

# NB3800-NWac2D-G

## Railway Router with 5G-NR + 1x WLAN-ac 5x ETH + 2x DIO + GNSS + EN50155

Railway approved, modular onboard communication platform for future proof IP solutions.



### Keyfeatures

<b>Mobile / Cellular</b>	1x 5G-NR, LTE-A Pro, UMTS
<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>DIO</b>	2x DIO
<b>Power</b>	24 VDC to 48 VDC
<b>Positioning</b>	Multi-GNSS
<b>Temperature Range</b>	-40 °C to +70 °C, EN 50155 class OT4/ST0
<b>Software</b>	Routing, Network Services, VPN, Firewall, Link Management, Supervisor, SDK, FMS2IP, free updates
<b>Compliance</b>	CE (RED), Railway (EN50155, EN45545)
<b>Modularity</b>	Extensions on request

### Product description

The NB3800, with its railway approvals and its interfaces to on-board electronics, is the ideal device for e.g. WLAN and passenger information or production data acquisition.

### Applications

- Passenger WiFi
- Passenger Infotainment
- Smart Traffic
- Telematics
- CCTV

### Specifications

#### Mobile / Cellular

#### Standard

1x Multimode 5G-NR, LTE-A Pro, UMTS

**5G - NR** n1, n2, n3, n5, n7, n8, n12\*, n20, n25, n28, n38, n40, n41, n48, n66, n71, n77, n78, n79

2014/53/EU (RED): n1, n3, n7, n8, n20, n28, n38, n40, n77, n78

**4G - LTE-A Pro** 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

2014/53/EU (RED): B1, B3, B7, B8, B20, B28, B38, B40

**3G - DC-HSPA+/UMTS** B1, B2, B3, B4, B5, B6, B8, B9, B19

2014/53/EU (RED): B1 (2100), B3 (1800), B8 (900)

**5G NR Modes** Sub-6 FDD and TDD

**LTE Category** Cat. 20 up to 7CA

**MIMO** 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

**Antenna ports** 4

**Power Class** 23dBm (Power Class 3)

**Data rate down / up (max)** up to 5.5 Gbps DL / 2.7 Gbps UL

**Operation Mode** 5G Core SA and NSA operations

**3GPP** 4G/5G Rel. 15, 3G HSPA+ Rel. 18

**FCC ID** RI7FN980

**Voice** -

**Region** Europe, Middle East and Africa (EMEA), North America (NA), Asia and Pacific (APAC)

\* future Module Firmware release

#### Region

#### Connectors

#### SIM

Europe

4x TNC female

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)  <b>Wireless standard</b> IEEE 802.11a/b/g/n/ac (Wi-Fi 5)  <b>Frequency</b> 2.4/5 GHz  <b>Diversity</b> 2x2 MIMO  <b>Data rate (max)</b> 300 Mbps (2.4 GHz) / 866 Mbps (5 GHz)  <b>Modes</b> Client or access point (up to 100 clients)  <b>FCC ID</b> TK4WLE600VX</p>
	<b>Connector</b>	2x TNC female
<b>Ethernet</b>	<b>Standard</b>	<p>2x Gigabit Ethernet  <b>Ethernet standard</b> 1000BASE-T, Auto MDIX  <b>Speed</b> 10/100/1000 Mbps  3x Fast Ethernet  <b>Ethernet standard</b> 100BASE-TX, Auto MDIX  <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  <b>Receiver</b> BeiDou, Galileo, GLONASS, GPS  gpsOne Gen 9  <b>Antennas</b> Active or passive  <b>Sensitivity</b> Up to -161 dBm  <b>CEP (Circular Error Probability)</b> &lt;2m (Open sky conditions. Standalone)  <b>Min Update Rate</b> 1Hz  <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>Connector</b>	1x M12 A-coded female
<b>IOs</b>	<b>Type</b>	<p>2x Digital I/O  <b>Signals</b> 2x DI, 2x DO  <b>DI signals</b> +, -  <b>DI level</b> Low: 0 - 5 VDC, high 9 - 60 VDC  <b>DI isolation</b> 1'500 VDC  <b>DO level</b> 0 - 60 VDC/1A  <b>DO signals</b> Relay outputs with NO, NC, COM (normally open, normally closed)  <b>DO isolation</b> 1'500 VDC</p>
	<b>Connector</b>	1x M12 A-coded female
<b>System</b>	<b>Core</b>	1.3 GHz dual-core, 1 GB RAM, 4 GB flash
	<b>Module Slots</b>	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, SNMP 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 LLDAP, 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>	<p>GNSS</p> <p><b>Enabled service</b> GNSS location service Server with JSON-, NMEA stream</p>
<b>Power</b>	<b>Input Voltage</b>	<p>24, 48 VDC</p> <p><b>Nominal voltages</b> 24, 48 VDC</p> <p><b>Absolute voltages</b> 24 VDC to 48 VDC (-30 % / +30 %)</p> <p><b>Galvanic isolation</b> 1500 VDC</p> <p><b>Standard</b> EN 50155 class S2/C1</p>
	<b>Connector Consumption</b>	<p>1x M12 A-coded male</p> <p>25 W (max)</p>
<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>		1800 g
<b>Environment</b>	<b>Operating Temperature</b>	-40°C to +70°C
	<b>Ingress Protection Level</b>	IP40
<b>MTBF</b>		182'000 h / 20.8 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 OT4/ST0, EN 45545 Railway
<b>Order Code</b>		NB3800-NWac2D-G