

IMPORTANT !!!

The TowerSentry monitoring unit controls the AC power to the tower light system. This allows the TowerSentry Operations Center (NOC) to remotely recycle the tower lights and check for proper alarm events.

After installation of the TowerSentry unit, there will be a 7-minute delay before AC power is supplied to the strobe system. During this time, the monitoring panel will perform a diagnostic test of the tower light system and report events to the monitoring station.

The delay can be temporarily bypassed by unplugging the timer module inside the TowerSentry unit.

Please affix this label inside the strobe system in plain view to notify tower personnel and technicians of this fact.

INSTALLATION

TowerSentry[®]
Tower Light Monitoring System
Medium Intensity Strobe Light Systems
Dual Mode (Wireless/Telco)
with
Remote Command (TSMS)

TowerSentry[®]
2720 Industrial Park Drive
Lakeland, FL 33801
(863) 667-1006

Warning!!! Lethal voltages are present in the lighting system. Remove AC power from the light system at the circuit breaker panel before proceeding with installation. Death or Serious injury may result if the unit is not disconnected

Installers Notes:

Installation will require basic tools including an AC/DC Volt/Ohm meter and a telephone if a telephone line is used.

TowerSentry® technicians are on staff to assist in installation and final checkout **M-F 8am – 4:30pm Eastern Time**. Installer should call and give 24-hour advance notice prior to installation to insure that a technician will be available. **TowerSentry**® technicians **are not available any other hours.**

Each *TSMS* unit is programmed for a specific tower light controller. Units cannot be swapped around from site to site without reprogramming.

The *TSMS* is designed to provide wireless remote switching of the 120VAC supplying power to the strobe system. This allows the TowerSentry monitoring center to remotely fail and restore the strobe system to confirm proper reception of strobe alarm signals. In addition, the *TSMS* provides Day/Night and AC Power status reports not provided by the strobe manufacturer.

Proper operation must be confirmed before installer leaves the site.

TowerSentry® **will not commence monitoring until proper operation has been confirmed by one of our technicians.**

Failure to call and confirm proper operation will result in the installer having to revisit the site for final checkout.

Caution: Only qualified personnel should perform Installation. Death or permanent injury may result.

Note: The command feature is optional. Units ordered without the command option will not have the command timer. Clients wishing to upgrade at a later date may do so by simply ordering the command timer.

Installation of *TowerSentry*® *TSMS*

The *TSMS* will require 120VAC power (taken directly from the strobe system), access to a telephone line (if used), and will interface with the strobe system via the supplied flex and wiring.

1. Mount the *TSMS* cabinet next to the strobe system controller.

NOTE: On outdoor installations, the cabinet must be mounted with the conduit connectors facing down to avoid water intrusion and to avoid voiding the warranty.

2. Install the supplied flex between the *TSMS* cabinet and the strobe system controller.

3. **Inside the TowerSentry *TSMS* cabinet...**

- Connect the **#12g blue flex wire** to the **blue** terminal.
- Connect the **#12g black flex wire** to the **fuse/breaker** terminal.
- Connect the **#14g white flex wire** to the **white** terminal.
- Connect the **#12g green flex wire** to the **green/yellow** terminal.
- Connect the **#14g red flex wire** to the **red** terminal.
- The **Yellow** and **Orange** terminals are for optional remote control commands.
- Connect the multi-conductor interconnect cable to the smaller black terminal strip as follows...

Terminal #1 – Black wire	(Common)
Terminal #2 – White wire	(White Strobe Fail)
Terminal #3 – Red wire	(Red Strobe Fail)
Terminal #4 – Green wire	(Sidelight/Marker Fail)
Terminal #5 – Brown wire	(Day/Night Status)
Terminal #6 - Blue wire	(System Confirmed On)
Terminal #7 – Orange wire	(Generator On)
Terminal #8 - Yellow wire	(Aux A)

4. **Inside the strobe system cabinet...**

- Locate the ‘hot’ wire coming from the circuit breaker that provides 120VAC power to the strobe system (this wire is normally black). Disconnect this wire from the input terminal of the strobe system. Connect the **#12 gauge blue flex wire** in its place. Using the supplied wire nut, connect the black wire (just removed) to the **#12g black flex wire**.
- Locate the AC input terminal for the ‘neutral’ wire coming from the circuit breaker cabinet (this wire is normally white). Connect the **#14g white flex wire** so that it **shares** this same input terminal on the strobe system.
- Locate the AC input terminal for the ‘ground’ wire coming from the circuit breaker cabinet (this wire is normally green). Connect the **#12g green flex wire** so that it **shares** this same input terminal on the strobe system.

