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BlueRS+ - SPP

AT Command Reference

Release r05

Note

This device was developed for the purpose of communication in an office environment. It is intended solely for our industrial clients for physical integration into their own technical products after careful examination by experienced technical personnel for its suitability for the intended purpose. The device was not developed for or intended for use in any specific customer application. The firmware of the device may have to be adapted to the specific intended modalities of use or even replaced by other firmware in order to ensure flawless function in the respective areas of application. Performance data (range, power requirements, etc.) may depend on the operating environment, the area of application, the configuration, and method of control, as well as on other conditions of use; these may deviate from the technical specifications, the Design Guide specifications, or other product documentation. The actual performance characteristics can be determined only by measurements subsequent to integration. Variations in the performance data of mass-produced devices may occur due to individual differences between such devices. Device samples were tested in a reference environment for compliance with the legal requirements applicable to the reference environment. No representation is made regarding the compliance with legal, regulatory, or other requirements in other environments. No representation can be made and no warranty can be assumed regarding the suitability of the device for a specific purpose as defined by our customers. Stollmann reserves the right to make changes to the hardware or firmware or to the specifications without prior notice or to replace the device with a successor model. Of course, any changes to the hardware or firmware of any devices for which we have entered into a supply agreement with our customers will be made only if, and only to the extent that, such changes can reasonably be expected to be acceptable to our customers. No general commitment will be made regarding periods of availability; these must be subject to individual agreement. All agreements are subject to our Terms and Conditions for Deliveries and Payments, a copy of which is available from Stollmann.

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1 Introduction

This documentation describes the command interface for the following models within the BlueRS+ product family:

- PAN1455 / PAN1555 featuring software version 1.001.1 or later

The BlueRS+ has two different operating modes, the command mode and the online mode. In the command mode, the BlueRS+ can be controlled using the commands described below. In the online mode (data transfer mode), the BlueRS+ transmits each character to the remote device via the existing Bluetooth link.

To enter the command mode during an active data connection the following sequence (escape sequence) can be used:

<delay time[1]>**<+><+><+>**<delay time>

The time interval between each of the three plus signs must not exceed 1 second. The escape sequence remains transparent to the remote device.

Regardless of which command set is used (see the **AT**CMDS** parameter), the BlueRS+ can be configured after power-on using the BlueRS+ configurator. To enter the BlueRS+ configurator, perform the steps below (only applicable if the startup message has been enabled with **AT**RSTMSG=1**):

- Start your terminal emulation program (e.g. HyperTerminal) with the following settings: 9,600 bps, 8 data bits, no parity, 1 stop bit (8/N/1).
- Power on the BlueRS+ and wait until the startup message is displayed.
  +++ Press <CR>,<CR>,<ESC>,<ESC> to enter BlueRS+ configurator +++
- Type in quickly (time slot is defined in **AT**RSTTIM** command, see page 46) the sequence <CR> <CR> <ESC> <ESC> to enter the BlueRS+ configurator.
- The BlueRS+ configurator acknowledges the sequence by outputting version information and a “#” prompt. At that point, you can configure the BlueRS+ using the commands described below (Configurator syntax). Save the configuration if required. The new settings take effect after leaving the BlueRS+ configurator.

[1] Delay time defined in the S12 register (see page 47)

2 Commands

Each command line sent from the DTE to the DCE consists of a prefix, a body, and a terminator.

With the exception of the command **A/** (repeat command), all command lines begin with the prefix **AT** (ASCII 065, 084) or **at** (ASCII 097, 116).

The body is a string of characters in the ASCII range 032-255. Control characters other than <CR> (carriage return; ASCII 013) and <BS> (back space; ASCII 008) in a command line are ignored.

The terminator is <CR>.

There is no distinction between upper-case and lower-case characters. A command line can have a maximum length of 80 characters. It is automatically discarded if the input is longer. Corrections are made using <BS>. Multiple commands on the same command line are allowed; they can be entered without a separator (e.g. **AT&K0E0W1**).

Commands denoted with "**" are advanced configuration commands. Multiple "**" commands in one command line have to be separated by a semicolon ";" (e.g. **AT**BNAME=Test;**BPSM=2**).

Basic commands have the following syntax:

Syntax	Description
<command> [<number>]	Write the value of the command

If a command expects <number> and it is missing value "0" is assumed.

Advanced configuration commands have the following syntax:

Syntax	Description
**<command>	Read the current value of the command
**<command>?	Display a help text for the command
**<command>=<value>	Write the value of the command

To get an overview of the commands supported by BlueRS+, a number of special commands are available, such as:

Command	Description
**help	Show all available commands
**show	Show commonly used parameters and their values
**showall	Show all configurable parameters and their values

S parameters have the following syntax:

Syntax	Description
S<parameter number>?	Reads the current value of the command
S<parameter number>=[<value>]	Writes the value of the command

If no value is given, an error result code is returned, and the stored value is left unchanged.

There are two types of responses - information text and result codes - that are sent back to the host. Information text may consist of a single line or multiple lines. Result codes may be transmitted as a number or as a string, depending on the user-selectable setting (see the **ATV** command on page 49). For a detailed description of the supported result codes see the chapter entitled “AT Result Codes” (page 56).

The factory-default values of the parameters marked using bold letter format.

&C DCD Control

AT syntax: **AT&C<mode>**

This command determines the behavior of the DCD control line of the BlueRS+.

Mode	Description
0	DCD always ON
1	DCD ON indicates a Bluetooth connection
2	DCD follows local DTR
4	DCD follows remote DCD

&D DTR Control

AT syntax: **AT&D<mode>**

This command determines the behavior of the DTR line in controlling a Bluetooth connection.

Mode	Description
0	Ignore: Incoming calls will be accepted independently of the DTR status; DTR drop does not disconnect an active connection
1[2]	Cmdmode: During an active connection dropping the DTR line performs a switch from online mode into command mode
2	Control: Incoming calls will be accepted only when DTR is ON; DTR drop disconnects an active connection
4[3]	Hangup: Incoming calls will be accepted independently of the DTR status; DTR drop disconnects an active connection
7	Reset device: DTR drop initiates a software reset

&F Load Factory Defaults

AT syntax: **AT&F<value>**

The factory-default values will be loaded. For storing values in non-volatile memory, use the **AT&W** command.

Value	Description
0	Set general parameters to factory defaults
1	Set general and proprietary parameters to factory defaults

[2] This mode is only applicable when using AT command mode (cmds=0).

[3] When using PAN1455/PAN1555 the default value is 0.

&K Flow Control

AT syntax: **AT&K<mode>**

This command determines the flow control behavior of the BlueRS+ during the data communication phase.

Mode	Description
0	No local flow control between the DTE and BlueRS+
3	Local flow control is set to hardware handshake RTS/CTS
5	Hardware flow control RTS/CTS in data mode and in command mode
6	Inverted RTS state is signaled to remote host as RI

&R CTS Control

AT syntax: **AT&R<mode>**

This command determines the behavior of the CTS control line of the BlueRS+.

Mode	Description
0	CTS follows RTS
1	Hardware flow control RTS/CTS, CTS is always ON if flow control is disabled
2	CTS follows DTR
3	CTS follows remote CTS

In case transmitting the CTS line via Bluetooth (**AT&R3**) is selected, the local flow control needs to be disabled (**AT&K0**).

&S DSR Control

AT syntax: **AT&S<mode>**

This command determines the behavior of the DSR control line of the BlueRS+.

Mode	Description
0	DSR always ON
1	DSR ON indicates a Bluetooth connection
2	DSR follows DTR
3	DSR follows DCD
4	DSR follows remote DSR
5	DSR Off Hook

&V Display Configuration

AT syntax: **AT&V**

This command displays the current configuration of the BlueRS+.

Param.	Description
AT&V	Displays the current configuration of the AT command setting
AT&V1	Displays the current configuration of the extended AT command setting

&W Store Active Configuration

AT syntax: **AT&W**

The active configuration is stored in non-volatile memory.

A Accept Incoming Call

AT syntax: **ATA**

This command accepts an incoming call if automatic call acceptance is not set (Register S0=0). An incoming call is always signaled with the unsolicited response “RING“ or code “2“, even if automatic call acceptance is selected.

Note: Must be the last command in an AT command line.

A/ Repeat Last Command Line

AT syntax: **A/**

This command repeats the commands of the most recently entered command line.

*Note: No **AT** prefix is required.*

BACCL Bluetooth Serial Service Access Level

AT syntax: **AT**BACCL | AT** BACCL=<mode>**
Configurator syntax: **baccl | baccl =<mode>**

This command defines the accessibility and visibility of the Bluetooth serial service.

