

Powered by

AD\ANTECH

HSPA+ Industrial Router UR5i v2

USER'S MANUAL







Used symbols

/Ì\

O

Danger – Information regarding user safety or potential damage to the router.

Attention – Problems that can arise in specific situations.

Information, notice – Useful tips or information of special interest.

GPL licence

Source codes under GPL licence are available free of charge by sending an email to: cellularsales@advantech-bb.com.



Advantech B+B SmartWorx s.r.o., Sokolska 71, 562 04 Usti nad Orlici, Czech Republic Manual Rev. 1 released in CZ, July 25, 2016

AD\ANTECH B+B SMARTWORX

Contents

1	Safe	ety Instruction	2				
2	WEEE directive						
3	Router Description						
4	Contents of Package						
5	Rou	iter Design	6				
	5.1	Router versions	6				
	5.2	Delivery identification	7				
	5.3	Order codes	8				
		5.3.1 Basic versions	8				
		5.3.2 Full version	8				
	5.4	Basic dimensions of the router box	9				
		5.4.1 Plastic box	9				
		5.4.2 Metal box	9				
	5.5	Mounting recommendations	10				
	5.6	Removing from the DIN rail	12				
	5.7	Description of the front panel	13				
		5.7.1 Status indication	14				
		5.7.2 Power connector PWR	15				
		5.7.3 Antenna connector ANT, DIV and GPS (alternatively WIFI or WMBUS) .	16				
		5.7.4 SIM card reader	17				
		5.7.5 Ethernet Port ETH	18				
		5.7.6 PORT1	19				
		5.7.7 PORT2	19				
		5.7.8 USB Port	20				
		5.7.9 I/O Port	20				
		5.7.10 Reset	22				
6	Firs	t Use	23				
	6 1	Connecting the router before first use	00				
	0.1		23				
	0.2		24				
	6.3		24				
		6.3.1 Configuration over web browser	24				
			25				
7	Tecl	hnical Parameters	26				



	7.1	Basic parameters	26
	7.2	Standards and regulations	26
	7.3	Technical parameters of module	27
	7.4	Technical parameters of GPS	27
	7.5	Technical parameters of processor	28
	7.6	Technical parameters of I/O port	28
	7.7	Technical parameters of expansion port	28
8	Rec	ommended Literature	29
9	Trou	bleshooting	30
	9.1	FAQ	30
10	Cus	tomers Support	32



List of Figures

1	Contents of package
2	Front panel UR5i v2B
3	Front panel UR5i v2F
4	Front panel UR5i v2B SL 6
5	Front panel UR5i v2F SL
6	Label UR5i v2B
7	Label UR5i v2B SL
8	Label UR5i v2F
9	Label UR5i v2F SL
10	Basic dimensions of plastic box (bottom and front view)
11	Basic dimensions of metal box (bottom and front view)
12	Space around antennas (plastic) 10
13	Space around antennas (metal)
14	Cable routing (plastic) 11
15	Cable routing (metal)
16	Space in front of connectors (plastic)
17	Space in front of connectors (metal) 11
18	Default position of DIN holder
19	Removing from the DIN rail
20	Front panel UR5i v2F
21	Power connector
22	Connection of power supply
23	Connecting of the antenna
24	Ejected SIM holder
25	Ethernet connector
26	Connection of ethernet cable 18
27	PORT1 cable connection 19
28	PORT2 cable connection
29	USB connector
30	I/O connector
31	Connection of I/O cable
32	Connection of input and output to the router
33	Router reset
34	Router connection
35	Entering the IP address of the router
36	Entering login information
37	Router web interface



List of Tables

1	Router versions	6
2	Delivery identification	7
3	Ordering codes for Basic versions	8
4	Ordering codes of full version	8
5	Front panel description	13
6	Status indication	14
7	Connection of power connector	15
8	Connection of Ethernet connector	18
9	Connection of USB connector	20
10	Connection of I/O port	20
11	Description of reset and restart router	22
12	Basic parameters	26
13	Standards and regulations	26
14	Technical parameters of module	27
15	Technical parameters of GPS	27
16	Technical parameters of processor	28
17	Technical parameters of I/O port	28

ADVANTECH B+B SMARTWORX

1. Safety Instruction



/!`

Please, observe the following instructions:

