

# NB3800-2L2Wac-G

## Railway Router with 2x LTE + 2x WLAN-ac 5x ETH + GNSS + EN50155

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



### Keyfeatures

|                          |                                                                                          |
|--------------------------|------------------------------------------------------------------------------------------|
| <b>Mobile / Cellular</b> | 2x LTE, UMTS, GSM                                                                        |
| <b>SIM</b>               | 4x Mini SIM                                                                              |
| <b>WiFi / WLAN</b>       | 2x 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>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, 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 equipment, rail approvals and interfaces to on-board electronics, is ideal for applications such as WiFi for passengers, passenger information or CCTV.

### Applications

- Passenger WiFi
- Passenger Infotainment
- Ticketing
- CCTV

### Specifications

|                          |                   |                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>Mobile / Cellular</b> | <b>Standard</b>   | 2x Multimode LTE, UMTS, GSM for EMEA<br><b>4G - LTE</b> B1, B3, B7, B8, B20, B28A<br><b>3G - DC-HSPA+/UMTS</b> B1 (2100), B3 (1800), B8 (900)<br><b>2G - GSM/GPRS/EDGE</b> B3 (1800), B8 (900)<br><b>Category</b> LTE Cat 4<br><b>Antenna ports</b> 2x2 MIMO<br><b>Data rate down / up (max)</b> 150 Mbps / 50 Mbps<br><b>Voice</b> CSFB, VoLTE (with optional Software License)<br><b>FCC ID</b> -<br><b>Region</b> Europe |
|                          | <b>Region</b>     | Europe                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                          | <b>Connectors</b> | 4x TNC female                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>WiFi / WLAN</b>       | <b>SIM</b>        | 4x Mini SIM - 2FF                                                                                                                                                                                                                                                                                                                                                                                                           |
|                          | <b>Standard</b>   | 2x WLAN 2.4/5 GHz a/b/g/n/ac (Wi-Fi 5)<br><b>Wireless standard</b> IEEE 802.11a/b/g/n/ac (Wi-Fi 5)<br><b>Frequency</b> 2.4/5 GHz<br><b>Diversity</b> 2x2 MIMO<br><b>Data rate (max)</b> 300 Mbps (2.4 GHz) / 866 Mbps (5 GHz)<br><b>Modes</b> Client or access point (up to 100 clients)<br><b>FCC ID</b> TK4WLE600VX                                                                                                       |
|                          | <b>Connector</b>  | 4x TNC female                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Ethernet</b>          | <b>Standard</b>   | 2x Gigabit Ethernet<br><b>Ethernet standard</b> 1000BASE-T, Auto MDIX<br><b>Speed</b> 10/100/1000 Mbps<br>3x Fast Ethernet<br><b>Ethernet standard</b> 100BASE-TX, Auto MDIX<br><b>Speed</b> 10/100 Mbps                                                                                                                                                                                                                    |
|                          | <b>Connector</b>  | 2x M12 X-coded female, 3x M12 D-coded female                                                                                                                                                                                                                                                                                                                                                                                |

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| <b>Positioning</b>      | <b>Standard</b>                        | 1x Multi-GNSS<br><b>Receiver</b> BeiDou, Galileo, GLONASS, GPS<br>gpsOne Gen 9<br><b>Antennas</b> Active or passive<br><b>Tracking Sensitivity</b> Up to -160 dBm<br><b>Services</b> Standalone<br><b>CEP (Circular Error Probability)</b> < 2m (CEP 50), (Open sky conditions, Horizontal)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                         | <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>                        | 1x RS-232<br><b>Protocol</b> EIA-232<br><b>Signals</b> TX, RX<br><b>Signal level</b> High > 5 VDC, low < -5 VDC<br><b>Bit rate</b> Up to 115 200 Bit/s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                         | <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 miniPCle (PCle + USB), 4x miniPCle (USB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Software</b>         | <b>Features</b>                        | NetModule Router Software (supported features depending on product variant)<br><b>Package</b> The standard software package includes an intuitive user interface, covering all modern routing protocols and enables efficient mass deployment.<br><b>General</b> Fail-safe update (FOTA), upgrade via USB, HTTP(S), (S)FTP or TFTP, remote CLI & WebGUI, RADIUS authentication, Simple Certificate Enrollment Protocol (SCEP), Hardware- und Software Watchdog<br><b>Remote Management</b> Manage and monitor devices with SNMP V1/V2/V3, Netmodule vendor MIB, telnet, SSH, or HTTP/HTTPS<br><b>Cellular Networking</b> Multi-SIM / eSIM support (optional license), multi-APN support, signal strength monitoring, dedicated bearers, CSFB/VoLTE calls (optional license)<br><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<br><b>Link Management</b> Link prioritization, link aggregation, load balancing, multipath-TCP, IP-passthrough, link supervision,<br><b>Services</b> DHCP Client/Server, DNS Caching Server, Email, SMS Service, NTP Client/Server, SNTP 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<br><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<br><b>VPN</b> OpenVPN, IPsec (IKEv1 and IKEv2), PPTP, GRE, LZTP, CSD dial-in, Certificate revocation service<br><b>Firewall</b> Stateful firewall, connection tracking, NAT, NATP, masquerading, bridge filtering, Adress translation (based on SRC and DST ports)<br><b>Encryption</b> supporting password protected PKCS12 files, integrated random certificate key generator, "Let's encrypt" certificate, ECC (Certificates with Elliptic Cryptography)<br><b>Quality of Service</b> Diffserv, SFQ, HTB, Priority-based Queuing, Netflow (Softflow)<br><b>Programmability</b> SDK<br><b>Troubleshooting</b> Logging, Ping, Traceroute, Tcpdump, Speed-test |
|                         | <b>Licenses</b>                        | GNSS<br><b>Enabled service</b> GNSS location service<br>Server with JSON-, NMEA stream                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Power</b>            | <b>Input Voltage</b>                   | 24, 48 VDC<br><b>Nominal voltages</b> 24, 48 VDC<br><b>Absolute voltages</b> 24 VDC to 48 VDC (−30 % / +30 %)<br><b>Galvanic isolation</b> 1500 VDC<br><b>Standard</b> EN 50155 class S2/C1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                         | <b>Connector</b><br><b>Consumption</b> | 1x M12 A-coded male<br>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>           |                                        | 1800 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Environment</b>      | <b>Operating Temperature</b>           | -40°C to +70°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                         | <b>Ingress Protection Level</b>        | IP40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>MTBF</b>             |                                        | 150'000 h / 17.1 years, according SN29500 at environmental temperature 40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| <b>Certifications</b> | <b>Compliance<br/>Domain</b> | CE according to 2014/53/EU (RED), 2011/65/EU (RoHS), Railway according to EN 50155 class OT4/ST0, EN 45545<br>Railway |
| <b>Order Code</b>     |                              | NB3800-2L2Wac-G                                                                                                       |