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)
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, Middle East and Africa (EMEA)
	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

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-LSc-G