



Medium Intensity Red A1-A6 Installation Manual
READ AND FOLLOW ALL SAFETY INSTRUCTIONS



- **DO NOT** let any supply cords touch hot surfaces higher than cord ratings.
- **DO NOT** mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not be subject to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause unsafe conditions.
- **DO NOT** use this equipment for anything other than intended use.
- Do take pictures of the installation and the wiring connections for commissioning and warranty.
- Proper Grounding is required to prevent lightning damage to the system
- The operation and maintenance must be carried out by authorized personnel.
- Repairs and Installation must only be carried out by qualified electrician.
- Genuine Dialight replacement parts must be used when unforeseen repairs are required.
- Observe the national safety rules and regulations during installation!!
- Earth Grounding is required throughout the install process. Failure to do so could void all warranties!!
- No alterations can be done without the agreement from Dialight Corp. Alterations other than written in this manual will void all warranties.

SAVE THESE INSTRUCTIONS!!!

Environmental Specifications

- Operating Temperature Range: -40°C to +55°C
- IP66, Suitable for outdoor use
- Pollution degree: P1
- Equipment is intended to be installed at an altitude of 2000m or less



Notice and Warnings:

This manual contains important information regarding the proper installation, operation, and maintenance of this product. Before using the product, read and understand all instructions, cautions, notes and warnings, as well as all of the labels affixed to the product. Failure to do so could result in personal injury or damage to equipment and/or void the product warranty.



FAILURE TO LEAVE THE ENCLOSURES FREE FROM DEBRIS UPON COMPLETION OF INSTALLATION MAY CAUSE SHORT CIRCUITS AND VOID THE SYSTEM WARRANTY



CAUTION: ONLY APPROVED PHOTOCELLS CAN BE USED WITH THIS SYSTEM



WARNING: FAILURE TO PROPERLY BOND THE LOW INTENSITY L810 LIGHTS AND CONTROLLER ENCLOSURES TO THE TOWER STRUCTURE WILL RESULT IN EVENTUAL LIGHTNING DAMAGE OF THIS SYSTEM. THE SYSTEM'S WARRANTY SHALL BE VOID IF ALL LOW INTENSITY L810 LIGHTS AND CONTROLLER ENCLOSURES ARE NOT PROPERLY BONDED TO THE TOWER STRUCTURE. TO AVOID WARRANTY NULLIFICATION, FOLLOW THE DIRECTIONS IN THEIR ENTIRETY.



CAUTION: NEVER LOOK AT THE LIGHTS WHILE THE SYSTEM IS ENERGIZED. THE LIGHTS COULD ILLUMINATE CAUSING TEMPORARY BLINDNESS WHICH WOULD BE DANGEROUS AT HIGH ELEVATIONS.



USE PROPER METHODS OF LIFTING AND CARRYING TO PROTECT AGAINST INJURY. FOLLOW THE RECOMMENDATIONS BELOW TO ENSURE ENCLOSURES ARE HANDLED IN A SAFE MANNER:

- **BASED ON FACILITY SAFETY REQUIREMENTS DETERMINE IF THE ENCLOSURE REQUIRES TEAM LIFTING**
- **BEND AT THE KNEES AND MAKE SURE YOUR BACK IS STRAIGHT BEFORE LIFTING**
- **LIFT WITH YOUR LEGS AND NOT YOUR BACK**
- **KEEP THE ENCLOSURE CLOSE TO YOUR BODY WHILE CARRYING**
- **KEEP YOUR BACK STRAIGHT WHEN LOWERING**

Included in this manual:

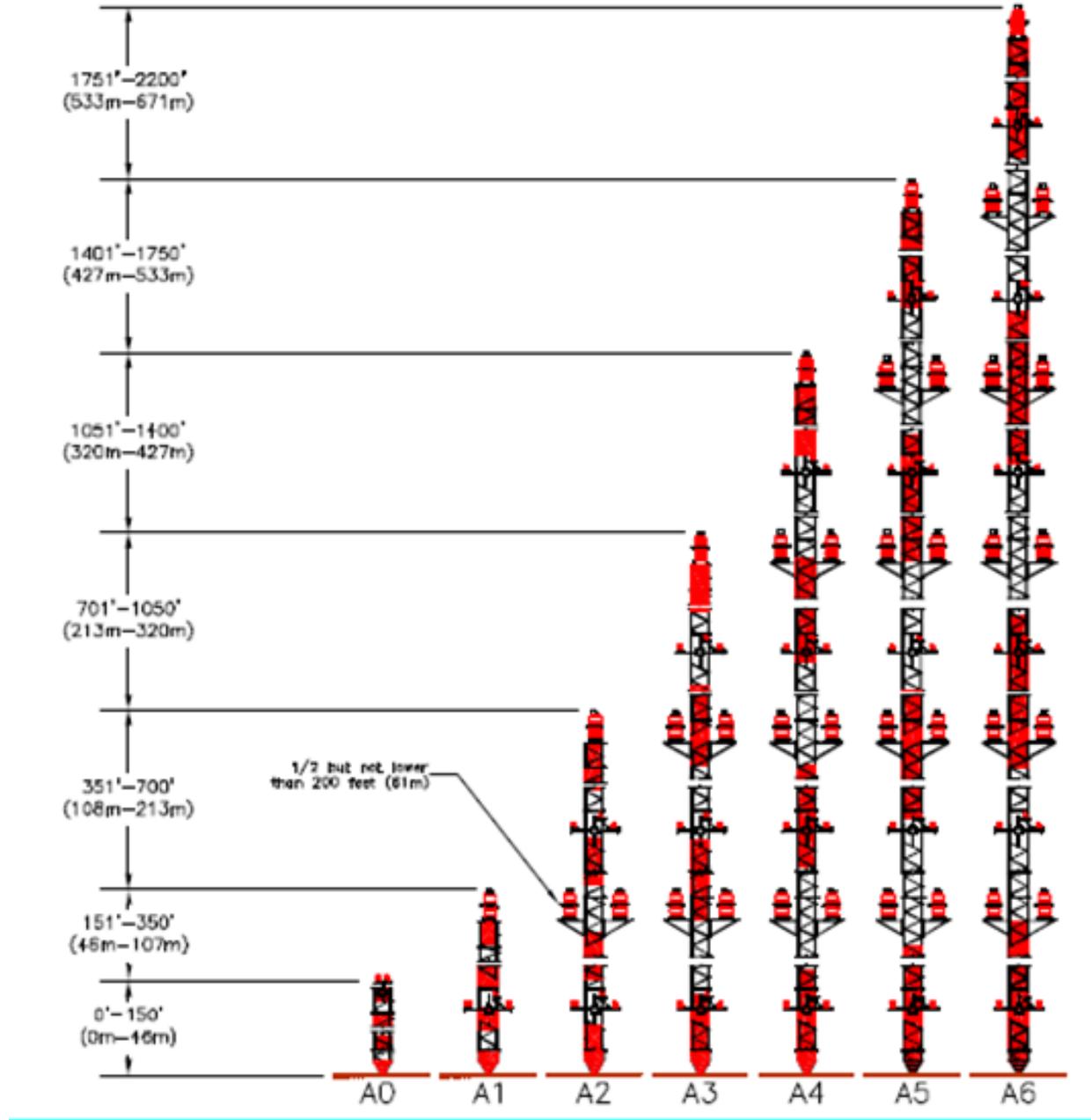
- Systems overview
- A tower style drawings
- Hot AM tower install disclaimer
- System Electrical Parameters
- Initial setup/installation requirements
- A1-A6 tower configurations/connections
- D6CE77CCTR (A1,A1+1,A2 A2+1,A3) Controller connections
- D6CG77CCTR (A4,A5,A6) Controller Connections
- Connecting the A5/A6 Expansion Box to the system
- Manual Calibration of the current sensors
- Photocell connection
- AC Mains Connections
- LCD Display Overview and System Configuration Settings
- Controller Status LED's
- Relay Board Alarm Dry Contact LED's
- Resetting
- Ext Sync Input (GPS, Etc.)
- Mechanical Dimensions of D664R13001L864 Flash Head
- Mechanical Dimensions of Controller and A5/A6 expansion box
- Replacement Part Numbers
- Display Events and Alarm descriptions
- Troubleshooting

Systems Overview:

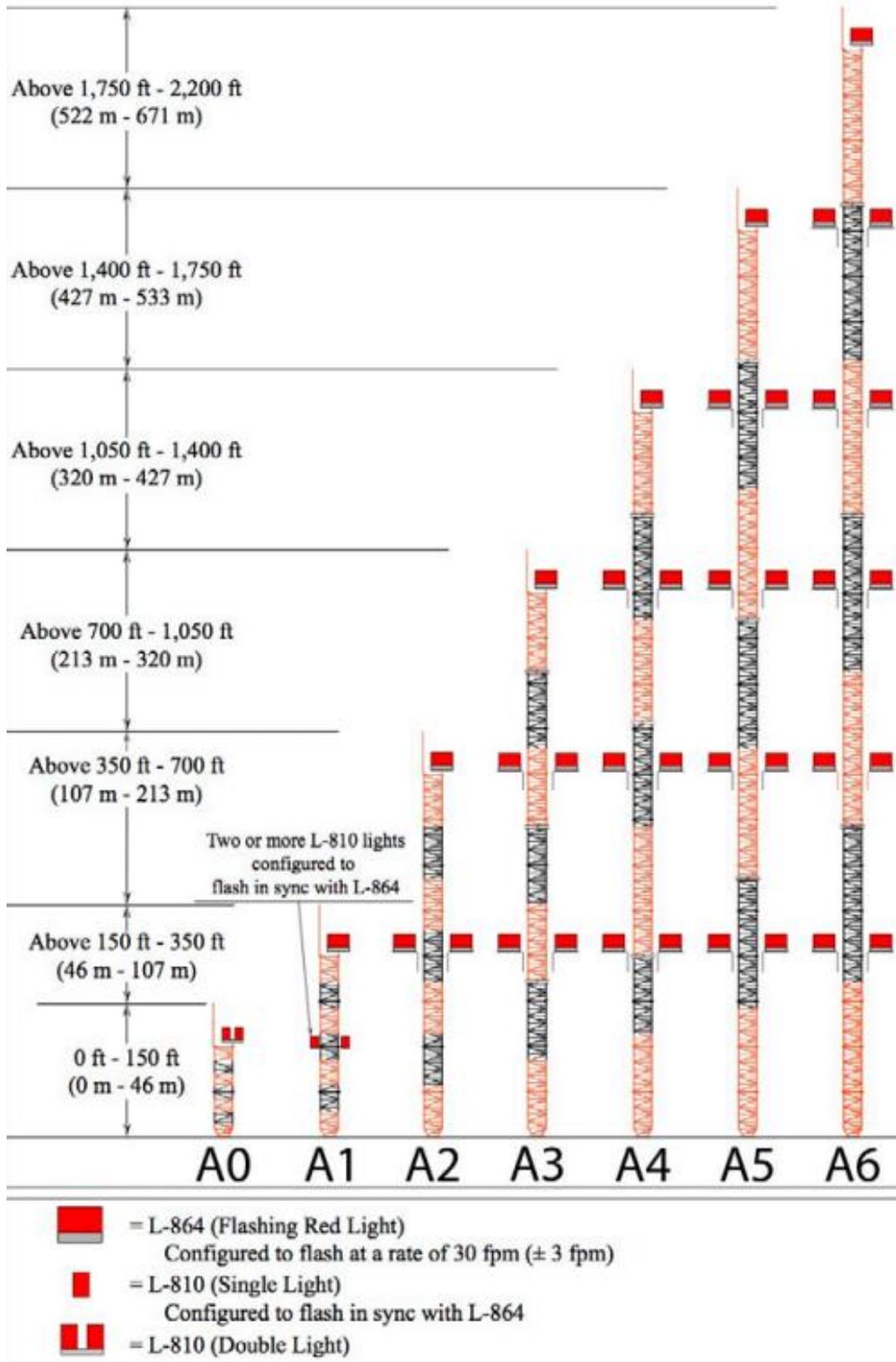
Dialight's LED based Red/IR Obstruction System is ideal for A1 through A6 FAA tower types (both standard and Avian Friendly configurations) and can be used to mark other structures as well. The operation of the lights is configurable and fully monitored. The side markers and/or beacons can be run in steady burn or flashing mode, with up to 24 ports individually mode selectable in banks of 6. The flash rate of the lights is also configurable, from lit solid and up to 40 flashes per minute. The system will seamlessly interface with the optional Dialight INEM (Gateway) and provides remote monitoring of the system. The lights are ETL verified to meet the FAA requirements.

A Tower Style (Red/IR at night) Drawings:

Non-Avian Friendly A style towers



Avian Friendly A Style towers



Hot AM Tower Installations:

The controller supplied with this install manual and hardware are NOT intended to be directly installed on to AM towers where the whole structure is the radiating antennae.

Contact www.dialight.com or your Sales Rep before installing.

Dialight provides additional information and different hardware kits for these structures

System Electrical Parameters:

Table 1 – Electrical Parameters

Nominal Supply Voltage (VAC)	Conditions	Watts
120Vac 60Hz	Red/IR night mode (A1- system)	Max 60 W
240Vac 50Hz	Red/IR night mode (A1- system)	Max 60 W
120Vac 60Hz	Red/IR night mode (A2- system)	Max 130 W
240Vac 50Hz	Red/IR night mode (A2- system)	Max 130 W
120Vac 60Hz	Red/IR night mode (A3- system)	Max 200 W
240Vac 50Hz	Red/IR night mode (A3- system)	Max 200 W
120Vac 60Hz	Red/IR night mode (A4- system)	Max 270 W
240Vac 50Hz	Red/IR night mode (A4- system)	Max 270 W
120Vac 60Hz	Red/IR night mode (A5- system)	Max 340 W
240Vac 50Hz	Red/IR night mode (A5- system)	Max 340 W
120Vac 60Hz	Red/IR night mode (A6- system)	Max 410 W
240Vac 50Hz	Red/IR night mode (A6- system)	Max 410 W

NOTE: Marker light level consist of 3 L810's

NOTE: A1 is defined as 1 Beacon and 1 Marker light level.

NOTE: A1+1 is defined as 2 Beacon and 1 Marker light level.

NOTE: A2 is defined as 3 Beacons and 2 Marker light levels.

NOTE: A2+1 is defined as 4 Beacons and 2 Marker light levels.

NOTE: A3 is defined as 5 Beacons and 3 Marker light levels.



NOTE: A4 is defined as 7 Beacons and 4 Marker light levels.
Additional side light enclosure (expansion box) is required for structures A5 and A6

NOTE: A5 is defined as 9 Beacons and 5 Marker light levels.

NOTE: A6 is defined as 11 Beacons and 6 Marker light levels.

Initial setup/Installation Requirements:

1: Board address set up/check: Although boards within the controller box are set at the factory, it is important to check each monitor board and alarm relay board that they are properly assessed with its rotary address switch. For the monitor boards; from right to left, board furthest to the right shall be addressed as "0," and each additional board being addressed as 1, 2...4, each board having a consecutive number setting. For the alarm relay boards, the board closest to the bottom of the controller shall be addressed as "0," and the one above will be addressed as "1."

