Wi-OLC System
Wireless Outdoor Lighting Control System

User Manual

FP *Outdoor Lighting Controls*

Sun-Tech
Sunrise Technologies, Inc.

Wi-OLC System
Wireless Outdoor Lighting Control System

TABLE OF CONTENTS

Disclaimer

Information to user:

The Wi-OLC System is authorized to operate on the 2.4GHz, unlicensed short range wireless frequency band (IEEE 802.15.4 ™ specifications) authorized by the Federal Communications Commission (FCC).

The 2.4GHz Radio Service is under the jurisdiction of the Federal Communications Commission (FCC). Any adjustments or alterations which would alter the performance of the transceiver's original FCC type acceptance, or which would change the frequency or performance are strictly prohibited.
Replacement or substitution of crystals, transistors, ICs, regulator diodes or any other part(s) of a unique nature, with parts other than those recommended by Sunrise Technologies, Inc may cause violations of the technical regulations in Part 15 of the FCC Rules or in violation of type acceptance requirements of the rules.

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Sunrise Technologies Wi-OLC base Station or Photocontrol Node meet the human exposure limits found in OET Bulletin 65, and ANSI/IEEE C95.1.   Proper operation of these radios in accordance to the instructions found in this manual will result in exposure substantially below FCC's recommended limits.
The following safety precaution should be observed:

- In order to comply with FCC RF exposure limits, the Base Station or the Photocontrol Node should be located at a minimum distance of 20 cm (8 inches) or more from the body of all persons.
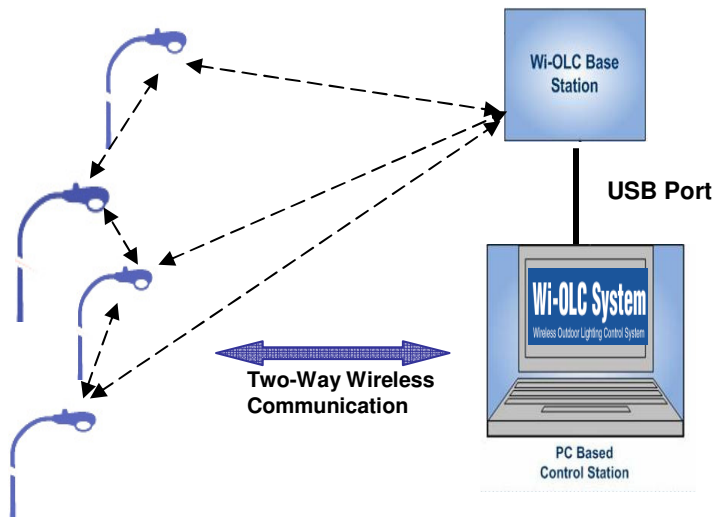
Wi-OLC Wireless Network

System Overview

The Wi-OLC System is a Personnel Computed (PC) based system designed to control outdoor light using wireless radio technology. The Base station and Wi-OLC nodes form a mesh communication network using ZigBee Pro wireless radios.

The Control Panel Software specifically developed for the application performs two main functions, the first is to manage the wireless network and the second to manage the pre-defined lighting schedules.

The Control Panel Software allows for control of individual lights or as groups of lights. The software uses Time of Day and Day of week from schedules for the entire year.

Wi-OLC System
Wireless Outdoor Lighting Control System

Wi-OLC System Components

System Requirements

The Wi-OLC system uses the following platform for the system:
- Control Panel software – Microsoft Visual Basic 6.0 with MS Access Database, on Windows 2000/XP/Vista using Intel x86 based PC (**User Supplied**).
- Base Station – Telegesis ZigBee Pro USB Dongle or Ethernet Base Station to the Control Panel PC Software.
- OLC Photocontrol Nodes – OLC Photocontrol nodes equipped with ZigBee Pro Mesh Wireless Technology.

Getting Started
Control Panel Software Installation
Install Control Panel Software on PC dedicated to the Wi-OLC system by running **Setup.EXE** from CD provided. The Setup program will prompt you through the setup process.

Connect Base Station
Connect Base station Dongle to USB port or Ethernet Port (depending of type of Base station) on PC dedicated to the Control Panel software.

PC must be on at all times with Control Panel software running in order for real-time monitoring and control of lights. It is recommended to battery carry-over PC during power outages.

PC Placement

Wireless communication from the Base station to the Wi-OLC nodes can be affected by walls and other solid obstructions. To achieve maximum reliable communication with the Wi-OLC nodes locate the PC/Base station as close to an outside wall as possible.