- The router must be used in compliance with all applicable international and national laws and in compliance with any special restrictions regulating the utilization of the router in prescribed applications and environments.
- To prevent possible injury and damage to appliances and to ensure compliance with all relevant provisions, use only the original accessories. Unauthorized modifications or the use of unapproved accessories may result in damage to the router and a breach of applicable regulations. Unauthorized modifications or use of unapproved accessories may void the warranty.
- The router can not be opened.
- Turn off the router and disconnect it from power supply before handling of the SIM card.
- Caution! The SIM card could be swallowed by small children.
- Input voltage must not exceed 36 V DC max.
- Do not expose the router to extreme ambient conditions. Protect the router against dust, moisture and high temperature.
- The router should not be used in locations where flammable and explosive materials are present, including gas stations, chemical plants, or locations in which explosives are used. We remind the users of the duty to observe the restrictions concerning the utilization of radio devices at such places.
- Switch off the router when traveling by plane. Utilization of the router in a plane may endanger the operation of the plane or interfere with the mobile telephone network, and may be unlawful. Failure to observe these instructions may result in the suspension or cancellation of telephone services for the respective client, or, it may result in legal sanctions; it may also result in both eventualities.
- When using the router in the close proximity of personal medical devices, such as cardiac pacemakers or hearing aids, you must proceed with heightened caution.
- The router may cause interference when in the close proximity of TV sets, radio receivers or personal computers.
- It is recommended that you should create an appropriate copy or backup of all the important settings that are stored in the memory of the device.



2. Product Disposal Instructions

The WEEE (Waste Electrical and Electronic Equipment: 2002/96/EC) directive has been introduced to ensure that electrical/electronic products are recycled using the best available recovery techniques to minimize the impact on the environment. This product contains high quality materials and components which can be recycled. At the end of it's life this product MUST NOT be mixed with other commercial waste for disposal. Check the terms and conditions of your supplier for disposal information.



3. Router Description

3G UMTS/HSPA router UR5i v2 is used to wirelessly connect various equipments and devices via Ethernet interface 10/100 to the internet or intranet. Thanks to high data transfer speed of up to 14,4 Mbit/s (download) and upload speed up to 5,76 Mbit/s it 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.

As a standard, this exceptionally fast 3G router UR5i v2 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 two SIM cards is available. The wide range of interface options of the 3G router further expands expansion Port1 and Port2, which are selected by the customer. For Port1 are available: Ethernet port 10/100, serial interface ports RS232, RS485, RS422, MBUS or inputs/outputs (I/O – CNT). Port2 may be equipped with serial interfaces RS232, RS485, RS422, MBUS, wireless interfaces WIFI or WMBUS, SDH expansion port or inputs/outputs (I/O – CNT). Both of ports can be fitted with internal switch (exp. port SWITCH). This 3G wireless router is supplied either in a plastic or metal casing, based on the requirements of the customer.

Configuration is done via web interface protected by password. The router supports creation of VPN tunnels using technologies IPsec, OpenVPN and L2TP to ensure safe communication. Web interface provides detail statistics about the 3G router activities, signal strength, detailed log, etc. Cellular router supports functions: DHCP, NAT, NAT-T, DynDNS, NTP, VRRP, control by SMS and many other function.

Other diagnostic functions ensuring continuous communication include automatic inspection of PPP connection offering an automatic restart feature – in case of connection losses, or hardware watchdog which monitors the status of the router. With the help of a special window (start up script window) you may insert Linux scripts for various actions. For some applications the key option to create several different configurations for one 3G cellular router, the so-called profiles (maximum of 4), and the option to switch between them (for example via SMS, binary input status, etc.) is essential. Cellular routers may automatically upgrade configuration and firmware from server. This allows mass reconfiguration of many routers in one time.

The router also supports additional software like R-SeeNet for permanent traffic monitoring of routers or communication VPN server Digicluster.



Examples of possible applications

- mobile office
- fleet management
- security system
- telematic

- telemetric
- remote monitoring
- vending and dispatcher machines



4. Contents of Package

RTWORX



Basic delivered set of router includes:

• router,

AD\ANTECH

- power supply,
- crossover UTP cable,
- up to three external antennas,
- clip for the DIN rail,
- paper start guide.



Figure 1: Contents of package

Temperature range for power supply is reduced to 0 $^\circ C$ to +40 $^\circ C!$

As optional accessories can also be supplied the following expansion ports (one for Basic version or two for Full version):

- RS232, RS485/422, MBUS, ETHERNET, CNT, SWITCH, WIFI, WMBUS or SDH.
- Separation columns for mounting expansion boards are included.