Mode	Description
0	Serial service is neither accessible nor visible
1	Serial service is accessible but not visible
2	Serial service is accessible and visible

BARSSI — Read Absolute RSSI Value

AT syntax: **AT**BARSSI**
Configurator syntax: **barssi**

This read-only parameter contains the absolute receive signal strength value acquired on the last poll interval (see **AT**BSTPOLL** parameter). The value is returned as a signed byte in hexadecimal notation. If the update interval is 0, the returned value will also be 0.

The result of the **AT**BARSSI** command is a signed byte in hexadecimal notation. That means if the highest bit (bit 7) is 1, the number is negative, and you get the value by building the two's complement.

Conversion table:

Value	Receive signal
0x10	10 dBm
0x00	0 dBm
0xFF	-1 dBm
0xFE	-2 dBm
0xFD	-3 dBm
…	
0xEC	-20 dBm
…	
0xE7	-25 dBm
…	
0xB5	-75 dBm
...	
0xB0	-80 dBm

The higher the value (hexadecimal value), the better the receive signal. Most common results are in the range of -20 dBm to -80 dBm.

When there is no Bluetooth connection the result isn't defined, amongst other things thats because there is no "neutral" value.

BARSSIIO[4] Signaling Absolute RSSI Value at GPIO

AT syntax: **AT**BARSSIIO | AT**BARSSIIO=<mode>**
Configurator syntax: **barssiio | barssiio=<mode>**

This command controls the signaling of the receive signal strength value at GPIO.

Mode	Description
0	Signaling absolute RSSI value at GPIO disabled
1	Signaling absolute RSSI value at GPIO enabled

Additionally the AT**BSTPOLL parameter must be configured to a value unequal 0. The receive signal strength will be indicated at the GPIO's 5, 8 and 10. The following states are possible:

IO5	IO8	IO10	Description	Receive signal strentgh
1	0	0	Too near	>= -30 dB ???
1	0	1	Too near	>= -30 dB ???
0	0	0	OK	< -30 dB
0	0	1	OK	< -45 dB
0	1	0	OK	< -60 dB
0	1	1	OK	< -70 dB
1	1	0	Too far away	< -83 dB
1	1	1	Too far away	< -90 dB

The GPIO signals are only valid during an established Bluetooth connection. The value is a moving average, it will be altered more often if the data troughput is higher. The refreshing rate depends on the setting of the **AT**BSTPOLL** parameter.

BCLASS Bluetooth Class of Device

AT syntax: **AT**BCLASS | AT**BCLASS=<value>**
Configurator syntax: **bclass | bclass=<value>**

This command allows the manipulation of the Bluetooth class of device/service (CoD).

Note: Changing the class of device affects profile-specific requirements and may influence interoperability. Change this only if you are certain of all side effects.

The CoD consists of 3 octets (24 bits). Bits 23 through 13 define the service class, bits 12 through 8 define the major device class, and bits 7 through 2 define the minor device class. Bits 1 and 0 are reserved and must always be set to 0.

[4] This command applies to BlueMod+C11/G2 only.

The service class field is a bit field; no bit, one bit or several bits can be set, depending on the profile requirements.

Service classes:

Bit	Description
13	Limited discoverable mode
14	Reserved
15	Reserved
16	Positioning (location identification)
17	Networking (LAN, ad-hoc, …)
18	Rendering (printing, speaker, …)
19	Capturing (scanner, microphone, …)
20	Object transfer (v-inbox, v-folder, …)
21	Audio (speaker, microphone, headset service, …)
22	Telephony (cordless telephony, modem, headset service, …)
23	Information (Web server, WAP server, …)

The major device class field represents the highest level of granularity for defining a Bluetooth device. The main function of a device is used to determine the major device class setting (bits 12 through 8 in the CoD).

Major device class:

Bit	12	11	10	9	8	Description
	0	0	0	0	1	Computer (desktop, notebook, PDA, organizer, …)
	0	0	0	1	0	Phone (cellular, cordless, payphone, modem, …)
	0	0	0	1	1	LAN/network access point
	0	0	1	0	0	Audio/video (headset, speaker, stereo, video display, VCR, …)
	0	0	1	0	1	Peripheral (mouse, joystick, keyboards, …)
	0	0	1	1	0	Imaging (printing, scanner, camera, display, …)
	1	**1**	**1**	**1**	**1**	Uncategorized, specific device code not specified

The minor device class field (bits 7 through 2 in the CoD) can be interpreted only in the context of the major device class (but independently of the service class field). The meaning of the bits may therefore change depending on the major device class.

Minor device class values for the “Computer” major device class:

Bit	7	6	5	4	3	2	Description
	0	0	0	0	0	0	Uncategorized, specific device code not assigned
	0	0	0	0	0	1	Desktop workstation
	0	0	0	0	1	0	Server-class computer
	0	0	0	0	1	1	Laptop
	0	0	0	1	0	0	Handheld PC/PDA (clam shell)
	0	0	0	1	0	1	Palm-sized PC/PDA
	0	0	0	1	1	0	Wearable computer (watch-sized)

Minor device class values for the “Phone” major device class:

Bit	7	6	5	4	3	2	Description
	0	0	0	0	0	0	Uncategorized, specific device code not assigned
	0	0	0	0	0	1	Cellular
	0	0	0	0	1	0	Cordless
	0	0	0	0	1	1	Smart phone
	0	0	0	1	0	0	Wired modem or voice gateway
	0	0	0	1	0	1	Common ISDN access

For the description of other minor device classes, refer to the Bluetooth specification.

Note: Values can be entered in hexadecimal notation (0x…). Leading zeros can be omitted.

Examples:

at**bclass=**0x1F00**	Uncategorized, specific device code not specified
at**bclass=0x0210	Wired modem

BCRYPT — Encryption

AT syntax: **AT**BCRYPT | AT**BCRYPT=<mode>**
Configurator syntax: **bcrypt | bcrypt=<mode>**

Enable or disable the encryption of the information transferred via Bluetooth.

Please note the Bluetooth connection must be authenticated (see **AT**BSECOUT**, **AT**BSECIN** parameters) to allow encryption.

Mode	Description
0	Encryption disabled
1	Encryption enabled

BINQ — Search Bluetooth Devices

AT syntax: **AT**BINQ | AT**BINQ=<mode>**
Configurator syntax: **binq | binq=<mode>**

With this command, an automatic search for all discoverable Bluetooth devices, and optionally their names and/or services, will be initiated.

As a result, the creation of the **binqlist** list will be initiated. The list can be read using the **AT**BINQLIST** command. If the inquiry has not terminated when the **AT**BINQLIST** command is issued, the BlueRS+ will return “inquiry active”.

The entries of the **binqlist** contain the Bluetooth device address, the Bluetooth device names, the available services (profiles), and the RSSI value. The RSSI value represents the absolute receive signal strength of the found Bluetooth device.

The creation of this list may take from 12 seconds (if only Bluetooth device addresses are discovered) up to several minutes. This depends on the setting of the **AT**BINQND**, **AT**BINQSD** parameters and the behavior of the remote devices discovered. A maximum of 16 Bluetooth devices and services can be stored in the internal database.

If **AT**BINQND** and/or **AT**BINQSD** are enabled, the name and/or service discovery for each device discovered might take an average of 2 seconds. A “complete” inquiry with name and/or service discovery for 16 devices will take approximately 45 seconds.

Mode	Description
0	The command terminates immediately with “OK”. The search process is executed silently in the background.
1	The inquiry/service discovery results will be shown “live”. The command terminates with “OK” once the search process is finished. During the search process the BlueRS+ reports the device and service information. If more than 16 devices are found, the message “RESOURCE ERROR” will be displayed.
2	The inquiry/service discovery results will be shown “live”. The command terminates with “OK” once the search process is finished. If the database cannot accommodate the devices found (because it is already full), instead of returning a “RESOURCE_ERROR” message, the devices/services are listed with their numbers set to “d--“ for devices and “s--“ for services.

