Medium Intensity Quick Start 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 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.***
- ***DO NOT look into the Infrared (IR) LEDs. These five IR LEDs on top of the unit (if applicable) will not appear to be ON, but can be verified using most digital cameras.***
- ***Pictures are required for commissioning the install. Failure to provide could VOID all warranties***

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 the agreement from Dialight Corp. Alterations other than written in this manual will void all warranties.***

Instructions must be kept with the system installed

Included in this manual:

- System overview
- Installation Tips and requirements
- Environmental Specifications
- System Descriptions
- RS485 Communication Connections
- Installing the RS485 to additional power supplies
- Controller layouts
- Navigating the LCD Display
    - LCD startup display screens
    - Setup Screens (Configuration)
    - Main Menu Screens
    - Manual Lighting inspection test
- Controller Status LED's
- Dry contact connections
- Controller electrical Parameters
- Resetting, ext. sync option, and serial numbers
- Replacement part numbers
- Display Events and Alarm Descriptions
- Alarm list and possible causes
- Calibration of Side Lights
- Connection of the Photocell
- Connection of the GPS Antenna
- Event and Alarm Views and Meanings

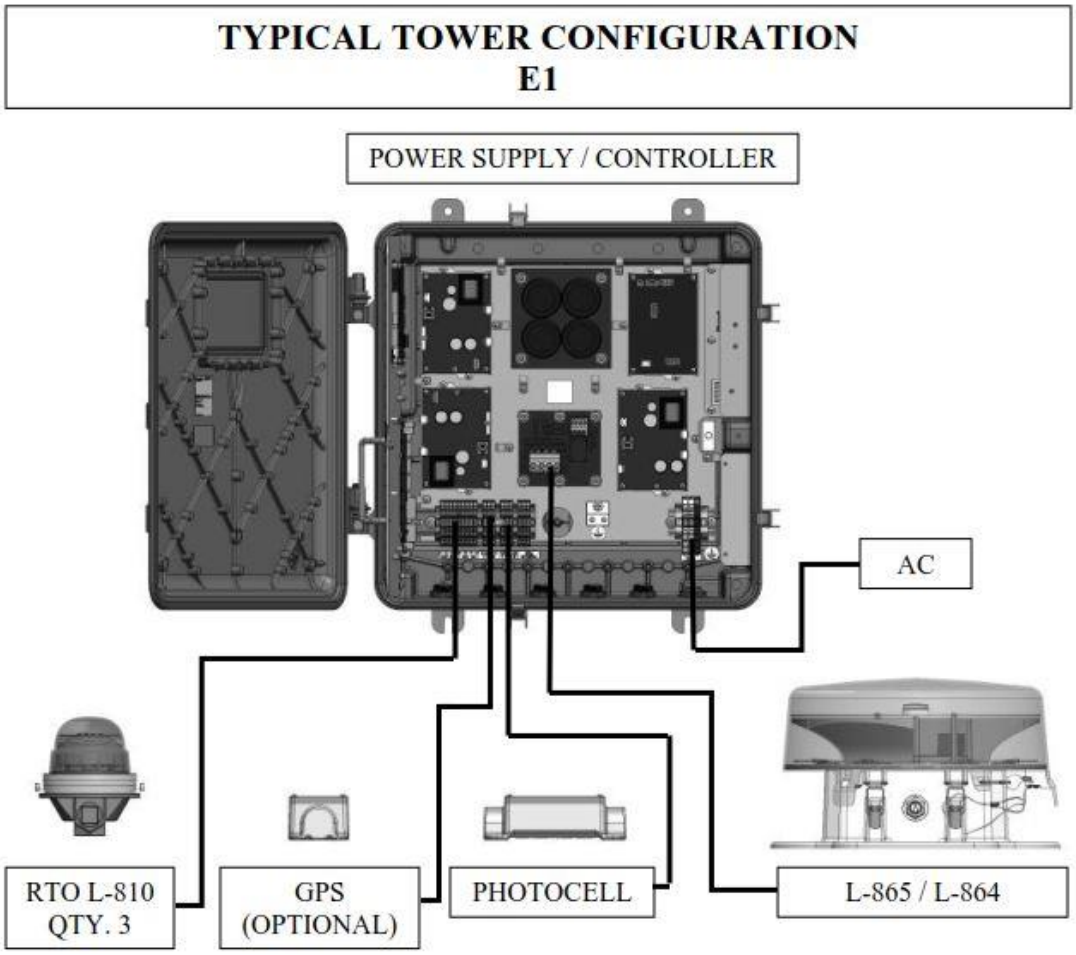
Introduction

This manual is for orientation and a quick guide to the installation process of the controller, configuration and definitions of the Dual Strobe system or Dual Strobe + Infrared (IR) system. There will be steps that are not detailed and the full installation manual MUST be used for more in depth installation instructions.

Refer to the installation manual for the following information

- Installing the Controller and the pre drilled holes
- Dimensions of the Controller
- Securing the cables to the structure
- Connection of either AC or DC input voltages
- Connection of the Side lights and calibration
- Photocell connections
- Flash head connections for both the 4 conductor and the 8 conductor versions
- Proper bonding of the Strobe cable
- Mounting the Flash head

System Overview



Installation Tips and requirements

For the Mains cable, it is recommended that the electrician or installer calculate the wire requirements based on the amount of Flash heads being installed. It is recommended that no installation utilizes less than 16AWG wire with at least a 90°C temperature rating. See electrical parameters. Local Electric codes and wiring MUST followed.

For RS485 cabling, 3 cores of 18AWG, drain wire plus a shield and braid for adequate grounding and signals are required. RS485 is only required for E1+1 and larger structures where multiple Strobes are required.

Cable between the Flash head and the controller must be a minimum of 14AWG and 4 conductors with foil and braid (Supplied if a Kit P/N is ordered). Maximum distance between the controller and the Flash head is 630feet.

NOTE: Failure to do any of the above could void all factory warranties. If in doubt please contact your sales agent or representative or Dialight Tech support.

During installing on the tower proper grounding techniques should be utilized. 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. For more details, contact your local sales rep.

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**

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

System Descriptions that are covered in the manual

D1RWCTR409	Gen5 dual red/white controller with AC input , 48volt sidelights and 4 conductor flash head cable required
D1RWCTR449	Gen5 dual red/white controller with 48VDC input , 48volt sidelights and 4 conductor flash head cable required
D1CWCTR409	Gen5 dual red/white + Infrared (IR) controller with AC input , 48volt sidelights and 4 conductor flash head cable required
D1CWCTR409	Gen5 dual red/white + Infrared (IR) controller with 48VDC input , 48volt sidelights and 8 conductor flash head cable required
D1RWCTR409GPS	Gen5 dual red/white + Infrared (IR) controller with 48VDC input , 48volt sidelights and 8 conductor flash head cable required
D1RWFH409	Gen5 dual red/white 4 conductor Flash Head
D1CWFH409	Gen5 dual red/white + Infrared (IR) 4 conductor Flash Head

Connection of AC Mains Power

The Enclosure is supplied with 6 predrilled holes to accommodate the Main cord, the RS485 communication cable, Photocell's input, GPS antenna cable, the Side Marker lights and relay outputs.

NOTE: Certain holes may not be required for all installation types thus all unused holes must remain sealed with supplied blanking plugs and properly tightened to avoid water or moisture entering the enclosure.
If additional holes are required then they can be located in any convenient location for the user and installer. If installed outdoors water ingress must be considered.

NOTE: If there is existing AC and RS485 communication (when required) in the vicinity of the Base Controller installation then these cables can be used if they meet the requirements in this guide.

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

RS485 Communication Connections

NOTE: The below is common between all the controllers covered in the manual.

The connection of the RS485 cable is vitally important to the operation of the system. This connection provides all the events and alarms to the Master controller that is being used with the installation.

Factory connected wiring color code:

Boards are Labeled	Description	Color Code
Label "A"	Communications "A"	**Grey**
Common	Common for RS485	**Yellow**
Label "B"	Communications "B"	**Blue**

Option 1: **RS485 consisting of 3 conductors, a drain wire and foil shield and braid.**

Install Cable	Connected to	Description	Color Code
Conductor 1	Label "A"	Communications "A"	**Grey**
Conductor 2	Common	Common for RS485	**Yellow**
Conductor 3	Label "B"	Communications "B"	**Blue**
Drain wire	Ground stud	Ground	Bare wire
Foil Shield and Braid	Clamping terminal	Ground	Connected when cable enters the enclosure and must be secured to the plate

Option 2: **RS485 consisting of 2 Conductors, a drain wire and either a shield or braid is used.**

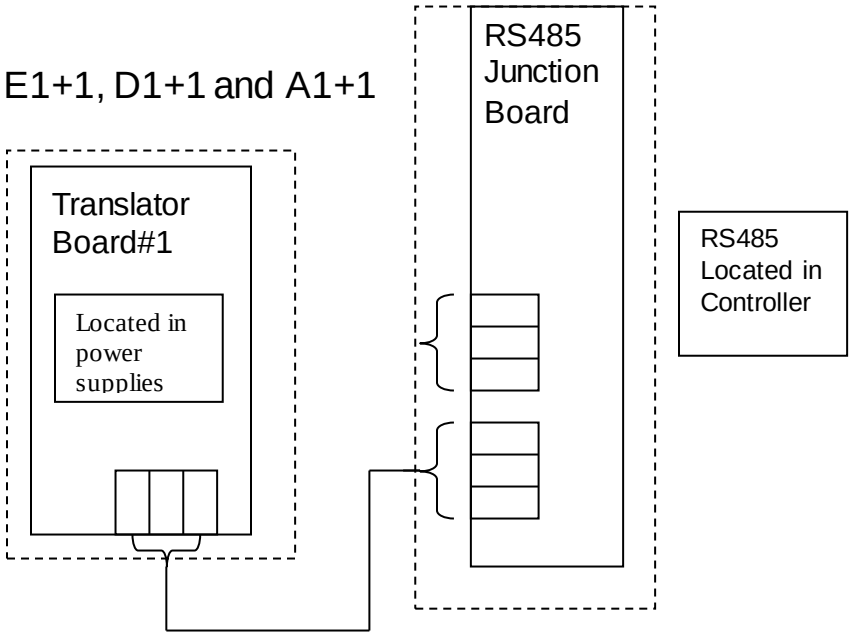
Install Cable	Connected to	Description	Color Code
Conductor 1	Label "A"	Communications "A"	**Red**
Drain Wire	Common	Common for RS485	**Bare Wire**
Conductor 2	Label "B"	Communications "B"	**Black**
Shield or Braid	Clamping Terminal	Ground	Connected when cable enters the enclosure and must be connected to plate

