

Draft

**Landis+Gyr
Network Bridge
N2200/N2250
Data Sheet**

Publication: 98-1822 Rev AA



Draft

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Publication: 98-1822 Rev AA			
Revision History			
Modification Date	Revision	Description	Author
	AA	Draft - Work in Progress	Vicky Costello
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Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP) Data Sheet

Product Overview

The Landis+Gyr Network Bridge provides the basis for a powerful RF wireless mesh network for remote data collection and end-device monitoring and control. The Network Bridge supports full two-way peer-to-peer communication to all devices within the network. The Network Bridge offers advanced functionality, such as individual message prioritization, additional memory for localized intelligence, and it is based on the Linux operating system. The N2200 (RF Mesh)/N2250 (RF Mesh IP) provides interface and control to distribution equipment and critical devices that require low latency.



Figure 1 - 1. N2200/N2250 Network Bridge

In addition to the standard RF Mesh and RF Mesh IP radios, the N2200/N2250 has one internal slot that can be fitted with LTE wireless or other future WAN technologies. The N2200/N2250 comes equipped with two serial and two Ethernet ports, and WiFi for configuration. Landis+Gyr's Network Bridge/Network Gateway Platform offers a family of Field Area Network Devices that can be configured and deployed to build a robust communication network infrastructure, enabling communication to edge devices in the field.



NOTE: Network Bridge, N2250 (RF Mesh IP), can support the Wi-SUN Field Area Network (FAN) profile through over-the-air (OTA) firmware upgrades.

FCC ID Labels

FCC ID Label content is shown in Figure 2 and is required for RF Mesh (2200) and RF Mesh IP (2250). If the X in N22X0, is 0, then this label would be for RF Mesh. If X is 5, then it would be for RF Mesh IP.

