



MultiTech MTR-H5 Troubleshooting

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1 Overview

The MultiTech MTR-H5 is a cellular modem and router. This document is intended to provide information on troubleshooting the MTR-H5 for use with the EG3000. This guide is designed only for use with a MultiTech MTR-H5 purchased through eGauge Systems.

For full documentation and other support issues, please visit the MultiTech website at <http://www.multitech.com/>

1.1 LEDs

LED	Details
POWER	Lit- Indicates presence of DC power
STATUS	Solid- Booting up or busy Blinking- Ready for use
CD	Lit- data connection has been established
LS	Off- No power to cellular radio Continuously lit- Not registered Slow blink - Registered or connected
SIGNAL	0 on- unit off, not registered, or no signal 1 on- Very weak signal ($7 \leq \text{RSSI} < 14$) 2 on- Weak signal ($15 \leq \text{RSSI} < 23$) 3 on- Good signal ($24 \leq \text{RSSI} \leq 31$)

1.2 Cellular antenna

An external cellular antenna is necessary to connect to the **CELL** antenna terminal. Without an antenna connected, the MTR-H5 will be unable to communicate with the cellular network.

2 Accessing the MultiTech interface

Prior to accessing the modem, make sure that all cables are in place and secure. The power and cell antenna terminals are threaded, and should be properly tightened. The modem is easiest to configure using a direct Ethernet connection from a computer.

Ensure all wireless interfaces are disabled on the computer (such as WiFi and Bluetooth) and that DHCP is enabled on the Ethernet interface. Connect the computer to the MultiTech MTR-H5 using Ethernet. Open a web browser and access at the default IP of `http://192.168.2.1`. The MultiTech may take several minutes after powering up to allow a connection to the interface.

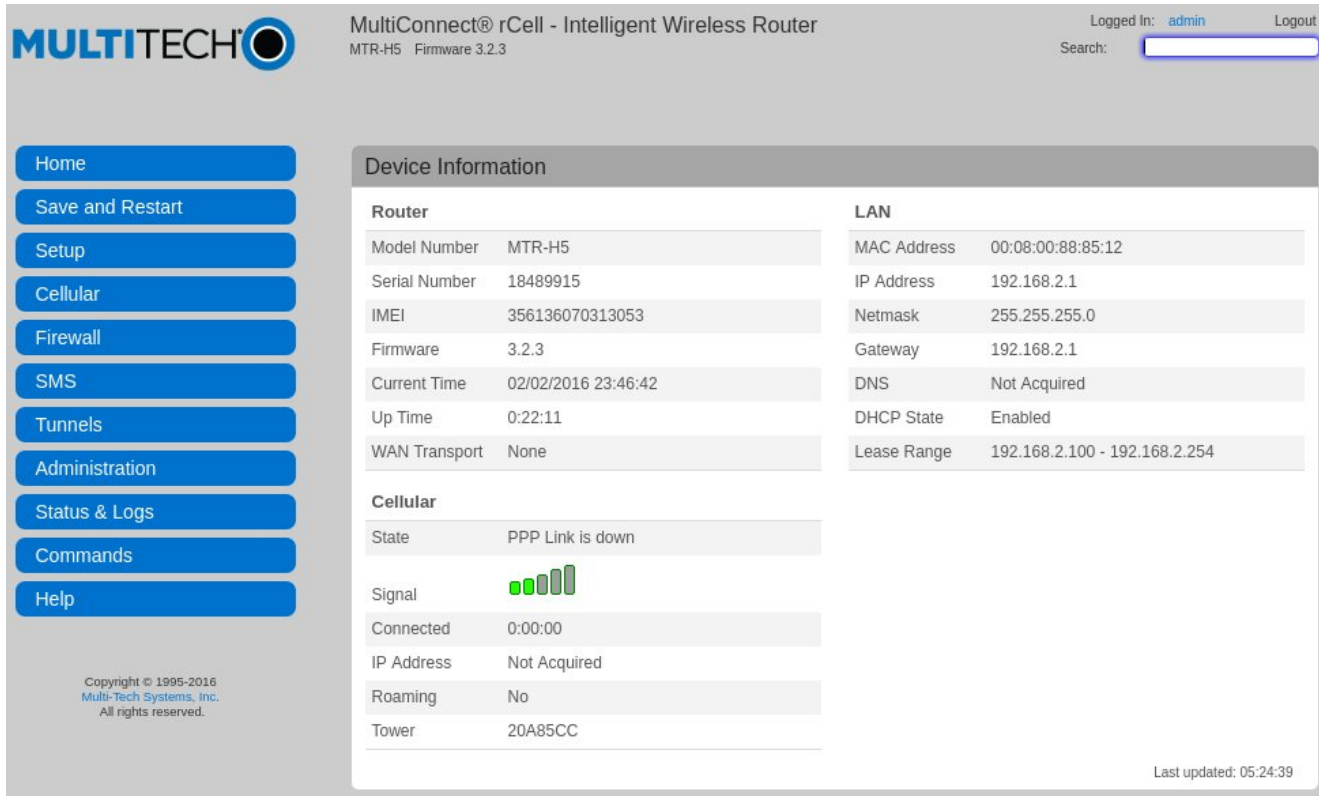
A warning message may appear indicating the website has an invalid certificate. Allow your browser to continue anyway.

