LWCSD LED Wireless Channelizing Sequential Device

General Description

The **LWCSD** is a radio controlled sequencial lighting system for the purpose of directing traffic in road construction zones. The system may comprise of up to 16 lights where each light is a self contained portable wireless unit which may be configured as a master unit or a slave unit.

Communication between units occurs via radio signals which contain information for decoding by the units microcontroller. Based on the information received, the microcontroller determines the units position in the flashing sequence and will cause its LED head to flash. The unit that flashes its LED head then transmits its encoded radio signal for the next LWCSD units in the sequence to receive and decode.

Technical Description

A LWCSD comprises of a 6Vdc battery power supply, a communications controller and a LED head.

The communications controller (f ig.1) includes:

916.5MHz OOK transmitter,

916.5MHz AM superhetrodyne receiver
microcontroller

hexadecimal rotary switch.

The LED head comprises of 12 LED's and associated drive circuitry.

The transmitted data comprises of Manchester encoded data resulting in a data packet of 50% duty cycle. Separate RF transmitter and receiver

Fig.1

sections take care of the wireless link, whilst the microcontroller performs the data decoding and logic control for the RF sections.

Each **LWCSD** may be configured as a master or slave through the appropriate position selection of the hexadecimal rotary switch.

Configuration for Operation

Setting up a **LWCSD** system is a simple 4 step procedure:

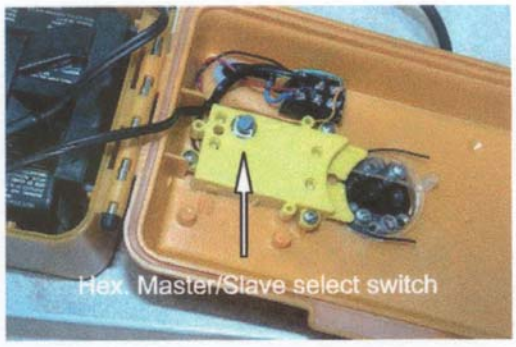
1. Select and Configure the Master LWCSD unit

2. Configure the optional 1-15 slave units
3. Switch on the LWCSD units
4. Position the units for the desired operation

Note: Each system may comprise of one master and up to 15 slave units. The Master and slave units are identical in electrical characteristics. They differ only in the message content broadcast over-the-air.

Step One

Select the Master unit and configure it as such



by setting the rotary hexadecimal switch to position "0".

Note: Without a master unit configured, all transmitters in the system will be inhibited and the system operation will be stopped.

Once the master has been configured and powered ON, it will begin to transmit a signal which automatically and continually synchronizes the system.

Step Two

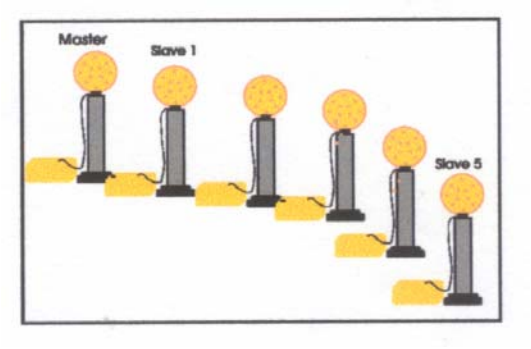
Similar to configuring the master unit, the slave units are configured consecutively by setting the slave unit number to correspond with the setting selected on the hexadecimal rotary switch. This will be "1" for slave number one through to 'F'' for slave number fifteen.

Step Three

Steps one and two may be performed with the units powered ON or OFF. It is not required to cycle the power for a unit to accept a new configuration. Power is applied by switching the toggle switch.

Step Four

Once powered and operating, the units may be placed in their positions up to 80feet apart to create the desired traffic guiding effect. The master will typically be the first



unit in the line, followed by slaves 1 through F, as applicable.

Slave units placed out of radio range from the other units in the system, will not flash their LED heads. Should this occur, however, the overall operation and synchronization of the system will not be affected.

Once the "out-of-range" slave unit is brought to within radio range it will begin to flash its LED head and automatically be resynchronized with the rest of the units in the system.

Caution: The LWCSD is designed to operate in compliance with part 15 of the FCC regulations. Any unauthorized changes or modifications to the system may void the authorization to operate this equipment.

FCC Compliance Label and Intended positioning