

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

NTC-100

Quick Start Guide



LANTRONIX

NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

GETTING STARTED

This quick start guide will help you set up and connect your device quickly and easily. More advanced set up instructions can be found in the user guide which can be downloaded from:

<https://www.lantronix.com/products/ntc-100-series/>

PACKAGE CONTENTS

The **NTC-100** package includes:



1 x NTC-100



1 x Quick Start Guide



1 x Y-cable
(Nano-fit to DE-9
and DC power input)



1 x DIN rail mounting bracket



1 x Torx screw

PREREQUISITES

Depending on your circumstances, you may require some of the following items to complete the installation of the **NTC-100** serial modem:

- › An AC/DC power adapter,
 - › 2.1mm centre positive jack,
 - › 100-240V AC : 12V DC/1.5A
(used in conjunction with the included Y-cable)
- › A suitable cellular antenna such as the NANT-00001-000 (LTE Tube Antenna)
- › A standard USB to USB Micro Type B cable
- › Additional screws and fasteners
- › A Windows PC or other device with an available serial or USB port
- › A terminal emulation client such as PuTTY
- › A T6 Torx driver to secure the SIM slot (optional)

DEVICE OVERVIEW

Measurements in millimeters



NTC-100
4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM



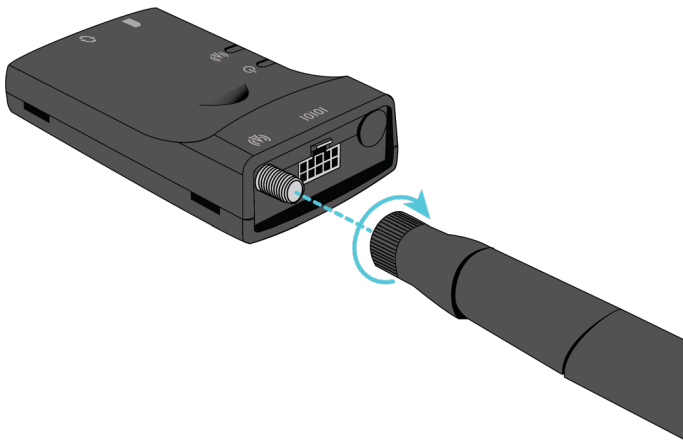
NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

INSTALLATION

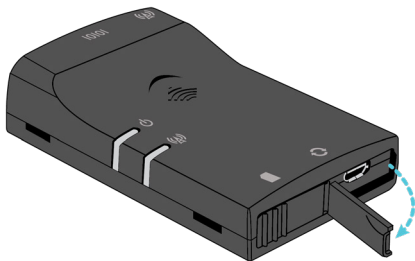
CONNECTING THE ANTENNA

Connect the antenna to the SMA connector on the **NTC-100** serial modem by placing it on the SMA connector and turning it in a clockwise direction.



INSERTING THE SIM CARD

1. Lift the cover from the right side. This reveals the Micro USB 2.0 port and the reset button.



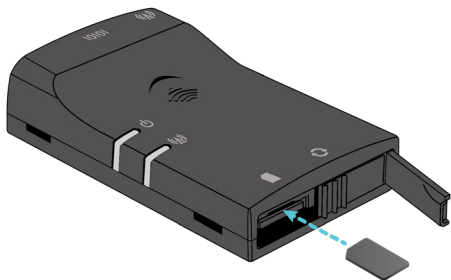
2. Slide the cover to the right to reveal the SIM card slot.



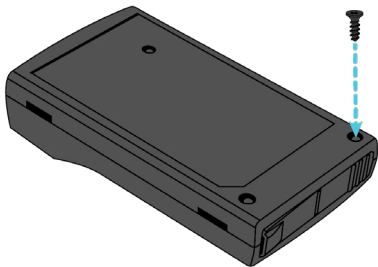
NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

3. Insert the SIM card into the slot with the gold SIM conductor pins facing down. Push the SIM card in until it locks in place. To remove the SIM card, push it in again and it will unlock.



4. Slide the cover back to the left and then push the right side closed.
5. To lock the protective cover, fasten the provided Torx screw into the hole below the SIM card slot on the bottom of the device using a T6 Torx driver.



NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

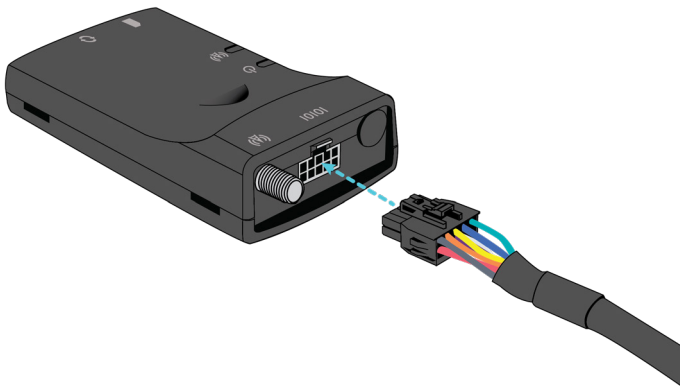
POWER AND SERIAL COMMUNICATION OPTIONS

The **NTC-100** serial modem may be connected and powered by:

- › The 10-pin power/data connector using the included Y-cable.
OR
- › The built-in 5V Micro USB socket (USB cable not included)

POWERING THE NTC-100 VIA Y-CABLE

The included Y-cable features a breakout cable providing a DC Jack. Connect the Serial plug to a Serial port on your device (e.g. computer) and then connect a 4.5-36V power source to the DC Jack to power the unit. Connect the 10-pin plug into the 10-pin connector on the **NTC-100** serial modem.



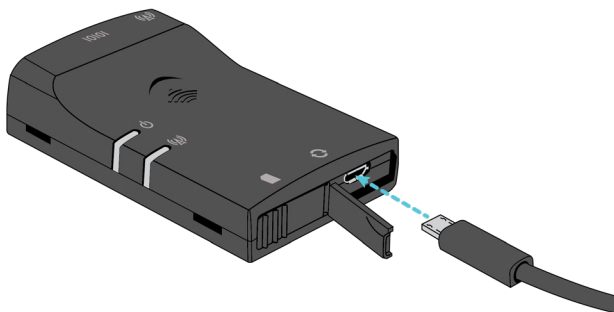
NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

POWERING THE NTC-100 SERIAL MODEM VIA 5V MICRO USB SOCKET

The **NTC-100** serial modem features a USB port which can optionally be used for serial connectivity, terminal emulation or debugging. The USB port enumerates a number of endpoints after the USB port driver is installed.

Connect a standard USB to USB Micro Type B cable (not included) between the **NTC-100** serial modem and a powered USB port on your device (e.g. computer). The USB cable provides the **NTC-100** serial modem with power and an emulated serial port input.

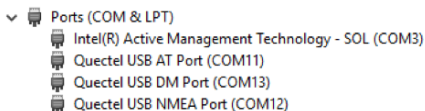


1. For USB port communication, you must install a driver compatible with the **NTC-100** serial modem's embedded Quectel BG96 cellular module. The Windows drivers are available from the **NTC-100** serial modem product page on the Lantronix website (<https://www.lantronix.com/products/ntc-100-series/>).
2. After the download has completed, install the driver by double-clicking on the downloaded file and following the installer prompts.

NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

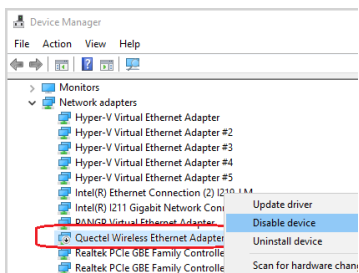
- Open the **Control Panel** and then **Device Manager**. The NTC-100 serial modem appears under **Ports** with three Quectel USB entries.



The COM port used for each port is displayed in brackets next to each port type. For terminal access, take note of the COM port assigned to the **Quectel USB AT Port**. In the screenshot above, it is COM11. For further instructions, see the **Accessing the NTC-100 via terminal emulator** section of this guide.

Important – After plugging in the USB cable, to avoid conflict with the application IP connection process ensure that the 'Quectel Wireless Ethernet Adapter' is disabled in the **Windows Device Manager**:

- Navigate to **Device Manager** > **Network adapters**.
- Right click **Quectel Wireless Ethernet Adapter** in the list.
- Select **Disable device** from the popup menu.



