

INSTALLATION

TowerSentry[®]
**Dual Mode Wireless/Telco
Tower Light Monitoring System
For White/Red lit Strobe or Led Systems
With Alarm Outputs**

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 an **Amprobe** and a telephone or butt-set if a telephone line is used.

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

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

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.

Installation of *TowerSentry®* Dual Monitoring System (*DMS*)

The ***DMS*** will require 120VAC power, access to a telephone line (if used), and will interface with the light system via the supplied multi-conductor interconnect cable.

1. Mount the ***DMS*** cabinet near the tower light controller. Conduit connectors are provided **at the bottom** of the cabinet for conduits supplying 120VAC power, the interconnect wire (coming from the tower light system), and a telephone line (if used).

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

2. 120VAC power must be taken directly from the AC terminal blocks on the lighting system by connecting a conduit or piece of flex between the two units. (Always consult local wiring codes). Wire the “Hot” 120v AC wire to the black fuse block. Wire the “neutral” AC wire to the gray terminal block. Wire the ground wire to yellow/green terminal block.

3. Route the supplied interconnect cable through conduit from the **DMS** to the tower light system. Hook up one end of the interconnect cable to the terminal strip on the **DMS** as follows...
 - Terminal #1 – White wire**
 - Terminal #2 – Red wire**
 - Terminal #3 – Green wire**
 - Terminal #4 – Brown wire**
 - Terminal #5 - Blue wire**
 - Terminal #6 - Orange wire**
 - Terminal #7 - Yellow wire**
 - Terminal #8 - Purple wire**
 - Terminal #9 – Black wire**

4. Wire the other end of the interconnect cable to the lighting system as follows...

White wire	Top White Strobe Fail (contact closure on fail)
Red wire	Top Red Strobe (contact closure on fail)
Green wire	Side / Marker Lights (contact closure on fail)
Brown wire	Night Mode (contact closure in night mode)
Blue wire	Spare
Orange wire	Spare
Yellow wire	Intensity Error (if available) (contact closure on fail)
Purple wire	AC Power Fail (if available) (contact closure on fail).
Black wire	To the common contact point on all alarm outputs

5. If a telephone line is being used, hook up the telephone line to “Telco R” and “Telco T” on the larger circuit board inside the **DMS** cabinet. **Customer supplied modems or answering devices must be programmed to answer on three or more rings so as not to interfere with the proper operation of this device.**

6. 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).

