



## 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

## ORDERING INFORMATION

**Note: Check with your local distributor for availability and options. Contact Advantech B+B SmartWorx distributors.**

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 functions 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.

## APPLICATIONS

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

## BB - LR2X71XXXX

### Accessories

0	No Accessories (DIN holder included)
1 (set)	Accessories with EU power supply
2 (set)	Accessories with UK power supply
3 (set)	Accessories with Australia power supply
4 (set)	Accessories with US power supply

### Enclosure

1	Plastic enclosure
2	Metal enclosure

### PORT2 (Full version only)

0	No expansion port
1	ETH
2	RS232
3	RS485
4	RS422
5	M-BUS
6	CNT (4x BI, 2x, 1xBO) - I/O port
7	WiFi
8	WMBUS (Wireless M-BUS)

### PORT1

0	No expansion port
1	ETH
2	RS232
3	RS485
4	RS422
5	M-BUS
6	CNT (4x BI, 2x, 1xBO) - I/O port
9	Switch

### Router version

B	Basic
F	Full

**Please note: Isn't possible to have in the router all combinations of the ports. Please check your chosen variant with your local distributor.**

# Cellular Routers LTE

## LR77 v2 Series



### SPECIFICATIONS

#### FIXED INTERFACES - BASIC VERSION

1× Ethernet	10/100 Mbps, independent or bridged
1× SIM	SIM Card
1× I/O	Binary input/output
1× USB	USB 2.0 Host, Type A

#### OPTIONAL INTERFACES

1× PORT 1	Ethernet (10/100Mbps), RS232, RS422/485, M-BUS I/O Input/Output, Ethernet Switch (with PORT 2)
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#### ANTENNA CONNECTORS

2× SMA – 50 Ohm
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#### FIXED INTERFACES - FULL VERSION

1× Ethernet	10/100 Mbps, independent or bridged
2× SIM	SIM Card
1× I/O	Binary input/output
1× USB	USB 2.0 Host, Type A

#### OPTIONAL INTERFACES

1× PORT 1	Ethernet (10/100Mbps), RS232, RS422/485, M-BUS I/O Input/Output, Ethernet Switch (with PORT 2)
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1× PORT 2	RS232, RS422/485, M-BUS, WMBUS, WiFi Ethernet Switch (with PORT 1)
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1× Optional	2nd SIM card holder ("F" router versions)
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#### ANTENNA CONNECTORS

3× SMA – 50 Ohm
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#### 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
Dimension Metallic version	42 x 87 x 113mm
Protection	IP30
Weight Plastic version	150g
Weight Metallic version	280g

#### 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

#### WiFi \*optional ("F" router versions)

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, MCS7: typ. -66 dBm (HT40) 11n, MCS7: 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

#### CPU & MEMORY

CPU	32b ARM microprocessor, 0.25 DMIPS per MHz
Flash memory	16 MB DDR SDRAM
RAM	64 MB
M-RAM	128 kB

#### I/O PORT (CNT)

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

#### PARAMETERS - LTE module

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)

#### STANDARDS/REGULATIONS

Telecom and Emission	ETSI EN 301 511 V9.0.2 (2003-03), ETSI EN 301 908-2 V11.1.1 (2016-07), ETSI EN 301 908-13 V11.1.1 (2016-07), ETSI EN 300 328 V2.1.1 (2016-11), ETSI EN 300 220-2 V3.1.1 (2017-02)
EMC	ETSI EN 301 489-1 V2.1.1 (2016-11), ETSI EN 301 489-17 V3.1.1 (2017-02), ETSI EN 301 489-3 V2.1.1 (2017-03)
Safety	EN 60950-1:2006 + A11:2009 + A12:2010 + A12:2011 + A2:2013 + AC:2011

# Cellular Routers LTE

## LR77 v2 Series



### 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

### BASIC VERSION

1 × SIM card holder, 1 × optional port (PORT1)

### FULL VERSION

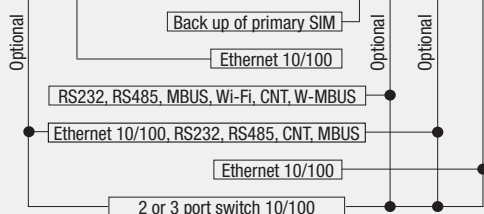
2 × SIM card holder, 2 × optional port (PORT1,2)



PLASTIC VERSION



METALLIC VERSION



# Cellular Routers LTE

LR77 v2 Series



## ACCESSORIES

ORDER CODE	DESCRIPTION	INCLUDED IN PACKAGE	INCLUDED IN SET PACKAGE	SOLD SEPARATELY
BB-SBD40	Metal DIN holder for Metal versions of routers v2	✓	✓	✓
BB-CPD2-B	Plastic DIN holder for Plastic versions of routers v2	✓	✓	✓
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-TG.10.0113	Antenna LTE/UMTS/GSM, Terminal, SMA-M		2x	✓
BB-AO-ABASE-C16	Magnetic mount base terminal antenna, 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 I/O	✓	✓	✓
BB-CON-WR2	2-pin Terminal block for Power Supply	✓		✓
BB-RPS-v2-WR2-EU	Power supply with WR connector (2 pins) - 12V/1A - EU plug		✓	✓
BB-RPS-v2-WR2-US	Power supply with WR connector (2 pins) - 12V/1A - US plug		✓	✓
BB-RPS-v2-WR2-UK	Power supply with WR connector (2 pins) - 12V/1A - UK plug		✓	✓
BB-RPS-v2-WR2-AUS	Power supply with WR connector (2 pins) - 12V/1A - AUS plug		✓	✓
BB-KD-ETH	Ethernet cross cable 1.5m		✓	✓
Quick Start Guide		✓	✓	

## 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.