5. Router Design

5.1 Router versions

UR5i v2 router is supplied in the following versions (see table below). All versions are available in plastic or metal box according to customer requirements.

Router versions	Router Box	SIM1	SIM2	0/1	USB	PORT1	PORT2	ЕТН
UR5i v2B	Plastic	1 x		1 x	1 x	1 x		1 x
UR5i v2B SL	Metal	1 x		1 x	1 x	1 x		1 x
UR5i v2F	Plastic	1 x	1 x	1 x	1 x	1 x	1 x	1 x
UR5i v2F SL	Metal	1 x	1 x	1 x	1 x	1 x	1 x	1 x

Table 1: Router versions



Figure 2: Front panel UR5i v2B



Figure 3: Front panel UR5i v2F



Figure 4: Front panel UR5i v2B SL



Figure 5: Front panel UR5i v2F SL



5.2 Delivery identification

Trade name	Type name	Other
UR5i v2B	UR-5i-v2	Basic version
UR5i v2B SL	UR-5i-v2	Basic version in the metal box
UR5i v2F	UR-5i-v2	Full version
UR5i v2F SL	UR-5i-v2	Full version in the metal box

Table 2: Delivery identification



Figure 6: Label UR5i v2B



Figure 7: Label UR5i v2B SL



Figure 8: Label UR5i v2F



Figure 9: Label UR5i v2F SL

AD\ANTECH B+B SMARTWORX

5.3 Order codes

5.3.1 Basic versions

Expansion port	Ordering code
Version without expansion port	UR5i v2B set
Version with Ethernet expansion port	UR5i v2B ETH set
Version with RS232 expansion port	UR5i v2B RS232 set
Version with RS485 expansion port	UR5i v2B RS458 set
Version with MBUS expansion port	UR5i v2B MBUS set
Version with CNT expansion port	UR5i v2B CNT set

Table 3: Ordering codes for Basic versions

5.3.2 Full version

Expansion port	Participation	Ordering code
Version without expansion port		UR5i v2F set
Version with Ethernet expansion port	PORT1	UR5i v2F ETH set
Version with RS232 expansion port	PORT1 or PORT2	UR5i v2F RS232 set
Version with RS485 expansion port	PORT1 or PORT2	UR5i v2F RS458 set
Version with MBUS expansion port	PORT1 or PORT2	UR5i v2F MBUS set
Version with CNT expansion port	PORT1	UR5i v2F CNT set
Version with SWITCH expansion port	PORT1 + PORT2	UR5i v2F SWITCH set
Version with WIFI expansion port	PORT2	UR5i v2F WIFI set
Version with WMBUS expansion port	PORT2	UR5i v2F WMBUS set
Version with SDH expansion port	PORT2	UR5i v2F SDH set

Table 4: Ordering codes of full version

Code for the second expansion port must be written after the first port. See example below:

- Basic version with RS485 port in plastic box: UR5i v2B RS485 set.
- Full version with Ethernet and RS232 port in metal cover: UR5i v2F ETH RS232 SL set.

If you want to have a router with WIFI (or WMBUS) and GPS instead of diversity, use the ordering code in this form: **UR5i v2F3**. WIFI connector is reverse as a standard (WMBUS connector is classic SMA as a standard). If you want to have a classic SMA connector (reverse SMA in case of WMBUS) use **UR5i v2F4** for version with diversity antenna and **UR5i v2F5** for version with GPS (i.e. no diversity).



5.4 Basic dimensions of the router box

5.4.1 Plastic box



Figure 10: Basic dimensions of plastic box (bottom and front view)

5.4.2 Metal box



Figure 11: Basic dimensions of metal box (bottom and front view)



5.5 Mounting recommendations

AD\ANTECH

- possibility to be put on a work surface,
- DIN rail EN 60715 with included clip CPD2 (or CKD2 for metal version).

For the most of applications with a built-in router in a switch board it is possible to recognize two kinds of environments:

- no public and industry environment of low voltage with high interference,
- public environment of low voltage without high interference.

RTWORX

For both of these environments it is possible to mount router to a switch board, the following there is no need to have examination immunity or issues in connection with EMC according to EN 60439-1 ed.2:00 + A1:04.