Start Control Panel Software

Start the Control Panel software by going to **"Start"** on bottom tool bar on the PC desktop, then go to **"Programs"** and Select **"Wi-OLC Control Panel"**

Status of connection with Base station

Time/Date obtained from PC
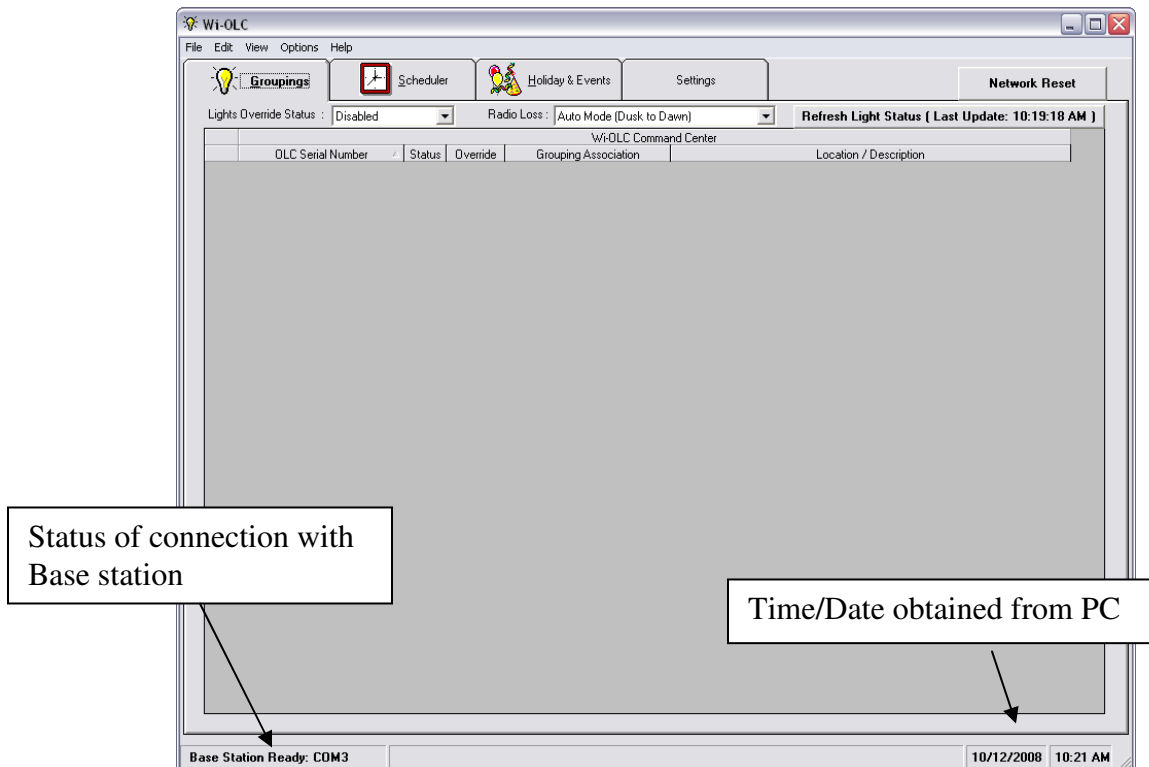
To make it easier to start the Control Panel software drag icon to PC Desktop. The following icon will display on the PC Desktop.

Entering Wi-OLC Serial Numbers

In order for the system to recognize the Wi-OLC nodes as part of this network the Wi-OLC serial numbers (MAC Addresses) need to be entered into the Control Panel Database.
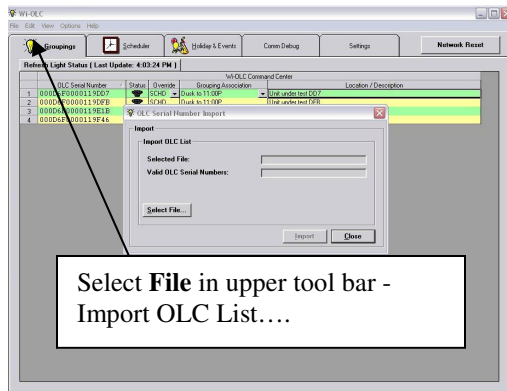
Up Load Serial Number File
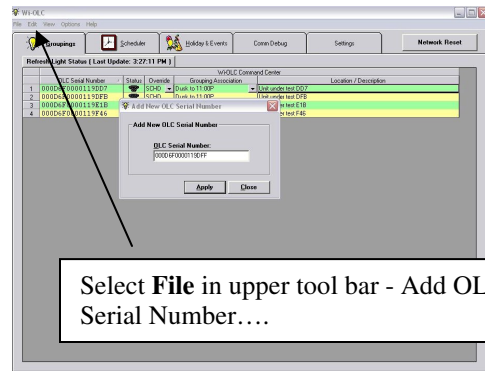
Manual Serial Number Entry

Import List

A database file is provided with each set of Wi-OLC nodes supplied. The list can be imported to the Control Panel software by selecting **File - Import List…...** then select location of database file.
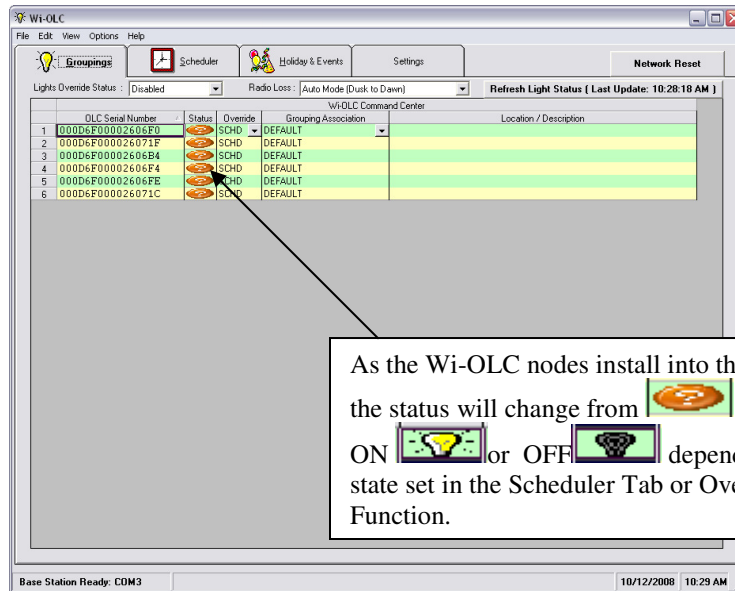
Manual Entry

Enter 16 digit alpha-numeric numbers into database by selecting **File – Add OLC Serial Number…..**, making sure to use all capitals letters. Example: 000D6F00002606F6

Wi-OLC Node Installation into Control Panel Software

The first time the Wi-OLC nodes are commissioned into the network they go through a process of finding the best RF path to the Basestation and can take several minutes depending on the size of the network.

As the Wi-OLC nodes install into the network the status will change from [icon] to ON [icon] or OFF [icon] depending on state set in the Scheduler Tab or Override Function.

Installing Wi-OLC Nodes on Outdoor Light Fixtures

Remove existing photocontrol and replace with the Wi-OLC node. An internal **RED** LED will flash and continue to flash until the Control Panel Software has confirmed the serial number is in the OLC Serial Number list in the Groping Tab.
The Wi-OLC node with respond to the internal light sensor and can be "Glove Tested" to check lamp and fixture is working properly.

Typical Installation

When installing Wi-OLC nodes make sure Control Panel Software is running.

It is recommended to start the installation as close to the Base Station to ensure communication with each light as they are installed. The "Line of Site" communication range from one Wi-OLC to another is approximately 2,000 feet.

Grouping Tab

The Group Tap is used to identify the individual Wi-OLC and assign it to a specific group of lights. This Tab is also used to document the physical location of each Wi-OLC Node.

OLC Serial Number Column

Each Wi-OLC node is assigned a serial number to identify it for network management as well as monitoring and control purposes. To delete for any reason the Wi-OLC node from the system by highlighting the record and then select Edit in the upper tool bar and the option to delete can be selected.

Location/Description Column

In order to keep track of each Wi-OLC node a open field is provided to enter data associated with the specific installation.

Groupings Tab – Continued

Override Column – Selecting **ON** or **OFF** will Override all scheduler operation for individual light. The light will need to be put back in SCHD for the light to be back under Scheduler control.

Grouping Association Column - This field assigns each OLC Node to specific group.

54 Commercial Street * Raynham, MA 02767 USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz   /   www.fpolc.com

Scheduler Tab

This Tab setups each of the Lighting Control Groups. Each group can be setup for 7 Day repeating schedule, Monday-Friday, Weekend and many other schedule combinations.
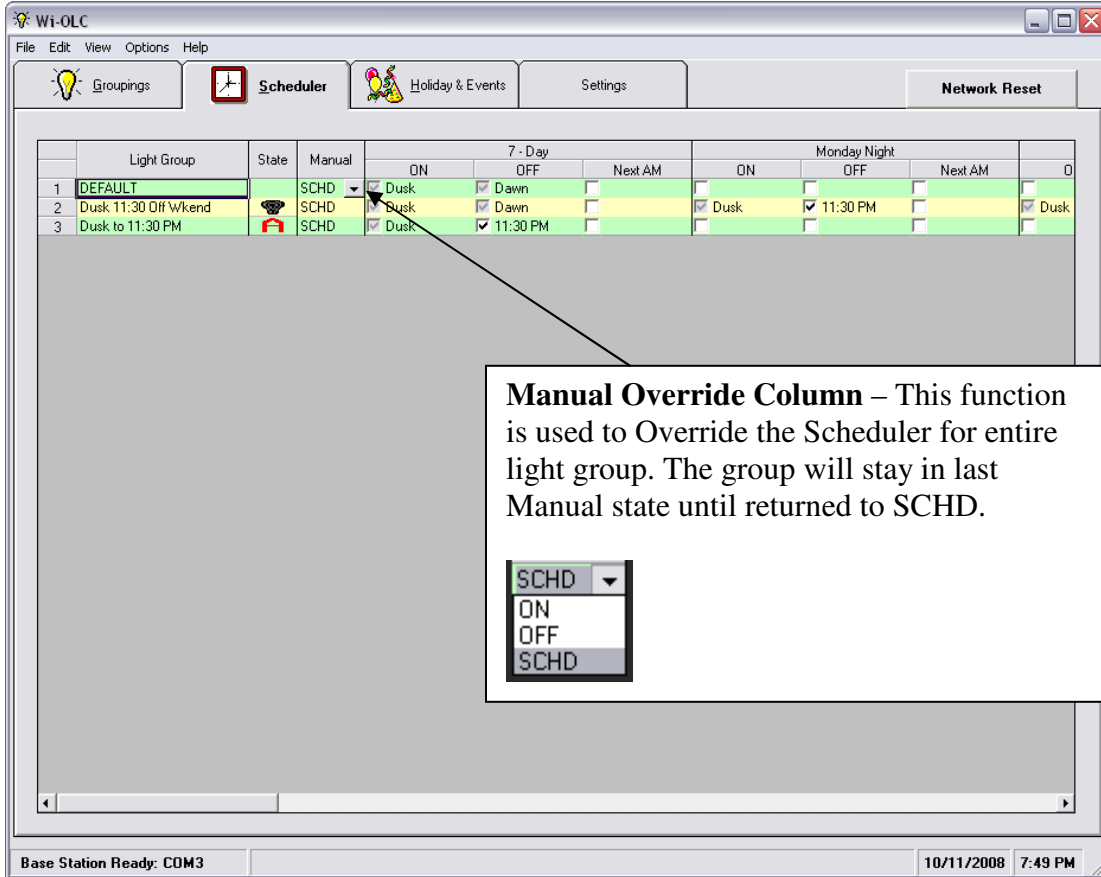
State Column