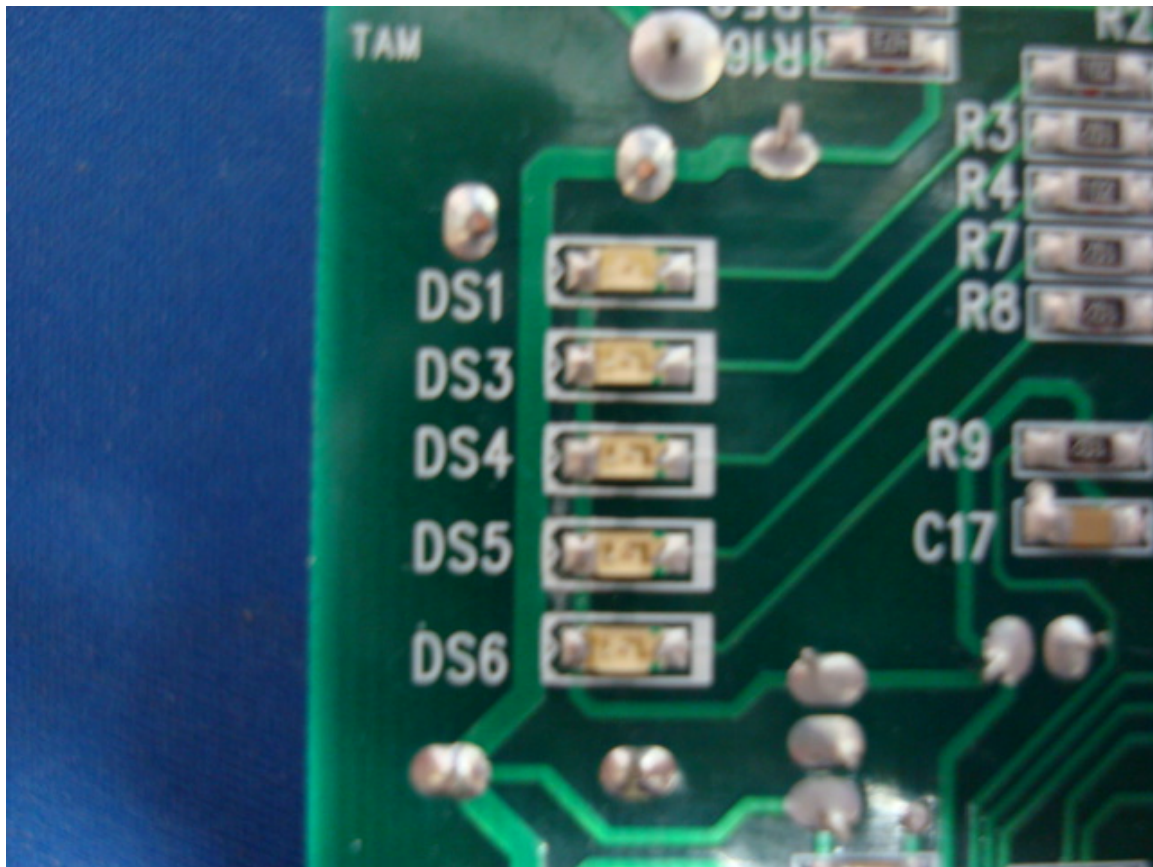
7. The installation is now complete. Close up all cabinets and turn on the circuit breaker to the tower lights and the **DMS**. **Please call our office at (863) 667-1006 so that we may confirm proper operation of the unit.**

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.



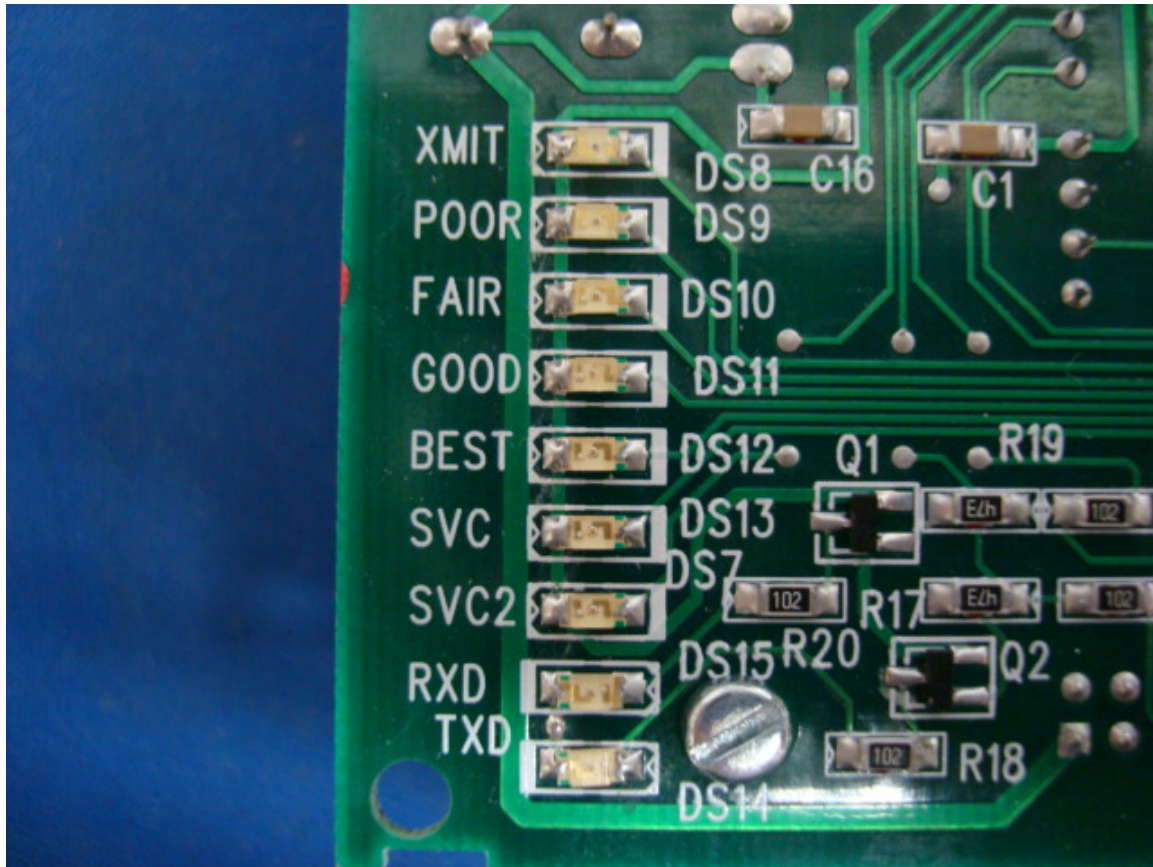
Additional information:

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 LEDs 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

TowerSentry® / DMS

Trouble-shooting guide

Tools needed:

Telephone or “butt set” with alligator clips
AC/DC Volt / Ohm meter (Fluke 77 or equivalent)
Small and medium size flat-blade screwdriver
Medium size Phillips screwdriver
Amprobe

There are five different areas where problems can occur... the telephone service, wireless provider, *DMS* unit, AC power source, and the tower light controller. The purpose of this trouble-shooting guide is to help the installer determine the source of the problem.

Please follow the guide step by step. Please don't assume that something is, or is not working without verifying it.

AC Power

- With the voltmeter set to AC volts, measure the input voltage to the *DMS* at the AC input terminals on the circuit board. The reading should be between 16-18VAC. If voltage is present, proceed to the next section. If voltage is not present, check for 110-120VAC power at the fuse-block. If voltage is not present check the fuse in the fuse block or look for a tripped circuit breaker.

Telephone Line

- If a telephone line is being used, check the telephone line for dial tone on the terminals of the *DMS* circuit board. (Telco T and Telco R) If dial tone is present, proceed to the next section. If not, report the outage to your local telephone company.

Wireless Provider

- The *DMS* unit utilizes the control channel of selected cellular wireless carriers. The *DMS* is programmed with a specific “SID” number (site identification number) for each tower site. Signal coverage is adequate throughout most of the country, but there are areas where coverage is weak or non-existent.

The *DMS* Unit

- The *DMS* provides ~6.5 volts DC between a particular zone and “com”. When an alarm contact closure is provided by the strobe system, this voltage will drop to zero. (**a “short” has been applied across that zone and com**). When the strobe system is working normally, the voltage across the alarm zones and common will remain at ~6.5 volts DC.
- Each zone on the *DMS* circuit board can be tested by removing the interconnect cable coming from the strobe system to the *DMS* terminal block. Test alarms can then be generated by shorting terminals 1&2, 1&3, 1&4, or 1&5 for at least 5 minutes.
- There is a 5 minute reporting delay to eliminate false alarms.
- If the *TowerSentry®* monitoring station is not receiving signals, the *DMS* board is bad or cellular coverage is not adequate. (Contact *TowerSentry®* during normal business hours for assistance in determining the problem).

The Tower Light Controller

The lighting controller provides a contact closure to signal events or alarms. If the *TowerSentry®* monitoring station is receiving test signals, the problem is most likely in the lighting system