



# NWK200: Extrovert 4G LTE Modem

Ideal for today's mobile, edge computing and Industrial Internet of Things applications, the NWK200 enables reliable cellular connectivity anywhere.

[logicsupply.com/nwk200](http://logicsupply.com/nwk200)



## Failover Protection

For mission critical data, the NWK200 connects you to the 4G LTE network as a vital backup method for transferring information, especially in mobile or fluctuating power environments.

## Pre-installed & Pre-certified

The NWK200 has been pre-certified for end device use in a wide range of our industrial PC systems, giving you the freedom to choose the platform that works best for your needs.

## Secure & Protected

The NWK200 gives you the reliable connectivity of the 4G network, combined with the peace of mind in knowing your data is safe from security threats and even environmental challenges.



### US Office

Phone: +1 802 861 2300  
Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)



## NWK200 Product Manual

Important Notices and Warnings . . . . .	2
Specifications & Dimensional Drawings . . . . .	3
Product Information . . . . .	4
Setting up AT terminal applications & Setup for Internet browsing . . . . .	5
Switching SIM Card Slots & AT Commands . . . . .	6
Pin Connectors . . . . .	7

### US Office

Phone: +1 802 861 2300  
Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Important Notices and Warnings

### Important Notice

Due to the nature of wireless communications, transmission and reception of data can never be guaranteed. Data may be delayed, corrupted (i.e., have errors) or be totally lost. Although significant delays or losses of data are rare when wireless devices such as the Extrovert family of products are used in a normal manner with a well constructed network, the Extrovert family of products should not be used in situations where failure to transmit or receive data could result in damage of any kind to other equipment, the user or any other party, including but not limited to personal injury, death or loss of property. Logic Supply accepts no responsibility for damages of any kind resulting from failures, delays or errors in data transmitted or received. The purchase and use of the Extrovert family of products does not come with, or constitute a wireless or data plan. A separate plan with your carrier is required.

### Safety and Hazards

**CAUTION:** For your own safety and to ensure continued proper operation, Extrovert products should not be used where explosive atmospheres may be present or where radio interference may cause damage to, or disruption in service from, other equipment.

**IMPORTANT NOTE:** Maintain at least 20 cm of separation between the LTE antenna and the user's body while in regular operation. Do not use Extrovert products in the vicinity of medical equipment as it may cause potentially disruptive interference.

Do not co-locate an Extrovert-enabled device with any other transmitting system.

To comply with FCC/IC regulations in North America that limit both maximum RF output power and human exposure to RF radiation (SAR), the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed the limits outlined in the table below.

Device	Technology	Band	Frequency	Maximum antenna gain (dBi)
EM7455 Embedded Module	LTE	2	1850-1910	6
		4	1710-1755	6
		5	824-849	6
		7	2500-2570	6
		12	699-716	6
		13	777-787	6
		25	1850-1915	6
		26	814-849	6
		30	2305-2315	1 (See *Important note below.)
		41	2496-2690	6
	UMTS	2	1850-1910	6
		4	1710-1755	6
		5	824-849	6

\*Important: The FCC and IC have a strict EIRP limit in Band 30 for mobile and portable stations in order to protect adjacent satellite radio, aeronautical mobile telemetry, and deep space network operations. Mobile and portable stations must not have antenna gain exceeding 1 dBi in Band 30. Additionally, both the FCC and IC prohibit the use of external vehicle-mounted antennas for mobile and portable stations in this band.

### US Office

Phone: +1 802 861 2300  
 Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

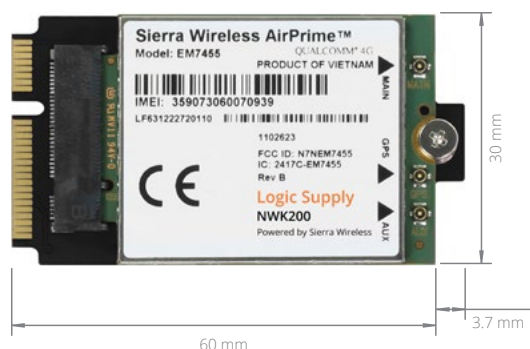
Phone: +31 85 2733760  
 Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Specifications