Blank indicates group is not used to control any of Wi-OLC nodes.

Light group Off and under control of the Scheduler.

Light group is On and under control the Scheduler.

Light group is in Auto State, meaning the light is under local control of the internal light sensor in Wi-OLC node.

Light Group Column

Light control groups are added in the Groups tab by Selecting **Add Group** in the Group Association Column or by selecting File in the upper Tool Bar and selecting Add Group. Once the Group is added it can setup with a Schedule.

Wi-OLC System
Wireless Outdoor Lighting Control System

Scheduler Tab - Continued

Manual Override Column – This function is used to Override the Scheduler for entire light group. The group will stay in last Manual state until returned to SCHD.

- 13

Scheduler Tab –Continued

Wi-OLC Node Scheduling
The scheduler's logic works from left to right. The default setting is for Dusk to Dawn operation on a 7-Day schedule. Any changes made to the columns to the right will override the 7-Day schedule.

Dusk – Light turns ON approximately 20 minutes after Sunset.
Dawn- Light turns OFF approximately 20 minutes before Sunrise
Time – Time of day used to control group.
Next AM – Light Turns ON in early morning before Dawn and light will turn OFF at Dawn
Blank Field – No operation is scheduled and reverts to 7-Day Columns for operation.

On/Off/Next AM Columns
The Scheduler can be setup on a 7-Day repeating schedule or different time for each day of the week. There are columns provided for Holidays and Special Events.

Scheduler Tab –Continued

Disable Light Group for Entire Night
Selecting OFF in both ON and OFF columns keeps lights off for an entire night.

A selection is provided in both ON and OFF Columns to keep light Off for all night.

54 Commercial Street   *   Raynham, MA 02767   USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz   /   www.fpolc.com

Holiday & Events Tab

Holiday Tap
This section sets up the holidays for use by the Scheduler.
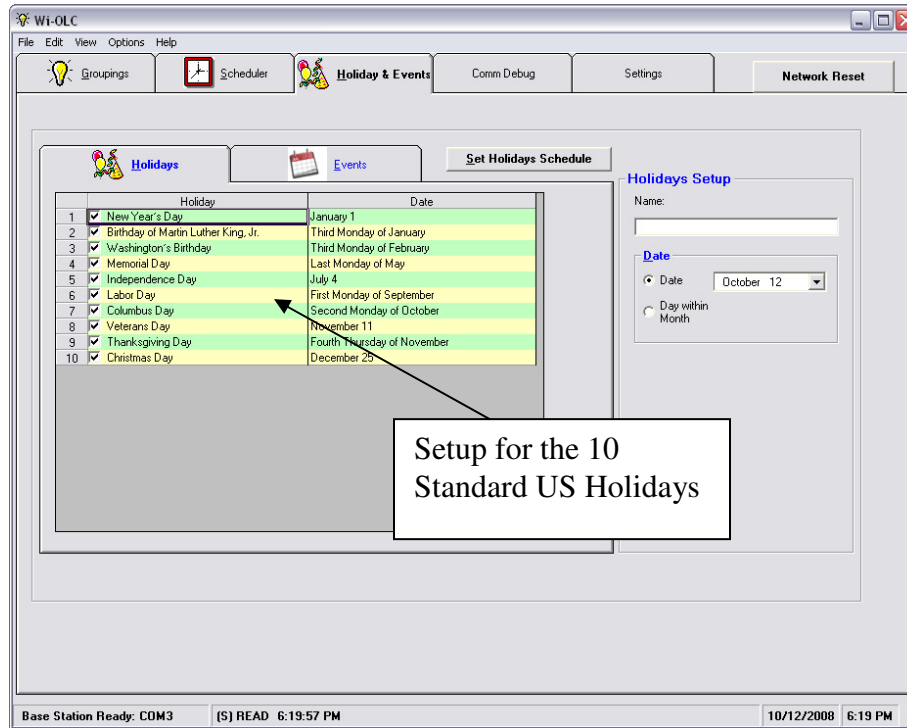
Setup for the 10 Standard US Holidays

