab the Strikesorb module by ends and depress lever on both sides.
- 6.4 Rock the Strikesorb module side to side, and pull it out.

Note: You have to overcome a strong spring contact to remove module.



Procedure

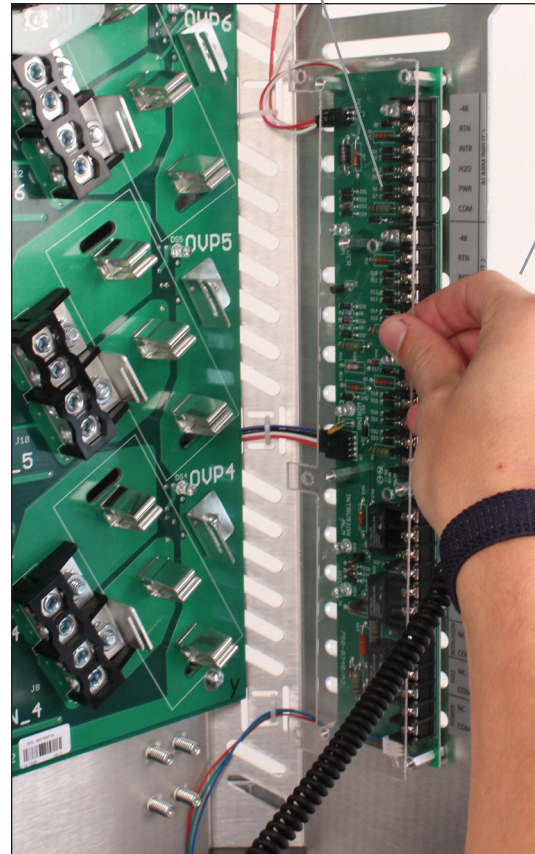
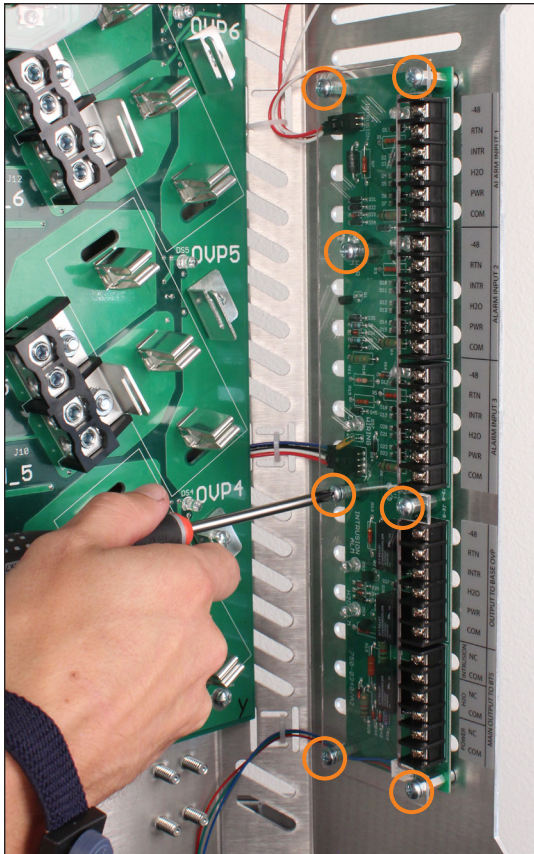
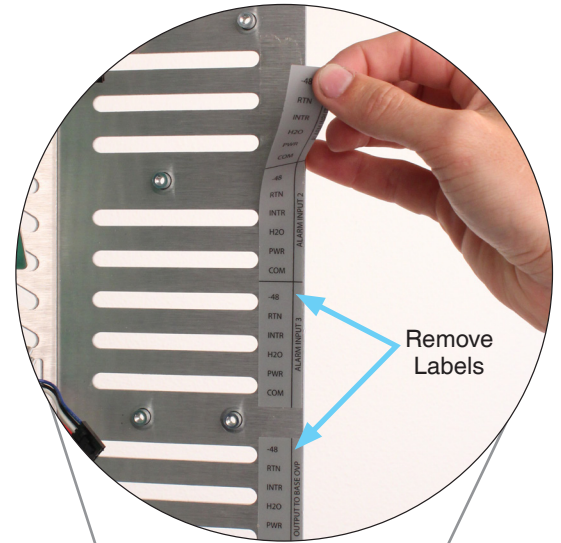
Removal of Touch Guard

- 7.1 Using a #2 Phillips-head screwdriver, **Remove 7 screws** securing the touch guard.

Remove touch guard and set aside.

Touch guard will not be used for 3315-ALM-RS485 kit installation.

- 7.2 Remove the 2 labels from the frame as indicated.

