



IM7200-L Cellular Wireless Addendum

This addendum relates to *IM7200-L* models and should be read in conjunction with the *IM7200 Quick Start Guide*.

Each model is set to work with a specific carrier by default. However, these devices can be reprogrammed to work with other carrier's SIM cards. Along with reprogramming, a SIM card must be provided by the carrier and installed in-situ.

Before powering on the IM7200-L

The IM7200-L has three SMA antenna connectors (1), for cellular with receive diversity and GPS, and a Mini-SIM card slot (2).

Your IM7200-L kit includes two cellular antennas with one 10-foot coaxial cable and magnetic antenna screw mount base for mounting outside the rack. If cellular signal strength is an issue, higher gain and directional antennas can be used.



1. Screw the first cellular antenna (or cable) onto the *CELL (MAIN)* SMA connector and screw the diversity antenna onto *CELL (AUX)*. Connectors are labeled **1** above.
2. If you have a GPS antenna, screw it on to the GPS connector.
3. Insert the carrier-provided Mini-SIM card into the *SIM CARD* slot, labeled **2** above. It will lock into place with a click.

Note: Insert the Mini-SIM card with contacts facing downward.

4. Complete Step 1, **Check the kit's contents are complete** through Step 7, **Configure serial devices**, from the IM7200 Quick Start Guide.
5. Proceed to **Connect the cellular modem** below.

Connect the cellular modem

After completing **Before powering on the IM7200-L**, above:

1. Click **System > Dial**.
2. Click the **Internal Cellular Modem** tab.
3. Check the **Allow outgoing modem communication** radio button.

4. Enter your carrier's Access Point Name (APN) in the **APN** field.
5. If you use DNS servers other than those provided by your carrier, check the **Override returned DNS servers** check-box and enter your DNS's addresses in the **DNS server 1** and **DNS server 2** fields.

Note: Your carrier may provide other connection details. In general, only the APN is necessary and other fields can be left blank. If a pin code was provided, use it to unlock the SIM card.

6. Click **Apply Modem Dial Settings**. A data connection will be established with your carrier.

Check the cellular modem's connection status

1. Click **Status > Statistics**.
2. Click the **Failover** and **Out-of-band** tab.
3. Note the **Always on Out-of-Band – Internal Cellular Modem's Connection Status** is **Connected**.
4. Note the modem's allocated **IP Address** and note if it is a public or private address.

Check the cellular modem's signal strength (RSSI)

1. Click **Status > Statistics**.
2. Click the **Cellular** tab.
3. Note the **RSSI** (received signal strength indication) coverage value (for advanced detail and logging you can examine **Status > Syslog**):

≤ -100 dBm	unacceptable	-89 to -70 dBm	medium-to-strong
-99 to -90 dBm	weak-to-medium	≥ -69 dBm	very strong

Access the IM7200-L over the cellular link

Once the cellular modem has connected to your provider's network, you may be able to access your IM7200-L remotely. To do this, your IM7200-L needs to have a Public IP address and the remote access path must not have SSH firewalled.

If you obtained a static Public IP with your data plan, your IM7200-L will be assigned the same IP address each time it authenticates and accesses the Internet and you can access the IM7200-L with that static Public IP address. By default, only *HTTPS*, *SSH*, and *ping* access is enabled on the OOB connection.

If you have a dynamic Public IP address plan, you will need to configure a DDNS service. Once this is done, you can then access the IM7200-L using the domain name allocated by the DDNS service. Alternately, for an inbound OOB connection, you can use Call Home with a Lighthouse or set up a VPN connection.

Note: Some carriers' data plans only provide dynamic *Private* or *Shared Address* IP address assignments. Such IP addresses are not directly visible across the Internet and the **Failover & Out-of-Band** tab on the **Status > Statistics** page will show your carrier-allocated Private (in the 10.0.x.x, 172.16.x.x or 192.168.x.x ranges) or Shared Address (in the 100.64.0.0/10 range) IP Address. In this case, *Call Home* or a *VPN* is required.