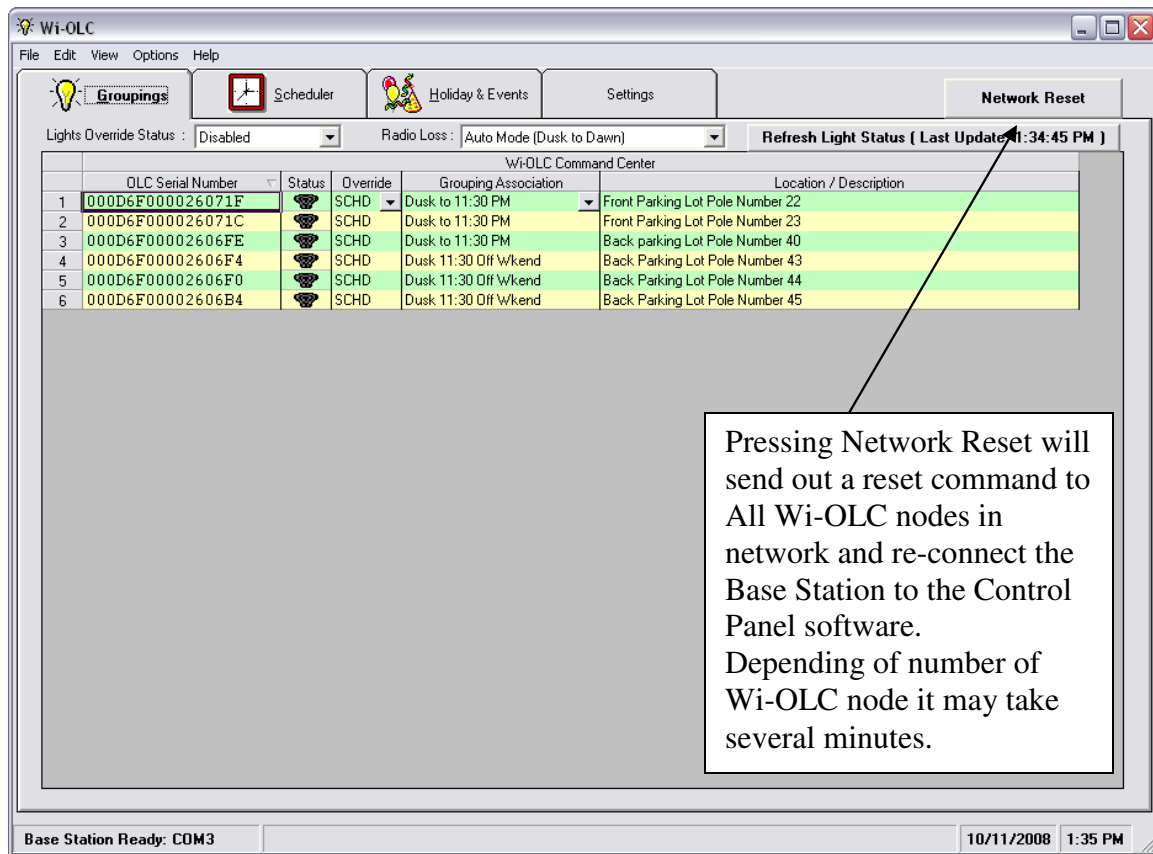54 Commercial Street   *   Raynham, MA 02767   USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz   /   www.fpolc.com

Special Events Tap

The option is able to setup a string continuous days to act as a special Event period.

Example: Setup to operate on Special Schedule for the week of 4TH of July.
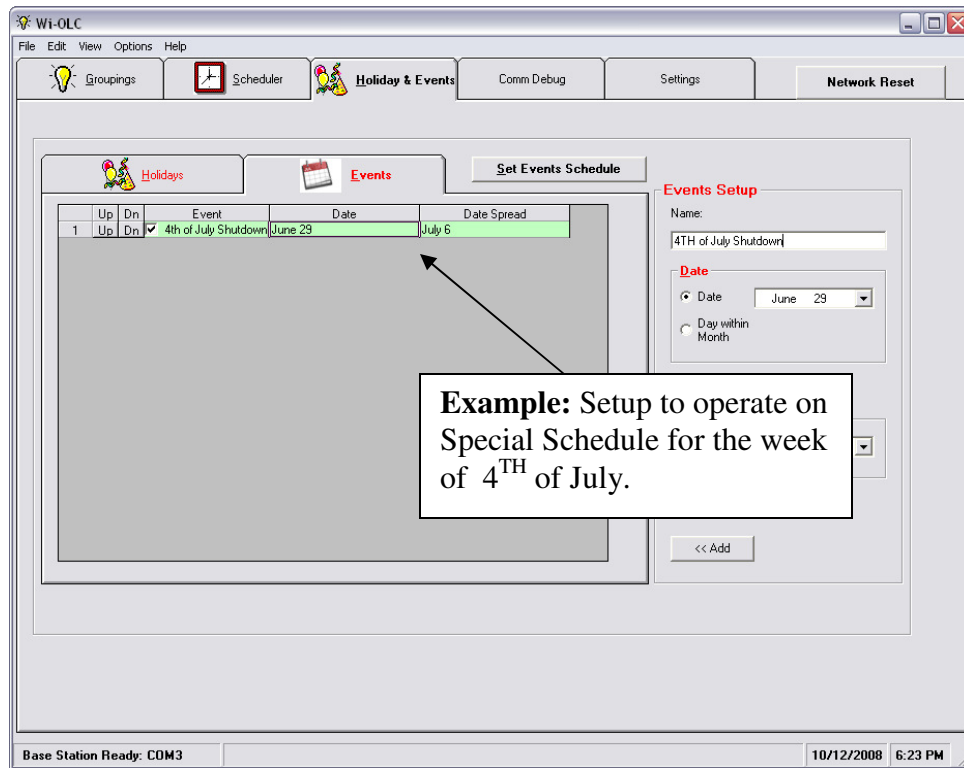
Network Reset Command

On receiving a Network Reset message from the Control Panel, the OLC nodes perform a network initialization. It performs a join to the network and starts its internal timers to receive Read/Write commands from the Control Panel. The Control Panel is not restarted and the lamp continues to be in the last given command state.

