

Operational Description

The REIMS Module is a basic demonstration platform for the MXYP8300 device. Two module configurations are available, 315MHz and 434MHz transmit frequency versions. All other features and operational characteristics are the same for the modules. The MXYP8300 device integrates air pressure, temperature, and X/Y/Z accelerometer sensors with a HCS08 MCU, wireless ISM band RF transmitter, and wireless LF band 125KHz receiver into a single device package. Typical application provides for the MXPY8300 to be mounted inside a tire wheel to provide measurement data to a Tire Pressure Monitoring System (TPMS) host for safety reporting to the vehicle operator.

Module power is derived from the on-board 3V Lithium Coin cell battery. The MXYP8300 monitors the battery and will not operate or allow transmission if the voltage is too low. Option JP1 (PWR_EN) allows the module to be powered on or off. JP1 should be opened to save battery during storage of the evaluation modules. The battery may be replaced with another CR-2325 type 3.0V battery.

Transmitter operation applies a fixed power setting with a +/-35KHz FSK modulation from the center carrier frequency of 315 or 434Mhz. Carrier frequency is derived from the reference crystal oscillator and a digital phase locked loop multiplier and divider. Transmitted data packets are sent at 9600 baud and typically contain 16 bytes of data (16ms transmit duration). Default application provides for a slightly random transmission time interval greater than 10 seconds and/or a select key 125KHz LF data reception.

All configuration and control operations are performed by the HCS08 microcontroller and application firmware. Sensor data is collected as analog to digital measurement readings. To support long battery life the transmitter and external reference oscillator are powered off at all times until a message is to be sent. A very low power internal precision R/C clock is provided to allow the controller and LF125KHz receiver to operate without the external oscillator running. This clock also provides the random 10 second wake-up interval when timed transmissions are applied.

The 315 or 434 MHz transmit antenna is an integral PCB copper trace. No adjustments or options are available.

The LF125Khz reception antenna is a mounted transponder coil, L5.