



# 4G LTE CAT 1 INDUSTRIAL IOT ROUTER

## NTC-220

Data Sheet

The **NTC-220** is a robust cost-effective device. Supporting **4G LTE Category 1**, the **NTC-220** is ideal for use-case scenarios requiring **reliable**, yet highly **secure** connectivity.



### RELIABLE CONNECTIVITY

The **NTC-220** supports **4G LTE Category 1**, which enables the next generation connectivity for a number of mission critical applications. Supporting all major 4G bands, the **NTC-220** is the perfect device choice for deployments across the globe.



### EXPANDING CAPABILITIES WITH CUSTOM SOFTWARE APPLICATIONS

The **NTC-220** features the Linux based **NetComm OS**, empowering solution architects and system integrators to create their own applications using **NetComm's Software Development Kit (SDK)**.



### RELIABLE ASSET TRACKING\*

Built-in **high-performance GPS** enables the **NTC-220** to track and monitor vehicles, trucks, heavy construction machines and other mobile assets from any location.

\*GPS not available on NTC-223



### REMOTE MANAGEMENT

**IIoT deployments** in isolated locations can be **managed remotely in real time** to reduce site visits and manual maintenance costs. Technicians can receive status alerts, extract and analyse data, upgrade firmware over the air, configure and update the **NTC-220** from headquarters or any other location using a wide range of management protocols, including OMA LWM2M, TR-069, SNMP, HTTP/HTTPS, Telnet/ CLI and SMS.

# PRODUCT INTERFACES



## PERFECT FOR

- Connected elevators / escalators
- Smart building systems
- Vending and ticketing machines
- Digital signs
- Access control systems
- Surveillance cameras
- Traffic lights control
- Vehicle tracking and monitoring

## FEATURES AT A GLANCE

- 4G LTE Cat 1 (10 Mbps)
- Software development capability (SDK)
- Integrated GPS for reliable asset tracking (not available on NTC-223)
- An Ethernet port, a serial port and software configurable I/O ports for connection flexibility
- USB OTG port to connect a local storage device
- Ignition sense capability and a wide input voltage range for vehicular applications
- Rugged industrial design for harsh environments
- Easy and clear LED status display for connection status, connected network type, and connection errors
- Remote device configuration, management and firmware upgrade

