Chapter 10 – SocketWireless® Wi-Fi® (MT810SWM-IP)

Introduction

The SocketWireless® Wi-Fi® device server connects serial devices to an IP network via 802.11b/g wireless networking. It enables you to build wireless networking into virtually any device allowing for remote monitoring, control and configuration. The space efficient communications device (1" x 2.5") integrates a complete TCP/IP protocol stack. It can make your existing and next generation device, machine or system, IP-ready while you focus on developing its core features.

Product Build Options and Ordering Information

Product	Description	Region	Order this Product ✓
MT810SWM-IP	802.11b/g Wi-Fi Device Server with IP, 5V	Regional	
MT810SWM-L-IP	802.11b/g Wi-Fi Device Server with IP, 3.3V	Regional	
Developer Kit			
MTSMI-UDK	Universal Developer Kit	Regional	

How to Read the Product Codes in the Table Above:

IP	TCP/IP Stack
L	3.3V
UDK	Universal Developer Kit

Other Product Codes:

The complete product code may end in **.Rx**. For example, MT810SWM-IP.Rx
"R" indicates product revision. "x" is the revision number.

AT Commands Reference Guide

Multi-Tech Systems, Inc. provides documentation of AT Commands for each embedded module. These AT Command Reference Guides are available on the CD included in the Developer Kit and are also available by request. Send an email to oemsales@multitech.com to request the copy you desire.

Product	Reference Guides Title and Document Product Number	Fax Commands	Voice Commands
SocketWireless Wi-Fi Device Server (MT810SWM-IP)	SocketWireless Wi-Fi AT Commands Reference Guide **(S000425x)** and Multi-Tech's Universal IP AT Command Reference Guide **(S000426x)**	NA	NA

Technical Specifications

The SocketWireless Wi-Fi meets the following specifications:

Category	Description
Wireless Specifications	
WLAN Standard	IEEE 802.11b/g Wi-Fi
Frequency Range	2.400 to 2.484 GHz
Data Rate	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 & 54Mbps
Maximum Transmit Power	15 dBm
Receiver Sensitivity	-82 dBm (with PER < 8%)
Security	64/128 bit WEP, WPA-PSK, WPA2-PSK
Mode	Ad Hoc, Infrastructure
Antenna Connector	UFL
Serial Interface	
Data Format	Serial, asynchronous
Data Rate	Software selectable: 1200 bps to 920K bps
Data Bits	7 or 8 data bits, 0 or 1 stop bits
Parity	Odd, even, none
Flow Control	RTS/CTS (Hardware), None
Serial WAN Speed	1200-920K bps
Network Protocol Support	
Protocols Supported	TCP, ICMP(PING), ARP, IP, UDP, DHCP Client, SMTP Client, POP3 Client, FTP Client, DNS Client
Power Requirements*	
Supply Voltage	3.3V or 5V
Power Usage	Typical – 400mA @ 3.3VDC, 240mA @ 5VDC
Power Consumption	**3.3 Volt** Inrush current at power-on is 740mA With active Wi-Fi connection, the current draw is 230mA **5 Volt** Inrush current at power-on is 1.1 amp With active Wi-Fi connection, the current draw is 247mA
Environmental	
Operating Temperature	-30° to +70° C (FCC Certified -20° to +55° C)
Storage Temperature	-40° to +85° C
Humidity	20% to 90% (non-condensing)
Physical Description	
Dimensions	2.541" L x 1.045" W x 0.680" H (6.45 cm x 2.65 cm x 1.7 cm)
Weight	0.6 oz. (0.017 kg.)
Certifications, Approvals, Warranty	
Certification	**Safety Certifications:** UL 60950-1 cUL 60950-1 EN 60950-1 AS/NZS 60950:2000 **EMC Approvals:** FCC Part 15 Subpart C Canada RSS-210 EN 300 328 EN 301 489-17
Warranty	Two years

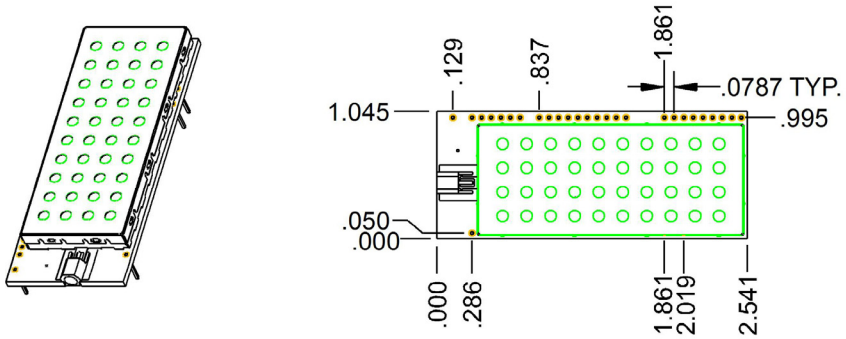
***Note:** Multi-Tech Systems, Inc. recommends that the customer incorporate a 10% buffer into their power source when determining product load.