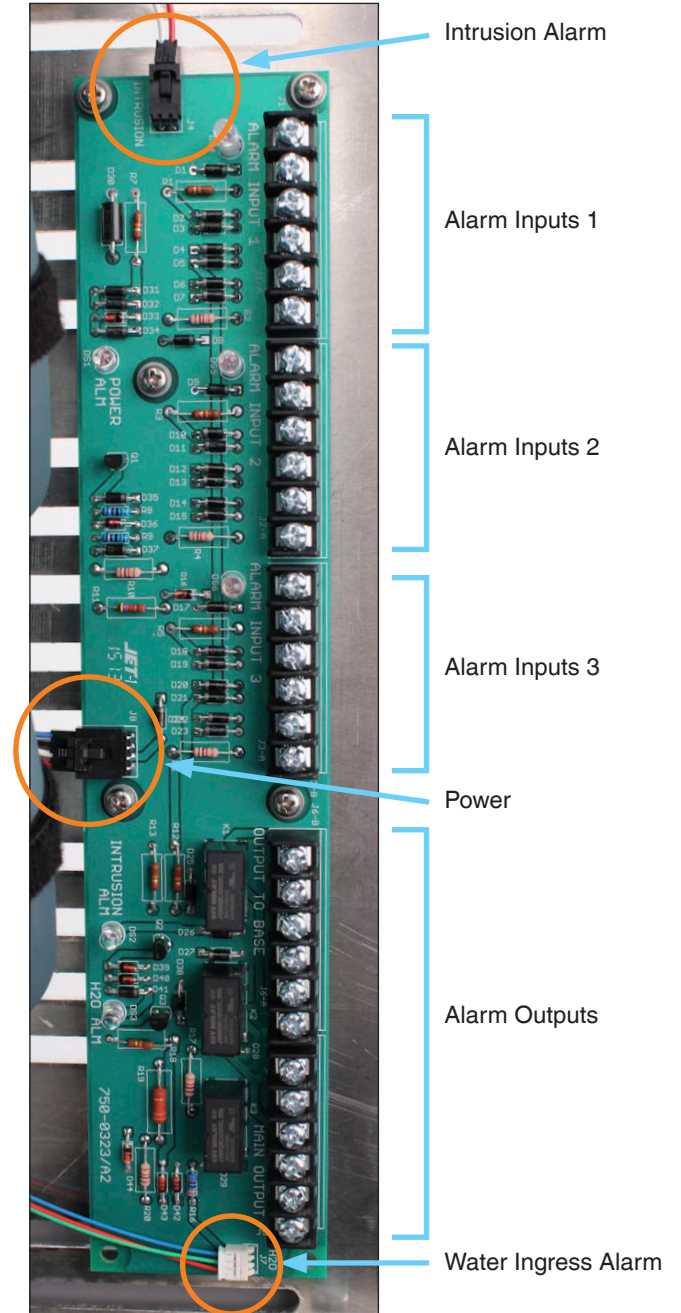


Procedure

Removal of Existing Alarm Wiring

8.1 **NOTE** – Label each alarming wire to ensure proper connection when reinstalling to 3315-ALM-RS485 PCB.

8.2 Depress the release tabs on the Intrusion and Power Connectors before pulling on the connector, **Remove all wires** connected to the alarm board pictured below.



Procedure

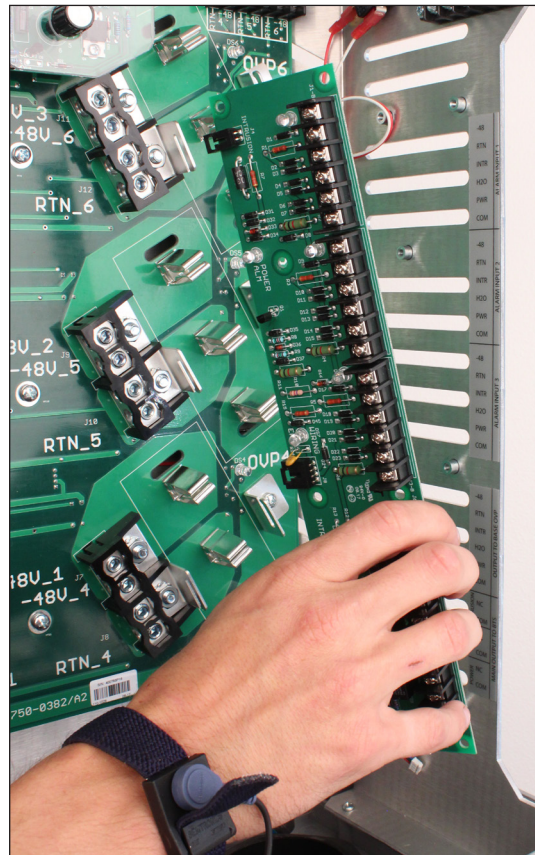
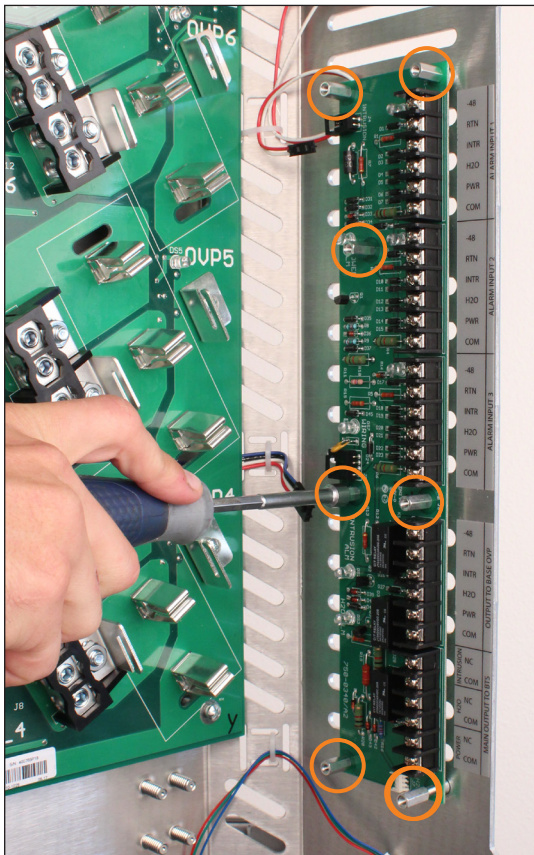
Removal of Stand-Offs and Alarm Board

9.1 **NOTE** – Label each alarming wire to ensure proper connection when reinstalling to 3315-ALM-RS485 PCB.

