# NXG-7002 4G Cellular and WiFi Router Module Installation Sheet

Product Summary

4G Cellular Modem

This module adds 4G cellular communication capabilities to the xGen alarm panel, allowing alarm reporting and remote connections over the 4G mobile network via UltraSync Cloud.

In the event that the primary path (WiFi or Ethernet) from the customer's broadband internet is not working, the panel will automatically switch to the backup 4G cellular to provide seamless alarm reporting.
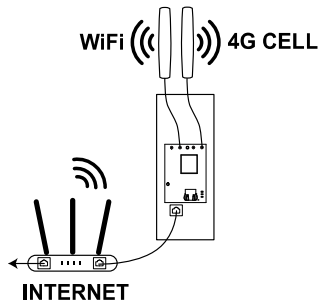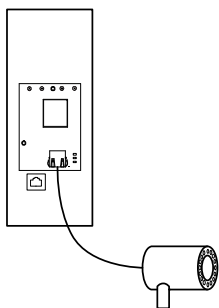
If 4G is unavailable, the module will switch to 3G or 2G where available. One SIM card may be pre-installed and should not be removed.

Only alarm traffic is routed to 4G, video from cameras is not.

Wired LAN

The WiFi Router provides a wired Ethernet LAN for connecting one or more cameras.
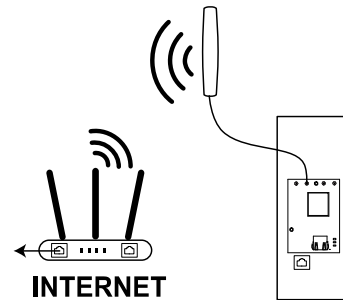
WiFi Access Point Mode

In access-point-mode, security devices such as WiFi cameras can connect to the WiFi Router. It provides DHCP services to assign camera IP addresses and performs router functions for connected clients. This separates the cameras from the customer's network for better performance and security.
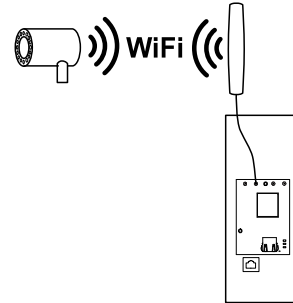
WiFi Client Mode

In client-mode, the WiFi Router can connect wirelessly to a customer's WiFi router which will provide the primary internet connection to the xGen panel. This avoids having to install an Ethernet cable between the xGen and the customer's router.

Full Wireless Integration

Access Point and Client modes can operate simultaneously to allow flexible connection of equipment with 4G cellular backup.
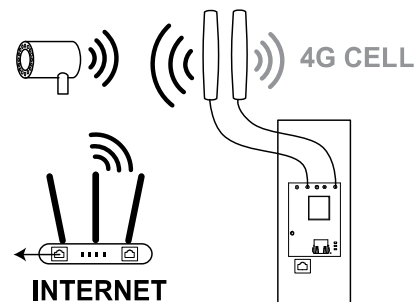
Before You Begin

The xGen panel must be provisioned before going to site. This allows the panel to connect to the servers so it can be programmed using the UltraSync+ app.

The module's SIM cards must be activated to provide internet to the panel. The cellular connection also allows initial programming of the module using the UltraSync+ app.

The xGen panel should be configured to allow remote access. This requires the Web Access Passcode to be set, and the site added to the UltraSync+ app.

Pre-Installation Check

The OpenSignal app can be used to check cellular signal levels, location of cell towers, and perform speed tests. It may assist installers in identifying a suitable location for the alarm panel.

If the alarm panel is installed in a location with poor cellular signal, it may report intermittent communication errors.

UTC do not warrant or support this app.

1. Download and install the OpenSignal app on your smart phone.

2. Open the app and check 4G signal level is three bars or more.

3. If signal level is poor, find an alternative location with three bars or more. Installing multiple or high gain antennas may assist.