Pressing Network Reset will send out a reset command to All Wi-OLC nodes in network and re-connect the Base Station to the Control Panel software.
Depending of number of Wi-OLC node it may take several minutes.

Wi-OLC System

Wireless Outdoor Lighting Control System

Override Feature

An override function is provided in the case all schedules need to be overridden and all lights are to be turned ON or OFF immediately.

Lights Override Status Dropdown Box
Selecting **All Lights ON** or **All Lights OFF** will turn lights ON or OFF until commanded to return from Override state.

Selecting **All Lights Auto** puts all the lights into Dusk to Dawn control (Wi-OLC node internal light sensor) until commanded to return from Override state.

Disable (Override)

In order to return lights to their normal Schedules, the **Disable** function must be selected. This will send a command to the all Wi-OLC nodes to return to normal schedules.

The Fail-safe feature is to enable Safe operation of lights in the rare event the
Radio Loss Function
The Radio loss function is used to
If the Wi-OLC node does not receive the periodic Poll Request from the Control Panel for 3 Polling Period, this indicates that there is a failure in the Control Panels/Base station or the Control Panel Software is shutdown. This will cause the Wi-OLC nodes to revert to Fail-Safe node which is Dusk to Dawn operation using internal light sensor after the 3 polling periods.
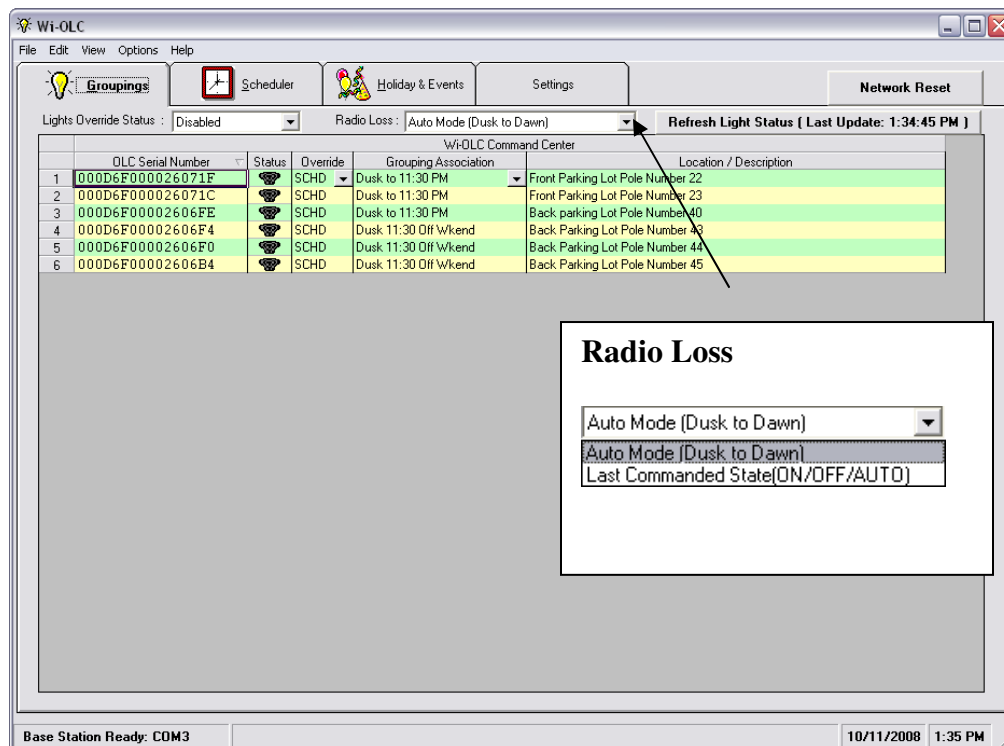
The OLC node then needs to move to fail-safe operation based on the "fail-safe enable" parameter in the non-volatile memory configured by the Control Panel. This parameter is used to indicate of the Control Panel is shut down by the operator or has failed unexpectedly. The OLC first checks the value of fail-safe mode parameter.

