CS Compass Mini-Trip Computer Ò Module Description of Operation

The CS module consists of two basic sections: the Compass Mini-Trip Computer (CMTC) section, and the Homelink® section.

The CMTC section provides data to the vehicle via the bus, the vehicle then displays the information on the instrument panel. There are three switches on board, which allow the user to select Homelink® operation. The CMTC microprocessor powers up the Homelink® section, and communicates to the Homelink® microprocessor which channel has been selected. The CMTC sends messages out on the J-1850 bus and then a display in the IP provides the information to the driver.

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.

The "training" operation is performed by scanning the legal frequencies with a single conversion superheterodyne receiver, looking for valid garage door opener bit code formats.

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.