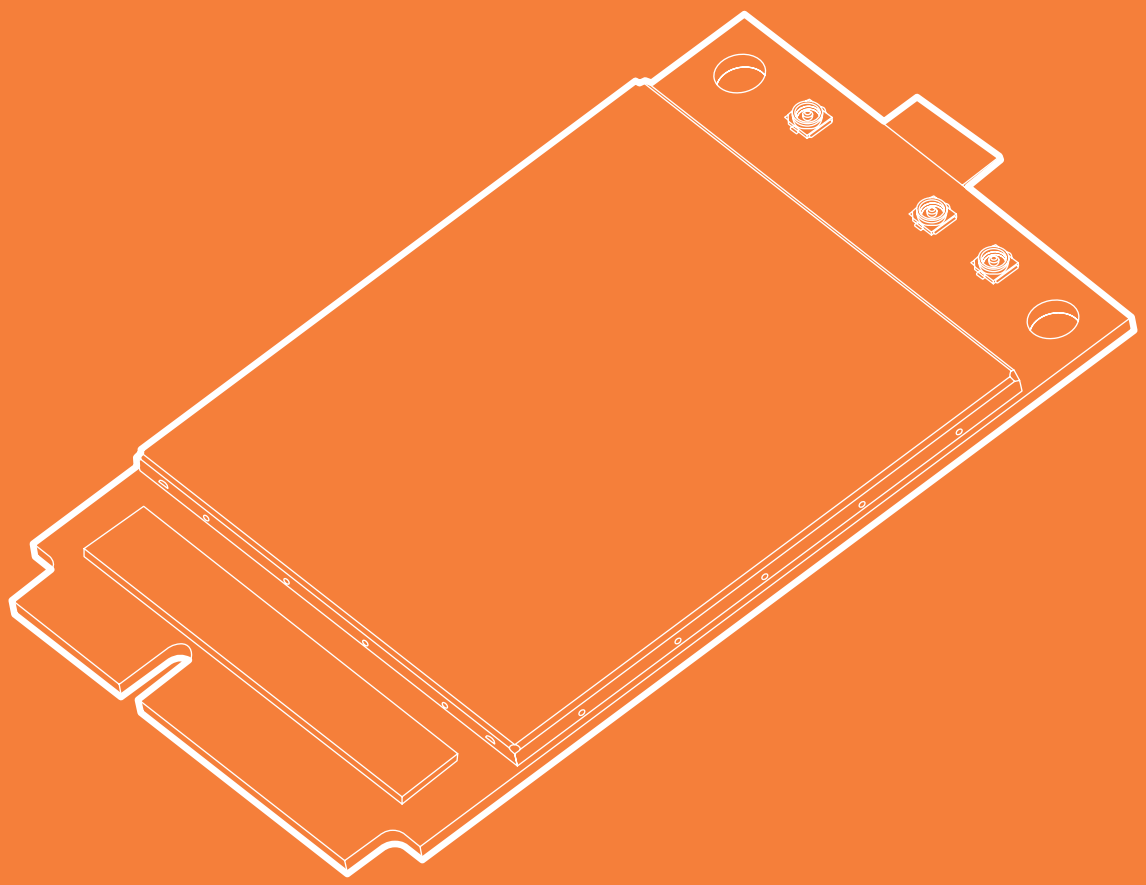
ONLOGIC

NWK200: Extrovert 4G LTE Modem

Revision Date 2019.09.06



US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 85 2733760
Email: info@onlogic.eu
www.onlogic .com

NWK200 Product Manual

Revision Date 2019.09.06

Important Notices and Warnings **2**
Important Notice 2
Limitation of Liability 2
Safety and Hazards 2

Overview **4**
Specifications 4
Product Description 4
High Speed Connectivity 4
Antenna RF interfaces (ANT1 / ANT2) 4

Initial Setup **6**
SIM installed internally by OnLogic - Windows OS 6
SIM installed internally by OnLogic - Ubuntu Desktop OS 6
SIM installed internally by OnLogic - Ubuntu Server OS 7
SIM installed in external slot by User - Windows OS 8
SIM installed in external slot by User - Ubuntu Desktop OS 9
SIM installed in external slot by User - Ubuntu Server OS 10
Ubuntu Server 16 with NWK200 10

Product Information **12**
Dimensions 12
Pin Connectors 12

Technical Functions **13**
Connecting to the modem 13
Connecting to modem via PuTTY (Windows) 13
Connecting to modem via minicom (Ubuntu) 13
Configuring Access Point Name (APN) 13
Configure the APN using Skylight 13
Configure the APN using Windows 14
Configure the APN using AT commands 14
AT Commands 14
Report current status **14**
Switching SIM Card Slots 14
Password-protected AT Commands 14
Troubleshooting 15
Known limitations 15

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.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. OnLogic 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.

