

# *YOUR BEST CONNECTION FOR CELLULAR SOLUTIONS*



**LTE/HSPA+/UMTS/CDMA/EDGE/GPRS  
Cellular Router Technology**



## Whatever Your Challenge, We Have a Conel Solution

We help companies and organisations around the world integrate, connect and upgrade their networks and devices. No matter what you do, build or sell, our experience in your industry and broad portfolio of device connectivity solutions makes it easy to create a powerful, rugged and efficient network.



### Transportation and Security

Extend your security reach with solutions engineered to keep cameras and traffic lights communicating smoothly with centralized control facilities. Our technologies are also widely used in toll booths, weigh stations, tunnels, subway systems and railways, avionics and air traffic control.



### IT and Communication

Safe, reliable connectivity for computers and LAN networks requires equipment designed for flexible configuration, ease of use and consistent performance. B&B Electronics and Conel bring best-in-class Enterprise routers and modems to IT professionals.



### Self-Service Terminals

Machine to machine (M2M) communication continues to evolve the convenience and accessibility of self-service terminals. From ATM's to automated airline check-in stations; from casino gaming machines to fuel station payment processing, our products help you redefine what's possible.

## The Challenge

Reducing traffic density and preventing traffic jams in cities is not an easy problem to solve.

Connected wirelessly via UMTS technology, traffic cameras are a vital part of a complete traffic system. The need to dynamically manage traffic flow requires the ability to send pictures or streaming video, direct from roads and streets, to control rooms. By monitoring the traffic information, actions can be taken to avoid a bad traffic situation or prevent a bad situation from getting worse.

Traffic monitors have the ability to control traffic by changing the display of online road LED boards or other automatic signs, at any given moment, to slow down or speed up traffic in defined locations or navigate drivers to clearer roadways. The ability to transfer data, via GSM mobile operator infrastructures, from traffic cameras and to road LED boards (automatic signs) is a very effective solution for problematic city traffic situations.



## The Solution

The Conel UR5i UMTS/HSUPA cellular network routers from B&B Electronics are connected directly to a camera placed above the road or street. Digital images, videos and traffic data are transferred instantaneously to the traffic control center. Using their SW application, control room dispatchers can change traffic speeds by changing the status on LED boards along roadways. From the control room, command data is delivered wirelessly to the UR5i UMTS/HSUPA router connected directly to the road LED boards. Reaction time to traffic situations can be measured in the tenths of a second.



## Industrial Automation

Our solutions are already at work in a global array of industrial automation applications both demanding and routine, including manufacturing automation, robotics, operator interfaces, PLCs/drives, instrumentation and specialized monitor and control applications.



## Energy and Natural Resources

From alternative energy producers like solar and wind farms to more traditional energy generators in the mining, nuclear, oil and gas industries, we serve the entire spectrum of energy industry applications.



## Meteorology, Alarm & Warning Systems

Weather monitoring systems exist in some of the harshest environments on the planet. Designed for extreme conditions, our rugged products support sensors measuring water flow level in rivers, seismographs, rainfall meters, air pollution monitoring devices and meteorological stations.

## The Challenge

Point-of-sale (POS) machines are everywhere in our daily life. The convenience, speed and ease of these transactions for the consumer will depend on highly secure data communications technology, performing reliably in locations at the very edge of the network. Consider the complex interactions required to:

- Withdraw money from an ATM
- Purchase a ticket from a ticketing machine to ride a city bus
- Deposit money into a vending machine to purchase a bottled soda or packaged food
- Pay a parking meter in order to park an automobile at a designated location



## The Solution

An UMTS wireless mobile operator network, for data transfer from machines offering POS services, is frequently used. The UR5 router is connected to a POS machine and transfers information and transactional data from the machine over a secure UMTS/HSDPA network to a control room server, where the data is then stored and processed. The UR5 routers use VPN tunnels and other advanced networking features for secure data transfer and machine communications. The UR5 router is fast, secure and cost effective, backed by our vast industry experience, and the router's field-proven ability to perform in many countries worldwide.

An important advantage of the UR5 router is mobility. Whether you transfer data from a busy city street or from a bus ticketing machine placed far away from a town, when you have the mobile operator UMTS signal available, you can use the UR5 routers to connect devices and collect data to a central PC or server. Welcome to digital freedom.