Compliance of EN 60439-1 ed.2:00 + A1:04 specification it is necessary to observe next assembly of the router to the switch – board:

- For whip antennas we recommend to observe a distance of 6 cm from cables and metal surfaces on every side due to the elimination of interference. While using an external antenna except for the switch-board it is necessary to fit a lightening conductor.
- Before mounting a router on sheet-steel we recommend using a "cable" antenna.



Figure 12: Space around antennas (plastic) Figure 13: Space around antennas (metal)



- For every cables we recommend to bind the bunch, we recommend for this use:
 - Length of the bunch (combination of power supply and data cables) can be maximum 1.5 m. If the length of data cables exceeds 1.5 m or in the event of, the cable leads towards the switch board. We recommend installing over voltage protectors (surge suppressors).
 - With data cables they mustn't carry cables with reticular tension \sim 230 V/50 Hz.



Figure 14: Cable routing (plastic)

Figure 15: Cable routing (metal)

• Sufficient space must be left in front of individual connectors for handling of cables,



Figure 16: Space in front of connectors (plastic) Figure 17: Space in front of connectors (metal)

• For correct function of the router we recommend to use in the switch-board earth-bonding distribution frame for grounding of power supply of router, data cables and antenna.



5.6 Removing from the DIN rail

DIN holder is suitable for DIN rail according to EN 60715 standard only. Default position of CPD2 holder (or CKD2 for metal version), which is used for mounting the router on a DIN rail, is shown in the following figure:



Figure 18: Default position of DIN holder

For removing from the DIN rail it is necessary to lightly push upward the router so that the top part of the CPD2 holder (or CKD2 for metal version) hitched to the DIN rail get out of this rail and then fold out the top part of the router away from the DIN rail.



Figure 19: Removing from the DIN rail



5.7 Description of the front panel

On the front panel is the following:

Caption	Connector	Description
PWR	2-pin	Connector for the power supply.
ETH	RJ45	Connector for connection into the local computer network.
PORT1	RJ45	Connector for expansion port RS232, RS458/422, MBUS, ETHERNET, CNT or SWITCH.
PORT2	RJ45	Connector for expansion port RS232, RS485/422, MBUS, SWITCH, WIFI, WMBUS or SDH (only FULL versions).
ANT	SMA	Connector for main antenna.
DIV	SMA	Connector for diversity antenna.
GPS	SMA	Connector for GPS antenna. It can be replaced with connector for WIFI or WMBUS antenna.
WIFI	R-SMA	Connector for WIFI antenna. Available only when the router is equipped with an expansion port WIFI.
WMBUS	SMA	Connector for WMBUS antenna. Available only when the router is equipped with an expansion port WMBUS.
USB	USB-A Host	Connector for connection of USB devices to the router. Supports devices with PL-2303 and FTDI USB/RS232 converters.
I/O	3-pin	Connector for connection of the binary input and output.
SIM1	—	Holder for the first SIM card.
SIM2	—	Holder for the second SIM card (only FULL versions).

Table 5: Front panel description



Figure 20: Front panel UR5i v2F



5.7.1 Status indication

About router status inform eight LED indicators on the front panel. ETH port, PORT1 and PORT2 have two additional LEDs that provide information about port status.

Caption	Color	State	Description
PWR	Green	Blinking On Fast blinking	Router is ready Starting of the router Updating firmware
DAT	Red	Blinking	Communication in progress on radio channel
WAN	Yellow	1x flash per sec. 2x flash per sec. 3x flash per sec.	Signal strength is from -50 dBm to -69 dBm Signal strength is from -70 dBm to -89 dBm or differ- ence between neighbours cells is exactly 3 dBm Signal strength is from -90 dBm to -113 dBm or differ- ence between neighbours cells is smaller than 3 dBm
USR	Yellow	Function of this LEI	D diode can be selected by user
OUT	Green	On	Binary output active
IN	Green	On	Binary input active
ETH	Green	On Off	Selected 100 Mbit/s Selected 10 Mbit/s
ETH	Yellow	On Blinking Off	The network cable is connected Data transmission The network cable is not connected
PORT	Green	Depends on the ex	pansion port (see user's manual for used port)
PORT	Yellow	Depends on the ex	pansion port (see user's manual for used port)
SIM1	Yellow	On	The first SIM card is active
SIM2	Yellow	On	The second SIM card is active

Table 6: Status indication

State indication of WAN LED is updated every 10 seconds.

