4G WiFi M2M Router

The NetComm Wireless 4G WiFi M2M Router is built for industrial applications. Feature rich and user friendly, the powerful router enables highly complex M2M and industrial IoT deployments.

NTC-140W-01 VZW
Specification Sheet

4G WiFi M2M Router
Overview

Machine-to-Machine (M2M) communications is to industrial automation and management what the internal combustion engine was to the automobile industry. It is revolutionary, and even disruptive, creating new ways to improve productivity and increase profits by enabling the industrial Internet of Things (IoT). Whether you are an end-user, a system integrator or an IoT service manager, your design toolbox will benefit from the highly adaptable 4G WiFi M2M Router (NTC-140W-01 VZM).

QUICK FACTS

- Approved for use by Verizon

- Rugged enclosure, wide operating temperature range, wall mount options and a flexible range of input power options making it ideal for use in harsh industrial environments

- Tested for vehicular applications (IEC Class 5M2, MIL-STD-810 method 516.5, ISO 7637-2)

- Powerful cellular connectivity supporting 4G (LTE) up to 100Mbps/50Mbps (downlink/uplink), 3G (DC-HSPA+ and 1xEV-DO Rel. A) up to 42Mbps/5.76Mbps and 2G (EDGE)

- Two Gigabit Ethernet ports for networking flexibility

- USB-OTG for additional interfaces or extra storage

- High-speed WiFi (802.11b/g/n) as access point or client with 2x2 MIMO antenna technology and integrated hotspot functionality

- Flexible WAN setup (use any interface as WAN), ideal for business continuity applications

- Integrated standalone GPS for precise and accurate asset tracking

- Ignition sense capability for graceful shutdown and startup in vehicle applications

- Configurable power save mode with minimum current draw when in sleep mode

The robust and intelligent NetComm Wireless 4G WiFi M2M Router (NTC-140W-01 VZM) provides real-time M2M data connectivity, even in harsh environments. The NTC-140W creates reliable point-to-point or point-to-multi-point WAN connections for a variety of mission critical applications such as primary broadband, video surveillance, retail, payments, in-vehicle communications and business continuity.

USER FRIENDLY
The NTC-140W is all about simplicity. It has 8 tri-colour LED indicators and a user friendly web interface, making onsite setup and ongoing remote management simple, easy and cost-effective. Access the device using any browser, or use text messages (SMS) to securely access the current status, change configurations or execute commands.

IDEAL INDUSTRIAL IOT DEVICE
The industrial IoT industry is expanding at a rapid rate as businesses realise the enormous value of remote asset management enabled through M2M communications. The NTC-140W has the custom capacity needed to adapt to varied M2M implementations; and is a future proof 4G device that ensures a low total cost of ownership and the highest possible rate of return.

CARRIER GRADE MANAGEMENT
The NTC-140W supports a wide range of telecommunication standards based remote management protocols such as LWM2M, TR-069 and SNMP to allow quick and easy integration with a wide range of remote management platforms. Extensive support for managing the device via SMS allows enterprises to communicate, get status reports, change settings or even execute commands using an SMS gateway. The built-in event notification engine, which sends alarms and notifications via email or SMS, allows an automated layer of self-monitoring to ensure a quick response to events requiring human intervention.
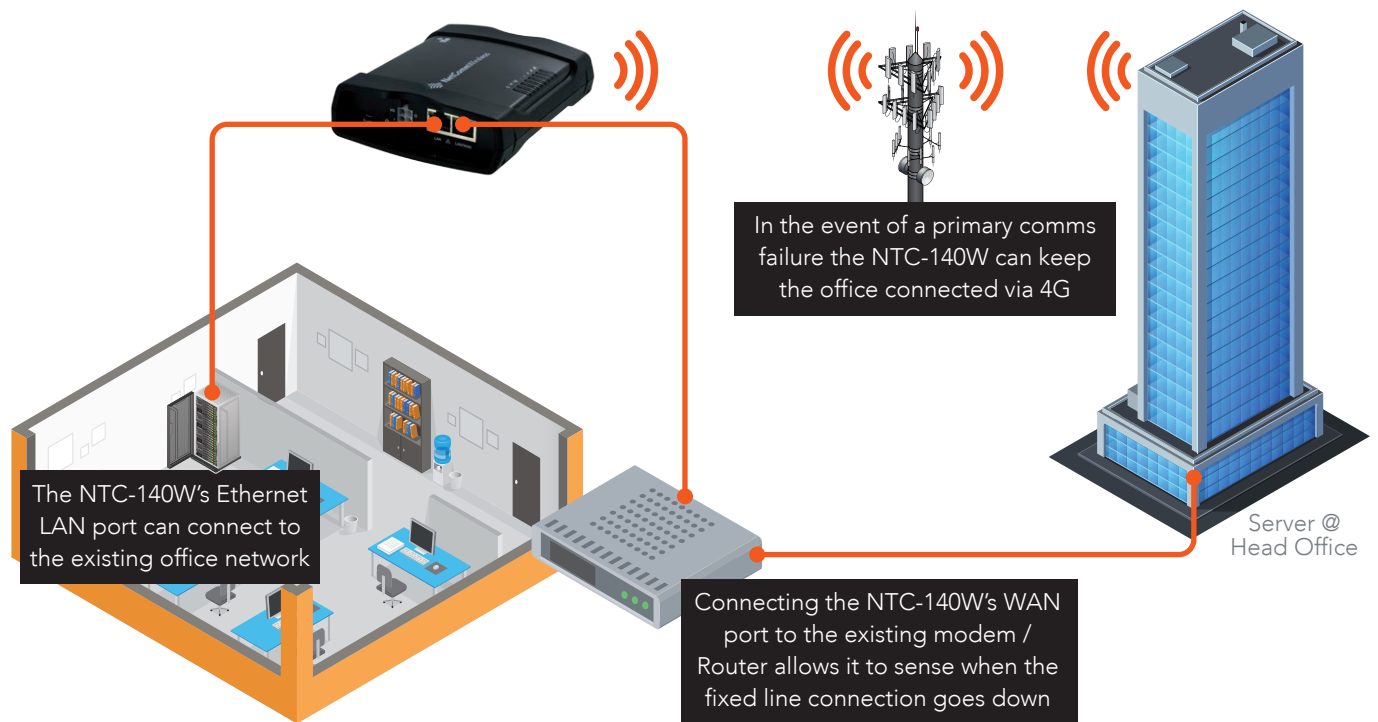
INDUSTRIAL GRADE DESIGN
Designed from the ground up with harsh industrial and automotive environments in mind, the NTC-140W features a state-of-the-art enclosure made from a composite of hard wearing, shock absorbing and environmentally stable industrial materials. Electrical components have been carefully selected to allow the NTC-140W to operate at extreme temperatures. Most importantly NetComm Wireless has done extensive environmental tests to ensure the device continues to operate under extreme conditions of temperature, shock and vibration.

Application Example
Wireless 4G failover

In the event of a primary comms failure the NTC-140W can keep the office connected via 4G

The NTC-140W's Ethernet LAN port can connect to the existing office network

Connecting the NTC-140W's WAN port to the existing modem / Router allows it to sense when the fixed line connection goes down

Server @ Head Office

Device Features
At a glance

1. Cellular antenna connectors
2. WiFi antenna connectors
3. GPS antenna connector
4. MicroSD card slot (up to 32GB MicroSD cards)
5. SIM card slot (for USIM/SIM 2FF format)
6. SIM tray eject button
7. Micro USB 2.0 OTG port (host or device mode)
8. Reset button
9. Molex Mini-Fit 4 pin connector (power, ignition input and I/O port)
10. Gigabit Ethernet LAN port
11. Gigabit Ethernet LAN/WAN port

Package Contents
What's in the box?*

1 x NetComm Wireless 4G WiFi M2M Router (NTC-140W)

1 x Power supply cable with fitted Molex connector

2 x Cellular antennas

2 x WiFi antennas

1 x 1.5m black Ethernet cable

1 x DIN rail mounting bracket

1 x Quick start guide

1 x WiFi security card

* GPS Antenna sold as optional accessory

Technical Specifications

PROCESSOR & STORAGE
- Powerful 720Mhz ARM Cortex A8 processor with 128MByte DDR2 RAM
- 256MByte Flash memory storage (~120MB available on board space for user storage)
- MicroSD card slot for additional storage

OPERATING SYSTEM
- Embedded Linux & Software Development Kit (SDK)

CELLULAR BANDS
- LTE:
  - Band 2 (1900 MHz)
  - Band 4 (AWS) (1700 / 2100 MHz)
  - Band 5 (850 MHz)
  - Band 13 (700 MHz)
  - Band 17 (700 MHz)
  - Band 25 (1900 MHz G Block)
- CDMA (EVDO Release 0 and EVDO Release A):
  - BC0 (Cellular 800 MHz)
  - BC1 (PCS 1900 MHz)
  - BC10 (Secondary 800 MHz)
- UMTS/HSDPA/HSUPA/HSPA+/DC-HSPA+:
  - Band 1 (2100 MHz)
  - Band 2 (1900 MHz)
  - Band 4 (AWS 1700/2100 MHz)
  - Band 5 (850 MHz)
  - Band 8 (900 MHz)
- GSM/GPRS/EDGE:
  - GSM 850 (850 MHz)
  - EGSM 900 (900 MHz)
  - DCS 1800 (1800 MHz)
  - PCS 1900 (1900 MHz)

