MRF24J40MB RF Link Documentation

# Pin Description Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pin on RF Module** | **Pin on PIC** | **Symbol** | **Type** | **Description** |
| **1** | **RD8** | **GND** | **Power** | **Ground** |
| **2** | **RD2** | **RESET** | **DI** | **Global Hardware Reset Pin** |
| **3** | **RD1** | **WAKE** | **DI** | **External wake-up Trigger** |
| **4** | **RB0** | **INT** | **DO** | **Interrupt pin to PIC** |
| **5** | **RD4** | **SDI** | **DI** | **Serial Interface Data Input to RF** |
| **6** | **RD6** | **SCK** | **DI** | **Serial Interface Clock** |
| **7** | **RD5** | **SDO** | **DO** | **Serial Interface output from RF** |
| **8** | **RD0** | **CS** | **DI** | **Serial Interface Enable** |
| **9** | **Not Connected** | **NC** | **No Connection** |  |
| **10** | **RD9** | **Vin** | **Power** | **Power Supply** |
| **11** | **Not Connected** | **GND** | **Ground** | **Ground** |
| **12** | **Not Connected** | **GND** | **Ground** | **Ground** |

**Legend:** Pin type abbreviation: D = Digital, I = Input, O = Output

# RF Link Test Routine

A pair of microcontrollers is used to test the functionality of the RF boards. On powering, the transmitter will count to 15 and display the value on the LED array. The receiver, on powering, will flash its LEDs 3 times. This can be used as a visual confirmation that both microcontrollers are programmed with the appropriate code and are operational.

Once in the main routine, the transmitter starts a counter, and transmits the counter value to the receiver. Then both microcontrollers display the current value of the counter on the four rightmost LEDs of the I/O Board synchronously. If there is a failure in transmission, the Transmitter will flash its LEDs until the connection is re-established.

Push-Button PB1 can be used on either microcontroller to re-initialise the RF module and establish a P2P connection.

# Test Procedure

1. Connect the RF links to the microcontrollers using the Pin Description Table above.
2. Using MPLAB X, open the RF\_module\_rx project located in the RfLink\_TEST folder. Program the two microcontrollers.
3. Setting the rightmost switch of the I/O board to the open position sets it to transmission mode and a t appears briefly on the 7-segment display. Setting the switch back to the closed position sets it to receive mode and an r appears briefly on the 7-segment display
4. Power on the microcontrollers and set the transmission status switch to the desired position. After a short delay, you should observe both microcontrollers displaying the same value on the LEDs.
5. Setting the second rightmost switch of the I/O board to the on position, sets the RF board to sleep and pauses transmission. To resume transmission set the switch back to the closed position.
6. In case of a transmission fault, the transmitter will flash its LEDs until the connection is re-established. If there is a problem with the transmitting end, the left LED bank will flash. In the case of a fault in the receiver, the right LED bank will flash. In this case ensure the RF links are properly connected and that all three LEDs on each module (+5V, RST, WAKE) are on. Push PB1 on the appropriate microcontroller to soft reset the RF module
7. If the problem persists, it means there is either a faulty connection or a hardware fault on the RF module.