9.2 Using a 1/4" nut-driver, **Remove 7 stand-offs** securing the PCB to the frame.

Remove PCB and set aside.

The stand-offs and this PCB will not be used for 3315-ALM-RS485 kit installation.

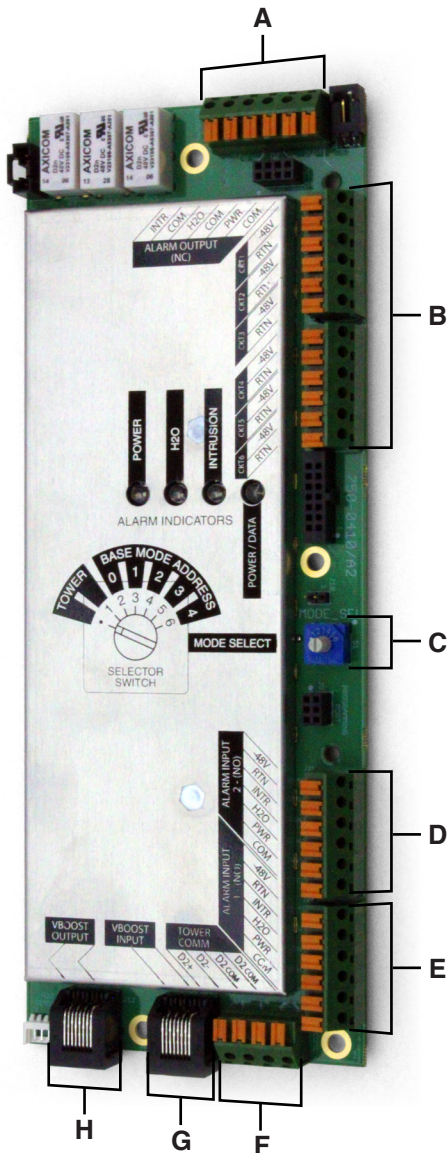
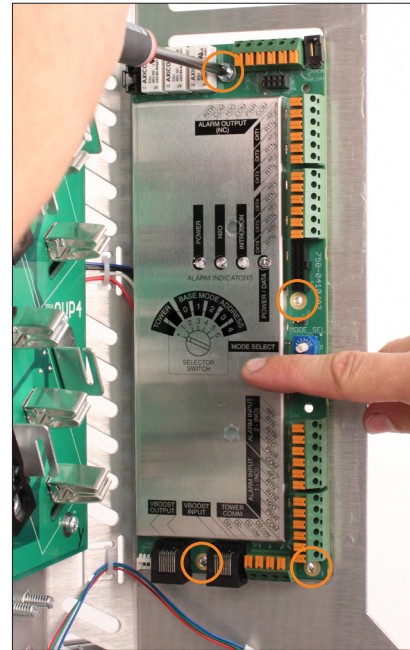


Procedure
Installation of 3315-ALM-RS485

- 10.1 Align new alarm board to frame. Using a #2 Phillips-head screwdriver, **secure 4 screws.**



ATTENTION - Ensure ESD wriststrap is used Electrostatic sensitive devices. ESD mitigative procedures, such as wearing wriststraps are to be used during installation and maintenance.



7.0 Installing Alarm Wiring

- A. Alarm Output to BTS: Outputs for Intrusion, H₂O, and Power
- B. Legacy: parallel voltage monitor wire connections
- C. Rotary Switch for Base Mode Operation. Place rotary switch to position "2, 3, 4, 5, or 6" which corresponds to base mode address "0, 1, 2, 3, or 4". If in daisy chain configuration, place selector switch to the next base mode address.

Place rotary switch to "•" or "1" for Tower Top Mode Operation.
- D. Legacy alarm wire connections 2: For Daisy Chain
- E. Legacy alarm wire connections 1: For Intrusion, H₂O, and Power
- F. Base Communication: Base RS485 communication input from tower, 2-twisted pair (4 wires total)
- G. VBoost Input: Optional ethernet daisy chain input
- H. VBoost Output: Optional ethernet output to daisy chain / VBoost

Procedure

Installation of 3315-ALM-RS485 (continued)

- 10.2 The power wire is secured to frame. In order for the power wire to reach the connection terminal, the cable tie must be clipped.
- 10.3 From the backside of the unit, carefully **clip the cable tie** to allow cable length to reach the Power wire connection terminal. This will minimize the chance of damaging the power wire.