SKU	NWK200	SIM Card Socket Size	2FF (Mini-SIM)
Carriers	Regional: NA/EMEA	Signal Type	USB 2.0 (on Mini PCIe)
Bands	LTE: 3GPP Release 11 Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 20, 25, 26, 29, 30, 41 MIMO 2x2 Rx Diversity	Expansion Options	SIM Card Socket (2)
	HSPA+/UMTS: 3GPP Release 9 Bands 1, 2, 3, 4, 5, 8	Operating Temp. Range	-30°C ~ 70°C
	SMS: SMS over IMS for LTE SMS over SGs for LTE	Drivers Supported	Ubuntu Windows 7 Windows 8.1 Windows 10
	GNSS: GPS: 1575.42 MHz GLONASS: 1602 MHz BeiDou: 1561.098 MHz	Regulatory Information	CE FCC RoHS
		Firmware Upgrade	Via USB Via FOTA
Data Range	Cat 6 (300 Mb/s DL, 50 Mb/s UL)	Power Supply	3.7V nominal (3.1V to 4.4V)
Interface	Mini PCIe (Full Height+)	Consumption Current	LTE max power (all bands): 1.5A Idle (sleep): 2.6mA
		(U)SIM	Supports 1.8V, 3V SIM, SIM toolkit
		Dimensions	63.7 x 30

## Dimensional Drawings

*All measurements in mm*



### US Office

Phone: +1 802 861 2300  
 Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
 Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Product Information

### Product Description

The Logic Supply NWK200 is based on the PCI Express Mini Card standard with a USB 2.0 interface and utilizes the Sierra EM7455 Cellular Module.

The NWK200 is an available option within Logic Supply's full range of industrial PCs. See [www.logicsupply.com](http://www.logicsupply.com) to select your PC platform. Add 4G LTE connectivity during the system configuration stage. Unless specifically authorized, the NWK200 is not available for individual sale as a component.

### High Speed Connectivity

Based on the Sierra EM7455 Cellular Module, Logic Supply 4G modem supports the latest 4G networks in EMEA/NA. The mPCIe form factor allows easy integration into smaller and thinner devices. Optimized for low power consumption, Logic Supply 4G modems are ideal for today's mobile computing, networking, and industrial IoT applications. This powerful LTE module supports throughput of up to 300 Mb/s with LTE Cat 6.

### Antenna RF interfaces (ANT1 / ANT2)

NWK200 is based on the Sierra EM7455 module and provides two RF interfaces for connecting the external antennas:

MAIN represents the primary RF input/output for transmission and reception of LTE RF signals. The MAIN pin of NWK200 has a nominal characteristic impedance of 50  $\Omega$  and must be connected to the primary Tx / Rx antenna through a 50  $\Omega$  transmission line to allow proper RF transmission and reception.

AUX represents the secondary RF input for the reception of the LTE RF signals for the Down-Link MIMO 2 x 2 radio technology supported by NWK200 as required feature for LTE category 4 UEs, and for alternate reception of GPS. The AUX pin of NWK200 has a nominal characteristic impedance of 50  $\Omega$  and must be connected to the secondary Rx antenna through a 50  $\Omega$  transmission line to allow proper RF reception.

### USB in Windows

USB drivers are provided for Windows operating system platforms and can be obtained from the NWK200 product page at [www.logicsupply.com](http://www.logicsupply.com).

USB drivers are available for the following operating system platforms:

- Windows Vista
- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

The module firmware can be upgraded over the USB interface by means of the FOTA feature, or using the firmware updater as provided by Sierra Wireless.

### USB in Linux/Android

It is not required to install a specific driver for each Linux-based or Android-based operating system (OS) to use the module USB interface, which is compatible with standard Linux/Android USB kernel drivers. The full capability and configuration of the module USB interface can be reported by running "lsusb -v" or an equivalent command available in the host operating system when the module is connected.

#### US Office

Phone: +1 802 861 2300  
Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

#### EU Office

Phone: +31 85 2733760  
Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Setting up AT terminal applications for communication with NWK200

1. Determine which COM port is being used by the NWK200. Open the Windows Device Manager (devmgmt.msc), then open the Modems flyout and right click the Sierra Modem device. Right-click Properties. On the Modem tab, the COM device used is listed at the top.
2. Run the AT terminal application (e.g. puTTY), select Serial in the connection type and configure the port with these settings:
  - Data rate: 115200 b/s
  - Stop bits: 1
  - Data bits: 8
  - Flow control: HW
  - Parity: N
3. Click Open.
4. The AT terminal is ready to use. For the complete list of AT commands supported by the modules and their syntax, see the EM7455 AT Commands Manual.