## LR77 v2 – 4G LTE Router

4G LTE router LR77 v2 provides a wireless connection between equipment and devices via an Ethernet interface 10/100 or serial interface to the Internet or intranet. The 4G router LR77 v2 is an advanced wireless data transfer device for applications with large data loads. Data transfer speeds in the LTE network reach up to 100 Mbit/s (download) and up to 50 Mbit/s for upload, making the LR77 v2 professional wireless solution an exceptional choice for traffic and security camera systems, individual computers, LAN networks, automatic teller machines (ATM) and other self-service terminals.

### Key Features

The high speed 4G LR77 v2 wireless router is standard equipped with one Ethernet 10/100 port, one USB host port, one binary input/output (I/O) port, and one SIM card to save and back-up communication data. (Optional 2 x SIM cards). The wide range of interface options gives you the ability to customise and expand the ports of the 4G router to meet your specific requirements.

- **Port1 is available as Ethernet 10/100, serial interface RS-232/RS-485/RS-422/MBUS or (I/O - CNT)**
- **Port2 is available as serial interface RS-232/RS-485/RS-422/MBUS or (I/O - CNT)**
- **Also available are optional 3 x switched Ethernet 10/100 ports, with an inserted XC-SW board**

The 4G wireless router is available in either a plastic or metal casing, based on your requirements of the customer.

The LR77 v2 router is configurable by a secure, password protected web interface. This 4G LTE router supports creation of VPN tunnels, using technologies such as IPsec, OpenVPN and L2TP to ensure safe communication. The web interface provides detail statistics about the 4G router activities, signal strength, a detailed log and more. The cellular router supports DHCP, NAT, NAT-T, DynDNS, NTP, VRRP, HTTPS, SSH, OSPF, RIP, BGP control by SMS and more.

Other diagnostic functions to ensure continuous communication include:

- **Automatic inspection of a PPP connection**
- **An automatic restart feature in case of connection losses**
- **A hardware watchdog which monitors the status of the router**

A special start-up script window is available for inserting Linux scripts for various actions. For some applications, a key feature is the ability to create several different configurations for one 4G LTE wireless router (a maximum of 4 profiles), with the option to switch between them (for example, SMS, binary input status, etc.). The LR77 v2 cellular LTE wireless router supports an automatic upgrade of configurations and firmware from the server. This allows mass reconfiguration of many routers at the same time. It is possible to develop user modules that modify LTE router behavior on the 4G LR77 v2 wireless router.



4G LTE Router LR77 v2

### Specifications

Complies with standards	EN 301 511, v9.0.2, EN 301 908-1&2, v3.2.1, ETSI EN 301 489-1 V1.8.1, EN 60950-1:06 ed.2 + A11:09 + A1:10
LTE parameters	LTE frequency 800/900/1800/2100/2600 MHz bitrate 100 Mbps/50 Mbps
HSPA+ parameters	3GPP rel. 7 standard bitrate 21.1 Mbps/5,76 Mbps UE CAT. 1 to 6, 8, 10, 12, 14 Data compress 3GPP
UMTS parameters	W-CDMA FDD standard WCDMA frequency 900/2100 MHz PS bitrate – 384/384 kbps CS bitrate – 64/64 kbps
GPRS parameters	GPRS frequency 900/1800/1900 MHz GPRS multislot class 10, CS 1 to 4 EGPRS multislot class 10, CS 1 to 4, MCS 1 to 9
Transmit power Class 3	(+23dBm) for UMTS 900/2100MHz
Temperature range	Function: -30 to +60°C Storage: -40 to +85°C
Protection	Freely: IP20 In switch board: IP56
Supply voltage	10 to 30 V DC
Consumption	Reception: 300 mW GPRS: to 3,5 W (GPRS transmission) UMTS/HSDPA: to 5,5 W (UMTS/HSDPA transmission)
Dimensions	42x76x113 mm (DIN 35mm)
Weight	LR77 v2 – 150 g LR77 v2 SL – 280 g
Antenna connector	SMA– 50 Ohm
User interface	ETH: Ethernet (10/100 Mbit/s) USB: USB 2.0 type A host PORT1: Optional RS232/RS-485/ETHERNET/M-BUS or inputs/outputs (I/O) PORT2: Optional RS232/RS-485/M-BUS

## UR5i v2 – 3G UMTS/HSPA+ Router

UR5i v2, our 3G UMTS/HSPA router, is also used to wirelessly connect various equipment and devices via an Ethernet 10/100 interface to the Internet or intranet. Thanks to high data transfer speeds of up to 21.1 Mbit/s (download) and upload speeds up to 5.7 Mbit/s, it is an ideal wireless solution for traffic and security camera systems, individual computers, LAN networks, automatic teller machines (ATMs) and other self-service and point-of-sale kiosks.