# DEVICE FEATURES

MEASUREMENTS  
in millimeters



Cellular antenna connectors

AUX

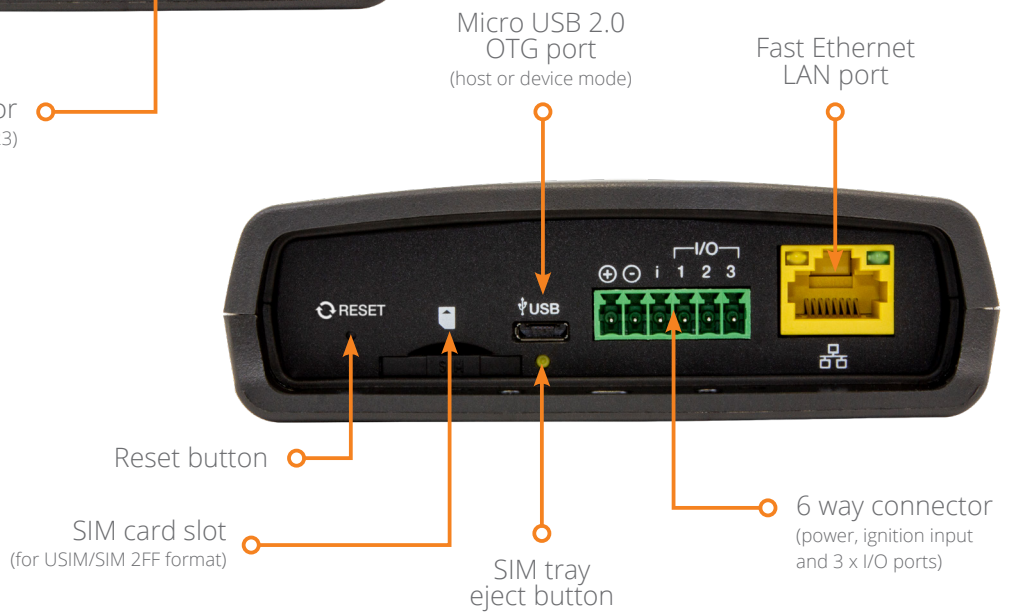
RS-232/422/485 port

IOIO SERIAL

GPS antenna connector  
(not available on NTC-223)

GPS

MAIN



Micro USB 2.0  
OTG port  
(host or device mode)

Fast Ethernet  
LAN port

RESET

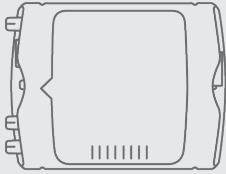
Reset button

SIM card slot  
(for USIM/SIM 2FF format)

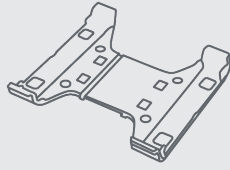
SIM tray  
eject button

6 way connector  
(power, ignition input  
and 3 x I/O ports)

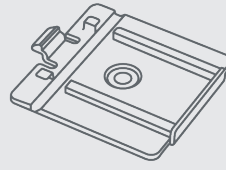
# DEVICE FEATURES



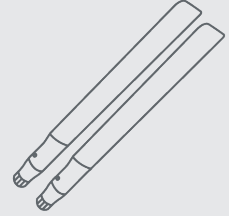
1x 4G LTE Cat 1 Industrial IoT Router (NTC-220)



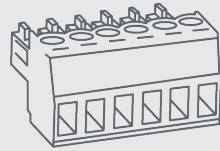
1x DIN Rail Mounting Bracket



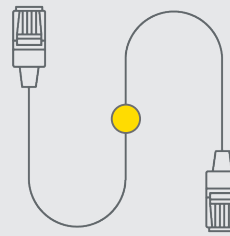
1x Horizontal DIN Rail Bracket



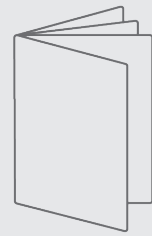
2x Cellular Antennas



1x Six-way Terminal Block



1x 1.5m Yellow Ethernet Cable



1x Quick Start Guide

## OPTIONAL ACCESSORIES



### 12 V DC Power Supply

#### PSU-0079 - SPECIFICATIONS

- International Efficiency Level VI Power Supply
- No-Load Power Consumption (115 V AC 60 Hz): 0.07 W
- No-Load Power Consumption (230 V AC 50 Hz): 0.1 W
- Maximum input voltage range: 90 – 264 V AC (100 – 240 V AC Normal)
- Maximum input frequency range: 47 – 63 Hz (50/60 Hz Normal)
- Output voltage range: 11.92 – 12.21 V DC (Typical 12 V DC)
- Maximum output current: 1.5 A
- Maximum ripple and noise: 83 mV peak-to-peak
- Maximum output overshoot: 2.7%
- Protection against overvoltage, overcurrent and short circuit
- Temperature range: 0°C to 40°C (Operating), -30°C to 70°C (Storage)
- Relative humidity range: 10% to 90%
- Altitude range: Sea level to 2,000 m
- Suitable regions: US/UK/EU/AU/SA/TW/CH/JP
- Safety certifications: UL60950-1, CSA C22.2 NO.60950-1, EN60950-1, AS/NZS 60950, GB4943, J60950, IEC 60950-1
- Lead length: 1.5 m