Installing the Module
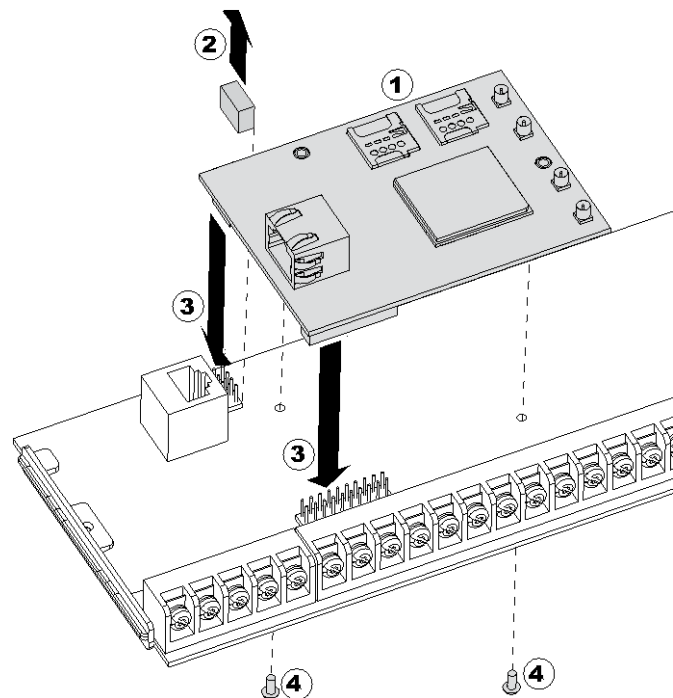
1. Check the SIM card is installed in SIM1 slot.

2. Remove J14, an 8-way header on the xGen located next to the Ethernet port. This connects the Ethernet WAN port pins to the panel, or redirects them to the module.

3. Align the module to the 8-pin and 16-pin headers on the xGen. Push down to attach the module. Take care not to bend the pins.

4. Attach the provided screws to the reverse side of the xGen to secure the module. Do not overtighten screws.
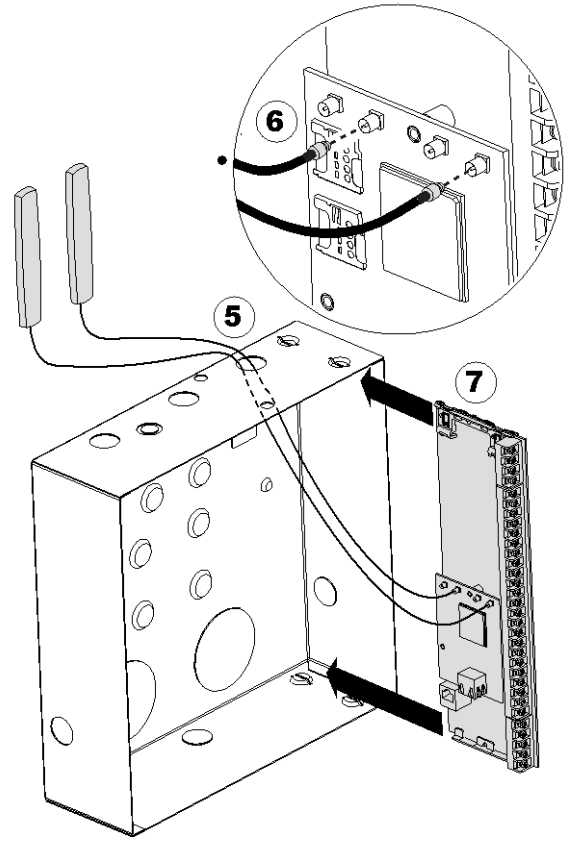
5. Remove knockouts as needed from metal box, then feed the two antennas through.

6. Connect the antennas to the MMCX jacks on the module labeled MAIN. Both antennas are identical. Do not attach to wall yet.

7. Slide the xGen into the metal box.

8. Turn on power to xGen. The LEDs on the module should light:
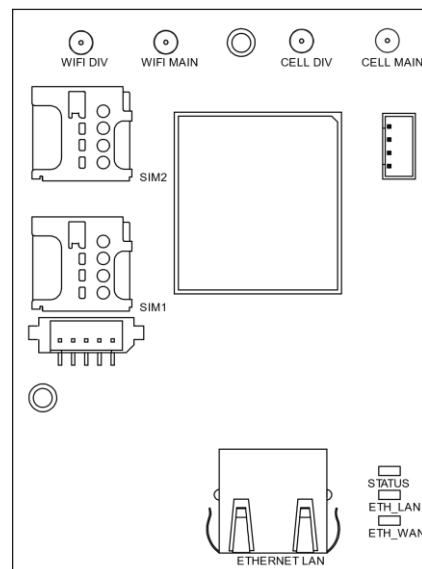
**STATUS**: on indicates power is connected to the module.