*Note: The performance of the command is influenced by the **AT**BINQND** and **AT**BINQSD** parameters.*

Examples:

at**binq	starting inquiry..... OK
at**binq 1 (at**binqnd=1) (at**binqsd=0)	starting inquiry..... d01: 008025128F72 0x001F00 -072 d02: 008025087843 0x001F00 -078 … d16: 008025129025 0x001F00 -077 RESOURCE ERROR … starting name/service discovery..... d01: 008025128F72 0x001F00 -072 BlueRS+E/G2 8F:72 d02: 008025087843 0x001F00 -078 BlueMod+C11/G2 78:43 … d16: 008025129025 0x001F00 -077 BlueRS+E/G2 90:25 OK
at**binq 2 (at**binqnd=0) (at**binqsd=1)	starting inquiry..... d01: 00802500211A 0x001F00 -075 d02: 000000330400 0x001F00 -056 … d16: 0080250021FD 0x001F00 -065 d--: 0002EE447120 0x500204 -083 d--: 008025070AAF 0x001F00 -077 d--: 0080250041ED 0x001F00 -079 starting name/service discovery..... d01: 00802500211A 0x001F00 -075 s01: uuid: 1101 sChan: 001E sName: config port s02: uuid: 1101 sChan: 0001 sName: serial port d02: 000000330400 0x001F00 -056 s01: uuid: 1101 sChan: 0001 sName: serial port … d16: 0080250021FD 0x001F00 -065 s01: uuid: 1101 sChan: 0001 sName: serial port OK

BINQDEL — Delete Remote Device Or Service

AT syntax: **AT**BINQDEL <dx>,[sx]**

Configurator syntax: **binqdel <dx>,[sx]**

This command deletes a remote device or a service of a remote device from the **binqlist** list.

Param.	Description
dx	Reference to device list entry of remote device in **binqlist** (d01...d16)
sx	Reference to service number of device list entry of remote device in **binqlist**

Examples:

at**binqdel d01	Delete device d01 from **binqlist**
at**binqdel d01,s2	Delete service s02 of device d01 from **binqlist**

BINQLIST — Show Inquired Bluetooth Devices

AT syntax: **AT**BINQLIST**
Configurator syntax: **binqlist**

This request returns the list of Bluetooth devices found. The list entries show the Bluetooth device addresses and Bluetooth device names requested by the **AT**BINQ** command.

For each Bluetooth device, the services (profiles) found will be shown (for a list of valid services see page 58 “Table for Coding Bluetooth Services”).

These entries can be accessed by selectors d01...dnn to address the Bluetooth device and the selectors s01...snn to address the Bluetooth devices’ service channel.

The internal database is limited to 16 Bluetooth devices. If more than 16 devices are found, the binqlist contains a “list broken” entry at the end.

Responses	
d01: <brad1> <cod1> <rssi1> <brname1> s01: uuid: <service> sChan: <cn> sName: <service name> s02: uuid: <service> sChan: <cn> sName: <service name> d02:B <brad2> <cod2> <rssi2> <brname2> s01: uuid: <service> sChan: <cn> sName: <service name> d03: <brad3> <cod3> <rssi3> <brname3> OK	
inquiry active OK	if the search initiated by **AT**BINQ** is still active
list empty OK	if no Bluetooth device is found

Properties of found Bluetooth device	
brad	Bluetooth device address (12 digits)
cod	Class of device (hexadecimal value)
rssi	Absolute receive signal strength
brname	Bluetooth remote name
service	Service of Bluetooth device (hexadecimal value)
cn	Channel number used for service type (hexadecimal value)
brsname	Service name used for service type
B	Bonded device (indicates an existing link key)

*Note: The performance of the command is influenced by the **AT**BINQND** and **AT**BINQSD** parameters.*

Example:

at**binqlist (at**binqnd=1) (at**binqsd=1)	d01: 0002EE447120 0x500204 -078 Nokia 6310i s01: uuid: 1111 sChan: 0002 sName: Fax s02: uuid: 1105 sChan: 0009 sName: OBEX Object Push s03: uuid: 1112 sChan: 000C sName: Audio Gateway s04: uuid: 1101 sChan: 0003 sName: COM 1 s05: uuid: 111F sChan: 000D sName: Voice Gateway s06: uuid: 1103 sChan: 0001 sName: Dial-up networking d02: 00802500211A 0x001F00 -075 Loopback RS+E s01: uuid: 1101 sChan: 001E sName: config port s02: uuid: 1101 sChan: 0001 sName: BlueRS+E serial port d03:B 008025002023 0x001F00 -068 BlueRS+E 20:23 s01: uuid: 1101 sChan: 0001 sName: serial port d04: 00032FFFB61C 0x420210 -082 Bluetooth Modem s01: uuid: 1101 sChan: 0001 sName: Serial port s02: uuid: 1103 sChan: 0001 sName: Dial-up Networking s03: uuid: 1111 sChan: 0001 sName: Fax OK

BINQND Request Device Name During Device Search

AT syntax: **AT**BINQND | AT**BINQND=<mode>**
Configurator syntax: **binqnd | binqnd=<mode>**

This command controls the performance of a name request on each inquired device during the execution of the **AT**BINQ** command.

Mode	Description
0	No name request is performed
1	Names are requested from remote device

Note: Each name request to a remote device can take an average 2 seconds.

BINQSD Discover Services During Device Search

AT syntax: **AT**BINQSD | AT**BINQSD=<mode>**
Configurator syntax: **binqsd | binqsd=<mode>**

This command controls the performance of a service discovery on each inquired device during the execution of the **AT**BINQ** command.

Mode	Description
0	No service discovery is performed
1	Services are discovered from remote device

Note: Each service discovery to a remote device can take an average 2 seconds.

BINQSERV Discover Services of Device

AT syntax: **AT**BINQSERV | AT**BINQSERV=<brad> | <dx>,[ux]**
Configurator syntax: **binqserv | binqserv=<brad> | <dx>,[ux]**

This command performs a service discovery on a single device.

Param.	Description
brad	Bluetooth remote device address (12 digits)
dx	Reference to device list entry of remote device in **binqlist** (d01...d16)
ux	Specific UUID to search for

The command needs a Bluetooth device address or a device selector dx from the **binqlist** as a parameter. The information gathered is returned immediately and inserted into the **binqlist**.

The internal database is limited to 16 Bluetooth devices. If the database cannot accommodate the devices found (because it is already full), instead of returning a “RESOURCE_ERROR” error code, the devices/services are listed with their numbers set to “d--” for devices and “s--” for services.

Examples:

at**binqserv 0002EE447120	Get service information for device with Bluetooth address 0002EE447120 d03: 0002EE447120 0x500204 -069 Nokia 6310i s01: uuid: 1111 sChan: 0002 sName: Fax s02: uuid: 1105 sChan: 0009 sName: OBEX Object Push s03: uuid: 1112 sChan: 000C sName: Audio Gateway s04: uuid: 1101 sChan: 0003 sName: COM 1 s05: uuid: 111F sChan: 000D sName: Voice Gateway s06: uuid: 1103 sChan: 0001 sName: Dial-up networking OK
at**binqserv d11	Get service information for device d11 from **binqlist** d11: 0080250021FD 0x001F00 -073 BlueRS+E 21:FD s--: uuid: 1101 sChan: 0001 sName: serial port
at**binqserv d03,u1101	Get service information for device d03 from **binqlist** for service 0x1101 d03: 0002EE447120 0x500204 -069 Nokia 6310i s01: uuid: 1101 sChan: 0003 sName: COM 1 OK

BLINKP Link Policy

AT syntax: **AT**BLINKP | AT**BLINKP=n**
Configurator syntax: **blinkp | blinkp=n**

This command defines the link policy (bit mask) for device requests for a new Bluetooth link.

Bit	2	1	0	Function
	0	0	**1**	Enable role switch support
	1	0	0	Enable sniff support

Examples:

at**blinkp=1	Device supports role switch feature
at**blinkp=4	Device supports sniff feature
at**blinkp=5	Device supports role switch feature and sniff feature

BNAME Local Device Name

AT syntax: **AT**BNAME | AT**BNAME=<name>**
Configurator syntax: **bname | bname=<name>**

This command allows the modification of the local device name. The device name is shown on a remote Bluetooth device during device/service discovery. It is limited to 50 characters.

The device name can contain a format string to include the device's own address or parts of it in the name.

Format: "%[<s>][<d>]a"

"%"	Identifier start format string
<s>	Character separator on byte order (optional)
<d>	Number (1-12) of digits included in device name (optional, default is 4)
"a"	Identifier end format string

Examples: Device address = "0123456789AB"

atbname=BlueRS+E %:4a**	Display on remote end: BlueRS+E 89:AB
at**bname=BlueRS+E %4a	Display on remote end: BlueRS+E 89AB
at**bname=BlueRS+E %:3a	Display on remote end: BlueRS+E 9:AB
at**bname=BlueRS+E %3a	Display on remote end: BlueRS+E 9AB
at**bname=BlueRS+E %:12a	Display on remote end: BlueRS+E 01:23:45:67:89:AB

BND Bond With a Bluetooth Device

AT syntax: **AT**BND=<device>[,PIN]**
Configurator syntax: **bnd=<device>[,PIN]**

This command initiates a bonding process with a remote Bluetooth device. <device> can either be the device address of the remote device or the dxx device selector from the **binqlist**.