5. Connect the multi-conductor interconnect cable inside your particular strobe system as follows...

FLASHTECH 310 STROBE SYSTEM

- Black wire - TB-1 Terminal #7 & #10, & TB-5 Terminal #1 (loop commons)**
- Brown wire - TB-5 Terminal #2**
- White wire - TB-1 Terminal #6**
- Blue wire - TB-1 Terminal #8**

- Common**
- Day/Night transition**
(alternate Day/Night)
- White Strobe Failure**
- Strobe Confirmed ON**

NOTES:

1. CONDUCTOR SIZE DEPENDS ON THE SERVICE VOLTAGE, THE DISTANCE FROM THE SOURCE, AND THE NUMBER OF LIGHTS SERVED. USE 175 VOLT-AMPERES PER LIGHT TO CALCULATE THE TOTAL LOAD, AND DETERMINE THE WIRE GAUGE NECESSARY TO PREVENT THE VOLTAGE DROP CAUSED BY WIRE RESISTANCE FROM EXCEEDING 5% AT ANY LIGHT.
2. FTCA RECOMMENDS USING A CONTINUOUS CABLE FROM THE FLASHHEAD TO THE POWER CONVERTER WITH NO INTERVENING JUNCTIONS OR SPLICES.
3. CONTACT RATING 1 AMPERE, 120 VAC. (TERMINALS 12 THRU 17 ARE OPTIONAL) ALARMS).
4. USER'S ALARM CIRCUIT NOT SHOWN. (EXTENDED ALARMS AVAILABLE ON THE PC 310-4A OR PC 310-4A1 ONLY).
5. USE L1 AND N FOR 120V, 60 Hz PRIMARY POWER. USE L1 AND L2 FOR 240V, 60 Hz PRIMARY POWER. UNIT IS FACTORY WIRED FOR NAMEPLATE VOLTAGE.
6. RED LIGHT SYSTEM COMPONENTS NOT PART OF FTB 310-4. (RED ALARM OPERATES ONLY ON '1' MODELS: THE PC 310-4A1 OR PC 310-4.)
7. SEE "NOTES ON RED LIGHT CONTROLLER CONNECTIONS" ELSEWHERE ON THIS DRAWING.
8. BOND CASE TO SITE GROUNDING SYSTEM

MOUNT THE PHOTOCELL TO FACE THE POLAR SKY. ENSURE THAT THE UNIT AND ITS MOUNTING ARE WATERTIGHT.

PC 310-4I POWER CONVERTER

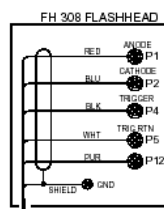
USE LIGHTNING PROTECTION FOR THE TOP FLASH-HEAD

FLASHHEAD CABLE CHART

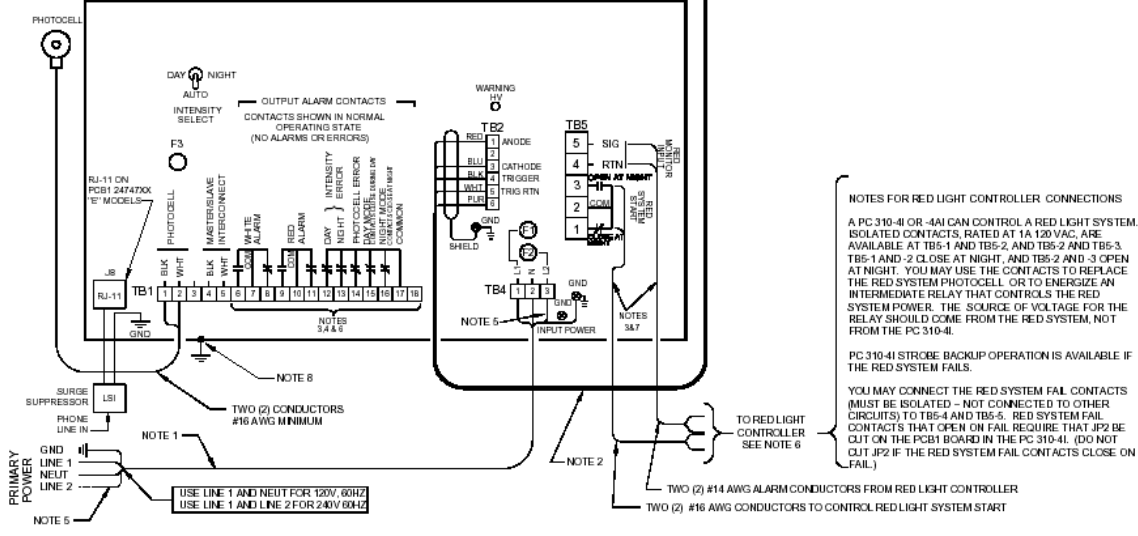
MINIMUM REQUIREMENTS FOR USER'S CABLE

RED	#10 AWG
BLU	#10 AWG
BLK	#16 AWG
WHT	#16 AWG
PUR	#16 AWG

MIN. INSULATION 600V
COLORS FOR REF. ONLY



FTCA FN 6340 OR USER'S CABLE (SEE CABLE CHART)



