



**Landis+Gyr  
Series 5  
Network Gateway  
N2400/N2450**

Data Sheet



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# Series 5 Network Gateway N2400/N2450 Data Sheet

## Product Overview

The Landis+Gyr Series 5 N2400 (RF Mesh)/N2450 (RF Mesh IP) Network Gateway provides the basis for a powerful RF wireless mesh network for remote data collection and end-device monitoring and control. The Network Gateway provides full two-way communication to devices within the network. The Network Gateway offers advanced functionality, such as individual message prioritization, additional memory for localized intelligence, and the Linux operating system.



*Figure 1. N2400/N2450-Series*

In addition to the standard RF Mesh radio, the N2400/N2450 has three internal slots that can use additional RF Mesh radios, LTE wireless or other future WAN technologies. The N2400/N2450 comes equipped with two Ethernet ports, an integrated battery pack, on-board GPS, and WiFi for configuration. Landis+Gyr's Network Bridge/Network Gateway Platform offers a family of Field Area Network (FAN) devices that can be configured and deployed to build a robust communication network infrastructure, enabling communication to Edge devices in the field.



**NOTE:** Network Gateway, N2450 (RF Mesh IP), can support the Wi-SUN FAN profile through over-the-air (OTA) firmware upgrades.

### FCC ID Label

FCC ID Label contents are shown in Figure 2 and is required for RF Mesh (2400) and RF Mesh IP (2450). If the X in N2240, is 0, then this label would be for RF Mesh. If X is 5, then it would be for RF Mesh IP.

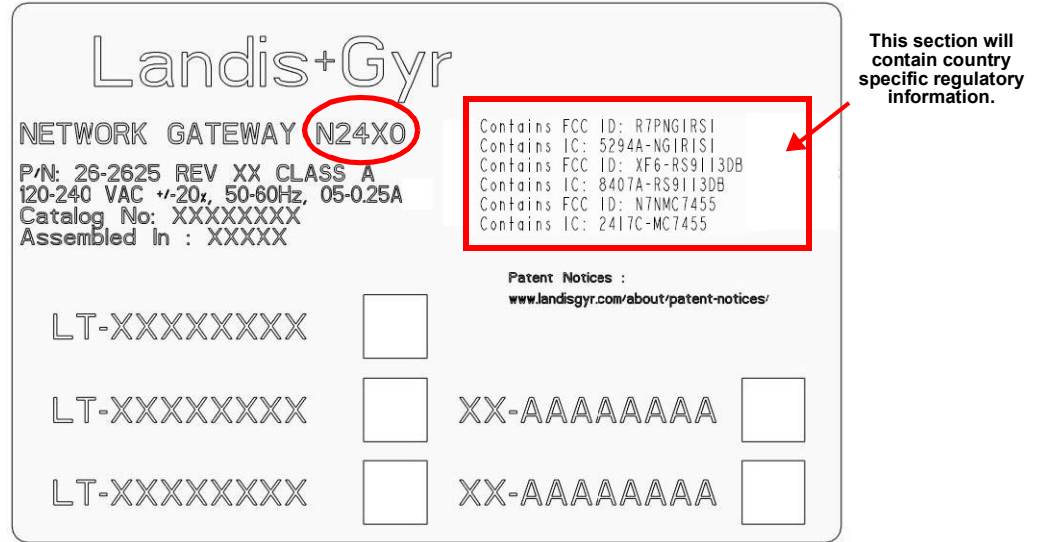


Figure 2. Product ID Label

### CUID Details

The CUID is the network ID for the entire Gateway, while the communication devices have their own IDs. These IDs will be needed when configuring the network to allow the Gateway to join.

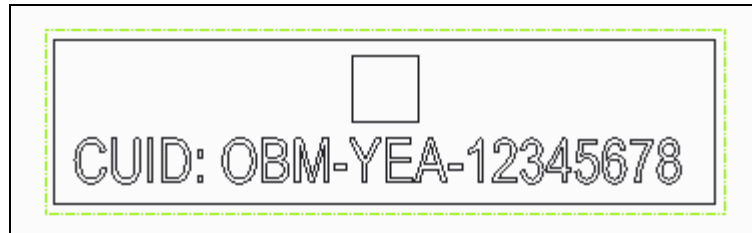


Figure 3. CUID Details



**NOTE:** The Network Gateway is designed and Safety Certified as an over-voltage Class 3 device. Installation must be implemented in accordance with local regulations for an over-voltage class 3 device. If the installation requires additional surge or current limiters, all wiring must conform to national wiring rules.