The optional <PIN> parameter is the passkey used to generate the bond. If <PIN> is omitted, the passkey configured with the **AT**BPIN** command is used.

If the bonding succeeds BlueRS+ returns "SUCCESS", otherwise "FAILED".

Bonded devices are stored in the **bndlist**. The number of bonded devices which can be stored in the bonded device list is defined in the **AT**BNDSIZE** parameter. If all entries are used, a new bond will overwrite the least recently used one.

Example:

at**bnd=010203040506,1234	Bond with device with address 010203040506 and use 1234 as PIN

BNDDEL — Delete Bonding Information

AT syntax: **AT**BNDDEL=<mode>**
Configurator syntax: **bnddel=<mode>**

This command deletes the bonding information stored by the BlueRS+.

Mode	Description
b<x>	Delete the bond of the device with device selector b<x> from **bndlist**; the remaining bond list entries get new index numbers
all	Delete all bonded devices

BNDLIST — Show Bonded Device List

AT syntax: **AT**BNDLIST**
Configurator syntax: **bndlist**

This command shows information about the devices bonded with the BlueRS+.

Example:

at**bndlist	b01: 000461811C0F THA-W2K b02: 00802500211A Loopback RS+E OK

BNDS — Storage Mode for Bonds

AT syntax: **AT**BNDS | AT**BNDS=<mode>**
Configurator syntax: **bnds | bnds=<mode>**

This command controls the storage mode for bonding information (link keys).

Mode	Description
0	Bonds persists for the duration of the authenticated connection
1	Bonds are permanently stored in the NVRAM of the BlueRS+

BNDSIZE — Bonded Devices List Size

AT syntax: **AT**BNDSIZE | AT**BNDSIZE=<value>**
Configurator syntax: **bndsize | bndsize=<value>**

This command reduces the number of entries (1…10) the bonded-device list can hold.

The default size depends on the product for which the firmware is designed. Currently it is **10** for SPP versions and **1** for versions that support audio profiles (HS-HS/HS-AG).

Note: Modification of this parameter will delete all entries in the bonded-device list.

Example:

at**bndsize=1	Limit the number of bonded devices to 1

BOAD — Bluetooth Own Device Address

AT syntax: **AT**BOAD**
Configurator syntax: **boad**

This command reads the Bluetooth devices' own device address.

Note: This command is read only.

BOFCON — Fast-Connection Mode

AT syntax: **AT**BOFCON | AT**BOFCON=<mode>**
Configurator syntax: **bofcon | bofcon=<mode>**

This parameter switches the fast-connection mode for outgoing calls on and off. The BlueRS+ uses a different page mode to establish the Bluetooth connection to the remote device and decreases the timeout for a unsuccessful connection.

Mode	Description
0	Fast connection mode disabled
1	Fast connection mode enabled

Note: The remote device must be configured to use page-scan mode R0 (bpsrm parameter) for maximum speed.

BOSCH Own Server Channel Number

AT syntax: **AT**BOSCH | AT** BOSCH=<channel number>**
Configurator syntax: **bosch | bosch=<channel number>**

This parameter sets up the server channel number of the serial service supplied by the local device. The channel number is used for incoming connections only.

Channel number	Description
1…32	Server channel number for incoming connection

Note: Server channel 30 is reserved for the remote configuration access; do not use it for a serial port service.

BOSRV Own Service Profile (UUID)

AT syntax: **AT**BOSRV | AT**BOSRV=<uuid>**
Configurator syntax: **bosrv | bosrv=<uuid>**

This parameter defines the service the BlueRS+ reports to a remote device. **AT**BOSRV** influences the type that is reported to a remote Bluetooth terminal device during a service-discovery sequence.

UUID	Description
0x1101	Serial port
0x1103	Dial-up networking
0x1106	OBEX file transfer

For additional service profiles (UUID's) please refer to the list of valid UUIDs. See page 58, "Table for Coding Bluetooth Services".

Note: The UUID must be entered as a hexadecimal value (0x...).

BOSRV2 Own Second Service Profile (UUID)

AT syntax: **AT**BOSRV2 | AT**BOSRV2=<uuid>**
Configurator syntax: **bosrv2 | bosrv2=<uuid>**

This parameter defines a second service the BlueRS+ reports to a remote device. **AT**BOSRV2** influences the type that is reported to a remote Bluetooth terminal device during a service-discovery sequence.

UUID	Description
0	No second service profile reported to a remote Bluetooth terminal
0x1101	Serial port
0x1102	LAN profile

For additional service profiles (UUID's) please refer to the list of valid UUIDs. See page 58, "Table for Coding Bluetooth Services".

Note: The UUID must be entered as a hexadecimal value (0x...).

BPIN Bluetooth Device PIN (Passkey)

AT syntax: **AT**BPIN | AT**BPIN=<old_pin>,<new_pin>**
Configurator syntax: **bpin | bpin=<old_pin>,<new_pin>**

This command sets the PIN for establishing a connection in restricted mode. The PIN has a maximum length of 16 alphanumeric characters; the factory-default is "0000".

This PIN is always checked if:

- the BlueRS+ is set to restricted mode and a connection is established
- the BlueRS+ is not set to restricted mode but the remote Bluetooth device is set to restricted mode.

After a pairing has taken place (PINs successful exchanged), Bluetooth links can be established between these paired devices independent of the settings for restricted mode and the PIN.

To reset the PIN to the factory-default, use the **AT&F1** command (all parameters will be set to the factory-default).

Note: Prefer PINs composed of only decimal digits. Do not assume that a remote device with limited user-interface capabilities supports alphabetic characters.

Example:

at**bpin=0000,1234	Set PIN to 1234 (old PIN was 0000)

BPSM Scanning Capability

AT syntax: **AT**BPSM | AT**BPSM=<mode>**
Configurator syntax: **bpsm | bpsm=<mode>**

This parameter controls the visibility of the device and its ability to accept connections and its reaction to paging and/or inquiry requests. If set to "0" all paging/inquiry requests from other Bluetooth devices will be ignored, and the RF receive part of the BlueRS+ is disabled.

Mode	Description
0	Page scan and inquiry scan are disabled; the BlueRS+ is not connectable and not discoverable
1	Inquiry scan is enabled; the BlueRS+ is discoverable, but not connectable
2	Page scan is enabled; the BlueRS+ is connectable, but not discoverable
3	Page scan and inquiry scan are enabled; the BlueRS+ is connectable and discoverable

BPSRI Page-Scan Repetition Interval

AT syntax: **AT**BPSRI | AT**BPSRI=<value>**
Configurator syntax: **bpsri | bpsri=<value>**

This parameter modifies the page-scan repetition interval (in milliseconds) of the BlueRS+.

Value	Description
n=11…2560	Use page-scan repetition interval of *n* ms
1280	Use page-scan repetition interval of 1280 ms

Note: Due to internal conversion it can happen that the value is not set to the exact entered value. In this case it will be set to the next lower value.

BPSRM Page-Scan Repetition Mode

AT syntax: **AT**BPSRM | AT**BPSRM=<mode>**
Configurator syntax: **bpsrm | bpsrm=<mode>**

This parameter modifies the page-scan repetition mode of the BlueRS+. Possible values according to the Bluetooth base-band specification are:

Mode	Description
0	R0 - continuous scan
1	R1 - 1.28 s interval, 11.25 ms window
2	R2 - 2.56 s interval, 11.25 ms window
255	Values of **AT**BPSRI** (interval) and **AT**BPSRW** (windows) parameter applies to page-scan repetition mode

Continuous scanning decreases the connect time down to about 200 ms:

- R0: about 200 ms
- R1: about 2.2 s
- R2: about 3.5 s

ATBPSRM** should be set to the same value for the scanning and the paging device.

Note: Setting the page-scan repetition mode to continuous scan significantly increases the power consumption.

BPSRW Page-Scan Repetition Window

AT syntax: **AT**BPSRW | AT**BPSRW=<value>**
Configurator syntax: **bpsrw | bpsrw=<value>**

This parameter modifies the page-scan repetition window (in milliseconds) of the BlueRS+.

Value	Description
n=11…2560	Use page-scan repetition window of *n* ms
11	Use page-scan repetition window of 11 ms

Note: Due to internal conversion it can happen that the value is not set to the exact entered value. In this case it will be set to the next lower value.

BR Baud Rate

AT syntax: **AT**BR | AT**BR=<value>**
Configurator syntax: **br | br=<value>**

This command determines the baud rate for the UART.