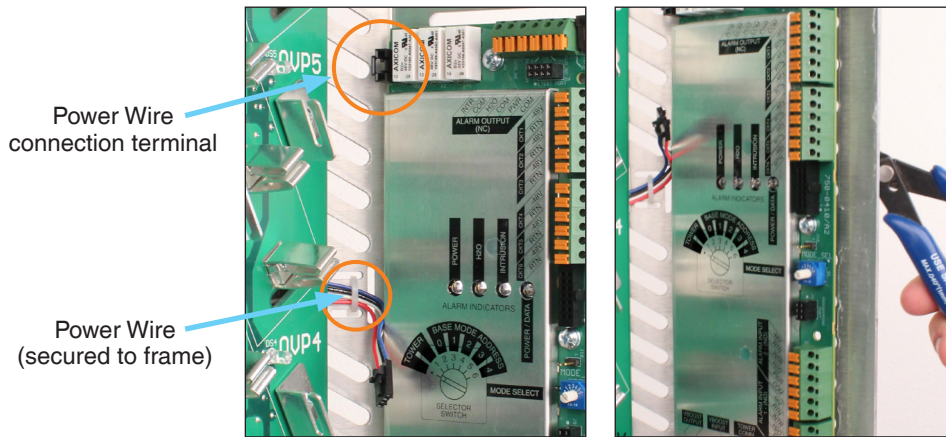


Figure 10.2

(indicating to clip cable-tie on the back-side of unit)

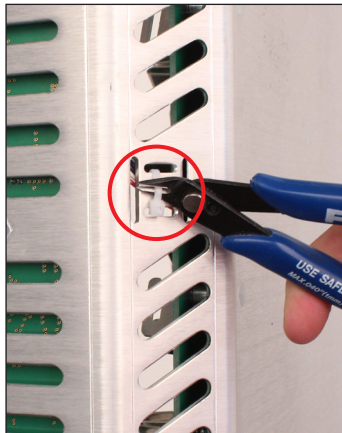
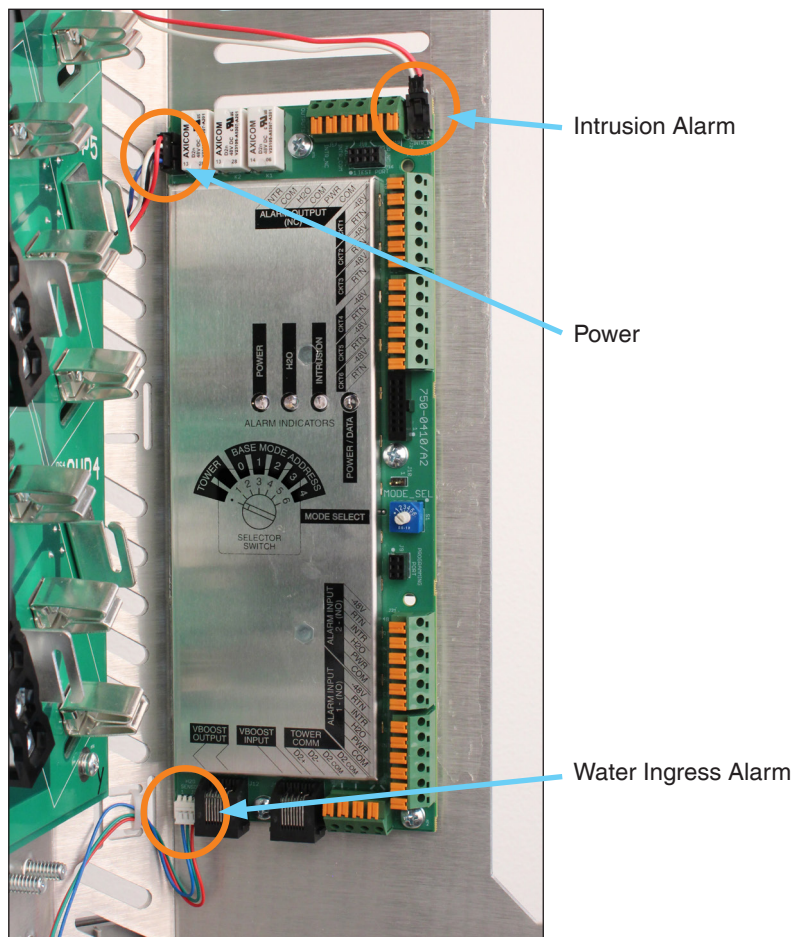


Figure 10.3
clipping cable-tie on
back-side of unit

Procedure

Connecting wires to 3315-ALM-RS485

- 10.4 Connect the Power Intrusion and H₂O wires.















Intrusion Alarm

Power

Water Ingress Alarm

11.1 Alarm connections for 3315-ALM-RS485 RVZDC-3315-PF-48 at the Tower Top connected to RVZDC-3315-PF-48 with Retrofit Kit at the base.