- If fail-safe enable parameter in OLC node configuration is set to TRUE, the OLC Photocontrol node switches to Auto mode and performs photo sensor-based dawn-to-dusk operation. This is the normal fail-safe operation at the OLC node
- If the fail-safe enable parameter is set to FALSE, the OLC Photocontrol node continues in the same state as per the last command given from the Control Panel (Lamp On/Off/Auto).
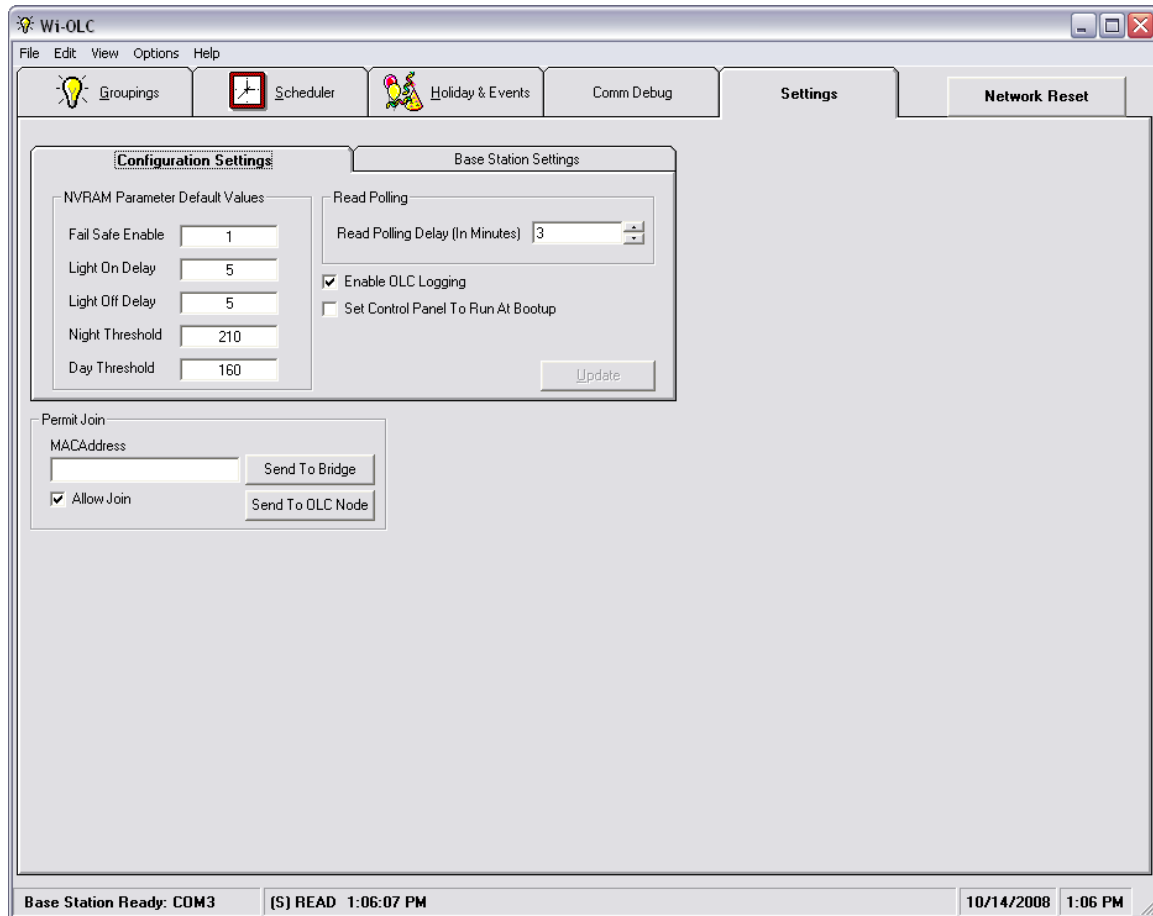
The OLC node remains in fail-safe mode until a subsequent Read Data Request is received from the Control Panel.