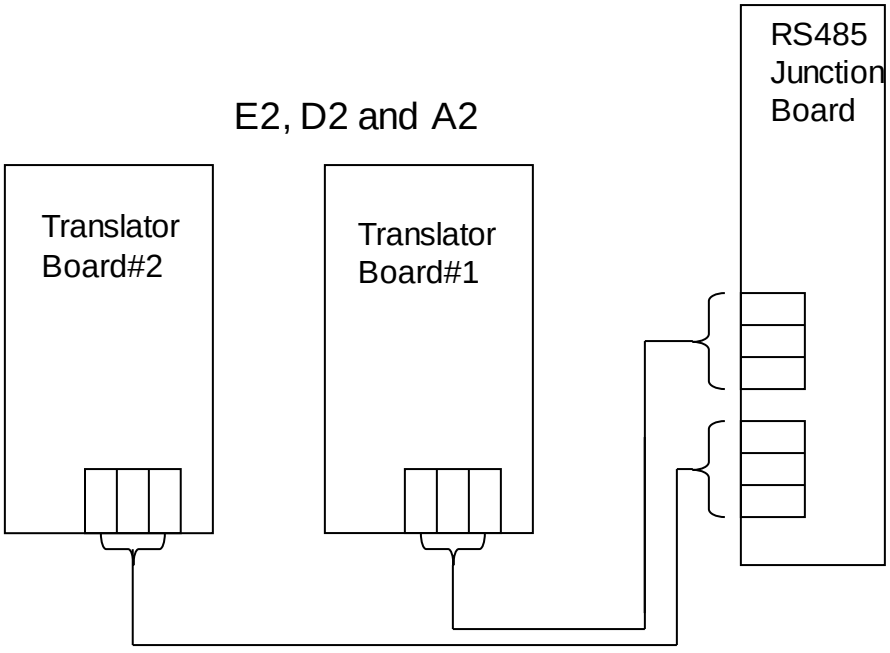
WARNING: For Color Codes not shown the installer must take note of the colors used for these connections since it is required that all A, Common and B terminals be connected the same throughout the system.

Installing the RS485 to additional power supplies

NOTE: For an E1 system there is no externally connected RS485.

NOTE: For structures lager than the above additional external communications need to be added between the RS485 surge board and the translator boards in each of the additional power supplies.
NOTE: For systems larger than E2 daisy chaining between the translator boards is required.





NOTE: Translator boards are located in power supply enclosures

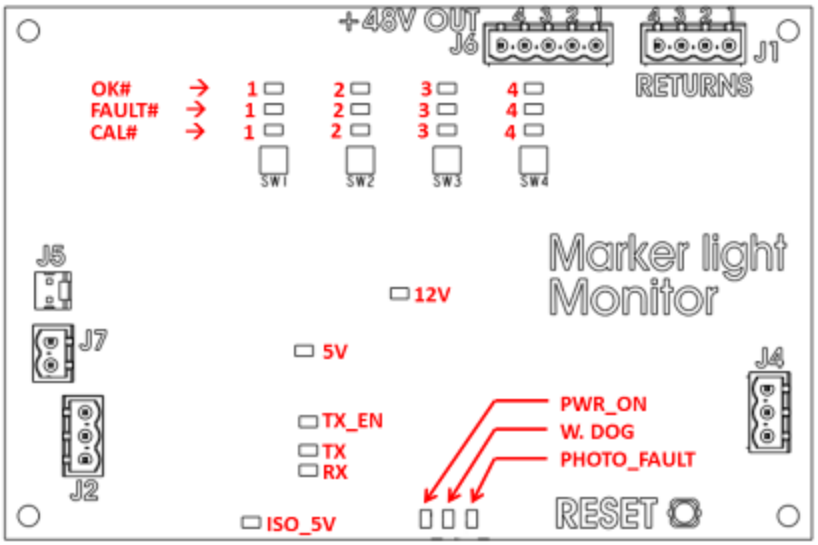
NOTE: The controller translator board is to be set to zero.

Connection of the Marker Lights (L810's) to the Side Light Monitoring Board

WARNING: DC Voltage L810's are to be used for connecting to this system!
NOTE: Dialight Part number is RTO-1R18-001

LED Status Indicators on the Monitor Board

LED Label	Color	Status
PHOTO_FAULT	RED	ON = Photo cell is not connected or in fault
		OFF = Photo cell is connected and working
W. DOG (Watchdog)	GREEN	BLINKING = Microcontroller is working
		OFF = Microcontroller in fault
PWR_ON	GREEN	ON = Board is powered
		OFF = Board is not powered or in fault
ISO_5V	GREEN	ON = 5 Volt DC rail is working
		OFF = 5 Volt DC rail is in fault
5V	GREEN	ON = 5 Volt DC rail is working
		OFF = 5 Volt DC rail is in fault
12V	GREEN	ON = 12 Volt DC rail is working
		OFF = 12 Volt DC rail is in fault
TX (Transmit)	GREEN	BLINKING = Monitor Board is transmitting data
		OFF = NOT transmitting data (Fault)
RX (Receive)	GREEN	BLINKING = Monitor Board is receiving data
		OFF = NOT receiving data (Fault)
TX_EN (Transmit Enable)	GREEN	BLINKING = Monitor Board acknowledge transmit
		OFF = NO acknowledge of transmit (Fault)
OK# (RTO Output #)	GREEN	ON = RTOs are present and working
		OFF = RTOs not present
FAULT# (RTO Output #)	RED	ON = RTOs are in fault (low current)
		OFF = RTOs are working or not present
CAL# (Calibrate RTO Output #)	AMBER	ON = RTOs are ready to calibrate
		OFF = RTOs are working, not present, or in fault



LED LOCATIONS

Calibration Steps for L810 Side 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.

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).

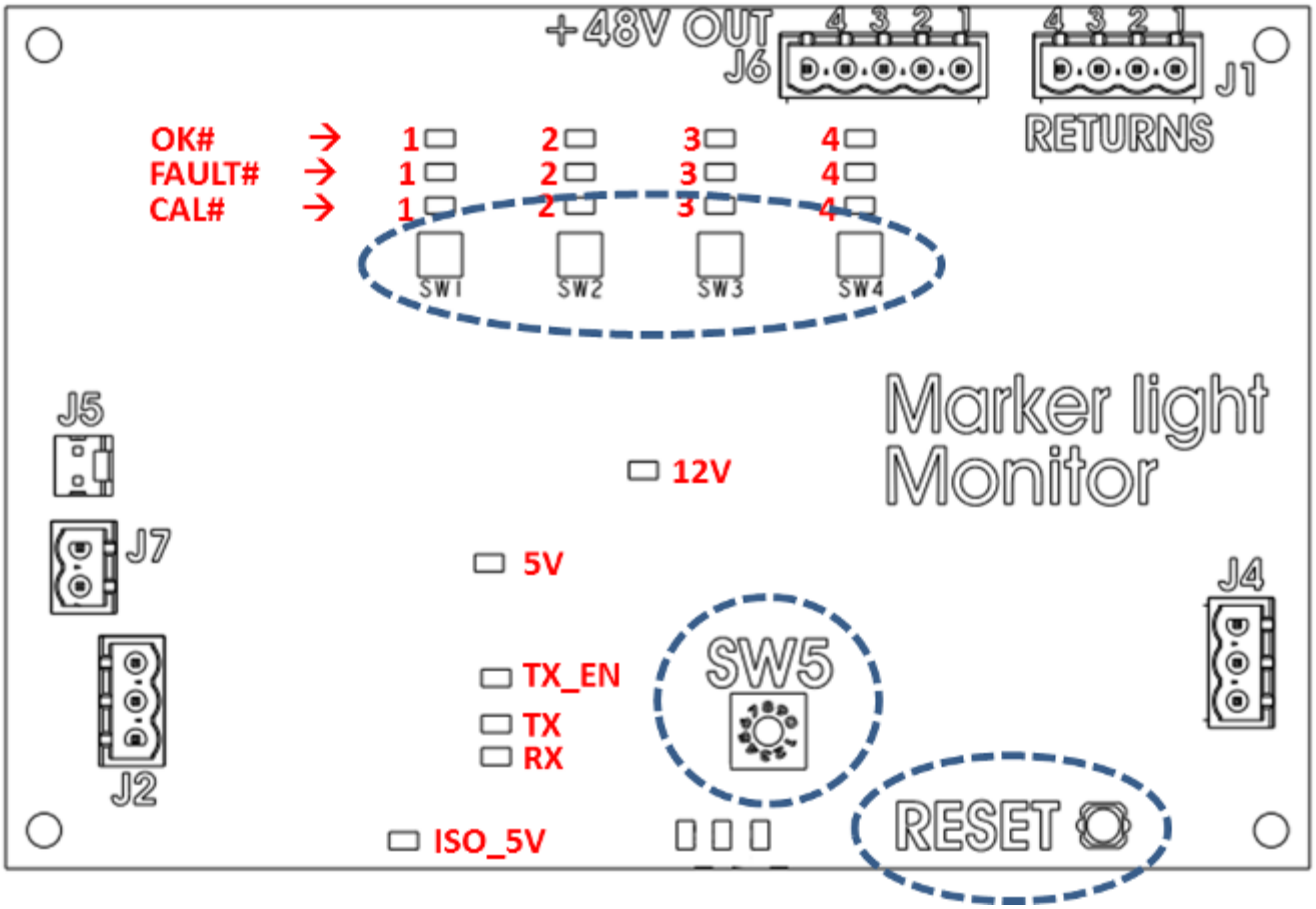
STEP 4 – Each output will auto configure within 15 seconds.

STEP 5 – Verify Each output is correct:

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

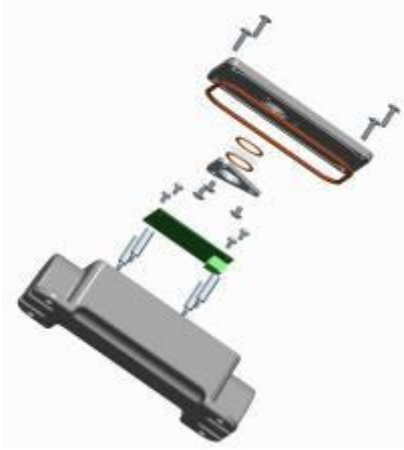
WARNING: If calibration is NOT completed then the system will not log events or Alarms for faulty Side lights.