# Dimensions

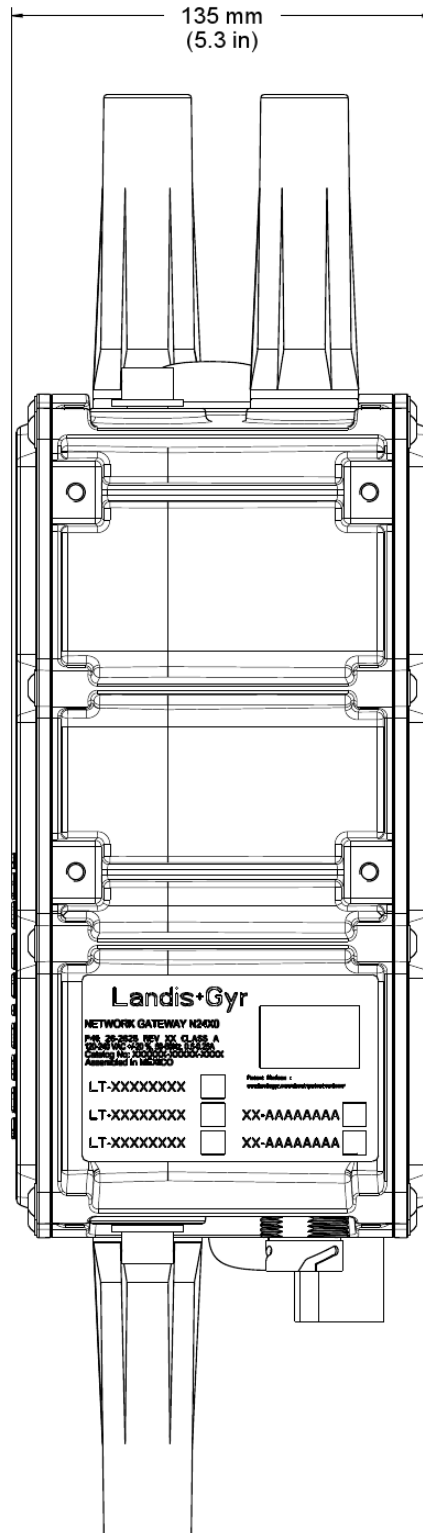


Figure 4. Network Gateway Physical Dimensions in mm (Inches)