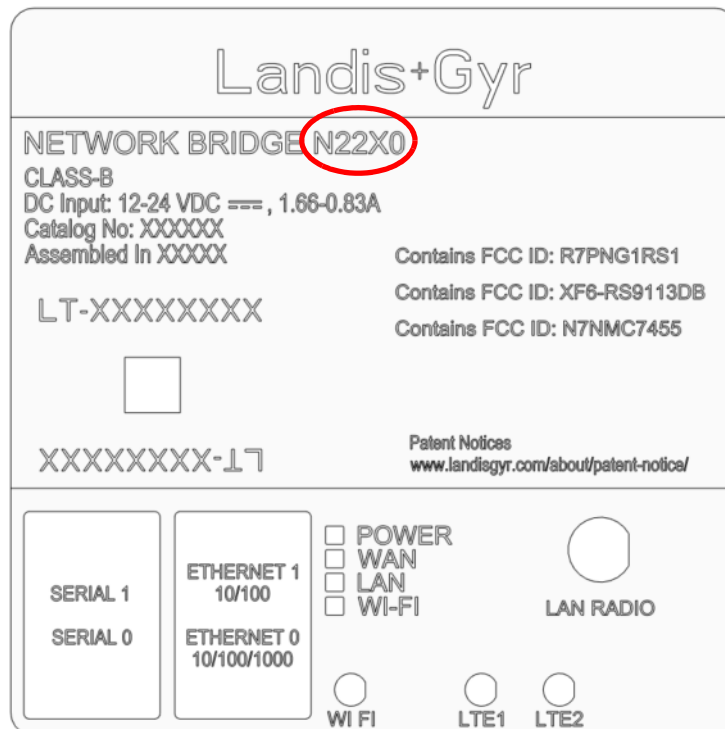


Figure 2. FCC ID Label

CUID Details



Figure 3. CUID Details

Dimensions

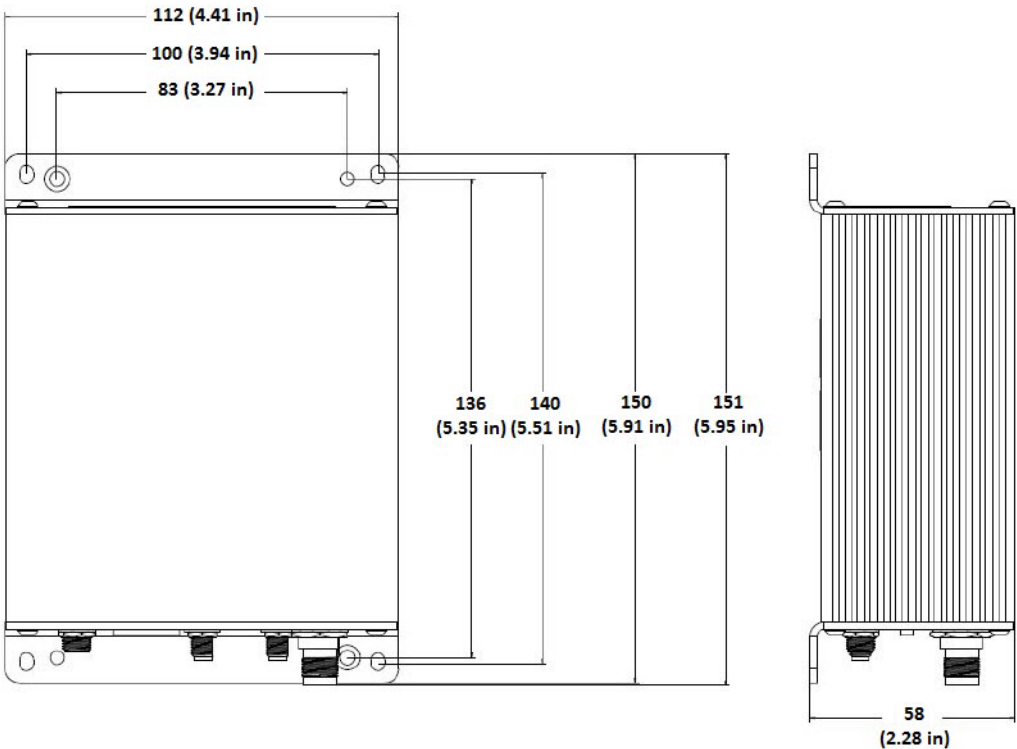


Figure 4. Network Bridge Physical Dimensions (mm)

Data Ports Pin-Out

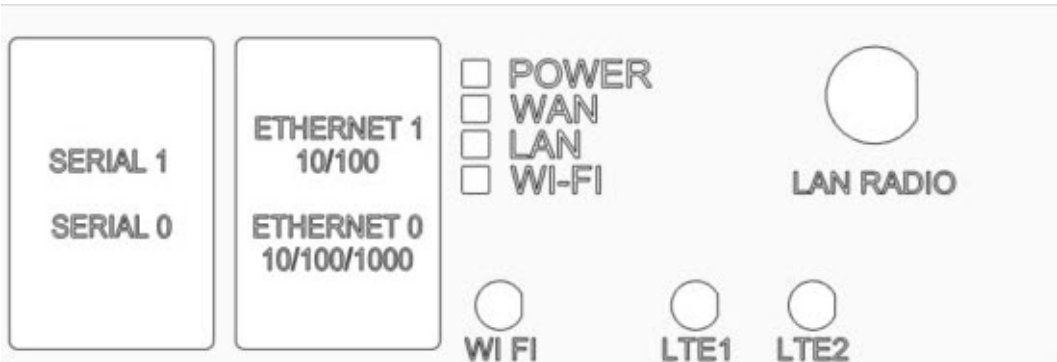


Figure 5. Data Ports Pin-Out

N2200/N2250 Specifications

Product Specifications

Table 1 lists the general product specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series.

**Table 1. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Product Specifications**

Element	Description
Electrical (General)	
Input Voltage Range	12-24 VDC +/- 20% (9.6-28.8 VDC)
Current	1.66A-0.83A
Processing Unit	
CPU	Cortex A5
Clock Speed	536 MHz
RAM Memory	512 MB DDR2 RAM
FLASH Memory	2 GB NAND + 4 GB External
Ethernet	
ETH 0	10/100/1000 Ethernet
ETH 1	10/100 Ethernet
WIFI	Yes
LTE Cat6 (US Only-ATT and Verizon)	Yes
Mechanical	
Enclosure	Black Anodized Aluminum, IP41 (ingress protection from dripping condensation and solid material larger than 1mm)
Dimensions	55.20mm W X 120.00mm D X 112.10mm H (2.17" W x 4.72" D x 4.41" H)
Weight	1.10 lbs (0.50 kg)
Operating Temperature Range	-40°C to 60°C (-40 to 140°F)
Storage Temperature Range	-40°C to 85°C (-40 to 185°F)
Limited Lifetime	
Life	20 years

Radio Specifications Americas

Table 2 lists the radio specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series for Americas.

**Table 2. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Radio Specifications Americas**

Element	Description
Radio (General)	
Radio Model	Model: NIC AM
Communication Protocol (PHY)	IEEE 802.15.4g - SUN FSK PHY
RF Frequency Range	North America: 902-928 MHz
	Brazil: 902-907.5, 915-928 MHz
Channel Spacing	N2250 (RF Mesh IP): 400 KHz
	N2200 (RF Mesh): 100, 300 KHz
RF Data Rate	N2250 (RF Mesh IP): 50, 150, 200 Kbps
	N2200 (RF Mesh): 9.6, 19.2, 38.4, 115.2 Kbps
Bridge Radio Processing Unit	
CPU	Dual-core Cortex M4
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
Receiver	
RF Mesh IP:	
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
RF Mesh:	
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
Transmitter	