2: Beacon/side marker (RTO) light connections: See diagrams for A tower configurations. Detailed connections for each will be described following the diagrams.

**NOTE: for A4 - A6 non-avian towers, the use of the Expansion Box as pictured, housing a third Monitor board, will be necessary.*

3: Cable requirements: For the Mains cable, the electrician or installer is to calculate the wire requirements based on the amount of Beacons being installed. It is recommended that no install utilize less than 14AWG wire with at least a 90°C temperature rating. See electrical parameters.

Cable between the Beacons and the Controller must be a minimum of 14AWG and 3 conductors. In some cases, the cable provided will be 5 conductors.

WARNING: Earth Ground wires must be connected to grounding points.

NOTE: Cable with foil and braid is required for lightning protection when conduit or Tek cable is not used.

Multi-conductor cable is used for A2 and A2+1 structures. (700 feet or less)

A3 and larger systems require 600 volt single conductors and conduit.

TEK cable can be used on all structures.

Neutral connections for all beacons can be combined (common) for ease of installation and less cable runs.

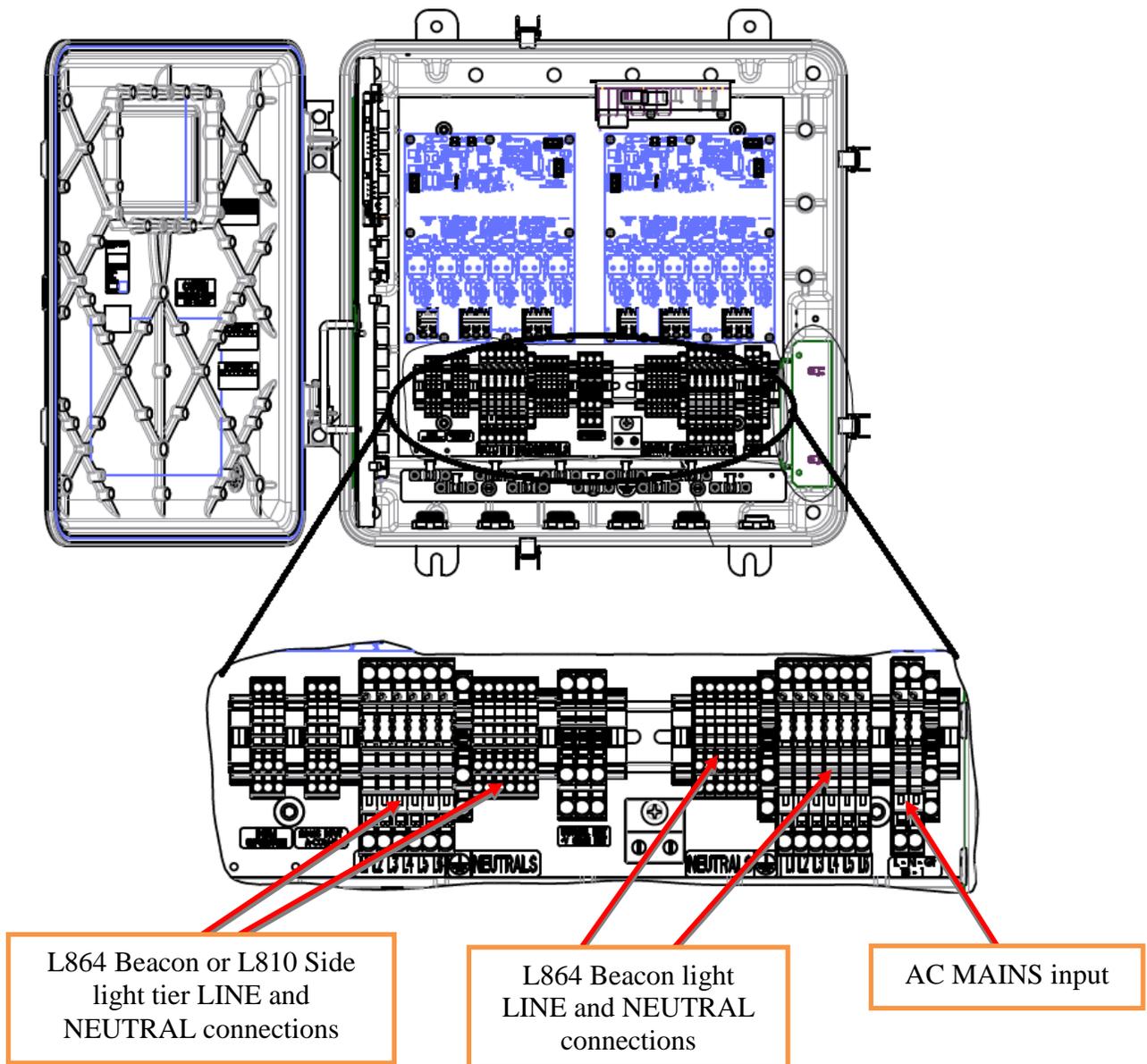
Neutral connections for all L810 lights can be combined (common) for ease of installation and less cable runs.

Cable between the Side lights and the controller must be a minimum of 16AWG and 3 conductors.

Cable between Photocell and the Controller must be a minimum of 18AWG and 3 conductors.

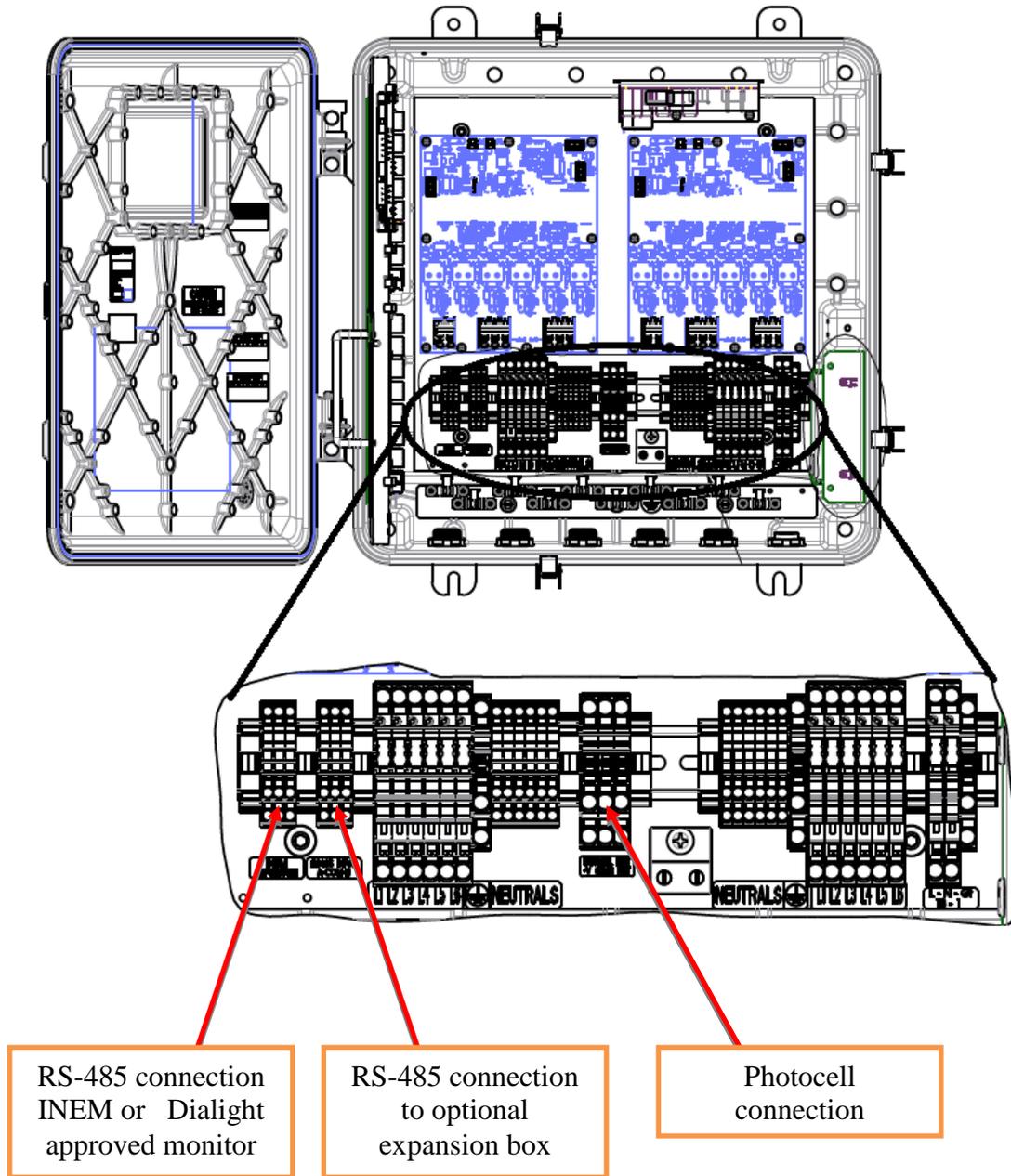
NOTE: Failure to do any of the above could void all factory warranties. If in doubt, please contact your sales agent or representative or visit www.dialight.com

A1-A6 Tower Lighting Controller Connections:



Connections continued on next page



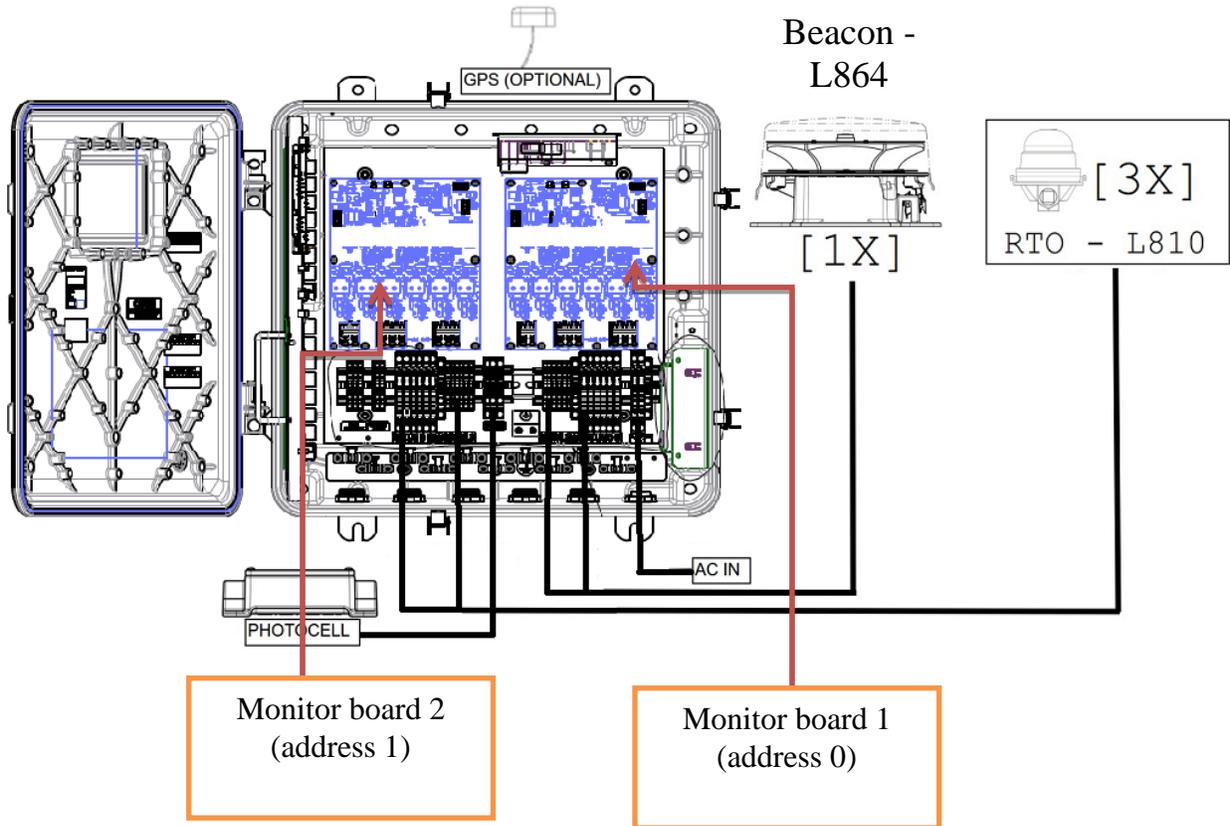


Note: On Port Connection Tables shown below each configuration:

- BC1 = Beacon 1, BC2 = Beacon 2 etc. BC1 being the upper most Beacon.
- SDLite T1 = Side Marker Light Tier 1, SDLite T2 = Side Marker Light Tier 2 etc. SDLite T1 being the lowest tier of side markers from the ground.
- XXXX indicates the port is not used.



D6CE77CCTR in A1 Configuration (Avian and Non-Avian Friendly):



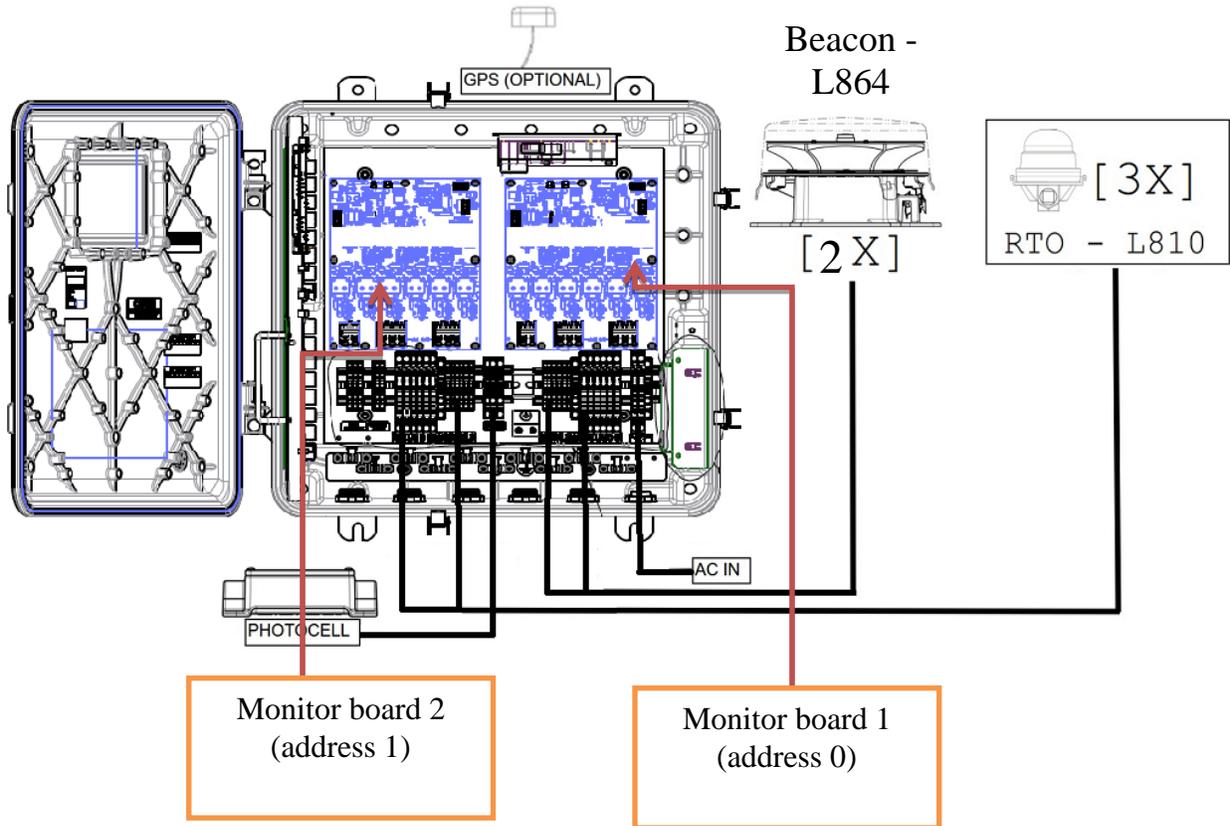
For A1:

2 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	XXXX	XXXX	XXXX	XXXX	XXXX
Board 2	T1 L810's	XXXX	XXXX	XXXX	XXXX	XXXX



D6CE77CTR in A1+1 Configuration: (Avian and Non-Avian Friendly)



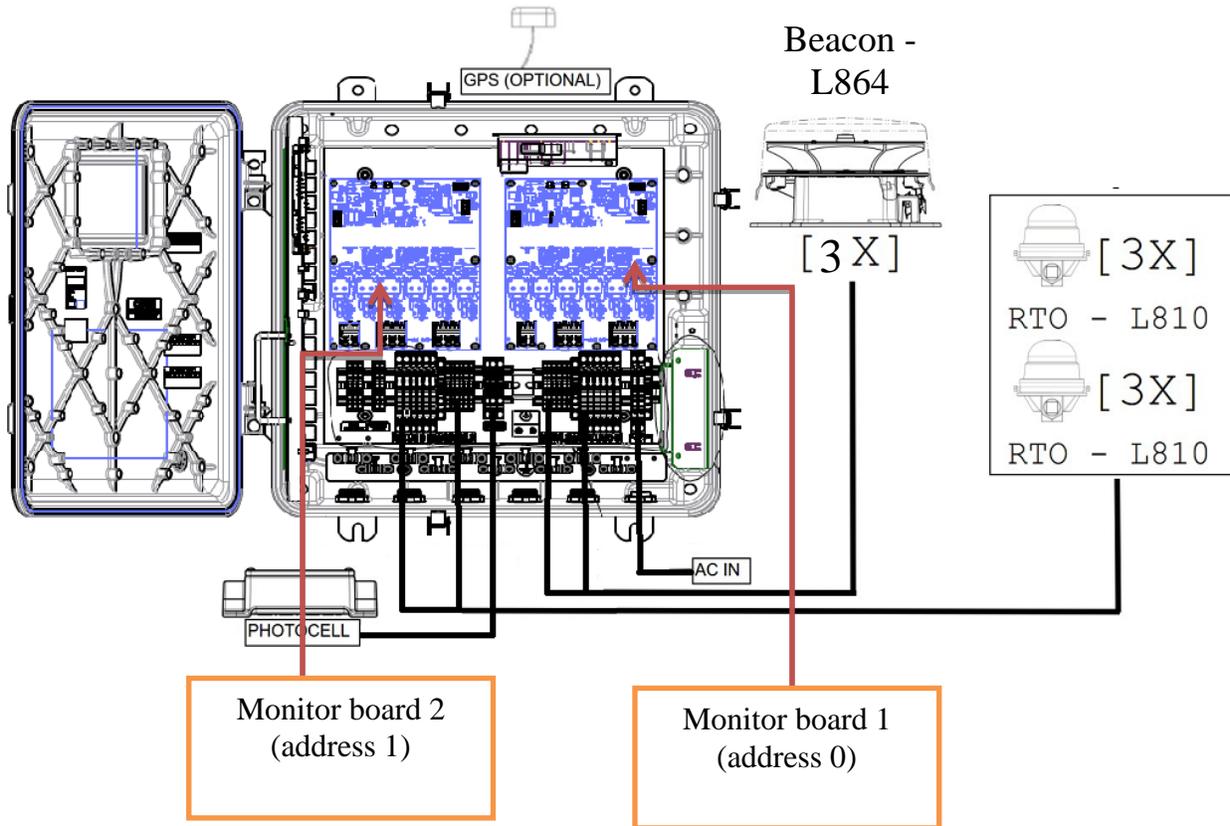
For A1+1:

2 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	XXXX	XXXX	XXXX	XXXX
Board 2	T1 L810's	XXXX	XXXX	XXXX	XXXX	XXXX



D6CE77CTR in A2 Configuration:
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers to be connected to monitor board 2)



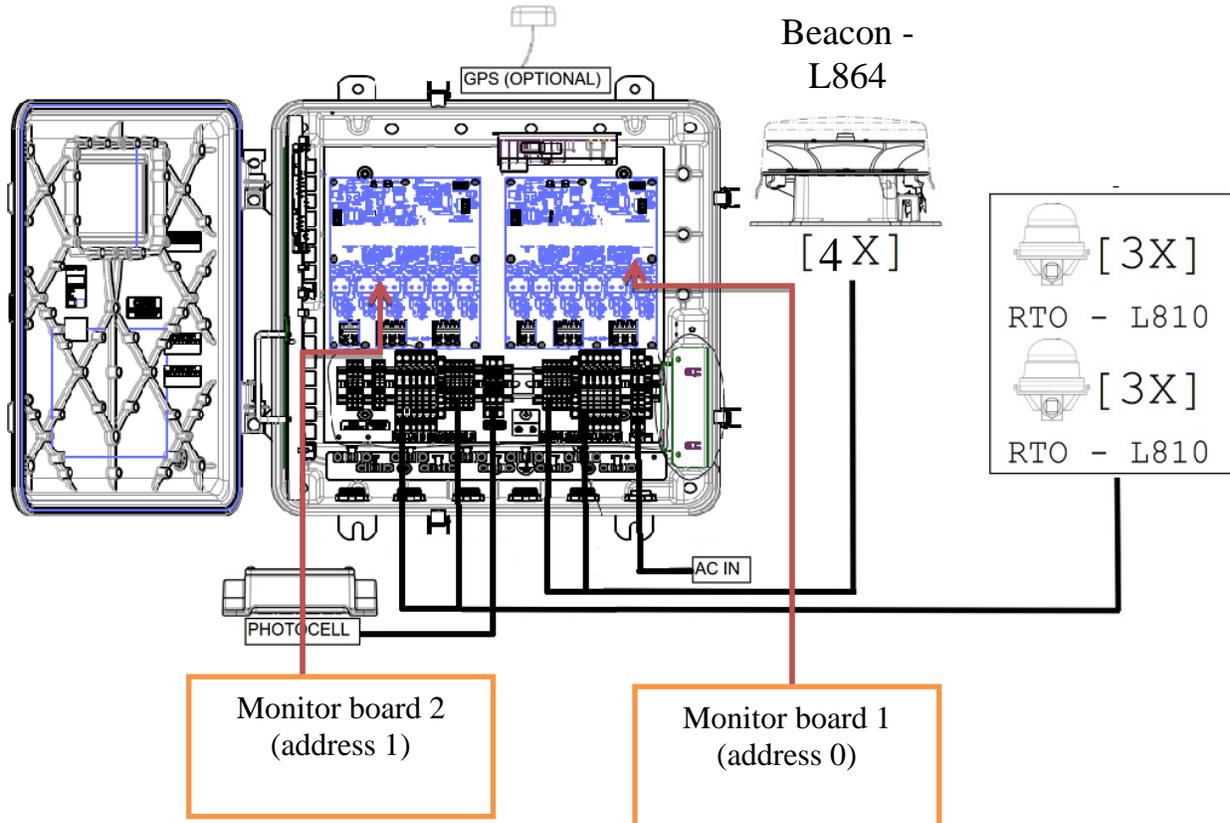
For A2:

2 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	XXXX	XXXX	XXXX
Board 2	T1 L810's	T2 L810's	XXXX	XXXX	XXXX	XXXX



D6CE77CCTR in A2+1 Configuration:
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers to be connected to monitor board 2)



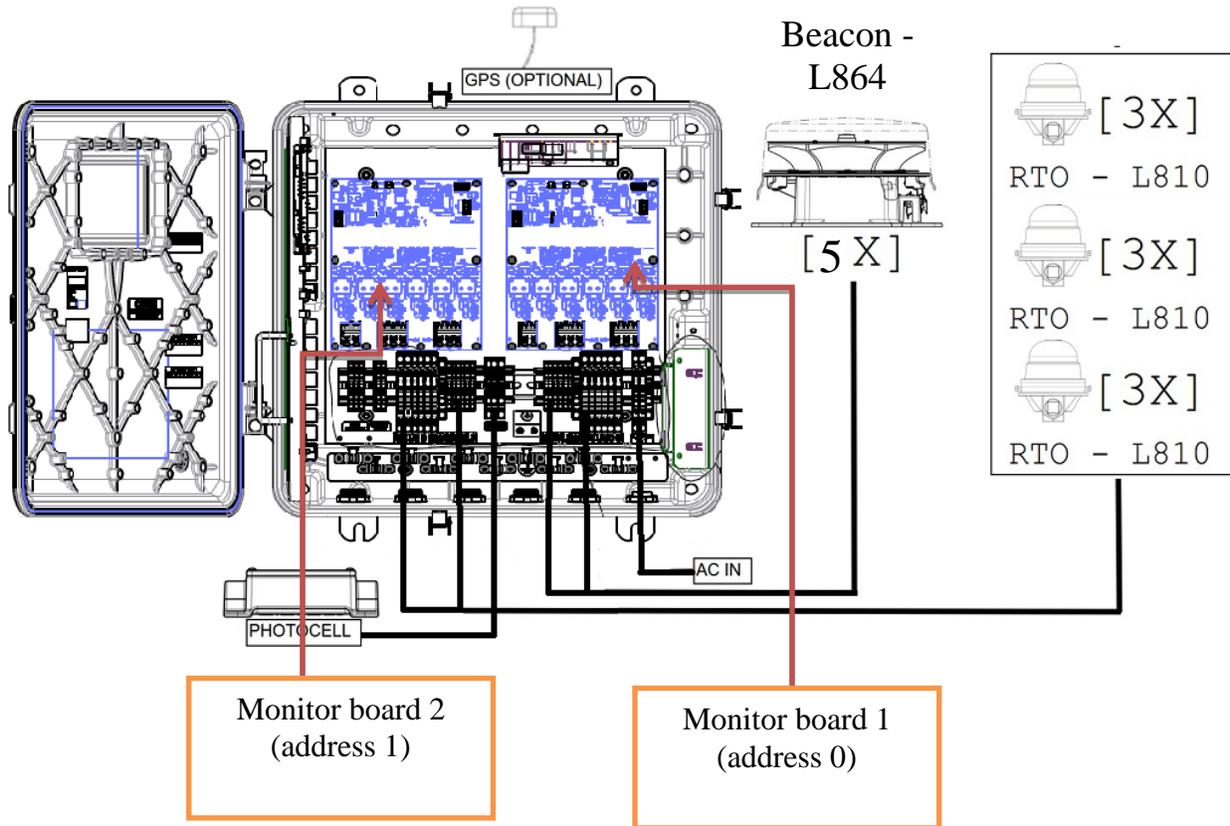
For A2+1:

2 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	BC 4	XXXX	XXXX
Board 2	T1 L810's	T2 L810's	XXXX	XXXX	XXXX	XXXX



D6CE77CCTR in A3 Configuration
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers to be connected to monitor board 2)



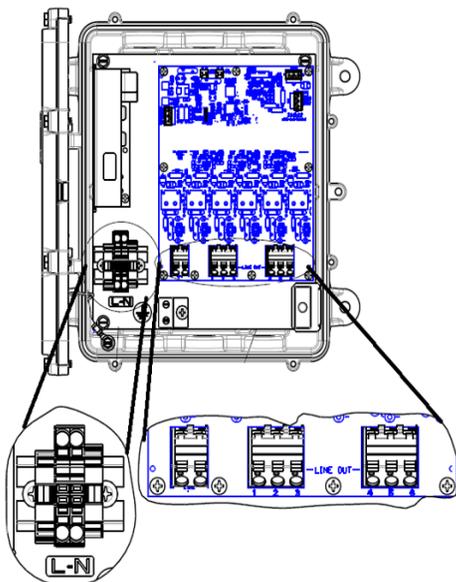
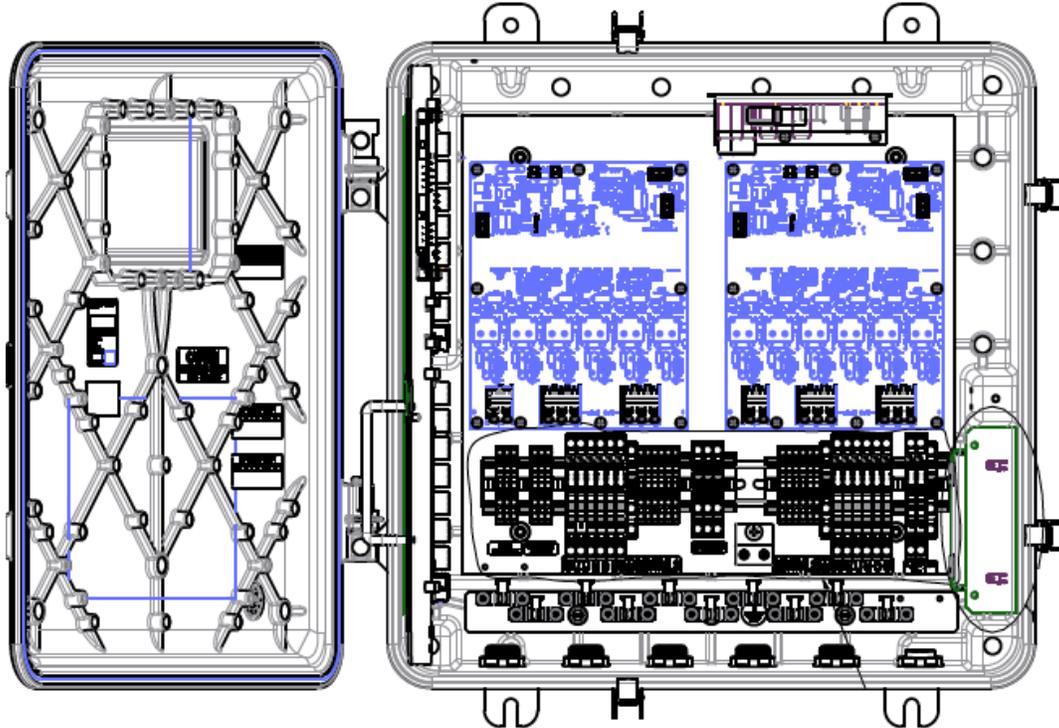
For A3:

2 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	BC 4	BC 5	XXXX
Board 2	T1 L810's	T2 L810's	T3 L810's	XXXX	XXXX	XXXX