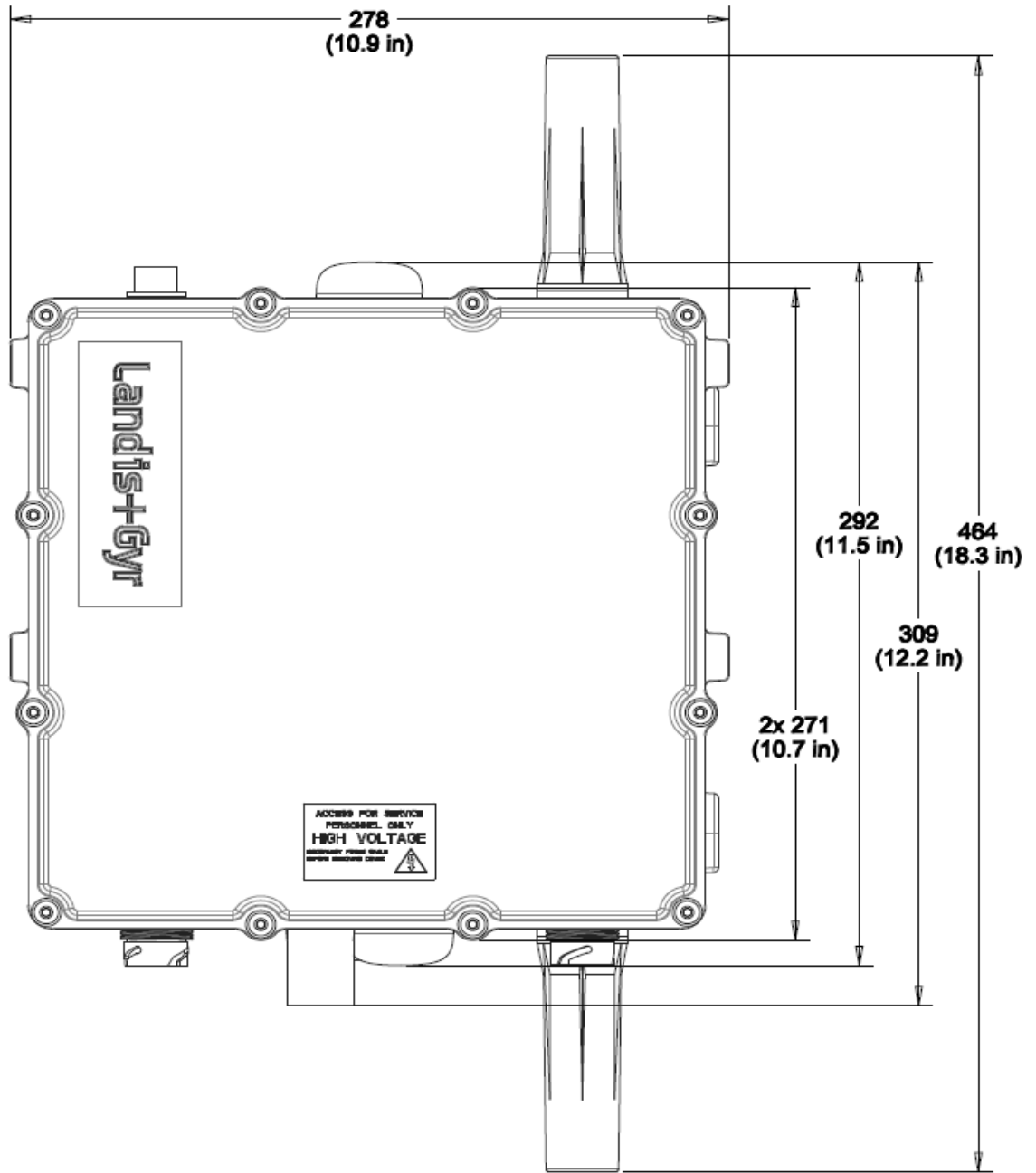


Figure 5. Network Gateway Physical Dimensions in mm (Inches)

# Series 5 Network Gateway N2400/N2450 Specifications

## Product Specifications

Table 1 lists the general product specifications for the N2400 (RF Mesh)/N2450 (RF Mesh IP) Network Gateway Series.

**Table 1. Network Gateway N2400 (RF Mesh)/N2450 (RF Mesh IP)  
Product Specifications**

Element	Description
<b>Electrical (General)</b>	
Input Voltage Range	120 to 240 VAC +/- 20% (96 - 288 VAC)
Current	0.5A-0.25A
Battery Holdup	Up to 14 hours (depending on configuration)
<b>Processing Unit</b>	
CPU	Cortex A5
Clock Speed	536 MHz
RAM Memory	512 MB DDR2 RAM
FLASH Memory	2 GB NAND + 4 GB External
<b>Ethernet</b>	
ETH 0	10/100/1000 Ethernet
ETH 1	10/100 Ethernet
<b>WiFi</b>	Yes
<b>LTE Cat6 (US Only-ATT and Verizon)</b>	Yes
<b>Mechanical</b>	
Enclosure	Aluminum/IP67
Dimensions	10.94" W x 5.31" D x 12.23" H (278mm W x 135mm D x 311mm H)
Weight	11.7 lbs (5.307 kg)
Operating Temperature Range	-40° to 60° C (-40 to 140° F)

## Series 5 RF Mesh and RF Mesh IP Radio Specifications Americas

Table 2 lists the radio specifications for the N2400 (RF Mesh)/N2450 (RF Mesh IP) Network Gateway Series for Americas.

**Table 2. Network Gateway N2400 (RF Mesh)/N2450 (RF Mesh IP) Radio Specifications Americas**

Element	Description
<b>Radio (General)</b>	
Radio Model	Model: NIC AM
Communication Protocol (PHY)	IEEE 802.15.4g - SUN FSK PHY
RF Frequency Range	<b>North America:</b> 902-928 MHz
	<b>Brazil:</b> 902-907.5, 915-928 MHz
Channel Spacing	<b>N2450 (RF Mesh IP):</b> 400 KHz
	<b>N2400 (RF Mesh):</b> 100, 300 KHz
RF Data Rate	<b>N2450 (RF Mesh IP):</b> 50, 150, 200 Kbps
	<b>N2400 (RF Mesh):</b> 9.6, 19.2, 38.4, 115.2 Kbps
<b>Gateway Radio Processing Unit</b>	
CPU	Dual-core Cortex M4
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
<b>Receiver</b>	
<b>RF Mesh IP:</b>	
Sensitivity (at 90% packet success rate, conducted, typical)	-107 dBm(50 Kbps)
	-100 dBm(150 Kbps)
	-98 dBm(200 Kbps)
Adjacent Channel Rejection	30 dB Typical
Alternate Channel Rejection	35 dB Typical
<b>RF Mesh:</b>	
Sensitivity (at 90% packet success rate, conducted, typical)	-113 dBm(9.6 Kbps)
	-110 dBm(19.2 Kbps)
	-107 dBm(38.4 Kbps)
	-101 dBm (115.2 Kbps)
Adjacent Channel Rejection	30 dB
Alternate Channel Rejection	35 dB
<b>Transmitter</b>	
Output Power (at Antenna Connector)	50 mW to 820 mW
Modulation Type	2FSK, 2GFSK