PEAK DATA SPEED
- LTE: Category 3:
  - 100 Mbps / 50 Mbps (Downlink/Uplink) (20Mhz bandwidth)
  - 50 Mbps / 25 Mbps (Downlink/Uplink) (10Mhz bandwidth)
- HSPA+:
  - 42 Mbps downlink (Category 24)
  - 5.76 Mbps uplink (Category 6)
- EDGE
  - 236 kbps throughput
- CDMA 1xEV-DO Rev. A:
  - 3.1 Mbps (forward channel)
  - 1.8 Mbps (reverse channel)
- CDMA 1x:
  - 153 kbps (forward channel)
  - 153 kbps (reverse channel)
  - 14.4 kbps (circuit-switched data bearers)

CONNECTIVITY
- 2 x 10/100/1000 Base-T Ethernet RJ45 ports with Auto MDIX
- Micro USB 2.0 OTG interface with 0.5A supply capability
- 1 x multipurpose I/O pin

SIM CARD READER
- Lockable Tray Reader with Push-Button-to-Release
  - optional soldered-down SIM (ETSI MFF2 DFN-8 USIM)
- Supports Mini USIM/SIM Format (2FF)

RESET BUTTON
- Reset button (recessed, requiring pen/paperclip) with three functions: Reboot, reboot into recovery mode, and reset unit to factory defaults

ANTENNA CONNECTORS
- 2x SMA connectors for 3G/4G
- 2x Reverse SMA connectors for Wireless LAN (MIMO)
- 1x SMA connector for GPS

LED INDICATORS
- Tri-colour (Red/Amber/Green) LEDs. Power, WLAN, Mobile Broadband, Service Type and Signal Strength indicators
- Easy and clear LED status display for connection status, connected network type, and connection errors

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

GPS
- Embedded GPS receiver (1575.42Mhz)
- SMA Connector for external passive or active GPS Antenna
- Active antenna voltage: 3.05V
- Maximum current: 50mA
- Tracking sensitivity under open sky: -161dBm
- Acquisition sensitivity under open sky: -145dBm
- Cold start sensitivity: -145dBm
- Time to first fix (TTFF): Cold 32s, Warm 29s, Hot 1s

WIFI/WLAN
- High throughput and extended range 802.11b/g/n 2T2R WiFi with transmission speeds up to 300Mbps
- Supports 2.4GHz frequency band

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, GPS, 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)

ADMIN & CONFIGURATION
- Web-based User Interface (HTTP/HTTPS) for full device status and configuration
- Password protected configuration file backup and restore for quick device configuration and device cloning
- Telnet Command Line Interface for status monitoring, configuration and control
- SNMP v1/v2 including cellular specific MIB, config and firmware download
- TR-069 Client for remote device configuration, configuration backup and restore, and firmware upgrade
- SMS messaging (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 Web-based User Interface (HTTP/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

FIRMWARE MANAGEMENT
- Firmware Upgrade locally via LAN or remotely Over-The-Air (HTTP/ HTTPS, SNMP, TR-069)
- Multiple firmware image storage on device and dynamic install
- Triggered firmware upgrade via SMS (initiate download & install from HTTP/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
- Module Manufacturer's Recommended Operating Temperature: -40°C to +85°C
- Storage Temperature: -40°C to +85°C

POWER SUPPLY
- AC Power supply available as an optional accessory
- Power input and I/O via 4 way Molex mini-fit connector
- DC Power (8 - 40V DC)
- 1x dedicated ignition input on 4 way connector
- Minimum power input rating of 6W via 4 way mini-fit connector. Recommended power input 12V 1.5A.
- Vehicle compatible protection on DC Input Jack. (ISO7637 standard)

DIMENSIONS & WEIGHT
- Device dimensions (excluding external antenna): 143mm (L) x 107mm (W) x 34mm (D) / ~235g

MOUNTING OPTIONS
- 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)

CERTIFICATIONS
- FCC (USA)
- IC (Canada)
- PTCRB (USA)
- RoHS
- WEEE
- ISO7637