Cellular Routers LTE
LR77 v2 Series

PRODUCT FEATURES

- Designed for M2M applications
- WiFi, M-BUS and Modbus TCP / Modbus RTU
- Modular design to fit application requirements
- Single or dual SIM cards for redundant backhaul
- LTE up to 50 Mbps upload to 100 Mbps download
- Open LINUX platform & advanced networking functions
- Advanced security features

4G LTE router LR77 v2 provides wireless connection of equipment and devices via Ethernet 10/100 or serial interfaces to the Internet or intranet. 4G router LR77 v2 is ideal for transferring large data loads. With LTE its ultra fast data transfer speed reaches up to 100 Mbit/s download and up to 50 Mbit/s upload. The LR77 v2 series is an ideal wireless solution for traffic and security camera systems, individual computers, LAN networks, automatic teller machines (ATM) and other self-service terminals, etc.

This extra fast 4G LR77 v2 wireless router is equipped with one Ethernet 10/100, one USB Host port, one binary input/output (I/O) port and one SIM card. To save and backup communication data, a version with 2 x SIM cards is available. A wide range of user-defined interface options further expands optional Port1 and Port2. Port1 is available as an Ethernet port 10/100, serial interface ports RS232/RS485/RS422/M-Bus/WiFi or (I/O - CNT). Port2 may be equipped with serial interfaces RS232/RS485/RS422/M-Bus or (I/O - CNT). Another option is inserting a XC-SW board to provide 3 x switched Ethernet 10/100 ports. Routers are available in either plastic or metal casings. FULL version of the router is equipped with GPS.

Configuration is done via web interface protected by password. The 4G LTE router supports creation of VPN tunnels using IPsec, OpenVPN and L2TP to ensure safe communications. Web interface provides detailed statistics about router activities, signal strength, detailed log, etc. Supports functions: DHCP, NAT, NAT-T, DynDNS, NTP, VRRP, HTTPS, SSH, OSPF, RIP, BGP control by SMS and many other functions.

Other diagnostic functins to ensure continuous communication include automatic inspection of PPP connection with an automatic restart feature in case of connection losses and a hardware watchdog which monitors the status of the router. With the help of a start up script window you may insert Linux scripts for various actions. For some applications it is possible to create several different configurations or profiles for router (maximum of 4), and the option to switch between them (for example via SMS, binary input status, etc.). Cellular LTE wireless router LR77 v2 supports automatic upgrade of configuration and firmware from the server. This allows mass reconfiguration of multiple routers in one time. It is also possible to develop user defined modules that modify LTE router behavior.

ORDERING INFORMATION

Note: For more configuration options, contact Advantech B+B SmartWorx or your local distributor. A specification configurator is also available online.

MODEL NUMBER	ETH 10/100	USB	SIM	RS232	RS485/ RS422	M-BUS	I/O	I/O (CNT)	WIFI	GPS
Basic Versions:										
LR77 v2BG	1	1	1				1			
LR77 v2BG ETH	2	1	1				1			
LR77 v2BG RS232	1	1	1	1			1			
LR77 v2BG RS485/422	1	1	1		1		1			
LR77 v2BG M-Bus	1	1	1			1	1			
LR77 v2BG CNT	1	1	1				1	1		
Full Versions:										
LR77 v2FG	1	1	2				1			1
LR77 v2FG RS232	1	1	2	1			1			1
LR77 v2FG RS485/422	1	1	2		1		1			1
LR77 v2FG M-Bus	1	1	2			1	1			1
LR77 v2FG CNT	1	1	2				1	1		1
LR77 v2FG SWITCH	3	1	2				1			1
LR77 v2FG WIFI	1	1	2				1		1	1

Europe, Middle East, Africa, Asia, South America, Latin America.
Check with your local distributor for pricing, availability and options.