Value	Description
1	1,200 bps
2	2,400 bps
3	4,800 bps
4	9,600 bps
5	19,200 bps
6	38,400 bps
7	57,600 bps
8	115,200 bps
9	230,400 bps
20	300 bps (only supported by BlueMod+C11/G2)
21	600 bps (only supported by BlueMod+C11/G2)
22	460,800 bps
23	921,600 bps

BRAD, BRAD2, BRAD3 Bluetooth Remote Device Address

AT syntax: **AT**BRAD | AT** BRAD=<Bluetooth address>**
Configurator syntax: **brad | brad=< Bluetooth address >**

This parameter sets up up to 3 Bluetooth addresses of remote Bluetooth devices that should be connected using an automatic link setup. The BlueRS+ will try to connect to the device with address **AT**BRAD** first; if that connection fails because

the device is busy or unreachable, the BlueRS+ tries to connect to the device with address **AT**BRAD2,** then **AT**BRAD3**, whereafter the sequence restarted at **AT**BRAD.**

The address can be any dial string as specified for the **ATD** command.

The address can be deleted using the command **AT**BRAD=-**

*Note: These commands are only applicable if the command set is set to an automatic connection mode (**AT**CMDS=6,7,8**).*

Example:

at**brad=0123456789AB	Automatic link setup to a device with Bluetooth address 0123456789AB

BRBD Connected Device Address

AT syntax: **AT**BRBD**

This command displays the device address of the connected Bluetooth device.

Note: This command is read-only and is only applicable in command mode during an active connection.

Example:

at**brbd	Show device address of connected Bluetooth device

BRNAME Connected Device Name

AT syntax: **AT**BRNAME**

This command displays the device name of the connected Bluetooth device.

Note: This command is read-only and is only applicable in command mode during an active connection.

Example:

at**brname	Show device name of connected Bluetooth device

BROLE Device Role

AT syntax: **AT**BROLE | AT**BROLE=<mode>**
Configurator syntax: **brole | brole=<mode>**

This command controls the role the device requests for a new Bluetooth link. If no specific action in this respect is taken, the device that initiates the connection will be the master. The terminating device (the one accepting a connection) will be the slave.

Mode	Description
0	Slave required
1	Slave preferred
2	Don't care
3	Master preferred
4	Master required

If the role is set to “required”, the device enforces a switch. If this fails, the link is disconnected.

“Preferred” means that the device tries to perform a switch but does not care about the result.

BRSCH Remote Bluetooth Server Channel

AT syntax: **AT**BRSCH | AT**BRSCH=<server channel>**
Configurator syntax: **brsch | brsch=<server channel>**

This command sets up the server channel of the remote Bluetooth device to which the Bluetooth link is to be established. The devices’ own server channel number can be changed with the **AT**BOSCH** parameter.

Server channel	Description
1…32	Server channel of the remote Bluetooth device

Note: Remote management between BlueRS+ is achieved using server channel 30.

BSECIN Authorization Mode for Incoming Connection

AT syntax: **AT**BSECIN | AT**BSECIN=<mode>**
Configurator syntax: **bsecin | bsecin=<mode>**

This parameter configures the authorization behavior of the BlueRS+ on incoming connections.

Mode	Mode name	Description
0	bondable	Passive mode - accept bond request from the remote device, no active authentication
1	bond unknown	Perform authentication on connection setup; if not bonded with the remote device, perform bonding
2	bond always	Always perform bonding
3	bonded only	Accept only connections from bonded devices; authenticate the link authorization
4	rebond always	Accept only connections from bonded devices; always perform bonding
5	do not connect	Do not connect
6	refuse pairing	Passive mode - the device does not initiate security procedures and accepts authentication but no bonding (PIN level authentication) from the remote end
7	refuse security	Passive mode - the device does not initiate security procedures and does not accept authentication or bonding (PIN level authentication) from the remote end

BSECOUT Authorization Mode for Outgoing Connection

AT syntax: **AT**BSECOUT | AT**BSECOUT=<mode>**
Configurator syntax: **bsecout | bsecout=<mode>**

This parameter configures the authorization behavior of the BlueRS+ for outgoing connections.

Mode	Mode name	Description
0	bondable	Passive mode - accept bond request from the remote device, no active authentication (default)
1	bond unknown	Perform authentication on connection setup; if not bonded with remote device perform bonding
2	bond always	Always perform bonding
3	bonded only	Accept only connections to bonded devices; authenticate the link authorization
4	rebond always	Accept only connections to bonded devices; always perform bonding
5	do not connect	Do not connect
6	refuse pairing	Passive mode - the device does not initiate security procedures and accepts authentication but no bonding (PIN level authentication) from the remote end
7	refuse security	Passive mode - the device does not initiate security procedures and does not accept authentication or bonding (PIN level authentication) from the remote end

BSIZE Block Size

AT syntax: **AT**BSIZE | AT**BSIZE=<value>**
Configurator syntax: **bsize | bsize=<value>**

This command defines the maximum length of a data block transmitted via Bluetooth.

Value	Description
n=16…330	Block size of *n* bytes is used
330	Block size of 330 bytes is used

BSMAX Maximum Sniff Interval

AT syntax: **AT**BSMAX | AT**BSMAX=<value>**
Configurator syntax: **bsmax | bsmax=<value>**

This command defines the maximum accepted sniff interval in ms for a new Bluetooth link. The default value is **300** (ms). Possible values are profile-dependent.

Note: Currently the value must be divisible by 5. Other values are accepted, but sniff function will not work.

BSMIN Minimum Sniff Interval

AT syntax: **AT**BSMIN | AT**BSMIN=<value>**
Configurator syntax: **bsmin | bsmin=<value>**

This command defines the minimum accepted sniff interval in ms for a new Bluetooth link. The default value is **100** (ms). Possible values are profile-dependent.

Note: Currently the value must be divisible by 5. Other values are accepted, but sniff function will not work.

BSMODE Sniff Support

AT syntax: **AT**BSMODE | AT**BSMODE=<mode>**
Configurator syntax: **bsmode | bsmode=<mode>**

This command enables/disables sniffing on a Bluetooth link. Sniffing is used to reduce power consumption during an active Bluetooth connection.

When a Bluetooth link is in the sniff state both connected devices can enter a power-saving state for a short time interval. The length of this interval is called “sniff interval” and is negotiated between the connected devices. The maximum and minimum acceptable values for the sniff interval can be set using the appropriate AT commands.

The sniff interval value has an impact on the propagation delay and maximum throughput on the Bluetooth link. Note that in order to enter sniff mode, both devices need support sniff mode.

Mode	Description
0	No sniff support
1	Passive sniff support
2	Active sniff support

Passive sniff support means that the device accepts sniff requests from the remote device with an interval between the values of **AT**BSMIN** and **AT**BSMAX**. To accept sniff requests from the remote device bit 2, of the **AT**BLINKP** parameter must to be set.

If active sniff support is enabled, the device tries to setup a sniff interval with a value of **AT**BSMAX**.

*Note: The performance of the command is influenced by the parameters **AT**BLINKP**, **AT**BSMIN** and **AT**BSMAX**.*

Examples:

at**bsmode=1 and at**blinkp=5	Sniff requests from remote devices will be accepted
at**bsmode=2 and at**blinkp=1	Device tries to initiate sniff mode on the Bluetooth link

BSNAME Local Service Name

AT syntax: **AT**BSNAME | AT**BSNAME=<name>**
Configurator syntax: **bsname | bsname=<name>**

This command defines the service name of the BlueRS+ serial port. The service name is shown on a remote Bluetooth terminal device during a service discovery sequence.

Examples:

atbsname=serial port**	Own service name of the serial port is “serial port”
at**bsname=RS+SrvName	Own service name of the serial port is “RS+SrvName”

BSNAME2 Local Second Service Name

AT syntax: **AT**BSNAME2 | AT**BSNAME2=<name>**
Configurator syntax: **bsname2 | bsname2=<name>**

This command defines the service name of the second BlueRS+ serial port. The service name is shown on a remote Bluetooth terminal device during a service discovery sequence.

Examples:

atbsname2=serial port**	Own service name of the serial port is “serial port”
at**bsname2=RS+2ndSrvName	Own service name of the serial port is “RS+2ndSrvName”

*Note: This command is only applicable if the value of the **AT**BOSRV2** command is set to a value unequal 0.*

BSTPOLL Update Interval for Radio Statistics

AT syntax: **AT**BSTPOLL | AT**BSTPOLL=<value>**
Configurator syntax: **bstpoll | bstpoll=<value>**

This parameter configures the updating interval (in ms) for Bluetooth radio-specific statistics like RSSI (see AT**BARSSI parameter).