**Table 2. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Radio Specifications Americas (Continued)**

Element	Description
Output Power (at Antenna Connector)	50 mW to 820 mW
Modulation Type	2FSK, 2GFSK
Out-of-band Spurious Emissions	< -50 dBc
Antennas Approved	
Type	Vertically-Oriented Whip
Peak Gain	5.5dBi
Whip, Skywave MMG-11, Rev B	5.5dBi Gain, 902-928 MHz, 50 ohms
Type	Vertically-Oriented Dipole
Peak Gain	5.15dBi
Dipole, Laird FG9023	5.15dBi Gain, 902-928 MHz, 50 ohms
Type	Vertically-Oriented Monopole
Peak Gain	5.15dBi
Monopole, Skywave 11-1106E	5.15dBi Gain, 902-928 MHz, 50 ohms

Radio Specifications India

Table 3 lists the radio specifications for the N2200 (RF Mesh)/N2250 (RF Mesh IP) Network Bridge Series for India.

**Table 3. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Radio Specifications India**

Element	Description
Radio (General)	
Radio Model	Model: NIC IN
Communication Protocol (PHY)	IEEE 802.15.4-2015 - SUN FSK PHY
RF Frequency Range	865-867 MHz
Channel Spacing	N2250 (RF Mesh IP): 200 KHz
	N2200 (RF Mesh): 100 KHz
RF Data Rate	N2250 (RF Mesh IP): 50, 150 Kbps
	N2200 (RF Mesh): 9.6, 19.2, 38.4 Kbps
Bridge Radio Processing Unit	
CPU	Dual-core Cortex M4
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
Receiver	
RF Mesh IP:	
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
RF Mesh:	
Sensitivity (at 90% packet success rate, conducted, typical)	-113 dBm(9.6 Kbps)
	-110 dBm(19.2 Kbps)
	-107 dBm(38.4 Kbps)
Adjacent Channel Rejection	30 dB
Alternate Channel Rejection	35 dB
Transmitter	
Output Power (at Antenna Connector)	50 mW to 1W
Modulation Type	2FSK, 2GFSK

**Table 3. Network Bridge N2200 (RF Mesh)/N2250 (RF Mesh IP)
Radio Specifications India(Continued)**

Element	Description
Out-of-band Spurious Emissions	<-50 dBc
Antenna Requirements	
Type	Vertically-oriented whip
Peak Gain	≤5.5 dBi

Radio Specifications Hong Kong

Table 4 lists the radio specifications for the N2250 (RF Mesh IP) Network Bridge Series for Hong Kong.

**Table 4. Network Bridge N2250 (RF Mesh IP)
Radio Specifications Hong Kong**

Element	Description
Radio (General)	
Radio Model	Model: NIC HK
Communication Protocol (PHY)	IEEE 802.15.4g
RF Frequency Range	920-925 MHz
Channel Spacing	400 KHz
RF Data Rate	50, 150, 200 Kbps
Bridge Radio Processing Unit	
CPU	Dual-core Cortex M4
Clock Speed	120 MHz
RAM Memory	304 Kbytes
FLASH Memory	2 MB + 4MB External
ROM Memory	8 Kbytes
Receiver	
RF Mesh IP:	
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
Alternate Channel Rejection	35 dB
Transmitter	
Output Power (at Antenna Connector)	50 mW to 1W
Modulation Type	2FSK, 2GFSK
Out-of-band Spurious Emissions	<-20 dBm ERP
Antenna Requirements	
Type	Vertically-oriented whip
Peak Gain	≤ 2 dBi

Regulatory Compliance

Safety and EMC

Table 5. Regulatory Standards Compliance: Safety and EMC

Specification	Description
Safety - Certification pending to:	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 0 device. Certification Pending.
EMC - Certification pending to:	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 15B, Unintentional Radiators
	IC ICES-003:2016Ed.6

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.

RF Exposure

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

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

Cet équipement doit être installé et utilisé à une distance minimale de 30cm 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 the antennas specified in this document. Antennas with higher gain may result in EIRP levels in excess of the FCC limit.

Antennas of a type other than whip, dipole, and monopole are not FCC approved for this device.



NOTE: If you increase the power from the factory settings, this can cause communication problems for other radios in the network.

Requirement for Hosting Certified Radios

The following radio modules are approved for use in the Bridge.

- NIC
- Cell Modems
- WiFi

Transmitters that are added to the Bridge require testing to be approved.

- If the transmitters are added by the customer, the customer is responsible for this testing.
- If Landis+Gyr adds these modules, the testing will be performed, and they will be added to the list of approved modules.

Industry Canada

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device. Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter (5294A-NG1R1S1) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved Antenna: Whip, 5.5 dBi gain, 902-928 MHz, 50 ohms.

Approved Antenna: Dipole, 5.15 dBi gain, 902-928 MHz, 50 ohms.

Approved Antenna: Monopole 2.15 dBi gain, 902-928 MHz, 50 ohms.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1)

l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio (5294A-NG1R1S1) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Brazil

Anatel

Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

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.