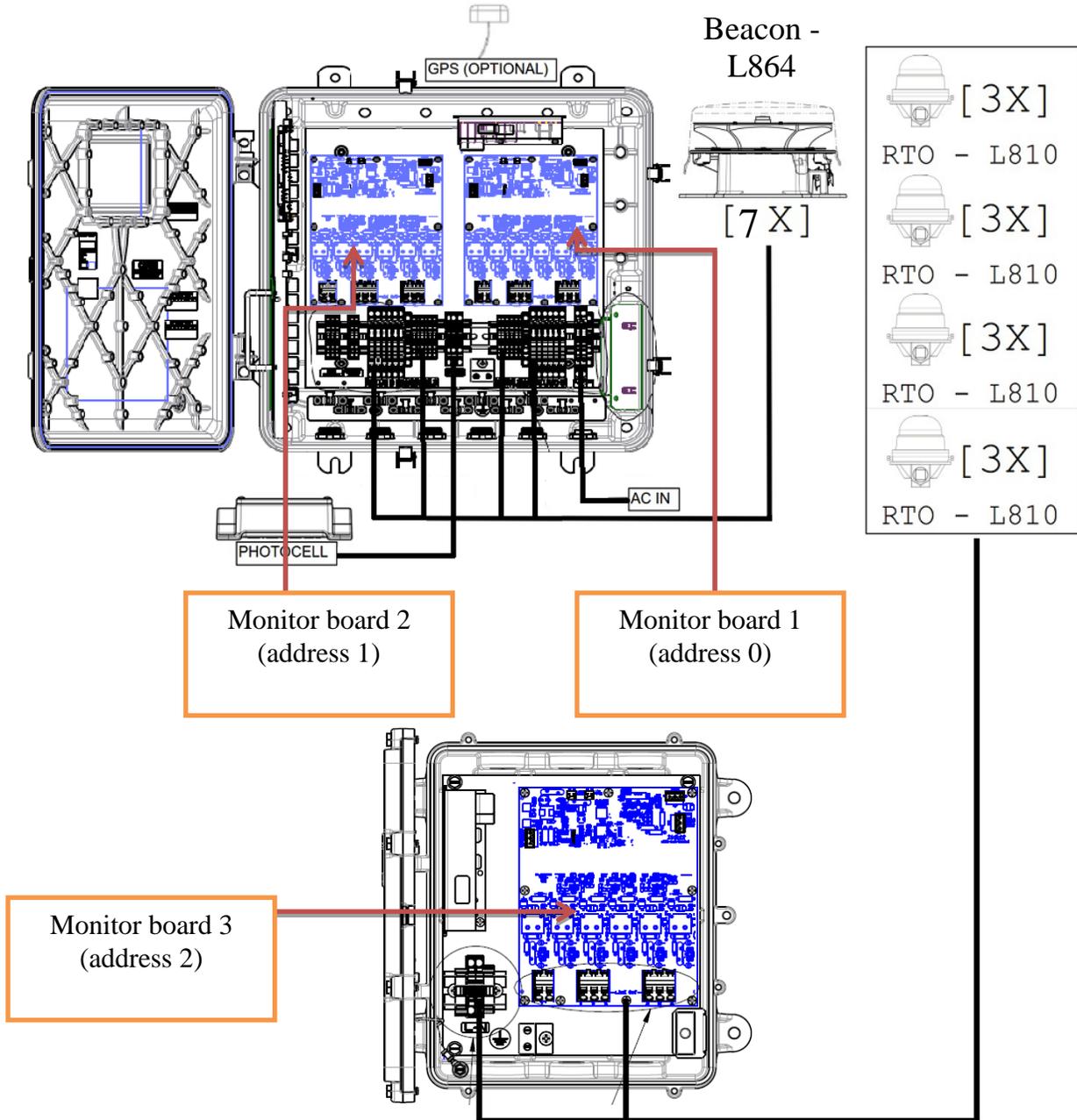
D6CG77CTR (A4,A6) Controller Connections:
(Additional Expansion box shown below will not be used in Avian Friendly configurations)



Note: On Port Connection Tables shown below each configuration:

- BC1 = Beacon 1, BC2 = Beacon 2 etc. BC1 being the upper most Beacon.
- SDLite T1 = Side Marker Light Tier 1, SDLite T2 = Side Marker Light Tier 2 etc. SDLite T1 being the lowest tier of side markers from the ground.
- XXXX indicates the port is not used.
- Board 3 = monitor board within expansion box, shall be addressed as 2 using the rotary dial on the board. Pointer must be set pointing to the number 2. See next section on expansion box details.

D6CG77CCTR in A4 Configuration
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers or expansion box in use)



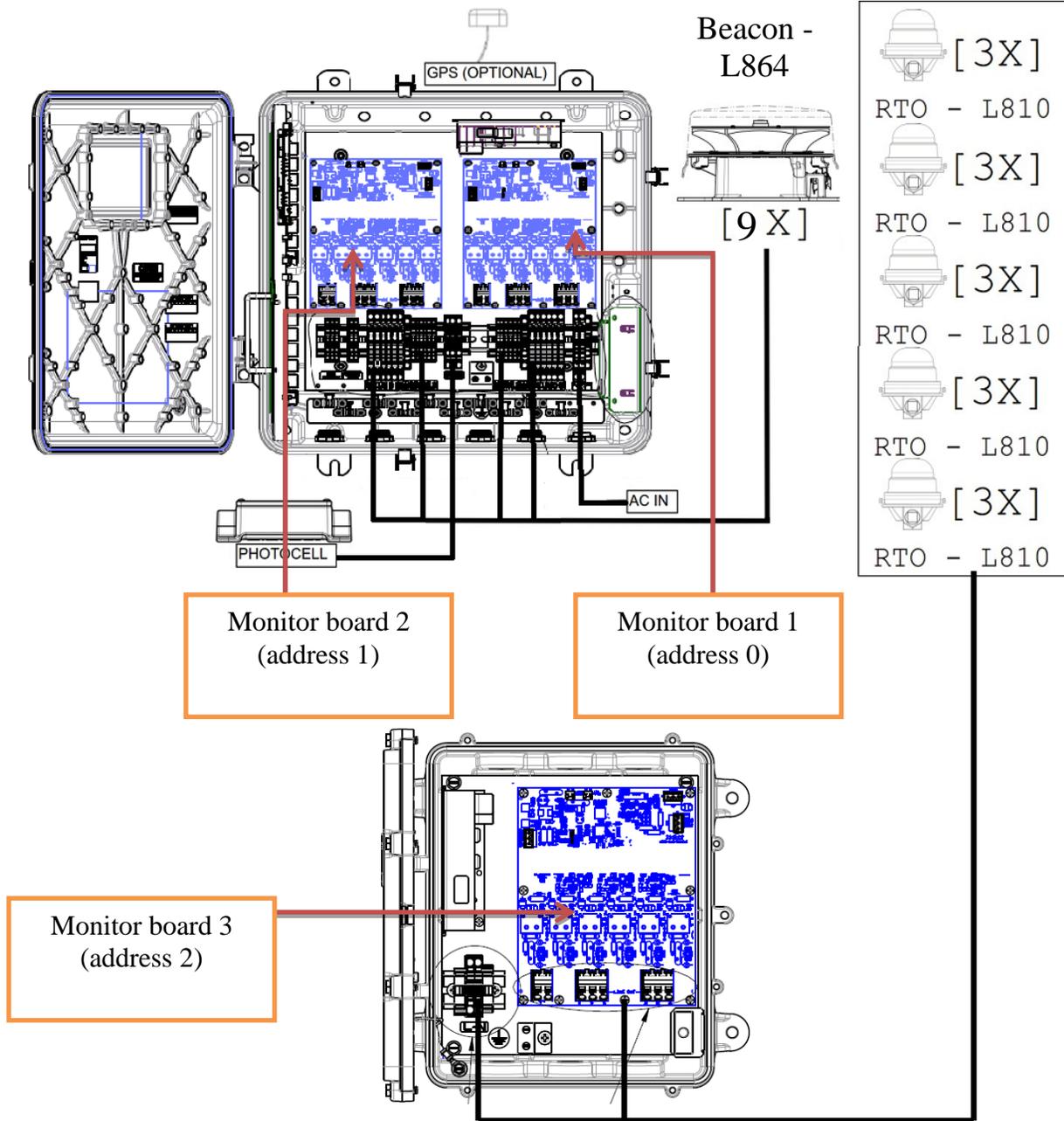
For A4

3 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6
Board 2	BC 7	XXXX	XXXX	XXXX	XXXX	XXXX
Board 3	T1 L810's	T2 L810's	T3 L810's	T4 L810's	XXXX	XXXX



D6CG77CCTR in A5 Configuration:
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers or expansion box in use)

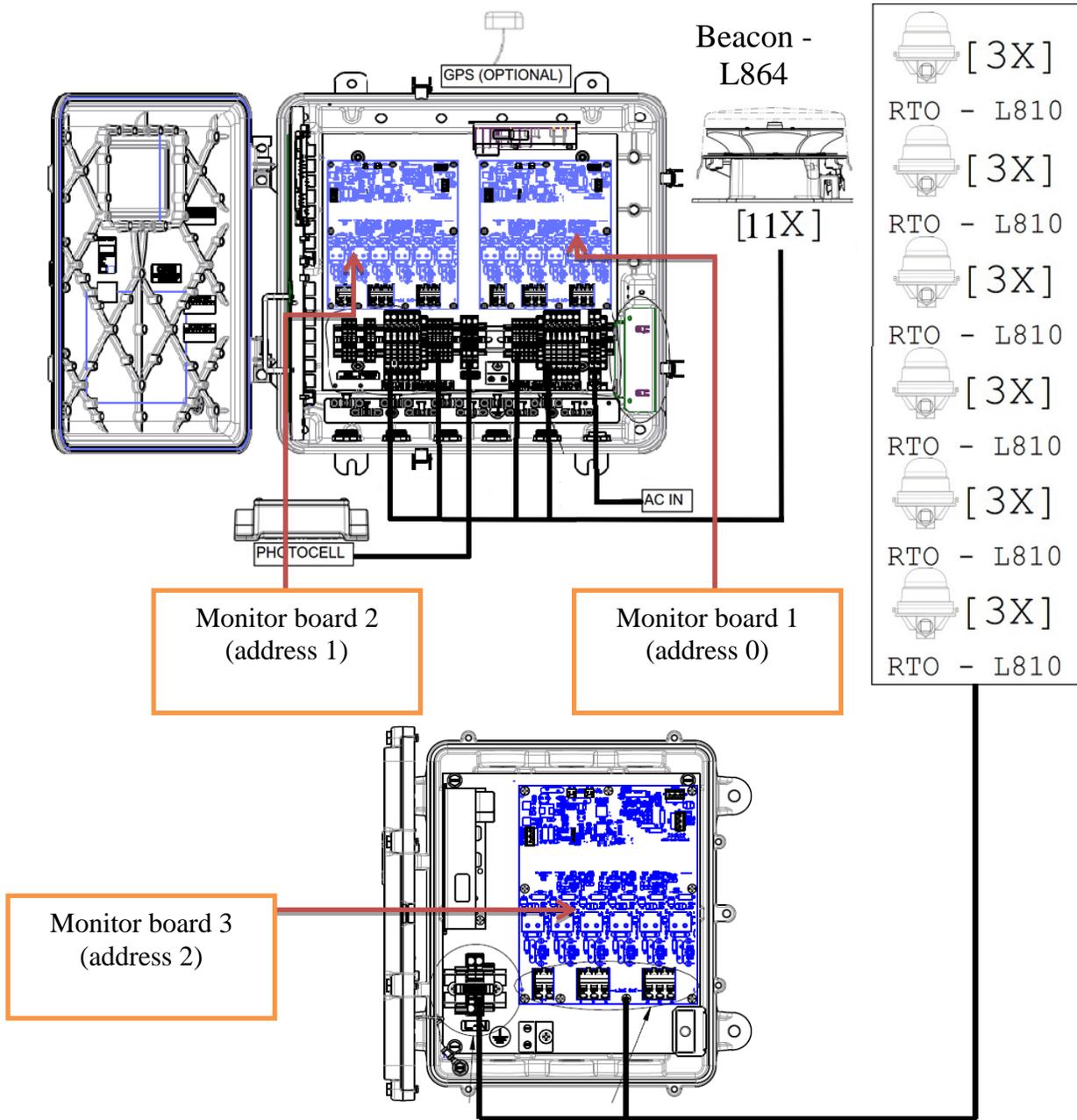


For A5
 3 monitor boards:

	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6
Board 2	BC 7	BC 8	BC9	XXXX	XXXX	XXXX
Board 3	T1 L810's	T2 L810's	T3 L810's	T4 L810's	T5 L810's	XXXX



D6CG77CCTR in A6 Configuration:
(Non-Avian Friendly configuration shown, for Avian Friendly, there are no 810 tiers or expansion box in use)



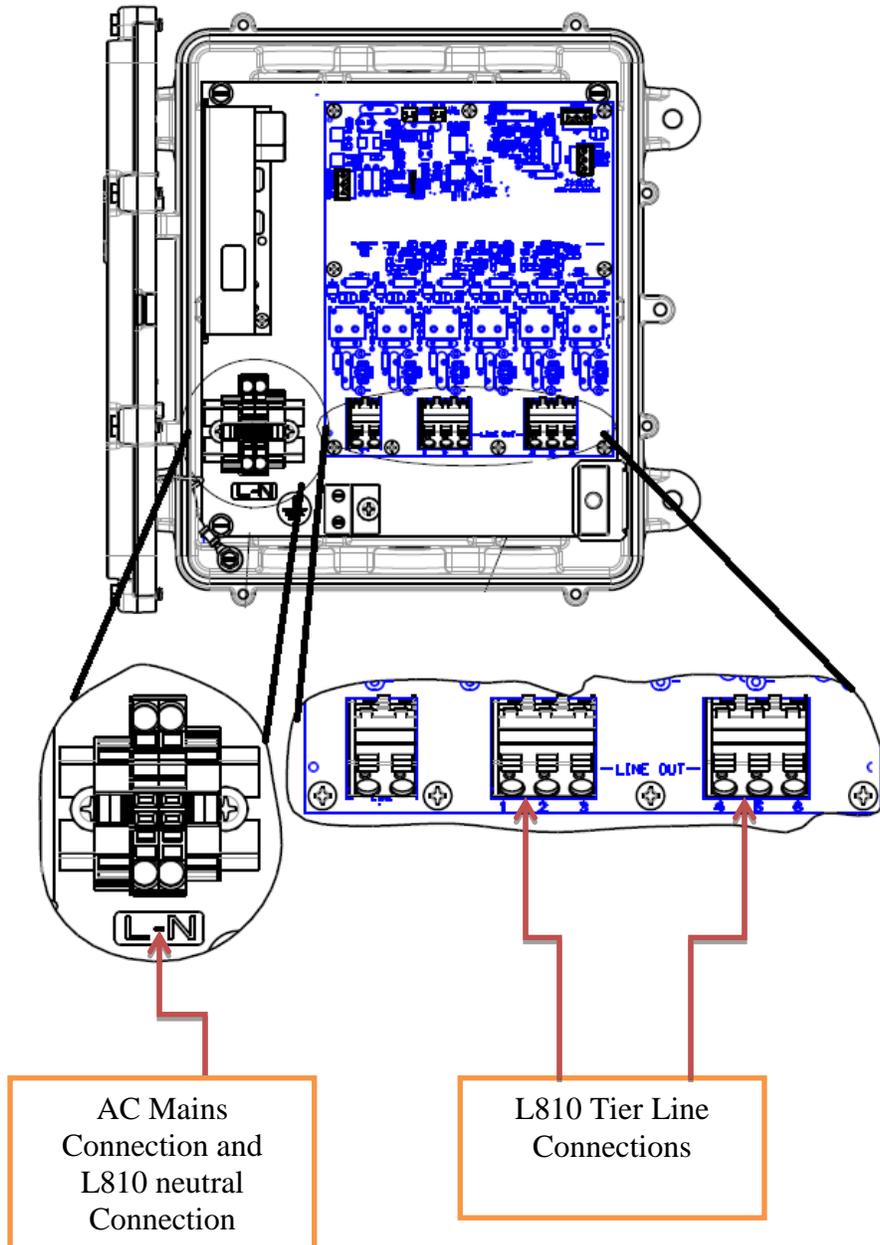
For A6:
 3 monitor boards:

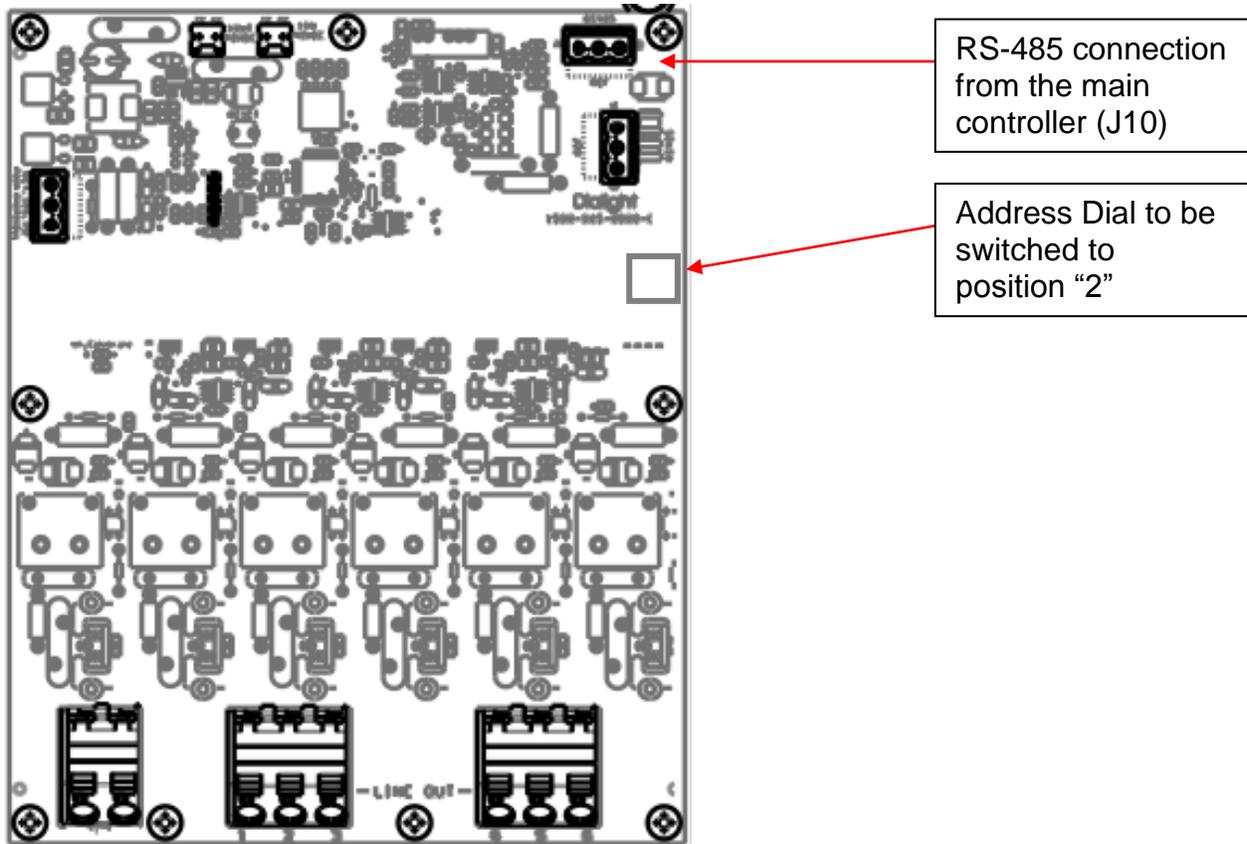
	Port1	Port2	Port3	Port4	Port5	Port6
Board 1	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6
Board 2	BC 7	BC 8	BC 9	BC 10	BC 11	XXXX
Board 3	T1 L810's	T2 L810's	T3 L810's	T4 L810's	T5 L810's	XXXX



Connecting the A4/A6 Expansion Box to the system:

The expansion box will need its own AC power input (Detail A) as well as an RS-485 communication line from the main controller, refer to the second diagram. This additional monitor board will be indexed as “3” on the rotary dial, see second diagram.

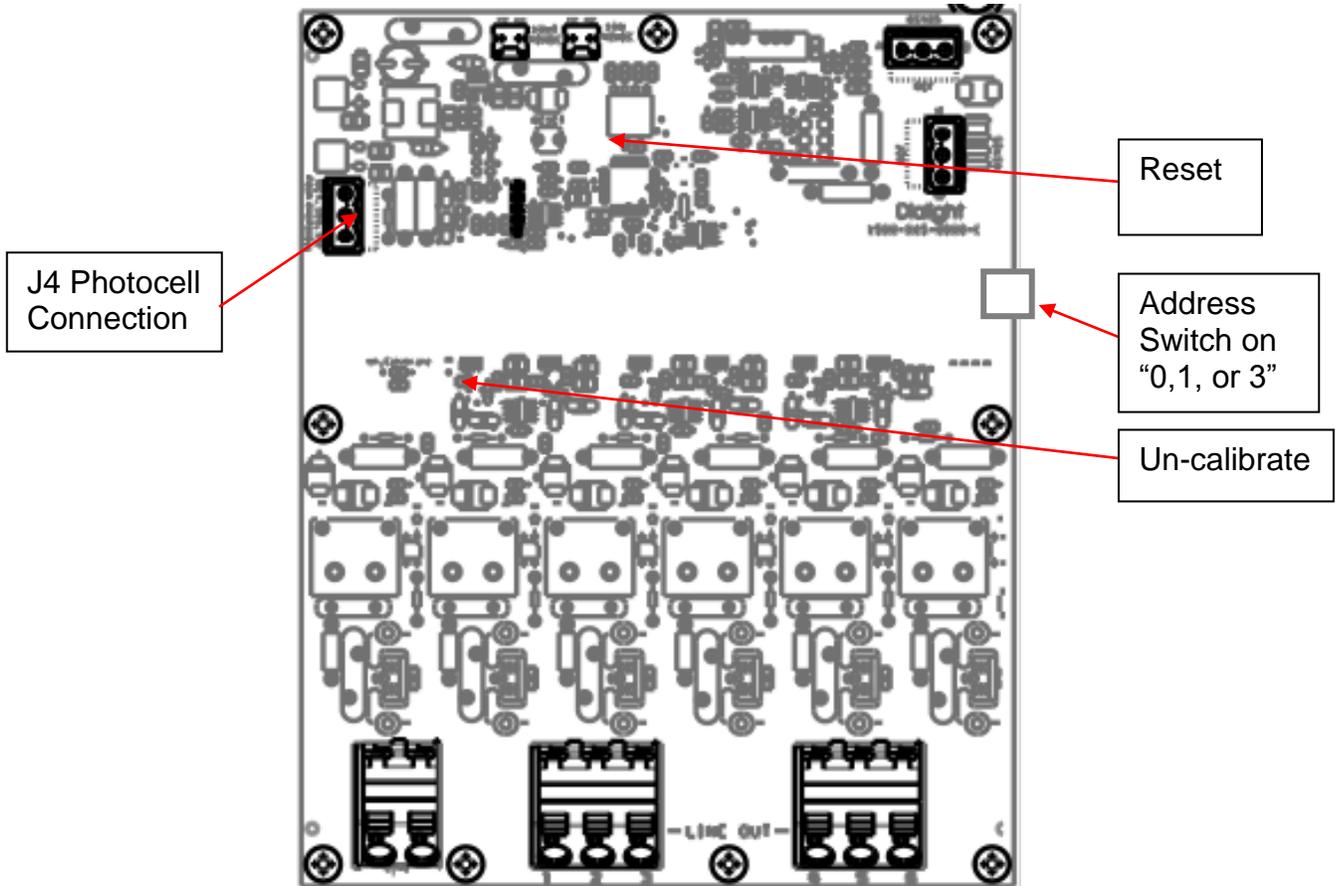




Calibration of the Current Sensors:

Manual Calibration Steps: For use during initial installation. Each Monitor board must individually be calibrated initially once the system and lights are completely installed. The Auto Calibration as shown in the configuration menu steps must be done to finalize installation.

1. To Perform the Manual Calibration scheme follow the steps below, refer to the diagram following this process.
 - a. Press and hold the Un-calibrate button labeled SW2 on the Monitor board for 2 to 3 seconds.
 - b. Fault LED's 1-6 will light up RED.
 - c. Press the RESET button SW1 located on the Monitor board to start the calibration process.
 - d. After the board has been calibrated (the green OK LED's turn on according to ports that have lights connected to them)
 - e. Press the reset button on the Main Controller (LCD) board



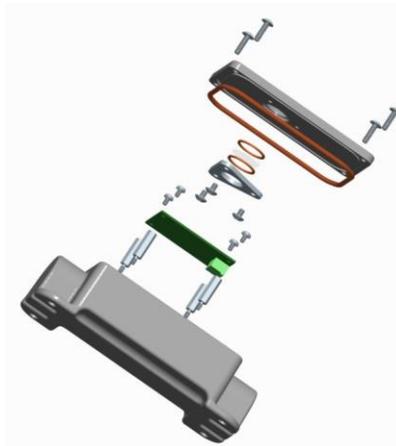
NOTE: Calibration can be done multiple times during the install process.

NOTE: If a light needs to be replaced then the calibration procedure must be re-done.



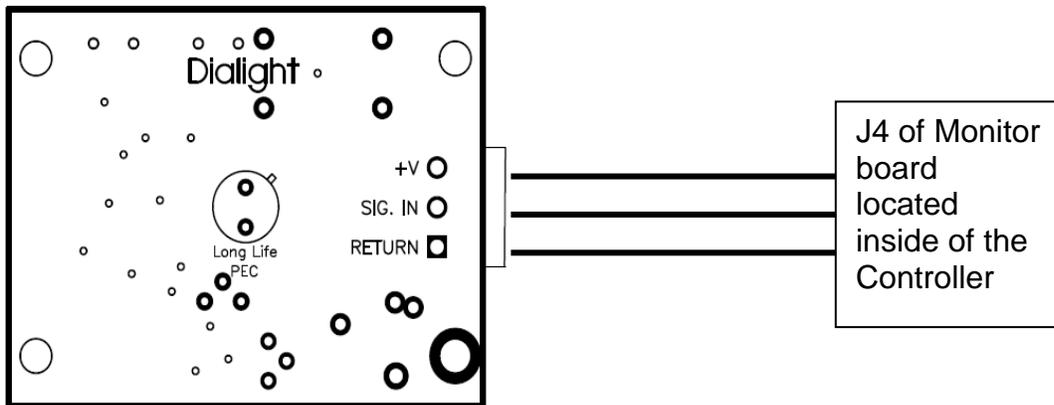
Photocell Connection:

Attach output of the Photocell (D256-6000PEC) to J4 of the Monitor board 1 (**The monitor board with the rotary switch set to “0”**), see Monitor Board diagram above.



Photocell Exploded View

Open the supplied photocell enclosure. The Photocell requires 3 connections to be made inside the photocell enclosure and 3 inside the Controller.



TOP VIEW

+V = 12Vdc (supplied from Controller)
 SIG. IN = Sense voltage relayed to Controller
 Return = Ground

NOTE: Maximum allowable distance is 500 feet from the Controller.

NOTE: Photocell must be mounted facing North in an un-obstructive view of the sky.



NOTE: The Photocell comes supplied with one end threaded for ¾" NPT conduit, which is recommended for installing the photocell. If a cable without conduit is used in a hazardous location installation then the cable at minimum **MUST** have either a shield or braid that is properly connected to body of the photocell and to the enclosure of the controller it is being installed to. Failure to properly ground or use a cable without the shield or braid will void all warranties and the product could be subject to premature failures.

AC Mains Connections:

Apply AC power to TB1, see Detail A in above diagrams

NOTE: See electrical specifications for power consumption and electrical recommendations.

The Enclosure has holes factory drilled to accommodate all the cable requirements. Additional holes can be added in any convenient location for the user and installer. If installed outdoors, water ingress must be considered.

NOTE: If there is existing AC in the vicinity of the Controller installation then these cables can be used if they meet the recommendations in this guide.

NOTE: Multiple grounding points are provided in the enclosure for protective and functional Earth/Ground connections.

LCD Display Overview:

The Startup Screen displays:

Dialight MI Ctrl
REV. x Build: xx

NOTE: The Site manager and installer should take a note of this screen if any troubleshooting is required.

The Initializing Screen:

This screen shows a countdown for the initial 15 flashes.

Initial 15 Flashes
In Process

Main Menu Screens:

Allows the user or maintenance personnel to view or access the displays

Pressing the up or down buttons scrolls through all the displays and displays choices in each of the configuration screens

Pressing the “Ent” button goes in to selected screen for logs or set up.

Pressing the “CLR” button escapes back to the main screen choices.

Configuration Type Screen: Configuring the system

- A) To change configuration of Controller go to ‘Config Type’ screen’ and press enter.

**CONFIG TYPE A
‘Enter to change’**

- B) Select External GPS using the up/down button, Yes/NO press enter.

**Ext GPS = NO
u/d=chg, enter=done**

- C) Avian Friend mode selection. Yes for Avian towers, No for standard configurations.

**AV FRNDLY = YES
u/d=chg, enter=done**

- D) Only visible when avian friendly mode is selected. This will enable or disable the use of L810 marker lights on Avian towers. EN = enabled, DIS = disabled.

**L810 status = EN
u/d=chg, enter=done**

- E) Select the number of Tiers that are connected to the system, 1 through 6 and then press enter:

**Number of 810 TIERS=1
u/d=chg, enter=done**

- F) Select the total number of L-810’s that will connected, 1 through 24, and then press enter.

TOTAL NUM 810 = 0
u/d=chg, enter=done

- G) Select the number of Beacons that will be a part of the system, 1 through 11, and then press enter.

Number of BC=1
u/d=chg, enter=done

- H) Select the number of Monitor boards that are connected to the system, 1 through 4, and then press enter.

Number of SD BDs=1
u/d=chg, enter=done

- I) The Monitor board ports can be configured to be either flashing or steady burn. Press Enter to change.

