

# NB1601-LgWWtSc-G

## Industrie-Router mit LTE-APAC + WLAN + BLE + 4x ETH + RS-232/485 + DIO + GNSS

Modularer Mobilfunk-Router mit 4-Port Ethernet Switch zur Vernetzung von schwer zugänglichen Orten.



### Hauptmerkmale

|                           |                                                                                           |
|---------------------------|-------------------------------------------------------------------------------------------|
| <b>Mobilfunk</b>          | 1x LTE, UMTS, GSM für APAC                                                                |
| <b>SIM</b>                | 2x Micro SIM                                                                              |
| <b>WiFi / WLAN</b>        | 1x Dual-band IEEE 802.11 a/b/g/n (Wi-Fi 4), 1x Bluetooth Low Energy                       |
| <b>Ethernet</b>           | 4x Fast Ethernet                                                                          |
| <b>IO</b>                 | 4x Digital I/O                                                                            |
| <b>Serielle / Feldbus</b> | 1x RS-232/485, 1x RS-232 Konsole                                                          |
| <b>Ortung</b>             | Multi-GNSS                                                                                |
| <b>Betriebstemperatur</b> | -40 °C bis +70 °C                                                                         |
| <b>Software</b>           | Routing, Network Services, VPN, Firewall, Link Management, Supervisor, SDK, freie Updates |
| <b>Konformität</b>        | CE (RED), UKCA (RER), UL/IEC/EN 62368-1                                                   |
| <b>Modularität</b>        | Erweiterungen auf Anfrage                                                                 |

### Produktbeschreibung

Der NB1601 bietet die Schlüsseltechnologien für stationäre Anwendungen, die einen zuverlässigen Internetzugang benötigen.

### Anwendungen

- Zustandsüberwachung
- Industrielle Sicherheit
- Fabrikautomation
- Remote Management
- Smart Buildings
- Mining
- Point of Sale
- Digital Signage

### Spezifikation

|                          |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <b>Mobile / Cellular</b> | <b>Standard</b>                                  | <p>1x Multimode LTE, UMTS, GSM for APAC<br/> <b>4G - LTE</b> B1 (2100), B3 (1800), B5 (850), B7 (2600), B8 (900), B28 (750)<br/> <b>3G - DC-HSPA+/UMTS</b> B1 (2100), B2 (1900), B5 (850), B8 (900)<br/> <b>2G - GSM/GPRS/EDGE</b> B2 (1900), B3 (1800), B5 (850), 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<br/> <b>FCC ID</b> XPYTOBYL280</p> |
|                          | <b>Region</b><br><b>Connectors</b><br><b>SIM</b> | <p>Asia and Pacific (APAC)<br/> 2x SMA female<br/> 2x Micro SIM - 3FF</p>                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>WiFi / WLAN</b>       | <b>Standard</b>                                  | <p>1x Dual-band WLAN 2.4/5 GHz a/b/g/n (Wi-Fi 4) + BT 4.2 combo<br/> <b>Wireless standard</b> IEEE 802.11a/b/g/n (Wi-Fi 4)<br/> Bluetooth 4.2, Bluetooth Low Energy<br/> <b>Frequency</b> 2.4/5 GHz<br/> <b>Antenna ports</b> 2x2 MIMO<br/> <b>Data rate (max)</b> 144 Mbps 2.4 GHz 2x2 MIMO, 150 Mbps 5 GHz SISO<br/> <b>Modes</b> Client or access point (up to 10 clients)<br/> <b>FCC ID</b> POR-WL18DBMOD</p>                                               |
|                          | <b>Connector</b>                                 | 2x SMA female                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Ethernet</b>          | <b>Standard</b>                                  | <p>4x Fast Ethernet<br/> <b>Ethernet standard</b> 100BASE-TX, Auto MDIX<br/> <b>Speed</b> 10/100 Mbps</p>                                                                                                                                                                                                                                                                                                                                                        |
|                          | <b>Connector</b>                                 | 4x RJ45                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <b>Positioning</b>      | <b>Standard</b>     | 1x Multi-GNSS<br><b>Receiver</b> BeiDou, Galileo, GLONASS, GPS/QZSS<br>72-channel u-blox M8 engine<br>3 concurrent GNSS channels<br><b>Antennas</b> Active or passive<br><b>Accuracy</b> Up to 2.5 m CEP<br><b>Sensitivity</b> Up to -164 dBm<br><b>Services</b> Standalone, Assisted GPS<br>Data server with JSON, NMEA data stream                                                                                                                                                                                                                                                               |
|                         | <b>Connector</b>    | 1x SMA 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<br>1x RS-232/485 combo (software switchable)<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<br><b>Protocol</b> EIA-485<br><b>Signals</b> A, B<br><b>Signal level</b> Differential output voltage, loaded 1.5 VDC – 3.6 VDC<br><b>Bit rate</b> Up to 115*200 Bit/s<br><b>Termination</b> 120 Ω for RS-485 configurable by software             |
|                         | <b>Connector</b>    | 2x Terminal block header 3.5 mm (screw locking)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>IOs</b>              | <b>Type</b>         | 2x Digital I/O<br><b>Signals</b> 1x DI, 1x DO<br><b>DI signals</b> +, -<br><b>DI level</b> Low: 0 - 3 VDC, high: 9 - 32 VDC<br><b>DO signals</b> Relay outputs with NO, NC, COM (normally open, normally closed)<br><b>DO level</b> 0 - 32 VDC/1A<br><b>Isolation</b> 1'500 VDC<br>2x Digital I/O<br><b>Signals</b> 1x DI, 1x DO<br><b>DI signals</b> +, -<br><b>DI level</b> Low: 0 - 3 VDC, high: 9 - 32 VDC<br><b>DO signals</b> Relay outputs with NO, NC, COM (normally open, normally closed)<br><b>DO level</b> 0 - 32 VDC/1A<br><b>Isolation</b> 1'500 VDC<br><b>Module</b> COM-I/O shield |
|                         | <b>Connector</b>    | 2x Terminal block header 3.5 mm (screw locking)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>System</b>           | <b>Core</b>         | 600 MHz (HW Rev. A) or 1 GHz (HW Rev. B02) single core, 512 MB RAM, 4 GB flash                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                         | <b>Module Slots</b> | 1x miniPCle / extension combo (USB), 1x Shield                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| Software       | Features                 | <p>NetModule Router Software</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, 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</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> |
|                | Licenses                 | <p>GNSS/GPS</p> <p><b>Services</b> Server with JSON-, NMEA stream</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Power          | Input Voltage            | <p>12, 24 VDC</p> <p><b>Nominal voltages</b> 12, 24 VDC</p> <p><b>Absolute voltages</b> 12 VDC to 24 VDC (-20 % / +20 %)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                | Connector<br>Consumption | <p>1x Terminal block header 3.5 mm (screw locking)</p> <p>7 W (average), 10 W (max)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Mounting       |                          | DIN-Rail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Dimensions     | W x H x D                | Width 45 mm x height 124/134 mm x depth 110/121 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Weight         |                          | 450 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Environment    | Operating Temperature    | -40°C to +70°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                | Ingress Protection Level | IP40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| MTBF           |                          | 300'000 h / 34.2 years, according SN29500 at environmental temperature 40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Lieferumfang   |                          | Device, General safety instructions, Terminal block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Certifications | Compliance               | CE according to 2014/53/EU (RED); UKCA according to Radio Equipment Regulations 2017 No. 1206 (RER); UL/IEC/EN 62368-1; 2011/65/EU (RoHS)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                | Domain                   | Industrial                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Order Code     |                          | NB1601-LgWWtSc-G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |