

# NB3800-N2LWacDf-G

## Railway Router with 1x 5G + 2x LTE + WLAN-ac + 5x ETH + 1 TB storage + GNSS + EN50155

With excellent 5G mobile radio technology for wireless internet access in the vehicle incl. 5-port Ethernet switch.



### Keyfeatures

<b>Mobile / Cellular</b>	1x 5G-NR, LTE-A Pro, UMTS 2x LTE, UMTS, GSM
<b>SIM</b>	4x Mini SIM
<b>WiFi / WLAN</b>	1x Dual Band IEEE 802.11a/b/g/n/ac (Wi-Fi 5), 100 Clients in Access Point Mode
<b>Ethernet</b>	2x Gigabit Ethernet, 3x Fast Ethernet
<b>Extended Storage</b>	1 TB
<b>Power</b>	24 VDC to 48 VDC
<b>Positioning</b>	Multi-GNSS
<b>Temperature Range</b>	-25 °C to +55 °C, EN 50155 class OT1/ST2
<b>Software</b>	Routing, Network Services, VPN, Firewall, Link Management, Supervisor, SDK, free updates
<b>Compliance</b>	CE (RED), Railway (EN50155, EN45545), ITxPT optional
<b>Modularity</b>	Extensions on request

### Product description

The powerful NB3800 with its features, railway approvals and interfaces to on-board electronics, is ideal for applications like passenger WiFi, passenger information systems or video surveillance.

### Applications

- Fleet Management
- Mining
- Passenger Infotainment
- Ticketing
- CCTV
- Telematics

