

SocketEthernet IP[®]

MT100SEM-IP Device Guide

SocketEthernet IP Device Guide

S000537, Version A

MT100SEM-IP, MT100SEM-L-IP, MT100SEM-L-HV-IP

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Revisions

Revision	Date	Description
A	12/05/12	Initial release.

Contacting Multi-Tech

Knowledge Base

The Knowledge Base provides immediate access to support information and resolutions for all Multi-Tech products. Visit <http://www.multitech.com/kb.go>.

Support Portal

To create an account and submit a support case directly to our technical support team, visit: <https://support.multitech.com>

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Warranty

To read the warranty statement for your product, please visit: <http://www.multitech.com/warranty.go>.

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Chapter 1 – Device Overview

Description

The SocketEthernet IP® intelligent device server connects serial devices to an IP network via a 10/100BaseT Ethernet interface. It enables you to build IP networking into virtually any device allowing for remote monitoring, control and configuration. The space efficient communications device (1" x 2.5") integrates Multi-Tech's intelligent Universal IP® stack, and can make your existing and next generation device, machine or system, IP-ready while you focus on developing its core features.

Product build options

Product	Description	Region
MT100SEM-IP		
MT100SEM-IP	Embedded Serial-to-Ethernet Device Server with Universal IP™ – 5V	Global
MT100SEM-L-IP	Embedded Serial-to-Ethernet Device Server with Universal IP™ – 3.3V	Global
MT100SEM-L-HV-IP	Embedded Serial-to-Ethernet Device Server with High Voltage Dielectric Isolation (EN60601) and Universal IP™ – 3.3V	Global
Developer Kit		
MTSMI-UDK	Universal Developer Kit	Global

Notes:

All builds can be ordered individually or in 50-packs.

The complete product code may end in .Rx, for example MT100SEM-IP.Rx, where R is revision and x is the revision number.

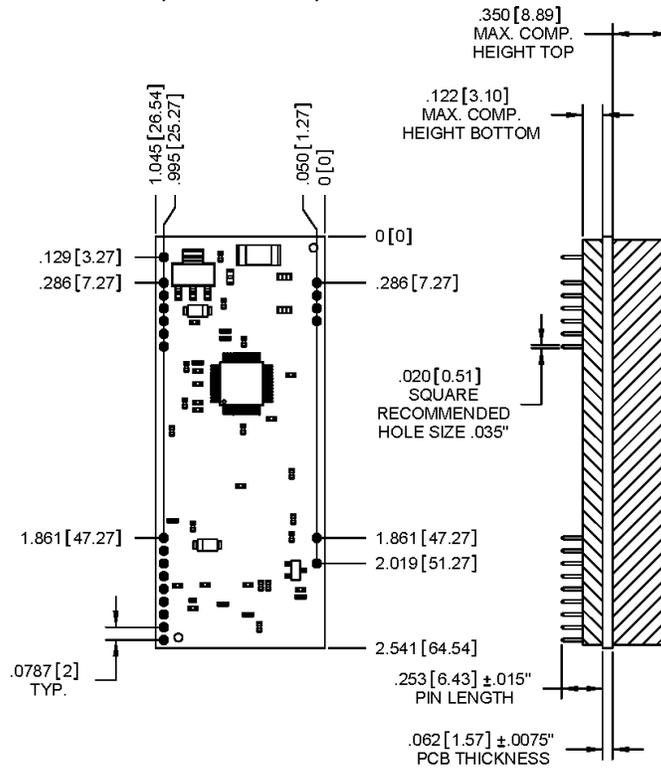
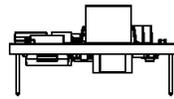
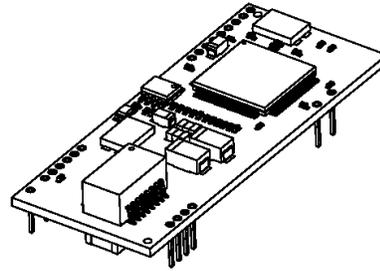
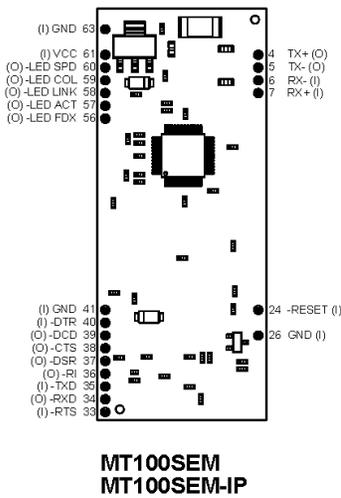
Documentation