# TECHNICAL SPECIFICATIONS

## PEAK DATA SPEED (MODEL DEPENDENT)

- › **LTE FDD:**
  - Max10 Mbps (DL) / Max 5 Mbps (UL)
- › **LTE TDD:**
  - Max 8.96 Mbps (DL) / Max 3.1 Mbps (UL)
- › **DC-HSPA+:**
  - Max 42 Mbps (DL) / Max 5.76 Mbps (UL)
- › **UMTS:**
  - Max 384Kbps (DL) / Max 384Kbps (UL)
- › **EDGE:**
  - Max 236.8 Kbps (DL) / Max 236.8 Kbps (UL)
- › **GPRS:**
  - Max 85.6 Kbps (DL) / Max 85.6 Kbps (UL)

## ANTENNA CONNECTORS

- › 2 x SMA connectors for 4G/3G/2G (1 x Main and 1 x RX Diversity)
- › 1 x SMA connector for GPS (not available on NTC-223)

## ANTENNA SPECIFICATIONS

- › Frequency (MHz): 698-2700
- › **Maximum Gain (dBi):**
  - 4.71 (NANT-00001)
  - 3.24 (NANT-00006)
- › VSWR: < 3.0:1
- › Height (mm): 201
- › Radome diameter (mm): 17

## INTERFACES

- › 1 x 100Base-T Ethernet RJ45 port
- › 1 x RS232 Serial Port DB-9 female DCE supporting either
- › 9 wire RS232 or RS485/RS422 (software selectable)
- › Software controlled termination resistors for RS485
- › 1 x Micro USB 2.0 OTG interface with 0.5A supply capability
- › **I/O terminal block providing:**
  - 3 x Multipurpose I/O pins
  - NAMUR (EN 60947-5-6 / IEC 60947-5-6) compatible sensor input
  - Analogue 0V to 30V input
  - Digital input (through measurement of voltage above/ below threshold)
  - Open collector output
- › **1 x Recessed multifunctional reset button**
  - Reboot
  - Reboot into recovery mode
  - Reset to factory default settings

## LED INDICATORS

- › **8 x tri-colour LEDs**
  - Power, Network, a GPS/customizable LED and 5x Signal Strength indicators
- › Easy and clear LED status display for connection status, connected network type, and connection errors

## GPS (NOT AVAILABLE ON NTC-223)

- › GPS
- › GLONASS
- › BeiDou
- › Galileo
- › QZSS

## SIM CARD READER

- › **1 x SIM card slot**
  - Supports Mini USIM/SIM Format (2FF)
  - Optional soldered-down SIM (ETSI MFF2 DFN-8 USIM)

## PROCESSOR AND STORAGE

- › 1 GHz ARM Cortex A8 processor with 256 MB RAM
- › 512 MB flash memory storage

## CELLULAR

- › Profile managed packet data connections
- › NAT Disable for framed route configuration
- › Transparent bridge mode using PPPoE to allow the router to transparently forward Public WAN IP address to a downstream device
- › SIM Security Management (PIN configuration, enable and disable)
- › Automatic and manual cellular band selection
- › Automatic and manual operator selection
- › Odometer reading available via Web-UI, CLI and SDK

## NETWORK & ROUTING

- › Static Routing, RIP (v1/v2), Port Forwarding and DMZ
- › Dynamic DNS
- › VRRP for redundant router failover
- › DHCP Server including address reservation by MAC address
- › Custom DNS server definitions
- › DHCP Relay
- › DHCP list display in Web-UI
- › Advanced DHCP Option configuration (Option 42 NTP, Option 66 TFTP, Option 150, Option 160)
- › Data Stream Manager providing ability to create mappings between input and output ports (e.g. Serial Port, SMS, USB) and perform required translation or data processing by each virtual tunnel.
- › Modbus Server TCP/IP Gateway and Client TCP/IP Agent with up to 247 slaves connected to the Serial TCP/IP Gateway.
- › Modbus RTU/ASCII frames support.