### Specifications

<b>Mobile / Cellular</b>	<b>Standard</b>	<p>1x Multimode 5G-NR, LTE-A Pro, UMTS</p> <p><b>5G - NR</b> n1, n2, n3, n5, n7, n8, n12*, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79</p> <p>2014/53/EU (RED): n1, n3, n7, n8, n20, n28, n38, n40, n77, n78</p> <p><b>4G - LTE-A Pro</b> B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29DL, B30, B32, B34, B38, B39, B40, B41, B42, B43*, B46(LAA), B48(CRS), B66, B71</p> <p>2014/53/EU (RED): B1, B3, B7, B8, B20, B28, B38, B40</p> <p><b>3G - DC-HSPA+/UMTS</b> B1, B2, B3, B4, B5, B6, B8, B9, B19</p> <p>2014/53/EU (RED): B1 (2100), B3 (1800), B8 (900)</p> <p><b>5G NR Modes</b> Sub-6 FDD and TDD</p> <p><b>LTE Category</b> Cat. 20 up to 7CA</p> <p><b>MIMO</b> 4x4 MIMO in 5G-NR support on n1, n2 n3, n7, n25, n38, n40, n41, n48, n66, n77, n78, n79 and LTE B1, B2, B3, B4, B7, B25, B30, B38, B39, B40, B41, B42, B43, B46, B48, B66</p> <p><b>Antenna ports</b> 4</p> <p><b>Power Class</b> 23dBm (Power Class 3)</p> <p><b>Data rate down / up (max)</b> up to 5.5 Gbps DL / 2.7 Gbps UL</p> <p><b>Operation Mode</b> 5G Core SA and NSA operations</p> <p><b>3GPP</b> 4G/5G Rel. 15, 3G HSPA+ Rel. 18</p> <p><b>FCC ID</b> RI7FN980</p> <p><b>Voice -</b></p> <p><b>Region</b> Europe, Middle East and Africa (EMEA), North America (NA), Asia and Pacific (APAC)</p> <p>* future Module Firmware release</p> <p>2x Multimode LTE, UMTS, GSM for EMEA</p> <p><b>4G - LTE</b> B1, B3, B7, B8, B20, B28A</p> <p><b>3G - DC-HSPA+ / UMTS</b> B1 (2100), B3 (1800), B8 (900)</p> <p><b>2G - GSM/GPRS/EDGE</b> B3 (1800), B8 (900)</p> <p><b>Category</b> LTE Cat 4</p> <p><b>Antenna ports</b> 2x2 MIMO</p> <p><b>Data rate down / up (max)</b> 150 Mbps / 50 Mbps</p> <p><b>Voice</b> CSFB, VoLTE (with optional Software License)</p> <p><b>FCC ID</b> -</p> <p><b>Region</b> Europe</p>
	<b>Region</b>	Europe
	<b>Connectors</b>	8x TNC female
	<b>SIM</b>	4x Mini SIM - 2FF
<b>WiFi / WLAN</b>	<b>Standard</b>	<p>1x WLAN 2.4/5 GHz a/b/g/n/ac (Wi-Fi 5)</p> <p><b>Wireless standard</b> IEEE 802.11a/b/g/n/ac (Wi-Fi 5)</p> <p><b>Frequency</b> 2.4/5 GHz</p> <p><b>Diversity</b> 2x2 MIMO</p> <p><b>Data rate (max)</b> 300 Mbps (2.4 GHz) / 866 Mbps (5 GHz)</p> <p><b>Modes</b> Client or access point (up to 100 clients)</p> <p><b>FCC ID</b> TK4WLE600VX</p>
	<b>Connector</b>	2x TNC female
<b>Ethernet</b>	<b>Standard</b>	<p>2x Gigabit Ethernet</p> <p><b>Ethernet standard</b> 1000BASE-T, Auto MDIX</p> <p><b>Speed</b> 10/100/1000 Mbps</p> <p>3x Fast Ethernet</p> <p><b>Ethernet standard</b> 100BASE-TX, Auto MDIX</p> <p><b>Speed</b> 10/100 Mbps</p>
	<b>Connector</b>	2x M12 X-coded female, 3x M12 D-coded female
<b>Positioning</b>	<b>Standard</b>	<p>1x Multi-GNSS</p> <p><b>Receiver</b> BeiDou, Galileo, GLONASS, GPS</p> <p>gpsOne Gen 9</p> <p><b>Antennas</b> Active or passive</p> <p><b>Sensitivity</b> Up to -161 dBm</p> <p><b>CEP (Circular Error Probability)</b> &lt;2m (Open sky conditions. Standalone)</p> <p><b>Min Update Rate</b> 1Hz</p> <p><b>Services</b> Standalone</p>
	<b>Connector</b>	1x TNC female
<b>USB</b>	<b>Standard</b>	1x USB 2.0 Host
	<b>Connector</b>	1x Type A
<b>Serial, Fieldbus</b>	<b>Protocol</b>	<p>1x RS-232</p> <p><b>Protocol</b> EIA-232</p> <p><b>Signals</b> TX, RX</p> <p><b>Signal level</b> High &gt; 5 VDC, low &lt; -5 VDC</p> <p><b>Bit rate</b> Up to 115 200 Bit/s</p>
	<b>Connector</b>	1x M12 A-coded female
<b>Extended Storage</b>		<p>1 TB SSD</p> <p><b>Capacity</b> 1 TB</p> <p><b>Technology</b> SSD</p> <p><b>Data</b> Application data such as logs, media content, ...</p>

<b>System</b>	<b>Core Module Slots</b>	1.3 GHz dual-core, 1 GB RAM, 4 GB flash 2x miniPCIe (PCIe + USB), 4x miniPCIe (USB)
<b>Software</b>	<b>Features</b>	<p>NetModule Router Software (supported features depending on product variant)</p> <p><b>Package</b> The standard software package includes an intuitive user interface, covering all modern routing protocols and enables efficient mass deployment.</p> <p><b>General</b> Fail-safe update (FOTA), upgrade via USB, HTTP(S), (S)FTP or TFTP, remote CLI &amp; WebGUI, RADIUS authentication, Simple Certificate Enrollment Protocol (SCEP), Hardware- und Software Watchdog</p> <p><b>Remote Management</b> Manage and monitor devices with SNMP V1/V2/V3, Netmodule vendor MIB, telnet, SSH, or HTTP/HTTPS</p> <p><b>Cellular Networking</b> Multi-SIM / eSIM support (optional license), multi-APN support, signal strength monitoring, dedicated bearers, CSFB/VoLTE calls (optional license)</p> <p><b>Wireless LAN</b> Access Point, Client Mode, Mesh Point or Dual Modes (Mesh Access Point / Access Point - Client), WLAN Pseudo-Bridge Client Mode: Multiple Client SSID Profile, Encryption: Open, WEP, WPA1/2/3-Personal, WPA1/2/3-Enterprise. Fast Roaming: Fast BSS Transition (802.11r), PreAuthentication, Protected Management Frames (802.11w) AP Mode: Multi-SSIDs (up to 8) Encryption: Open WPA1/2/3-Personal, WPA1/2/3-Enterprise Fast Roaming: Fast BSS Transition (802.11r), PreAuthentication, DFS support Protected Management Frames (802.11w) Client Tracking, Band Steering, Hide SSID broadcasting, Isolate Clients, Accounting, Short guard Intervall Mesh Mode (802.11s): Encryption: None, SAE. Gateway announcements</p> <p><b>Link Management</b> Link prioritization, link aggregation, load balancing, multipath-TCP, IP-passthrough, link supervision,</p> <p><b>Services</b> DHCP Client/Server, DNS Caching Server, Email, SMS Service, NTP Client/Server, SMTP Server, DynDNS, SSH Server, SNMP Agent, HTTP/HTTPS/FTP Server, IPv6 for WAN, 802.1x over Ethernet, MQTT Broker Voice Gateway (SIP, Call Routing, Audio with optional license) Coovachilli Hotspot</p> <p><b>Routing</b> Destination, policy, multipath, mobile-IP, OSPF, BGP, multicast, TCP-MSS clamping, bridging discovery protocols LLDP, CDP, SONMP, EDP, FDP, IRDP, VRRP, STP/RSTP, VRRP, VLAN, PPPoE, VXLAN</p> <p><b>VPN</b> OpenVPN, IPsec (IKEv1 and IKEv2), PPTP, GRE, L2TP, CSD dial-in, Certificate revocation service</p> <p><b>Firewall</b> Stateful firewall, connection tracking, NAT, NAPT, masquerading, bridge filtering, Adress translation (based on SRC and DST ports)</p> <p><b>Encryption</b> supporting password protected PKCS12 files, integrated random certificate key generator, "Let's encrypt" certificate, ECC (Certificates with Elliptic Cryptography)</p> <p><b>Quality of Service</b> Diffserv, SFQ, HTB, Priority-based Queuing, Netflow (Softflow)</p> <p><b>Programmability</b> SDK</p> <p><b>Troubleshooting</b> Logging, Ping, Traceroute, Tcpdump, Speed-test</p>
	<b>Licenses</b>	GNSS <b>Enabled service</b> GNSS location service Server with JSON-, NMEA stream
<b>Power</b>	<b>Input Voltage</b>	24, 48 VDC <b>Nominal voltages</b> 24, 48 VDC <b>Absolute voltages</b> 24 VDC to 48 VDC (-30 % / +30 %) <b>Galvanic isolation</b> 1500 VDC <b>Standard</b> EN 50155 class S2/C1
	<b>Connector</b>	1x M12 A-coded male
	<b>Consumption</b>	25 W (max)
<b>Dimensions</b>	<b>W x H x D</b>	Width 167/190 mm x height 121.1 mm x depth 106.5 mm
<b>Weight</b>		2000 g
<b>Environment</b>	<b>Operating Temperature</b>	-25°C to +55°C
	<b>Ingress Protection Level</b>	IP40
<b>MTBF</b>		150'000 h / 17.1 years, according SN29500 at environmental temperature 40 °C
<b>Certifications</b>	<b>Compliance Domain</b>	CE according to 2014/53/EU (RED), 2011/65/EU (RoHS), Railway according to EN 50155 class OT1/ST2, EN 45545 Railway
<b>Order Code</b>		NB3800-N2LWacDf-G