SD BD Config
'enter' to change

- J) Select the Board function (Flashing or Steady) for each Monitor board.

SD BD 1 = STEADY
u/d=chg, enter=done

Use the up/down buttons to scroll to the 'Status 'screen when complete press enter

- K) Select the Night Flash per minute rate (options are 20/30/40)

Flash per min=
u/d=chg, enter=done

Use the up/down buttons to scroll to the 'Status 'screen when complete press enter

L) Recalibrate the current sensors:

**CAL curnt sens= NO
u/d=chg, enter=done**

Use the up/down buttons to scroll to the 'Status 'screen when complete press enter

M) Enable or disable the transition alarm

**Trans PEC Alarm = YES
u/d=chg, enter=done**

Table 2 – System settings – Configuration menu selections per *Non-Avian Friendly* tower type

For an A1	For an A1+1	For and A2
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 1 d. Total NUM of 810s = 3 e. Number of BC = 1 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 1= STEADY i. Flash per minute = 20, 30 OR 40 j. Cal Curnt sensor = NO	After pressing ENTR: k. Ext GPS= (set to NO) l. AV FRNDLY = NO m. NUM of 810 TIERS = 1 n. Total NUM of 810s = 3 o. Number of BC = 2 p. Number of SD BD's = 2 q. SD BD 1= FLASHING r. SD BD 1= STEADY s. Flash per minute = 20, 30 OR 40 t. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 2 d. Total NUM of 810s = 6 e. Number of BC = 3 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 1= STEADY i. Flash per minute = 20, 30 OR 40 j. Cal Curnt sensor = NO

For an A2+1	For an A3	For and A4
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 2 d. Total NUM of 810s = 6 e. Number of BC = 4 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 2= STEADY i. Flash per minute = 20, 30 OR 40 j. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 3 d. Total NUM of 810s = 9 e. Number of BC = 5 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 2= STEADY i. Flash per minute = 20, 30 OR 40 j. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 4 d. Total NUM of 810s = 12 e. Number of BC = 7 f. Number of SD BD's = 3 g. SD BD 1= FLASHING h. SD BD 2= FLASHING i. SD BD 3= STEADY j. Flash per minute = 20, 30 OR 40 k. Cal Curnt sensor = NO



For an A5	For an A6
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 5 d. Total NUM of 810s = 15 e. Number of BC = 9 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 2= FLASHING i. SD BD 3= STEADY j. Flash per minute = 20, 30 OR 40 k. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = NO c. NUM of 810 TIERS = 6 d. Total NUM of 810s = 18 e. Number of BC = 11 f. Number of SD BD's = 2 g. SD BD 1= FLASHING h. SD BD 2= FLASHING i. SD BD 3= STEADY j. Flash per minute = 20, 30 OR 40 k. Cal Curnt sensor = NO

Table 3 – System settings – Configuration menu selections per Avian Friendly tower type

For an A1 Avian	For an A1+1 Avian	For and A2 Avian
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = EN d. NUM of 810 TIERS = 1 e. Total NUM of 810s = 3 f. Number of BC = 1 g. Number of SD BD's = 2 h. SD BD 1= FLASHING i. SD BD 2= FLASHING j. Flash per minute = 30 k. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = EN d. NUM of 810 TIERS = 1 e. Total NUM of 810s = 3 f. Number of BC = 2 g. Number of SD BD's = 2 h. SD BD 1= FLASHING i. SD BD 2= FLASHING j. Flash per minute = 30 k. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 3 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO

For an A2+1 Avian	For an A3 Avian	For and A4 Avian
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 4 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 5 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 7 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO



For an A5 Avian	For an A6 Avian
After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 9 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO	After pressing ENTR: a. Ext GPS= (set to NO) b. AV FRNDLY = YES c. L810 status = DIS d. Number of BC = 11 e. Number of SD BD's = 2 f. SD BD 1= FLASHING g. SD BD 2= FLASHING h. Flash per minute = 30 i. Cal Curnt sensor = NO

Use the up/down buttons to scroll to the 'Status' screen, when complete press enter.

Status Screen of Alarms:

NOTE: If an Alarm is found, the Status screen will change from "NORMAL" to "ALARM" to indicate there is an active Alarm.

By pressing "Ent" you will be able to view alarm logs. Time stamps are actual times that the alarm occurred. Refer to 'interpretation of the logs' for further details.

Status: Normal
'Enter' to view Alm

Status: Alarm
'Enter' to view Alm

Error/Event Log:

This screen allows the user to enter into the log screen that shows all the Error/Events that have occurred during a given time stamp. When entering the screen the highest or last log will be shown. By using the up or down keys the user can scroll back 127 entries before the screen rolls back to the latest entry.

NOTE: If for some reason the highest entry cannot be found press the "CLR" button to exit the log and then press the "Ent" key to return to highest log.

Press 'Enter' Key
to view event log.

Setting the real time clock:

By selecting "Ent" the user can set the actual time and date of the Controller.

NOTE: This may come preset from the factory for either East or West Coast time.



NOTE: The board has a battery, so if for some reason the Controller needs to be powered down, the time and date is kept.

**MMM DD,YY “Time”
‘Enter’ to set Clock**

X is the total number of either Beacons or Marker lights configured.
Y represents the controller firmware level.

**Tower Style: A
X 864, X 810 Ay**

Screen: Mode of operation: Day, Night

NOTE: These modes change according to the Photocell operation. There are no options for pre-programming select times.

NOTE: During day mode no fixtures will be lit with this Controller.

**MODE: Night T=+YC
ACTIVE: RED 864**

**MODE: DAY T=+YC
ACTIVE: NONE**

Y = the temperature in (C) Celsius on the main controller board, information only.

Forced Mode operation:

NOTE: On this screen the Controller can be forced in DAY or NIGHT by using the push buttons marked TEST ‘White’ and ‘Red’ located on the main LCD board.

NOTE: There is no timeout when selecting ‘White’ or ‘RED’; and the installer must press the “CLR” button to resume normal operation.

**MODE: Night Forced
ACTIVE: RED 864**

**MODE: DAY Forced
ACTIVE: NONE**

NOTE: Day MODE Red Beacons and side lights turn off

Screen: Manual Lighting Inspection Test

The user can perform a manual lighting inspection during this test to ensure proper operation of the system in its entirety.

NOTE: Discreet and Modbus alarms will be generated during this test.

NOTE: If the site is being actively monitored at the time of test, they will see the generated alarms.

System needs to be in **Night mode** before test is started

Test will time out after 2 minutes of no user input during the manual test.

Test relies on user input to complete the necessary checks.

Press "ENTR" to initiate LI test

**Manual LI TEST
'enter' to Test**

Press enter

**Manual LI TEST
push RED BTN**

Press the 'TEST RED' button

**Manual LI TEST
IN PROCESS RED**

**Manual LI TEST
PASS :)**

OR

**Manual LI TEST
FAIL : (**

**Manual LI TEST
LIT DONE**

System will return to configuration screen when test is completed.

System will reset within 5 minutes of test completion

NOTE: If the QLI manual test is not completed due to prompts not being followed, tests will time out after 5 minutes and display:

**Manual LI TEST
LIT NOT DONE**

After the Lighting inspection (LI) test is done the user can check the LI list in the Alarm menu and it should be as follows:

Table 4 – Lighting Inspection List

(A1+1-A2) Red Controller	(A2+1,A3-A4) Red Controller
1. LIT log start	19. LIT log start
2. PEC Lost ACT	20. PEC Lost ACT
3. 1 BC Fail 1 ACT	21. 1 BC Fail 1 ACT
4. 1 BC Fail 2 ACT	22. 1 BC Fail 2ACT
5. 1 BC Fail 3 ACT NOTE: (only for A2)	23. 1 BC Fail 3 ACT
6. 1 ALL 810 T1 ACT	24. 1 BC Fail 4 ACT
7. 1 ALL 810 T2 ACT NOTE: (only for A2)	25. 1 BC Fail 5 ACT NOTE: (only for A3, A4)
8. MNTR Comm 1 ACT	26. 1 BC Fail 6 ACT NOTE: (only for A4)
9. 1 BC Fail 1 CLR	27. 1 BC Fail 7 ACT NOTE: (only for A4)
10. 1 BC Fail 2 CLR	28. MNTR Comm 1 ACT
11. 1 BC Fail 3 CLR NOTE: (only for A2)	29. PEC Lost CLR
12. 1 ALL 810 T1 CLR	30. MNTR Comm 1 CLR
13. 1 ALL 810 T2 CLR NOTE: (only for A2)	31. 1 BC Fail 1 CLR
14. PEC Lost CLR	32. 1 BC Fail 2 CLR
15. MNTR Comm 1 CLR	33. 1 BC Fail 3 CLR
16. MNTR Comm 2 ACT	34. 1 BC Fail 4 CLR
17. MNTR Comm 2 CLR	35. 1 BC Fail 5 CLR NOTE: (only for A3, A4)
18. LIT log end	36. 1 BC Fail 6 CLR NOTE: (only for A4)
	37. 1 BC Fail 7 CLR NOTE: (only for A4)
	38. 2 ALL 810 T1 ACT
	39. 2 ALL 810 T2 ACT
	40. 2 ALL 810 T3 ACT NOTE: (only for A3, A4)
	41. 2 ALL 810 T4 ACT NOTE: (only for A4)
	42. MNTR Comm 2 ACT
	43. MNTR Comm 2 CLR
	44. 2 ALL 810 T1 CLR
	45. 2 ALL 810 T2 CLR
	46. 2 ALL 810 T3 CLR NOTE: (only for A3, A4)
	47. 2 ALL 810 T4 CLR NOTE: (only for A4)
	48. LIT log end



(A5-A6) Red Controller	
49. LIT log start 50. PEC Lost ACT 51. 1 BC Fail 1 ACT 52. 1 BC Fail 2ACT 53. 1 BC Fail 3 ACT 54. 1 BC Fail 4 ACT 55. 1 BC Fail 5 ACT 56. 1 BC Fail 6 ACT 57. 1 BC Fail 7 ACT 58. MNTR Comm 1 ACT 59. PEC Lost CLR 60. MNTR Comm 1 CLR 61. 1 BC Fail 1 CLR 62. 1 BC Fail 2 CLR 63. 1 BC Fail 3 CLR 64. 1 BC Fail 4 CLR 65. 1 BC Fail 5 CLR 66. 1 BC Fail 6 CLR 67. 1 BC Fail 7 CLR 68. 2 BC Fail 8 ACT 69. 2 BC Fail 9 ACT 70. 2 BC Fail 10 ACT NOTE: (only for A6) 71. 2 BC Fail 11 ACT NOTE: (only for A6) 72. MNTR Comm 2 ACT 73. MNTR Comm 2 CLR 74. 2 BC Fail 8 CLR 75. 2 BC Fail 9 CLR 76. 2 BC Fail 10 CLR NOTE: (only for A6) 77. 2 BC Fail 11 CLR NOTE: (only for A6) 78. 3 ALL 810 T5 ACT 79. 3 ALL 810 T6 ACT NOTE: (only for A6) 80. 3 ALL 810 T1 ACT 81. 3 ALL 810 T2 ACT 82. 3 ALL 810 T3 ACT 83. 3 ALL 810 T4 ACT 84. MNTR Comm 3 ACT 85. MNTR Comm 3 CLR 86. 3 ALL 810 T1 CLR 87. 3 ALL 810 T2 CLR 88. 3 ALL 810 T3 CLR 89. 3 ALL 810 T4 CLR 90. 3 ALL 810 T5 CLR 91. 3 ALL 810 T6 CLR NOTE: (only for A6) 92. LIT log end	



Controller Status LED's (located on Main LCD board):

NOTE: Actual colors shown may not match system being installed.

STATUS LED ASSIGNMENTS						
S7	S6	S5	S4	S3	S2	S1
COMM	SYNC	25% LED	ALL 810 OFF	Photocell	EXT SYNC	Heartbeat
Failure	Failure	Failure	Failure	Failure Day/Nigh	Failure	Flashes
RED	RED	RED	RED	RED	AMBER	GREEN

Relay Board 1 Alarm Dry Contact LED's:

Rotary knob set to Zero

NOTE: PEC mode (Day or Night indication to reader) gets connected to Relay board number 1, This is the relay board addressed as "0" on the rotary switch.

STATUS LED/dry contact ASSIGNMENTS							
AL8	AL7	AL6	AL5	AL4	AL3	AL2	AL1
PEC	L 810	Beacon	Beacon	Beacon	PEC/transition	Sync	Sidelight
MODE	FAILURE	3	2	1	FAILURE	Failure	COMM
		Failure	Failure	Failure			
Amber	Red	Red	Red	Red	Red	Red	Red

Relay Board 2 Alarm Dry Contact LED's:

Rotary knob set to One

STATUS LED/dry contact ASSIGNMENTS							
AL8	AL7	AL6	AL5	AL4	AL3	AL2	AL1
Beacon	Beacon	Beacon	Beacon	Beacon	Beacon	Beacon	Beacon
11	10	9	8	7	6	5	4
Failure	Failure	Failure	Failure	Failure	Failure	Failure	Failure
Red	Red	Red	Red	Red	Red	Red	Red



Mains AC Power Resetting:

Power on Resetting (i.e. switching power off then on again) is recommended when maintenance or repairs are being done; and all Alarm and Error/Event logs have been cleared.

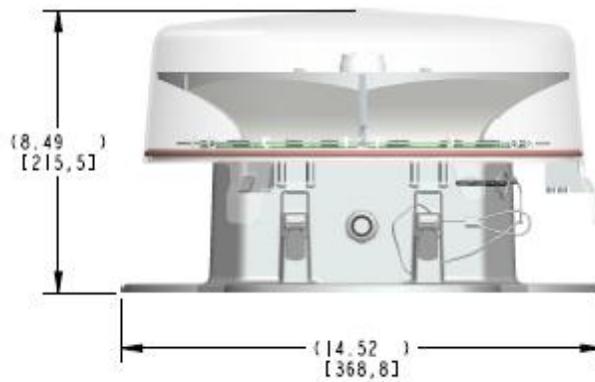
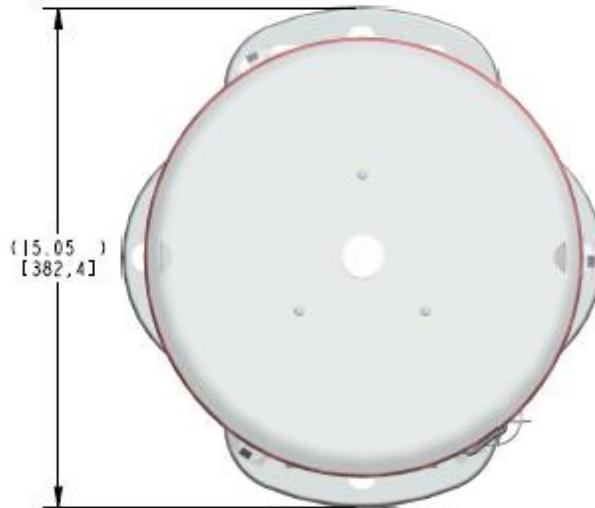
Push Button Reset:

The Reset Button is a firmware re-boot that causes the Controller to do a complete re-start. This reset is most often used when power is either lost or required to be shut down for a period of time. This reset will go through the full initialization and the 15 flash countdown menu. Any alarms reported are actual alarms.

