

2002.5 FN145 Overhead Console Module Description of Operation

The FN145 module provides the following functionality: PathPoint® Compass, Oil Minder, Homelink III® and Message/Button Interface.

The Compass mode displays the direction in which the vehicle is heading. The heading is determined by using data from two internal zero degree sensors and the compass ASIC. The Oil Minder mode informs the driver of the percentage of oil life remaining based on mileage, time and engine revolutions. The percentage is derived from bus messages and internal real time clock that monitors the time elapsed. The message/button interface allows access to different features on the console (Park Assist, Alarm System, Map Lamps, Telematics, etc.) and the overall vehicle through the use of the vehicle bus or the vehicle connector.

The Homelink® transmitter is a radio frequency transceiver device whose primary function is to determine both frequency and bit code format of typical garage door remote control devices and identically re-transmit them to the original garage door opener receiver. The on-board microcontroller maintains the operational frequency band as 288Mhz to 418Mhz excluding forbidden bands of 240MHz to 285MHz, 322MHz to 335.4MHz and 399.9MHz to 410 MHz.

Scanning the legal frequencies with single-conversion superheterodyne receiver, looking for valid garage door opener bit code formats performs the “training” operation.

In addition to being frequency and data format adaptive the Homelink® transmitter is also RF amplitude adaptive. During the training sequence, the duty factor of the incoming bit code format is evaluated by the microcontroller determining the greatest amount of on time in a 100 mS window. The duty factor is then used to mathematically adjust the output power in a range of 80% (1.9dB) to an upper limit of 30% (10.5dB) duty cycle. A 9 bit attenuator is adjusted by a closed loop power control algorithm in the microcontroller.

After the training sequence the frequency bit code format and attenuator setting is stored in Non Volatile Memory (NVM) and retrieved on subsequent power ups. The VCO is set on the desired RF carrier frequency stored in NVM. The antenna is fine-tuned by sweeping twice around the expected tuning point. The voltage-controlled oscillator (VCO) is then modulated with the appropriate bit code information from the NVM.