(i)



5.7.2 Power connector PWR

Panel socket 2-pin.

Pin number	Signal mark	Description
1	VCC(+)	Positive pole of DC supply voltage (+9 to +36 V DC)
2	GND(-)	Negative pole of DC supply voltage

Table 7: Connection of power connector

Figure 21: Power connector

Power supply for router is required between +9 V to +36 V DC supply. Protection against reversed polarity without signaling is built into the router.

The power consumption during receiving is 2.6 W. The peak power consumption during data sending is 5.5 W. However, values of consumption can be increased, if some expansion port is equipped. For correct operation it is necessary that the power source is able to supply a peak current of 1.2 A.

Circuit example:

A



Figure 22: Connection of power supply

The positive pole VCC is marked by a red socket on the power.



5.7.3 Antenna connector ANT, DIV and GPS (alternatively WIFI or WMBUS)

Main and diversity antennas are connected to the router using the SMA connector on the front panel. Full version of the router also contains the third SMA antenna connector, through which the additional antenna can be connected (if WIFI expansion port is used, this connector is reverse – RSMA).

The router can not operate without connected main antenna marked as ANT!

ANT connector is used to connect the main antenna. For connecting the diversity antenna use the second antenna connector DIV. The third connector (GPS) in the full version of the router is used for additional antenna intended for GPS (router supports active GPS antenna). On user's request, this antenna connector can be modified to WIFI or WMBUS.



(i)

The antenna is connected by screwing this antenna to the SMA connector on the front panel of the router (see figure below).



Figure 23: Connecting of the antenna

Diversity antenna improves radio features of the router at low signal strength.



5.7.4 SIM card reader

The SIM card reader for 3 V and 1,8 V SIM cards is placed on the front panel of the router. For getting the router to work is necessary to insert an activated SIM card with an unblocked PIN code. The SIM cards might be of different adjusted APN (Access Point Name).

Changing the SIM card:

- Before handling of the SIM card disconnect the router from power supply!
- Press the small yellow button to eject the reader holder.
- Insert the SIM card into the reader holder and slide it in the reader (see figure below).



Figure 24: Ejected SIM holder



5.7.5 Ethernet Port ETH

Panel socket RJ45.

Pin	Signal mark	Description	Data flow direction
1	TXD+	Transmit Data – positive pole	Input/Output
2	TXD-	Transmit Data – negative pole	Input/Output
3	RXD+	Receive Data – positive pole	Input/Output
4	—	—	
5	—	—	
6	RXD-	Receive Data – negative pole	Input/Output
7	—	—	
8	—	-	

Table 8: Connection of Ethernet connector



Figure 25: Ethernet connector



Plug Ethernet cable into the RJ45 connector labeled as ETH (see figure below).



Figure 26: Connection of ethernet cable



5.7.6 PORT1

The PORT1 is equipped on customer's request with one of the offered expansion ports:

- RS232
- RS485
- RS422
- ETHERNET
- MBUS
- CNT
- SWITCH (together with PORT2)

Description and examples of expansion ports connection can be found in user's guide for corresponding expansion port.

Plug cable for the first expansion port into the RJ45 connector labeled as PORT1 (see figure below).



Figure 27: PORT1 cable connection

5.7.7 PORT2

The PORT2 is equipped on customer's request with one of the offered expansion ports:

- RS232
- RS485
- RS422
- MBUS

- SDH
- SWITCH (together with PORT1)
- WIFI
- WMBUS



(i)

PORT2 is available only in the Full version of the router! Description and examples of expansion ports connection can be found in user's guide for corresponding expansion port.



Plug cable for the second expansion port into the RJ45 connector labeled as PORT2 (see figure below).



Figure 28: PORT2 cable connection

5.7.8 USB Port

Panel socket USB-A.

Pin	Signal mark	Description	Data flow direction
1	+5 V	Positive pole of 5 V DC supply voltage, 0.5 A	
2	USB data -	USB data signal – negative pole	Input/Output
3	USB data +	USB data signal – positive pole	Input/Output
4	GND	Negative pole of DC supply voltage	

Table 9: Connection of USB connector



Figure 29: USB connector

5.7.9 I/O Port

Panel socket 3-pin.

