

OnCell G3470A-LTE Quick Installation Guide

Moxa OnCell Series

Version 2.1, December 2020

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Overview

The OnCell G3470A-LTE is Moxa's 4G/Ethernet IP gateway that provides a higher cellular bandwidth and more reliable connection to your Ethernet network for cellular applications. With the integrated 4-port gigabit Ethernet switch and 4G LTE support, the OnCell G3470A-LTE offers a faster cellular connection with a lower total cost of ownership. To enhance reliability, a key for industrial users, the OnCell G3470A-LTE features isolation design for both power and antenna inputs. Coupled with high-level EMS and wide-temperature support, the OnCell G3470A-LTE provides the highest level of device stability in any rugged environment. In addition, with dual SIM and dual power-input features, the OnCell G3470A-LTE supports network redundancy to ensure an uninterrupted connectivity in your applications.

Package Checklist

Moxa's OnCell G3470A-LTE is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- OnCell G3470A-LTE
- 1 GPS connector terminator
- 2 2G/3G/4G omni-directional antennas, 2 dBi, SMA (male)
- 5 plastic RJ45 protective caps for serial console and Ethernet ports
- Quick installation guide (printed)
- Warranty card

Installation and Configuration

Before installing the OnCell G3470A-LTE, make sure that all items in the package checklist are in the box. In addition, you will need access to a notebook computer or PC equipped with an Ethernet port. The OnCell G3470A-LTE has a default IP address that you must use when connecting to the device for the first time.

Step 1: Insert a SIM card and turn on the OnCell G3470A-LTE

Insert one or two 2G/3G/4G SIM cards into the SIM slots located on the bottom of the OnCell G3470A-LTE. Then, turn on the OnCell G3470A-LTE by connecting a power terminal block to a DC power source (12 to 48 VDC).

Step 2: Connect the OnCell G3470A-LTE to a notebook or PC

Since the OnCell G3470A-LTE supports MDI/MDI-X auto-sensing, you can use either a straight-through cable or crossover cable to connect the OnCell G3470A-LTE to a computer. If the LED indicator on the OnCell G3470A-LTE's LAN port lights up, it means a connection has been established.

Step 3: Set up the computer's IP address

Set an IP address on the same subnet as the OnCell G3470A-LTE. Since the OnCell G3470A-LTE's default IP address is 192.168.127.254, and the subnet mask is 255.255.255.0, you should set the IP address of the computer to 192.168.127.xxx and subnet mask to 255.255.255.0.

Step 4: Use the web-based manager to configure the OnCell G3470A-LTE

Open your computer’s web browser and type **http://192.168.127.254** in the address field to access the homepage of the web-based management system. Before the homepage opens, you will need to enter the user name and password. For first-time configuration, enter the default user name and password and then click on the Login button:

User name: admin
Password: moxa

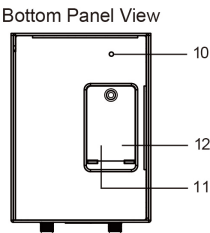
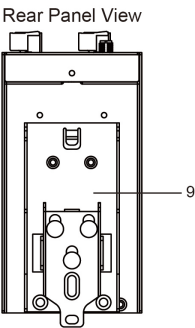
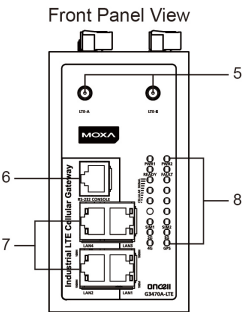
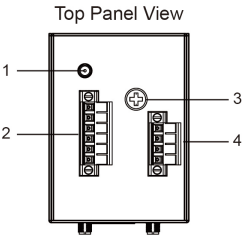


ATTENTION

For security reasons, we strongly recommend changing the password. To do so, select **Maintenance → Username/Password**, and then follow the on-screen instructions.

NOTE For the change to take effect, you must click Save Configuration to save the change, or Restart (clicking the Save and Restart buttons will save all changes).