ETH_LAN: on indicates LAN cable plugged in to module, off indicates LAN cable not plugged in, blinking indicates activity on LAN port.

ETH_WAN: on indicates WAN cable plugged into panel, off indicates WAN cable not plugged in, blinking indicates activity on WAN port.

9. Check the signal level of the 4G and cellular (see following page).

10. The module supports "antenna diversity" to improve multipath reception. If signal level is not sufficient on either WiFi or cellular, then install extra antenna(s) by connecting them to the MMCX jack(s) labeled "DIV".

   For best reception, install the DIVersity antennas parallel to the MAIN antennas and at least 20cm apart. Antennas should be attached away from metal surfaces.

11. Once module is fully functioning, fix the antennas to the wall. Surface should be clean and dry. The alarm panel should look like this once assembled:
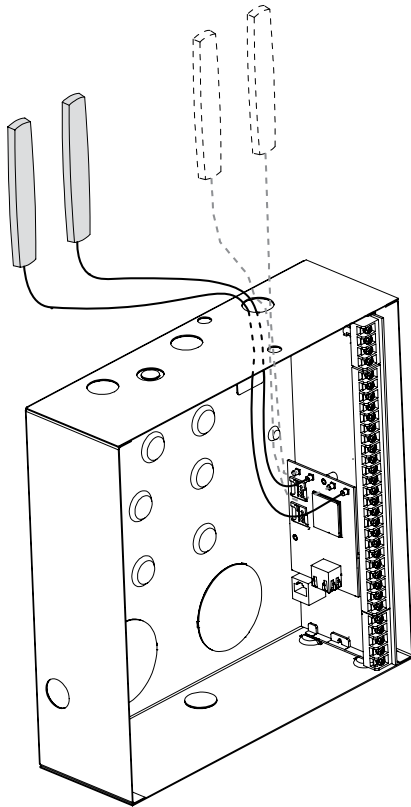
Single/Dual Path Reporting

If only single path cellular reporting is required, then follow steps to check signal level.

If dual path (cellular and WiFi/Ethernet) reporting is required, check signal level then complete steps to "Connect WiFi Router to Customer Router".

If single path WiFi/Ethernet reporting is required, skip to "Connect WiFi Router to Customer Router".

Note: Dual path is only available if the panel Ethernet reporting and the cellular module reporting are used.

Check Signal Strength Using NXG-1820 Keypad

1. Turn on power.

2. Wait 3 minutes for the module to boot and connect to the cellular network.

3. Enter a valid PIN on NXG-1820 keypad to get access to the main screen.

4. Press MENU, enter PIN, press ENTER, go to Settings > Status > Connection Status.

5. Check "UltraSync Status" shows "Connected".

6. Scroll Right ▶.

7. Check "Signal Strength" is acceptable.

Signal Strength

	Low			OK	
−121	−107	−98	−89	−76	−51

• If the reported value is −88 to −51 then the signal level is OK.

• If the reported value is −121 to −89 then installing an external high-gain antenna is recommended.

Note: Signal levels vary day to day and are not absolute values. Use the UltraSync Portal to track signal level performance over time.

Default the Module

If required, clear all the settings of the module back to factory default:

