

Ford SPDJB Module Description

The Ford Smart Power Distribution Junction Bock (SPDJB) Module is a factory installed automotive module, powered from the automotive 12 Volt system and is used to perform four categories of functions.

In the first category it supplies a continuous, fused battery voltage to loads in the vehicle.

In the second category it provides switched, fused battery supply to loads in the vehicle. The battery voltage supply switching is controlled by the microcontroller in the SPDJB. The microcontroller has an 8 MHz crystal oscillator.

The third category is Remote Keyless Entry (RKE), which controls the power door locks and the trunk lock. It receives the 315 MHz ASK 2 kb/s Manchester encoded transmitted signal from the driver carried Key Fob. This signal is received on an antenna mounted on the printed circuit board of the module. The antenna drives a 315 MHz SAW filter which then drives the low noise amplifier input of the high integration superheterodyne receiver integrated circuit. The output of the LNA drives the mixer, which also has the 304.3 MHz VCO/PLL derived local oscillator as an input. A 9.509 MHz crystal oscillator is used as the frequency reference. The output of the mixer drives the 10.7 MHz ceramic filter which then drives the IF amplifier. The IF amp drives the ASK demodulator which is followed by an active low pass filter and then the ASK data slicer. The output of the ASK data slicer drives an input pin of the microcontroller which then decodes the ASK data and drives the door lock and unlock motors when appropriate.

The fourth category is Tire Pressure Measurement (TPM). It receives the 315 MHz FSK 9.6 kb/s Manchester encoded transmitted signal from the tire pressure transmitters installed in the vehicle wheels. Most of the circuitry described for the ASK reception is the same for the FSK. The difference is after the IF amp. The IF amp also drives a separate FSK demodulator which then drives an active low pass filter and then FSK data slicer. The output of the FSK data slicer drives an input pin on the microcontroller which then decodes the FSK data and then passes it out on the vehicle bus.