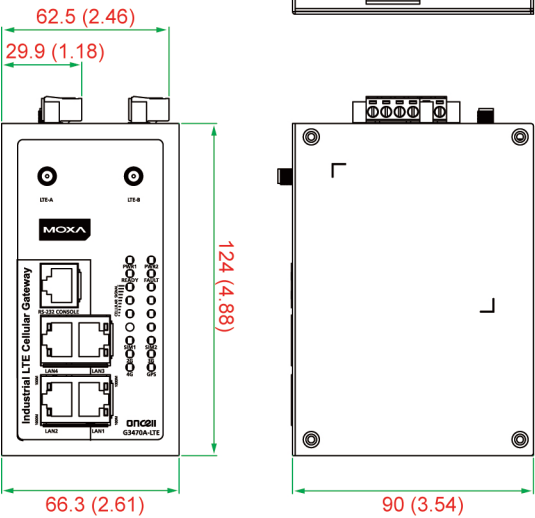
Hardware Overview



1. GPS antenna connector (female SMA)
2. Terminal block (two digital input and one digital relay)
3. Grounding screw (M5)
4. Terminal block (PWR1 and PWR2)
5. 2x2 MIMO antenna ports for LTE (female SMA)
6. RS-232 serial console (RJ45)
7. 10/100/1000 BaseT(X) Ethernet ports (RJ45)
8. LED display
9. DIN-rail mounting kit
10. Reset button
11. Dual SIM - SIM1
12. Dual SIM - SIM2

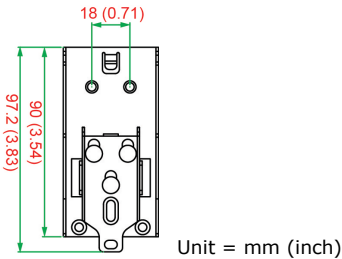
Device Dimensions

Unit = mm (inch)



DIN-Rail Mounting

DIN-Rail Kit Dimensions:

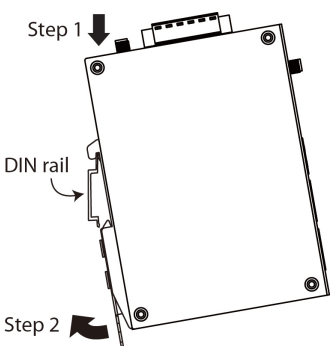


The DIN-rail kit is attached to the back panel of the OnCell G3470A-LTE series. Mount the OnCell G3470A-LTE series on corrosion-free mounting rails that meet the EN 60715 standard.

Installation

STEP 1: Insert the upper lip of the DIN rail into the DIN-rail mounting kit.

STEP 2: Press the OnCell G3470A-LTE series towards the DIN rail until it snaps into place.

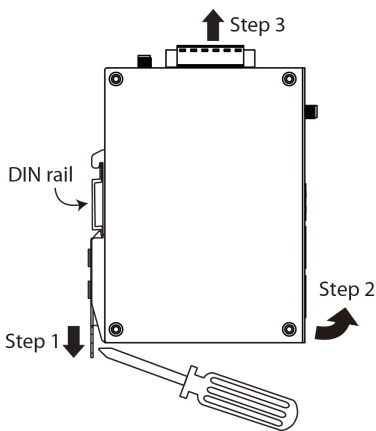


Removal

STEP 1: Pull down the latch on the mounting kit using a screwdriver.

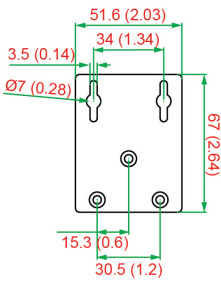
STEP 2: Slightly pull the OnCell G3470A-LTE forward.

STEP 3: Lift up to remove the OnCell G3470A-LTE from the DIN rail



Wall Mounting (optional)

Wall-mount Kit Dimensions:

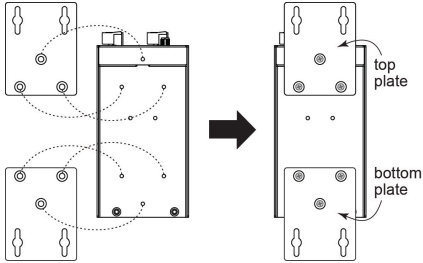


Unit = mm (inch)

For some applications, it may be more convenient to mount the OnCell G3470A-LTE to a wall, as illustrated below.

