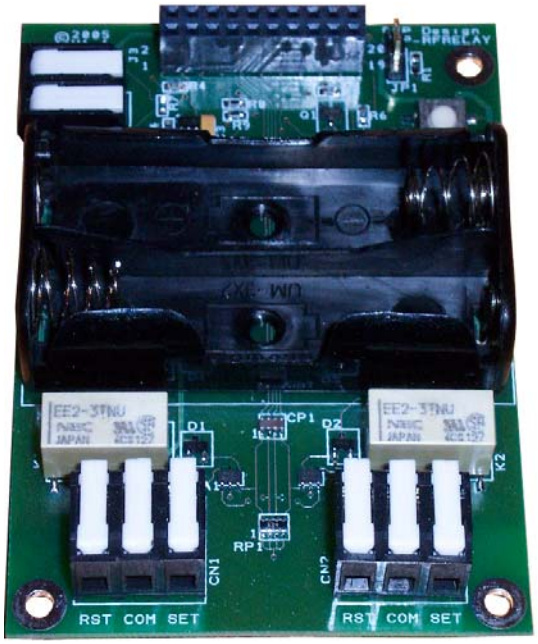
DLP-RF2RELAY

(Preliminary)

Dual Latching Relay Module



Overview

The DLP-RF2RELAY is designed for use with the DLP-RF2 transceiver (purchased separately) and serves as a design example demonstrating several features of the DLP-RF2 transceiver. The DLP-RF2RELAY demonstrates the use of latching relays, a battery power measurement system, a door switch input and the low-power mode of operation of the DLP-RF2.

Using the pre-programmed SIPP™ firmware, the DLP-RF2 ships from the factory with functionality that supports each of these features.

Schematics for the DLP-RF2RELAY are available for download upon purchase.

Low-Power Mode

The DLP-RF2RELAY holds port pin RX2/C1 low at power up of the DLP-RF2. If using the SIPP firmware in the DLP-RF2 as shipped from DLP Design, on power up the DLP-RF2RELAY and

DLP-RF2 board set will immediately enter the low-power mode drawing less than 40 microamps of current from the two AA batteries. The RF2 module will wake up from the low-power mode either periodically, based on a preset value in the setup of the DLP-RF2, or due to a change on the door switch input. On wake up, the DLP-RF2 will attempt to check in with the system controller. Once communications with the host controller are complete, the RF2 will return to low-power mode.

Refer to the datasheet for the DLP-RF2 for additional details on the low-power mode.

Door Switch

Wiring terminal CN1 is provided on the DLP-RF2RELAY for connection to a set of normally open or normally closed door switch contacts. When the door switch contacts are opened or closed, the DLP-RF2 is brought out of sleep mode and a broadcast packet (destination ID=0) is transmitted. The system controller transceiver (DLP-RF1 or DLP-RF2) responds to this packet by requesting the battery voltage, and/or to set or reset on of the relays. The system controller then has the option of instructing the DLP-RF2RELAY and DLP-RF2 board set to return immediately to sleep.

Latching Relays

The two relays used are latching type relays and as such will only draw current from the batteries when changing states. The process of changing states takes about 10 milliseconds and requires a low-high-low pulse on one of 4 digital I/O lines from the DLP-RF2 transceiver.

To position relay K1 to the RESET position, pulse B3 high for 10mS.
To position relay K1 to the SET position, pulse B1 high for 10mS.
To position relay K2 to the RESET position, pulse B6 high for 10mS.
To position relay K2 to the SET position, pulse B5 high for 10mS.

If using the SIPP firmware in the DLP-RF2 as shipped from DLP Design, commands for these features are provided.

The contact specifications are as follows (the contacts were connected in parallel to achieve these ratings):

Contact Ratings: 120W, 250VA
Max Switching Voltage: 220VDC, 250 VAC
Max Switching Current: 4A
Max Carrying Current: 4A

Battery Power Measurement

The battery power measurement system works by placing a light load (approximately 10 milliamps) on the two AA batteries and then measuring the battery voltage using the A/D converter in the DLP-RF2. A 2.1-volt voltage regulator is used as a voltage reference to set the max voltage for the A/D converter in the DLP-RF2. The connection from the batteries to the A/D converter is made via a voltage divider so that the battery voltage (~3.2V max) is within the range of the 2.1-volt reference after being divided by 2.

A MOSFET switch is used to disable the battery power measurement circuitry when not in use such that no load is placed on the batteries.

Disclaimer

9.0 Contact Information

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