APPLICATIONS

Transportation and security
IT and communication
Self-service terminals
Energy and power industry
Meteorology, alarm and warning systems

Cellular Routers LTE

LR77 v2 Series

SPECIFICATIONS

FIXED INTERFACES

Standard Ports	
Ethernet	10/100 Mbits, independent or bridged
SIM	SIM Card
I/O	Binary input/output
USB	USB 2.0 Host, Type A

OPTIONAL INTERFACES

Port 1	Ethernet (10/100Mbps), RS232, RS422/485, M-Bus I/O Input/Output, Ethernet Switch (with port 2)
Port 2	RS232, RS422/485, M-Bus, WM-Bus, SDH, WiFi Ethernet Switch (with port 1)
Optional	2nd SIM card holder ("F" router versions)

ANTENNA CONNECTORS

3x SMA – 50 Ohm	

POWER

Source	9 - 36 VDC
Consumption	Idle - 2.3 W GPRS - to 3.5 W (GPRS transmission) LTE - to 5.5 W (LTE transmission)

MECHANICAL

Dimension	Plastic version - 51 x 87 x 116mm Metallic (-SL) version - 42 x 87 x 113mm
Protection	IP30
Weight	Plastic: 150 g Metallic (-SL): 280 g

ENVIRONMENTAL

Operating Temperature	-40 to +75°C
Storage Temperature	-40° to +85°C
Humidity	Operating - 0 to 95% relative humidity non condensing Storage - 0 to 95% relative humidity non condensing

ACCESSORIES

BB-SBD40	Metal DIN holder for Metal versions of routers v2
BB-CPD2-B	Plastic DIN holder
BB-GA.110.101111	Magnet mount antenna LTE 698MHz to 960MHz, 1575.42MHz, 1710MHz to 2700MHz, 3500MHz, 1M RG174 Cable, SMA(M) Connector Typical 40% Efficiency and 3dBi Peak Gain
BB-AO-ALTE-FSMAK	Antenna LTE 690 MHz to 960 MHz, 1710MHz to 2170MHz, 2500 MHz to 2700MHz, gain 3 - 5 dB, SMA connector, without magnetic mount base
BB-TG.30.8113	Antenna LTE 698MHz to 960MHz, 1575.42MHz 1710MHz to 2700MHz Typical 70%+ Efficiency and 3dBi+ Peak Gain Dipole Swivel Terminal Antenna Hinged 90° termination with SMA(M) Connector
BB-AO-ABASE-C16	Magnetic mount base for BB-AO-ALTE-5SP, 3m cable, SMA connector
BB-AW-A24G-M5SRP	Antenna WiFi stick 5dB, SMA-RP connector
BB-AP-AGNSS-SMA	Antenna GPS/GLONASS, active (3V), magnetic, 33 - 34dB, 3m cable + SMA connector
BB-CON-WR3	3-pin terminal block for IO
BB-CON-WR2	2-pin Terminal block for Power Supply
BB-RPS-v2-WR2-X	Power supply with WR connector (2 pins) - 12V/1A X = EU - EU plug X = US - US plug X = UK - UK plug X = US - AUS plug
BB-KN-WR2-3	Power supply cable 2-wire, 3m

SOFTWARE FEATURES

Linux based, possibility to program your own application

NTP client, NTP Server – time synchronization

SMS communication – AT commands on RS232, Ethernet and I/O

M-RAM memory inside – router statistic's saving into memory

NETWORKING

DHCP – automatic IP addressing in LAN network

NAT/PAT – IP address and ports translation between inside/outside network

VRRP – virtual backup router function

DynDNS client – access to the router with a dynamic IP address

Dial-in – the ability to communicate over dial CSD call

PPPoE Bridge – PPP frames encapsulation inside ETH frames

VPN TUNNELING

IPsec, OpenVPN, L2TP – secure encrypted tunnels

CONFIGURATION AND DIAGNOSTIC

HTTP server – configuration via web server

Telnet – configuration and access to the file system

SNMP – router diagnostics, communication with I/O and M-Bus

GPRS state signalization by LED

On-line info on GSM signal status (level, cell, neighbors)

SMS info – power on, GPRS connection or disconnection

SMS control – on/off GPRS connection, switch SIM, I/O etc.