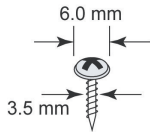
STEP 1:

Remove the aluminum DIN-rail attachment plate from the OnCell G3470A-LTE, and then attach the wall mount plates with M3 screws, as shown in the adjacent diagram.



STEP 2:

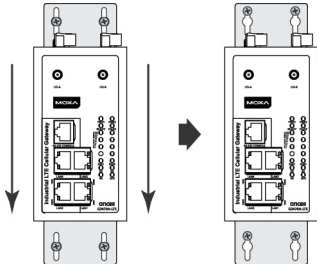
Mounting the OnCell G3470A-LTE to a wall requires 4 screws. Use the OnCell G3470A-LTE device, with wall mount plates attached as a guide, to mark the correct locations of the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure at the right.



NOTE Test the screw head and shank size by inserting the screw into one of the keyhole shaped apertures of the Wall Mounting Plates before it is screwed into the wall.

STEP 3:

Once the screws are fixed into the wall, insert the four screw heads through the large opening of the keyhole-shaped apertures, and then slide the OnCell G3470A-LTE downwards, as indicated in the accompanying diagram. Tighten the four screws for added stability.



WARNING

- This equipment is intended to be used in a Restricted Access Location, such as a dedicated computer room. Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the fact that the metal chassis of the equipment is extremely hot and may cause burns.
- Service persons or users should pay special attention and take special precautions before handling the equipment.
- Access should be controlled with lock and key, or a security identity system controlled by the authority responsible for the location. Only authorized, well-trained professionals should be allowed to access the restricted access location.
- External metal parts are hot!! Pay special attention or use special protection before handling.

Wiring Requirements



WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa OnCell G3470A-LTE.



WARNING

Safety First!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowed for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following items:

- Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.
NOTE: Do not run signal or communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.
- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring with similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is strongly advised that you label wiring to all devices in the system when necessary.



ATTENTION

This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS" and rated O/P: 9.6 W (12 V/0.78 A to 48 V/0.2 A).



ATTENTION

Make sure that the external power adapter (includes power cords and plug assemblies) provided with the unit is certified and suitable for use in your country.

Grounding the Moxa OnCell G3470A-LTE

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

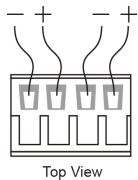


ATTENTION

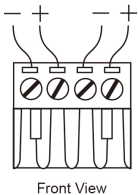
This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

Wiring the Redundant Power Inputs

The top two pairs of contacts of the 10-contact terminal block connector on the OnCell G3470A-LTE’s top panel are used for the OnCell G3470A-LTE’s two DC inputs. Top and front views of the terminal block connector are shown here.



Top View



Front View

STEP 1: Insert the negative/positive DC wires into the V-/V+ terminals.

STEP 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.

STEP 3: Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the OnCell G3470A-LTE’s top panel.



ATTENTION

Before connecting the OnCell G3470A-LTE to the DC power inputs, make sure that the DC power source voltage is stable.

Wiring the Relay Contact

The OnCell G3470A-LTE has one relay output, which consists of the two contacts of the terminal block on the OnCell G3470A-LTE’s top panel. Refer to the Specification section for detailed electrical requirement. The relay contacts are used to indicate user-configured events. The two wires attached to the relay contacts form an open circuit when a user-configured event is triggered. If a user-configured event does not occur, the relay circuit will be closed.

Wiring the Digital Inputs

The OnCell G3470A-LTE has two sets of digital inputs—DI1 and DI2. Each DI comprises two contacts of the 6-pin terminal block connector on the OnCell G3470A-LTE’s top panel. Refer to the Specification section for detailed information on isolated digital input definition.

Communication Connections

10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the OnCell G3470A-LTE's front panel are used to connect to Ethernet-enabled devices.

Below we show pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports.

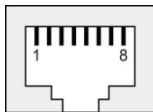
MDI Port Pinouts

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

MDI-X Port Pinouts

Pin	Signal
1	Rx+
2	Rx-
3	Tx+
6	Tx-

8-pin RJ45

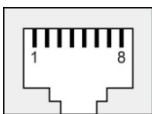


1000BaseT Ethernet Port Connection

1000BaseT data is transmitted on differential TRD+/- signal pairs over copper wires.