NOTE: If calibration of the side lights is not performed the default is that the side lights will turn ON at night but no events or alarms will be logged

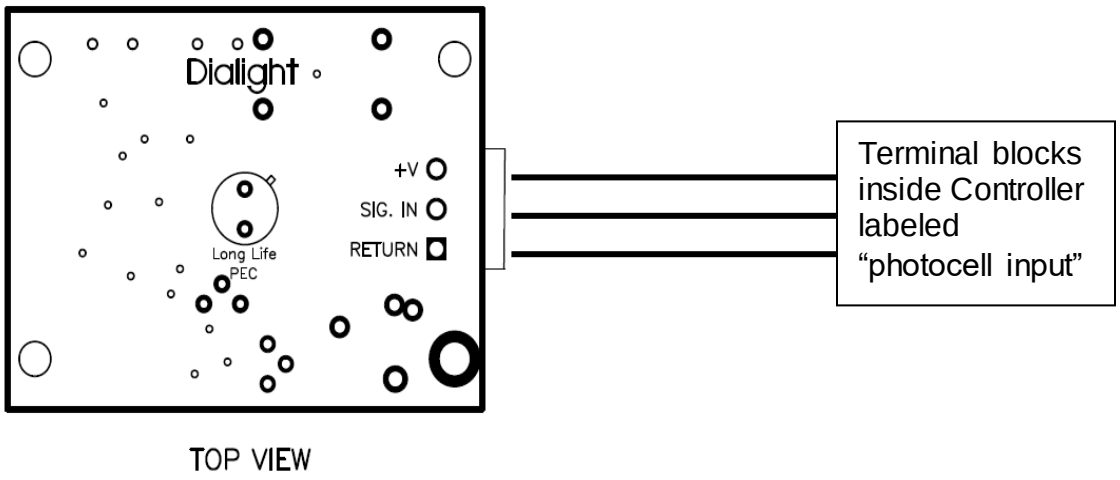


MARKER LIGHT MONITOR BOARD SHOWING BUTTONS AND SWITCH FOR CONFIGURATION AND CALIBRATION

Photocell Connection: Dialight P/N D256-600xPEC



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



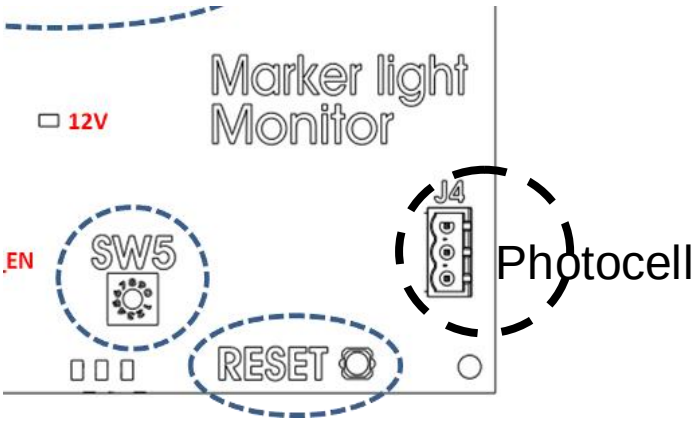
TOP VIEW

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

Cable Requirements:
3 conductor, 18AWG
Maximum allowable distance is 500 feet from the controller

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

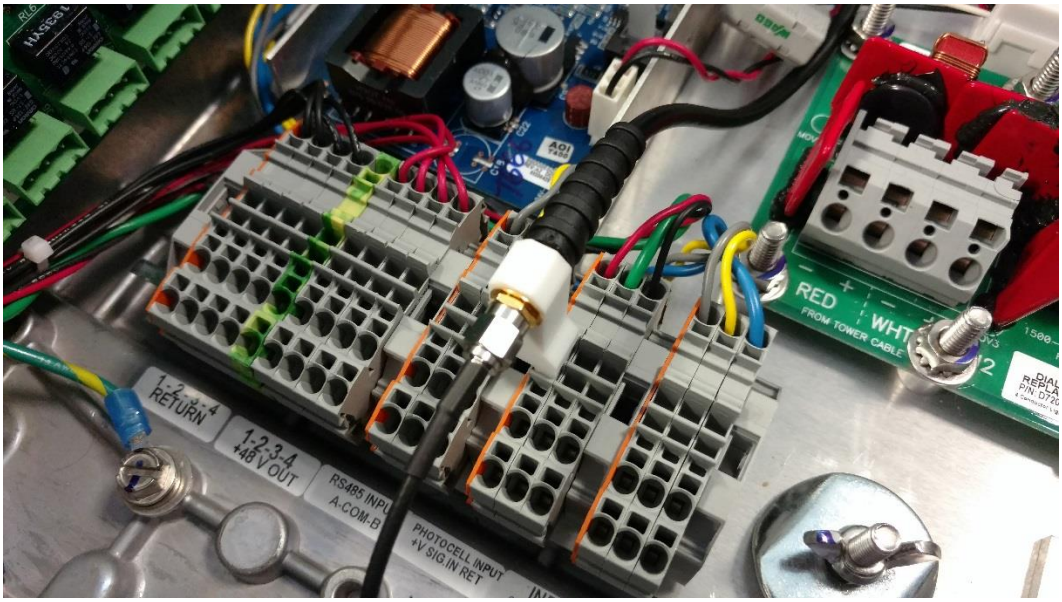
shield or braid will void all warranties and the product could be subject to premature failures.
When installed the Photocell must face north and have an unobstructed view of the northern sky.
NOTE: For testing and troubleshooting purposes refer to the Photocell manual



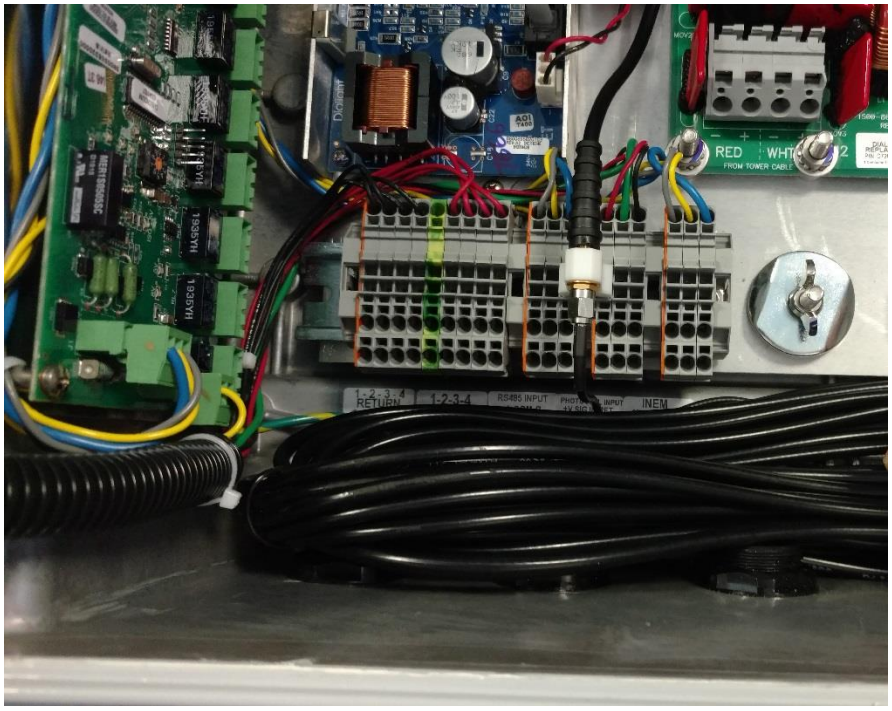
GPS Antenna Connection to the Controller

NOTE: REFER to GPS Antenna manual for mounting GPA Antenna to Photocell Enclosure

Located in the controller mounted on top of the terminal blocks on the bottom left hand side is a BNC connector that accepts the cable from the GPS antenna, Picture shown below.
NOTE: This is the only connection required for the GPS inside the controller.



WARNING: The cable can NOT be cut or shortened in any way. Any extra cable that is left because of the proximity of the antenna MUST be gathered, tie wrapped and stored in the Controller. See picture below



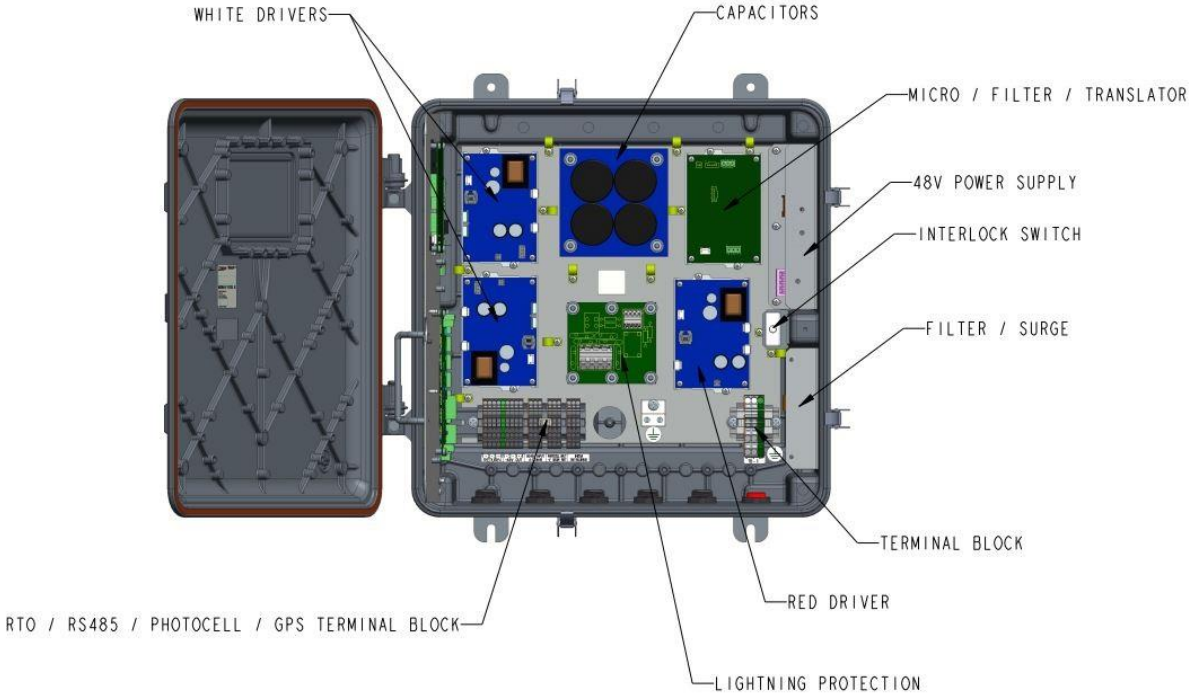
Bundle excess GPS cable and store in bottom part of Enclosure