**Table 2. Network Gateway N2400 (RF Mesh)/N2450 (RF Mesh IP)  
Radio Specifications Americas (Continued)**

Element	Description
Out-of-band Spurious Emissions	< -50 dBc
<b>Approved Antennas</b>	
Type	Vertically-Oriented Whip
Peak Gain	5.5dBi
Whip, Skywave MMG-11, Rev B	5.5dBi Gain, 902-928MHz, 50 ohms
Type	Vertically-Oriented Dipole
Peak Gain	5.15dBi
Dipole, Laird FG9023	5.15dBi Gain, 902-928MHz, 50 ohms
Type	Vertically-Oriented Monopole
Peak Gain	2.15dBi
Monopole, Skywave 11-1106E	2.15dBi Gain, 902-928MHz, 50 ohms
Type	Directional Patch
Peak Gain	9.0dBi
Airgain ET900SLGADB	9.0dBi Gain, 902-928MHz, 50 ohms

## Series 5 RF Mesh IP Radio Specifications India

Table 3 lists the radio specifications for the N2450 (RF Mesh IP) Network Gateway Series for India.

**Table 3. Network Gateway N2450 (RF Mesh IP)  
Radio Specifications India**

Element	Description
<b>Radio (General)</b>	
Radio Model	Model: NIC IND
Communication Protocol (PHY)	IEEE 802.15.4g
RF Frequency Range	865-867 MHz
Channel Spacing	<b>N2450 (RF Mesh IP):</b> 200 KHz
RF Data Rate	<b>N2450 (RF Mesh IP):</b> 50, 150 Kbps
<b>Gateway Radio Processing Unit</b>	
CPU	Dual-core Cortex M4
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
<b>Receiver</b>	
<b>RF Mesh IP:</b>	
Sensitivity (at 90% packet success rate, conducted, typical)	-107 dBm(50 Kbps)
	-100 dBm(150 Kbps)
Adjacent Channel Rejection	30 dB
Alternate Channel Rejection	35 dB
<b>Transmitter</b>	
Output Power (at Antenna Connector)	50 mW to 820 mW
Modulation Type	2FSK, 2GFSK
Out-of-band Spurious Emissions	<-50 dBc
<b>Antenna Requirements</b>	
Type	Vertically-oriented whip
Peak Gain	< 5.5 dBi

## Series 5 RF Mesh and RF Mesh IP Cellular Modem Specifications

Table 4 lists the 4G cellular modem specifications for the N2400 (RF Mesh)/N2450 (RF Mesh IP) Network Gateway.

**Table 4. Network Gateway N2400 (RF Mesh)/N2450 (RF Mesh IP) Cellular Modem Specifications**

Element	Description
<b>4G LTE</b>	
Category	Cat 6
Frequency Bands	B1, B2, B3, B4, B5, B7, B8, B12, B13, B20, B25, B26, B29, B30, B41
Data Speed	Peak Download Rate 300 Mbps, Peak Upload Rate 50 Mbps
SIM	Standard/Mini SIM (2FF)
<b>Antenna Requirements</b>	
Antenna	Skywave Antenna PN: 15-4005-E
Peak Gain	<3 dBi
<b>Hardware</b>	
Dimensions	2.01"L X 1.18"W X 0.11" D
Form Factor	Conforms to type F2 as specified in PCI Express Mini Card Electromechanical Specification Revision 1.2
<b>Approvals</b>	
Carrier	AT&T, Verizon
Regulatory	CE, FCC, GCF, IC, NCC, PTCRB

## Series 5 Network Gateway Shipping and Handling

All Network Gateways contain Lithium Ion battery cells. They should only be shipped in a box labeled with Landis+Gyr part number 23-1375 (U-Line part number S-14859). Fill in the blanks with a permanent marker and legible text as shown.