NOTES FOR RED LIGHT CONTROLLER CONNECTIONS

A PC 310-4I OR -4A1 CAN CONTROL A RED LIGHT SYSTEM. ISOLATED CONTACTS, RATED AT 1A 120VAC, ARE AVAILABLE AT TB5-1 AND TB5-2, AND TB5-2 AND TB5-3. TB5-1 AND -2 CLOSE AT NIGHT, AND TB5-2 AND -3 OPEN AT NIGHT. YOU MAY USE THE CONTACTS TO REPLACE THE RED SYSTEM PHOTOCELL OR TO ENERGIZE AN INTERMEDIATE RELAY THAT CONTROLS THE RED SYSTEM POWER. THE SOURCE OF VOLTAGE FOR THE RELAY SHOULD COME FROM THE RED SYSTEM, NOT FROM THE PC 310-4I.

PC 310-4I STROBE BACKUP OPERATION IS AVAILABLE IF THE RED SYSTEM FAILS.

YOU MAY CONNECT THE RED SYSTEM FAIL CONTACTS (MUST BE ISOLATED - NOT CONNECTED TO OTHER CIRCUITS) TO TB5-4 AND TB5-5. RED SYSTEM FAIL CONTACTS THAT OPEN ON FAIL REQUIRE THAT JP2 BE OUT ON THE PCB1 BOARD IN THE PC 310-4I. (DO NOT OUT JP2 IF THE RED SYSTEM FAIL CONTACTS CLOSE ON FAIL.)

NOTE 1: USE LINE 1 AND NEUT FOR 120V, 60Hz
NOTE 2: USE LINE 1 AND LINE 2 FOR 240V 60Hz

NOTE 5: TWO (2) #14 AWG ALARM CONDUCTORS FROM RED LIGHT CONTROLLER
NOTE 6: TWO (2) #16 AWG CONDUCTORS TO CONTROL RED LIGHT SYSTEM START

FLASHTECH 312 STROBE SYSTEM

- Black wire - TB-1 Terminal #7 & #10, & TB-5 Terminal #5 (loop commons)
- Red wire - TB-1 Terminal #9
- Green wire - TB-5 Terminal #4
- White wire - TB-1 Terminal #6
- Blue wire - TB-1 Terminal #8

- Common
- Red Beacon Failure
- Sidelight Failure
- White Strobe Failure
- Strobe Confirmed ON

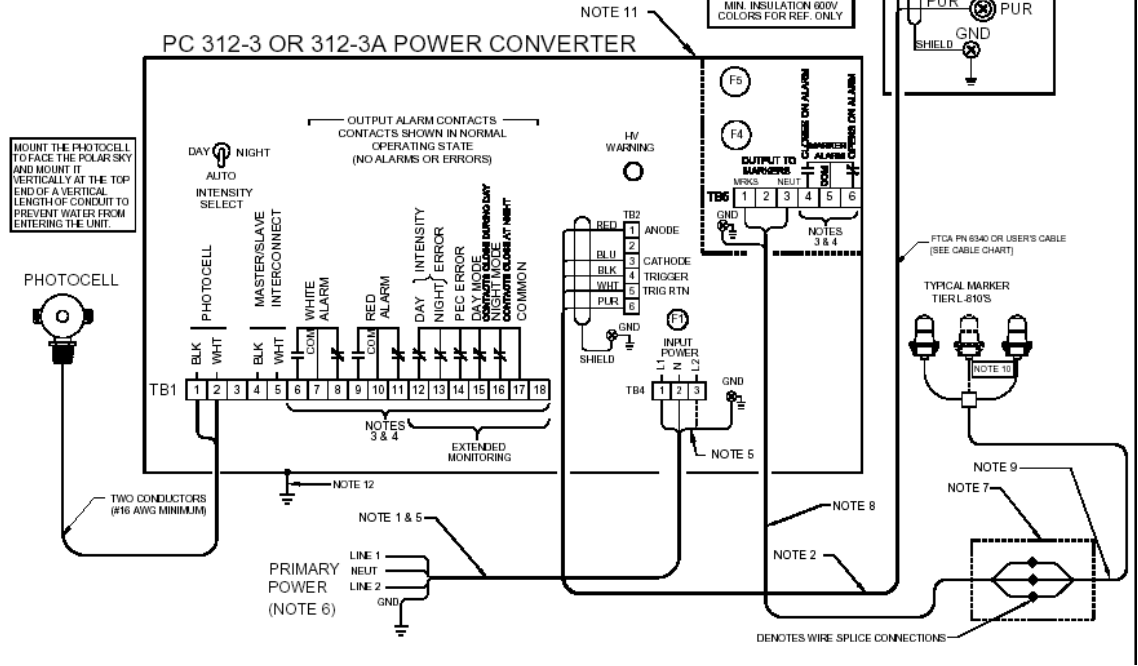
Connect the #12guage red *flex* wire to TB-5 Terminal #1 on the strobe system.