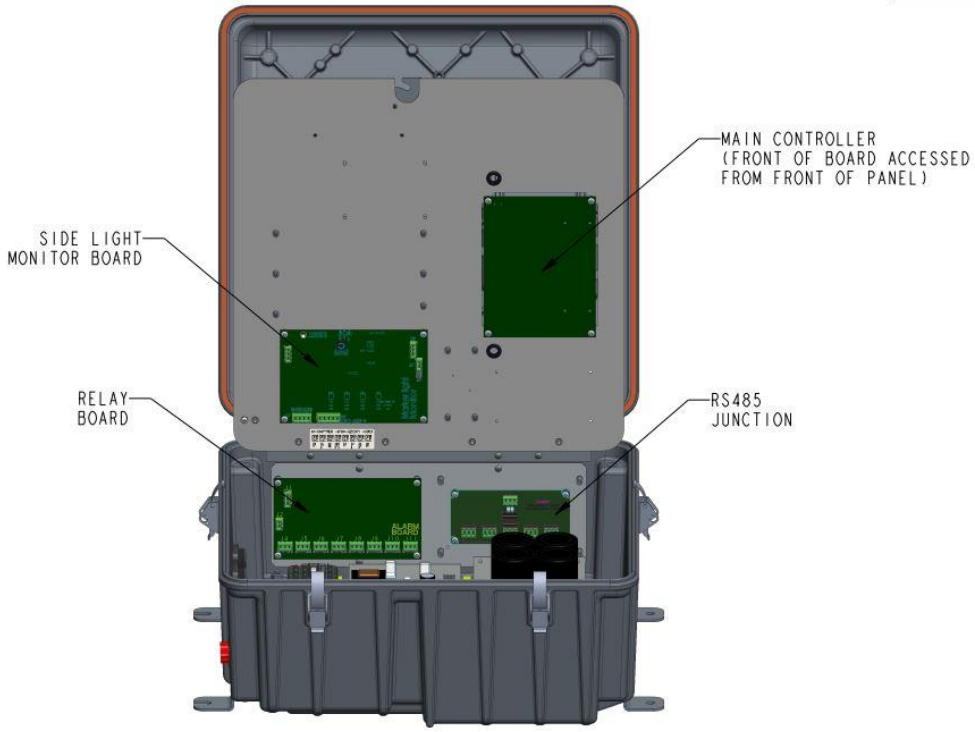
D1xW-CTR-4x9 Controller

Requirements

NOTE: See electrical parameters for power consumption

- Attach output of Photocell to terminal blocks labeled “photocell”
- Connect the RS485 to the terminal blocks labeled “RS485” when additional power supplies are connected.



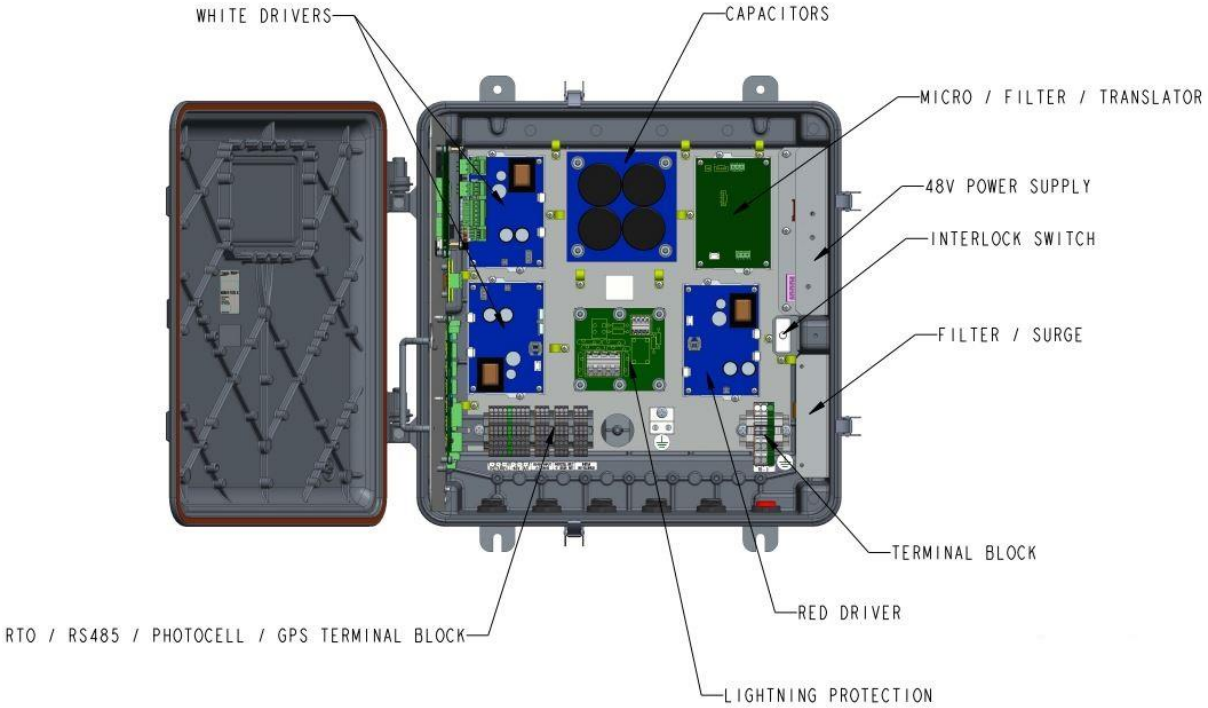


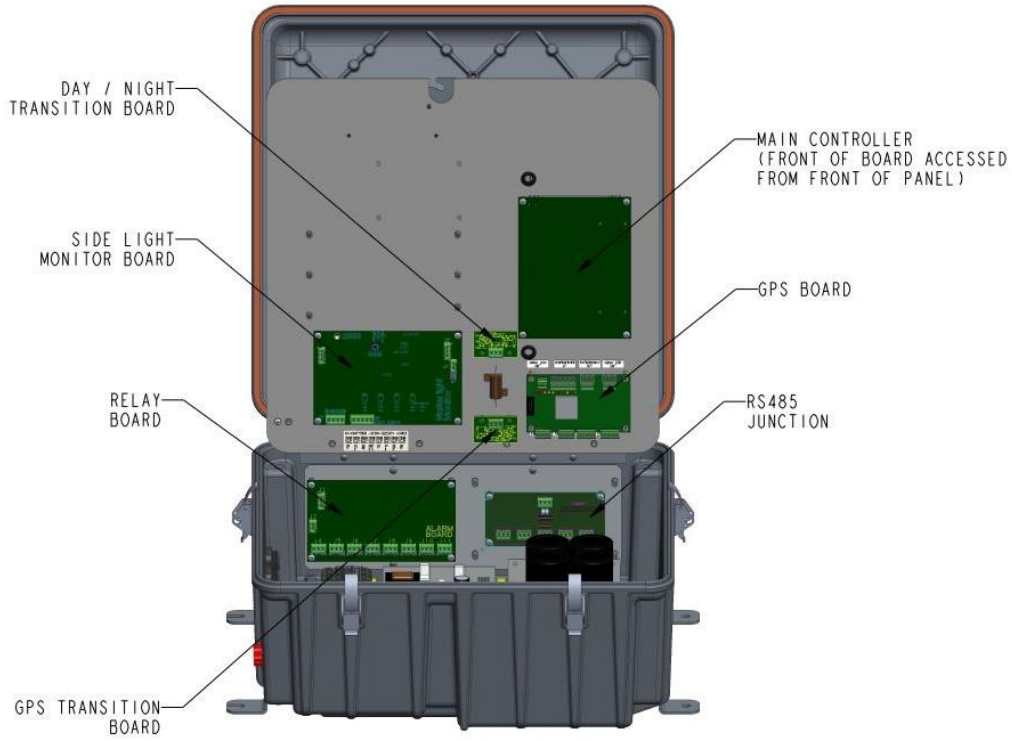
D1xW-CTR-4x9GPS Controller

Requirements

NOTE: See electrical parameters for power consumption

- Attach output of Photocell to terminal blocks labeled “photocell”
- Connect the RS485 to the terminal blocks labeled “RS485” when additional power supplies are connected.





LCD Start up Display Screens

Once power is turned on the next 2 screens will be displayed automatically.

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 E and D type structures For A red only systems the countdown starts at 45.

NOTE: In some cases this screen will go back to the Startup screen if synchronization was faulty.

Initial 15 Flashes In Process

Setup Screens:

These screens are used for properly configuring system based on the structure type that is being installed. By using the "UP" and "DWN" buttons the user or maintenance personnel 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 an "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 A, D, or E. 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.
For the D1RWCTR409GPS the factory Default is YES.

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. 0 through 4 can be selected; the number input shall represent the number of tiers present. Press "ENTR".

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

E) Select the number of Side Marker s (L810's, RTO's) that will connected to 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 number of beacons (864/5's) that will be connected to the system. 1 through 9 beacons can be supported. Press "ENTR"

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

G) Select the number of side light boards that are 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 side lights. Use “UP” and “DWN” buttons to change from STEADY, DISABLED and FLASHING, depending on what is needed of the sidelights.

NOTE: This is a 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 as well as the 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 them press “ENTR”

NOTE: Factory default is 30fpm
NOTE: This is a global change that 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) If sidelights are to be calibrated at this time (if not calibrated as per the previous section of this manual or the quantity or wiring of sidelights has changed since previous calibration), 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 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.

NOTE: Typically used where there long day or night operations.

Selecting YES: If the photocell does not detect day or night after 18 hours, the system will alarm after 18 hours 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 log but the system will continue to operate normally based on light conditions. No alarm via dry contact or mod bus will be generated.

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

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

Use “UP” and “DWN” buttons to change from “NO” to “YES”, and then press “ENTR.”

L) The Beacon can be made steady burn in Red night mode

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

Once the selection for the Beacon steady red Night is completed the next screen to be displayed is the “Config Type”.

NOTE: Typically used outside of the US. FAA regulations require the beacon to be flashing so most typical installation will have this selection set to "NO" to ensure a flashing beacon.
After about 2 minutes the system will reset on its own to save the configured information.

CONFIG TYPE X 'Enter to change'

The Reset button located in the middle bottom of the board can also be pressed to reset the system.

Resetting is required so the controller saves the configured information to throw alarms on changes occurring during the operation of the system.

Main Menu Screens:
The next screens are paged through using the "UP" and "DWN" buttons. 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.

Upon resetting or powering and powering up the system this is the first screen that is displayed.

- **Status Screen – Config type:**

CONFIG TYPE X 'Enter to change'

- **Screen: Tower style:**

This screen displays what the Base Controller has been configured for, if the amount of beacons configured does not match what is actually connected then alarms will be generated as "config" alarms. 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 3 beacons and only 1 is powered AL1 (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**

NOTE: These modes change according to the user's photocell operation. There are no options for preprogramming mode change times.

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

NOTE: On this screen the controller can be forced in DAY or NIGHT (using the push buttons located under the down button marked White and Red).
NOTE: S3 will blink till system is restored to normal operation

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

- **Status Screen - Alarms:**

This screen allows the user access to the Alarm Log. By pressing the "ENTR" button, current and previous alarms the system has encountered are able to be viewed, starting with the most current alarm. Alarms can be scrolled through 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.

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

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

- **Date and Time Screen - Setting the real time clock:**

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

NOTE: 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

- **Manual Lighting Inspection Screen**

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

NOTE: Discreet and Modbus alarms will be generated during this test, a if NOC is actively monitoring at the time of test, they will see the generated alarms.

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

- **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, real time events are to be viewed by pressing the "CLR" button to exit the log and then press the "CLR" key to return to log, indicating the latest recorded event.

Press 'Enter' Key to view event log.

After this display when pressing the up button the Config display is the next one shown.

Manual Lighting Inspection Test for Firmware Versions B6 or higher:

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

NOTE: Discreet and Modbus alarms will be generated during this test, if NOC is actively monitoring at the time of test, they will see the generated alarms.
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 needs to be in Day mode before test is started

Press “ENTR” to initiate LI test

Manual LI TEST ‘enter’ to Test

Press enter

MLI ‘CLR’ to exit Push WHT BTN

Press’ TEST WHITE’ button located under the ‘Down’ on the LCD control board
A series of test will be automatically performed.

Manual LI TEST IN PROCESS WHT

Cover photocell; wait until beacon turns Red or White Night.
This can be confirmed by monitoring AL8 on the dry contact board. Once the AL8 is off the system is in Night mode.
Wait for 15 flashes and then press the TEST RED button.

MLI ‘CLR’ to exit push RED BTN

The displays will indicate the test is in process and state which mode of night operation the system is presently configured to.

A and E Structures

Manual LI TEST IN PROCESS RED

OR

D Structures

Manual LI TEST IN PROCESS NWHT

Once the test is complete one of the 2 displays will be shown.

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 after the completion of the test

NOTE: If the 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 log and it should be as follows:

For an "E" style system:

1. LIT log start
2. 865 SYNC 1 ACT
3. TRNS RS232 1 ACT
4. TRNS Comm 1 ACT
5. TRNS Comm 1 CLR
6. TRNS RS232 1 CLR
7. 865 SYNC 1 CLR
8. 1 865 W25% BACT
9. 1 865 W25% 1 CLR
10. 1 865 W25% 2 CLR
11. L810 CAL error ACT
12. L810 CAL error CLR
13. 1 ALL L810 TX ACT
14. PCE LOST ACT
15. SDLT Comm ACT
16. SDLT Comm CLR
17. PCE LOST CLR
18. 1 ALL L810 TX CLR
19. 1 864 R25% ACT
20. 1 864 R25% CLR
21. LIT log end

For a "D" style system:

1. LIT log start
2. 865 SYNC 1 ACT
3. TRNS RS232 1 ACT
4. TRNS Comm 1 ACT
5. TRNS Comm 1 CLR
6. TRNS RS232 1 CLR
7. 865 SYNC 1 CLR
8. 1 865 W25% BACT
9. 1 865 W25% 1 CLR
10. 1 865 W25% 2 CLR
11. PCE LOST ACT
12. SDLT Comm ACT
13. SDLT Comm CLR
14. PCE LOST CLR
15. LIT log end

For an "A" style system:

1. LIT log start
2. 865 SYNC 1 ACT
3. TRNS RS232 1 ACT
4. TRNS Comm 1 ACT
5. TRNS Comm 1 CLR
6. TRNS RS232 1 CLR
7. 865 SYNC 1 CLR
8. 1 ALL L810 TX ACT
9. L810 CAL error ACT
10. L810 CAL error CLR
11. PCE LOST ACT
12. SDLT Comm ACT
13. SDLT Comm CLR
14. PCE LOST CLR
15. 1 ALL L810 TX CLR
16. 1 864 R25% ACT
17. 1 864 R25% CLR
18. LIT log end

Controller Status LED's; Located on Main Controller Board with LCD display

Note: Actual colors shown may not match system being installed
Note: There are labels located on the enclosure door stating the alarm descriptions.

STATUS LED ASSIGNMENTS

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

Relay Board Alarm Dry Contact LED's:

STATUS LED/dry contact ASSIGNMENTS

AL8	AL7	AL6	AL5	AL4	AL3	AL2	AL1
PEC MODE Amber	L 810 FAILURE Red	Trans COMM Failure Red	Day/Night transition Failure Red * not used when PEC Trans is set to NO	PEC LOST Red	25% FAILURE Red For either white or red fails	Sync Failure Red	Config or COMM Failure Red

Dry Contact monitoring Installation

Cable requirements

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 in to the relay contacts marked (Com, NO, and NC).
Relays are marked as if there is no power is applied to the system.

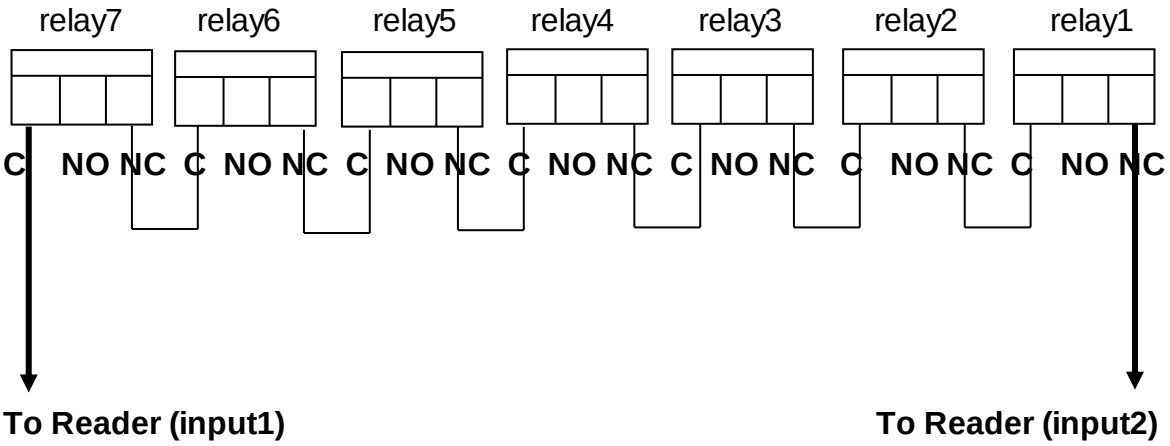
WARNING: It is highly recommended that by using a multi-meter the dry contacts be measured for "open" or "closed" by using the OHM setting on the meter.
The relays can measured for open or closed with power applied to the base controller.

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 monitoring and not Alarm relay but indication of the mode the system is currently in.

Wiring for Multiplexing a single dry contact reader.



Controller Box Electrical Parameters:

Wattage below is with no side lights attached; wattage from side lights must be added.

Nominal Supply Voltage (VAC)	Conditions	Peak Watts
230Vac 50/60Hz	Day mode (E1 system)	90W
230Vac 50/60Hz	Red night mode (E1 system)	60W
230Vac 50/60Hz	Red+IR night mode (E1 system)	65W
230Vac 50/60Hz	White night mode (E1 system)	35W
120Vac 50/60Hz	Day mode (E1 system)	90W
120Vac 50/60Hz	Red night mode (E1 system)	60W
120Vac 50/60Hz	Red+IR night mode (E1 system)	65W
120Vac 50/60Hz	White night mode (E1 system)	35W

Nominal Supply Voltage (Vdc)	Absolute Maximum Input Vdc	Conditions	Peak Watts
+/- 48Vdc	40-60Vdc	Day mode (E1 system)	75W
+/- 48Vdc	40-60Vdc	Red night mode (E1 system)	45W
+/- 48Vdc	40-60Vdc	Red+IR night mode (E1 system)	50W
+/- 48Vdc	40-60Vdc	White night mode (E1 system)	30W

L810 Obstruction Side Marker Electrical Parameters:

Required for E1 and larger structures with L810 side lights being installed.

For use with:
D1CW-CTR-409
D1CW-CTR-449
D1RW-CTR-409
D1RW-CTR-449

Part Number	Voltage Range	Watts	Current draw
RTO-1R18	24-48Vdc	1.5 watts	80mA Max
RTO-CR08	24-48Vdc	5 watts	225mA Max
860-1R04-001	44-52Vdc	15 watts	340mA Max

Required for E1 and larger structures with L810 side lights being installed.

For use with:
D1RW-C17-009-CTR D1RW-C17-409-CTR

Part Number	Voltage Range	Watts
RTO-1R07	120-240Vdc	6.5

Mains AC Power Resetting:

Power on Resetting (i.e. switching power off then on again) is required when any rotary knobs are changed, toggle switches (DIP switches on the Micro/Filter assembly) are changed or communications (RS485) have been disconnected.

Push Button Reset:

The Reset Button is a firmware re-boot that causes the Main Controller Board to do a 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 warm up and the initial 15 flash countdown menu.
It will re-establish RS485 communications with other power supplies connected to the main controller.

Flash Rates

Structure Types	Day	Night
E Configurations	40FPM	20FPM
D Configurations	40FPM	40FPM
A Configurations	N/A	20FPM

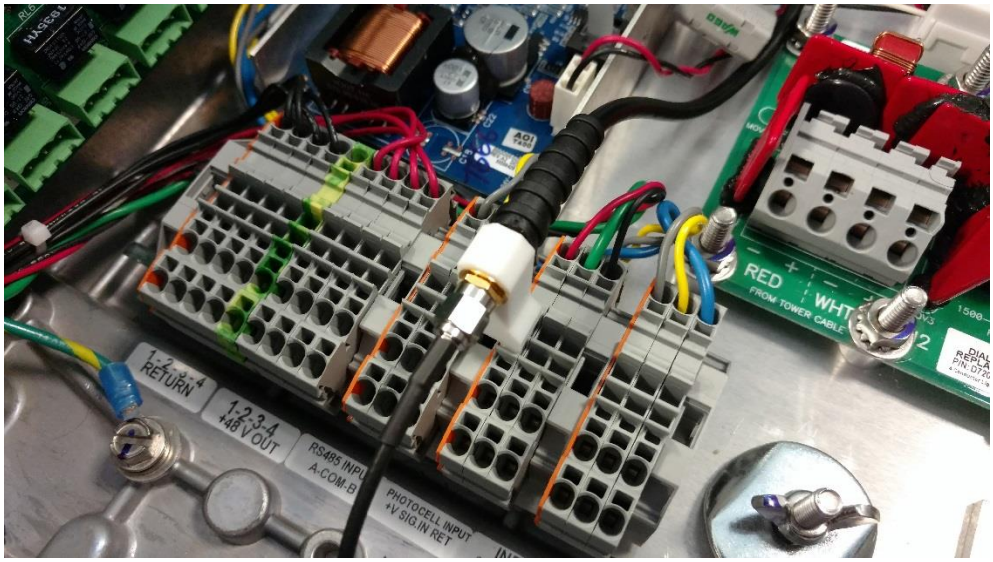
Ext Antennae Input

This connection will synchronize the System with other Dialight GPS enhanced systems or can be ran by itself and then other structures can be added later thus synchronizing the structures together.