## VPN

- › PPTP Client for VPN connectivity to remote PPTP VPN Server
- › IPSec tunnel termination (for up to 5 tunnels)
- › GRE Tunnelling
- › OpenVPN (Client, Server and P2P)

## ADMINISTRATION & CONFIGURATION

- › Secure web-based user interface (HTTPS) for full device status and configuration
- › Password protected configuration file backup and restore for quick device configuration and device cloning
- › SSH Command Line Interface for status monitoring, configuration and control
- › SNMP v1/v2/v3 including cellular specific MIB, config and firmware download
- › TR-069 Client for remote device configuration, configuration backup and restore, and firmware upgrade
- › SMS Client (Send/Receive) including inbox, outbox
- › Ping monitor watchdog (Reset connection on repeated ping failure)
- › Diagnostic Log Viewer (remote and local)
- › System Status and Security Logs
- › NTP Server Support for network time sync of device's system clock
- › Device User Guide stored on the device and accessible via the secure web-based user interface (HTTPS)
- › **Advanced Diagnostics and Control via SMS**
  - Query status information – such as Signal Strength, WAN IP, Uptime, and many more
  - Configure device remotely via SMS – such as APN, authentication settings, and many more
- › Execute commands via SMS – such as reboot, reset to defaults, go offline, and many more
- › Secure SMS management using sender whitelisting and password management
- › SMS acknowledgement replies for queries and commands

# TECHNICAL SPECIFICATIONS

## FIRMWARE MANAGEMENT

- › Firmware Upgrade locally via LAN or remotely Over-The-Air (HTTPS, SNMP, TR-069, LWM2M)
- › Multiple firmware image storage on device and dynamic install
- › Triggered firmware upgrade via SMS (initiate download & install from HTTPS)

## SOFTWARE DEVELOPMENT KIT

- › Develop and install custom software applications
- › Open Linux standard development environment
- › Develop applications/scripting in standard ANSI C/Shell script and LUA
- › Package manager built into Web-UI for Application installation/removal
- › API (C, LUA and Shell libraries) to the unit's internal Runtime Database to allow full status monitoring configuration and control of the device from custom applications

## TEMPERATURE

- › Operating Temperature Range: -40°C to +70°C
- › Storage Temperature Range: -40°C to +85°C
- › Operating Humidity Range: 0% to 95%

## POWER SUPPLY

- › Power input via 6-way termination block receptacle
- › Field terminable power input via screw type terminal block included
- › DC Power (8 – 40V DC)
- › 1 x Dedicated ignition input and 3 x I/O ports on 6-way connector (only available on some models)
- › Power consumption 6W, recommended DC supply via terminal block (12V 1.5A)
- › Vehicle compatible protection on DC Input Jack. (ISO7637 standard)

## DIMENSIONS, WEIGHT & MOUNTING

- › Device dimensions (excluding external antenna): 143 mm (L) x 107 mm (W) x 34 mm (D) / 221 g (254 g with bracket)
- › Wall mount support in multiple orientations via embedded mounting holes
- › DIN Rail mount support via plastic bracket included in box (Top hat section rail TH 35 IEC60715)

