VIGILANT® SERIES
Dual Red/White (L-864/865)
White Lighting System (L-865)

D1xWCTR4x9 - Controller/Power Supply

with
D1xWFH408 or D1xWFH409 – Flashhead
RTOxR280x – L-810 DC Sidelights
D2566000PEC – Photocell

FAA Type D1 or E1 Systems

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 subjected 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 other than intended use.***
- ***<u>DO take pictures</u>: Installation Photos Required for Warranty Coverage. (All electrical connections, bonding, system support and grounding)***
- ***Refer to Quick Manual for list of required pictures and commissioning checklist***
- ***The cable information provided are for tower structures of less than 500 feet.***

SAVE THESE INSTRUCTIONS!!

- ***The operation and maintenance must be carried out by authorized personnel.***
- ***Repairs and Installation must only be carried out by a qualified electrician.***
- ***Only 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 should be done without agreement from Dialight Corp. Alterations other than written in this manual will void all warranties.***
- ***The light source contained in this luminaire shall only be replaced by the manufacturer or his service agent or a similar qualified person.***

SAVE THESE INSTRUCTIONS!!

Table of Contents:

Warranty:

Please visit www.dialight.com/resources/warranties for the latest warranty policy.

System Descriptions:

The below devices are covered in this manual.

D1RWCTR409	Gen5 Dual Red/White Controller/Power Supply 120/277AC 50/60Hz Input Voltage +48VDC L-810 Sidelights (RTO1R1800x) L-864/865 or L-865 flash head, 4 conductor cable required
D1RWCTR449	Gen5 Dual Red/White Controller/Power Supply ±48VDC Input Voltage +48VDC L-810 Sidelights (RTO1R1800x) L-864/865 or L-865 flash head, 4 conductor cable required
D1CWCTR409	Gen5 Dual Red/White w/Infrared (IR) Controller/Power Supply 120/277VAC Input Voltage ±48VDC L-810 Sidelights w/IR (RTOCR2800x) L-864/865 or L-865 flash head w/IR, 4 conductor cable required
D1CWCTR449	Gen5 Dual Red/White w/Infrared (IR) Controller/Power Supply ±48VDC Input Voltage +48VDC L-810 Sidelights w/IR (RTOCR2800x) L-864/865 or L-865 flash head w/IR, 4 conductor cable required
D1RWFH409	Gen5 Dual Red/White w/4 conductor Flash Head - Configured in controller as Dual Red/White or White Only
D1CWFH409	Gen5 Dual Red/White w/Infrared (IR) & 4 conductor Flash Head - Configured in controller as Dual Red/White or White Only
RTO1R1800x	+48VDC L-810 LED Sidelight, Single or Double
RTOCR2800x	+48VDC L-810 LED Sidelight w/IR, Single or Double
D2566000PEC	Medium Intensity Photocell

System not listed, please contact Dialight technical support at 844-436-5422.

Introduction:

This manual is for installing the FAA Type E (L-864/865, Dual Red/White) or FAA Type D (L-865, White only) lighting systems. Please see the separate user manual for FAA Type A (L-864, Red Only) systems.

Covered in this manual is the following information.

- Warranty Policy
- System Descriptions
- Notice and Warnings
- Dimensions of Controller/Power Supply Enclosure
- Dimensions of Photocell
- Dimensions of D1xW Flashhead
- Electrical & Environmental Specifications
- Installation Tips and Requirements
- System Cable Specifications
- Controller Component Layout
- AC Power, Sidelight, Photocell & Flashhead Connections
- Spare Parts for Controller/Power Supply
- Navigating the LCD Display
    - Configuration Screens
    - Main Menu Screens
    - Manual Lighting inspection test
- Commissioning Photographs
- Technical Support
- Serial Number Coding

Not included in this manual:
Refer to the quick start manual for the below information

- RS485 Communication Connections for multiple systems
- Controller Status LED's
- Dry contact connections
- Resetting system & external GPS option
- Display Events and Alarm Descriptions
- Alarm list and possible causes
- INEM installation and setup

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

FAILURE TO TIGHTEN DOWN CLAMP WASHERS WILL MAKE INTERNAL COMPONENTS VULNERABLE TO SURGE OR LIGHTNING DAMAGE

FAILURE TO PROPERLY BOND THE EARTH GROUND WIRE TO THE JUNCTION BOX WILL RESULT IN EVENTUAL LIGHTNING DAMAGE OF THIS SYSTEM. TO AVOID WARRANTY NULLIFICATION, FOLLOW THE DIRECTIONS IN THEIR ENTIRETY.

CAUTION: ONLY APPROVED DIALIGHT PHOTOCELLS CAN BE USED WITH THIS SYSTEM

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

CAUTION: NEVER LOOK AT THE FLASH HEAD WHILE THE SYSTEM IS ENERGIZED. THE FLASH HEAD COULD START FLASHING CAUSING TEMPORARY BLINDNESS WHICH WOULD BE DANGEROUS AT HIGH ELEVATIONS.

FAILURE TO SET UP THE SYSTEM CORRECTLY DURING STARTUP MAY RESULT IN THE TOWER HAVING TO BE CLIMBED AGAIN TO PERFORM TROUBLESHOOTING.

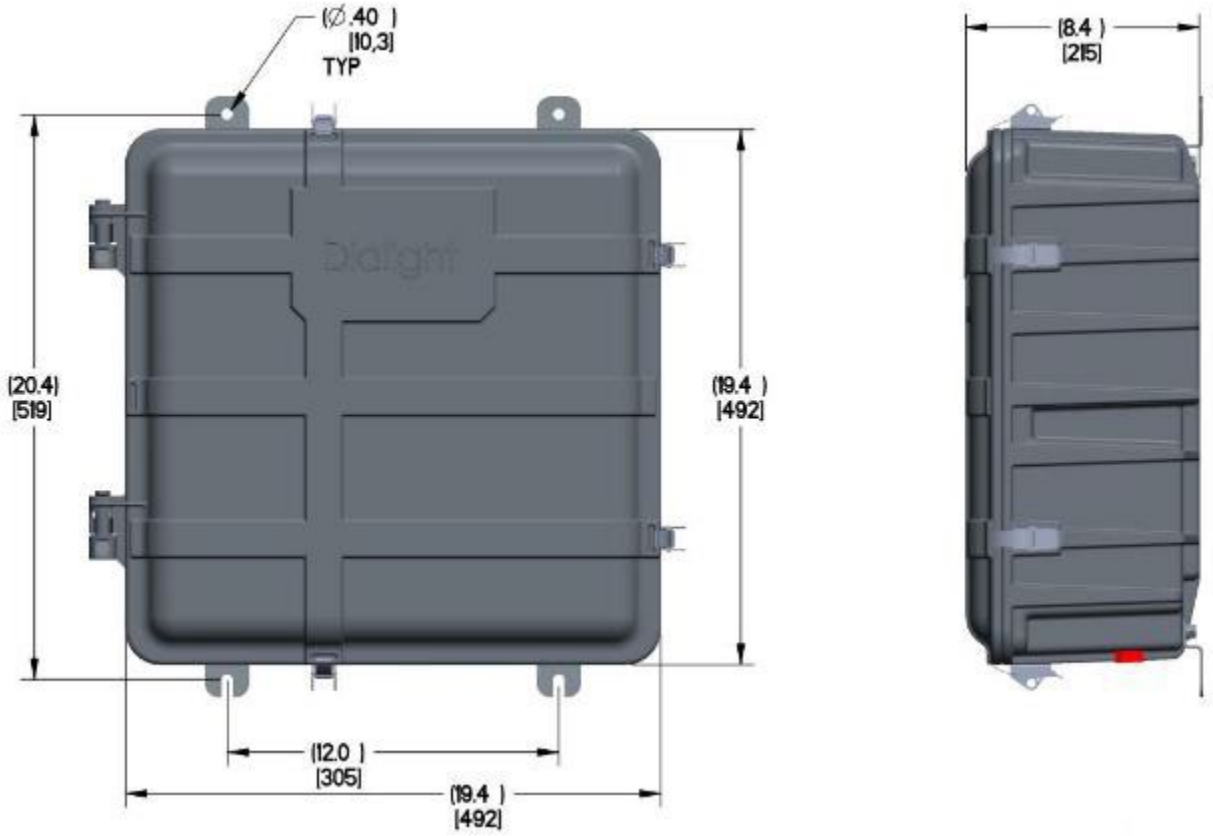
USE PROPER METHODS OF LIFTING AND CARRYING TO PROTECT AGAINST INJURY. FOLLOW THE RECOMMENDATIONS BELOW TO ENSURE ENCLOSURES ARE HANDLED IN A SAFE MANNER:

