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PARK-DADDY Circuit Description

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B. English

The Invis-a-Beam LLC PARK-DADDY system is designed to align objects in a straight line up to 30 meters using infrared technology. Feedback on the status of the alignment is transmitted via RF to a 12-Volt automotive cigarette lighter socket powered RF receiver. Each system consists of three components. The following are descriptions of each of these components.

1. Transmitting Infrared Head Unit "B":

The Transmitting Infrared Head Unit contains a single printed circuit assembly. It is powered by (2) "D" size alkaline batteries. The circuit board contains a microcontroller to generate infrared pulses via two 940 nm infrared emitting diodes. It also provides battery monitoring and status via a bi-color red/green LED.

2. Receiving Infrared Head Unit "A":

The Receiving Infrared Head Unit contains a single printed circuit assembly. It is powered by (2) "D" size alkaline batteries. The circuit board contains a microcontroller to receive infrared pulses via two 940 nm infrared receiver modules. It also provides battery monitoring and status via a bi-color red/green LED. The board utilizes a Silicon Labs Si4455 based RF transmitter with a printed circuit antenna. When the infrared beam is broken, the microcontroller will begin transmitting via the Si4455 to the RF Radio Receiver. A tactile pushbutton switch is implemented to allow channel changing from 916.25 to 917.75 MHz in 250 KHz steps. When transmissions are active, they occur continuously every 50 mS with a 5mS duration.

3. RF Radio Receiver Unit:

The Radio Receiver Unit contains a single printed circuit assembly. The circuit board contains a microcontroller, Silicon Labs Si4455 based RF receiver, audible tone generator, tactile switches for tone volume control and LED indicators. The unit contains a speaker for the tone generation and is powered through a 12-Volt automotive cigarette lighter plug. The device is operated as an RF receiver only; utilizing a printed circuit board antenna. When powered up, the microcontroller monitors the RF receiver for valid packet receptions. Upon reception of a valid code, the unit will illuminate red LEDs and if so enabled, sound a tone indicating that the IR beam has been broken between the Transmitting Infrared Head Unit and Receiving Infrared Head Unit. When the IR beam is re-established, the RF transmissions will stop and the tone disabled. In this state the LEDs will illuminate green.