Note: FCC rules require notification of Day/Night status. TowerSentry pulls this information off of the 120v terminal feeding AC power to the side marker lights.

NOTES:

1. THE AC INPUT POWER CONDUCTOR GAUGE DEPENDS ON THE SERVICE VOLTAGE, THE DISTANCE FROM THE SOURCE, THE NUMBER OF POWER CONVERTERS, AND THE NUMBER OF L-810 MARKER LIGHTS SERVED. USE 250 VA PER POWER CONVERTER PLUS 116 VA PER L-810 MARKER LIGHT. ALSO SEE NOTE 9.
2. USE A CONTINUOUS CABLE FROM THE POWER CONVERTER TO THE FLASHHEAD WITHOUT JUNCTIONS OR SPLICES.
3. CONTACT RATING 1 AMPERE, 120 VAC. EXTENDED MONITORING IS AVAILABLE ON FTB 312-3A SYSTEMS ONLY ("A" MODELS).
4. USER'S ALARM CIRCUITS NOT SHOWN.
5. USE LINE 1 AND NEUT FOR 120V, 60 Hz.
6. USE LINE 1, LINE 2 AND NEUT FOR 240/120V, 60 Hz.
7. JUNCTION BOX FOR DISTRIBUTION WIRING TO MARKERS TYPICALLY FURNISHED BY OTHERS AND LOCATED AS CLOSE AS POSSIBLE TO THE POWER CONVERTER.
8. FTCA RECOMMENDS #12 AWG AS THE MAXIMUM CONDUCTOR SIZE FROM TB5 TO THE JUNCTION BOX. USE LARGER CONDUCTORS FOR THE BRANCH FROM THE JUNCTION BOX TO THE MARKER FIXTURES, IF REQUIRED. SEE NOTE 9 TO DETERMINE THE BRANCH CONDUCTOR SIZE.
9. THE TOTAL LINE DROP, INCLUDING INPUT SERVICE WIRING AND BRANCH LINES TO THE L-810 MARKER LIGHT SOCKETS, MUST NOT EXCEED 3% OF RATED VOLTAGE.
10. THE MARKER FIXTURES MAY BE SUPPLIED BY OTHERS.
11. MOUNT THE POWER CONVERTER VERTICALLY.
12. BOND THE CASE TO THE SITE GROUNDING SYSTEM.

FLASH-HEAD CABLE CHART	
MINIMUM REQUIREMENTS FOR USER'S CABLE	
RED	#10 AWG
BLU	#10 AWG
BLK	#16 AWG
WHT	#16 AWG
PUR	#16 AWG
MIN. INSULATION 600V, COLORS FOR REF. ONLY	



FLASHTECH 324 STROBE SYSTEM

Black wire - TB-5 Terminal #5 & TB-1 Terminal #7, & #10
(Loop commons)

Red wire - TB-1 Terminal #9

Green wire - TB-5 Terminal #4

White wire - TB-1 Terminal #6

Blue wire - TB-1 Terminal #8

Common

Red Beacon Failure

Sidelight Failure

White Strobe Failure

System Confirmed ON

Connect the #12 gauge red flex wire to "Output to Markers" Terminal #1.

Note: FCC rules require notification of Day/Night status. TowerSentry pulls this information off of the 120v terminal feeding AC power to the side marker lights.

NOTES:

1. THE AC INPUT POWER CONDUCTOR SIZE DEPENDS ON THE SERVICE VOLTAGE, THE DISTANCE FROM THE BUILDS, THE NUMBER OF POWER CONVERTERS, AND THE NUMBER OF L-910 MARKER LIGHTS REQUIRED. USE 20 GA WIRE POWER CONVERTER PLUS 1/8 IN PER L-910 MARKER LIGHT. ALSO SEE NOTE 8.

2. USE A CONTINUOUS CABLE FROM THE POWER CONVERTER TO THE FLASHHEAD WITHOUT JUNCTIONS OR SPLICES.

3. CONTACT RATING: 1 AMPERE, 300 VAC. EXTENDED MONITORING IS AVAILABLE ON FH 324-1 SYSTEMS ONLY (10 MODEL).

4. USER'S ALARM CIRCUIT NOT SHOWN.

5. USE LINE 1 AND NEUT FOR 120V, 60 HZ. USE LINE 1, LINE 2 AND NEUT FOR LOW VOLT, 60 HZ.

6. LIMIT IS FACTORY WIRE FOR NAMEPLATE VOLTAGE.

7. JUNCTION BOX FOR DISTRIBUTION WIRING TO MARKERS. TYPICALLY FURNISHED BY OTHERS AND LOCATED AS CLOSE AS POSSIBLE TO THE POWER CONVERTER.

8. FIDC RECOMMENDS 30 AMP AS THE MINIMUM CONDUCTOR SIZE FROM THE TB TO THE JUNCTION BOX. USE LARGER CONDUCTORS FOR THE BRANCH FROM THE JUNCTION BOX TO THE MARKER FLASHHEAD, IF REQUIRED. SEE NOTE 9 TO DETERMINE THE BRANCH CONDUCTOR SIZE.