- **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**

Dimensions for Mounting the Enclosure:

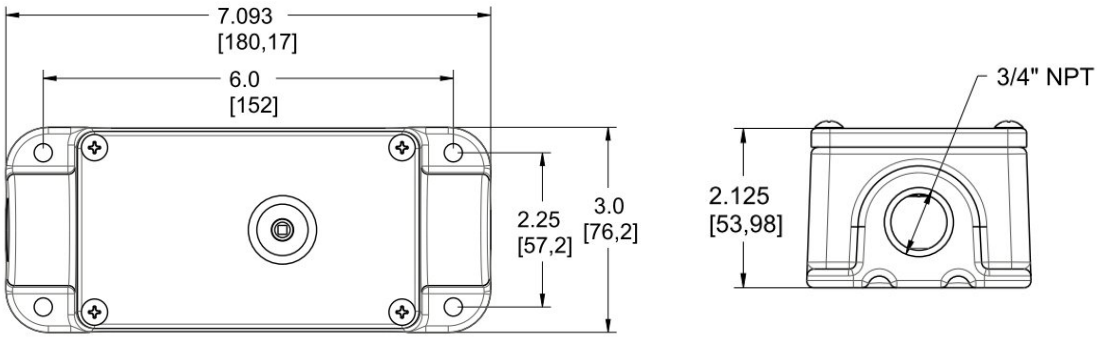
NOTE: Both the Controller and Power Supply use the same enclosure.

- Recommended mounting hardware diameter is 3/8” (10.3mm)
- Weight of the complete enclosure is 49.5 lb (22.45kg).
- Six (6) ¾-inch NPT entrance holes provided on bottom side of enclosure

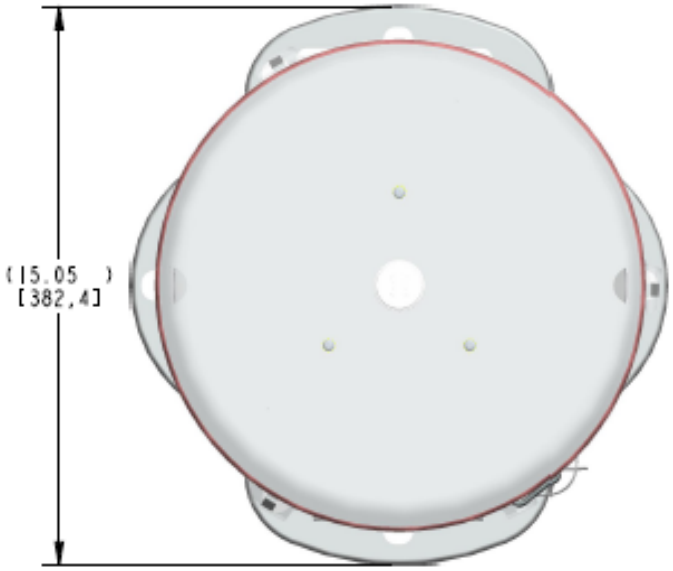


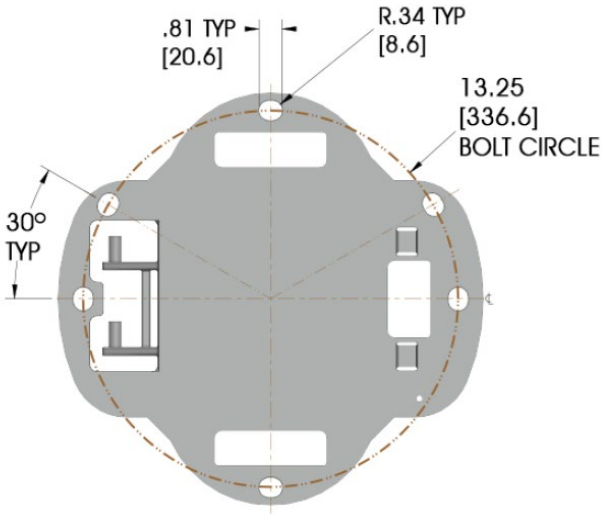
Dimensions for Mounting Photocell:

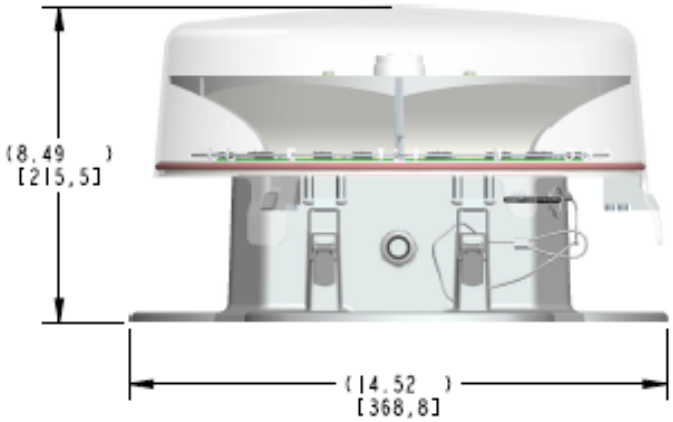
- Four (4) ⌀0.22” (5.6mm) thru holes provided for mounting



Dimensions for Mounting the D1xW L864/865 Flashheads:

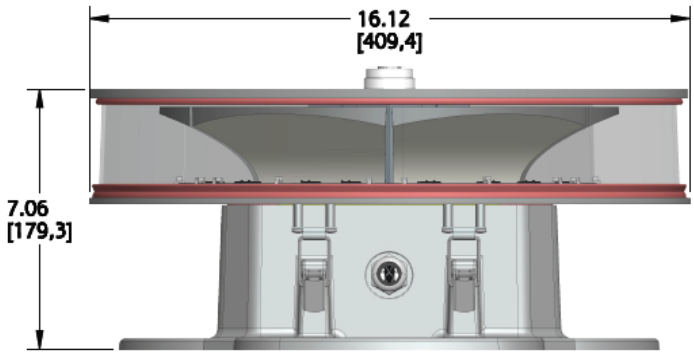






D1xWFH409 Flashhead
Weight 21 lbs.(9.5kg)

D1RWFH408 Flashhead



Recommended Locations for Cable Entry:

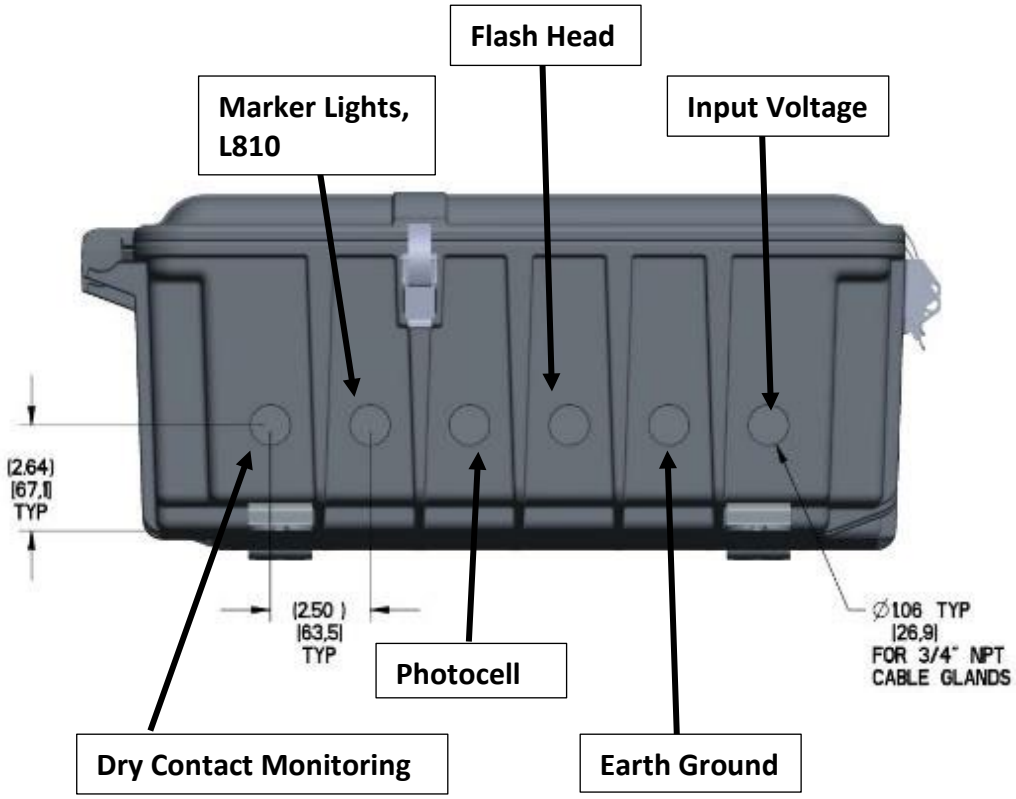
The enclosures are supplied with six factory-drilled holes. Remove any red dust caps and all entrance holes must be properly sealed with watertight connectors or plugs to ensure proper moisture protection. Typical port entrances for cables/seal-tight are shown below. Input voltage location has red dust cap from factory, this must be removed and replaced with watertight connector or plug.

To maintain water ingress protection all additional holes should located at the bottom side of the enclosure.

NOTE: Dimensions are suited for ¾-inch NPT cord grips or seal tight.

NOTE: Additional Grounding can be added at either the mounting feet or inserted to the ground terminal block (GL) located in the enclosure. Grounding cables not supplied.

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



Electrical Specifications:

D1xWCTR409 Controller/Power Supply – 90 Watts, 120/277 VAC 50/60Hz
D1xWCTR449 Controller/Power Supply – 75 Watts, ±48VDC
D1xWFH4xx Flashhead – 36 Watts
RTO1R18001 48VDC L-810 – 1.5 Watts
RTOCR28001 48VDC L-810 w/IR – 5.2 Watts

Environmental Specifications:

Operating Temperature Range: -40°F to +130°F (-40°C to +55°C)
Humidity: 95% relative humidity
Wind: up to 150 mph (240kmph)
Protection: IP66, Suitable for outdoor use
Pollution degree: P1
Equipment intended to be installed at an altitude of 2000m or less

Installation Tips and Requirements:

The D1xWCTR4x9 Controller/Power Supply is housed in a NEMA4X rated outdoor enclosure and can be installed either outside or in a shelter. If installed outside, the installer must consider water ingress and proper earth grounding to reduce the risk of premature failures.

For AC or DC Input, it is recommended that the electrician or installer calculate the wire requirements based on the system being installed. It is recommended that installation does not utilize less than 14AWG 600V cable with at least a 90ºC temperature rating. See electrical parameters for further information.

It is recommended that the lighting system be on its own breaker adequately rated for the system's power consumption. The breaker MUST be rated for at least 20% higher than the systems total current draw.

Proper grounding techniques must be utilized based on local, state and federal guidelines and customer specifications. The system has built in Lightning and RF immunity at each section, but for it to be effective proper ground connection techniques must be used.

System Cable Specifications:

NOTE: Cables for AC/DC Input and remote monitoring are not supplied.

Specification for Input cable:

Requires three conductors for AC or DC Input.
- Typical AC color code is Black, White and Green.
- Typical DC color code is Red, Black and Green.

Earth Ground is required in the controllers.
A minimum of 14AWG is to be used.
Bonding ground wire when required is to be 6AWG.
Individual wires can be used in lieu of a cable but must be routed through conduit or seal tight.

Specification for RS485 Cable:

Requires three conductors of 18AWG, drain wire plus a braid for grounding.
Typical color code is Grey, Yellow, and Blue.
NOTE: Only required for systems that have more than one (1) Controller/Power Supply.

Specification for Photocell Cable:

Requires three conductors of 18AWG.
Typical colors are Red, Black and Green.
Maximum distance is 500 feet (152 meters).

Specification for 48Vdc L810 Side Marker Cable:

Requires three conductors of 18AWG.
Typical color code is Red, Black and Green.

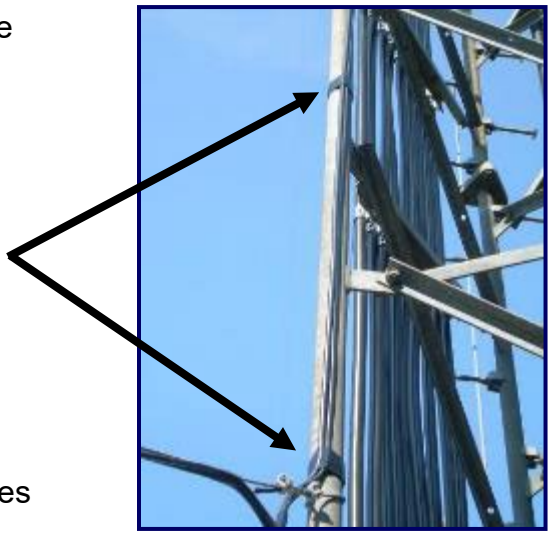
Specification for the Flashhead cable

The Vigilant® flashhead requires a 4-conductor cable with a minimum of 14 AWG with foil and braid shielding.

Typical colors are Red, Red with black stripe, White and White with black stripe. Cable needs to be an un-cut (no splices) run from flashhead to controller/power supply surge protection devices.