Ext Sync Input:

This connection will synchronize the System with a 3rd party GPS module. The input looks for a pulsed signal with a period of 1,500 milliseconds, where the leading edge to falling edge of the pulse is greater than 100 milliseconds. This will trigger forty flashes per minute, synchronized with the other system's output.

Mechanical Dimensions of D664-R13-001 L-864 Flash Head (Beacon):

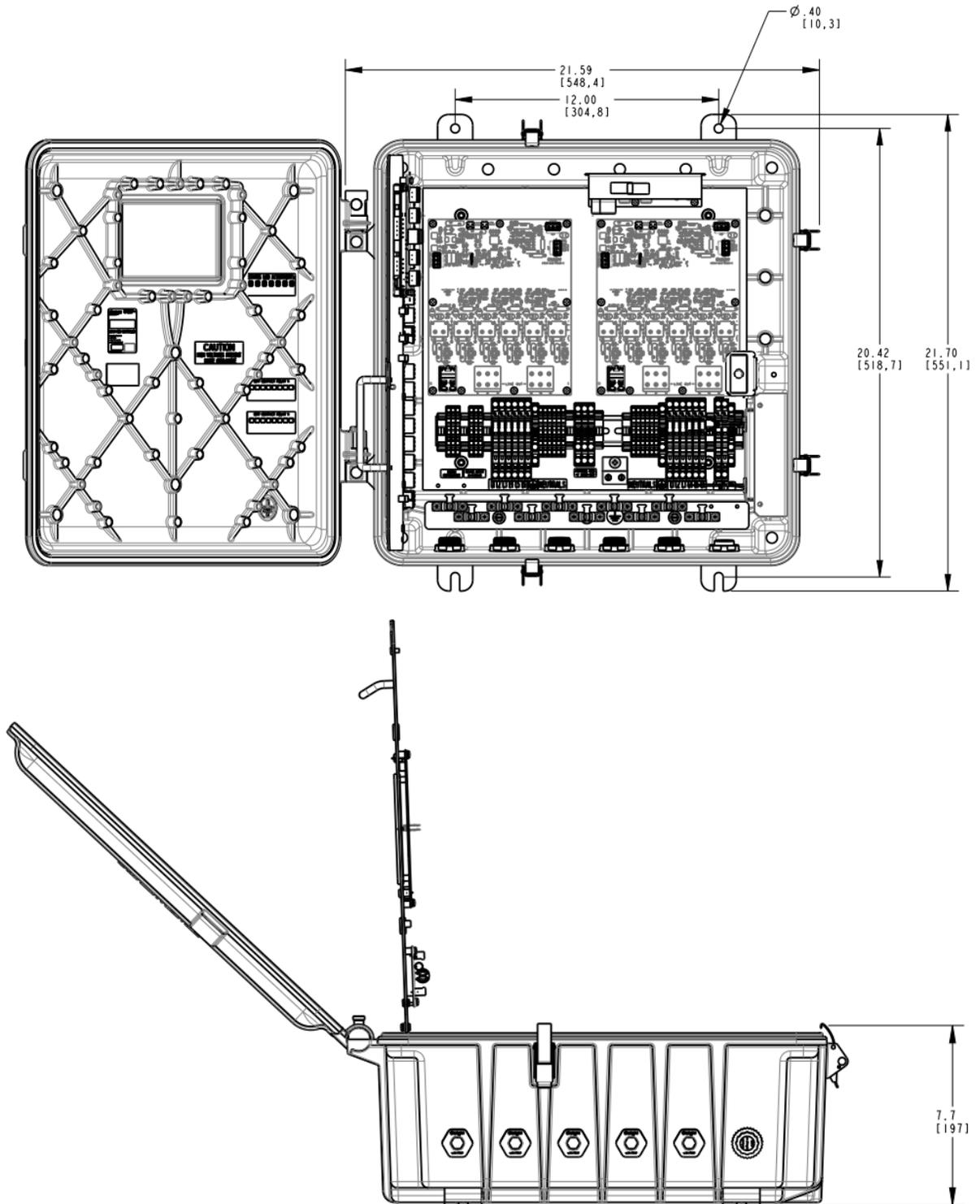


Beacon Reference Dimensions

NOTE: Beacon(s) sold separately

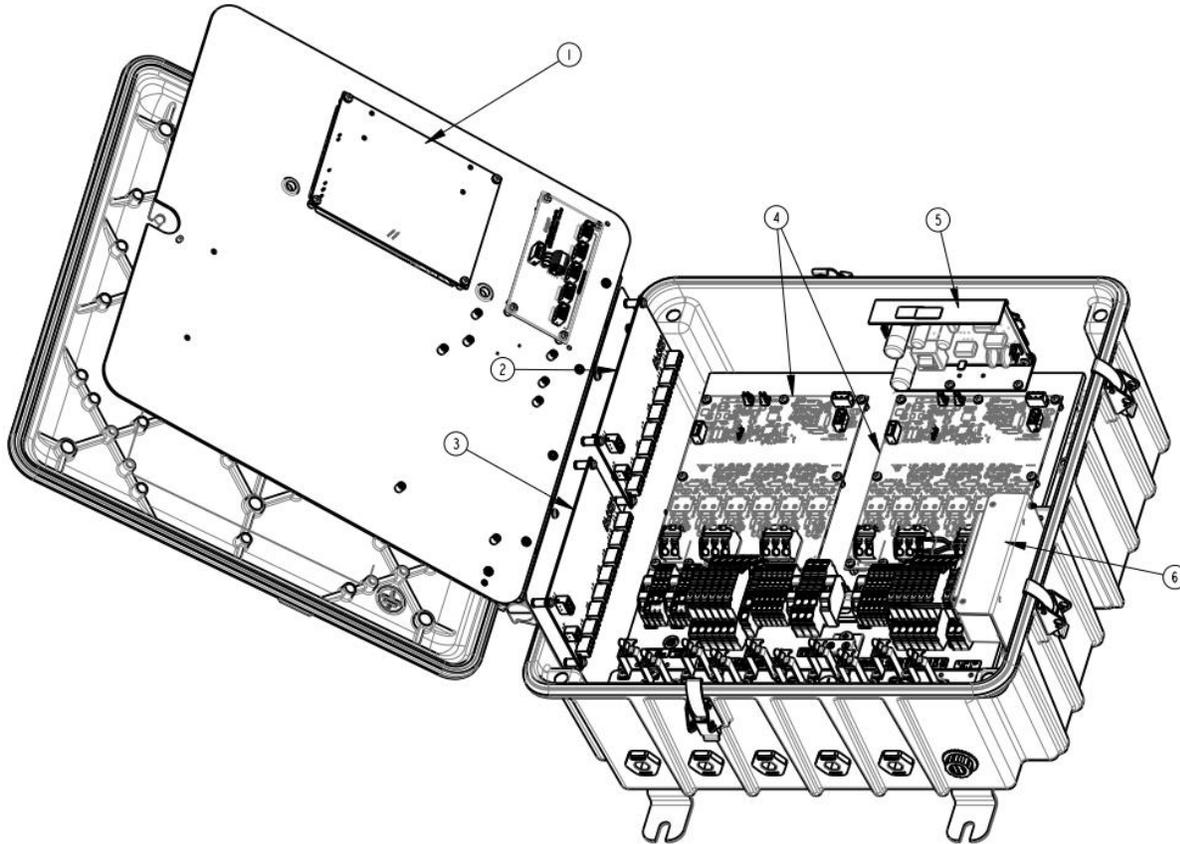


Mechanical Dimensions of Controller:



Replacement Part Numbers:

- **D6CE77CCTR (A1,A3)**



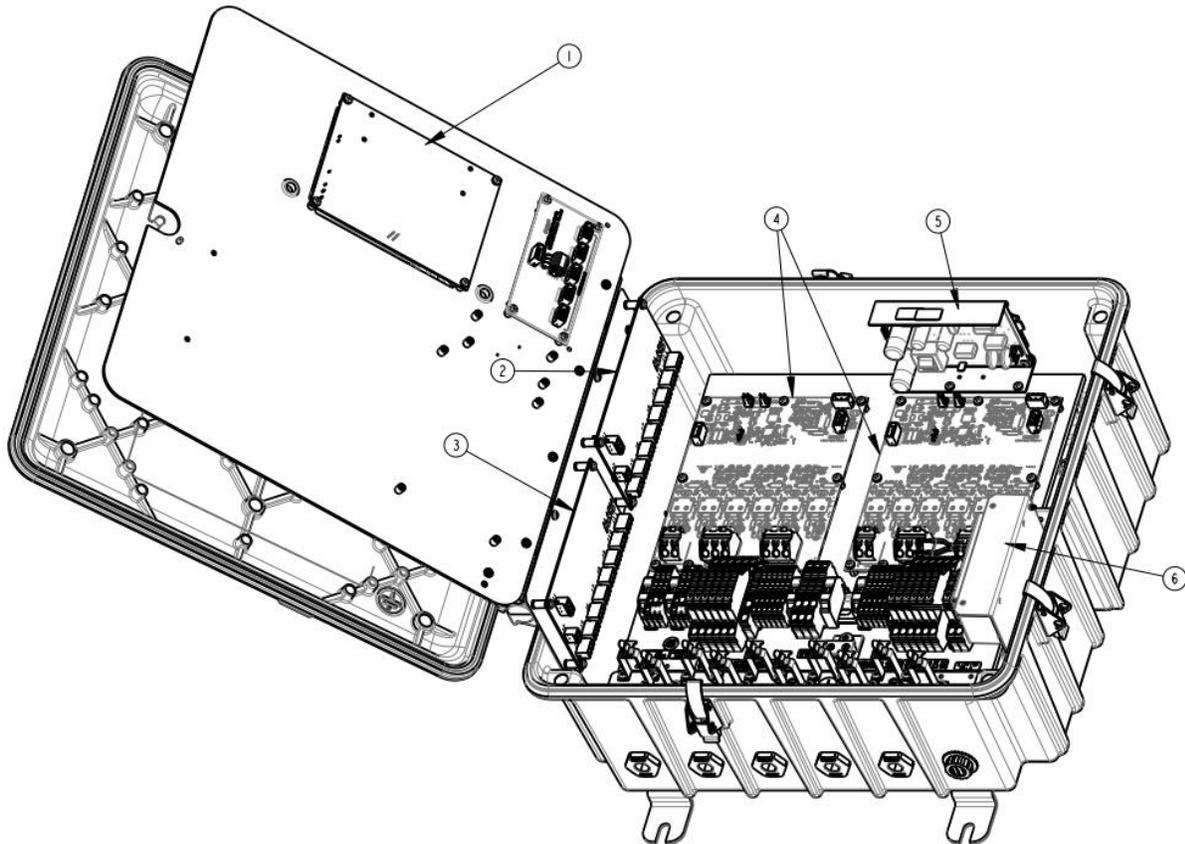
Controller Replacement Parts

Replacement Parts List

- 1) LCD ASSEMBLY P/N: D7409LCD
- 2) 1ST RELAY ASSEMBLY P/N: D7600RLY
- 3) 2ND RELAY ASSEMBLY P/N: D7601RLY
- 4) LIGHT MONITOR BOARD P/N: D7509SLM
- 5) AC TO DC POWER SUPPLY P/N: D5R9005RA
- 6) AC FILTER/SURGE ASSEMBLY P/N: D5R9005RA



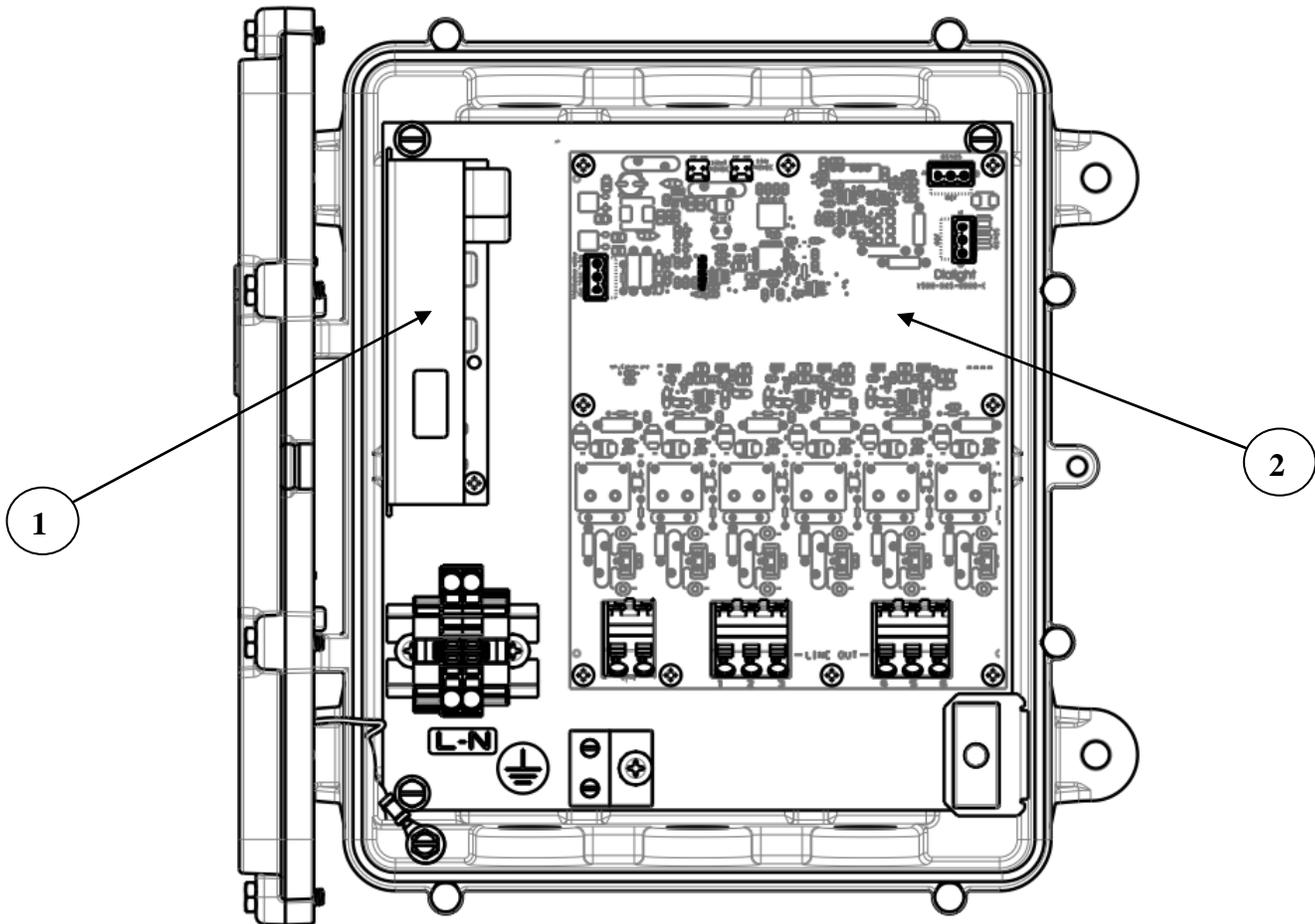
- **D6CG77CTR (A4,A6)**



Controller Replacement Parts

Replacement Parts List

- 1) LCD ASSEMBLY P/N: D7409LCD
- 2) 1ST RELAY ASSEMBLY P/N: D7600RLY
- 3) 2ND RELAY ASSEMBLY P/N: D7601RLY
- 4) LIGHT MONITOR BOARD P/N: D7509SLM
- 5) AC TO DC POWER SUPPLY P/N: D5R9005RA
- 6) AC FILTER/SURGE ASSEMBLY P/N: D5R9005RA