Pin	Signal mark	Description	Data flow direction
1	BIN0	Binary input	Input
2	GND	Signal ground	
3	OUT0	Binary output	Output
		Table 10, Connection of 1/O part	

Table 10: Connection of I/O port





Figure 30: I/O connector

I/O user interface is designed for processing of binary input and control (setting) binary output. Binary output is not switched to ground in the default configuration. Maximum load binary output is 30 V/100 mA. The constant current supplied by the binary input is 3 mA.

Connect I/O cable into the I/O connector on the front panel of the router and tighten locking screws (see figure below).



Figure 31: Connection of I/O cable

Example of a circuit describing connection of binary input and output to the router:



Figure 32: Connection of input and output to the router



5.7.10 Reset

When *PWR* LED starts flashing on the front panel, it is possible to restore the default configuration of the router by pressing the *RST* button on the front panel. After pressing this button the default configuration is restored and then router reboots (green LED will be on).

For pressing the *RST* button could be used a narrow screwdriver.



(i)

We recommend backing up configuration of the router (see *Configuration manual for v2 routers*) because reset of the router sets the configuration to the default state.

It is important to distinguish between reset and reboot the router.

Action	Router behavior	Invoking events
Reboot	Turn off and then turn on router	Disconnect and connect the power, Press the <i>Reboot</i> button in the web configuration
Reset	Restore default configuration and reboot the router	Press <i>RST</i> button

|--|



6. First Use

6.1 Connecting the router before first use

Before putting the router into operation it is necessary to connect all components which are required to run your applications. Don't forget to insert SIM card.

The router can not operate without connected antenna, SIM card and power supply. If the antenna is not connected, router can be damaged.



Figure 34: Router connection



6.2 Start

The router is put into operation when the power supply is connected to this router. By default, the router will automatically start to log on to the default APN. DHCP server will start to assign addresses for devices on the Ethernet port ETH0. Router behavior can be changed via the web interface. This is described in detail in the *Configuration manual for v2 routers*.

The power consumption during receiving is 2.6 W. The peak power consumption during data sending is 5.5 W. However, values of consumption can be increased, if some expansion port is equipped. For correct operation it is necessary that the power source is able to supply a peak current of 1 A.

6.3 Configuration

Attention! If no SIM card is inserted in the router, it is not possible to operate. Inserted SIM card must have activated data transmission.

6.3.1 Configuration over web browser

For status monitoring, configuration and administration of the router is available a web interface which can be accessed by entering the IP address of the router into the web browser. The default IP address of the router is 192.168.1.1.

00			_
(〈(二)(二))	e https://192.168.1.1/	\rightarrow	A

Figure 35: Entering the IP address of the router

Configuration may be performed only by the user "root" with default password "root".

Login
Username
Password
Login

Figure 36: Entering login information



After successfully entering login information user gains access to the router via his internet browser.

Status	General Status
General	Mobile Connection
Mobile WAN	
WiFi	SLR Caro : Frimary IP Address : Unassigned
WiFi Scan	State : Offline
Network	» More Information «
DHCP	Primary (AN)
IPsec	Filling y Eve
System Log	IP Address : 10.40.28.66 / 255.255.252.0
System Log	Rx Data : 4.2 MB
Configuration	Tx Data : 140.8 KB Bridged - Var
LAN	
VRRP	» More Information «
Mobile WAN	Secondary LAN
PPPoE	IP Address : 10,40,28,66 / 255,255,252,0
WiFi	MAC Address : 7C:66:9D:38:30:F0
WLAN	Rx Data : 0 B Tx Data : 0 B
Backup Routes	Bridged : Yes
Firewall	» More Information «
OpenVPN	Wet
IPsec	VIEL
GRE	IP Address : Unassigned
L2TP	PMC AUUTESS : / 31A5104:22:24:07
РРТР	» More Information «
DynDNS	Peripheral Ports
NTP	Expansion Port 1 : R5-232
SMMP	Expansion Port 2 : RS-485
SMS	Binary Input 0 : Off Binary Input 1 : Off
Expansion Port 1	Binary Output : Off
Expansion Port 2	System Information
USB Port	
Startup Script	rizmware Version : 5.3.0 (2015-10-01) BELA #120 Serial Number : N/A
Up/Down Script	Profile : Standard
Automatic Update	Supply Voltage : 12.0 V Temperature : 38 °C
Customization	Time : 2000-05-16 00:57:08
User Modules	uprime : 0 days, 0 nours, 39 minutes
Administration	
Aummsulauon	
Users	
Change Profile	
Set Real Time Clock	
Set SMS Service Center	
Unlock SIM Card	
Send SMS	
Backup Configuration	
Restore Configuration	
Update Firmware	
Reboot	
Logout	

Figure 37: Router web interface

A detailed description of the router settings via the Web interface can be found in the document *Configuration manual for v2 routers*.