## ENCLOSURE

- › IP41 rated



MODEL	NTC-221	NTC-222	NTC-223	NTC-224	NTC-225	NTC-227
<b>REGION / CARRIER</b>	<ul style="list-style-type: none"> <li>› Australia</li> <li>› New Zealand</li> </ul>	<ul style="list-style-type: none"> <li>› Europe</li> <li>› Middle East</li> <li>› Africa</li> </ul>	<ul style="list-style-type: none"> <li>› Japan</li> </ul>	<ul style="list-style-type: none"> <li>› USA - AT&amp;T, T-Mobile</li> <li>› Canada</li> </ul>	<ul style="list-style-type: none"> <li>› USA - Verizon</li> </ul>	<ul style="list-style-type: none"> <li>› Global - All</li> </ul>
<b>FREQUENCY BANDS</b>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 2 (1900 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 4 (1700 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 7 (2600 MHz)</li> <li>› Band 8 (900 MHz)</li> <li>› Band 28 (700 MHz)</li> </ul> <p><b>LTE TDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 40 (2300 MHz)</li> </ul> <p><b>WCDMA Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 2 (1900 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 8 (900 MHz)</li> </ul> <p><b>GSM Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 2 (1900 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 8 (900 MHz)</li> </ul>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 7 (2600 MHz)</li> <li>› Band 8 (900 MHz)</li> <li>› Band 20 (800 MHz)</li> </ul> <p><b>WCDMA Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 8 (900 MHz)</li> </ul> <p><b>GSM Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 3 (1800 MHz)</li> <li>› Band 8 (900 MHz)</li> </ul>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 8 (900 MHz)</li> <li>› Band 18 (850 MHz)</li> <li>› Band 19 (850 MHz)</li> <li>› Band 26 (850 MHz)</li> </ul>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 2 (1900 MHz)</li> <li>› Band 4 (1700 MHz)</li> <li>› Band 12 (700 MHz)</li> </ul> <p><b>WCDMA Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 2 (1900 MHz)</li> <li>› Band 4 (1700 MHz)</li> <li>› Band 5 (850 MHz)</li> </ul>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 4 (1700 MHz)</li> <li>› Band 13 (700 MHz)</li> </ul>	<p><b>LTE FDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 2 (1900 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 4 (1700 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 7 (2600 MHz)</li> <li>› Band 8 (900 MHz)</li> <li>› Band 12 (700 MHz)</li> <li>› Band 13 (700 MHz)</li> <li>› Band 18 (850 MHz)</li> <li>› Band 19 (850 MHz)</li> <li>› Band 20 (800 MHz)</li> <li>› Band 25 (1900 MHz)</li> <li>› Band 26 (850 MHz)</li> <li>› Band 28 (700 MHz)</li> </ul> <p><b>LTE TDD Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 38 (2600 MHz)</li> <li>› Band 39 (1900 MHz)</li> <li>› Band 40 (2300 MHz)</li> <li>› Band 41 (2500 MHz)</li> </ul> <p><b>WCDMA Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 1 (2100 MHz)</li> <li>› Band 2 (1900 MHz)</li> <li>› Band 4 (1700 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 6 (800 MHz)</li> <li>› Band 8 (900 MHz)</li> <li>› Band 19 (800 MHz)</li> </ul> <p><b>GSM Bands:</b></p> <ul style="list-style-type: none"> <li>› Band 2 (1900 MHz)</li> <li>› Band 3 (1800 MHz)</li> <li>› Band 5 (850 MHz)</li> <li>› Band 8 (900 MHz)</li> </ul>
<b>REGULATORY CERTIFICATIONS</b>	<ul style="list-style-type: none"> <li>› RCM (Australia &amp; New Zealand)</li> <li>› CE (Europe)</li> </ul>	<ul style="list-style-type: none"> <li>› CE (Europe)</li> <li>› SIRIM (Malaysia)</li> </ul>	<ul style="list-style-type: none"> <li>› JATE (Japan)</li> <li>› TELEC (Japan)</li> </ul>	<ul style="list-style-type: none"> <li>› FCC (USA)</li> <li>› IC (Canada)</li> <li>› PTCRB (USA)</li> </ul>	<ul style="list-style-type: none"> <li>› FCC (USA)</li> </ul>	<ul style="list-style-type: none"> <li>› FCC (USA)</li> <li>› PTCRB (USA)</li> <li>› IC (Canada)</li> <li>› CE (Europe)</li> </ul>
<b>CARRIER APPROVALS</b>	<ul style="list-style-type: none"> <li>› Telstra</li> </ul>			<ul style="list-style-type: none"> <li>› AT&amp;T</li> </ul>	<ul style="list-style-type: none"> <li>› Verizon Wireless</li> </ul>	<ul style="list-style-type: none"> <li>› AT&amp;T (Pending)</li> </ul>

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