Replacement Part List

- 1) AC TO DC POWER SUPPLY P/N: D5R9005RA
- 2) LIGHT MONITOR ASSEMBLY P/N: D7509SLM



Display Events and Alarm descriptions:

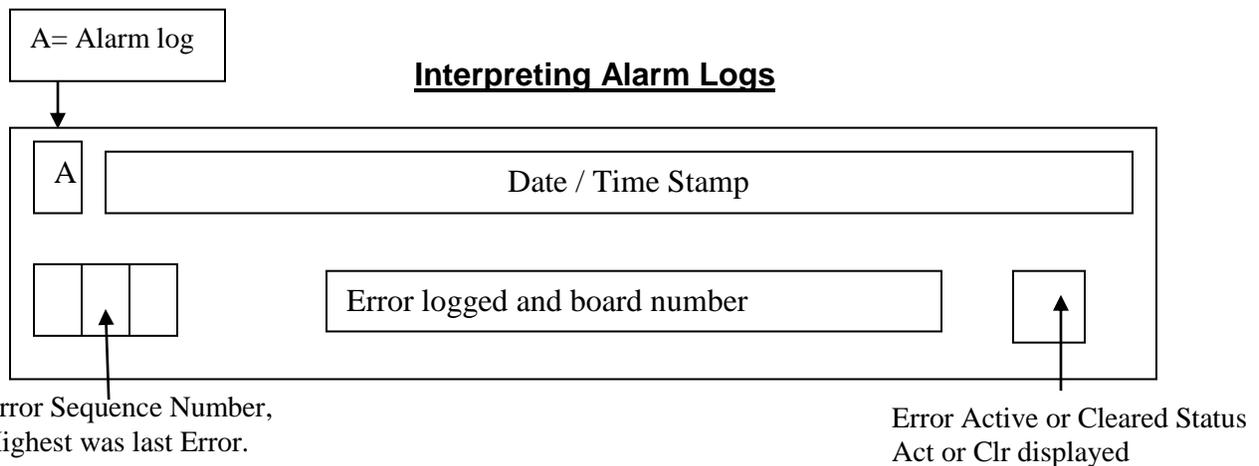
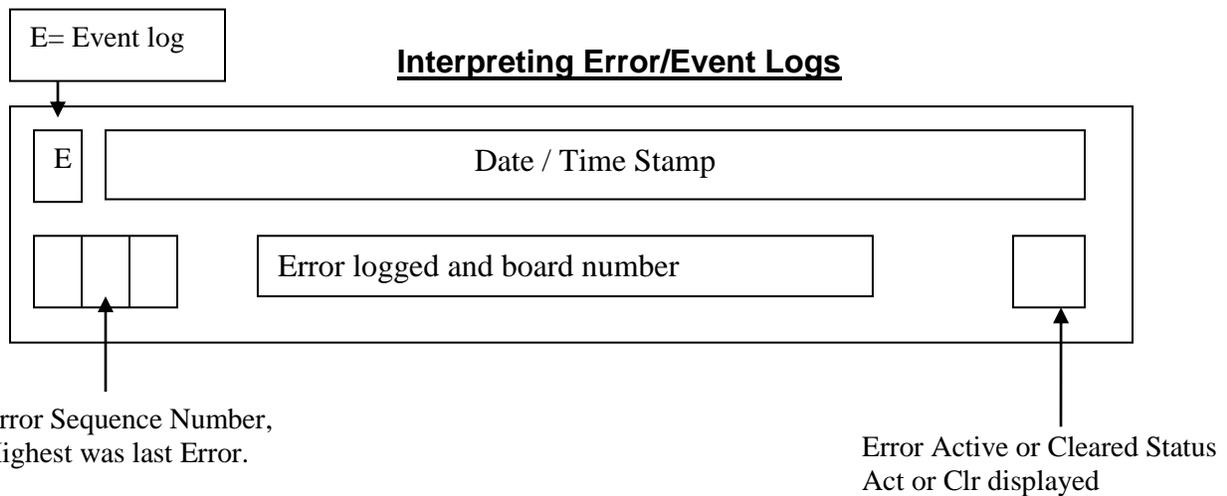
Navigating the Display

Up/Down: Buttons scroll through menu options, or Log entries

Enter: Selects a menu

Clear: Exits a menu and returns to previous screen
Clears error/alarm registers

Holding the Clear button for 5 seconds when in the Event or Alarm log clears the given Log data. The first recording will be displayed as “Logs Cleared”



NOTE: The above are separate screens shown on the LCD both logs are individually accessible



Alarm List:

Table 5 – Alarm List

NIGHT TESTS (Standard and Avian Friendly Configurations) - Photocell MUST be in Night Mode							
TEST MODE	Tower type	Alarm to be Made/Error	LCD Alarm Display	How to Generate the Alarm	What LED's light	What is the Fault	What happens
Night Test	A1-A6	No Photocell	PEC LOST	Remove J4 from monitor board 8800-865-3160-05	Relay Board AL3 and Control Board S3	PHOTOCELL FAULT	System Remains in Night Mode
Night Test	A1-A6	No RS485 to Monitor board	MNTR COMM PEC LOST	Remove J10 from monitor board 8800-865-3160-05	Relay board AL1 & AL3, Control Board S3 and S7	Communications and PEC fault	Beacon goes steady RED; RTO's stay lit
Night Test	A1-A6	No Internal RS-485 COMM	MNTR COMM PEC LOST RLY COMM 1	Remove J7 (RS485) from the Control board (8800-865-4000-05)	Relay Board AL1-AL8, Control Board S3 and S7	COMM FAULT PHOTOCELL FAULT RTO FAULT ALL BEACON X FAULT	Beacon goes steady RED; RTO's stay lit
<u>FOR NON-AVIAN FRIENDLY CONFIGURATIONS</u>							
<u>THE FOLLOWING TESTS REQUIRE AN ENCLOSURE WITH SWITCHES FOR DISCONNECTING POWER!!!</u> <u>They are to be done safely per manufacturing guidelines.</u>							
Night test	A1-A6	Side Marker level 1 out	ALL 810 TX	Remove the RTO's from it LX and NX For A1-A2 (MNTR board 1) For A3 - A4 (MNTR board 2) For A5 - A6 (MNTR board 3)	Relay Board 1 AL7 & Control Board S4	L810 FAULT	Beacon stays RED; ALL RTO's of level 1 turn off
Night test	A1-A6	25% Red –	1 BC Fail 1	Remove Beacon 1 from MNTR board 1 (L1/N1)	Relay Board 1 AL4 & Control Board S5	Beacon 1 FAULT	Beacon port turns off
Night test	A2-A6	25% Red –	1 BC Fail 2	Remove Beacon 2 from MNTR board 1 (L2/N2)	Relay Board 1 AL5 & Control Board S5	Beacon 2 FAULT	Beacon port turns off
Night test	A2-A6	25% Red –	1 BC Fail 3	Remove Beacon 3 from MNTR board 1 (L3/N3)	Relay Board 1 AL6 & Control Board S5	Beacon 3 FAULT	Beacon port turns off
Night test	A3-A6	25% Red –	1 BC Fail 4	Remove Beacon 4 from MNTR board 1 (L4/N4)	Relay Board 1 AL1 & Control Board S5	Beacon 4 FAULT	Beacon port turns off



Night test	A3-A6	25% Red –	1 BC Fail 5	Remove Beacon 5 from MNTR board 1 (L5/N5)	Relay Board 2 AL2 & Control Board S5	Beacon 5 FAULT	Beacon port turns off
Night test	A4-A6	25% Red –	1 BC Fail 6	Remove Beacon 6 from MNTR board 1 (L6/N6)	Relay Board 2 AL3 & Control Board S5	Beacon 6 FAULT	Beacon port turns off
Night test	A4-A6	25% Red –	2 BC Fail 7	Remove Beacon 7 from MNTR board 2 (L7/N7)	Relay Board 2 AL4 & Control Board S5	Beacon 7 FAULT	Beacon port turns off
Night test	A5-A6	25% Red –	2 BC Fail 8	Remove Beacon 8 from MNTR board 2 (L1/N1)	Relay Board 2 AL5 & Control Board S5	Beacon 8 FAULT	Beacon port turns off
Night test	A5-A6	25% Red –	2 BC Fail 9	Remove Beacon 9 from MNTR board 2 (L2/N2)	Relay Board 2 AL6 & Control Board S5	Beacon 9 FAULT	Beacon port turns off
Night test	A6	25% Red –	2 BC Fail 10	Remove Beacon 10 from MNTR board 2 (L3/N3)	Relay Board 2 AL7 & Control Board S5	Beacon 10 FAULT	Beacon port turns off
Night test	A6	25% Red –	2 BC Fail 11	Remove Beacon 11 from MNTR board 2 (L4/N4)	Relay Board 2 AL8 & Control Board S5	Beacon 11 FAULT	Beacon port turns off
<p><u>FOR AVIAN FRIENDLY CONFIGURATIONS</u></p> <p>THE FOLLOWING TESTS REQUIRE AN ENCLOSURE WITH SWITCHES FOR DISCONNECTING POWER!!! They are to be done safely per manufacturing guidelines.</p>							
Night Test	A1	25% Red –	1 BC Fail 1	Remove Beacon 1 from MNTR board 1 (L1/N1)	Relay Board 1 AL4 & Control Board S5	Beacon 1 FAULT	Beacon port turns off
Night Test	A1	Side Marker level 1 out	ALL 810 TX	Remove the L810 Tier from L and N MNTR board 2 connections	Relay Board 1 AL7 & Control Board S4	L810 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 1	Remove Beacon 1 from MNTR board 1 (L1/N1)	Relay Board 1 AL4 & Control Board S5	Beacon 1 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 2	Remove Beacon 2 from MNTR board 1 (L2/N2)	Relay Board 1 AL5 & Control Board S5	Beacon 2 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 3	Remove Beacon 3 from MNTR board 1 (L3/N3)	Relay Board 1 AL6 & Control Board S5	Beacon 3 FAULT	Beacon port turns off



Night Test	A2-A6	25% Red –	1 BC Fail 4	Remove Beacon 4 from MNTR board 1 (L4/N4)	Relay Board 1 AL1 & Control Board S5	Beacon 4 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 5	Remove Beacon 5 from MNTR board 1 (L5/N5)	Relay Board 2 AL2 & Control Board S5	Beacon 5 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 6	Remove Beacon 6 from MNTR board 1 (L6/N6)	Relay Board 2 AL3 & Control Board S5	Beacon 6 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 7	Remove Beacon 7 from MNTR board 1 (L7/N7)	Relay Board 2 AL4 & Control Board S5	Beacon 7 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 8	Remove Beacon 8 from MNTR board 2 (L1/N1)	Relay Board 2 AL5 & Control Board S5	Beacon 8 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 9	Remove Beacon 9 from MNTR board 2 (L2/N2)	Relay Board 2 AL6 & Control Board S5	Beacon 9 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 10	Remove Beacon 10 from MNTR board 2 (L3/N3)	Relay Board 2 AL7 & Control Board S5	Beacon 10 FAULT	Beacon port turns off
Night Test	A2-A6	25% Red –	1 BC Fail 11	Remove Beacon 11 from MNTR board 2 (L4/N4)	Relay Board 2 AL8 & Control Board S5	Beacon 11 FAULT	Beacon port turns off
VALIDATED THROUGH FACTORY BURN IN PROCESS							
Test		Night to Day transition	Nite to Day	Leave the system in night mode for more than 18 hours(do it only in Burn in)	Relay Board1 AL3 & Control Board S3	PHOTOCELL FAULT	Beacon stays RED & RTO's stay on



Troubleshooting:

This system has built in diagnostic modes enabling the user to manually switch into Day or Night. To force into either mode, use the buttons labeled DAY and NIGHT, SW5 and SW8. By holding the desired button down for three seconds, the system will manually change modes, and hold that mode for two minutes. The system will return to its normal operation automatically, using photocell input to determine the correct mode.

Table 6 - Troubleshooting Table

No power to the system	Ensure proper connections and voltage at the AC terminal block input, 120-240VAC, 50/60Hz	Restore connections at the AC terminal blocks, turn on circuit breaker if off on the AC supply to the system
No L810 or L864 lights are lit, system on in night mode	Ensure proper connections to the light output ports. Night should be indicated in Mode screen, if not, manually force system into night mode using SW5-“Red” labeled button.	Restore connections at output ports if found to be improperly connected. If lights turned on while manually forcing system into Night mode, check for proper photocell wiring and functionality
Will not switch from Day to Night, or Night to day	Ensure connections at the Photocell PCB and the Driver board are consistent on both ends of the photocell wire	Using the Dialight 3 conductor cable, ensure that BLACK is connected to RET on the boards, RED to V+ and GREEN to SIG IN
Beacon alarm present (AL4-AL6 on Relay Board 1 and AL1-AL8 on Relay Board 2)	Manually force system into Night mode. Using AC volt meter, ensure there is AC voltage present at port output. Note that this voltage will be turning on and off if port is specified to flash	If voltage is present, the lights or their wiring is suspect. If no voltage is present, there is a possibility of an open fuse on the controller PCB. Note that fuses are not user serviceable, contact Dialight support at this time.
AL7 on Relay Board 1 present	Manually force system into Night mode. Using AC volt meter, ensure there is AC voltage present matching the system input voltage at port outputs that the side markers are connected to	If voltage is present, the lights or their wiring is suspect. If no voltage is present, there is a possibility of an open fuse on the controller PCB. Note that fuses are not user serviceable, contact Dialight support at this time.



<p>AL3 present on Relay board 1 Photocell Alarm, Alarm Log indicating "PEC LOST"</p>	<p>Observe if Photo Fault red LED on Monitor Board 1(address set to "0") is on or off. If LED is on, this indicates a loss of electrical connection or improper wiring to the photocell.</p>	<p>Repair wiring as necessary</p>
<p>AL3 present on Relay board 1 Photocell Alarm, Alarm Log indicating "Transition Fail" (18 Hour Alarm)</p>	<p>If environmental conditions do not exceed over 18 hours of daylight or darkness, ensure there are no obstructions interfering with the photocell sensor. If the system is installed with days or nights longer than 18 hours, refer to the configuration menu and Trans PEC Alarm setting.</p>	<p>Remove any obstructions to the photocell. Configure system to either produce an alarm after 18 hours of day or night, or configure not to produce 18 hour alarm</p>



REVISION HISTORY

REV	ECO NO.	DRN	CKD	APP	QA	CM	DATE
A	72359	EK	TV	DW	SR	JN	8/27/20
B	86192	AL	ER	TV	EF	JN	9/29/21