Limitation of Liability

The information in this manual is subject to change without notice and does not represent a commitment on the part of OnLogic. OnLogic AND ITS AFFILIATES SPECIFICALLY DISCLAIM LIABILITY FOR ANY AND ALL DIRECT, INDIRECT, SPECIAL, GENERAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUE OR ANTICIPATED PROFITS OR REVENUE ARISING OUT OF THE USE OR INABILITY TO USE ANY OnLogic PRODUCT, EVEN IF OnLogic AND/OR ITS AFFILIATES HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR THEY ARE FORESEEABLE OR FOR CLAIMS BY ANY THIRD PARTY.

Notwithstanding the foregoing, in no event shall OnLogic and/or its affiliates aggregate liability arising under or in connection with the OnLogic product, regardless of the number of events, occurrences, or claims giving rise to liability, be in excess of the price paid by the purchaser for the OnLogic product.

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.

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Important Notices and Warnings (cont.)

Device	Technology	Bands	Uplink Frequencies (MHz)	Downlink Frequencies (MHz)	Maximum antenna gain (dBi)
EM7455	LTE	2	1850 - 1910	1930 - 1990	6
		4	1710 - 1755	2110 - 2155	6
		5	824 - 849	869 - 894	6
		7	2500 - 2570	2620 - 2690	9
		12	699 - 716	729 - 746	6
		13	777 - 787	746 - 756	6
		25	1850 - 1915	1930 - 1995	6
		26	814 - 849	859 - 894	6
		30	2305 - 2315	2350 - 2360	1
		41	2496 - 2690		9
	UMTS	2	1850 - 1910	1930 - 1990	6
		4	1710 - 1755	2110 - 2155	6
		5	824 - 849	869 - 894	6

*Important: The FCC and IC have a strict EIRP limit in Band 30 for mobile and portable stations in order to protect adjacent satelite 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@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Overview

Specifications

SKU	NWK200
Carriers	Regional: NA/EMEA
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 **HSPA+/UMTS:** 3GPP Release 9 Bands 1, 2, 3, 4, 5, 8 **SMS:** SMS over IMS for LTE SMS over SGs for LTE **GNSS:** GPS: 1575.42 MHz GLONASS: 1602 MHz BeiDou: 1561.098 MHz
Data Rate	Cat 6 (300 Mb/s DL, 50Mb/s UL)
Interface	Mini PCIe (Full Height+)
SIM Card Socket Size	2FF (Mini-SIM)
Signal Type	USB 2.0 (on Mini PCIe)
Expansion Options	SIM Card Socket (2)
Operating Temp. Range	-30°C ~ 70°C
Drivers Supported	Ubuntu Windows 7 Windows 8.1 Windows 10
Regulatory Information	CE FCC RoHS
Firmware Upgrade	Via USB Via FOTA
Power Supply	3.7V nominal (3.1V to 4.4V)
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

Product Description

The OnLogic 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 OnLogic's full range of industrial PCs. See www.onlogic.com to select your PC platform. Add 4G LTE connectivity during the system configuration stage. The NWK200 is not available for individual sale as a component.

High Speed Connectivity

Based the on Sierra EM7455 Cellular Module, OnLogic 4G modem supports 4G networks in EMEA/NA. The mPCIe form factor allows easy integration into smaller and thinner devices. Optimized for low power consumption, OnLogic 4G modems are ideal for today's mobile computing, networking, and industrial IoT applications. This powerful LTE module supports transfers of up to 300 Mb/s downlink and 50 Mb/s uplink 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 Ω and must be connected to the primary Tx / Rx antenna through a 50 Ω transmission line to allow proper RF transmission and reception.

Antenna RF interfaces (ANT1 / ANT2) (cont.)

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Overview (cont.)

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 Ω and must be connected to the secondary Rx antenna through a 50 Ω transmission line to allow proper RF reception.

When installed in a OnLogic computer, MAIN and AUX RF interfaces are connected to external antenna mounts. The external mounts each use an SMA (female) connector. Our line of compatible cellular antennas all use a standard SMA (male) connector.