1. Launch the UltraSync+ app.

2. Click the site name to login to the panel.

3. Click the Menu button on the top left.

4. Click Advanced.

5. Click Shortcut.

6. Enter 24.910.

7. Press ENTER.

Connect WiFi Router to Customer Router

Method 1 – Scan for WiFi Router

1. Login to the panel.

2. Click Advanced > Communicator > IP Configuration > IP Options.

3. Tick "Enable WiFi / Disable Ethernet".

4. Click Save.

5. Click Logout to activate the change.

6. Login to the panel.

7. Click Settings > WiFi Setup.

8. Click "Scan For Wireless Networks".

9. Wait 30 sec for the router to complete searching for nearby WiFi access points.

10. Select the customer's WiFi router from the list.

11. Enter the Passphrase of the customer's WiFi router.

12. Click Settings > Connection Status.

13. Check "WiFi Status" shows "Connected" to the correct SSID.

Method 2 – Manually enter SSID

1. Login to the panel.

2. Click Advanced > Communicator > IP Configuration > IP Options.

3. Tick "Enable WiFi / Disable Ethernet".

4. Click Save.

5. Click Logout to activate the change.

6. Login to the panel.

7. Click Settings > Network.

8. Enter the customer's WiFi router details (SSID, Security Type, and Passphrase).

9. Click Save.

10. Click Settings > Connection Status for connection details.

Method 3 – Use Ethernet cable

Alternatively, you may connect the Ethernet WAN port on the xGen directly to the customer's router using an Ethernet cable.

Connect Camera to WiFi Router

If the xGen is installed without the WiFi Router Module, optional cameras are normally connected to the customer's WiFi broadband router.

With the WiFi Router Module installed, UltraSync cameras can connect to the Soft Access Point (AP) Mode on the WiFi Router Module and provide more control to the installer.

1. Login to the panel (e.g. UltraSync+ app).

2. Click Advanced > Networking.

3. Click WiFi Access Point. The SSID and Passphrase is displayed.

4. Enter these details into the camera.

Troubleshooting

Signal Strength is poor, unable to connect using app

If cellular reception is poor, then the app will be unable to connect. To provide internet so programming can be done using the app, temporarily connect panel to customer's router using Ethernet cable:

1. Connect an Ethernet cable to the Ethernet WAN port on the xGen panel.

2. Connect the other end of the Ethernet cable to an available LAN port on the customer's router.

Check Signal Strength Using UltraSync+ App

1. Turn on power.

2. Log in to the panel.

3. Click Settings > Connection Status.

4. Scroll down to Signal Strength.

5. Check whether Signal Strength is acceptable.

Check Signal Strength Using Web Server

1. Turn on power.

2. Log in to the panel.

3. Click Settings > Connection Status.

4. Scroll down to Signal Strength.

5. Check whether Signal Strength is acceptable.

WiFi Setup screen shows "WiFi Mode Not Enabled"

1. Click Advanced > Communicator > IP Configuration > IP Options.

2. Tick "Enable WiFi / Disable Ethernet".

3. Click Save.

4. Click Logout to activate the change.

Cell State does not show Connected, Cell Service is not showing a valid service

If SIM card(s) are preinstalled, no configuration is necessary. Check SIM cards are installed correctly, SIM1 is prioritized, try defaulting the module, and power cycling the system.

If SIM card(s) require custom settings:

1. Login to the panel (e.g. UltraSync+ app)

2. Click Advanced > Communicator > Cellular Configuration.

3. Click SIM1.

4. Enter the APN, Username, Password, CHAP/PAP authentication, PIN, and PUK codes as instructed by the carrier.

5. Click Save.

6. Click Settings > Connection Status.

7. Check SIM cards are connecting to their network.

Specifications

Voltage	13.8 VDC (provided by panel)
Current	
Maximum	200 mA at 13.8 V
Quiescent	118 mA at 13.8 V
Transmit Power	
External connector	MMCX
Dimensions (W x H x D)	136 x 80 x 5 mm
Storage temperature	−34° to 60°C (−30° to 140°F)
Weight	150 g
Operating environment	
Temperature	−10° to 55°C (14° to 131°F)
Relative humidity	maximum 90% noncondensing

Regulatory information

Manufacturer	Placed on the market by: UTC Fire & Security Americas Corporation, Inc. 3211 Progress Drive, Lincolnton, NC, 28092, USA Authorized EU manufacturing representative: UTC Fire & Security B.V. Kelvinstraat 7, 6003 DH Weert, Netherlands
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Certification	EN50136-2/EN50131-10 SP3 & SP4 (GSM/GPRS) Tested and certified by ANPI vzw/asbl. $C\epsilon$
European Union directives	UTC Fire & Security hereby declares that this device is in compliance with the applicable requirements and provisions of all applicable rules and regulations, including but not limited to the Directive 2014/53/EU. For more information see: www.utcfssecurityproducts.eu
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