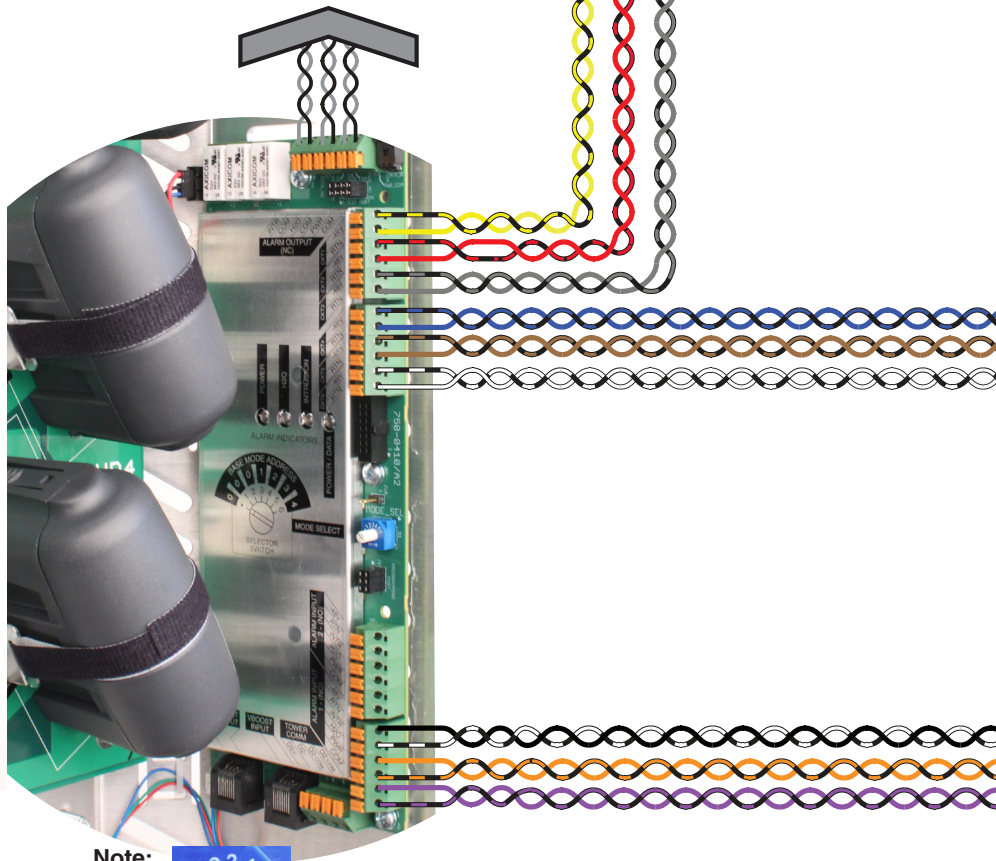
Pair	Color	Alarm Input
1		Yellow RTN (1)
		-48V (1)
2		Red RTN (2)
		-48V (2)
3		Slate RTN (3)
		-48V (3)
4		Blue RTN (4)
		-48V (4)
5		Brown RTN (5)
		-48V (5)
6		White RTN (6)
		-48V (6)

Voltage Monitoring on Main PCB



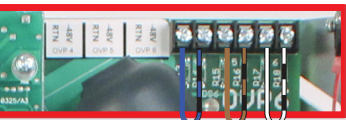
Alarm Outputs to BTS

Base Unit

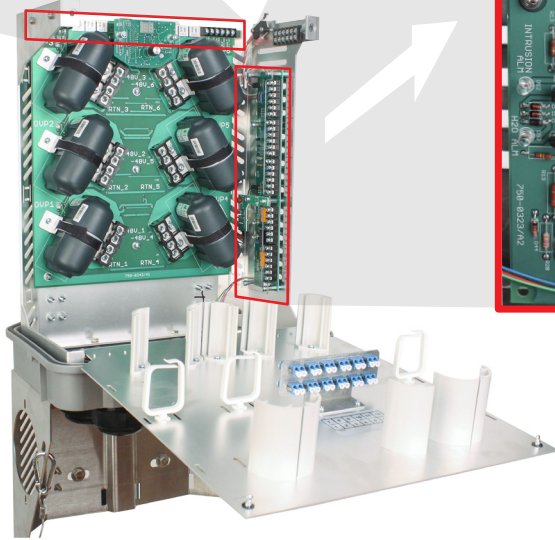
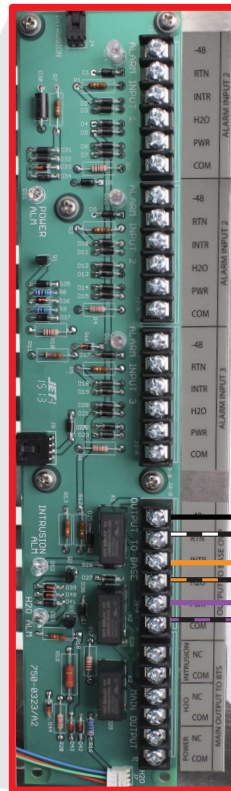


Note:
Base Mode Address "0"
Position "2"