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup

SIM installed internally by OnLogic - Windows OS

- Create a free account on Sierra Wireless website: https://source.sierrawireless.com/
- Download and Install USB drivers for EM7455 from Sierra Wireless website: https://source.sierrawireless.com/resources/airprime/software/airprime-em_mc-series-windows-drivers-qmi-build-latest-release/
- Verify drivers were installed correctly by accessing Device Manager. In Device Manager, user should see:
  - 1 modem device
  - 2 network devices
  - 1 sensor device (GPS)
  - (several) ports (virtual COMs)
- Download and Run the Firmware executable specific to the Carrier who manufactured the installed SIM and with whom you have a service plan. Firmware can be downloaded from the Sierra Wireless Website: https://source.sierrawireless.com/resources/airprime/minicard/74xx/airprime-em_mc74xx-approved-fw-packages/
- If using Windows 7, download and install Skylight Connection Manager from the Sierra Wireless website: https://source.sierrawireless.com/resources/airprime/software/airprime-em_mc-series-connection-manager/
- If using Windows 7, use Skylight Connection Manager to manage and monitor connection.
- If using Windows 8 or 10, use Windows connection manager (Settings -> Network & Internet) or Skylight Connection Manager to manage and monitor connection.
- Connect cellular antennas to mounts if not done already.
- Contact cellular carrier account representative to activate service. User will need the IMEI and ICCID numbers to activate service. These numbers are found on the product label and on the User Guide included in the box with every system.

SIM installed internally by OnLogic - Ubuntu Desktop OS

NWK200 support in Ubuntu 16 Desktop requires:

- Kernel version greater than 4.7
- Modem manager from Ubuntu 16.10 or later

- If running Ubuntu 16.04, install modem manager from a later version
  - From the Ubuntu terminal,
    - *sudo add-apt-repository "deb http://us.archive.ubuntu.com/ubuntu artful main"*
    - *sudo apt-get update*
  - Install the new modem manager
    - *sudo apt-get install modemmanager*
  - (Optional) remove repository
    - *sudo add-apt-repository -r "deb http://us.archive.ubuntu.com/ubuntu artful main"*
- If running Ubuntu 16.04, make sure kernel version is newer than 4.7.
- Check kernel version from the Ubuntu terminal:
- uname -r
- If kernel version is older than 4.7, update to newer version.
- sudo apt-get install linux-image-generic-hwe-16.04

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup (cont.)

SIM installed internally by OnLogic - Ubuntu Desktop OS (cont.)

- Reboot computer.
- Configure cellular connection
  - From the network manager menu (top right), select Edit Connections.
  - Click Add, then <<cellular option>> and follow the prompts to add your LTE connection configuration. (Prompts such as Add a Mobile Connection, Set Location, Carrier Broadband Plan**, and Save this connection.)
- Connect cellular antennas to mounts if not done already.
- Contact cellular carrier account representative to activate service. User will need the IMEI and ICCID numbers to activate service. These numbers are found on the product label and on the User Guide included in the box with every system.

** NOTE: If Verizon is Carrier, then multiple options may be presented.

SIM installed internally by OnLogic - Ubuntu Server OS

Ubuntu Server 16 with NWK200

- Install tools necessary for configuration. From the Ubuntu terminal
  - *sudo rm /etc/apt/apt.conf*
  - *echo deb http://us.archive.ubuntu.com/ubuntu artful main | sudo tee -a /etc/apt/sources.list*
  - *sudo apt-get update*
  - *sudo apt-get install -y network-manager modemmanager minicom*
- Remove interfaces which could interfere
  - *sudo vi /etc/network/interfaces* and remove any entry for 'enp1s0' or 'enp2s0'
- Configure modem
  - *sudo minicom -s*
    - Serial port setup
      - Press a - change name to '/dev/ttyUSB2'
      - Press g to change software flow control to YES
      - Exit (this will drop you to a new shell)
    - Enter these commands one at a time
      - *ate1*
      - *at!entercnd="A710"*
      - *at!usbcomp=1,1,100D*
      - *at!reset*
    - Press CTRL+A, Q
- Restart the computer. From Ubuntu terminal
  - *sudo reboot*
- From Ubuntu terminal
  - *sudo rm /usr/lib/NetworkManager/conf.d/<10-global...>*
  - *sudo touch /usr/lib/NetworkManager/conf.d/<10-global...>*
  - *sudo systemctl restart NetworkManager*
  - *sudo nmcli* This will list connections. We will use the one that starts with 'cdc-wm'

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup (cont.)