MDI/MDI-X Port Pinouts

Pin	Signal
1	TRD(0)+
2	TRD(0)-
3	TRD(1)+
4	TRD(2)+
5	TRD(2)-
6	TRD(1)-
7	TRD(3)+
8	TRD(3)-

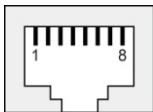


RS-232 Connection

The OnCell G3470A-LTE has one RS-232 (8-pin RJ45) console port located on the front panel. Use either an RJ45-to-DB9 or RJ45-to-DB25 cable to connect the Moxa OnCell G3470A-LTE's console port to your PC's COM port. You may then use a console terminal program to access the OnCell G3470A-LTE for console configuration.

Console Pinouts for 10-pin or 8-pin RJ45

10-Pin	Description	8-Pin
1	-	
2	DSR	1
3	RTS	2
4	GND	3
5	TxD	4
6	RxD	5
7	DCD	6
8	CTS	7
9	DTR	8
10	-	



NOTE The pin numbers for both 8-pin and 10-pin RJ45 connectors (and ports) are typically not labeled on the connector (or port). Refer to the Pinout diagram above to see how RJ45 pins are numbered.

LED Indicators

The front panel of the Moxa OnCell G3470A-LTE contains several LED indicators. The function of each LED is described in the table below.

LED	Color	State	Description
Front Panel LED Indicators (System)			
PWR1	Green	On	Power is being supplied from power input 1.
PWR2	Green	On	Power is being supplied from power input 2.
READY	Green	On	System startup is complete and the system is operating.
		Blinking	Device has been located by the OnCell Search Utility.
		Off	Power is off, or the system is booting up.
FAULT	Red	On	System configuration error or a relay event has occurred.
		Blinking	IP address conflict.
		Off	Power is off, or there is no error condition.
CELLULAR SIGNAL (3 LEDs)	Green	On	Number of LEDs to indicate cellular signal level when registered to a base station. Signal LED 1: $0 < \text{RSSI} \leq 12$ Signal LED 2: $12 < \text{RSSI} \leq 20$ Signal LED 3: $20 < \text{RSSI} \leq 31$
SIM1	Amber	On/Off	SIM 1 is active or inactive.
		Blinking	SIM 1 is not inserted or PIN code is incorrect.
SIM2	Amber	On/Off	SIM 2 is active or inactive.
		Blinking	SIM 2 is not inserted or PIN code is incorrect.
2G	Amber	On	Registered to a base station with cellular connection in GPRS or EDGE mode.
3G	Amber	On	Registered to a base station with cellular connection in UMTS or HSPA mode.
4G	Amber	On	Registered to a base station with cellular connection in LTE mode.
GPS	Green	On	GPS has been located.
		Blinking	Locating GPS or less than four satellites have been located.
		Off	GPS has not been located.
LAN Port LED Indicators (Port Interface)			
1000M	Green	On	1000Mbps link is active.
		Blinking	Data is being transmitted at 1000Mbps.
		Off	1000Mbps link is inactive.
10/100M	Amber	On	10/100Mbps link is active.
		Blinking	Data is being transmitted at 10/100Mbps.
		Off	10/100Mbps link is inactive.

