NB1601-LWWtSc-G

Industrial Router with LTE + WLAN + BT/BLE + 4x ETH + RS-232/485 + DIO + GNSS

Modular mobile router with 4-port Ethernet switch to connect remote locations.

Keyfeatures

Mobile / Cellular	1x LTE, UMTS, GSM
SIM	2x Micro SIM
WiFi / WLAN	1x Dual-band IEEE 802.11 a/b/g/n (Wi-Fi 4), 1x Bluetooth Low Energy
Ethernet	4x Fast Ethernet
IO	4x Digital I/O
Serial / Fieldbus	1x RS-232/485, 1x RS-232 Console
Positioning	Multi-GNSS
Operation Temperature	-40 °C to +70 °C
Software	Routing, Network Services, VPN, Firewall, Link Management, Supervisor, SDK, free updates
Compliance	CE (RED)
Modularity	Extensions on request

Product description

The NB1601 offers the key technologies for stationary applications that require reliable Internet access.

Applications

- Condition Monitoring
- Industrial Security
- Factory Automation
- Remote Management
- Smart Buildings
- Mining
- Point of Sale
- Digital Signage

Specifications

Mobile / Cellular	Standard	1x Multimode LTE, UMTS, GSM for EMEA **4G – LTE** B1 (2100), B3 (1800), B5 (850), B7 (2600), B8 (900), B20 (800) **3G - DC-HSPA+/UMTS** B1 (2100), B2 (1900), B5 (850), B8 (900) **2G - GSM/GPRS/EDGE** B2 (1900), B3 (1800), B5 (850), B8 (900) **Category** LTE Cat 4 **Antenna ports** 2x2 MIMO **Data rate down / up (max)** 150 Mbps / 50 Mbps **Voice** CSFB (with optional Software License) **FCC ID** XPYTOBYL210
	Region	Europe, Middle East and Africa (EMEA)
	Connectors	2x SMA female
	SIM	2x Micro SIM - 3FF

WiFi / WLAN	Standard	1x Dual-band WLAN 2.4/5 GHz a/b/g/n (Wi-Fi 4) + BT 4.2 combo **Wireless standard** IEEE 802.11a/b/g/n (Wi-Fi 4) Bluetooth 4.2, Bluetooth Low Energy **Frequency** 2.4/5 GHz **Antenna ports** 2x2 MIMO **Data rate (max)** 144 Mbps 2.4 GHz 2x2 MIMO, 150 Mbps 5 GHz SISO **Modes** Client or access point (up to 10 clients) **FCC ID** Z64-WL18DBMOD
	Connector	2x SMA female

Ethernet	Standard	4x Fast Ethernet **Ethernet standard** 100BASE-TX, Auto MDIX **Speed** 10/100 Mbps
	Connector	4x RJ45

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Positioning	**Standard**	1x Multi-GNSS
		Receiver BeiDou, Galileo, GLONASS, GPS/QZSS
		72-channel u-blox M8 engine
		3 concurrent GNSS channels
		Antennas Active or passive
		Accuracy Up to 2.5 m CEP
		Sensitivity Up to –164 dBm
		Services Standalone, Assisted GPS
		Data server with JSON, NMEA data stream
	Connector	1x SMA female
USB	**Standard**	1x USB 2.0 Host
	Connector	1x Type A
Serial, Fieldbus	**Protocol**	1x RS-232
		Protocol EIA-232
		Signals TX, RX
		Signal level High > 5 VDC, low < -5 VDC
		Bit rate Up to 115 200 Bit/s
		1x RS-232/485 combo (software switchable)
		Protocol EIA-232
		Signals TX, RX
		Signal level High > 5 VDC, low < -5 VDC
		Bit rate Up to 115'200 Bit/s
		Protocol EIA-485
		Signals A, B
		Signal level Differential output voltage, loaded 1.5 VDC – 3.6 VDC
		Bit rate Up to 115'200 Bit/s
		Termination 120 Ω for RS-485 configurable by software
	Connector	2x Terminal block header 3.5 mm (screw locking)
IOs	**Type**	2x Digital I/O
		Signals 1x DI, 1x DO
		DI signals +, -
		DI level Low: 0 - 3 VDC, high: 9 - 32 VDC
		DO signals Relay outputs with NO, NC, COM (normally open, normally closed)
		DO level 0 - 32 VDC/1A
		Isolation 1'500 VDC
		2x Digital I/O
		Signals 1x DI, 1x DO
		DI signals +, -
		DI level Low: 0 - 3 VDC, high: 9 - 32 VDC
		DO signals Relay outputs with NO, NC, COM (normally open, normally closed)
		DO level 0 - 32 VDC/1A
		Isolation 1'500 VDC
		Module COM-I/O shield
	Connector	2x Terminal block header 3.5 mm (screw locking)
System	**Core**	600 MHz (HW Rev. A) or 1 GHz (HW Rev. B02) single core, 512 MB RAM, 4 GB flash
	Module Slots	1x miniPCIe / extension combo (USB), 1x Shield

Software	Features	NetModule Router Software (supported features depending on product variant)
		Package The standard software package includes an intuitive user interface, covering all modern routing protocols and enables efficient mass deployment.
		General 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
		Remote Management Manage and monitor devices with SNMP V1/V2/V3, Netmodule vendor MIB, telnet, SSH, or HTTP/HTTPS
		Cellular Networking Multi-SIM / eSIM support (optional license), multi-APN support, signal strength monitoring, dedicated bearers, CSFB/VoLTE calls (optional license)
		Wireless LAN 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
		Link Management Link prioritization, link aggregation, load balancing, multipath-TCP, IP-passthrough, link supervision,
		Services 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
		Routing 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
		VPN OpenVPN, IPsec (IKEv1 and IKEv2), PPTP, GRE, L2TP, CSD dial-in, Certificate revocation service
		Firewall Stateful firewall, connection tracking, NAT, NAPT, masquerading, bridge filtering, Adress translation (based on SRC and DST ports)
		Encryption supporting password protected PKCS12 files, integrated random certificate key generator, "Let's encrypt" certificate, ECC (Certificates with Elliptic Cryptography)
		Quality of Service Diffserv, SFQ, HTB, Priority-based Queuing, Netflow (Softflow)
		Programmability SDK
		Troubleshooting Logging, Ping, Traceroute, Tcpdump, Speed-test
	Licenses	GNSS
		Enabled service GNSS location service
		Server with JSON-, NMEA stream

Power	Input Voltage	12, 24 VDC
		Nominal voltages 12, 24 VDC
		Absolute voltages 12 VDC to 24 VDC (-20 % / +20 %)
	Connector	1x Terminal block header 3.5 mm (screw locking)
	Consumption	7 W (average), 10 W (max)

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

Certifications	Compliance	CE according to 2014/53/EU (RED), 2011/65/EU (RoHS)
	Domain	Industrial

Order Code		NB1601-LWWtSc-G