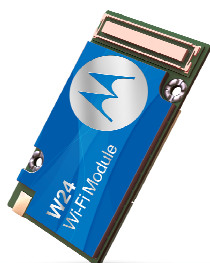




# Motorola M2M Wireless Modules W24 Wi-Fi Module Product Features



This white paper discusses the various features and benefits of the W24 Wi-Fi module for use in M2M applications.



#### W24 Wi-Fi Features:

- iRouter Mode
- Web Server
- TCP/UDP Sockets
- SerialNET Mode
- Email Send
- Email Retrieve
- TelNET client
- FTP client

### W24 Wi-Fi Overview

Motorola's W24 Wi-Fi module is designed to be the ultimate communication solution for multiple M2M devices. With easy Wi-Fi (802.11b/g) access to internet and data connections for cost effective and secure broadband connectivity, the W24 meets the needs of M2M applications like AMR, AVL, ePOS, Home Automation, Security and Telemedicine.

The W24 includes built-in connectivity to the G24-GSM and C24-CDMA modules for Wi-Fi to cellular data routing (connectivity to the H24-HSPA module is currently being developed). The W24 stack leverages a single design, and is therefore a perfect solution for M2M applications requiring both communication types, like fleet management, security or AMR devices.

When stacked with the G24 or C24, the W24 enables multiple tasks. The W24 provides broadband Internet access for data collection and downloading at the local dock, while the G24 or C24 is used as a backhaul to monitor data in real time. This dual use of our wireless modules is just one more advantage of Motorola's core competencies and experience in the wireless ecosystem.

### iRouter Mode

W24's iRouter mode is used to provide a gateway to a multitude of WiFi devices through a single dialup or cellular link. In this configuration, the W24's DHCP server may be used to assign IP addresses to the local hosts on the WiFi side. The W24 also uses a NAT

(Network Address Translator) to translate between local and public IP addresses.

The W24 can be entered into iRouter mode using one of two possible methods:

- Auto Mode: The W24 enters iRouter mode automatically and immediately after power-up and after every soft reset.
- Manual: Upon entering iRouter mode, The W24 immediately goes online on the dialup/cellular side. Packets are not buffered during dialup/cellular connection establishment. After establishing the connection, The W24 starts the routing service.

*iRouter mode is an ideal solution for AMR applications in which Wi-Fi/Internet coverage is not available. Each meter in the environment contains a W24 module, which enables Wi-Fi connectivity. The network of W24 modules creates a cluster of networked meters, in which a single node acts as a cellular gateway to the web. The gateway is enabled when stacking the W24 with the G24 or C24 cellular module.*

### Web Server

The W24 includes two internal websites: one used by the application and one to configure and update the W24's firmware. The W24 configuration website is integrated in W24's firmware and is dedicated to W24 configuration and maintenance. This website supports remote W24 parameter configuration, W24 firmware upload, and uploading of the application website.

The application website allows system developers to build Web-based products for device application use. This website may include multiple linked HTML pages, links to external pages, images, graphics, and Java applets. The application site may also incorporate a WAP (Wireless Access Protocol) server that can be browsed by Internet-enabled cellular handsets or PDAs. Application websites can be password-protected with MD-5 encryption.

By connecting to the W24's IP address, you can manage and access your device remotely using the following capabilities:

- Display information on application website
- Upload firmware to update both the W24 or the device
- Remote control and configuration of W24 or the device

### TCP/UDP Sockets

Ten simultaneous active TCP or UDP sockets enable many concurrent tasks. Two simultaneous TCP listening sockets enable W24 to act as a server, and up to 10 active sockets in backlog for efficient data transmission.

#### **Typical applications for TCP:**

- Remote device control
- Data collection
- Financial transactions
- Home automation
- Accessing secure servers

#### **Typical applications for UDP:**

- Video monitoring
- Audio streaming
- Image transfer

### SerialNET Mode

A key feature of the W24's AT+i protocol is a plug-and-play operating mode called SerialNET, which is perfect for retrofitting installed legacy devices with IP capability.

When the W24 enters SerialNET mode, *absolutely no modifications are required on the host application*. The benefit is that in SerialNET mode, the host does not need to be AT+i aware. SerialNET is a two-way mode. The host processor can stream data to the W24,

which packetizes it and sends it via TCP or UDP to a remote IP address. Alternatively, data coming from a remote system over the Internet is de-packetized by the W24 and streamed to the host.

In SerialNET mode, the W24 routes a local asynchronous serial device across the Internet to a remote IP address and TCP or UDP port. The W24 can function in SerialNET mode as a server or client. As a client, the W24-enabled device initiates communications by sending service requests to a server. As a server, W24 responds to client requests.

Once the SerialNET mode is established, the link becomes a pipeline for streaming raw serial data to W24. Data will continue to flow freely between the local and remote devices until a predefined activity occurs to terminate the remote connection.

#### **Typical SerialNET Mode applications:**

- Internet-enabling deployed vending machines
- Utility meters
- Security systems
- Point-of-Sales (POS) terminals
- Programmable logic controllers (PLCs)
- Fleet management terminals

### Email Send (SMTP & MIME)

Each W24 can have its own unique email address or shared address. There is no limit on the number of emails that can be sent with the W24. It is also possible to send an unlimited number of emails with MIME binary attachments. There is no limit to the size of the binary attachment, which makes the W24 excellent for audio, video, and large data files. The body of an email can contain up to 18 kB of text. Email can be sent to 50 addresses and to four CC addresses.

For security reasons, many Internet Service Providers now use SMTP servers that require authentication of the user account before enabling the user to send email. The W24's SMTP client has been enhanced to support SMTP servers that require clients to authenticate their user name and password before being granted service.

**Typical applications for SMTP:**

- Sending daily sales transactions for POS terminals
- Fleet management assignments and reporting
- Remote status reporting
- Data collection

**Typical applications for MIME:**

- Sending firmware updates
- Large data files
- Audio files
- Maps
- Video clips
- High-resolution photographs

ability to change the server's current directory; and opening, closing, appending or deleting a file on the remote server.

**Typical FTP Client applications:**

- Real-time transfer of large files
- Firmware download
- Data collection
- Medical imaging

## Email Retrieve

Each W24 can have its own unique email address or shared address. There is no limit on the number of emails that can be sent with the W24. It is also possible to send an unlimited number of emails with MIME binary attachments. There is no limit to the size of the binary attachment, which makes the W24 excellent for audio, video, and large data files. The body of an email can contain up to 18 kB of text. Email can be sent to 50 addresses and to four CC addresses.


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## TELNET Client

The W24 offers the ability to open and close a TELNET session, to send a line or a data stream, to flush the socket's outbound data, and to receive data. The W24 also supports TELNET binary send. The TELNET client support is important for legacy systems that utilize TELNET sessions.

## FTP Client

In addition to basic commands such as opening and closing an FTP socket to a remote FTP server, and sending or retrieving a file, the W24 includes a rich set of commands for FTP, including: retrieval of the remote FTP server's file directory listing and name list; the ability to create a directory on the remote server; the



## Motorola, Inc., M2M Wireless Modules

[www.motorola.com/m2m](http://www.motorola.com/m2m), Schaumburg, Ill, is a provider of M2M wireless modules in one form factor that supports various technologies, including GSM/GPRS/EDGE, CDMA 1x, iDEN, Wi-Fi, HSPA and GPS. Motorola delivers cutting-edge technology combined with rugged hardware for cost-effective design and easy integration.



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