## NWK200 setup for Internet browsing

If the correct carrier-specific firmware exists and is installed, most connection settings are configured automatically.

To manage your connection in Windows 7, download and install Sierra Skylight. With Skylight running, click the Connect button.

In Windows 8 and 10, you can do this from the Windows connection manager (bottom right in the taskbar or Settings->Network & Internet->Ethernet).

To enable NWK200 support in Ubuntu, you must use a modem manager version from yakkety or newer and kernel revision greater than 4.10. For use in 16.04, install the HWE kernel, enable a future repo, and then install the updated modem manager:

- `sudo apt-get install linux-image-generic-hwe-16.04`
- `sudo add-apt-repository "deb http://us.archive.ubuntu.com/ubuntu zesty main"`
- `sudo apt-get update`
- `sudo apt-get install modemmanager`
- Reboot.
- From the network manager menu (top right), select Edit Connections.
  - Click Add, then select Mobile Broadband and follow the prompts to add your LTE connection configuration.
- `sudo add-apt-repository -r "deb http://us.archive.ubuntu.com/ubuntu zesty main"`

If you did not purchase your NWK200 with a SIM card pre-installed, you may need to install carrier-specific firmware before the device can connect properly. Visit the NWK200 product page at [www.logicsupply.com/nwk200](http://www.logicsupply.com/nwk200) for links to the available firmware for your device. Updating your firmware in Windows is as simple as downloading and running the executable for your carrier. If your carrier has no specific firmware provided, use 'Generic,' then obtain the correct APN information from your carrier and enter it in the appropriate Skylight or Windows Connection manager menus.

### US Office

Phone: +1 802 861 2300  
 Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
 Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Switching SIM Card Slots

To switch the active SIM slot, open the AT terminal as described in “Setting up AT terminal applications.” The AT commands “AT!UIMS=0” and “AT!UIMS=1” allow you to switch the active SIM. If your Logic Supply system is equipped with an exterior SIM socket, it is usually connected to UIM 1.

## AT Commands

For a complete description and syntax of the AT commands supported by each Sierra EM7455 cellular module, see the Sierra EM/MC74xx series AT commands manual.

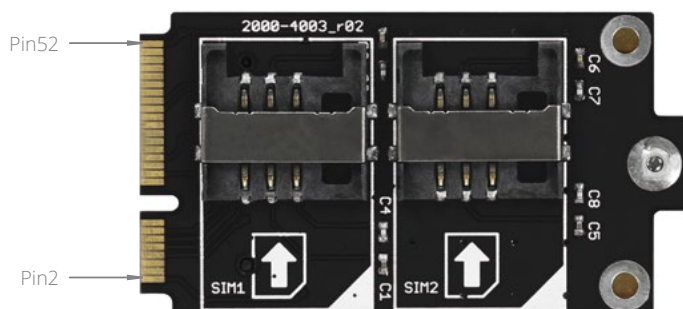
### US Office

Phone: +1 802 861 2300  
Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)

## Pin Connectors



PIN Number	PIN Description
2, 24, 39, 41, 52	VCC Power Power Input
4, 9, 15, 18, 21, 26, 27, 29, 34, 35, 37, 40, 43, 50	GND Ground
8	SIM_VCC—External SIM Power
10	SIM_IO—External SIM Data I/O
12	SIM_CLK—External SIM Clock
14	SIM_RST—External SIM Reset
20	W_DISABLE_N
36	USB_DN
38	USB_DP
1, 3, 5, 6, 7, 11, 13, 16, 17, 19, 22, 23, 25, 28, 30, 31, 32, 33, 42, 44, 45, 46, 47, 48, 49, 51	Not Used

### US Office

Phone: +1 802 861 2300  
Email: [info@logicsupply.com](mailto:info@logicsupply.com)  
[www.logicsupply.com](http://www.logicsupply.com)

### EU Office

Phone: +31 85 2733760  
Email: [info@logicsupply.eu](mailto:info@logicsupply.eu)  
[www.logicsupply.com](http://www.logicsupply.com)