Alarm Board



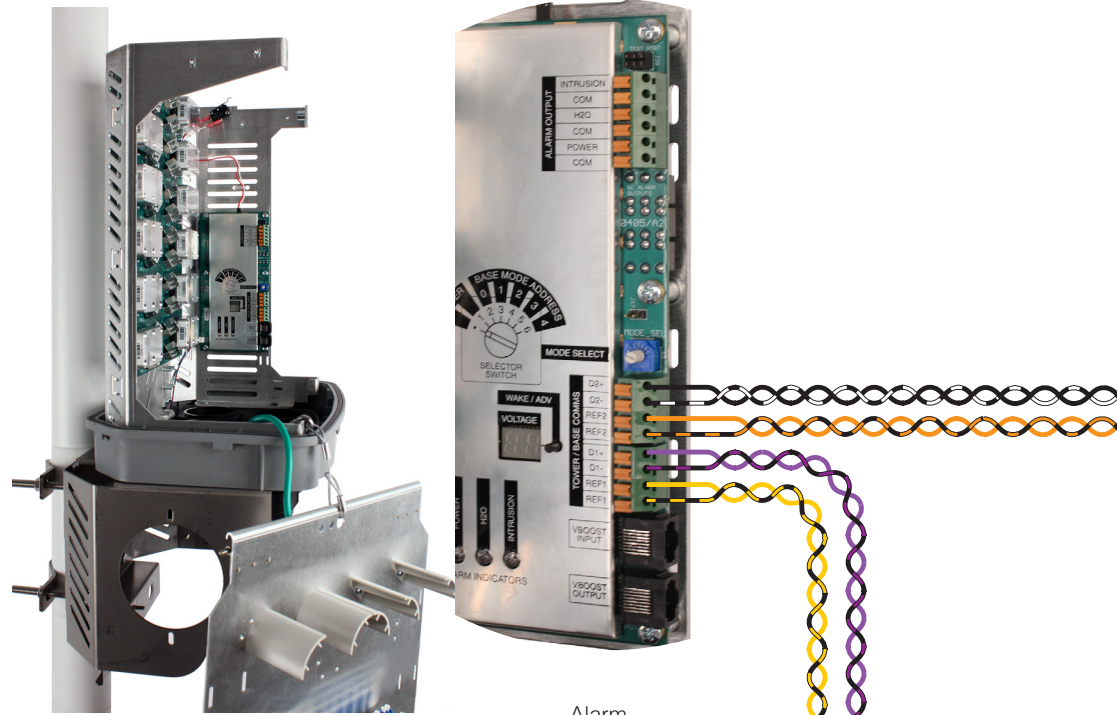
3315 Tower Top Unit

Pair	Color	Alarm Input
1	Black	-48V
	Black/White	RTN
2	Orange	INTR
	Black	H ₂ O
3	Violet	PWR
	Black	COM

11.2

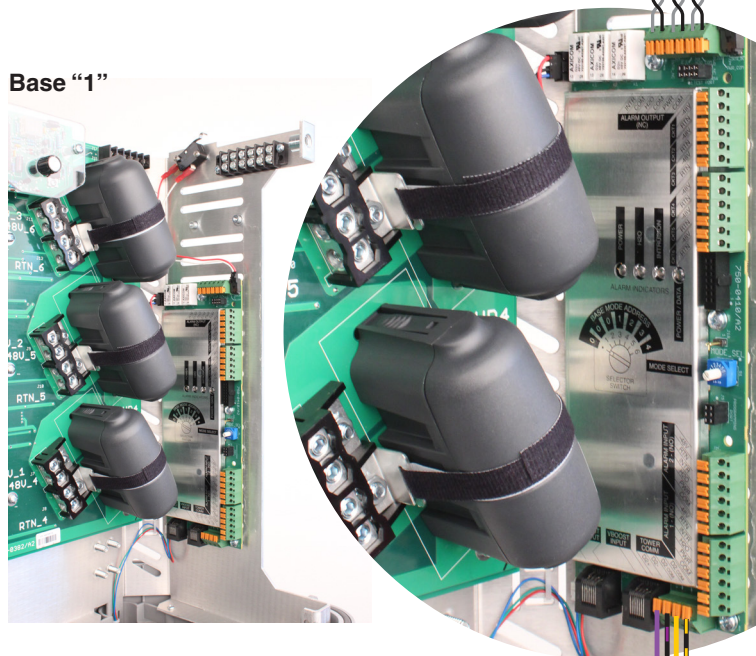
Alarm connections for 3315-ALM-RS485 RVZDC-6627-PF-48 at the Tower Top connected to (2) RVZDC-3315-PF-48 with Retrofit Kits at the base.

Tower







Alarm Outputs to BTS

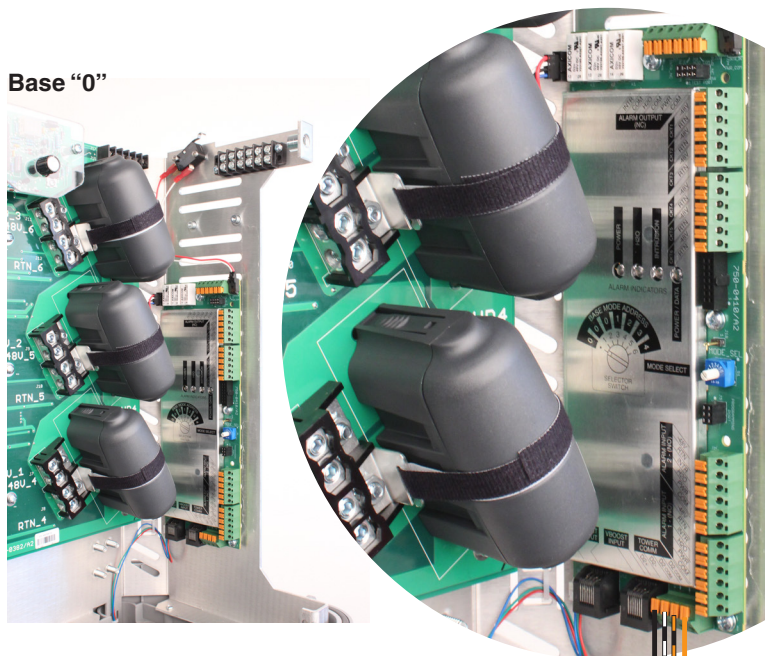
Base "1"



Note:
Base Mode Address "1"
Position "3"



Pair		Color	Data
1		Black	D2+
		White/Black	D2-
2		Orange	REF2
		Orange/Black	REF2
3		Violet	D1+
		Violet/Black	D1-
3		Yellow	REF1
		Yellow/Black	REF1