- LITHIUM ION BATTERY
- For more information call, **888-390-5733**



Figure 6. Shipping Label Example

## Regulatory Compliance

### FCC Compliance

#### FCC Class A

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.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined

by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult Landis+Gyr or an experienced radio technician for help



**WARNING: Changes or modifications to this device not expressly approved by Landis+Gyr could void the user's authority to operate the equipment.**



**WARNING: Radio output power should not be altered without consulting with Landis+Gyr personnel.**

## Industry Canada

The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

This Class A digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. 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.

Cet appareillage numérique de la classe A répond à toutes les exigences de l'interférence canadienne causant des règlements d'équipement. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif peut ne pas causer l'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris l'interférence qui peut causer l'opération peu désirée.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication.

This device has been designed to operate with the antennas listed below. Antennas not included in this list or having a gain greater than the specified gain for that antenna type, are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

### Approved Antennas

Whip, Skywave MMG-11, Rev B, 5.5dBi gain

Dipole, Laird FG9023, 5.15dBi gain

Monopole, Skywave 11-1106E, 2.15dBi gain

Directional Patch, Airgain ET900SLGADB, 9.0dBi gain

## RF Exposure

This equipment complies with FCC and ISED radiation exposure limits. This equipment should be installed and operated with a minimum distance of 30cm (11.02 in) between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites FCC/IC d'exposition aux radiations définies pour un environnement non contrôlé.

Cet équipement doit être installé et utilisé à une distance minimale de 30cm (11.02 in) entre le radiateur et votre corps.

Cet émetteur ne doit pas être co-implantés ou exploités en conjonction avec une autre antenne ou émetteur.

## EIRP Limit

The equipment meets the required FCC specifications with any customer-selectable RF power setting of the radio, using the antennas indicated in this document. FCC testing was conducted using a vertically-oriented whip antenna with a gain of 5.5dBi. Whip antennas with higher gain may result in EIRP levels in excess of the FCC limit.

Antennas of a type other than those shown above are not FCC approved for this device.



**NOTE:** If power is increased above factory settings, communication problems may occur with other radios in the network.

## Regulatory Compliance Safety and EMC

**Table 5. Regulatory Standards Compliance: Safety and EMC**

Specification	Description
Safety	IEC 60950-1:2005Ed.2+A2012;C2012
	UL 60950-1:2007Ed.2+R:14Oct2014
	CSA C22.2#60950-1:2007 Ed.2+A1;A2
	Information Technology Equipment - Safety, as an Over-voltage Class 3 device.
	IEC 62368
EMC	CENELEC-EN 55032 2012.01.30 Ed. 1.0 (CISPR 32) EMC of Multimedia Equipment - Emission Requirements
	CENELEC-EN 55024 2010/08/24 Ed:2 (CISPR 24) IT Equipment- Immunity characteristics
	FCC 47CFR PT 15-B 1998/10/1 Unintentional Radiators
	IC ICES-003:2016Ed.6
	IEEE 1613

## Regulatory Compliance India

### WPC Guidelines

This device complies with WPC guidelines. 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.

## Safety Information

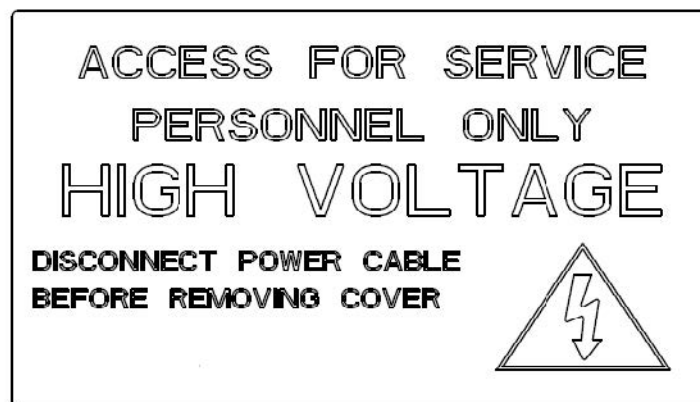
### California Hazard Identification



**WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).**

### Electrical Shock Hazard Warning

Hazardous voltages exist inside the grounded case of the Network Gateway. Consequently, the Gateway should never have the covers loosened or removed while AC power is applied. Further, only trained personnel should remove a cover and attempt to perform any maintenance even with the Gateway disconnected from the power source.



*Figure 7. Warning Label*