6.3.2 Configuration over Telnet

For status monitoring, configuration and administration of the router can be also used Telnet. After entering the IP address of the router you will be allowed to configure the router using commands. The default IP address of the router is 192.168.1.1. Configuration may be performed only by the user "root" with default password "root".



(i)

A detailed description of the router settings via the Telnet can be found in the document *Configuration manual for v2 routers*.

7. Technical Parameters

ARTWORX

B+B SMA

7.1 Basic parameters

AD\ANTECH

UR5i v2		
Temperature range	Operating Storage	-40 °C to +75 °C -40 °C to +85 °C
Humidity	Operating Storage	0 to 95 % relative humidity non condensing 0 to 95 % relative humidity non condensing
Altitude	Operating	2000 m/70 kPa
Degree of protection		IP30
Supply voltage		9 to 36 V DC
Consumption	ldle GPRS UMTS	2.6 W to 3.5 W (GPRS transmission) to 5.5 W (UMTS transmission)
Dimensions	Plastic box Metal box	51 x 87 x 116 mm (DIN 35 mm) 42 x 87 x 113 mm (DIN 35 mm)
Weight		UR5i v2 – 150 g UR5i v2 SL – 280 g
Antenna connector		3x SMA – 50 Ohm
User interface	ETH USB PORT1 PORT2	Ethernet (10/100 Mbit/s) USB 2.0 On customer's request On customer's request

Table 12: Basic parameters

7.2 Standards and regulations

The router complies with the following standards and regulations.

Standards and regulat	Standards and regulations		
Telecom and emission	ETSI EN 301 511 v9.0.2, ETSI EN 301 908-1 v6.2.1, ETSI EN 301 908-2 v5.4.1, ETSI EN 300 440-2 v1.4.1		
EMC	ETSI EN 301 489-1 v1.9.2, ETSI EN 301 489-3 v1.6.1, ETSI EN 301 489-24 v1.5.1		
Safety	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013		
E8 – EMC for devices in transportation	E8 homologation number: 10R – 04 7054		

Table 13: Standards and regulations



7.3 Technical parameters of module

HSPA+ module	
HSPA+ parameters	Bit rate 14,4 Mbps (DL) / 5,76 Mbps (UL) 3GPP rel. 6/7 standard Data compress 3GPP
UMTS parameters	Bit rate 384 kbps (DL) / 384 kbps (UL) 3GPP rel. 4 standard
GPRS/EDGE parameters	EDGE bit rate 237 kbps (DL) / 237 kbps* (UL) GPRS bit rate 85,6 kbps (DL) / 85,6 kbps* (UL) Multislot class 12, CS 1 to 4, 3GPP rel. 99/4 standard
Support channels	GSM/GPRS/EDGE: Quad band, 850/900/1800/1900 MHz UMTS/HSDPA/HSUPA/HSPA+: Five band, 800/850/900/1900/2100 MHz

Table 14: Technical parameters of module

7.4 Technical parameters of GPS

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

Table 15: Technical parameters of GPS

* Tracking sensitivity is the lowest GPS signal level for which the device can still detect an in-view satellite 98 % of the time when in sequential tracking mode.

** Acquisition sensitivity is the lowest GPS signal level for which the device can still detect an in-view satellite 50 % of the time.



7.5 Technical parameters of processor

32b ARM microprocessor	
Memory	512 Mb DDR SDRAM 128 Mb FLASH 1 Mb MRAM
Interface	Serial interface RS232 Ethernet interface 10/100 Mbit/s USB 2.0 interface

Table 16: Technical parameters of processor

7.6 Technical parameters of I/O port

Binary input and output		
Input/Output	Binary input Binary output	Reed contact with trigger level 1.3 up to 1.4 V 100 mA/max. 30 V
Table 17: Technical parameters of I/O port		

7.7 Technical parameters of expansion port

Technical parameters of expansion ports are provided in separate manuals.