The following documentation is available by email to oemsales@multitech.com or by using the Developer Guide Request Form on the multitech.com website.

- **Device Guides** – This document. Provides model-specific specifications and developer information.
- **Universal Socket Developer Guide** – Provides an overview, safety and regulatory information, design considerations, schematics, and general device information.
- **AT Command Guide** – Use S000457 the Universal IP AT Command Guide.

Chapter 2 – Mechanical Drawings

MT100SEM-IP All builds



DIMENSIONS IN In [mm]

Chapter 3 – Specifications

Technical specifications

Category	Description
Speed, Format	
Serial/Data Speeds	300 to 921600 bps
Ethernet Data Speeds	10MB or 100MB
Serial Character Format	8N1 (Data, Parity, and Stop bits are configurable)
Interface	
Interfaces	10/100BaseT Ethernet, Asynchronous Serial
Physical Description	
Weight	0.6 oz. (0.017kg)
Dimensions	2.541" L x 1.045" W x 0.68" H (6.45cm L x 2.65cm W x 1.7cm H)
Environment	
Operating Temperature	-40° C to +85° C
Storage Temperature	-40° C to +85° C
Humidity	20% to 90% non-condensing
Power Requirements	
Operating Voltage	3.3VDC or 5VDC
Input Power	3.3V or 5V depending on build
Transmission	
Flow Control	RTS/CTS (hardware)
IP	
Network Protocols	ARP, DHCP client, DNS client, FTP, ICMP (ping), IP, POP3, SMTP, TCP, Telnet server, UDP
Management	Serial Telnet Web-based configuration
Certifications, Compliance, Warranty	
EMC Compliance	FCC Part 15 Class B Canadian Class B EN55022 Class B EN55024
Safety Compliance	UL 60950 cUL 60950 EN 60950 AS/NZS 60950:2000 For high voltage build: UL 60601-1 EN 60601-1
Warranty	Two years

Device Reset

The device is ready to accept commands after a fixed amount of time ("X" Time) after power-on or reset.

Model	Time Constant	"X" Time	Minimum Reset Pulse
MT100SEM-IP	250 ms	6 seconds	100us

DC electrical characteristics

Units: Volts

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

3.3VDC Characteristics (VDD = 3.3V ± 0.3V) VDDMAX = 3.6V

Parameter	Minimum	Maximum	
5V Serial – All builds			
Input Low Level –DTR (40), –TXD (35), –RTS (33), –RESET (24)	-0.3V	0.8V	
Input High Level –DTR (40), –TXD (35), –RTS (33), –RESET (24)	2.52V	VDD	
Output Low Level –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	NA	0.4V	Current Drive 2mA
Output High Level –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	2.3V	NA	Current Drive 2mA
Digital Input Capacitance			5pF
3.3V Serial – All builds			
Input Low Level –DTR (40), –TXD (35), –RTS (33), –RESET (24) Note: These inputs are 5 volt tolerant	-0.3V	0.8V	
Input High Level –DTR (40), –TXD (35), –RTS (33), –RESET (24) Note: These inputs are 5 volt tolerant	Min 2.52V	VDD	
Output Low Level –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	NA	0.4V	Current Drive 2mA
Output High Level –DCD (39), –CTS (38), –DSR (37), –RI (36), –RXD (34)	Min. 2.3V	NA	Current Drive 2mA
Digital Input Capacitance			5pF

Power measurements

Multi-Tech Systems, Inc. recommends that you incorporate a 10% buffer into your power source when determining product load.