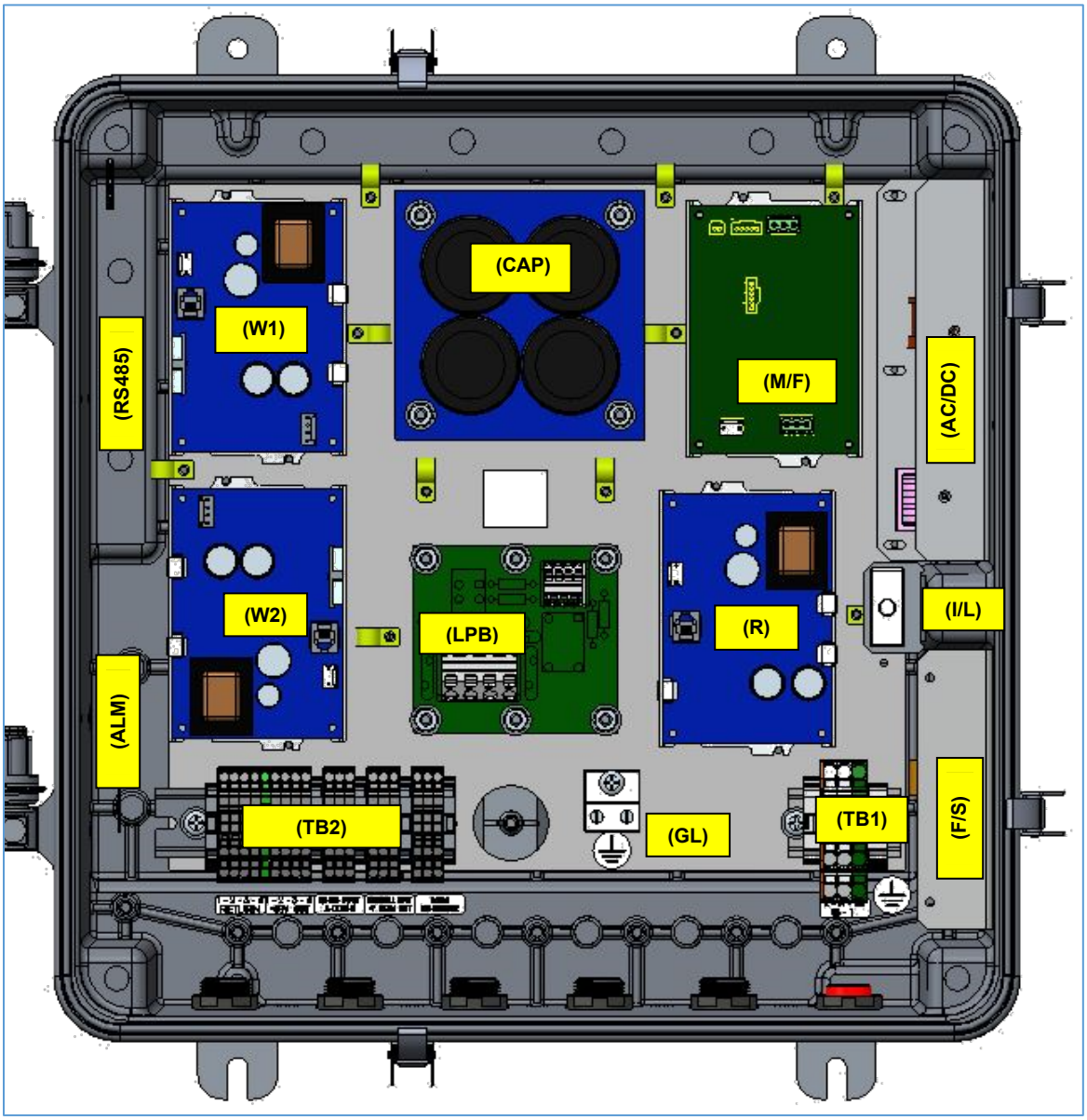
NOTE: Stripes are always for the negative connection on DC systems.

All cables that extend up the structure must be adequately secured to the structure with the use of ¾" filament tape and 2" black all weather tape at a maximum of 5 foot intervals. Route cables inside the structure leg when possible. Maximum #14-AWG cable length is 680 feet (207 meters). #12-4C should be used on taller structures.



Failure to meet any of the above cable requirements could void all factory warranties. If in doubt please contact your sales representative or Dialight.com.

Controller/Power Supply Component Layout:



NOTE: Interior Door with LCD Display and Sidelight Module not shown.

I D	Description	I D	Description
W1	WHITE LED DRIVER #1	I/L	INTERLOCK SWITCH
W2	WHITE LED DRIVER # 2	AC/DC	POWER SUPPLY CONVERTER
TB2	SIDELIGHT/RS485/PHOTOCELL	M/F	MICRO/FILTER ASSY
GL	EARTH GROUND LUG	CAP	CAPACITOR BOARD
TB1	INPUT VOLTAGE (AC or DC)	LPB	LIGHTNING PROTECTION BOARD
F/S	FILTER/SURGE BOARD	R	RED LED DRIVER
ALM	DRY CONTACT ALARM MODULE	RS485	RS485 CONNECTOR BOARD
LCD	LCD MODULE *(door mounted)*	SLM	SIDELIGHT MODULE *(door mounted)*

Connection of Input Power:

Input cable or wire NOT supplied with the system. Input power connected at terminals labeled TB1 (see below).

- The AC connection requires three conductors. Live, Neutral and Earth Ground. Input Voltage is 120/277 VAC 50/60Hz (100-305 VAC range).

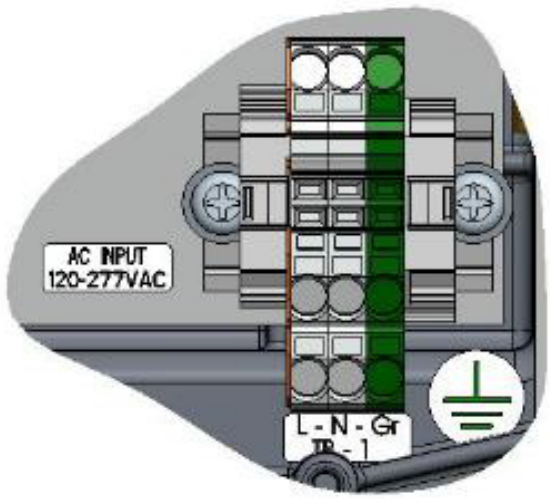
- The DC connection requires three conductors. Positive, Negative and Ground. Input Voltage is ±48VDC (40-60 VDC range).

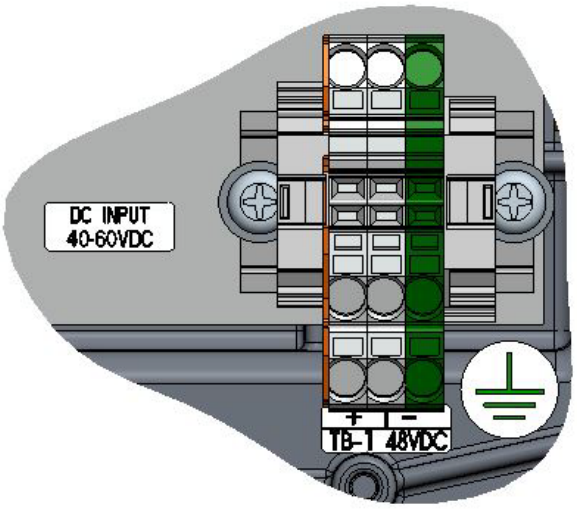
Individual wires can be used but must be fed through seal tight or conduit.
Earth ground connection is required to provide safety and proper operation of the system.

WARNING: Floating Neutrals are not permissible within the wiring of the system and the installer must verify the connections. This will “Void” all warranties and cause system failure during turn on.

WARNING: No more than 305VAC measured from Live to Earth Ground or Live to Neutral on TB1, or 60VDC from Positive to Negative or Positive to Ground. This must be measured before powering up the system.

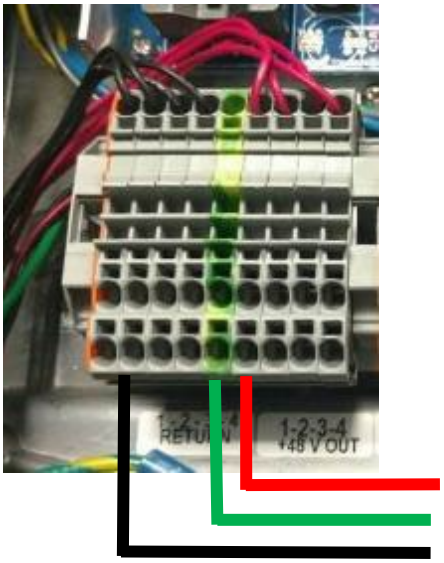
NOTE: The load and voltage loss of the cable must be quantified before selecting the cable size requirements. See electrical specifications for details.