### Key Features

The extra fast 3G UR5i v2 wireless router comes standard equipped with one Ethernet 10/100 port, one USB host port, one binary input/output (I/O) port, and one SIM card (optional 2 x SIM cards) to save and back-up communication data. The wide range of interface options gives you the ability to customise and expand the ports of the 3G router to meet your requirements.

- **Port1 is available as Ethernet 10/100, serial interface RS-232/RS-485/RS-422/MBUS or (I/O - CNT)**
- **Port2 is available as serial interface RS-232/RS-485/RS-422/MBUS or (I/O - CNT)**

The 3G wireless router is available in either a plastic or metal casing, based on the requirements of the customer.

The UR5i v2 router is configurable by a secure, password protected web interface. The 3G UMTS/HSPA+ router supports creation of VPN tunnels, using technologies such as IPsec, OpenVPN and L2TP to ensure safe communication. The web interface provides detail statistics about the 3G router activities, signal strength, a detailed log and more. The cellular router supports DHCP, NAT, NAT-T, DynDNS, NTP, VRRP, control by SMS and more.

Other diagnostic functions to ensure continuous communication include:

- **Automatic inspection of a PPP connection**
- **An automatic restart feature in case of connection losses**
- **A hardware watchdog which monitors the status of the router**

The 3G router also provides a special start-up script window for inserting Linux scripts for various actions. For some applications, a key feature is the ability to create several different configurations for one 3G wireless router (a maximum of 4 profiles), with the option to switch between them (for example, SMS, binary input status, etc.). The UR5i v2 cellular wireless router supports an automatic upgrade of configurations and firmware from the server. This allows mass reconfiguration of many routers at the same time.



3G UMTS/HSPA+ Router UR5i v2

### Specifications

Complies with standards	EN 301 511, v9.0.2, EN 301 908-1&2, v3.2.1, ETSI EN 301 489-1 V1.8.1, EN 60950-1:06 ed.2 + A11:09 + A1:10
HSPA+ parameters	3GPP rel. 7 standard bitrate 21.1 Mbps/5,76 Mbps UE CAT. 1 to 6, 8, 10, 12, 14 Data compress 3GPP
UMTS parameters	W-CDMA FDD standard WCDMA frequency 850/900/1900/2100 MHz PS bitrate – 384/384 kbps CS bitrate – 64/64 kbps
GPRS parameters	GPRS frequency 850/900/1800/1900 MHz GPRS multislots class 10, CS 1 to 4 EGPRS multislots class 10, CS 1 to 4, MCS 1 to 9
Transmit power Class 3	(+23dBm) for UMTS 900/2100MHz
Temperature range	Function: -30 to +60°C Storage: -40 to +85°C
Protection	Freely: IP20 In switch board: IP56
Supply voltage	10 to 30 V DC
Consumption	Reception: 300 mW GPRS: to 3,5 W (GPRS transmission) UMTS/HSDPA: to 5,5 W (UMTS/HSDPA transmission)
Dimensions	42x76x113 mm (DIN 35mm)
Weight	UR5i v2 – 150 g UR5i v2 SL – 280 g
Antenna connector	SMA– 50 Ohm
User interface	ETH: Ethernet (10/100 Mbit/s) USB: USB 2.0 type A host PORT1: Optional RS232/RS-485/ETHERNET/M-BUS or inputs/outputs (I/O) PORT2: Optional RS232/RS-485/M-BUS