After powering up, the **NTC-100** serial modem is ready to establish a serial communication link. **See page 12** for instructions on accessing the **NTC-100** serial modem via terminal emulator.

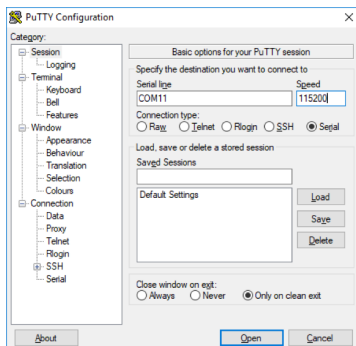
CONFIGURING THE NTC-100 VIA SMS

A full list of SMS commands used to control and configure the **NTC-100** are available in the **User Guide**.

ACCESSING THE NTC-100 VIA TERMINAL EMULATOR

To access the **NTC-100** using a terminal emulator:

1. Using your terminal emulator, create a new connection to the COM port assigned to the connected serial port, with the bitrate set to 115200.



2. If you are accessing the **NTC-100** via the USB interface, type AT and Press Enter in the terminal window that appears. If the **NTC-100** is connected, it replies with OK. Note that you can access only module AT commands from the USB port.

If you are accessing the **NTC-100** via the Serial Y cable, you are presented with a blank screen. Type root then press Enter. At the password prompt, type admin then press Enter. When logged in, type AT. The **NTC-100** replies with OK. From the Serial interface, you can access module AT commands and custom application AT commands.

Further AT commands are available in the supporting documentation on the Lantronix website at

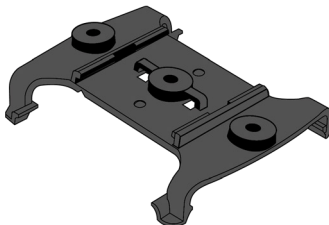
<https://www.lantronix.com/products/ntc-100-series/>

NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

MOUNTING OPTIONS

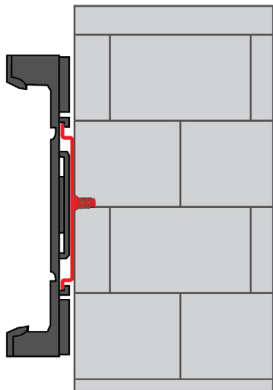
The **NTC-100** serial modem can be mounted on a wall, DIN rail or a pole by using the mounting bracket. The mounting bracket is made from polyamide, a flexible material.



DIN RAIL MOUNTING

The **NTC-100** serial modem mounting bracket has been designed to fit a TS 35 Type-O DIN rail with a 25mm core.

Bend the mounting bracket at the bend line so that the ridges are able to 'hold' onto the DIN rail edges as per the diagram below. Alternatively, if the end of the DIN rail is open, you can slide the bracket on to the rail. You also have the option of securing the mounting bracket further by screwing it into place on the rail.

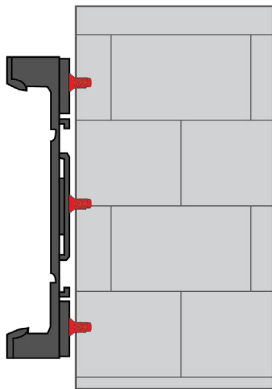


NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

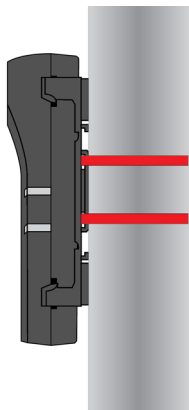
WALL MOUNTING

Select the location where you would like to attach the **NTC-100** serial modem. Attach the mounting bracket to the chosen wall or ceiling by using the 3 screw holes (screws not included).



POLE MOUNTING

Use cable ties (max 4mm width) through the holes on the mounting bracket to affix the **NTC-100** to a pole.

