IEEE 802.11 b/g Wi-Fi® Modules Providing Complete 2.4 GHz Wi-Fi Connectivity for PIC® Microcontrollers

**MRF24WG0MA/MB**

**Summary**
Supporting the Internet of Things, Microchip’s MRF24WG0MA/MB IEEE 802.11 b/g modules provide Wi-Fi connectivity to PIC microcontroller based designs. These regulatory agency certified and standards based Wi-Fi modules are highly suitable in many embedded products where low power consumption, complete Internet Protocol services and flexibility are necessary for the embedded wireless market. The MRF24WG0MA/MB Wi-Fi modules together with Microchip’s large selection of peripheral rich PIC microcontrollers are ideally suited for easily adding Wi-Fi connectivity to your embedded products.

The MRF24WG0MA/MB modules together with the PIC microcontroller provide a complete Wi-Fi solution. Advanced IP services such as web server, data encryption (SSL) and FTP features are provided via the free license TCP/IP source code stack available for 8, 16, or 32-bit PIC microcontroller.

**Features**
- Single operating voltage: 2.8V to 3.6V (3.3V typical)
  - Temperature range: −40°C to +85°C
- Simple, four-wire SPI interface with interrupt
- 36 pin module with integrated antenna (MA) or U.FL connector (MB), no RF design required
- Low-current consumption:
  - RX mode: 156 mA (typical)
  - TX mode: 240 mA (+18 dBm typical)
  - 802.11 PS mode: 4 mA (typical)
  - Hibernate mode: 0.1 mA (typical)
- RF/Analog Features:
  - Application throughput: 5 mbps
  - −95 dBm typical sensitivity at 1 Mbps
  - +18 dBm typical 802.11b TX power with control
  - +16 dBm typical 802.11g TX power with control
  - Integrated RSSI ADC and I/Q DACs, RSSI readings available to host
- Hardware CSMA/CA access control, automatic ACK, and FCS creation and checking
  - Automatic MAC packet retransmit
  - Hardware Security Engine for AES and RC4-based ciphers
  - Supports 802.1x, 802.1i security: WEP, WPA-PSK, WPA-2-PSK, WPA-EAP
  - Supports Infrastructure, Adhoc, Wi-Fi Direct Client
  - Implements Wi-Fi Protected Setup (WPS), and SoftAP for easy product commissioning

**WPS**
1. Press WPS button on wireless LAN router or access point.
2. Press WPS button on end device.
3. The devices are linked.

**SoftAP**
- Andriod™ MAC OS® Windows®
### Wi-Fi Development
**Getting Started**
- Select a development platform
- Download Microchip TCPIP Framework
  - [www.microchip.com/mla](http://www.microchip.com/mla)
- Plug in Wi-Fi PICtail™ Daughter Board
- Start with an out of box example
  - Web server
  - ASCII control console program
  - Easy setup (SoftAp, WPS, or P2P) configuration web page
- Create your application
  - Modify example source to your needs

### Ordering Part Numbers
- MRF24WG0MA-I/RM (FCC Certified Module with Integral Printed Antenna)
- MRF24WG0MB-I/RM (FCC Certified Module with u.fl Connector for External Antenna)

### Applications
- Embedded web servers
- Data transmission to secured cloud servers
- Infotainment systems
- Smartphone access to other wireless networks (bridging)
- Motion JPEG video security
- Sensor networks

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**Development Kit**

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<thead>
<tr>
<th>Development Kit</th>
<th>MCU Platform</th>
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<tr>
<td>PICDEM™.net2 (DM163024) + MRF24WG0MA Wireless G PICtail™/PICtail Plus Daughter Board (AC164149)</td>
<td>8-bit</td>
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<tr>
<td>Explorer 16 (DM240001) + MRF24WG0MA Wireless G PICtail™/PICtail Plus Daughter Board (AC164149)</td>
<td>16-bit</td>
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<tr>
<td>PIC32 Starter Kit + I/O Expansion Board (DM320001) + MRF24WG0MA Wireless G PICtail™/PICtail Plus Daughter Board (AC164149)</td>
<td>32-bit</td>
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