Value	Description
0	No statistics are performed
n=1…65535	Update statistics every *n* ms

Example:

at**bstpoll=500	Update statistics every 500 ms

BSUPTIM Supervision Timeout

AT syntax: **AT**BSUPTIM | AT**BSUPTIM=<value>**
Configurator syntax: **bsuptim | bsuptim=<value>**

This command defines the supervision timeout the device requests for a new Bluetooth link.

Value	Description
n=1…65535	Supervision timeout after *n**0.625 ms (*n* is decimal value)
32000	Supervision timeout after 20 s

Note: The supervision timeout can only be set by the Piconet master.

Example:

at**bsuptim=**32000**	Supervision timeout of 20 s

CAPA Call Pause

AT syntax: **AT**CAPA | AT**CAPA=<value>**
Configurator syntax: **capa | capa=<value>**

This parameter defines the call pause (*n* in seconds) before making the next call attempt by using an automatic call setup mode.

Value	Description
n=0…255	Call retry after *n* s
3	Call retry after 3 s

CATO — Call Timeout to Abort

AT syntax: **AT**CATO | AT**CATO=<value>**
Configurator syntax: **cato | cato=<value>**

This parameter defines the time (*n* in seconds) after which to abort a call if not successful connected.

Value	Description
n=3…255	Call is aborted after *n* s
15	Call is aborted after 15 s

CCTS — CTS Control

AT syntax: **AT**CCTS | AT**CCTS=<mode>**
Configurator syntax: **ccts | ccts=<mode>**

For a description of the settings, see the **AT&R** command (page 11).

CDCD — DCD Control

AT syntax: **AT**CDCD | AT**CDCD=<mode>**
Configurator syntax: **cdcd | cdcd=<mode>**

For a description of the settings, see the **AT&C** command (page 10).

CDSR — DSR Control

AT syntax: **AT**CDSR | AT**CDSR=<mode>**
Configurator syntax: **cdsr | cdsr=<mode>**

For a description of the settings, see the **AT&S** command (page 11).

CDTR — DTR Control

AT syntax: **AT**CDTR | AT**CDTR=<mode>**
Configurator syntax: **cdtr | cdtr=<mode>**

For a description of the settings, see the **AT&D** command (page 10).

CMDS Command Set

AT syntax: **AT**CMDS | AT**CMDS=<mode>**
Configurator syntax: **cmds | cmds=<mode>**

This command selects the command set to use with the BlueRS+. For details about the different command sets, see chapter 3 “Automatic Connection Establishment”.

Mode	Description
0	AT command set
6	Automatic connection when DTR is ON
7	Automatic connection when character is received
8	Automatic connection, independent of any status line
10	Internal configuration command set (configurator commands need to be used)
12	Incoming calls only, no connection initiated by this module

Note:
Once the BlueRS+ is configured to an automatic connection establishment mode it can be re-configured only after power-on (see introduction).
*After changing and saving the command set via remote configuration, the BlueRS+ has to be reset using the **RESET** command.*

CONF Enter BlueRS+ Configurator

AT syntax: **ATCONF**

This command calls the BlueRS+ configurator directly. The “#” configurator prompt will be displayed. Use the **quit** (or **exit** or **go**) command to exit the BlueRS+ configurator.

CRI RI Control

AT syntax: **AT**CRI | AT**CRI=<mode>**
Configurator syntax: **cri | cri=<mode>**

This command configures the behavior of the RI signal.

Mode	Description
0	RI is set with an incoming Bluetooth link request
1	RI follows the remote RI line status

D Initiate Bluetooth Link

AT syntax: **ATD <brad> | <remdev> [,<cn> | <service>]**

This command addresses a Bluetooth device directly via its address or by reference to a device-internal list. If a connection to a Bluetooth device requiring the restricted mode, the PIN must have been set up using **AT**BPIN** command.

Param.	Description
brad	Called Bluetooth remote device address (12 digits)
remdev	Remote Bluetooth device, can be dx or bx (see below)
service	Service of remote Bluetooth device, can be sx or uy (see below)
cn	Server channel for the requested service on remote device (* input as decimal value)
dx	Reference to device list entry of remote device in **binqlist** (d01...dx)
bx	Reference to bonded device list entry of remote device in **bndlist** (b01...bx)
sx	Reference to remote device service number in **binqlist**
uy	With y=UUID of a service, if the remote device presents more than one service with the same UUID the last one is selected (for a list of valid UUIDs see page 58 “Table for Coding Bluetooth Services”)

* The server channel in the **binqlist** is displayed as a hexadecimal value. In the **ATD** command, the server channel parameter must be entered in decimal format.

This command must be the last command in an AT command line. Any character input while the BlueRS+ is dialing will cancel the dialing procedure.

The dial string can be used with commands/parameters **ATD**, **AT**BRAD**, **AT**BRAD2** and **AT**BRAD3**.

The characters W P T R w p t r > , ; / ^ ! @ ( ) – and space are ignored within a dial string.

Note: The remote Bluetooth device has to be determined before issuing this link request. This can be done in the following ways:

- *Get it manually by reading it from the sticker of the remote Bluetooth device.*
- *Request the address and service by using the **AT**BINQ=1** and **AT**BINQLIST** commands.*
- *Give the BlueRS+ about 10 seconds after reset to initialize before issuing the first command.*

Examples:

ATD 0080371443AB	Connect to Bluetooth device 0080371443AB
ATD d1	Connect to the first Bluetooth device in **binqlist** (server channel number defined in **AT**BRSCH**)
ATD d3,u1101	Connect to Bluetooth device to service with UUID 1101 (serial port) of device d3
ATD b1,c2	Connect to first entry in bonded device list on server channel 2

DL Initiate Bluetooth Link to Last Dialed Bluetooth Address

AT syntax: **ATDL<Bluetooth address>**

This command initiates a Bluetooth link to the last Bluetooth address used with the **ATD** command.

If the **ATD** command was not used prior to the **ATDL** command (e.g. after reset), the command is answered with an ERROR message.

DBITS Data Bits

AT syntax: **AT**DBITS | AT**DBITS=<mode>**
Configurator syntax: **dbits | dbits=<mode>**

This command defines the number of data bits (asynchronous characters).

Mode	Description
7	Use 7 data bits
8	Use 8 data bits

DEFA Default Settings

AT syntax: **AT**DEFA=<value>**
Configurator syntax: **defa=<value>**

For a description about the settings, see the **AT&F** command (page 10).

DEVMODE Device Mode Indication

AT syntax: **AT**DEVMODE**
Configurator syntax: **devmode**

This command indicates if the device is working as DCE or DTE.

Value	Description
0	Device is working as DCE
1	Device is working as DTE

Note: This command is read-only and is only applicable for devices that support this feature.

DEVMSEL Device Mode Selection

AT syntax: **AT**DEVMSEL | AT**DEVMSEL=<mode>**
Configurator syntax: **devmsel | devmsel=<mode>**

This command determines if the device is working as DCE or DTE.

Value	Description
0	Selected by GPIO
1	Set fixed DTE
2	Set fixed DCE

Note: This command is only applicable for devices that support this feature.

E Local Echo

AT syntax: **ATE**

This command selects the local echo in command mode.

Param.	Description
ATE	No local echo
ATE1	Local echo on in command phase

FLASH Load New Firmware

AT syntax: **AT**FLASH[=<baud rate>]**
Configurator syntax: **flash[=<baud rate>]**

This commands loads new firmware into the BlueRS+. The current firmware will be overwritten. The firmware will be stored in the previously used part of flash memory.

For the optional parameter <baud rate> the following values are allowed:

Value	Description
115200	use 115,200 bps for flashing
230400	use 230,400 bps for flashing
460800	use 460,800 bps for flashing
921600	use 921,600 bps for flashing

While uploading, the following checks will be performed:

- File transfer protocol is XMODEM 1K
- An overall firmware checksum is used

- The firmware type written in the module header of the firmware must be compatible with the hardware type and permitted firmware types (stored inside the bootloader).

For details about the firmware update procedure, see page 53 “Firmware Update”.

Note: This command is only available via the local serial port.

FLC Flow Control

AT syntax: **AT**FLC | AT**FLC=<mode>**
Configurator syntax: **flc | flc=<mode>**

For a description about the settings, see the **AT&K** command (page 11).

H Disconnect

AT syntax: **ATH**

This command disconnects the existing Bluetooth connection after issuing the escape sequence (see page 7).

I Display Version Information

AT syntax: **ATI**

Displays different information about version number and settings.