Once the Antenna is connected to the BNC connector located in the controller, the EXT GPS configuration must be set to YES to use the GPS for synchronized flashing.
If the GPS lock is lost the Controller will resume the flashing of the system till the GPS lock is restored.

NOTE: If GPS lock is lost for more than 2 minutes than an Alarm relay on the Dry contact is engaged. If the lock is restored the Alarm will clear.

NOTE: During initial power on, while installing and power outages it may take sometime for the system to re lock to the GPS signal.



BNC Connector for connecting GPS Antenna to Controller

Ext Sync Input: (Optional) Factory supplied

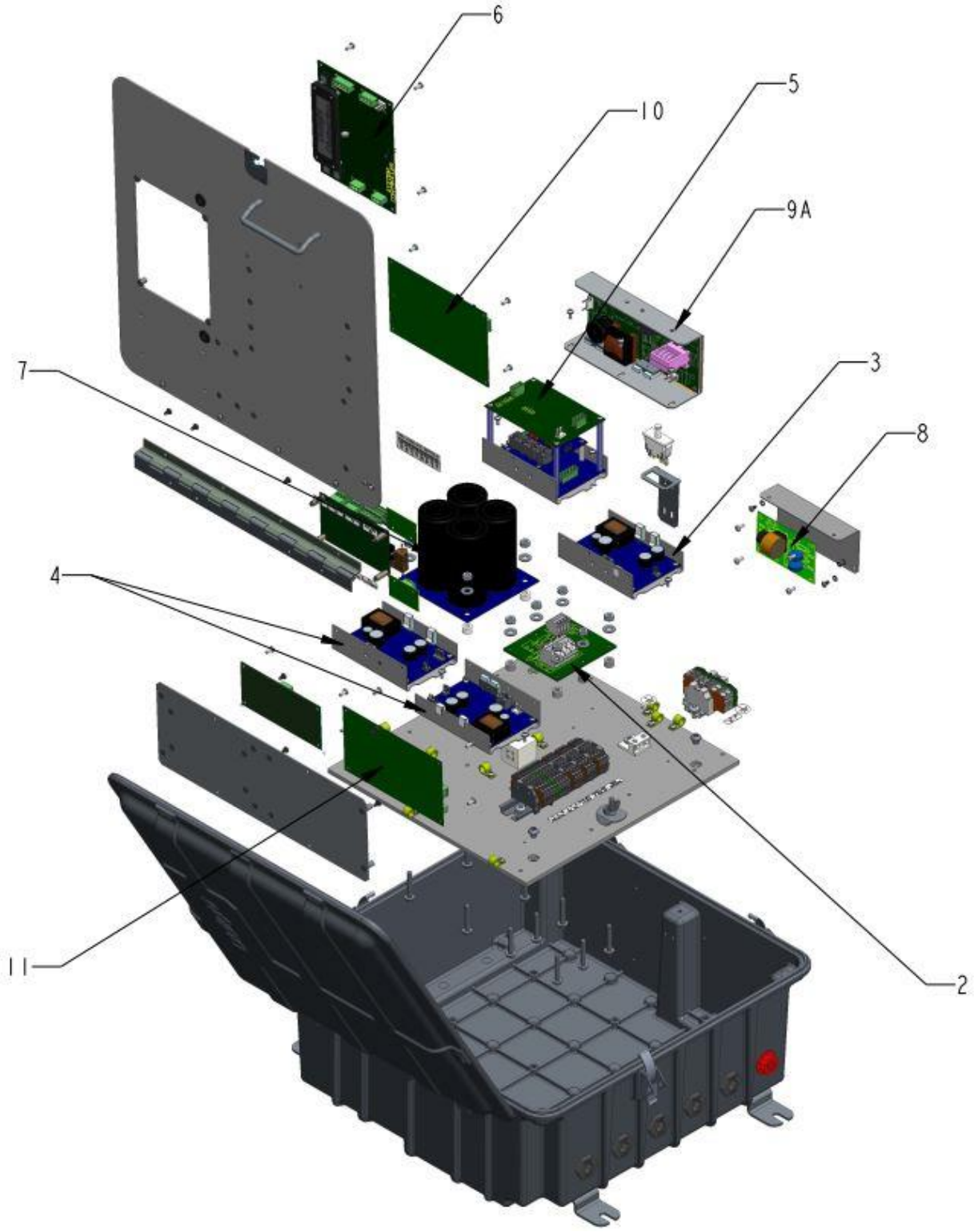
This connection will synchronize the System with a 3rd party GPS module. The contact looks for a pulsed signal with a period of 1,500 milliseconds, where the leading edge to falling edge of the pulse is greater than 100 milliseconds. This will trigger forty flashes per minute synchronized with the other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

Serial Numbers

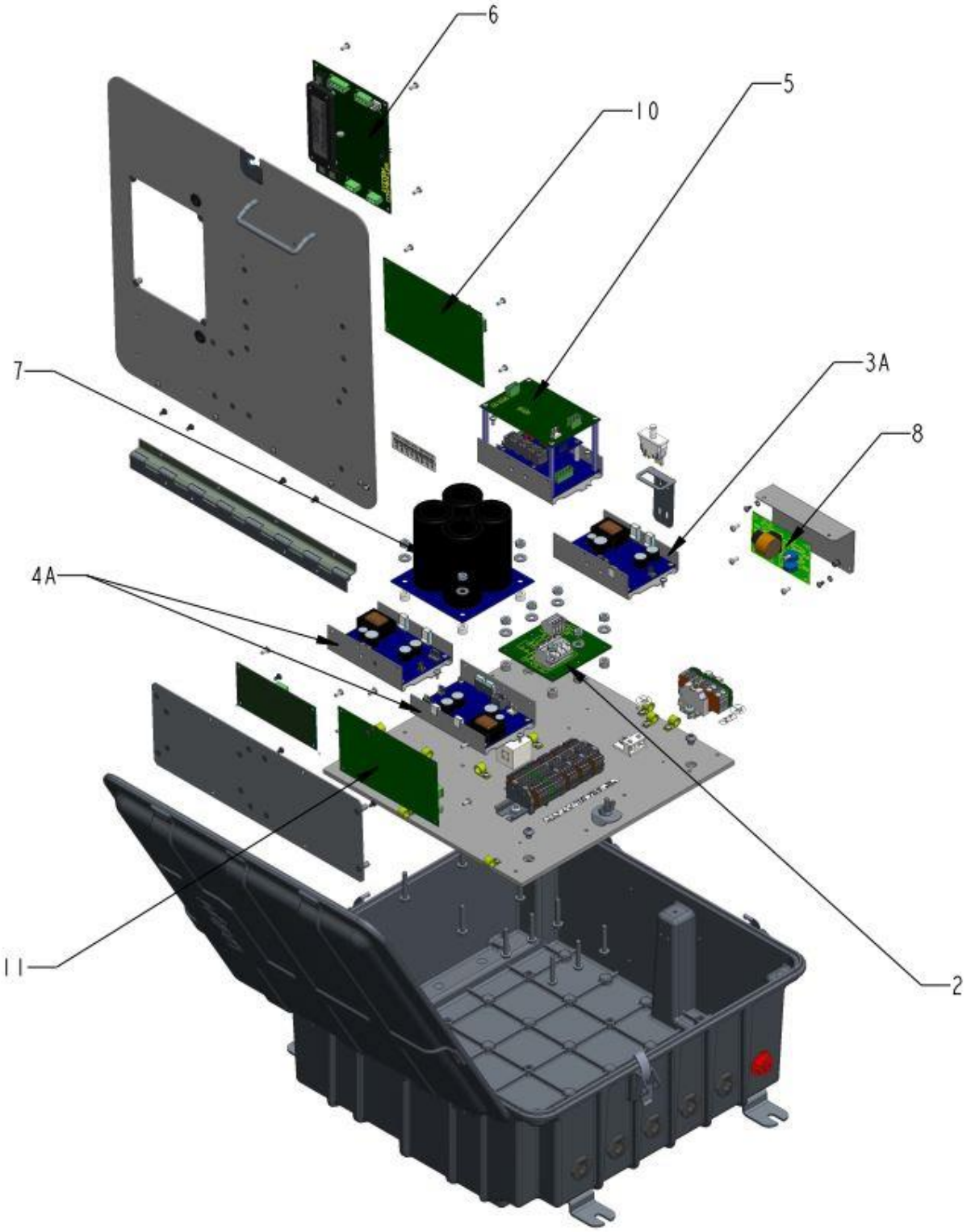
The serial numbers of the fixtures being installed are located on the Dialight label. Dialight refers to the serial numbers as **Date Codes.** The Date Codes are set up as The following YY,DDD, S/N.
YY= the year it was produced
DDD= Julian day of the year
S/N= a number of either 3 or 4 digits.