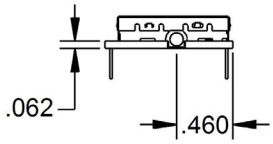
Technical Specifications Continued

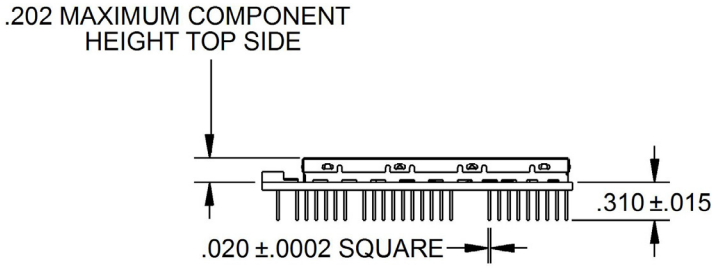
Intelligent Features	
Features	Command line configuration through serial interface AT Command compatible System firmware upgraded through serial port. Over the air firmware upgrade Command line configuration through TELNET

Mechanical Drawings

This drawing is being updated







Electrical Characteristics

3.3V Serial

3.3VDC Characteristics (VDD = 3.3V ± 0.2V) VDDMAX = 3.5V

Digital Inputs –DTR (40), –TXD (35), –RTS (33), –RESET (24)	**Input High** Min 2.0V	**Input Low** Max 0.8V	
Digital Outputs –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	**Output High** Min. 2.3V	**Output Low** Max 0.4V	**Current Drive** 2mA
Digital Input Capacitance			**5 pF**

5V Serial

5VDC Characteristics (VDD = 5V ± 0.25V) VDDMAX = 5.25V

Digital Inputs –DTR (40), –TXD (35), –RTS (33), –RESET (24)	**Input High** Min 2.52V	**Input Low** Max .0.8V	
Digital Outputs –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	**Output High** Min. 2.3V	**Output Low** Max 0.4V	**Current Drive** 2mA
Digital Input Capacitance			**5 pF**

Application Notes

RF Interface

Radio Characteristics

Frequency	2402 – 2480MHz
Modulation	DSSS
Number of Channels	1 to 14
Transmission Rate	1, 2, 5.5, 11, 12, 18, 24, 36, 48, 54 Mbps
RF Receive Sensitivity	-82dBm typical
RF Transmit Power	15 dBm

Default Power Up Settings

Baud Rate = 115200 bps
Data Bits = 8 bits
Parity = None
Stop bits = 1 bit
Hardware Flow Control RTS/CTS = Disabled

Sources for Peripheral Devices

Antenna Requirements

This table needs to be updated

Frequency Range	2.4-2.5 GHz
Impedance	50 ohm nominal
VSWR	<2.0:1
Gain	5 dBi
Radiation	Omni
Polarization	Vertical
Connector	Reverse Polarity SMA Plug

Antenna Details to be Determined

Antenna Source for Wi-Fi

The antenna can be ordered from the following manufacturer: TBD

Part Number **Description**
TBD

Antenna Cable and Connector

See Chapter 1 for Antenna System details. Note that the cable for the Wi-Fi SocketModem has a reverse polarity SMA plug.

Approved Antenna Cable Parts
TBD

Regulatory Requirements for the Wi-Fi Antenna

This section covers how to use the modular transmitter in order to maintain the modular transmitter approval and RF exposure compliance.

Conditions to Satisfy Modular Transmitter Approval

This device is intended only for use by OEM integrators under the following 3 conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and the end user for all installations.
2. The transmitter module may not be located with any other transmitter or antenna.
3. The communications device is approved using the FCC "unlicensed modular transmitter approval" method. Therefore, the communication device must only be used with the originally approved antennas.

As long as the 3 conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements with this communication device installed (for example, digital device emissions, PC peripheral requirements, etc.)

IMPORTANT NOTE: In the event that any of these conditions CANNOT be met (for example certain laptop configurations, location with another transmitter, or use of a different type antenna), then the FCC authorization for the communications device is no longer considered valid and the FCC ID CANNOT be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

RF Exposure Statements Developers Must Include in the User Manual for End Users

The user manual for consumers must include the following information in a prominent location:

IMPORTANT NOTE: To comply with FCC RF safety exposure limits, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be located or operating in conjunction with any other antenna or transmitter.

Regulatory Requirements for End Product Labeling

Suggested End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed in such a way that 20 cm may be maintained between the antenna and the users (for example access points, routers, wireless ASDL modems, and similar equipment). The final end product must be labeled in a visible area on the exterior of the enclosure with the following or similar text: "Contains TX FCC ID: AU792U07B06821".

FCC & IC Information to Consumers

The user manual for the consumer must contain the statements required by the following FCC and IC regulations: 47 C.F.R. 15.19(a)(3), 15.21, 15.101 and RSS-Gen Issue 2 dated June 2007, Sections 7.1.4 and 7.1.5.

Additional Information That Must Be Provided to OEM Integrators

The end user should NOT be provided any instructions on how to remove or install the modular transmitter.