8. Recommended Literature

SMARTWORX

[1] Advantech B+B SmartWorx:

ADVANTECH

- [2] Advantech B+B SmartWorx:
- [3] Advantech B+B SmartWorx:
- [4] Advantech B+B SmartWorx:
- [5] Advantech B+B SmartWorx:
- [6] Advantech B+B SmartWorx:
- [7] Advantech B+B SmartWorx:
- [8] Advantech B+B SmartWorx:
- [9] Advantech B+B SmartWorx:
- [10] Advantech B+B SmartWorx:
- [11] Advantech B+B SmartWorx:
- [12] Advantech B+B SmartWorx:
- [13] Advantech B+B SmartWorx:

Start Guide for v2 routers, Configuration Manual for v2 Routers, User's manual – Expansion port RS232, User's manual – Expansion port RS485/422, User's manual – Expansion port MBUS, User's manual – Expansion port CNT, User's manual – Expansion port ETH,

- User's manual Expansion port ETT,
- User's manual Expansion port WIFI,
- User's manual Expansion port WMBUS,
- User's manual Expansion port SD,
- Application note Expansion port mounting,
 - Application note Programmer guide.

ADVANTECH B+B SMARTWORX

9. Troubleshooting

If you can not connect to the router from your PC, your network card may be configured the way it is not possible to connect to the router. Take one or more of the following steps to solve the problem:

- Select the communication rate 10 MB/s in the properties of your network card.
- Connect the router to the PC via Switch.
- Connect the router to the PC, start the router first and then start the PC after the router's initialization.

9.1 FAQ

I have NAT enabled. My equipment is not connecting to the network.

• The device's gateway has to be configured as the router.

In the router resets itself and the Ethernet connection fails.

• The router will not function without an antenna. Keep the antenna as far as possible from the power supply.

Loan't access the Web server over NAT.

• The remote HTTP access of the router has to be disabled, the default server address has to be your web server and the gateway of the web server has to be the IP of the router.

Mobile WAN connection fails. (DAT LED off)

- Check signal power. If the signal power is weak, you will have to use a better antenna. If the neighboring cells have a similar signal strength, you will need to use a directional antenna. For proper operation, the signal levels have to be in the range from -50 dBm to -90 dBm.
- It is necessary to set ping, which will check the connection and, in the case of failed ping, restart connection.

Mobile WAN connection cannot be established. (DAT LED off)

- Recheck GPRS settings APN, name, password and IP address.
- Try to enter PIN verify if the SIM card has the PIN code set.
- In a private APN, switch the DNS server send off.
- Switch the system log on and observe where the error occurs.

Ethernet connection fails or isn't establishing.

• It is possible to turn auto negotiation off and set a rate and duplex manually on the Ethernet interface of the router.

DynDNS doesn't function.

- With private APN this is not functional.
- If the same IP address is recorded in your canonic name as dynamically assigned address, it means that the operator is using NAT or firewall.
- Verify NAT using ping to the static server address.
- Verify Firewall accessing remotely to the router's Web interface.
- The operator may not provide the address of DNS server and without DNS server's adress it is impossible to connect to the dyndns.org server. There will be these messages in the system log:
 - DynDNS daemon started
 - Error resolving hostname: no such file or directory
 - Connect to DynDNS server failed

L2TP or IPSec isn't establishing.

- Check the system log for error messages.
- I switched the router to offline mode by SMS message, but the router is in online mode after restart.
 - SMS messages do not change the router configuration. They remain in effect only until the router is restarted.

FTP doesn't function.

• Router doesn't support active FTP mode. It supports passive mode only.

RS232 doesn't function.

• Verify that the router supports RS232 communications. Also verify the RS232 communication settings. To do so, open the router's configuration menu via the web browser, select the appropriate expansion port and verify the settings in the configuration menu.



10. Customers Support

You can find current information about this product on our website:

www.bb-smartcellular.eu

Upkeep-advices:

G

- The SIM-card must be handled carefully as with a credit card. Don't bend, don't scratch on this and do not expose to static electricity.
- During cleaning of the router do not use aggressive chemicals, solvents and abrasive cleaners!

Advantech B+B SmartWorx s.r.o. hereby declares that the router narrated in this user's guide fits all basic demands of directive 1999/5/EC (R&TTE).

Router fits values of coefficient SAR defined by association ICNIRP and values of "About protection of health before non-ionized radiation".



Declaration of Conformity was issued and it is possible to find it on the Advantech B+B SmartWorx website (www.bb-smartcellular.eu/download) in respective product category or is available on request from producer.