**ER75i v2**



**UR5 v2**



**UR5i v2**



**LR77 v2**

<b>Data Transfer Technology</b>				
LTE	×	×	×	✓
UMTS/HSPA+	×	×	✓	✓
UMTS/HSUPA	×	×	✓	✓
UMTS/HSDPA	×	✓	✓	✓
GPRS/EDGE	✓	✓	✓	✓
CDMA	×	×	×	×
<b>Ports &amp; Interfaces - To learn about the number of available ports and about optional port combinations see the product details</b>				
Ethernet 10/100	✓	✓	✓	✓
USB Host	✓	✓	✓	✓
RS232	optional	optional	optional	optional
RS-485	optional	optional	optional	optional
MBUS	optional	optional	optional	optional
I/O	optional	optional	optional	optional
<b>Operating Temperature</b>				
-30 °C to +60°C	✓	✓	✓	✓
<b>Power Supply</b>				
10 - 30 V DC	✓	✓	✓	✓
<b>Design/Number of SIMs</b>				
Plastic box	optional	optional	optional	optional
Metal box	optional	optional	optional	optional
SIM card slot - 1 or 2	optional	optional	optional	optional
<b>Option Allowing Attachment to DIN Rail</b>				
TS35/TS32	✓	✓	✓	✓
<b>Operating System</b>				
Linux	✓	✓	✓	✓
<b>Basic Functions - To see the complete list of functions, please see the product details</b>				
VPN – Ipsec	✓	✓	✓	✓
VPN – OpenVPN	✓	✓	✓	✓
VPN - L2TP	✓	✓	✓	✓
VPN – GRE	✓	✓	✓	✓
DHCP	✓	✓	✓	✓
HTTP server	✓	✓	✓	✓
FTP	✓	✓	✓	✓
NAT/PAT	✓	✓	✓	✓
SNMP	✓	✓	✓	✓
VRRP	✓	✓	✓	✓
DynDNS	✓	✓	✓	✓
NTP	✓	✓	✓	✓
Telnet	✓	✓	✓	✓
SSH	✓	✓	✓	✓
PPPoE bridge	✓	✓	✓	✓
SMS + e-mail functions	✓	✓	✓	✓
Auto config/FW update	✓	✓	✓	✓
<b>Option to Monitor Routers in the Network - additional software</b>				
R-SeeNet	✓	✓	✓	✓
smartCLUSTER	✓	✓	✓	✓

## Smart Decisions Begin with Intelligent Management Software

### R-See Net

R-See Net is the software system used for monitoring Conel routers. It continuously collects information from individual routers in the network and records the data into a SQL database. Then, it creates a visual form of the information for the network administrator.

R-See Net consists of two parts:

1. R-See Net server - A server application that 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.
2. R-See Net PHP – A web-based application that accesses to the SQL database and provides the user or network administrator information about the status of individual routers, as well as about the status of the entire network.

### Available Data

Everything you need to know about your network's current status as well as a historical view of the information transferred today, yesterday, this week, this month and last month.

- Signal strength
- Response time
- Router availability
- Number of PPP connections
- Number of various channels connected

The screenshot displays a complex network monitoring interface. It features a grid of data points, likely representing individual routers or network segments, with various colored indicators (yellow, red, green) representing different status levels. The interface includes multiple columns and rows of information, possibly including IP addresses, signal strength, and connection counts. The overall layout is dense and technical, typical of a network management system.

### SmartCLUSTER

SmartCLUSTER is software designed to create safe communications systems while using a public network - the Internet. SmartCLUSTER is an OpenVPN server that offers three functions for the creation of safe private networks in a public environment.

1. As an OpenVPN server it connects clients (Conel routers and end-user computers) via an OpenVPN tunnel. It creates communication links between individual tunnels and thereby enables individual devices to communicate with each other.
2. Based on the user-defined network configuration and connection parameters of VPN tunnels, SmartCLUSTER creates a configuration file for Conel routers and also creates secure certificates for both sides of the secured OpenVPN tunnel. This allows the user to install individual Conel routers easily into a virtual private network, confident the system is secure against attacks or unauthorised access.
3. SmartCLUSTER can be used as an instrument for basic network management through information on the connection status of individual routers.

### The SmartCLUSTER solution

- SmartCLUSTER provides solutions for applications where you need to connect devices on local area networks (LANs), and a router. The router provides communication with the LAN and does not have a public internet IP address.
- SmartCLUSTER does not solve problems relevant to the assignment of fixed public IP addresses, or private APNs (Access Point Names) by the GSM / UMTS network provider.
- SmartCLUSTER does solve problems relevant to network security and the secure connection of individual local networks.
- SmartCLUSTER solves the problem of how to connect devices which are behind routers with SIM cards belonging to various GSM/UMTS operators. It is also a great solution for devices located in various countries that use local tariffs without a roaming service, but use the SmartCLUSTER communication server.



# Flexible, Versatile, Functional – LR77 v2 Now in 4G!



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Cellular Router Technology



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