Specifications

Cellular Specification	
Standards	GSM/GPRS/EDGE/UMTS/HSPA/LTE
Band Options	OnCell G3470A-LTE-EU: B1 (2100 MHz)/B3 (1800 MHz)/B7 (2600 MHz)/B8 (900 MHz)/B20 (800 MHz) OnCell G3470A-LTE-US: B2 (1900 MHz)/B4 (AWS)/B5 (850 MHz)/B13 (700 MHz)/B17 (700 MHz)/B25 (1900 MHz) OnCell G3470A-LTE-EU: UMTS/HSPA 2100/1900/850/800/900 MHz OnCell G3470A-LTE-US: UMTS/HSPA 2100/1900/AWS/850/900 MHz Quad-band GSM/GPRS/EDGE 850/900/1800/1900 MHz
LTE Data Rate	Category 3 Downlink: 100 Mbps (20 MHz bandwidth), 50 Mbps (10 MHz bandwidth) Uplink: 50 Mbps (20 MHz bandwidth), 25 Mbps (10 MHz bandwidth)
HSPA Data Rate	Downlink: Up to 42 Mbps (category 24) Uplink: Up to 5.76 Mbps (category 6)
GPRS Data Rate	Downlink/Uplink: 236 kbps
Interface	
Cellular Antenna Connectors	2 SMA (female), MIMO for LTE, antenna diversity for WCDMA
SIM Slots	Dual SIM card support
GNSS	1 SMA (female), GPS: 1575.42 MHz, GLONASS: 1602 MHz
Ethernet	4, 10/100/1000 Mbps auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection (RJ45-type)
Serial Console Port	1, RS-232 (RJ45-type)
LED Indicators	PWR1, PWR2, READY, FAULT, CELLULAR SIGNAL, SIM1, SIM2, 2G, 3G, 4G, GPS
Alarm Contact	1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Inputs	2 electrically isolated inputs +13 to +30 V for state "1" +3 to -30 V for state "0" Max. input current: 8 mA
Ground Screw	M5
Reset Button	Power Reset/Factory Default Reset
Software Specification	
Network Protocol	ICMP, TCP/IP, UDP, DHCP, Telnet, DNS, SNMP, HTTP, HTTPS, SMTP, SNTP, ARP
Routing/Firewall	NAT, Port Forwarding, IP/MAC/Port Filtering
VPN	Max. Tunnel Number: 5 (Responder/Initiator) IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5), PSK/X.509/RSA
Management Options	Remote SMS Control, SNMPv1/v2c/v3, Web/Telnet/Serial Console
Others	DDNS

Software Specification (Moxa Proprietary)	
GuaranLink	3-tier heart-beat for reliable and persistent cellular connectivity
OnCell Central Management	Large scale centralized device management over private cellular IP addresses
Search Utility	Simple device configuration and management utility
Physical Characteristics	
Housing	Metal casing for high EMC-level, providing IP30 protection
Mounting	DIN-rail (default) or wall-mount (optional)
Weight	1300 g
Dimension	67 x 90.5 x 124 mm (2.6 x 3.52 x 4.83 inch)
Installation	DIN-Rail mounting, wall mounting (with optional kit)
Environmental Limits	
Operating Temperature	Standard Models: -30 to 55°C (-22 to 131°F) Wide Temp. Models: -30 to 70°C (-22 to 158°F)
Storage Temperature	-40 to 75°C (-40 to 167°F)
Ambient Relative Humidity	5 to 95% (30°C, non-condensing)
Power Requirements	
Input Voltage	12 to 48 VDC, redundant dual DC power inputs
Connector	4-pin removeable terminal block
Power Consumption	9.6 W (12 V/0.78 A to 48 V/0.2 A)
Reverse Polarity Protection	Present
Standards and Certifications	
Safety	OnCell G3470A-LTE-US: UL 60950-1
EMI	OnCell G3470A-LTE-US: FCC Part 15 Subpart B
EMS	OnCell G3470A-LTE-EU: EN 61000-6-2/-4
Radio	OnCell G3470A-LTE-US: FCC ID N7NMC7355 OnCell G3470A-LTE-EU: EN 301 489-1, EN 301 489-7, EN 301 511/4
Reliability	
MTBF	327326 hours
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/support/warranty.aspx



ATTENTION

The OnCell G3470A-LTE is **NOT** a portable mobile device and should be located at least 20 cm away from the human body.

The OnCell G3470A-LTE is **NOT** designed for the general public. To deploy OnCell G3470A-LTE units and establish a wireless network safely, a well-trained technician should do the installation.



ATTENTION

Use the antennas correctly: Wide-band (2G/3G/4G) antennas are needed when the OnCell G3470A-LTE operates. Make sure that your antenna installation is within a safety area, which is covered by a **lightning protection or surge arrest** system.



ATTENTION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.



ATTENTION

Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, refer to national and local codes (for example, U.S.:NFPA 70, National Electrical Code, Article 810, Canada: Canadian Electrical Code, Section 54).