Connection of the Side Marker Lights:

The DC connection requires three conductors. Positive, Negative and Ground. Voltage to the L-810 sidelights is +48VDC and cable/wire connections on TB2 (Return & +48V Out). Additional conductors required if using individual lamp monitoring.



SIDE MARKER LIGHT CONNECTIONS

RTO Red wire
RTO- Green wire
RTO- Black Wire

CONNECTION OF RTO's TO TERMINAL BLOCK (TB2) IN MAIN CONTROLLER

+48V OUT Connections:

Port 1	+48Vdc	Voltage to Individual L810 or Tier (up to 4 SL)
Port 2	+48Vdc	Voltage to Individual L810
Port 3	+48Vdc	Voltage to Individual L810
Port 4	+48Vdc	Voltage to Individual L810

NOTE: A single Port connection can power all L810's.

Return Connections:

Port 1	-48Vdc	Voltage to Individual L810 or Tier (up to 4 SL)
Port 2	-48Vdc	Voltage to Individual L810
Port 3	-48Vdc	Voltage to Individual L810
Pin 4	-48Vdc	Voltage to Individual L810

NOTE: A maximum of 1.2 amps can be monitored through each port connection.

Calibration of the Side Marker Lights:

Follow these steps to calibrate the Marker Light Monitor Boards located in the Main Controller. These steps will allow the system to properly identify, power, and monitor the RTO L810 side markers. If calibration is NOT completed, then the system will not log events or Alarms for faulty Side lights.

STEP 1 – CLEAR the Marker Light Monitor Board by holding down buttons SW1-4 at same time.

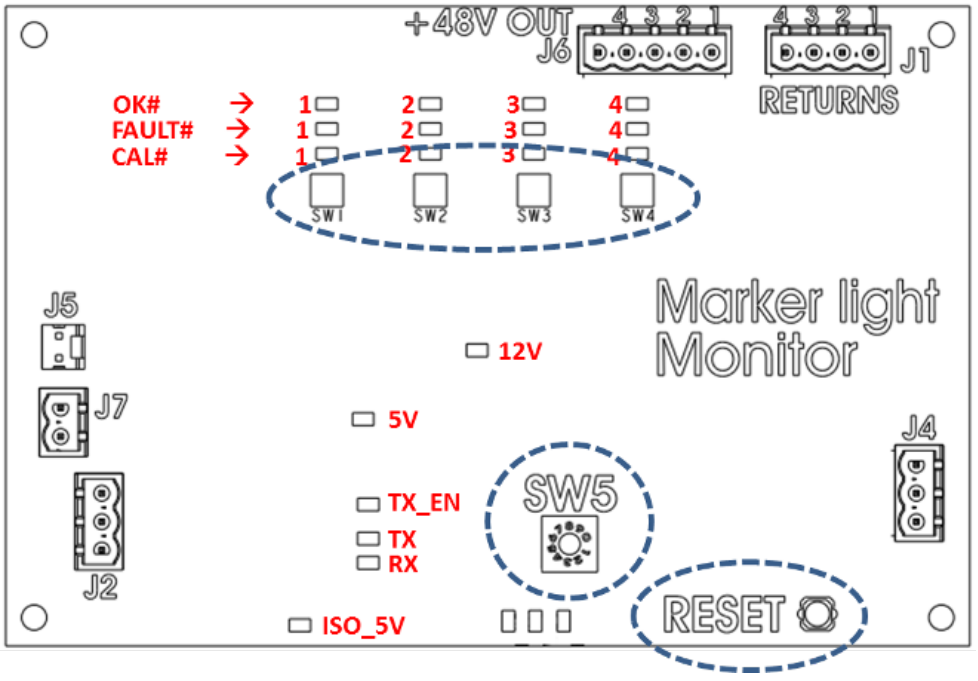
STEP 2 – FAULT LEDs #1-4 will light up red.

STEP 3 – Press "RESET" button (SW7).

STEP 4 – Each output will auto configure within 15-20 seconds.

STEP 5 – Verify Each output is correct:

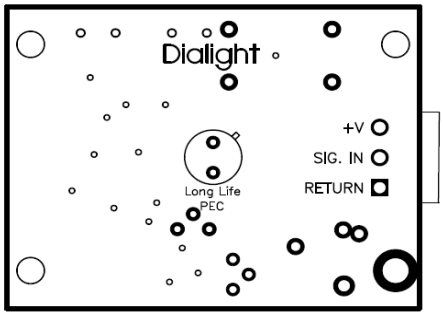
"OK" LED will illuminate Green if RTO output is present.
"OK", "FAULT", and "CAL" LEDs will be off if RTO output is NOT present.



Photocell Connection:

One photocell is used for all Dialight Medium Intensity Controllers, p/n D2566000PEC. No other photocell can be used as it will damage the system and void the warranty.

- Open supplied photocell enclosure by removing four screws.
  NOTE: Screws are not captive to the cover plate.
- Insert cable/wires thru bottom port of housing.
- Strip back required length of jacket to allow connections.
- Remove green connector from circuit board.
- With screws shown – connect Red, Green, and Black wires.
- Completely reseat connector into circuit board.



TOP VIEW

⟸ Photocell to Controller Connections ⟹

V+= Red Wire
(Supply from Controller)
SIG IN= Green Wire
(Sense to Controller)
RET= Black Wire (Ground)

NOTE: A zip tie is provided inside the photocell enclosure to secure the cable from falling out. A UL knot can also be used to prevent the cable from sliding down the conduit. Weight of cable should not be placed on terminal block alone.

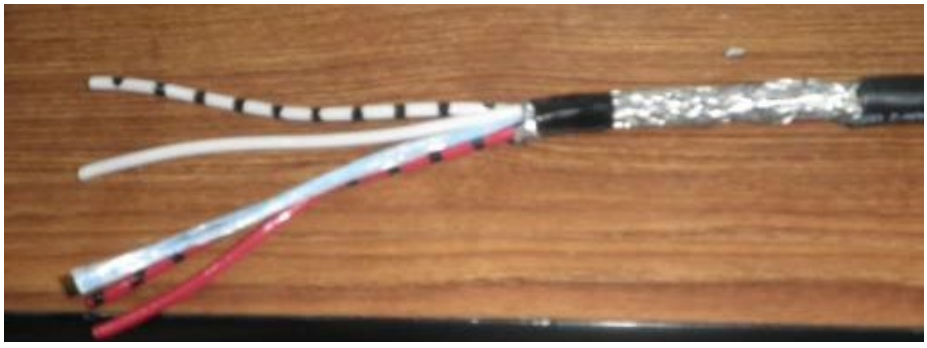
Cable Requirements:
Three conductor, 18AWG minimum with a max. distance of 500 feet from the controller.

Photocell must face north and be placed in a location without obstructions or excess ambient light (i.e. security light).

The photocell comes supplied with a ¾" NPT conduit hub. Conduit mounting is recommended method for installing the photocell. If exposed cable is used in a hazardous location, the cable must have either a shield or braiding that is properly connected to body of the photocell and to the controller enclosure. 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.

Flashhead Cable Preparation:

1. Run the cable through the provided strain relief before stripping the outer jacket in order not to fray the braiding.
2. Remove 10” of the outer jacket. Careful not to damage internal braid. If cut, cable should be re-stripped to ensure proper bonding.
3. Wrap electrical tape 3-4” from end of outer jacket to prevent fraying.
4. Remove remaining braiding for the wires to be connected at flashhead terminal block (Red/Black, Red, White/Black, and White) back to electrical tape.
5. Strip conductors back 3/8” for termination into terminal block.
6. Connect the four conductors to terminal block and ground connection as detailed the next section.



