
# MultiTech MTR-H5 Troubleshooting

July 1, 2016

## Contents

# 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<br>Blinking- Ready for use |
| CD | Lit- data connection has been established |
| LS | Off- No power to cellular radio<br>Continuously lit- Not registered<br>Slow blink - Registered or connected |
| SIGNAL | 0 on- unit off, not registered, or no signal<br>1 on- Very weak signal ($7 \leq$ RSSI $< 14$)<br>2 on- Weak signal ($15 \leq$ RSSI $< 23$)<br>3 on- Good signal ($24 \leq$ 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

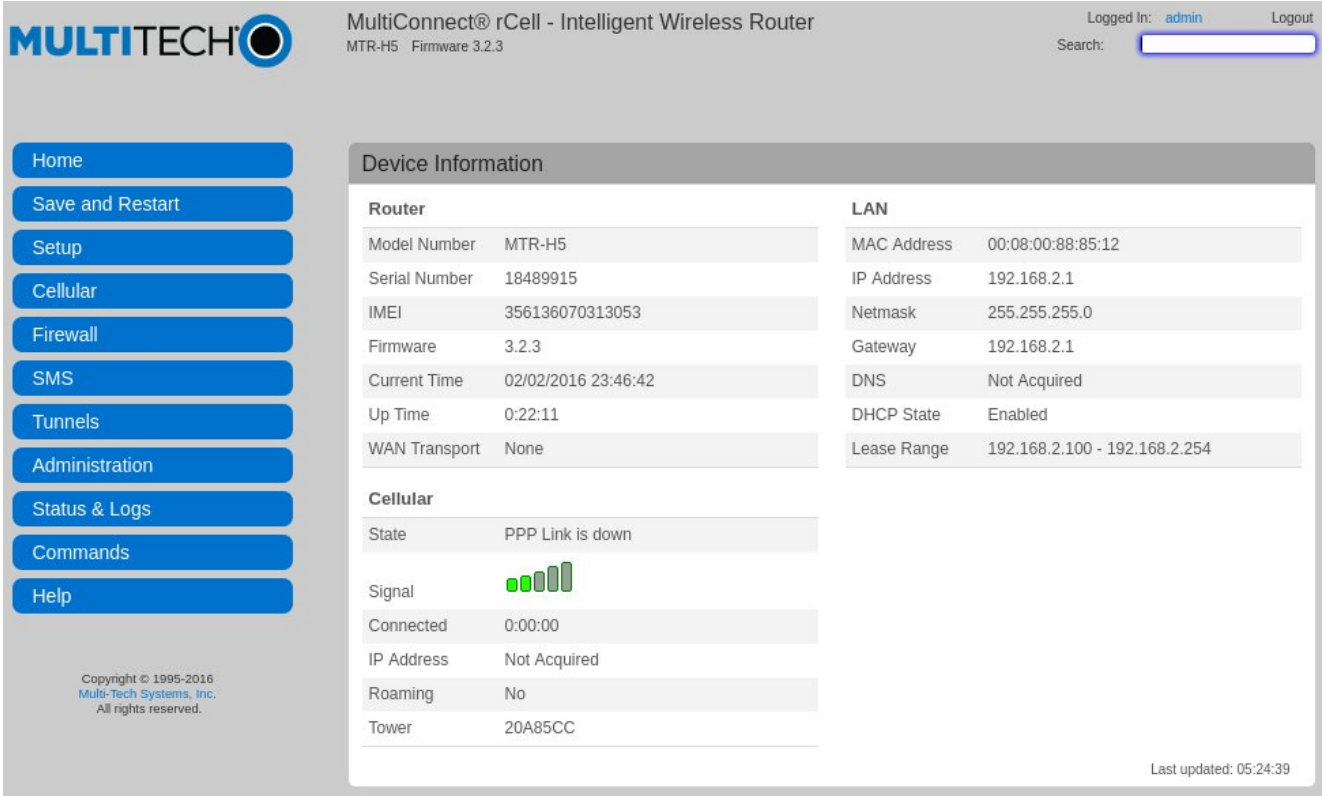
Prior to accessing the modem, make sure that all cables are in place and secure. The power and cell antenna terminals are threaded, and should be properly tightened. The modem is easiest to configure using a direct Ethernet connection from a computer.