9. THE TOTAL LINE DROP, INCLUDING INPUT SERVICE WIRING AND BRANCH LINES TO THE L-910 MARKER LIGHT SCOOTER, MUST NOT EXCEED 3% OF RATED VOLTAGE.

10. THE MARKER FIXTURES MAY BE SUPPLIED BY OTHERS.

11. MOUNT THE POWER CONVERTER VERTICALLY.

12. INSERT TELEPHONE PLUG INTO SURGE SUPPRESSOR MODULE LOCATED NEAR CONDUIT HOLES.

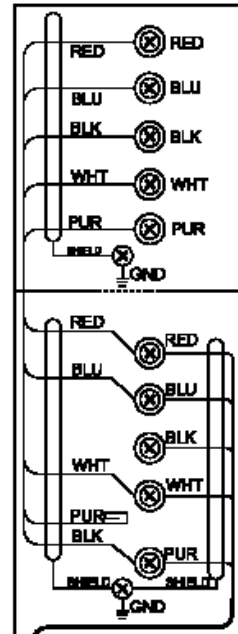
13. BOND CABLE TO THE SITE GROUNDING SYSTEM.

Always Use Ground Protection For The Top Flashhead

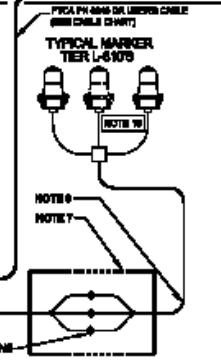
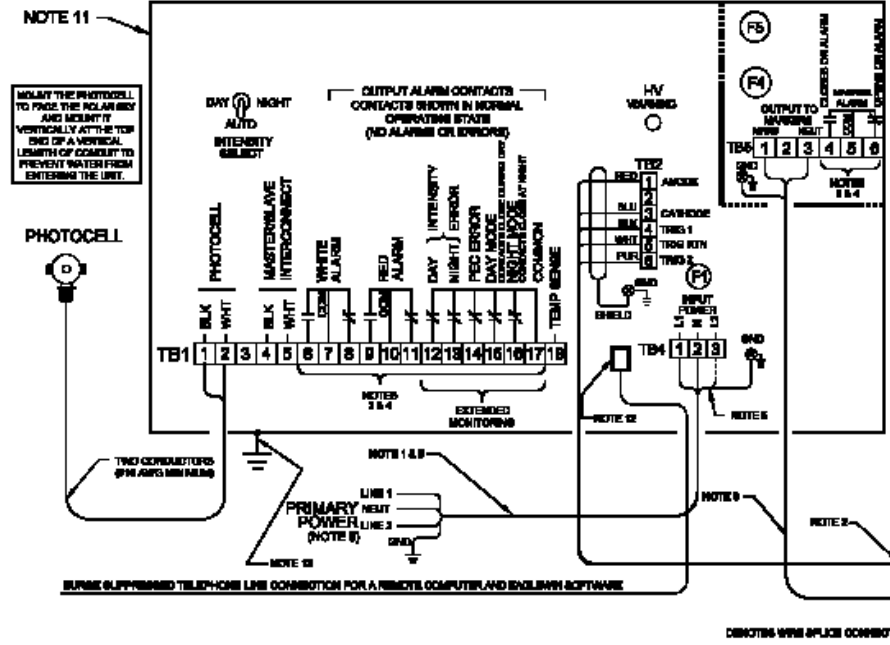
FLASHHEAD CABLE CHART	
MINIMUM REQUIREMENTS FOR USER'S CABLE	
RED	#10 AWG
BLU	#10 AWG
BLK	#18 AWG
WHT	#18 AWG
PUR	#18 AWG

MIN. INSULATION BODY COLORS FOR REF. ONLY

FH 324-2 FLASHHEAD



PC 324-1 POWER CONVERTER



HONEYWELL /FLASHGUARD 2000 STROBE SYSTEM

Black wire - TB1 Terminal #8	Common
White wire - TB1 Terminal #6	Strobe Failure
Blue wire - TB1 Terminal #7	System Confirmed ON

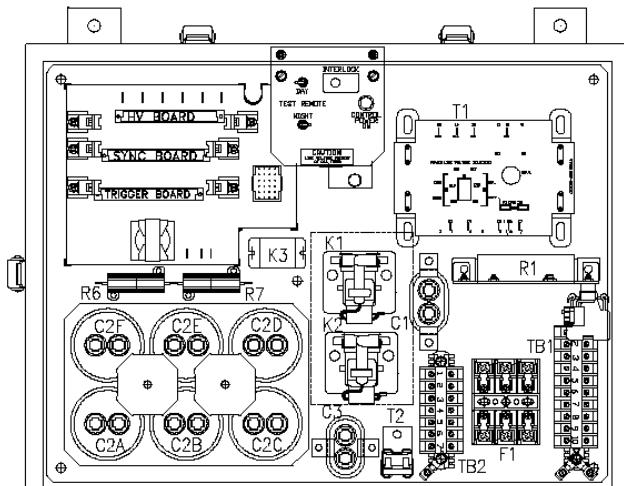
Connect the #12guage red *flex* wire to TB1 terminal #1, on the strobe system.
Note: FCC rules require notification on Day/Night status. TowerSentry pulls this information off of the 120v photocell feeding AC power to the Day/Night relay.