Flashhead/Controller Cable Connections:

Flashheads and Controller have the same surge/terminal connections so the information below will be used for connecting inside the Flash Head. Use same installation method for the controller.

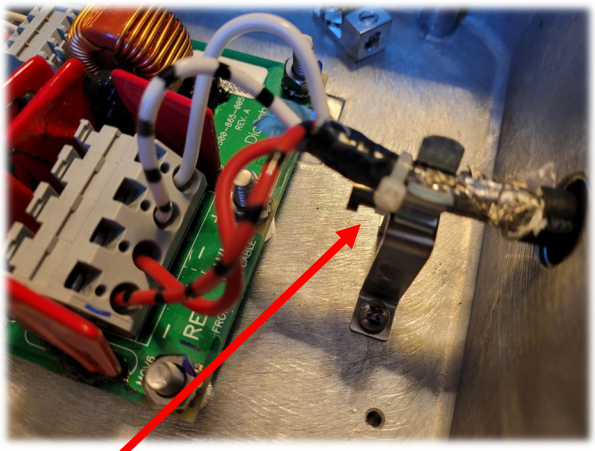
The flashhead cable must be an uncut run from the flashhead to the controller.

Mixing wires will result in severe damage to the controller and/or Flashhead. This will VOID all warranties.

NOTE: This is the only connection in the Flash Head pedestal that is required.

NOTE: If color code is different than shown, the installer must provide this information to the site manager upon completion for future reference when required.

Terminal block in Flashhead shown
Using a small tipped Flat head screwdriver, insert and lift handle upwards to push the internal latch down to insert the wire.
Do a pull test to ensure conductor is properly seated.



Insert braiding in to the clip and use zip tie to secure to clip.
See NOTICE on inside lid of flashhead for more details.

J2 pin designators	Description
RED Connections (RED)	
- Pin 1 (Red/Black wire)	RED LED's negative (Cathode connection)
+ Pin 2 (Red wire)	RED LED's positive (Anode connection)
White Connections (WHT)	
- Pin 3 (White/Black wire)	WHITE LED's negative (Cathode connection)
+ Pin 4 (White wire)	WHITE LED's positive (Anode connection)

Terminal block in Controller shown
Using a small tipped Flat head screwdriver, insert and lift handle upwards to push the internal latch down to insert the wire.
Do a pull test to ensure conductor is properly seated.

WARNING: It is vitally important that the braid and foil be properly connected under the clamping washers for lightning protection. Failure to do will result in premature failures during lightning strikes.

NOTE: For commissioning the system, pictures must be taken of all the clamping washers and the cables secured under them.

Spare Parts - Controller/Power Supply:

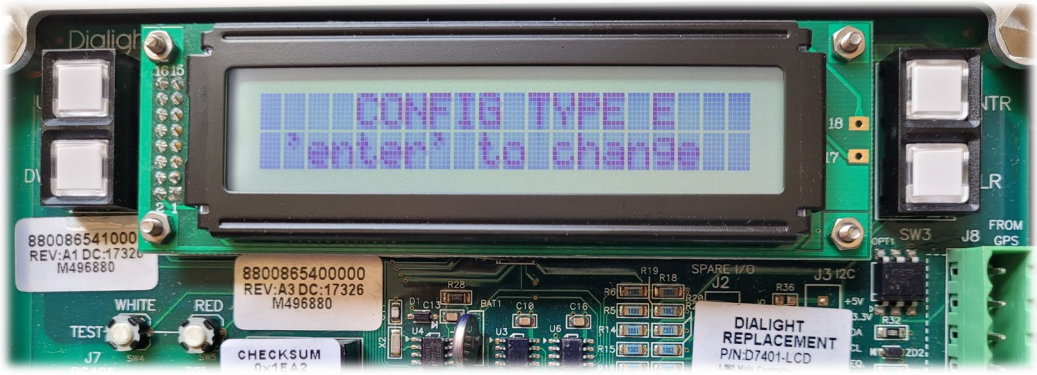
NOTE: Interior Door with LCD Display and Sidelight Module not shown.

I D	Description	Part Number
W1 / W2	WHITE LED DRIVER BOARD	D1W0084WA
RS485	RS485 CONNECTOR BOARD	8800865420100
ALM	DRY CONTACT ALARM MODULE	D7600RLY
CAP	CAPACITOR BOARD	D1RW0084CP
LPB	LIGHTNING PROTECTION BOARD	D7208SUR
M/F	MICRO/FILTER ASSY	D7300ASY
R	RED LED DRIVER	D1CW0084RA
AC/DC	POWER SUPPLY CONVERTER *(AC Units Only)*	D1RW9005RA
I/L	INTERLOCK SWITCH	7700865000100
F/S	FILTER/SURGE BOARD *(AC Units)*	D7202SUR
F/S	FILTER/SURGE BOARD *(DC Units)*	D7204SUR
LCD	LCD MODULE *(door mounted)*	D7401LCD
SLM	DC SIDELIGHT MODULE *(door mounted)*	D7502SLM

System Configuration Screens:

After all wiring connections are completed checked for accuracy. Provide Input Voltage to the Controller/Power Supply. Ensure the front panel is closed and locked so the interlock switch is fully engaged. The front panel LCD screen will turned on and display the Startup and Initializing screens automatically.

The following steps have to be completed to ensure proper operation of the system.



On the left side of the display will be the “UP” and “DWN” buttons.
On the right side of the display will be the “ENTR” and “CLR” buttons.

The Startup Screen displays:

Dialight MI Ctrl **REV. x Build: xx**

NOTE: The Site Manager and Installer should take a note of this screen including the REV number and the Build number if any future troubleshooting is required. x’s indicate revision levels and will appear as numbers on the display.

The Initializing Screen:
This screen shows a countdown for the initial 15 flashes for FAA E and D type systems. For FAA Type A (Red only) the countdown starts at 45 flashes.

NOTE: This screen may go back to the Startup screen if synchronization fails.

Initial 15 Flashes **In Process**

Setup Screens:
The following screens will be used to properly configure system based on the lighting system being installed. By using the “UP” and “DWN” buttons the user can view and edit the configuration as applicable by pressing the “ENTR” button after the selecting the desired choice the next screen will be entered.

- **Configuration Type Screen:**

A) To change configuration of controller go to ‘Config Type’ screen and press “ENTR”. This will enable you to select either “E”, “A” or “D” tower type. Sub categories such as E1, E2 etc. will be addressed later in the configuration menu.

CONFIG TYPE X ‘Enter to change’

B) Use the “UP” and “DWN” buttons to scroll and select tower style E, A, or D. Then press “ENTR”.

NOTE: If ‘Tower Style D’ is selected, the system will automatically proceed to step F, skipping steps D and E since side markers (L810) are not used in D style configurations. Any information previously in the system as indicated in omitted steps will be changed to “0” if switched back to an E or A style configuration and will have to be re-entered to match what is installed on the tower.

NOTE: System will reset when tower style is changed.

Tower style = E ‘Enter’ to change

C) Select for the presence of an External GPS using the “UP” and “DWN” buttons.
“YES” indicates an external GPS is being used,
“NO” is the standard configuration without an external GPS.
Press “ENTR” after selection.

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

D) Select the number of Side Marker (L810 or RTO) Tiers that are connected to the system. The number input shall represent the number of tiers present. Zero to four can be selected. ‘1’ for a standard A-1 or E-1 lighting system.

Num of 810 TIERS=0 u/d=chg, enter=done

E) Select the number of Side Markers (L810’s, RTO’s) that will are connected to Port 1 (P1 / Tier 1) 0 through 4 can be selected, then press “ENTR”
NOTE: Repeat for ports 2 through 4.
NOTE: Each port represents one tier.