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`.

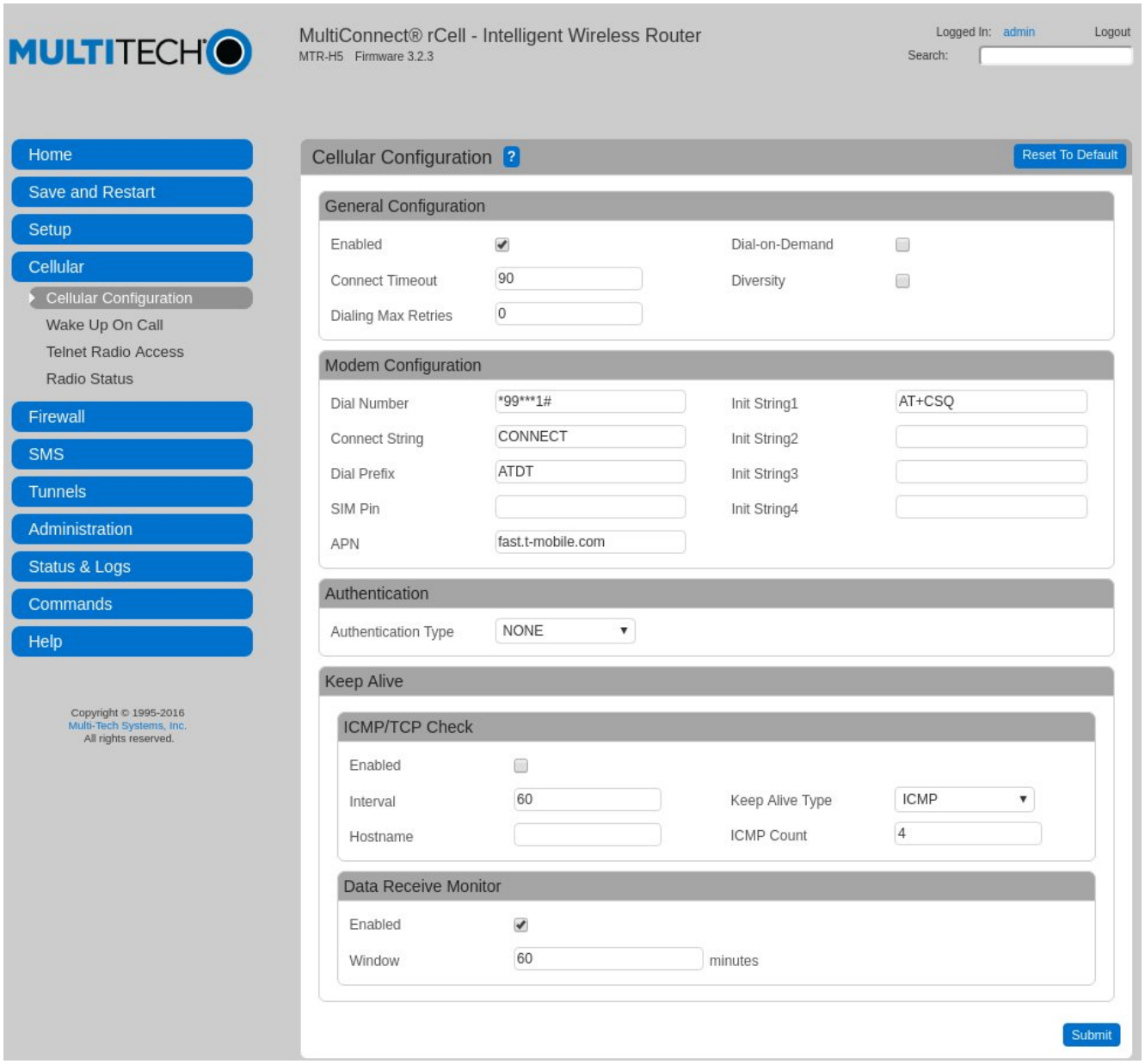
# 3 Device information




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

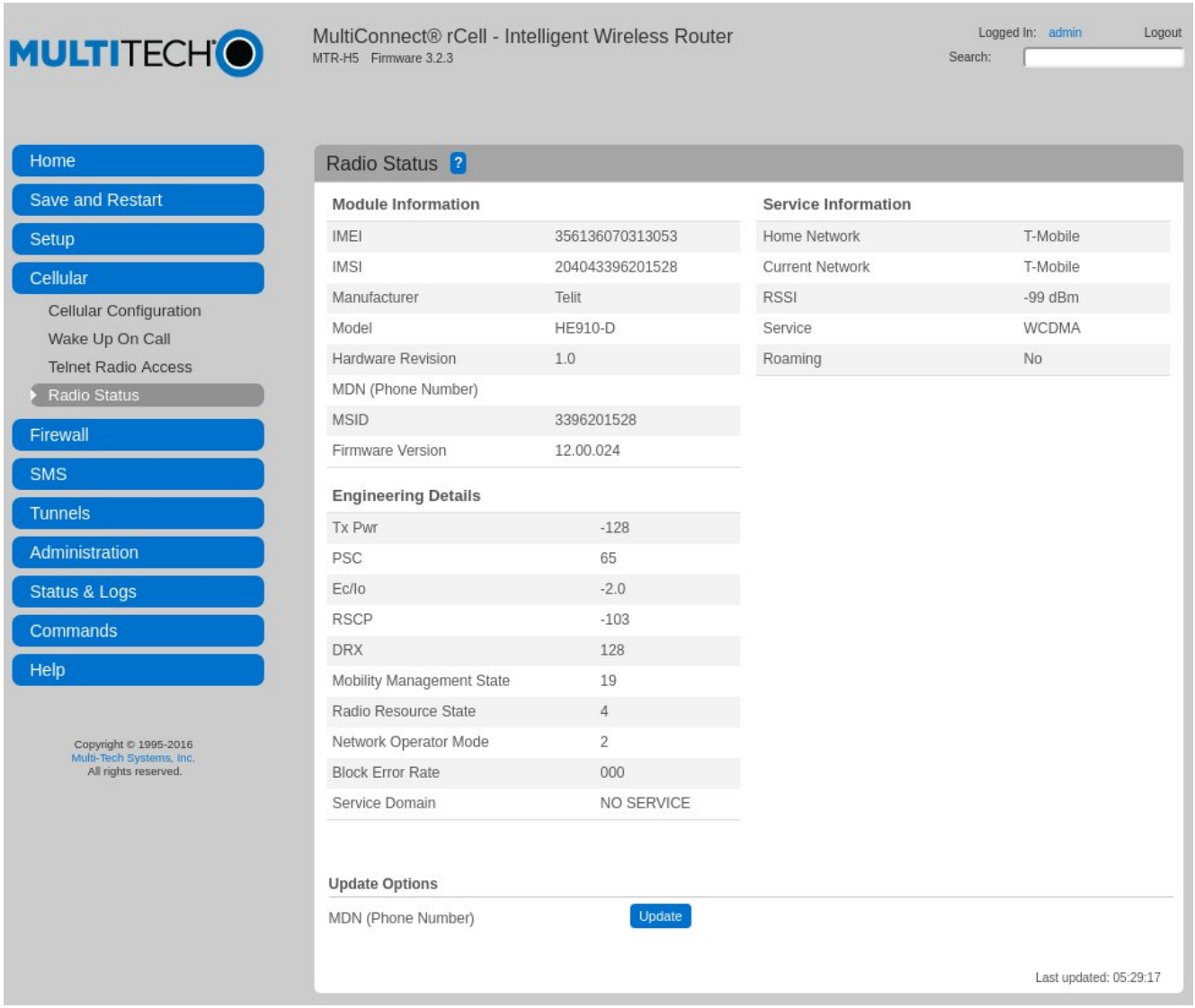



Check under Cellular Connection to ensure that the APN is set correctly It is essential for this to be set correctly, or the cellular connection will fail. A “factory reset” or “reset to default settings” will clear this value. When using a T-Mobile SIM card provided by eGauge Systems, be sure this value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




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 Domain[1] = CS+PS

[1] Found 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 |