IMPORTANT!!!

Inside the *TSMS*: There is a gray wire on the backside of the white terminal block. Move it to the Yellow/Green ground block. Re-tighten the screws

POWER SUPPLY COMPONENT LAYOUT

FG 2000



HONEYWELL / FLASHGUARD 3000 STROBE SYSTEM

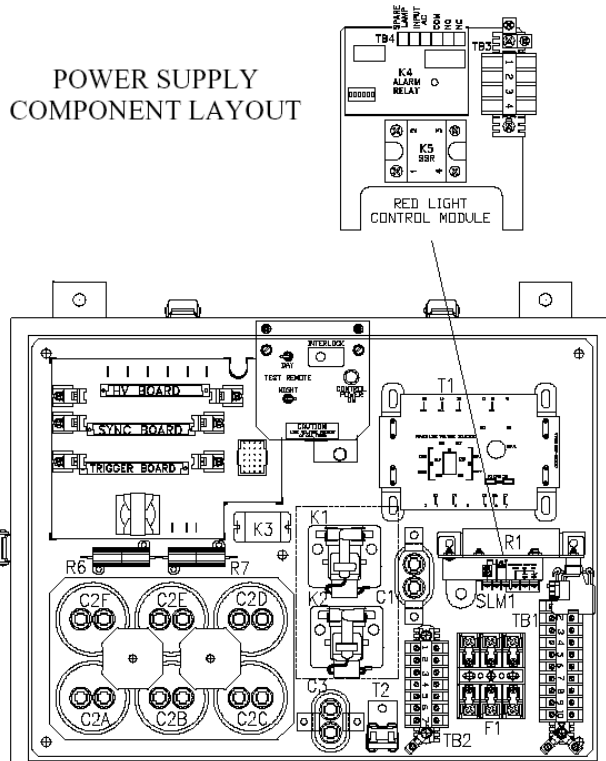
Black wire - TB1 Terminal #8 & TB4 Terminal #4 (loop commons)	
White wire - TB1 Terminal #6	Strobe Failure
Blue wire - TB1 Terminal #7	System Confirmed ON
Green wire - TB4 Terminal #3	Sidelight/Marker Fail

Connect the #12gauge red *flex* wire to the red terminal block inside the TowerSentry unit. Connect the other end to **TB-1 Terminal #1** inside the strobe system.

Note: FCC rules require notification on Day/Night status. TowerSentry pulls this information off of the 120v photocell feeding AC power to the Day/Night relay.

IMPORTANT!!!

Inside the TSMS: There is a gray wire on the backside of the white terminal block. Move it to the Yellow/Green ground block. Re-tighten the screws.



ORGA STROBE SYSTEM

Black wire - Terminals #7, #10, #13, #16 (loop)	Common
White wire - Terminal #11	Strobe System Failure
Brown wire - Terminal #17	Day/Night Status
Blue wire - Terminal #12	System Confirm ON
Green wire - Terminal #15	Sidelight/Marker Fail

Day / Night control for ORGA lighting systems.

(For testing purposes)

When in front of the CIP:

1. Check whether the display says 'Main Menu'
2. If not, press 'F1'; this brings you from any submenu to the 'Main Menu'
3. Once the display says 'Main Menu', press '3' on the keypad and then 'Enter'
4. In the 'Configuration Menu', press '1' on the keypad and then 'Enter'
5. In the 'Intensity Override Setting' press '1' and then 'Enter'
6. The menu will now say: 'Intensity Override' followed by the setting. The choices are: 'Auto', 'Day', 'Twi', 'Night'. Select the desired setting with arrow keys 'up' or 'down'.
7. Press 'F2'. The command will then be immediately sent to all lights on the system. In override mode the display will have a 'Over-ride' msg. in all menus at the top right corner.
8. Important: Put the system back in 'Auto' mode before leaving the site.