NUM 810 P1/T1= 0 u/d=chg, enter=done

F) Select the total number of beacons (L864/865, L-864 or L-865) connected to the system. Up to nine beacons can be supported. Press “ENTR”.
‘1’ typically selected for standard A/D/E-1 system.

Number of 864/5 = 1 u/d=chg, enter=done

G) Select the number of side light boards connected to the system, 1 through 9 and the press “ENTR”.

NOTE: Additional sidelight monitor boards are available for special applications; most configurations will only have one board and this will remain set to “1”

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

H) Select the status of sidelights. Use “UP” and “DWN” buttons to change from STEADY, DISABLED and FLASHING, depending on the specific lighting requirements at the site.

NOTE: This global change that will affect all tiers of sidelights; individual tiers are not able to have statuses changed.

L810 stat = STEADY
u/d=chg, enter=done

L810 stat = Disabled
u/d=chg, enter=done

L810 stat = Flashing
u/d=chg, enter=done

I) Select red mode flash rate of the beacons and sidelights when specified to be flashing as indicated in step H. Selections available are 20, 30, and 40. Use “UP” and “DWN” buttons to change, and press “ENTR”

NOTE: Factory default is 30fpm per FAA specifications.
NOTE: This global change will affect all tiers of sidelights at once.
NOTE: This change will not affect white flashes.

Flash per min = 30
u/d=chg, enter=done

J) Sidelights are to be calibrated at this time, use “UP” and “DWN” buttons to change from “NO” to “YES”, and then press “ENTR.” The system will reset and the sidelight board will perform its calibration sequence.

NOTE: This step should only be selected if all tiers of sidelights are fully installed, operational and connected to the controller.

RECAL L810 = NO **u/d=chg, enter=done**

K) If the Photocell mode transition alarm (18-hour alarm) is not needed as an alarm this selection can disable it. Use “UP” and “DWN” buttons to change from “NO” to “YES”, and then press “ENTR.”

Selecting YES: If the photocell does not detect day or night transition after 18 hours, the system will alarm and will switch to Day mode. To clear this alarm the system requires a local reset or a forced operation change locally or remotely.

Selecting NO: After 18 hours of not transitioning, the system will log an event in the system log but will continue to operate normally based on ambient light conditions. No alarm via dry contact or mod bus is generated.

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

Trans PEC Alrm = NO **u/d=chg, enter=done**

L) Some non-FAA applications require the L-864 to operate in a Steady-state mode. The Beacon can be made steady burn in Red night mode by selecting 'YES'. Typical applications will be set to 'NO'.

BCN Steady RNite= NO **u/d=chg, enter=done**

Once this selection for the Beacon is complete, the next screen to be displayed is the "Config Type".

After about 2 minutes, the system will reset on its own with the new configuration.

CONFIG TYPE X **'Enter to change'**

Verify operation of the system with the photocell.
Ensure no alarms are present during Day and Night modes.

User Interface Screens:

The following screens will provide information about the system based on the previous calibration. These are mostly informational screens only with limited functional changes to the lighting system.

- **Main Menu Screen:**
  The user or maintenance personnel can view and edit the configurations as applicable by pressing the “ENTR” button to enter into each main menu screen. Pressing the “CLR” in the selected screens takes the user back to the main screens.

  The next screens are paged through by using the “UP” and “DWN” buttons.

- **Status Screen – CONFIG Type:**
  Upon resetting or powering up the system this is the first screen that is displayed.

CONFIG TYPE X ‘Enter to change’

- **Screen: Tower style**
  This screen displays the Base Controller configuration.
  If the amount of beacons configured do not match actually connected beacons, then an alarm will be generated as a “config” alarm. Only powered fixtures and fixtures connected to the RS485 will be detected.

  The “B y” in second line will indicate the firmware level of main controller.

  NOTE: If the installer selects more than one beacon on the A/D/E-1 system, an AL1 alarm (config ERR) will be lit and recorded in the alarm log.

Tower Style: X X 86X ,X 810 B y

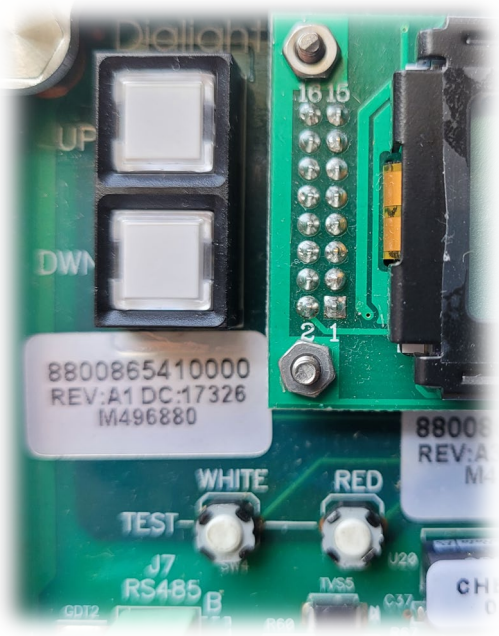
- **Screen: Mode of operation – Day or Night**
  The mode changes according to the user's photocell operation based on ambient light conditions. There are no options for preprogramming mode change times.

  User can manually switch from Day to Night or Night to Day using procedure below.

  Mode: Options are Day or Night, T= controller temperature (C)
  Active: Options are Wht or Red

MODE: Night T=X C ACTIVE: RED 864	MODE: Night Forced 'Clear' to restore

On this screen, the controller can be forced in DAY or NIGHT using the push buttons located under the 'DWN' button marked WHITE (SW4) and RED (SW5).



NOTE: LED S3 will blink on the board until the system is set back to normal operation.

The system will automatically restore to normal operation after approx. 2 minutes.

WARNING: Remote forcing through the GUI will remain indefinitely.

- **Screen – Alarm Status**
  This screen allows the user access to the Alarm Log. By pressing the "ENTR" button, both current and previous alarms are viewed, starting with the most current alarm. Alarms are viewed by using the "UP" and "DWN" buttons. Each alarm occurrence is dated and time stamped. Up to 999 alarm entries can be stored in the controller.

  If an Alarm is present, the Status screen will change from "NORMAL" to "ALARM" thus indicating there is an active Alarm in the system.

  By pressing "ENTR" 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. Press the "CLR" to exit the log.

Status: Normal 'Enter' to view Alrm	Status: ALARM 'Enter' to view Alrm

  NOTE: To erase all recorded events press and hold the CLR button for 5 seconds. This is a permanent erase so only do so when instructed by technical support or during a new system installation.

- **Screen: Date and Time**
  By selecting "ENTR" the user can set the actual time and date of the Base Controller.

  Date and time settings are stored in the controller; if power is lost, internal battery backup ensures settings will not be erased.

MMM DD,YY "Time" 'Enter' to set Clock

- **Screen: Manual Lighting Inspection Screen**
  The user can perform a manual lighting inspection to ensure proper operation of the system in its entirety. This procedure will be explained in next manual section.

  Test will time out after 2 minutes of no user input during the manual test. The test relies on user input to complete the necessary checks.

Manual LI TEST 'Enter' to Test

- **Screen: Status Screen Event Log**

  This screen allows the user access to the Event Log. By pressing the "ENTR" button, current and previous events the system has encountered are able to be viewed, starting with the most current event. Events can be scrolled through using the "UP" and "DWN" buttons. Each event occurrence is dated and time stamped.

  NOTE: While viewing the event log, to leave the log press the "CLR" button to exit the log and then press the "ENTR" key to return to log, indicating the latest recorded event.

Press 'Enter' Key to view event log.