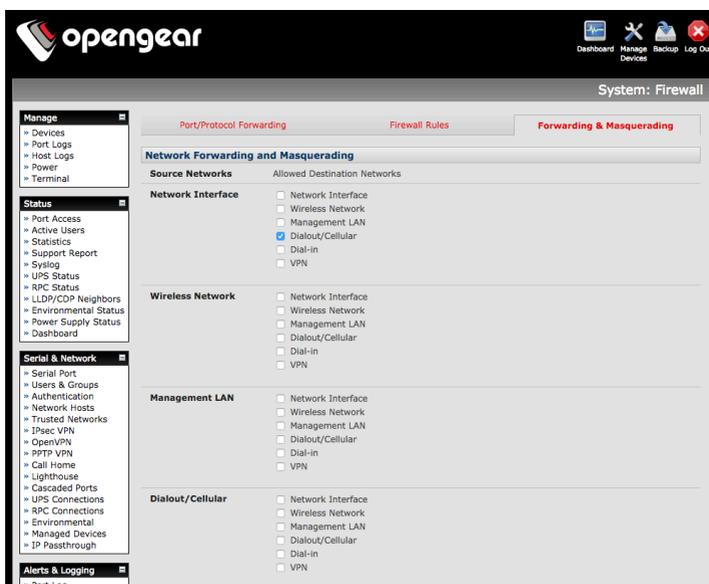
Alternative mode: cellular router

In the default *OOB access mode*, the connection to a carrier's cellular network is always on, awaiting any incoming access to the IM7200-L itself or attached serial consoles. The IM7200-L also provides cellular router mode (disabled by default) where IP traffic is selectively routed between the cellular connected network and the local Ethernet LAN.

To enable routing:

1. Select **System > Firewall > Forwarding & Masquerading**.
2. Check the *Dialout/Cellular* checkbox in **Network Interface** to set this as an *Allowed Destination Network*.

Network Forwarding allows devices on the local private LAN to connect through to the public network. This establishes the carrier's cellular network as a *Destination Network* for the *Source Network Network Interface*.



To enable *IP Masquerading* which allows devices on a LAN to share one public IP address, (in this case when connecting to the public network via the cellular modem):

1. Check *Enable IP Masquerading (SNAT)* on **Dialout/Cellular**.
2. Configure **Port Forwarding** and set **Port Rules** so external users can selectively initiate connections to the masqueraded devices on the LAN.
3. Set the **Service Access** rules for routed connections to the IM7200-L itself.
4. Configure the devices on the LAN with new *Gateway* and *DNS* settings.

Alternative mode: failover

In the default *Out-of-Band access mode*, and in the alternative *cellular router mode*, the connection to the carrier network is always on. An alternative is failover mode. This tells the internal cellular connection to remain idle in a low power state.

In this mode, the IM7200-L continually pings nominated primary and secondary probe addresses over the main network connection. In the event of ping failure, the IM7200-L dials out and connects to the cellular carrier and access will be switched transparently to this network connection. When the main network connection is restored, access is switched back.

Refer to the *Opengear User Manual* for set up details.

Other useful cellular functions

The Keep Alive Watchdog

This watchdog can force a clean restart of the cellular modem and its services to work around any carrier issues, for example, to prevent the carrier from disconnecting the cellular connection during idle periods. This service periodically pings a nominated IP address. Each ping attempt sends out a configurable number of pings, and the ping attempt fails if none of these pings are successful. By default, the keep alive ping attempts are sent at 30-second intervals. Each ping attempt sends a set of five 64-byte packets.

Note: You may be charged for ping replies. Assuming this, the default setup generates about 50MB monthly on top of normal data usage.

Monitoring cellular data usage

A *Cellular Data Usage Alert* triggers a notification action when traffic levels reach a user-set limit (for example, when traffic levels come close to the data allocation provided for in the carrier's cellular data plan).

Cellular Data Usage Check	
Cellular Modem	Internal Cellular Modem The Cellular Modem on which to monitor data usage
Data Limit	KBytes 0 MBytes 100 The amount of data over the specified time period to trigger on
Time Period	Seconds 0 Minutes 0 Hours 6 Days 0 A rolling time period to measure data usage against
<input type="button" value="Save Auto-Response"/>	

SMS initiated cellular connection

The IM7200-L can accept SMS text messages to trigger the cellular radio signal and connect to the carrier AP. This function is run using the **Auto Response** feature and calls to a custom script. The *Opengear Knowledge Base* has details.