Wi-OLC System
Wireless Outdoor Lighting Control System
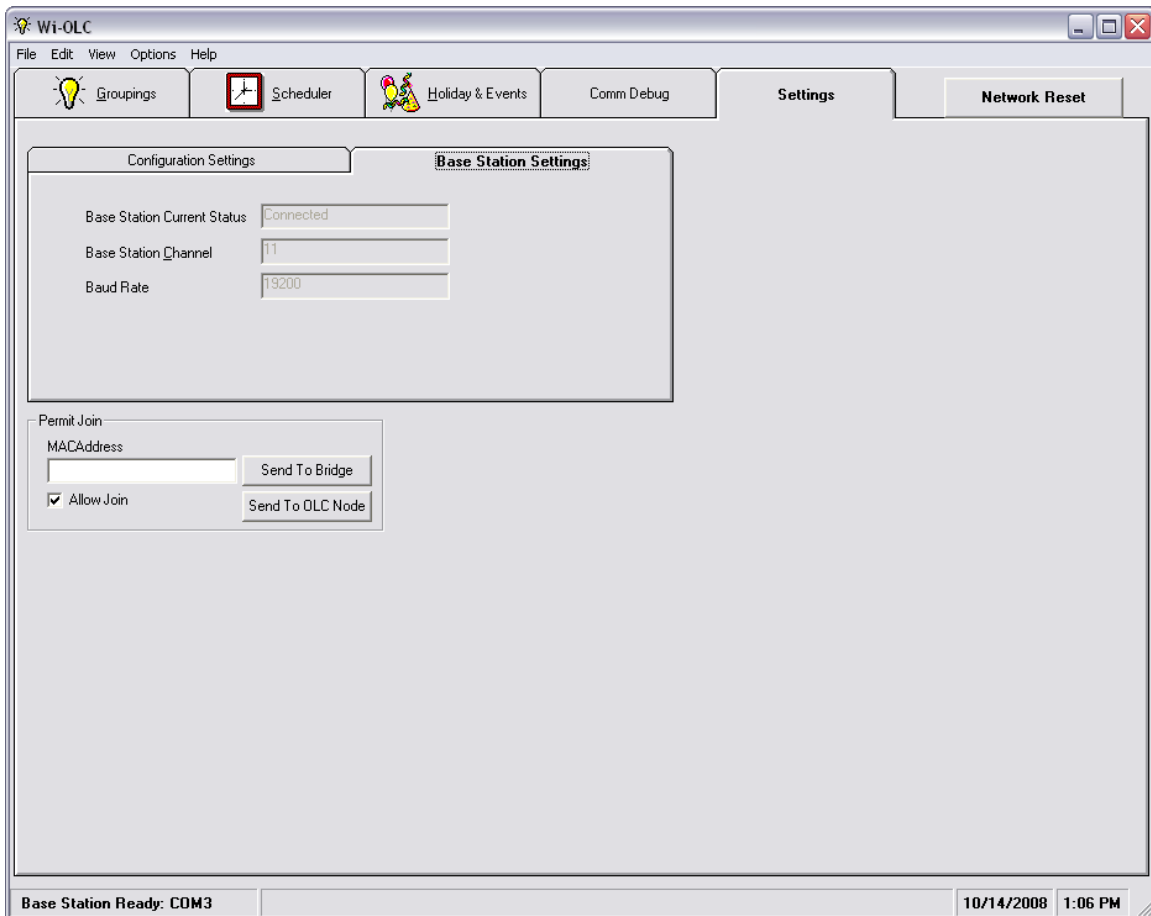
Engineering and Troubleshooting Tabs

Configuration Setting Tab

54 Commercial Street * Raynham, MA 02767   USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz / www.fpolc.com

Wi-OLC System
Wireless Outdoor Lighting Control System

54 Commercial Street   *   Raynham, MA 02767   USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz   /   www.fpolc.com

Wi-OLC System

Wireless Outdoor Lighting Control System

54 Commercial Street   *   Raynham, MA 02767   USA   Phone: (508) 821-1597   Fax: (508)822-0593
www.sun-tech.biz   /   www.fpolc.com

Wi-OLC System
Wireless Outdoor Lighting Control System

System Check: To check that each of the installed Wi-OLCs can communicate with the Base Station, and the Base Station can communicate with The Control Panel Software, click the Groupings tab. Wi-OLCs listed as On or Off are active in the network. OLCs with a question mark not in communication with the Base Station and need to be checked.

System Check: To verify communication with an individual Wi-OLC and confirm system operation, select "On" in override column.

Troubleshooting Guide

54 Commercial Street ∗ Raynham, MA 02767 USA Phone: (508) 821-1597 Fax: (508)822-0593
www.sun-tech.biz / www.fpolc.com

Wi-OLC System

Wireless Outdoor Lighting Control System

Problem	Perform These Checks
The power indicator light at the Wi-OLC base station is not flashing green.	• Verify that the USB cable is properly connected to the Base Station and to the control panel computer. Verify that the base stations power adapter is plugged into an AC outlet *If the USB connecting cable is longer than fifteen feet, use the base station's optional RS485 extended range cable.*
The LEDs in the Wi-OLC do not flash on installation.	• Check the outdoor light has power to the NEMA photocontrol receptacle. • Insert a known good Wi-OLC in the socket and observe both green and red LEDs flash for 2-3 seconds, then the Red only on 5 second intervals.
An installed OLC does not appear in Wi-OLC list of registered Wi-OLCs.	• Verify that the red LED is flashing on 5 second interval. • Verify the Wi-OLC is within 2,000 feet of the Base Station or other Wi-OLC controlled light. *Wait about thirty seconds for a new OLC to register on the network after you install it. A new OLC does not appear in the Control Panel serial number list until it is registered.*
A light or group of lights does not turn on from Wi-OLC Control Panel Software.	• Verify the Base Station and all Wi-OLC are within range • Check whether the filament in a dark light needs replacement.
A light or group of lights does not turn off from ~~Light Watcher.~~	• Verify at ~~Light Watcher~~ that light control is in manual mode. • Verify at ~~Light Watcher~~ that the OLCs in question are registered in the network.
~~Light Watcher~~ indicates that it cannot communicate with the base station.	Shutdown the ~~Light Watcher~~ control panel off. Disconnect the base station's power source and plug it back in. Reboot the computer and relaunch ~~Light Watcher~~ application. Open the Groupings tab in ~~Light Watcher~~ and check the State column for communication with the OLCs in the network. OLCs not in communication with the network have a question mark in the State column. *OLCs may require twenty to thirty minutes to re-register after you repower or reset the base station. Only registered OLCs appear in Light Watcher's Groupings tab without a question mark in the State column.*

If you cannot resolve a technical problem, please contact the Wi-OLC system administrator or Sunrise Technologies 508-821-1597

NODE BAR CODE LABEL	LOCATION