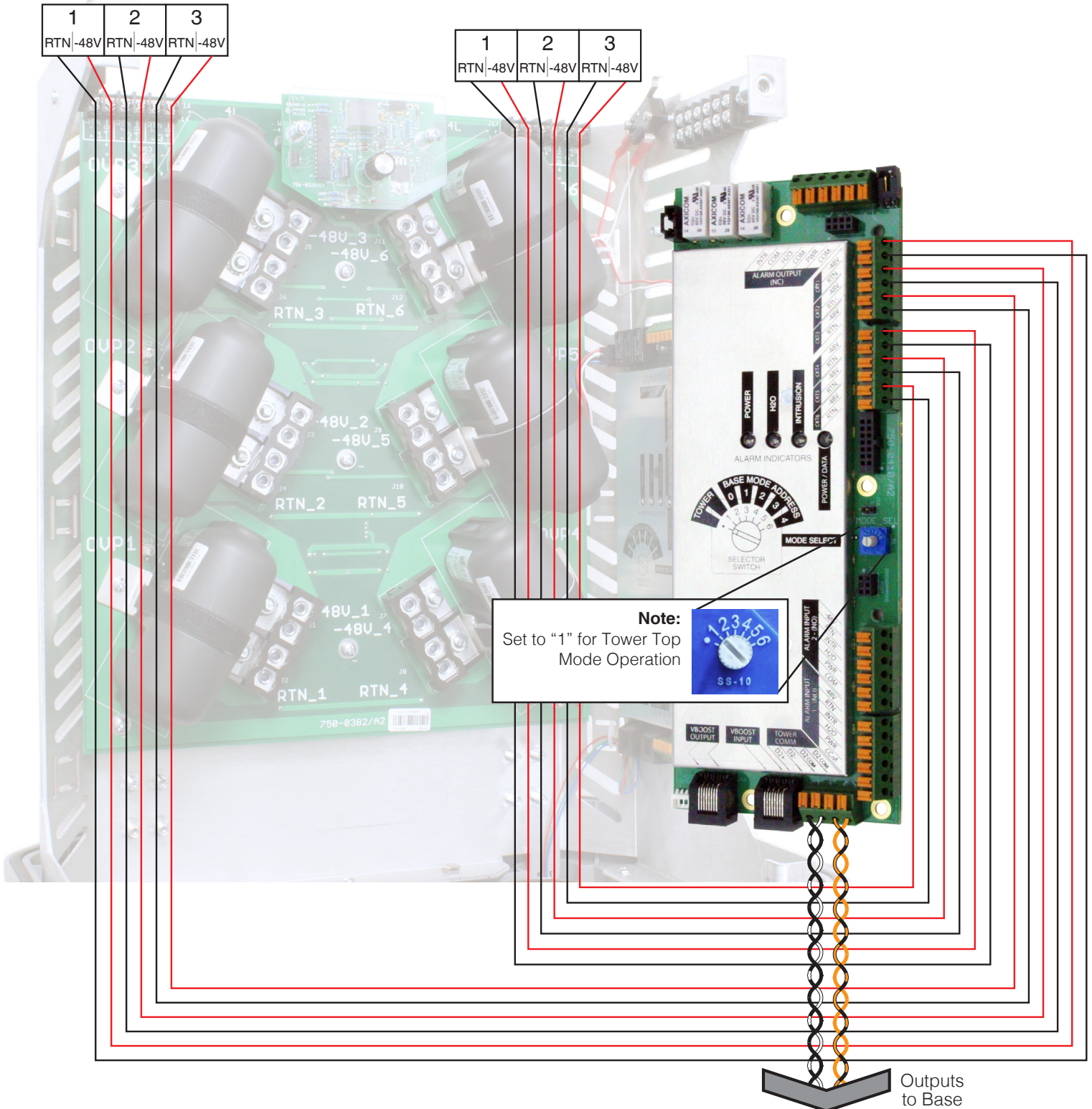


Note:
Base Mode Address "0"
Position "2"



11.3 Alarm connections for 3315-ALM-RS485.

Third Generation RVZDC-3315-PF-48 installed on Tower Top.