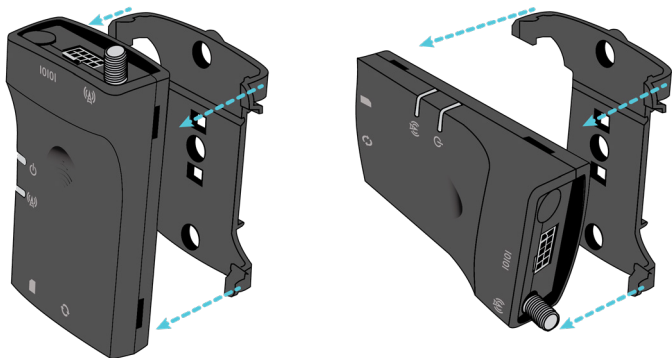


NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

INSERTING THE NTC-100 INTO THE MOUNTING BRACKET

Once the bracket is attached to the DIN rail, wall or pole, snap the **NTC-100** into the mounting bracket to hold it in place. The **NTC-100** can be snapped into the mounting bracket in two ways, as shown below.

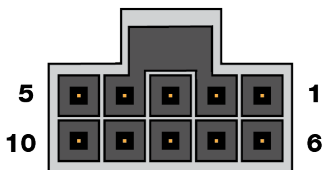


NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

PIN OUTS

10-PIN POWER/DATA CONNECTOR



Note: The image to the left depicts the NanoFit header on the **NTC-100** as viewed from the side of the device.

PIN MAP

Nano-Fit Pin	DE-9 Pin	Wire Colour	RS-232	RS-485	RS-422
1	2	Green	RXD	A	RD-
2	1	Blue	DCD	B	RD+
3	7	Yellow	RTS		
4	9	Orange	RI		
5	5	Black	GND	GND	GND
6	4	Brown	DTR		TD-
7	3	White	TXD		TD+
8	6	Purple	DSR		
9	8	Grey	CTS		
10	-	Red	DC In	DC In	DC In

USB

1. VUSB 5V
2. USB Data N
3. USB Data P
4. USB ID
5. GND

LED INDICATORS

The **NTC-100** serial modem uses two LEDs to display the current system and connection status.

STATUS LED

Status	Description
Off	The power is off.
Flashing Red	Device error.
Flashing Green	The NTC-100 is powering up.
Solid Green	The NTC-100 is powered up and ready for connection.

NETWORK LED

Functions

Status	Description
Off	No signal.
Intermittently Red (on 30 seconds, off 30 seconds)	No SIM detected.
Blinking Red (displays red once every 2 seconds)	SIM detected but not connected.
Blinking Red, Amber or Green	Registered to network with poor (red), medium (amber) or strong (green) signal strength.
Flashing Red, Amber or Green	Data being transferred with poor (red), medium (amber) or strong (green) signal strength.

NTC-100

4G LTE CAT M1/NB1 INDUSTRIAL IOT SERIAL MODEM

Signal Strength

To check the precise signal strength reading on the device, from the terminal, enter the following command:

AT+QCSQ

The **NTC-100** replies with the following syntax:

+QCSQ:

<sysmode>[,<value1>[,<value2>[,<value3>[,<value4>]]]]

OK

The value listed for **<value2>** is the **RSRP** and the value most often used to measure signal strength. Also, see the table below for detail on the signal strength ranges and the **LED indicator colours** for those ranges.

Network LED Colour	Description	CAT-M1 / CAT NB1 Signal Strength Range <value2>
Green	High	RSRP > -90 dBm
Amber	Medium	-90 dBm ≥ RSRP > -100 dBm
Red	Low	-120 dBm < RSRP ≤ -100 dBm
OFF	Poor to no signal	RSRP ≤ -120 dBm or no sync to signal

ACCESSORIES

Additional cables are available for purchase separately. Contact your **Lantronix** sales representative to order additional cables. Refer to the table below for the product codes.

Accessory Name	Product Code
Y-Cable (DE-9 female to 10-pin + DC5521 female)	MCBL-00004-000
Straight cable (8P8C to 10-pin)	MCBL-00003-000
Straight cable (10-pin to open cable)	MCBL-00005-000

US

LANTRONIX

CORPORATE HEADQUARTERS

48 Discovery, Suite 250

Irvine, CA 92618 | USA

Tel: +1 (800) 526-8766

www.lantronix.com

Trademarks and registered trademarks are the property of Lantronix, Inc. or their respective owners.

Specifications are subject to change without notice. Images shown may vary slightly from the actual product.

895-0092-00 Rev. A