TWR E-1DB STROBE SYSTEM

NOTE: The heavy Red Wire is not needed on this system

Black wire - Plug J3... Terminals #2, #5, #8, #11, #14 (loop commons)	Common
Red wire - J3 Terminal #10	Red Beacon Failure
Green wire - J3 Terminal #1	Sidelight Failure
White wire - J3 Terminal #4	White Strobe Failure
Blue wire - J3 Terminal #6	System Confirm ON
Brown wire - J3 Terminal #9	Night Mode

TWR D/1LV(S) STROBE SYSTEM

NOTE: The heavy Red Wire is not needed on this system

Black wire - J2-2, K4-5, K6-1 (loop commons)	Common
White wire - J2-3	White Strobe Failure
Brown wire - K4-6	Day/Night Status
Blue wire - J2-1	System Confirmed ON

**Note: Alarm contacts on TWR systems
may vary; confirm proper alarm contacts.**

ALL OTHER STROBE/LIGHTING SYSTEMS

If the strobe system for your site is not one of those listed in this manual, please locate the manufacturer's installation manual to assist in proper wiring to the *TSMS* and call TowerSentry for assistance.

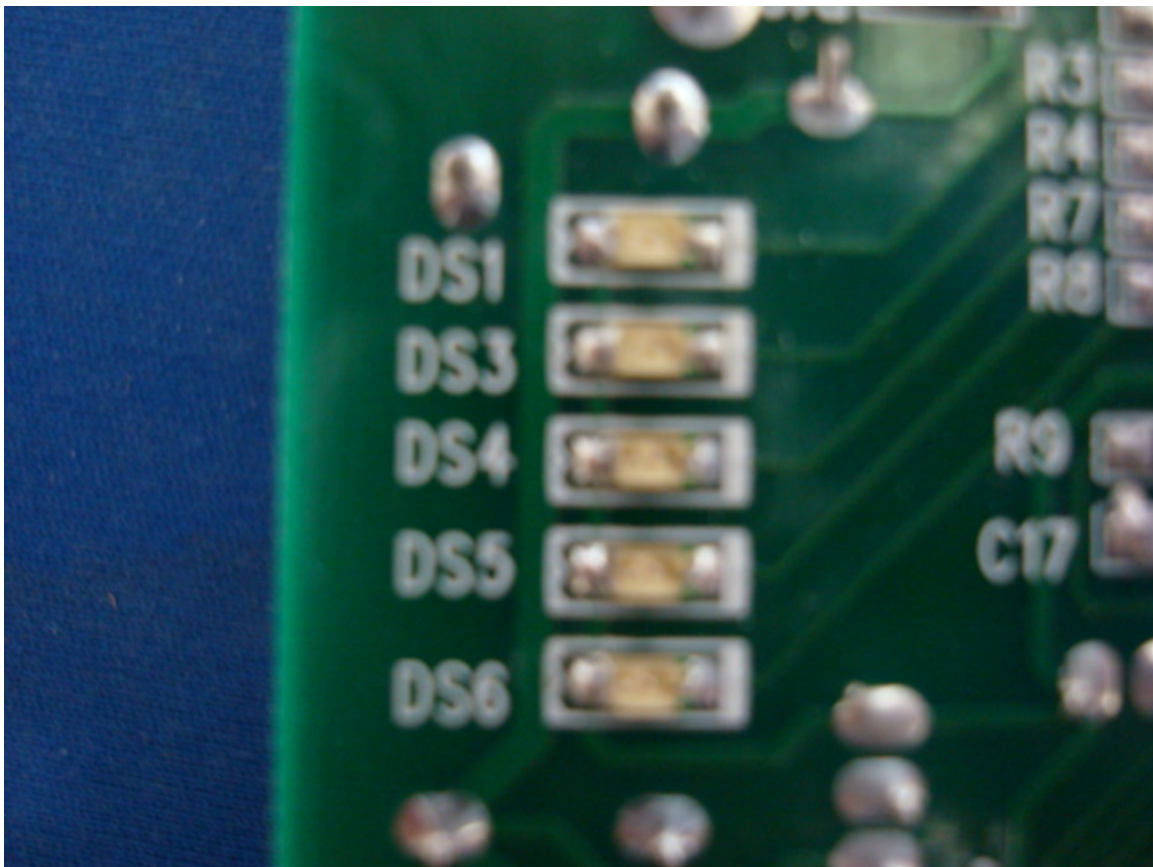
6. If wireless transmission is used the *TSMS* has a radio with an internal antenna. Due to the nature of cellular transmission, the cabinet should be mounted **outdoors**. In the event that cabinet is mounted indoors and the radio signal is not adequate, an external antenna should be ordered.
7. Insert the Timer into the labeled 9 pin socket at this time.
8. Place the backup battery in the bottom of the cabinet. Hook up the black and red leads from the circuit board to the battery. Red to "+" (plus), black to "-" (neg).
9. The installation is now complete. Close up all cabinets and turn on the circuit breaker to the tower lights and the *TSMS*. **Please call our office at (863) 667-1006 so that we may confirm proper operation of the unit.**

Explanation of Radio Power Up / LED Lights and sequence.

DS1, when flashing, means that the transceiver is communicating properly with the control board. When the transceiver is first booted up, it transmits a brief signal, requesting an acknowledgement from an active cell tower in the area. The DS4 light is lit during this process. If NO service is found, all lights will flash in unison. After a 10-minute period, the radio will again try to find a site.