Param.	Description
ATI	Returns the device name (e.g. “BlueRS+E“)
ATI1	Returns “0”
ATI2	Returns “OK”
ATI3	Returns the version string: “V1.xyz”
ATI4	Returns the manufacturers name: “Stollmann E+V GmbH”
ATI5	Returns “OK”
ATI6	Returns the copyright string: “(c) Copyright Stollmann E+V GmbH”
ATI7	Returns “OK”
ATI8	Returns “ERROR”
ATI9	Returns “OK”
ATI77	Returns the bootloader version string
ATI99	Returns the firmware creation date

IDLE — Idle Data Timeout

AT syntax: **AT**IDLE | AT**IDLE=<value>**
Configurator syntax: **idle | idle=<value>**

This command defines the timeout (in seconds) for disconnecting the Bluetooth link after inactivity on the serial line.

Value	Description
0	Inactive; no automatic disconnect in case of inactivity on the serial line
n=1…255	Disconnect after *n* s inactivity on the serial line

LOAD — Load Stored Parameter Setting

AT syntax: **AT**LOAD**
Configurator syntax: **load**

This command loads all parameters stored in non-volatile RAM.

O — Return to Online State

AT syntax: **ATO**

If the BlueRS+ is in command mode after issuing an escape sequence while a connection is active, ATO returns the BlueRS+ to data mode.

Note: This command must be the last command in the AT command line.

OPT — Option Register

AT syntax: **AT**OPT | AT**OPT=<value>**
Configurator syntax: **opt | opt=<value>**

This command (bit mask) controls the echo, suppress results, result message format, and extended result code parameters. The parameter is given as a decimal value; the default is 5.

Bit	5	2	1	0	Function	Corresponding parameter
	0	0	0	1	Echo	ATE1
	0	0	1	0	Suppress results	ATQ1
	0	1	0	0	Result message format	ATV1
	1	0	0	0	Extended result codes	ATW1

Examples:

at**opt=**5**	ATE1, ATQ, ATV1, ATW
at**opt=37	ATE1, ATQ, ATV1, ATW1

PRTY Parity

AT syntax: **AT**PRTY | AT**PRTY=<mode>**
Configurator syntax: **prty | prty=<mode>**

This command defines the parity of asynchronous characters.

Mode	Description
0	No parity
1	Odd parity
2	Even parity

PWD Power Down Mode

AT syntax: **AT**PWD | AT**PWD=<mode>**
Configurator syntax: **pwd | pwd=<mode>**

This command controls the power-down mode that reduces power consumption if no Bluetooth link is established. If activated, the power-down state is achieved automatically (after approx. 1-2 seconds) if a Bluetooth link is disconnected, and the DTR line is set to low.

Raising DTR will signal the BlueRS+ to leave the power-down state; all functions will be available.

Please note, that the AT command handler is not available in the power-down state.

Mode	Description
0	Power-down not allowed
1	Power-down state will be achieved automatically

*Note: The power consumption in the power-down state is influenced by the **AT**BPSM** parameter.*

Q — Suppress Results

AT syntax: **ATQ**

This command allows/suppresses result codes and messages.

Param.	Description
ATQ	Enable result messages after command input
ATQ1	Suppress result messages after command input

QUIT, EXIT, GO — Activate Parameter Changes

Configurator syntax: **quit | exit | go**

These commands activate the current parameter settings and exits the BlueRS+ Configurator (without storing the parameters in non-volatile memory).

RBACCL — Remote Config Port Access Level

AT syntax: **AT**RBACCL | AT**RBACCL=<mode>**
Configurator syntax: **rbaccl | rbaccl=<mode>**

This command defines the accessibility and visibility of the Bluetooth remote configuration port.

Mode	Description
0	Config port is neither accessible nor visible
1	Config port is accessible but not visible
2	Config port is accessible and visible

RBSNAME — Remote Config Port Service Name

AT syntax: **AT**RBSNAME | AT** RBSNAME=<name>**
Configurator syntax: **rbsname | rbsname=<name>**

This command defines the service name of the Bluetooth remote configuration port. The service name is shown on a remote Bluetooth terminal device during a service discovery sequence.

Examples:

atrbsname=config port**	Own service name of config port is “config port”
at**rbsname=RS+CfgName	Own service name of config port is “RS+CfgName”

RESET — Reset Device

AT syntax: **AT**RESET**
Configurator syntax: **reset**

This command resets the whole functionality of the BlueRS+ by a forced hardware reset (like power off/on).

*Note: See also the **AT**RSTTIM** parameter.*

RFMAXTXPWR — Maximum Output Power

AT syntax: **AT**RFMAXTXPWR | AT**RFMAXTXPWR=<value>**
Configurator syntax: **rfmaxtxpwr | rfmaxtxpwr=<value>**

This command sets the maximum output power of the Bluetooth radio of the device. The firmware ensures the device never speaks more loudly that this value. The chip uses this for page, inquiry and their scan responses. This is also the power used for new connections.

Value	Description
-128	Use factory default maximum output power value
-20…16	Maximum output power in dBm

All other values in the range of -128 to 127 could be set with this command as well, but the equal or next lower value from the power table will be set internally. Furthermore the value will be set to a value amongst minimum and maximum output power value of the device.

Example:

at**rfmaxtxpwr=0	The maximum output power will be set to 0 dBm

RIDLE — Remote Config Port Idle Data Timeout

AT syntax: **AT**RIDLE | AT**RIDLE=<value>**
Configurator syntax: **ridle | ridle=<value>**

This command defines the timeout (in seconds) for disconnecting the remote Bluetooth link after inactivity on the serial line.

Value	Description
0	Inactive; no automatic disconnect in case of inactivity on the serial line
n=1…255	Disconnect the remote connection after *n* s of inactivity on the serial line
60	Disconnect the remote connection after 60 s

RPC Remote Port Configuration Enable

AT syntax: **AT**RPC | AT**RPC=<value>**
Configurator syntax: **rpc | rpc=<value>**

Bluetooth provides the feature of allowing the control over serial-port parameters (like baud rate, parity, etc.) from the remote end. To distinguish which device is the master regarding RPC (settings are provided by the DTE) and which one is the slave (settings are obtained via the Bluetooth link), the **AT**RPC** parameter is used.

RPC uses a decimal parameter value; the default is 0 = master mode. Any value different from 0 places the BlueRS+ in slave mode.

To facilitate more detailed settings, each bit of the RPC value has a control function for one port setting. If the bit is set, the settings follows the remote settings (slave mode), and the corresponding local parameter is used as the initial value and as the setting in command mode (when no Bluetooth link is active).

Bit	4	3	2	1	0	Function	Corresponding parameter
	0	0	0	0	1	Baud rate[5]	AT**BR
	0	0	0	1	0	Number of data bits	AT**DBITS
	0	0	1	0	0	Number of stop bits	AT**SBITS
	0	1	0	0	0	Parity type	AT**PRTY
	1	0	0	0	0	Flow control	AT**FLC

Examples:

at**rpc=7	Baud rate, data bits and stop bits follows the remote settings
at**rpc=31	Baud rate, data bits, stop bits, parity and flow control follows the remote settings

RPWD Remote Config Port Password

AT syntax: **AT**RPWD | AT**RPWD=<password>**
Configurator syntax: **rpwd | rpwd=<password>**

This command sets the password for the remote configuration port. The length of the password can be 1...32 characters. The default password is empty - just press the return key to access.

[5] Supported baud rate values via RPC are from 2,400 bps up to 230,400 bps

RSTMSG — Startup Message

AT syntax: **AT**RSTMSG | AT**RSTMSG=<mode>**
Configurator syntax: **rstmsg | rstmsg=<mode>**

After power-on, the following startup message can be displayed with a fixed speed of 9,600 bps, 8 data bits, no parity, 1 stop bit:

+++ Press <CR>,<CR>,<ESC>,<ESC> to enter BlueRS+ configurator +++

Mode	Description
0	Inactive, no startup message will be send after power-on
1	Active, startup message will be send after power-on

RSTTIM — Startup Timer

AT syntax: **AT**RSTTIM | AT**RSTTIM=<value>**
Configurator syntax: **rsttim | rsttim=<value>**

This command defines the startup delay after a reset. Within this period, the internal configuration mode can be entered after a reset of the device (see **AT**RSTMSG**).

Value	Description
n=3…255	Startup delay *n**50 ms
40	Startup delay 2 s

S — AT S Register

AT syntax: **AT**Sx | AT**Sx=<value>**
Configurator syntax: **sx | sx=<value>**

This command configures the S register settings. It is used in the AT command set only.