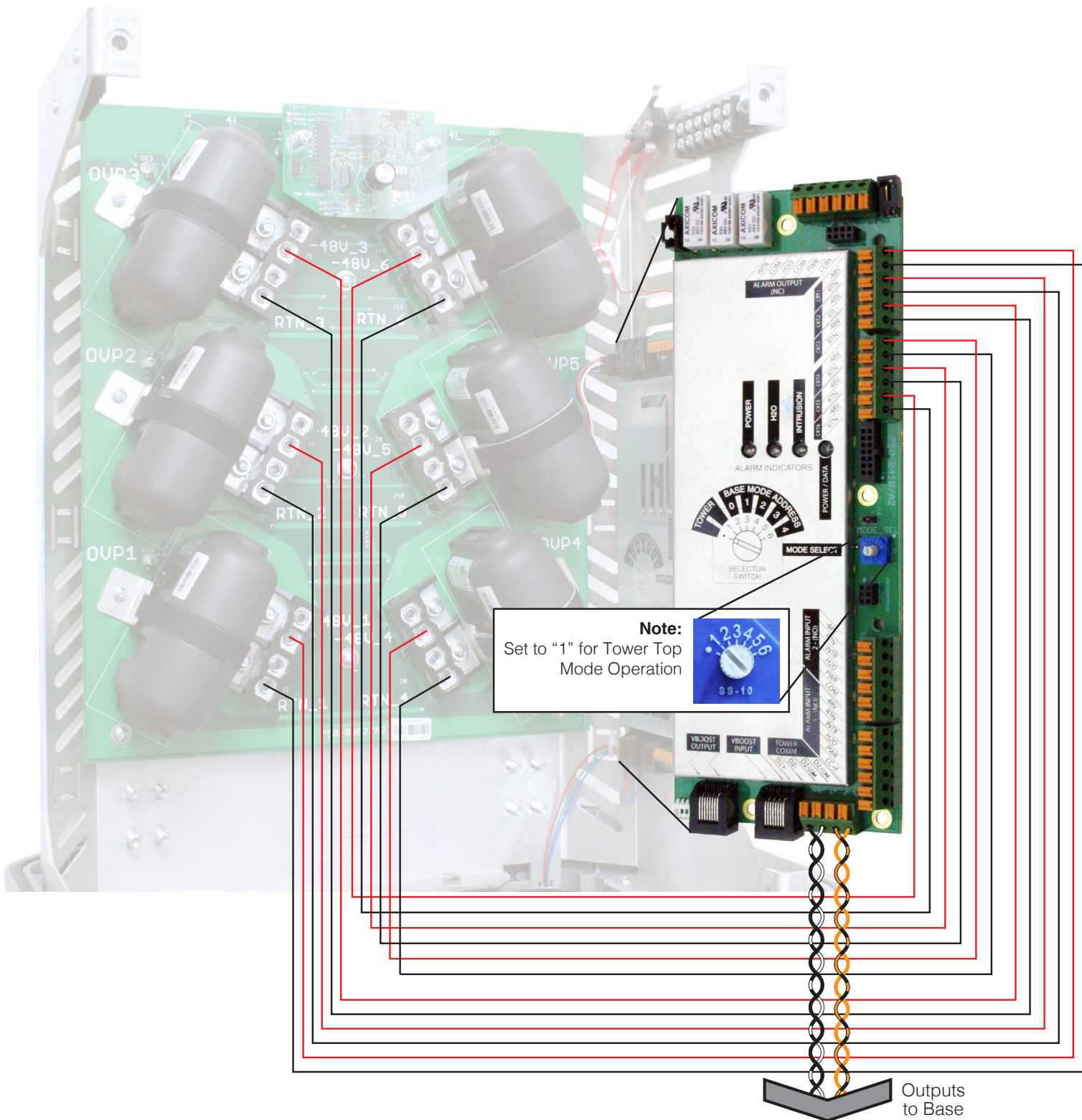


Note:
Set to "1" for Tower Top Mode Operation

Outputs to Base

11.4 Alarm connections for 3315-ALM-RS485.

Second Generation RVZDC-3315-PF-48 installed on Tower Top.



Installing a Strikesorb Module

12.1 Reinstall the 3 Strikesorb modules that were removed in Step 6.1.

**Installation Complete.
Closing and Securing Unit.**

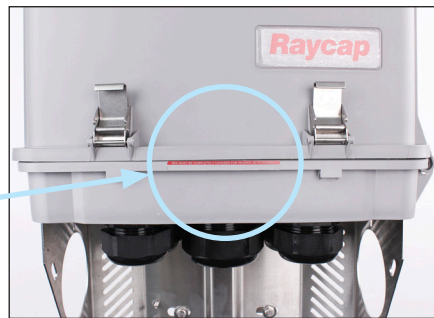
13.1 Slide enclosure lid into place.



13.2 As pictured, Lid IS NOT properly aligned.

Red must be completely covered for proper lid alignment.

RED MUST BE COMPLETELY COVERED FOR PROPER LID ALIGNMENT



13.3 As pictured, Lid IS properly aligned.



- 13.4 If installation requires padlocks, (not provided) secure “bottom right” of enclosure.

Note: If padlock holes are NOT aligned, the lid is NOT properly aligned.



- 13.5 When alignment of lid is confirmed, close and secure all clamps.

Installation complete.



14. Supported Configurations

(Note: Any combination of these supported configurations, can be used in Daisy Chain.)

12 OVP Dome Configurations (Base):

Base Unit 1	Unit Connected at Top		Configuration Supported?
	Tower 1	Tower 2	
6627	6627	NONE	YES
6627	3315 (with Retrofit)	NONE	YES
6627	3315 (with Retrofit)	3315 (with Retrofit)	YES
6627	6627	6627	NO
6627	6627	3315	NO

“6627” = 12 OVP Dome | “3315” = 6 OVP Dome

“with Retrofit” = Retrofit Alarm Board installed

12 OVP Rack Configurations (Base):

Base Unit 1	Unit Connected at Top		Configuration Supported?
	Tower 1	Tower 2	
4520	6627	NONE	YES
4520	3315 (with Retrofit)	NONE	YES
4520	3315 (with Retrofit)	3315 (with Retrofit)	YES
4520	6627	6627	NO
4520	6627	3315	NO

“4520” = 12 OVP Rack | “2260” = 6 OVP Rack | “6627” = 12 OVP Dome | “3315” = 6 OVP Dome

6 OVP Rack/Dome Configurations (Base):

Unit Connected at Base		Unit Connected at Top	Configuration Supported?
Base Unit 1	Base Unit 2	Tower 1	
3315 (with Retrofit)	3315 (with Retrofit)	6627	YES
3315 (with Retrofit)	3315	6627	YES
2260 (with Retrofit)	2260 (with Retrofit)	6627	YES
2260 (with Retrofit)	2260	6627	YES
3315 (with Retrofit)	NONE	3315	YES
2260 (with Retrofit)	NONE	3315	YES
3315	3315	6627	NO
2260	2260	6627	NO
6627	6627	6627	NO

“4520” = 12 OVP Rack | “2260” = 6 OVP Rack | “6627” = 12 OVP Dome | “3315” = 6 OVP Dome

“with Retrofit” = Retrofit Alarm Board installed