SIM installed internally by OnLogic - Ubuntu Server OS (cont.)

- *sudo nmcli c add save yes connection.type gsm apn <your apn> ifname cdc-wdm0*
- *sudo nmcli d connect cdc-wdm0*

- Verify the modem is set correctly by using the minicom command and setting mentioned above. Once in the minicom shell, use the following commands to check the modem settings.
  - at!impref? displays firmware mode installed. This should match the carrier for the SIM(s) on the card.
- If firmware mode doesn't match Carrier for the SIM installed then use:
  - at!impref="CARRIER" this command loads the firmware, where CARRIER is ATT,VERIZON,SPRINT in quotes.depending on which SIM is installed on the card
- Connect cellular antennas to mounts if not done already.
- Contact cellular carrier account representative to activate service. User will need the IMEI and ICCID numbers to activate service. These numbers are found on the product label and on the User Guide included in the box with every system.

SIM installed in external slot by User - Windows OS

IMPORTANT NOTE: Externally accessible SIM slot not available in all system configurations.

- Create a free user account on Sierra Wireless website: https://source.sierrawireless.com/
- Download and Install USB drivers for EM7455 from Sierra Wireless website: https://source.sierrawireless.com/resources/airprime/software/airprime-em_mc-series-windows-drivers-qmi-build-latest-release/
- Verify drivers were installed correctly by accessing Device Manager. In Device Manager, user should see:
  - 1 modem device
  - 2 network devices
  - 1 sensor device (GPS)
  - (several) ports (virtual COMs)
- Download and Run the Firmware executable specific to the Carrier who manufactured the installed SIM and with whom you have a service plan. Firmware can be downloaded from the Sierra Wireless Website: https://source.sierrawireless.com/resources/airprime/minicard/74xx/airprime-em_mc74xx-approved-fw-packages/
- If using Windows 7, download and install Skylight Connection Manager from Sierra Wireless website: -
- Install SIM card in externally accessible slot
- Configure modem to use external SIM slot instead of internal slot 1
  - Connect to the modem via puTTY
    - In the Device Manager, find out which virtual COM the modem is attached to. Open the 'Modems' category flyout, right click the Sierra modem entry and select properties. The port is listed at the top of main page.
    - Open PuTTY and select the Serial radio button in the main window. In the <<connection>> box, replace COM1 with the COM[n] from the modem properties. Set the baud rate to 115200. Click Open.
  - Make the modem "echo" back the commandes. In the terminal window, type
    - *ATE1* and press Enter. It is possible that no text will be displayed until the command is executed.
  - Enable the external SIM slot
    - *AT!CUSTOM="UIM2ENABLE",1*

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup (cont.)

SIM installed in external slot by User - Windows OS (cont.)

- Switch which SIM slot is used
  - *AT!UIMS=1*
- Close PuTTY
- If using Windows 7, use Skylight Connection Manager to manage and monitor connection.
- If using Windows 8 or 10, use Windows connection manager (Settings -> Network & Internet) or Skylight Connection Manager to manage and monitor connection.
- Connect cellular antennas to mounts if not done already.
- Contact cellular carrier account representative to activate service. User will need the IMEI and ICCID numbers to activate service. These numbers are found on the product label AND/OR the SIM.

SIM installed in external slot by User - Ubuntu Desktop OS

IMPORTANT NOTE: Externally accessible SIM slot not available in all system configurations.

- Install SIM card in externally accessible slot
- Configure modem
  - *sudo minicom -s*
    - Serial port setup
      - Press a - change name to '/dev/ttyUSB2'
      - Press g to change software flow control to YES
      - Exit (this will drop you to a new shell)
    - Enter these commands one at a time
      - *ate1*
      - *at!entercnd="A710"*
      - *at!usbcomp=1,1,100D*
      - *at!reset*
    - Press CTRL+A, Q
- Restart the computer. From Ubuntu terminal
  - *sudo reboot*
- Change active SIM slot to be the external slot
  - sudo minicom -s
    - Serial port setup
      - Press a - change name to '/dev/ttyUSB2'
      - Press g to change software flow control to YES
      - Exit (this will drop you to a new shell)
    - Enter these commands one at a time
      - *ate1*
      - *AT!CUSTOM="UIM2ENABLE",1*
      - *AT!UIMS=1*

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup (cont.)

SIM installed in external slot by User - Ubuntu Desktop OS (cont.)

