NB1601-LSc-G

Industrial Router with LTE + 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
Ethernet	4x Fast Ethernet
IO	4x Digital I/O
Operation Temperature	-40°C to +70 °C
Serial / Fieldbus	1x RS-232/485, 1x RS-232 Console
Positioning	Multi-GNSS
Software	Routing, Network Services, VPN, Firewall, Link Management, Supervisor, SDK, free updates
Compliance	CE (RED), UKCA (RER), UL/IEC/EN 62368-1, FCC
Customizable	Extensions on request

Product description

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

Applications

- Condition Monitoring
- Remote Management
- Smart Buildings
- Environmental Monitoring
- Digital Signage
- Smart Grid
- Oil & Gas
- Renewable Energy
- Ticketing
- CCTV

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
	Connectors	2x SMA female
	SIM	2x Micro SIM - 3FF
Ethernet	**Standard**	4x Fast Ethernet **Ethernet standard** 100BASE-TX, Auto MDIX **Speed** 10/100 Mbps
	Connector	4x RJ45
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

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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
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

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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
Scope of delivery		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-LSc-G

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