  NOTE: To erase all recorded events press and hold the CLR button for 5 seconds. This is a permanent erase so only do so when instructed by technical support or during a new system installation.

Manual Lighting Inspection:

Firmware of the system must be B6 or higher.
Please see the Configuration Screen for firmware version.

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

NOTE: Discrete and Modbus alarms will be generated during this test, if NOC is actively monitoring at the time of test, they will receive the generated alarms. Inform the NOC prior to starting the manual lighting inspection (MLI). See section “Manual Lighting Inspection Test” for more information and procedure to conduct the test.

Test will time out after 2 minutes of no user input during the manual test. The test relies on user input to complete the necessary checks.

NOTE: A lighting inspection can be done remotely but the Auto Lighting Inspection is required. The auto does not require covering of the photocell or pressing the selected mode during the auto test.

System must be in Day mode with the photocell before starting the test.

Press “ENTR” to initiate Lighting Inspection.

Manual LI TEST **‘enter’ to Test**

Press “WHITE” (SW4) button located under the ‘DWN’ button on the left side of the LCD control board. This will automatically start a series of tests.

MLI ‘CLR’ to exit **Push WHT BTN**

Once the test begins the display will remain as shown until completion.

Manual LI TEST IN PROCESS WHT

The display will state Cover the PEC and Push the RED (SW5) button.

IMPORTANT: Cover photocell and wait until beacon switches to Night Mode. Transition may take up to 60 seconds. This can be observed by monitoring AL8 LED on the dry contact board. Once the AL8 switches from AMBER to OFF, the system is in Night mode.

COVER PHOTOCELL Push RED BTN

Once system is flashing in NIGHT mode, wait for a minimum of 15 flashes (approximately 30 seconds) and then press the TEST RED (SW5) button.

MLI 'CLR' to exit Push RED BTN

The display will indicate the test is in process and state mode of night operation (Red or White) based on the configuration of the system from the Startup procedure.

A and E Structures

Manual LI TEST IN PROCESS RED

OR

D Structures

Manual LI TEST IN PROCESS NWHT

Once the test has completed, one of the two displays below will be shown for approximately 20 seconds.

Manual LI TEST PASS :)	OR	Manual LI TEST FAIL : (

The next screen will display for approximately 30 seconds.

Manual LI TEST LIT DONE

Uncover photocell and system will return to initial configuration screen when test is completed. System will reboot and initialize system after approximately 60 seconds.

System will operate in Day Mode and show the below screen.

CONFIG TYPE X 'Enter' to change

After the Lighting inspection (LI) test is done, the user can check the LI list in the Alarm log.

Controller Status LEDs:

There are several LED status and alarm indicators within the controller. The two main status indicators are located on the Main LCD board and Alarm Relay Board.

Main LCD Board

STATUS LED ASSIGNMENTS

S7	S6	S5	S4	S3	S2	S1
COMM	SYNC	25% LED	L810 Failure	Photocell	EXT SYNC	Heartbeat
Failure RED	Failure RED	Failure RED	Failure RED	Fail Day/Night RED	Failure AMBER	Flashes GREEN

Alarm Relay Board

STATUS LED/dry contact ASSIGNMENTS

AL8	AL7	AL6	AL5	AL4	AL3	AL2	AL1
PEC MODE	L810 FAILURE	TRANS COMM	Day/Night Transition	PEC LOST	25% FAILURE	Sync	Config or COMM Fail
Amber*	Red	Red	Red**	Red	Red***	Red	Red

* PEC Mode = Amber indicates Day Mode, OFF indicates Night Mode
** Not used when PEC Trans is set to NO
*** For either White or Red failures (depending on PEC Mode)

Alarm Board Dry Contact Wiring:

A minimum of 22AWG wire should be used for connecting the relays.

1: The relays can be wired individually or multiplexed for alarm monitoring.
2: The relays can be wired as normally open or normally closed.

To monitor the dry contacts on the relay board, the dry contact readers will have to be wired into the relay contacts marked (COM, NO, and NC). Relays are marked as if there is no power is applied to the system.

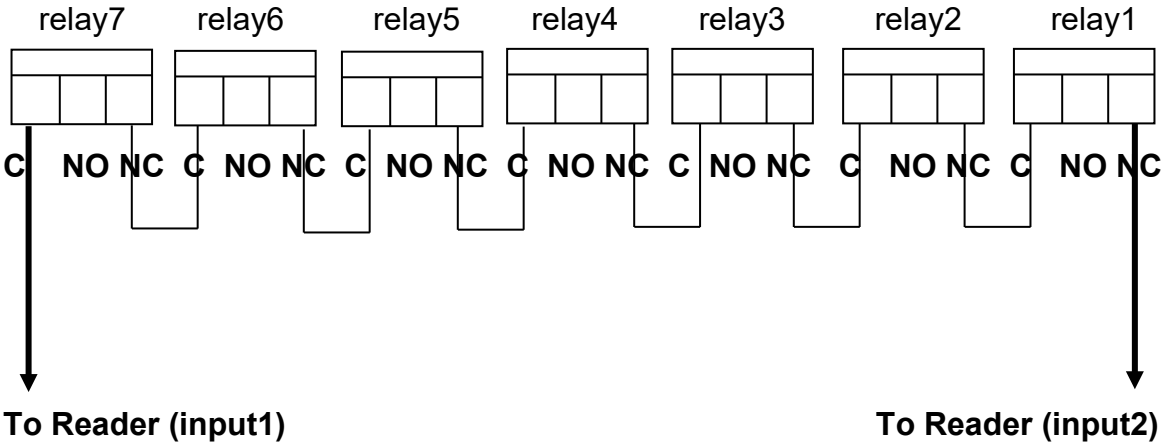
It is highly recommended that a multi-meter be used to measure the dry contacts for “open” or “closed” by using the OHM setting on the meter. The relays can measured for open or closed with power applied to the base controller.

NOTE: If only one dry contact reader is present then the relays need to be multiplexed together to give one output as shown below:

NOTE: If less than 7 dry contact readers then 1 or more dry contacts can be multiplexed together.

NOTE: Dry contact Relay 8 is only for Day and Night status and is not an Alarm relay but indication of the mode the system is currently in.

Wiring for Multiplexing a single dry contact reader.



Commissioning Photographs:

The following photographs should be taken and supplied to end-user (system owner).

1. Internal wiring of the Flashhead
2. Flashhead mounting to the structure (showing ground lug and service loop)
3. Additional Earth bonding the pedestal to the structure. (If applicable)
4. Any and all service loops for flashhead and sidelight cables.
5. ESD brushed or lightning rods installed.
6. Labels on the flashhead and controller.
7. All internal wiring in controller (AC Input, Photocell, Flashhead, Sidelight).
8. Manual Lighting Inspection final display screen showing system passed test.

Technical Support:

Engineering Technical Support Contact Phone Number

844-436-5422

Press 1 for Medium intensity

Press 3 for Product Information

Serial Number Coding:

The serial numbers of the fixtures being installed are located on the Dialight label. Dialight refers to the serial numbers as **Date Codes.** The date code is used to determine warranty status of the unit. The Date Codes are set up as:

The following YY,DDD, S/N.
YY= the year it was produced
DDD= Julian day of the year
S/N= a number of either 3 or 4 digits.

Revision History:

REV	ECO No.	DRN	CKD	APP	QA	CM	DATE
A	51667	DW	JM	RA	YS	JN	4/27/2018
B	64577	TLD	AV	AR	YS	JN	11/27/19
C	67165	NS	AV	AR	YS	JN	4/20/20
D	95565	JAJ	DW	AR	YS	JN	7/18/2022
E		JAJ	JC	AR	YS	JN	9/7/2023