Transferred data counting, one more APN as backup

Remote router group configuration change, switching among configuration profiles

SSH – encrypted configuration and access to the file system

STANDARDS/REGULATIONS - Versions LR77 v2BG and LR77 v2FG

Telecom and Emission	ETSI EN 301 511 v9.0.2, ETSI EN 301 908-1 v5.2.1, ETSI EN 301 908-2 v5.2.1, ETSI EN 301 908-13 v5.2.1
EMC	ETSI EN 301 489-1 v1.9.2
Safety	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013, EN 62311:2008

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WIFI *optional

Antenna connector	R-SMA – 50 Ohms
Supported WiFi band	2.4 GHz
Standards	802.11b, 802.11g, 802.11n
2.4 GHz supported channels	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
RX Sensitivity	11b, 11 Mbps: typ. -85 dBm 11g, 54 Mbps: typ. -70 dBm (HT20) 11n, MSC7: typ. -66 dBm (HT40) 11n, MSC7: typ. -62 dBm
TX Output Power	11b, 11 Mbps: min. 18, typ. 19, max. 20 dBm 11g, 54 Mbps: min. 14.5, typ. 16, max. 17.5 dBm 802.11n (HT20): min. 13.5, typ. 15, max. 16.5 dBm 802.11n (HT40): min. 13.5, typ. 15, max. 16.5 dBm
Type of device	Access point, station

GPS SPECIFICATIONS

Antenna	50 Ohms – active
Protocols	NMEA 0183 v3.0
Frequency	1575.42MHz
Sensitivity	Tracking: -161dBm Acquisition (Assisted): -158dBm Acquisition (Standalone): -145dBm
Acquisition time	Hot start: 1 s Warm start: 29 s Cold start: 32 s
Accuracy	Horizontal: < 2m (50 %); < 5m (90 %) Altitude: < 4m (50 %); < 8m (90 %) Velocity: < 0.2 m/s

32B ARM MICROPROCESSOR

Memory	512 Mb DDR SDRAM 128 Mb FLASH 1 Mb MRAM

I/O PORT

Binary input	Reed contact with trigger level 1.3 up to 1.4 V
Binary output	100 mA/ max. 30 V

PARAMETERS - LTE module for versions LR77 v2BG and LR77 v2FG

LTE parameters	Bit rate 100 Mbps (DL) / 50 Mbps (UL) 3GPP rel. 8 standard Supported bandwidths: 5 MHz, 10 MHz, 20 MHz Supported frequencies: 800 / 900 / 1800 / 2100 / 2600 MHz
HSPA+ parameters	Bit rate 42 Mbps (DL) / 5,76 Mbps (UL) 3GPP rel. 7 standard UE CAT. 1 to 6, 8, 10, 12, 14 3GPP data compression Supported frequencies: 900 / 1800 / 2100 MHz
UMTS parameters	PS bit rate 384 kbps (DL) / 384 kbps (UL) CS bit rate 64 kbps (DL) / 64 kbps (UL) W-CDMA FDD standard Supported frequencies: 900 / 1800 / 2100 MHz
GPRS/EDGE	Bit rate 237 kbps (DL) / 59,2 kbps (UL) GPRS multislot class 10, CS 1 to 4 EDGE multislot class 12, CS 1 to 4, MCS 1 to 9 Supported frequencies: 900 / 1800 MHz
GPRS/EDGE - Supported Power Classes	EGSM 900: Class 4 (33 dBm) GSM 1800: Class 1 (30 dBm) EDGE 900: Class E2 (27 dBm) EDGE 1800: Class E2 (26 dBm)

R-SEENET™

Router Management Software consisting of two parts:

R-SeeNet Server application can be programmed to automatically send SNMP queries (Simple Network Management Protocol) to each router defined in the network. The application retrieves status information from the routers and records it in the SQL database.

R-SeeNet PHP is a web-based application that accesses the SQL database and provides the network administrator detailed information on individual routers and network health.

SMARTWORX HUB™

SmartWorx HUB takes management of your devices to new levels of flexibility and efficiency. Giving you a complete view of your installed device population, SmartWorx Hub delivers invaluable configuration, diagnostic and management facilities directly to your desktop, wherever you are.

Manage a single device or your entire device population at the same time. Whether you need to modify configuration parameters, download or upgrade installed firmware and applications or view detailed information regarding network statistics, you can do it all from any location.