When the transceiver receives an acknowledgment back from a carrier the DS5 LED will light.

Once a carrier is found, the radio will transmit additional information then re-boot itself looking for a second carrier (possibly stronger in signal, possibly weaker), it then goes back to DS4 while it sends out a new search. If a second carrier is found, DS5 will again light. The transceiver then compares the two signals and will chose the stronger of the two. The radio then reboots again, DS4 is lit again, then DS5. Once locked on, DS6 will light very briefly (sometimes quicker than you can spot). Once on line, only DS1 will flash.



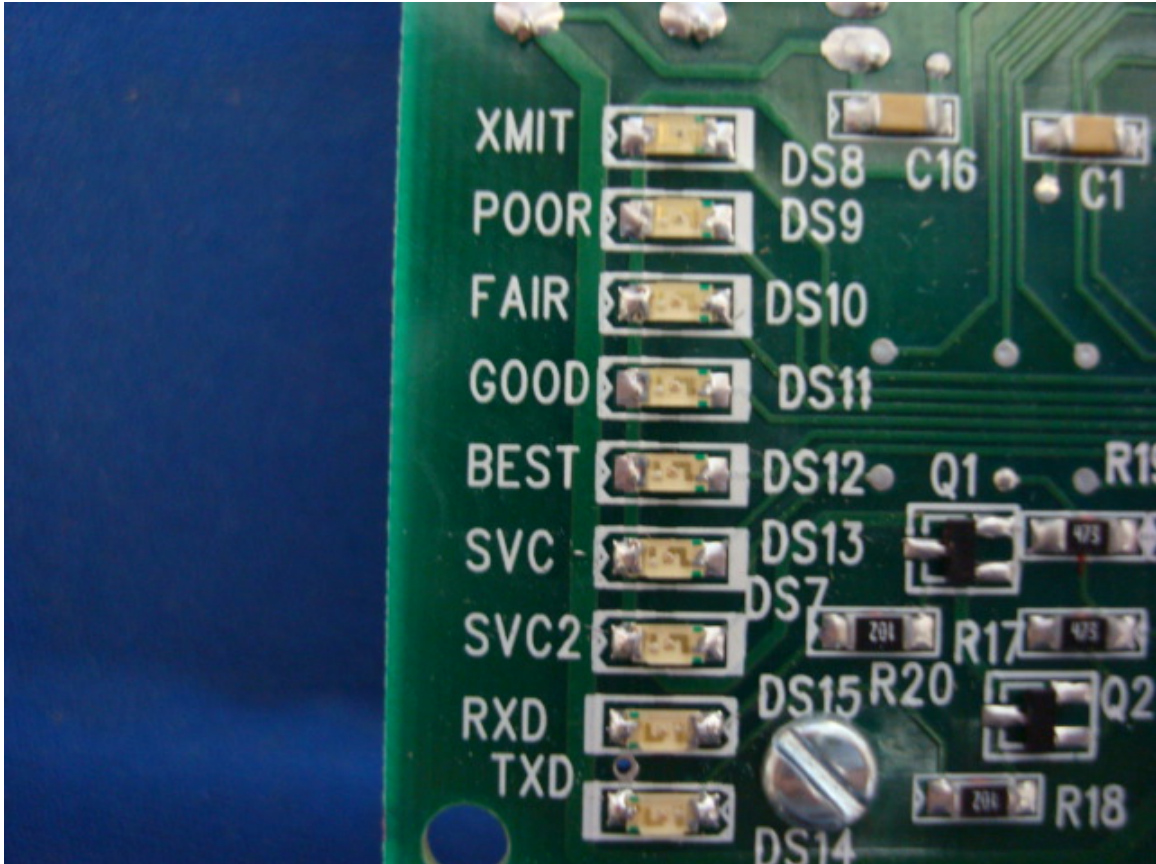
Additional information:

DS3 to DS6 LED's flashing = Network failure

DS3 to DS6 LED's off= Normal idle condition

(DS3 and DS4) and (DS5 and DS6) flashing alternately=Shutdown

The second set of LED's show the relative signal strength received, and you will also notice a XMIT LED that lights whenever a signal is transmitted. Each LED is tri-mode. Fast flashing, slow flashing and steady on. The Leeds are labeled as Poor, Fair, Good, Best. Each Led will light and flash relative to the signal received.



Description of relative signal strength for the LED's

Signal	Strength	Poor	Fair	Good	Best
-114	-197	Off	Off	Off	Off
-106	-104	Slow	Off	Off	Off
-103	-101	Fast	Off	Off	Off
-100	-98	On	Off	Off	Off
-97	-95	On	Slow	Off	Off
-94	-92	On	Fast	Off	Off
-91	-89	On	On	Off	Off
-88	-86	On	On	Slow	Off
-85	-83	On	On	Fast	Off
-82	-80	On	On	On	Off
-79	-77	On	On	On	Slow
-73	Higher	On	On	On	On