	Sleep Mode	Typical	Maximum
MT100SEM – 3.3 Volt			
Current (AMPS)	NA	0.137	0.168
Watts	NA	0.411	0.504
MT100SEM - 5Volt			
Current (AMPS)	0.187	0.187	0.194
Watts	0.935	0.935	0.97

Recommended Parts

Recommended SocketEthernet parts are RoHS compliant.

Manufacturer	Part Number
Capacitors for a non-isolated design	
NIC Components Corp.	NMC0603NPO150J50TRPF
Safety rated capacitors for an isolated design	
Recommended capacitors are Y2 rated and meet supplementary isolation at 240Vac along with the required creepages and clearances.	
NOVACAP	ES2211N K502NXT series part
Resistor	
The resistors are 75 ohms 1/8 watt.	
Ethernet modular jack	
This jack is an eight contact, eight position, unshielded and ungrounded connector that maintains the isolation and spacing requirements. A shielded and grounded connector may be used, but you must consider isolation and spacing requirements.	
Stewart Connector Systems	SS-6488-NF-K1

SNMP

Multi-Tech provides an MIB file that you can import directly into any SNMP manager. To download the MIB file, go to multitech.com/support.go and select SocketEthernet IP from the Product Families drop down list.

Windows-Based Auto-Discovery Manager

The Auto-Discovery Manager can remotely monitor Universal IP functioning. You can also use it to configure key parameters, such as DHCP status (enable/disable), IP address, and the MT100SEM-IP host name. Use a Windows-based server application that can monitor and configure the device to run the Auto-Discovery Manager. Communication between the device and server is through MAC level broadcasts on a configured UDP port.

Use either AT Commands or the Auto-Discovery Manager software to perform auto-discovery. For AT Commands refer to [Documentation](#). To download the Auto-Discovery Manager software, go to multitech.com/support.go and select SocketEthernet IP from the Product Families drop down list.

Auto-Discovery Manager Software

The Auto-Discovery Manager includes:

- Client – Periodically broadcasts its current configuration over the network.
- Server – Receives the broadcasts from the client.

Client

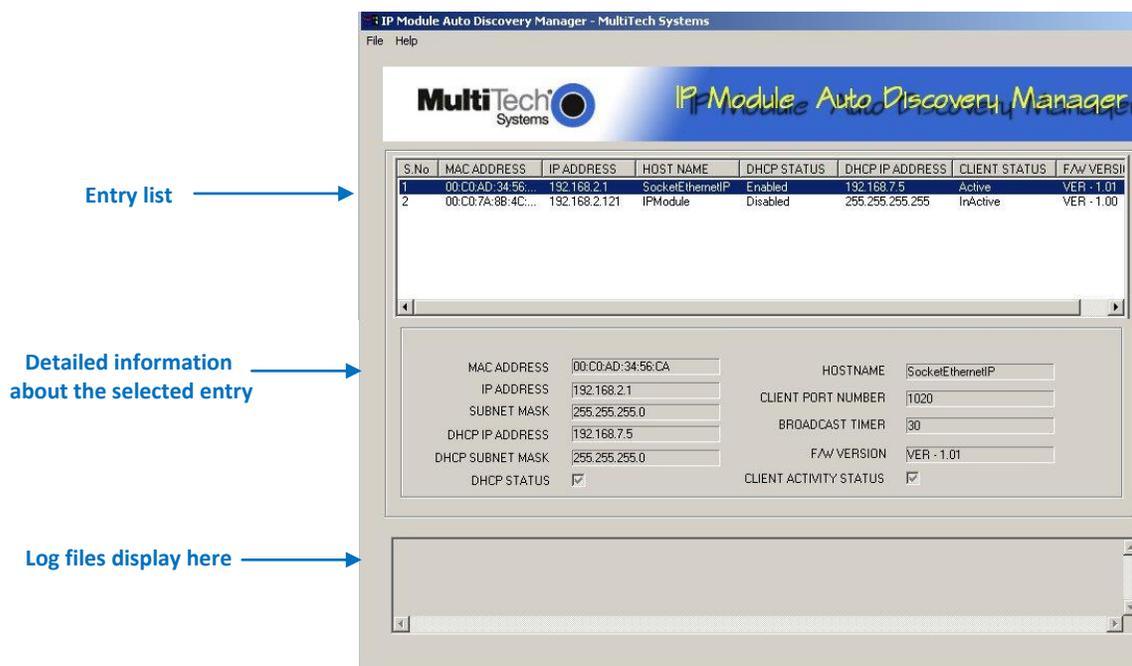
The Auto-Discovery Client is integrated with MT100SEM-IP. It broadcasts its current configuration over the network on a specific UDP SERVER-PORT. By default the SERVER-PORT is set to 1020. The configuration parameters broadcast are:

- Version details
- MAC Address
- Static IP Address
- DHCP Status

- DHCP Assigned IP Address
- Host Name
- Broadcast interval
- Port number on which the client listens

Server

The server provides server side support software for the remote user. It listens on the SERVER-PORT and receives the broadcasts from the client and updates the list of configuration parameters. This list can be viewed through the user interface:



Viewing detailed information

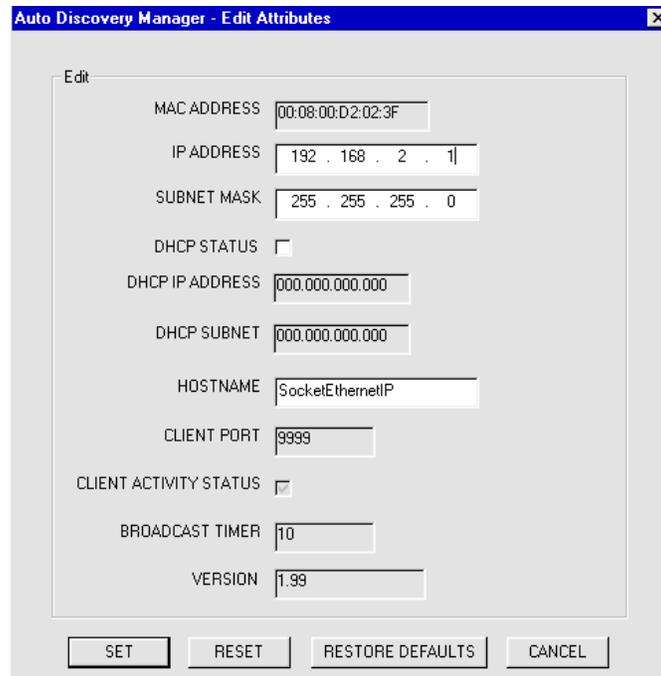
New entries are appended to the Entry list. Scroll down to view additional entries, if any.

To view details, highlight an entry in the list. Details display in the middle of the screen.

Editing the List

To edit an entry:

1. Double-click the entry you want to edit. The Auto Discovery Manager – Edit Attributes form displays.



2. Make desired changes and click SET. The server sends the new parameters to the client.

When the client receives the broadcast from the server, it validates the packet. The client determines if the packet is destined for its own MAC Address. If so, it sets modified parameters that are different from its current configuration, and broadcasts the newly configured parameters.

Client status is set to Active when it receives the broadcast packet.

Client status is set to Inactive if there is no request from the client for a stipulated period. (3 * periodic timer value).

Undoing changes

To undo your changes and restore parameters to the previous settings:

- Click **RESET**.

Restoring default parameters

To restore the default parameters:

1. Click **RESET PARAMETERS**.
2. Enter your username and password.
3. Click **SET**.

Saving the Log

Logs are spooled into the third part of the window in the main dialog box. To save the log:

1. Select **File > Save Log As**.
2. Enter a file name and click **Save**.