Opengear

ACM700x-2-LMx Quick Start Guide

The *ACM700x-2-LMx Quick Start Guide* documents installation, configuration and local operation of the ACM7008-2-LMx and ACM7004-2-LMx series.

01. Check the kit's contents are complete

#	item	part #	links to Opengear stores				
1	ACM7008-2-LMx or ACM7004-2-LMx	varies					
2	4G LTE blade antennas	569028	US	UK	EU	AU	INT
1	12V switching DC power supply	450031	US	UK	EU	AU	INT
4	Country-specific power socket adapters	n/a	Part of the power supply.				
1	Rack kit (1 tab, 2 rack screws, 2 nuts, 3 screws)	590003	Not available separately.				
4	Adhesive-backed rubber feet	n/a	Not available separately.				
1	Dual-SIM cradle	n/a	Not available separately.				
1	DB9F-to-RJ45 crossover serial adapter	319015	US	UK	EU	AU	INT
1	Digital I/O converter (terminal block)	n/a	Not available separately.				

02. Assemble the hardware

01. If free-standing: attach the adhesive-backed rubber feet to the *ACM700x-2-LMx's* base.

02. If rack-mounted: attach the rack kit to the side of the *ACM700x-2-LMx* to be fixed to the rack.

03. Screw the 4G LTE blade antennas in to the main (M) and diversity (A) connectors ((•)).

Note: do not screw 4G LTE antennas in any more than finger tight. The SMA connectors used to connect 4G LTE antennas can be damaged if overtightened.

04. Screw any passive (569008) or active (569018) GPS antennas into the GPS connector.

05. If you have a data plan: slide the mini-SIM in to the SIM cradle, contacts upward, with the notch inward and adjacent the longer cradle arm. If you have only one SIM, use the bottom slot.

06. Slide the cradle into the *ACM700x-2-LMx*.

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Note: the -LMA, -LMV, -LMS, -LMCR and -LMCT models include Opengear OCM cellular modem devices, which are programmable to support either AT&T USA, Verizon USA, Sprint, Rogers Canada or Telus Canada. The -LMR with OCM73R4 supports most other carriers globally, including major carriers in EMEA, APAC and ANZ regions. For more details, refer to the Opengear help desk FAQ article, 'List of Opengear Appliances and the related Integrated Cellular module'.

07. Connect the *ACM700x-2-LMx* to your primary network via *NET1* (an RJ45 port).

08. Connect the *ACM700x-2-LMx* to your Out-of-Band (OOB) management network via *NET2*.

09. For cellular IP passthrough connect NET2 to a secondary router's WAN port. IP pass-through lets a LAN router use the *ACM700x-2-LMx's* modem as a WAN connection. 'Can I use Opengear cellular as a failover WAN link for a remote LAN?' in the Opengear KnowledgeBase has more.

10. Connect other devices to the *ACM700x-2-LMx's* serial ports and USB ports.

11. If you have external sensors: plug in the terminal block and attach sensors and DIO devices.

12. Plug in the 12V DC power supply and turn on power to the *ACM700x-2-LMx*.

03. Connect to the ACM700x-2-LMx

The *ACM700x-2-LMx* is addressable at either of two IP addresses:

01. its built-in address of 192.168.0.1/24.

02. the address its on-by-default DHCP client accepts from a DHCP server on your network.

Using a browser on the same network as the *ACM700x-2-LMx's* NET1 port with an IP address in one of the *ACM700x-2-LMx's* network ranges (ie 192.168.0.x/24 or the range used by your DHCP server):

03. Enter ***https://192.168.0.1/*** or ***https://[DHCP-supplied address]/*** and press ***Return***.

Note: the ACM700x-2-LMx has a self-signed SSL certificate: 'untrusted connection' errors will present.

04. Click through these errors to load the *ACM700x-2-LMx* login page.

05. Enter the default system username and passcode:

    Username: ***root***

    Password/Passcode: ***default***

  and press ***Submit*** or hit ***Return***

05. The Opengear Management Console (OMC) *Welcome* page loads.

Note: the OMC logs you out after 20 inactive minutes. The current page stays loaded, however, and clicking any UI element loads the login page. Log back in and the requested page loads.

Configuration and management options present in expanded-by-default menus down the left-hand edge. The top-level menus are *Manage*, *Status*, *Serial & Network*, *Alerts & Logging*, and *System*.

The rest of the page lists configuration tasks required to turn the *ACM700x-2-LMx* into a usable unit. Some of these tasks will be marked as done because of the *ACM700x-2-LMx's* factory settings. The following procedures document initial configuration using the menus rather than the task list.