The default username is `admin` and password is `admin`.



The image shows a screenshot of the MultiTech login interface. At the top, the MultiTech logo is displayed in blue. Below the logo, the text "MultiConnect® rCell v3.2.3" is visible. The login form consists of two input fields: "Username:" and "Password:". Both fields contain the text "admin". To the right of the password field is a blue "Login" button.

3 Device information



MultiConnect® rCell - Intelligent Wireless Router
MTR-H5 Firmware 3.2.3

Logged In: [admin](#) Logout

Search:

Home
Save and Restart
Setup
Cellular
Firewall
SMS
Tunnels
Administration
Status & Logs
Commands
Help

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Last updated: 05:24:39

The **Device Information** page appears whenever accessing the modem for the first time. Check the **Cellular** box to make sure the modem has an IP address. Also, check the **Connected** field to see how long the modem has been connected to a cellular network. If these fields are 0.0.0.0 and **Not Acquired** it may mean the modem doesn't have good signal, or it may mean settings are incorrect elsewhere.

Note that the Signal graphic updates somewhat slowly. This is normal. Using this graphic as the basis for antenna positioning should be done with the update delay in mind.

4 Cellular Configuration

The screenshot displays the MultiTech MultiConnect rCell web interface. The page title is "MultiConnect® rCell - Intelligent Wireless Router" with "MTR-H5 Firmware 3.2.3" below it. The user is logged in as "admin" and can click "Logout". A search bar is present. The left sidebar contains navigation buttons: Home, Save and Restart, Setup, Cellular (selected), Cellular Configuration (sub-selected), Wake Up On Call, Telnet Radio Access, Radio Status, Firewall, SMS, Tunnels, Administration, Status & Logs, Commands, and Help. The main content area is titled "Cellular Configuration" and includes a "Reset To Default" button. It is divided into several sections:

- General Configuration:**
 - Enabled:
 - Connect Timeout: 90
 - Dialing Max Retries: 0
 - Dial-on-Demand:
 - Diversity:
- Modem Configuration:**
 - Dial Number: *99**1#
 - Connect String: CONNECT
 - Dial Prefix: ATDT
 - SIM Pin:
 - APN: fast.t-mobile.com
 - Init String1: AT+CSQ
 - Init String2:
 - Init String3:
 - Init String4:
- Authentication:**
 - Authentication Type: NONE
- Keep Alive:**
 - ICMP/TCP Check:**
 - Enabled:
 - Interval: 60
 - Hostname:
 - Keep Alive Type: ICMP
 - ICMP Count: 4
 - Data Receive Monitor:**
 - Enabled:
 - Window: 60 minutes

A "Submit" button is located at the bottom right of the configuration area.