Replacement Part Numbers

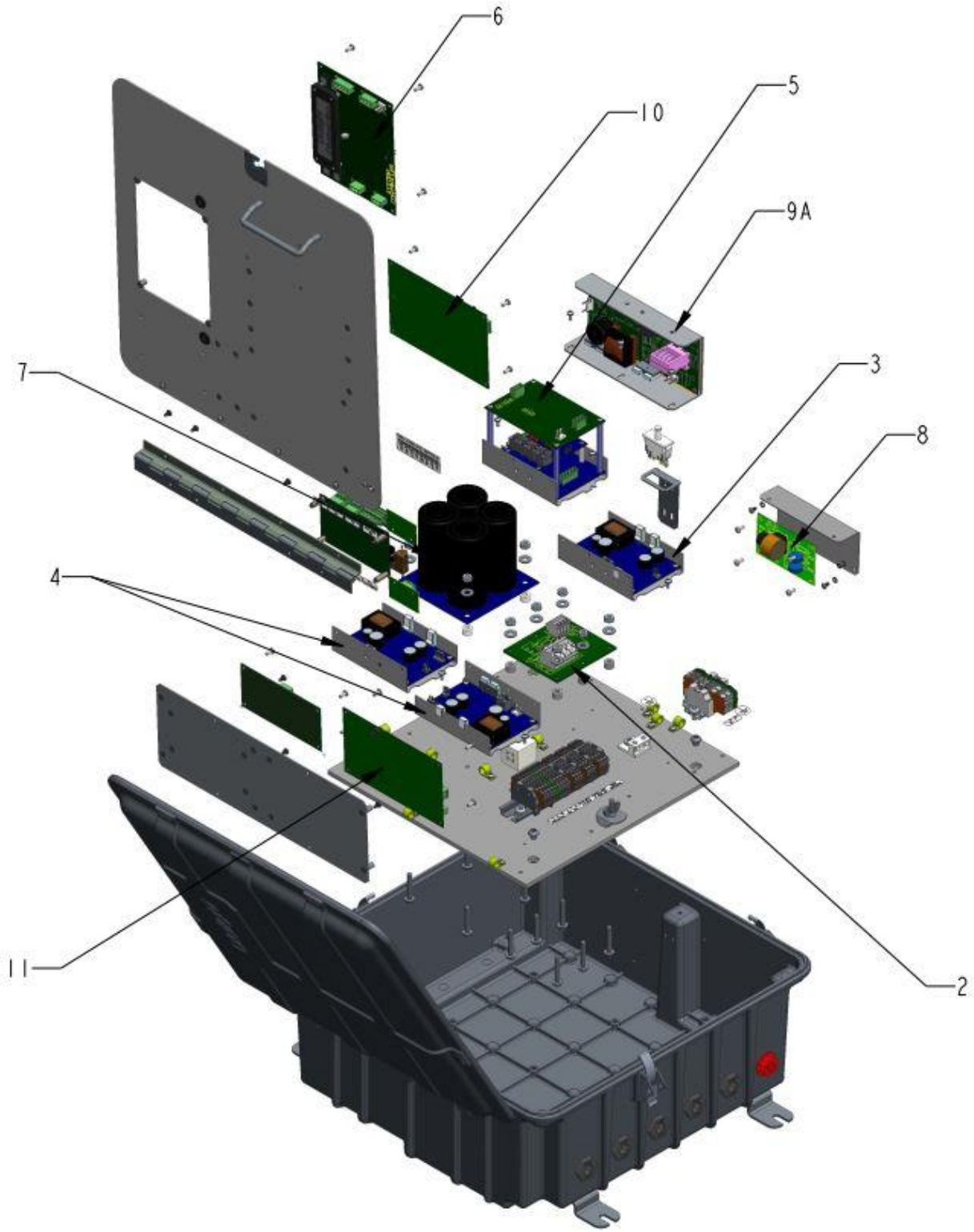
D1xW-C13-xxx-CTR

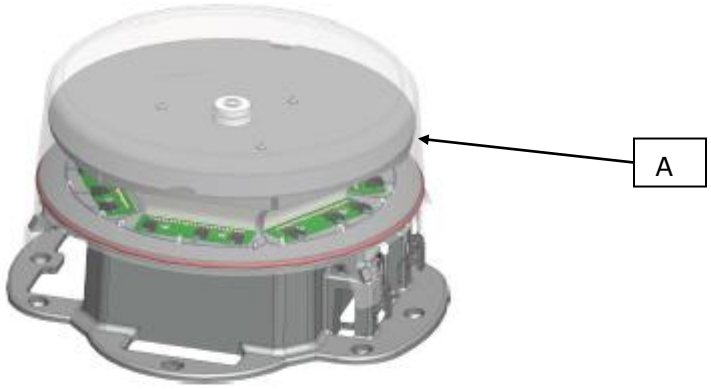


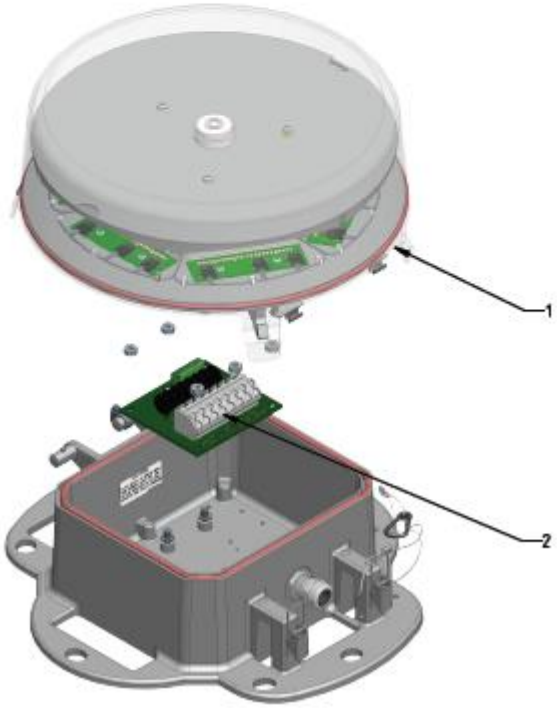
D1xW-C14-xxx-CTR



D1RW-CTR-409GPS

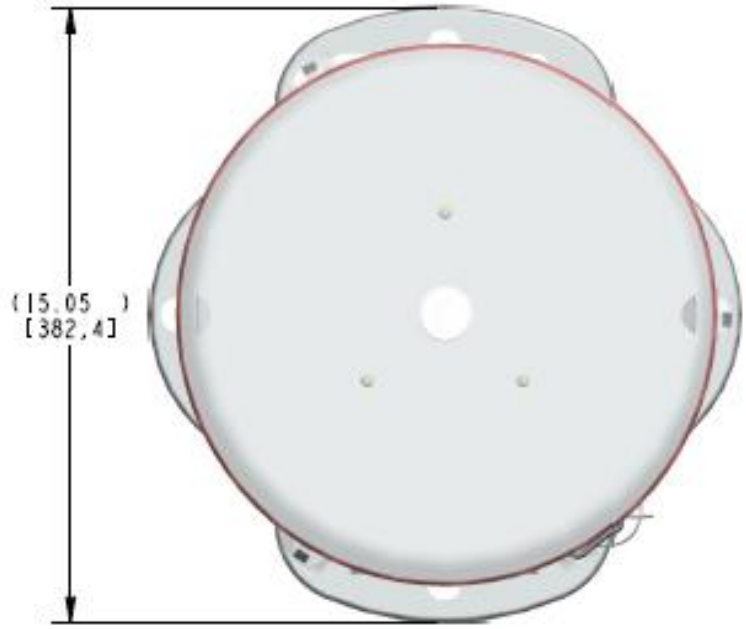


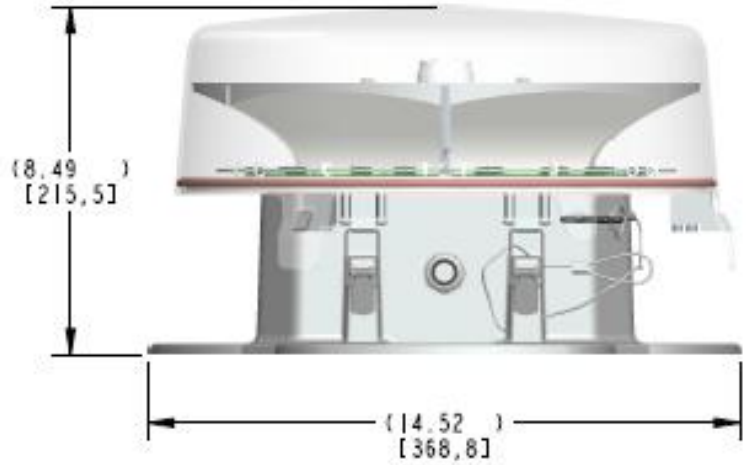

A


1
2

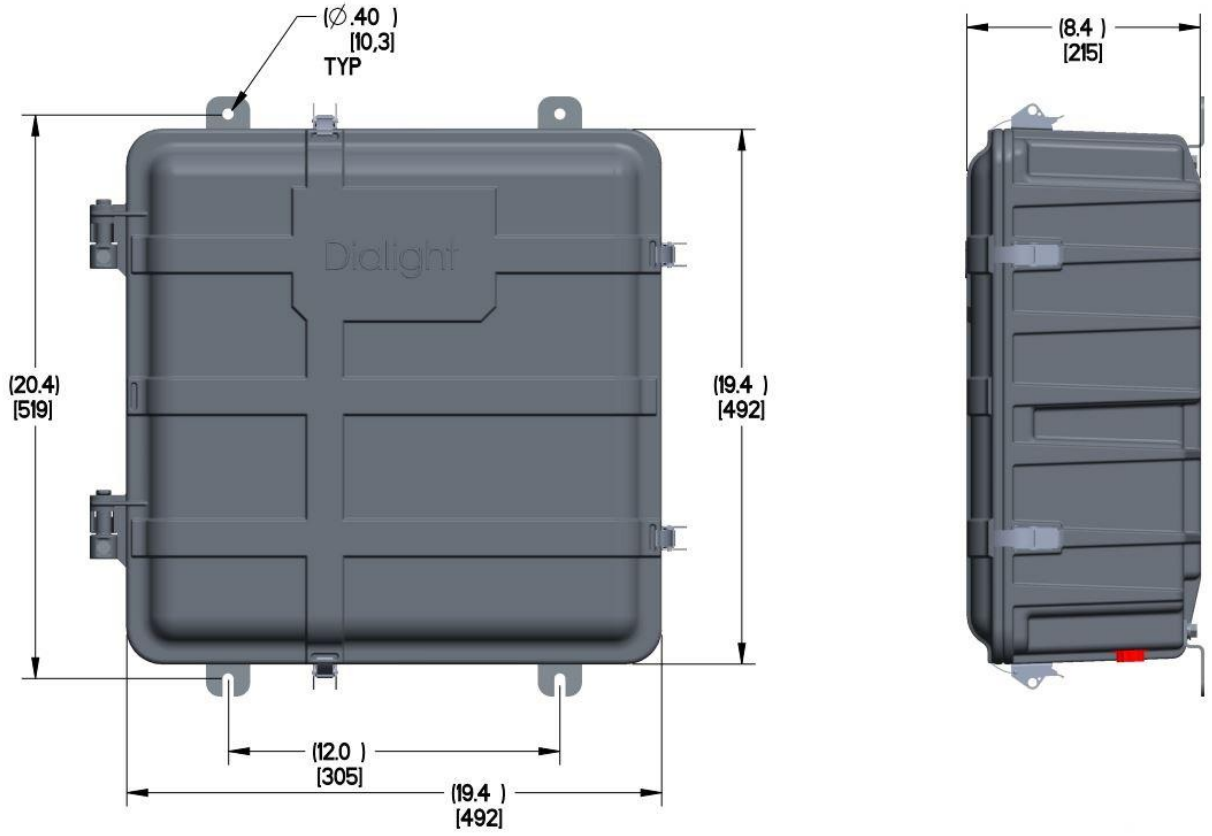
Item	Description	Replacement P/N
A	Replacement Complete Flashhead 4 conductor	Dual: D1RW-FH-409 Dual+IR: D1CW-FH-409
A	Replacement Complete Flashhead 8 conductor	D1RW-FH-009
1	Replacement Lamp Top only pedestal not included	Dual 8 Conductor: D1RW-1019 Dual 4 Conductor: D1RW-1020 Dual+IR 4 Conductor: D1CW-1020
2	Replacement Lightning Protection Board	Dual 8 Conductor: D7201-SUR Dual 4 Conductor: D7203-SUR Dual+IR 4 Conductor: D7208-SUR
3	Replacement Red Driver	Dual: D1RW0084RA Dual+IR: D1CW0084RA
3A	Replacement Red Driver for 48Vdc input	Dual: D1RW0084RADC Dual+IR: D1CW0084RADC
4	Replacement White Driver	D1RW0084WA
4A	Replacement White Driver for 48Vdc Input	Dual D1RW0084WADC
5	Replacement Micro / Filter / Translator	D-7300-ASY
6	Replacement Main Controller	AC Side Lights: D-7405-LCD DC Side Lights: D-7401-LCD
7	Replacement Capacitor Board	D1RW0084CP
8	Replacement Filter / Surge Board for AC input	D7202-SUR
8A	Replacement Filter / Surge Board for 48Vdc input	D7204-SUR
9A	Replacement 48V P/S only used on AC input models	D1RW9005RA
10	Replacement Side Light Monitor for AC side lights	D7502-SLM
10A	Replacement Side Light Monitor for DC side lights	D7500-SLM
11	Replacement Relay Board	D7600-RLY