- Press CTRL+A, Q

- If running Ubuntu 16.04, install modem manager from a later version
  - From the Ubuntu terminal,
    - *sudo add-apt-repository "deb http://us.archive.ubuntu.com/ubuntu artful main"*
    - *sudo apt-get update*
  - Install the new modem manager
    - *sudo apt-get install modemmanager*
  - (Optional) remove repository
    - *sudo add-apt-repository -r "deb http://us.archive.ubuntu.com/ubuntu artful main"*
- If running Ubuntu 16.04, make sure kernel version is newer than 4.7.
  - Check kernel version from the Ubuntu terminal:
    - *uname -r*
  - If kernel version is older than 4.7, update to newer version.
    - *sudo apt-get install linux-image-generic-hwe-16.04*
- Reboot computer.
- Configure cellular connection
  - From the network manager menu (top right), select Edit Connections.
  - Click Add, then <<cellular option>> and follow the prompts to add your LTE connection configuration.
- Connect cellular antennas to mounts if not done already.
- Contact cellular carrier account representative to activate service. user will need the IMEI and ICCID numbers to activate service. These numbers are found on the product label.

SIM installed in external slot by User - Ubuntu Server OS

IMPORTANT NOTE: Externally accessible SIM slot not available in all system configurations.

Ubuntu Server 16 with NWK200

- Install SIM card in externally accessible slot
- Install tools necessary for configuration. From the Ubuntu terminal
  - *sudo rm /etc/apt/apt.conf*
  - *echo deb http://us.archive.ubuntu.com/ubuntu artful main | sudo tee -a /etc/apt/sources.list*
  - *sudo apt-get update*
  - *sudo apt-get install -y network-manager modemmanager minicom*
- Remove interfaces which could interfere
  - *sudo vi /etc/network/interfaces and remove any entry for 'enp1s0' or 'enp2s0'*
- Configure modem
  - *sudo minicom -s*
    - Serial port setup
      - Press a - change name to '/dev/ttyUSB2'

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Initial Setup (cont.)

SIM installed in external slot by User - Ubuntu Server OS (cont.)

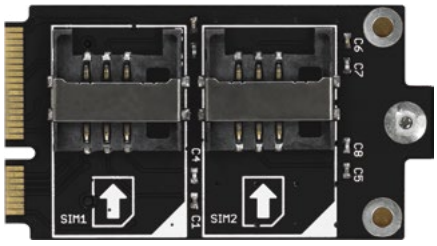
        - Press g to change software flow control to YES
        - Exit (this will drop you to a new shell)
    - Enter these commands one at a time
        - *ate1*
        - *at!entercnd="A710"*
        - *at!usbcomp=1,1,100D*
        - *at!reset*
    - Press CTRL+A, Q
- Restart the computer. From Ubuntu terminal
    - *sudo reboot*
- Change active SIM slot to be the external slot
    - sudo minicom -s
        - Serial port setup
            - Press a - change name to '/dev/ttyUSB2'
            - Press g to change software flow control to YES
            - Exit (this will drop you to a new shell)
        - Enter these commands one at a time
            - *ate1*
            - *AT!CUSTOM="UIM2ENABLE",1*
            - *AT!UIMS=1*
        - Press CTRL+A, Q
- From Ubuntu terminal
    - *sudo rm /usr/lib/NetworkManager/conf.d/<10-global...>*
    - *sudo touch /usr/lib/NetworkManager/conf.d/<10-global...>*
    - *sudo systemctl restart NetworkManager*
    - *sudo nmcli This will list connections. We will use the one that starts with 'cdc-wm'*
    - *sudo nmcli c add save yes connection.type gsm apn <your apn> ifname cdc-wdm0*
    - *sudo nmcli d connect cdc-wdm0*
- Verify the modem is set correctly by using the minicom command and setting mentioned above. Once in the minicom shell, use the following commands to check the modem settings.
    - *at!impref?* displays firmware mode installed. This should match the carrier for the SIM(s) on the card.
- If firmware mode doesn't match Carrier for the SIM installed then use:
    - *at!impref="CARRIER"* this command loads the firmware, where CARRIER is ATT,VERIZON,SPRINT in quotes depending on which SIM is installed.