Check under Cellular Connection to ensure that the APN is set correctly. It is essential for this to be set correctly, or the cellular connection will fail. A “factory reset” or “reset to default settings” will clear this value. When using a T-Mobile SIM card provided by eGauge Systems, be sure this value is set to `fast.t-mobile.com`

All other settings should be fine at their default values. You can reset to the factory default settings using the **Reset to Default** button in the top right corner of the page.

Note: SIM cards not supplied by eGauge Systems may need alternate configuration options set on this page. Contact your carrier or MultiTech for assistance configuring non-eGauge supplied data plans.

5 Radio Status

The screenshot shows the MultiTech MultiConnect rCell web interface. The page title is "MultiConnect® rCell - Intelligent Wireless Router" with "MTR-H5 Firmware 3.2.3" below it. The user is logged in as "admin" and can click "Logout". A search bar is present. The left sidebar contains navigation buttons: Home, Save and Restart, Setup, Cellular (selected), Firewall, SMS, Tunnels, Administration, Status & Logs, Commands, and Help. Under "Cellular", there are links for Cellular Configuration, Wake Up On Call, Telnet Radio Access, and Radio Status (highlighted). The main content area is titled "Radio Status" and contains the following sections:

Module Information		Service Information	
IMEI	356136070313053	Home Network	T-Mobile
IMSI	204043396201528	Current Network	T-Mobile
Manufacturer	Telit	RSSI	-99 dBm
Model	HE910-D	Service	WCDMA
Hardware Revision	1.0	Roaming	No
MDN (Phone Number)			
MSID	3396201528		
Firmware Version	12.00.024		

Engineering Details	
Tx Pwr	-128
PSC	65
Ec/Io	-2.0
RSCP	-103
DRX	128
Mobility Management State	19
Radio Resource State	4
Network Operator Mode	2
Block Error Rate	000
Service Domain	NO SERVICE

Update Options

MDN (Phone Number)

Last updated: 05:29:17

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Under the Module Information subsection you can see the information retrieved from the SIM card. If this information is missing, it can indicate a problem with the SIM (such as a failure, inactive SIM, or missing SIM). The SIM card must be fully seated in the modem in order to be read. The SIM should be pushed in until a clicking sound is heard. If the SIM is not flush with the side of the modem, it is NOT fully seated. Sample output from the Module Information section is on the next page.

5.1 Radio Status expected values

No SIM or unreadable:

IMSI = not supported
MDN = not supported
MSID = (blank)

You may see an error message **SIM card not detected** along with the date and time. This error message can be cleared by clicking the red circle with the white **X** though it:



Inactive SIM:

IMSI = (number will appear)
MDN = not supported (or blank)
MSID = (number will appear)

Active SIM:

IMSI = (number will appear)
MDN = (eleven-digit number)
MSID = (number will appear)
Service Domain¹ = CS+PS

¹Found in **Engineering Details** box

6 Debug Options



A debug terminal window can be opened from **Administration** → **Debug Options** and clicking the triangle in the circle to the right of **Radio Terminal**.

WARNING: Modifying settings through the radio terminal can lead to an inoperable device. Do not enter any text into the terminal without being absolutely certain you know what the result will be!

6.1 Checking service mode

To verify the modem is communicating in the correct mode, enter:

```
AT+WS46?
```

The modem should indicate it is in the correct mode by responding with:

```
+WS46: 25
```

6.2 Checking raw signal strength

To check the current signal level, enter the command:

```
AT+CSQ
```

The modem will respond with something like:

```
CSQ: 22,1
```

The first value (in this case, 22) indicates the signal strength to the connected tower. The higher the number, the better the signal. See table directly below. It is important to note that cellular signal quality can vary throughout the day.

Value	Condition
2–9	Marginal or insufficient
10–14	OK
15–19	Good
20–30	Excellent