04. Set a strong, high-entropy passcode for the root user

01. Click *Serial & Network > Users & Groups*.

02. Click *Edit* for the *Root User*.

03. Enter a strong, high-entropy passcode in the *Password* field.

04. Re-enter the passcode in the *Confirm* field.

05. Click *Apply*.

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05. Set NET1's network configuration method

01. Click **System > IP**.
02. Click **Network Interface** if it is not the front-most tab.
03. For **Configuration Method** click either the **DHCP** or **Static** radio button.
04. If **Static**, enter an **IP Address** and **Subnet Mask** for the NET1 interface.

06. Set NET2's network configuration method

NET2 is set to inactive by default. To activate it:

01. Click **System > IP**.
02. Click **Management LAN Interface** to make it the front-most tab.
03. Click the **Deactivate this network interface** checkbox to de-select this option and activate NET2.
04. For **Configuration Method** click either the **DHCP** or **Static** radio button.
05. If **Static** enter an **IP Address** and **Subnet Mask** for the NET2 interface. For OOB, set these for your management network. For IP-passthrough, set these to match an unused private IP range.

Note: the *ACM700x-2-LMx's* firewall determines which protocols and services can access which ports and devices. HTTPS and SSH are enabled to the *ACM700x-2-LMx* itself by default. To change access settings for the *ACM700x-2-LMx*, and for connected serial ports, click **System > Services**, click the **Service Access** tab and adjust as required.

07. Connect the cellular modem

The following assumes at least one SIM has been installed, as per **02. Assemble the hardware**, above.

01. Click **System > Dial**.
02. Click the **Internal Cellular Modem** tab.
03. Check the **Allow outgoing modem communication** radio button.
04. Enter your carrier's Access Point Name (APN) in the **APN** field.
05. If you use DNS servers other than your carrier's servers, 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. Generally only the apn is needed and other fields can be left blank. If a pin code was provided, use it to unlock the sim card.

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

08. Check the cellular modem's connection status

01. Click **Status > Statistics**.
02. Click the **Failover and Out-of-band** tab.
03. Note the **Always on Out-of-Band — Internal Cellular Modem's Connection Status** is **Connected**.
04. Note the modem's allocated **IP Address** and note if it is a public or private IP address.

09. Check the cellular modem's signal strength (RSSI)

01. Click **Status > Statistics**.
02. Click the **Cellular** tab.
03. Note the **RSSI** (received signal strength indication) coverage value:

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

Note: the cellular status and signal strength LEDs also show modem status: *off* for no connection, *flashing* while establishing, and *on* while established. Coverage is indicated by the number of lit LEDs: *four* (very strong); *three* (strong); *two* (medium); *one* (weak); *zero* (unacceptable).

10. Configure remote cellular access

If the allocated IP address is *fixed* and public, access the *ACM700x-2-LMx's* HTTPS and SSH services directly. If the IP address is *dynamic* and public, configure the *ACM700x-2-LMx's* **Dynamic DNS** client:

01. Click **System > Dial**.
02. Click the **Internal Cellular Modem** tab.
03. Select your Dynamic DNS provider from the **Dynamic DNS** pop-up menu.
04. Enter their settings for fields such as **DDNS Hostname**, **DDNS Username** and **DDNS Password**.

If the allocated **IP address** is private, direct remote access is not possible. Use *Lighthouse's Call Home* or a *VPN* instead. See 'Does my site need a public IP address for OOB or Failover access?' for details.

11. Configure managed devices

01. Click **Serial & Network > Serial Port**.

The ACM700x-2-LMx's serial ports and their labels, modes, and protocols displays. To configure a port:

02. Click **Edit**.
03. Set the **Common Settings for Port x** to match the device connected to serial port x.
04. To enable remote access to the device check the **Console Server Mode** radio button in **Console Server Settings** and click the checkboxes for allowed protocols (eg **Telnet**, **SSH** and **Web Terminal**).
05. Click **Apply**.

Note: configure user access policies for connecting to such ports in **Serial & Network > Users & Groups**. An AAA server can configure them remotely. The *Opengear User Manual* has details.

12. Configure IP passthrough (optional)

To transparently bridge the cellular IP settings and data traffic to a downstream ethernet router:

01. Connect NET2 to a downstream router's secondary WAN port.
02. Set NET2 to a static, unused private IP address (eg 192.168.23.23).
03. Set the downstream router to get it's IP via DHCP.
04. Click *Serial & Network > IP Passthrough*.
05. Check the *Enable IP passthrough from modem to downstream router* checkbox.
06. Select *Internal Cellular Modem* from the *Modem* pop-up menu.
07. Enter the downstream router's MAC address in the *MAC address* text-entry field.
08. Select *Management LAN* from the *Interface* pop-up menu.
09. If the router does not accept cellular network settings via DHCP check the *Enable Force Subnet Mask* checkbox and enter a *Force Subnet Mask* value of *24*.
10. To access the *ACM700x-2-LMx* itself (eg, for OOB management) using the cellular IP address, check the *Intercept Enabled* checkboxes for the desired services (SSH, HTTPS and HTTP).

Note: this segregates WAN & LAN traffic but other NET2-connected devices may see WAN data.

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