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

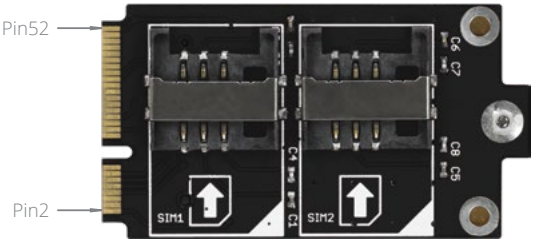
EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Product Information

Dimensions



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@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Technical Functions

Connecting to the modem

Connecting to modem via PuTTY (Windows)

- In the Device Manager, find out which virtual COM the modem is attached to.
  - Open the 'Modems' category flyout,
  - Right click the Sierra modem entry
  - Select properties. The port number [n] is listed at the top of main page.
- Open PuTTY
  - Select the Serial radio button in the main window.
  - In the <<connection>> box, replace COM1 with the COM[n] from the modem properties.
  - Set the baud rate to 115200.
  - Click Open.
- Make the modem "echo" back the commandes. In the terminal window, type
  - ATE1 and press Enter. It is possible that no text will be displayed until the command is executed.
- If Windows 7 is installed, change USB communication mode from QMI to MBIM with the following commands
  - AT!ENTERCND="passwd" <--where *passwd* is replace with actual password
  - AT!USBCOMP=1,1,100D
- User can now send any AT commands necessary

Connecting to modem via minicom (Ubuntu)

- From Ubuntu terminal
  - *sudo minicom -s*
    - Serial port setup
      - Press a - change name to '/dev/ttyUSB2'
      - Press g to change software flow control to YES
      - Exit (this will drop you to a new shell)
    - Make the modem "echo" back the commandes. In the terminal window, type
      - *ATE1*
- User can now send any AT commands necessary

Configuring Access Point Name (APN)

Users should use the carrier specific firmware when available. If not available, users using the Generic firmware may have to configure their carrier's APN before the modem will connect. Most carriers publish a FAQ for APN settings.

Configure the APN using Skylight

Windows users can download and install Skylight Connection Manager from Sierra Wireless for better connection management. Skylight is not available for other operating systems.

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Technical Functions (cont.)

Configuring Access Point Name (APN) (cont.)

Configure the APN using Windows

Windows 7 users should use Skylight. Windows 8 and 10 users may use the Windows connection manager by clicking the network icon ("PC and cable" or "signal bars") in the system tray and selecting Network Settings, then clicking the cellular network connection in the new window and selecting the option for APN settings.

Alternatively users can navigate to Settings -> Network & Internet

Configure the APN using AT commands

Ubuntu users can use minicom (see above sections "Connecting to the modem via...") to configure the APN by sending AT commands through terminal.

Windows users can use PuTTY (see above sections "Connecting to the modem via...") to configure the APN by sending AT commands through terminal.

The AT command **AT+CGDCONT** is used to set the APN using the format:

AT+CGDCONT=<index>,"<IPType>","<apn>"

For example, *AT+CGDCONT=1,"IP","internet.carrier.com"*

AT Commands

Report current status

View operational status of modem using AT command **AT!GSTATUS?**

Switching SIM Card Slots

The NWK200 comes with two built-in SIM slots. It does not have any provision for automatic SIM switching, so a user must intervene in order to change SIMs. SIM slot 1 on the card connects to UIM0 on the modem. SIM slot 2 on the card, or any motherboard or external slot, connects to UIM1.

- To select the "operating" SIM slot, run
  - AT!UIMS=n Where n is 0 or 1
- A password is not required for this command.

If an error is received switching to UIM1 then it is currently disabled (likely by a modem reset).

Use AT!CUSTOM="UIM2ENABLE",1 to enable UIM1.

IMPORTANT NOTE: Hot-swapping a SIM card (e.g. via external slot) may reset the selected UIM at which point it will have to be configured correctly again.

Password-protected AT Commands

Some of the EM7455's AT commands are protected by a password and will return an error if a password has not been entered. To enter the password, from the terminal, send

AT!ENTERCND="passwd"

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com

Technical Functions (cont.)

AT Commands (cont.)

Password is case-sensitive.

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.

Troubleshooting

Go through first time setup steps one at a time. If those aren't successful, then additional AT commands may be used to report status or change configuration of the modem. AT commands must be sent via a terminal interface such as PuTTY or minicom.

Known limitations

1. SMS (text messaging) is not supported on the VZW firmware image.
2. Windows may not accurately indicate when a SIM card is installed.
3. Static IP assignment depends on carrier network and may not be possible or consistent.

US Office
Phone: +1 802 861 2300
Email: info@onlogic.com
www.onlogic.com

EU Office
Phone: +31 088 5200 700
Email: info@onlogic.eu
www.onlogic.com