Mechanical Dimensions of D1RW L864/865 Flash Head





Mechanical Dimensions of D1RW Controller



Display Events and Alarm descriptions

Navigating the Display

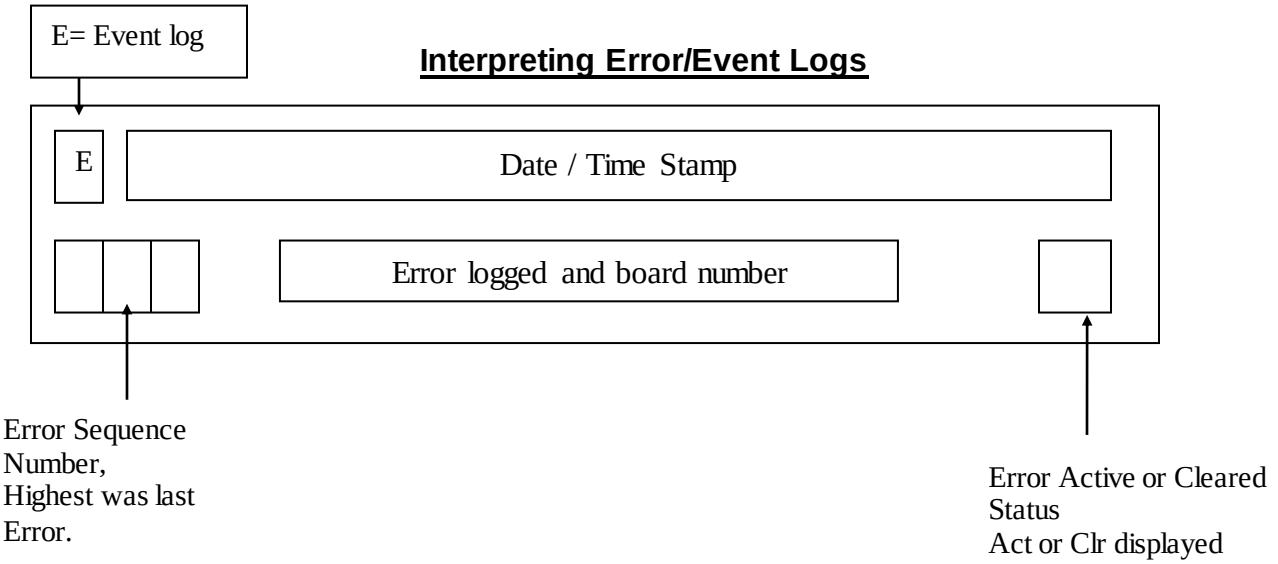
Up/Down: Buttons scroll through menu options, or Log entries

Enter: Selects a menu

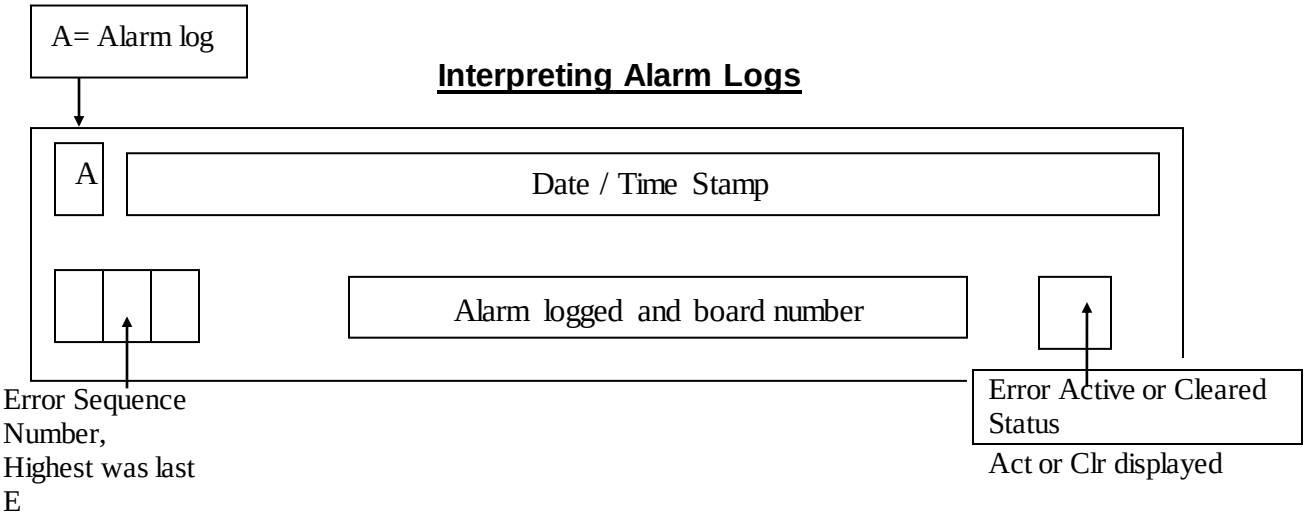
Clear: Exits a menu and returns to previous screen
Clears error/alarm registers

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"

Interpreting Error/Event Logs



Interpreting Alarm Logs



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

Alarm List

Error	LCD Alarm display	Description	How to generate it	Corresponding Dry Contact
D1RW COMM	TRNS Comm X	Comm Alarm	Check: J1 (RS485) on the translator board Check: Check other side in splitter board	Alarm 6 Alarm 1
Side Marker Communication	SDLT comm 1	Side light board communication issue	Check: J2 (RS485) on the monitor board	Alarm 1
No Photocell	PCE LOST	Photocell not detected	Check: J4 on monitor board Check: the red and black for 48vdc Check: wiring in photocell to match J4	Alarm 4
Day to Night transition	Day to Nite	There was an issue with the transition from Day to Night	The system is in Day mode for more than 18 hours	Alarm 5 * event if PEC trans is configured to NO
Night to Day transition	Nite to Day	There was an issue with the transition from Night Mode to Day Mode	The system is in night mode for more than 18 hours	Alarm 5 * event if PEC trans is configured to NO
Side Markers out	ALL 810	All Side Lights are out	Check: J1 of the monitor board Check: in night mode that there is 48Vdc from J1 to J6	Alarm 7
25% White	865 W25PCT 1	25% of the white LED's are out	Check White driver 1 Check: White driver 2 Check: Surge board wiring to white and white/black	Alarm 3
25% Red or Red+IR	864 R25PCT 1	>25% of LEDs are out or Red (+IR) failure	Check: J2 off of Red driver Check: cables on red driver Check: Surge board wiring to red and red/black	Alarm 3
D1_RS232	TRNS RS232 1	Translator board connection to the micro-board in missing	Check: both sides of the RS232 Cable (J4) on the Translator board	Alarm 6
Relay Board Communication	RLY Comm 1	Relay board issue Check TX,RX and Tx_En if flashing	Check: J1 (RS485) on the Relay board Check: That the yellow and black wires are connected	All dry contacts will be tripped S7 on LCD lit Alarm logged

D1RW Sync Alarm	865/864 SYNC 1	Sync input pulse is missing	Check: J5 on the Translator board Check: that GPS EXT in the configuration is NO	Alarm2
D1RW wrong color	TRNS Comm mdX X = board address	the Beacon/Strobe is flashing the wrong color	Reset the external power source or use the interlock switch	Alarm 1
Sidelights not properly calibrated or configured	810 CAL err	The Sidelight board is not calibrated	Sidelights not installed, Sidelight configuration is wrong Sidelights are connected on the wrong ports	Alarm 7
Photocell configuration error	PEC Config err	The photocell is not installed on Address "0" sidelight board	Check: Sidelight board with photocell must be "0" and reset system	Alarm 4
Configuration error	Config error	Configuration was programmed wrong	Confirm configuration settings to match Tower	Alarm 1
AC OFF	BAT BAKUP	With the Battery connected to the main controller and AC power is down on the system.	With the Battery connected to the main controller and power down the system, only the main controller should be on	Event logged NO Alarms (relay board is off)
Side Marker 1 off	1st 810 1	Side Marker 1 on level 1 has failed	Confirm if side light is on Check wiring in controller Check wring in junction box Check wiring to side light	Event Logged & Alarm 7
Side Marker 2 off	2nd 810 1	Side Marker 2 on level 1 has failed	Confirm if side light is on Check wiring in controller Check wring in junction box Check wiring to side light	Event Logged & Alarm 7
Side Marker 3 off	3rd 810 1	Side Marker 3 on level 1 has failed	Confirm if side light is on Check wiring in controller Check wring in junction box Check wiring to side light	Event Logged & Alarm 7

QUARTERLY LIGHTING INSPECTION TEST:

This is only done when a NOC has been setup to do this test. If a Dialight Gateway is installed then the test can be completed remotely.

MANUAL QLI TEST:
NOTE: A NOC has to authorize the manual test 1st.
System needs to be in Day mode
Test will time out after 2 minutes of due to the lack of user input during then manual test.

Have the NOC authorize QLI

MANUAL QLI TEST 'enter' to Test

Press enter

MANUAL QLI TEST push WHT BTN

Press' TEST WHITE' button located under the 'Down' on the LCD controller circuit board

MANUAL QLI TEST IN PROCESS WHT

Cover photocell, wait until beacon turns Red or White Nite.
Wait for 15 flashes and then press the TEST RED button.

MANUAL QLI TEST push RED BTN

Press the 'TEST RED' button

MANUAL QLI TEST IN PROCESS RED	**OR**	**MANUAL QLI TEST IN PROCESS NWHT**

MANUAL QLI TEST PASS :)	**OR**	**MANUAL QLI TEST FAIL : (**

MANUAL QLI TEST
QLIT DONE

System will return to configuration screen when test is completed.

System will reset within 5 minutes of test completion.

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

MANUAL QLI TEST
QLIT NOT DONE

REVISION HISTORY

REV	ECO No.	DRN	CKD	APP	QA	CM	DATE
A	41331	CAG	SA	CV	YS	JN	1/30/17
B	47880	CAG	BAM	SA	YS	JN	11/20/17
C	64577	TLD	AV	AR	YS	JN	11/27/19