Mode	Description
sx	Show the current setting of register Sx
sx=1	Set register Sx to 1

AT command S register set (all values in decimal format):

Register	Value	Description
s0	0 **1** 2…n	No automatic call acceptance; acceptance of an incoming call is controlled by the data terminal (**ATA** command after RING) Immediate call acceptance Call acceptance after n RING messages
s2	**43**	Escape character
s3	**13**	Carriage-return character
s4	**10**	Line-feed character
s5	**08**	Backspace character
s7	**30**	Wait time for carrier (in s)
s9	**1**	Enable PNP functionality for Windows 95
s12	**100**	Delay time by using the escape sequence in 10 ms increments
s30	0 **1**	Escape characters will not be transmitted to the remote device Escape characters will be transmitted to the remote device
s91	**0** 1 2	All unknown AT commands will be answered with ERROR All unknown AT commands will be answered with OK Windows 2000 compatibility: Some AT commands will be answered with OK, unknown AT commands will be answered with OK

SAVE — Store Parameter Changes

AT syntax: **AT**SAVE**
Configurator syntax: **save**

This command stores the current set of parameters in non-volatile memory.

SBITS — Stop Bits

AT syntax: **AT**SBITS | AT**SBITS=<mode>**
Configurator syntax: **sbits | sbits=<mode>**

This command defines the number of stop bits of asynchronous characters.

Mode	Description
1	One stop bit
2	Two stop bits

SERMODE[6] Serial Mode

AT syntax: **AT**SERMODE | AT**SERMODE=<mode>**
Configurator syntax: **sermode | sermode=<mode>**

This command defines the serial mode of the device.

Mode	Description
0	RS-232
1	RS-485 2 wires

*Note: In RS-485 mode the serial hardware flow control needs to be disabled (**AT&K0**) and the control of the DTR line shall be ignored (**AT&D0**).*

SHOW Show Parameter Settings

AT syntax: **AT**SHOW**
Configurator syntax: **show**

This command displays the current set of parameters.

SHOWALL Show All Parameter Settings

AT syntax: **AT**SHOWALL**
Configurator syntax: **showall**

This command displays all accessible parameters.

TXFWD Timer for Data Forwarding

AT syntax: **AT**TXFWD | AT**TXFWD=<value>**
Configurator syntax: **txfwd | txfwd=<value>**

If characters were entered, but no additional characters are entered within the defined period, the serial data already received will be transmitted via the Bluetooth link.

Value	Description
0	Data will be forwarded after 4 bytes' worth of data timeout (time depends on serial speed)
n=1…65535	Delay time *n**10 ms (*n* is decimal value)

[6] This command applies to BlueMod+C11/G2 only.

V Result Message Format

AT syntax: **ATV**

This command determines the format of the result messages.

Param.	Description
ATV	Result message is presented numerically (followed by <CR>)
ATV1	Result message is presented as text

VER Show Version String of Firmware

Configurator syntax: **ver**

This command displays detailed information about the firmware version and BlueRS+ type.

Example:

ver	BREa000 V1.1.054 May 26 2005 10:57:12

VERB Show Version String of Bootloader

Configurator syntax: **verb**

This command displays detailed information about the bootloader version and BlueRS+ type.

Example:

verb	BOOT LOADER V1.27 150703 0704-01-00

W Extended Result Codes

AT syntax: **ATW**

This command enables/disables extended result codes.

Param.	Description
ATW	Result message is presented without extended result codes
ATW1	Result message is presented with extended result codes (include error causes)

Z Load Stored Settings

AT syntax: **ATZ**

The active configuration is reset to the stored configuration.

Note: This command must be the last command in the AT command line.

Deprecated commands

The following commands are supported by the firmware for compatibility with older versions:

- BACCTAB
- BDEL
- BDINQ
- BDLIST
- BRESTR

We strongly recommend using the newer equivalent commands.

3 Automatic Connection Establishment

The BlueRS+ supports different modes of automatic connection establishment. The following modes are available:

- Bluetooth connection will be initiated independent of any status line after power-on the BlueRS+ (**AT**CMDS=8**)
- Bluetooth connection will be initiated when character is received on the serial line (**AT**CMDS=7**)
- Bluetooth connection will be initiated when DTR line goes ON (**AT**CMDS=6**)

The address of the device, that should be connected using an automatic link setup, needs to be stored in the **AT**BRAD** parameter (see **AT**BRAD**).

Example:

at**cmds=8 at**brad=0123456789AB	Automatic link setup after power-on the BlueRS+ to a device with Bluetooth address 0123456789AB

Note: Once the BlueRS+ is configured to an automatic connection establishment mode it can be re-configured only after power-on (see introduction).

4 Remote Configuration

The BlueRS+ can be configured via Bluetooth by using another Bluetooth device. Make sure the BlueRS+ is powered on and in range of the local Bluetooth device.

Bluetooth connection establishment using a standard Bluetooth device:

By default the configuration port of the BlueRS+ is accessible but not visible. To make it visible for other Bluetooth devices the configuration port must be set to “accessible and visible” first (**AT**RBACCL=2**).

Initiate a new scan of the Bluetooth area. When the BlueRS+ is found perform a service discovery. In the result you will get 2 services (ports):

- “serial port” (UUID 0x1101, server channel 0x0001)

- “config port” (UUID 0x1101, server channel 0x001E)

Connect to the “config port” and open the terminal program at the appropriate COM port.

Bluetooth connection establishment using another BlueRS+:

When using another BlueRS+ to connect to the remote BlueRS+ establish a Bluetooth connection using server channel 30 (see ATD command).

e.g. ATD <BD address of remote device>,c30

Remote configuration

Once the Bluetooth connection is established successfully the remote BlueRS+ acknowledges by requesting the remote password. Please enter the correct password (default: no password, just press <RETURN>). After successful login the remote BlueRS+ responds with a "#" prompt. Now you can configure the remote BlueRS+ using the AT commands (Configurator syntax, without the prefix AT**). The new settings can be stored using the **SAVE** command and becomes active after disconnecting the Bluetooth connection. If necessary the remote BlueRS+ can be reset using the **RESET** command[7]. After finishing the configuration of the remote BlueRS+ the Bluetooth connection can be disconnected using the **QUIT** command.

The configuration port of the BlueRS+ can be disabled using the **AT**RBACCL=0** command.

*Note: The remote Bluetooth connection is disconnected after 60 seconds (default) inactivity on the serial line (see **AT**RIDLE**).*

5 Firmware Update

The firmware can be updated using the **AT**FLASH** command.

To update the firmware, perform the steps below:

- Set the serial speed on the terminal emulation to the baud rate the device is configured to.
- Send the **AT**FLASH** command string to start the firmware update procedure.
  - Alternative: Send the command string **AT**FLASH=<baud rate>** and set the terminal emulation accordingly.
- After a few seconds, the following message will be displayed:
  "Erasing flash EPROM now. Please wait ..."
- A few seconds later the following message will be displayed:
  "Start your XMODEM transfer now (Ctrl-X aborts) ..."
- Start the upload transfer. Search for the firmware file to load into the device and upload the file using the 1k X-Modem protocol.

[7] When executing the RESET command the Bluetooth connection will be disconnected.

Note:
The character "C" received is the request character of the X-Modem protocol. It will stop being output after the upload procedure has started.

- After loading the complete firmware into flash memory, the device will automatically perform a reset.
- After reset the device will start with the baud rate stored in NVRAM or with the firmware default. Be aware that the terminal emulation has to be set accordingly.
- Make sure the new firmware file is present and enter **ATI3** to check the firmware version number.
- Send the following commands to get firmware default values: **AT&F1&W**.

If the firmware update fails for some reason (file upload is interrupted, wrong file etc.) the device will run in bootloader mode. In this mode, the device responds to all AT commands besides **AT** and **AT**FLASH** with "BOOTLOADER ACTIVE". Enter the **AT**FLASH** command again to repeat the firmware update procedure.

6 Power Management

To reduce the power consumption of the BlueRS+, power-down modes can be activated automatically by the BlueRS+ (controlled by parameter settings).

If no Bluetooth connection is established, the following states are implemented. The activation of these states can be controlled by the **AT**BPSM** and **AT**PWD** parameters.

6.1 Deep-Sleep State

The Bluetooth radio is completely deactivated; no paging requests from other Bluetooth devices will be recognized. Only raising the DTR control line will activate the BlueRS+ and may initiate a Bluetooth link, depending on other parameters.

Note: In deep-sleep state, the AT command set is not active; the CTS line is low.

Example:

at**pwd=1	Enable power-down mode
at**bpsm=0	Disable page scan and inquiry scan
at**cmds=6	Establish Bluetooth link after raising DTR

*Note: After setting the command set (**CMDS** command) to a value unequal 0, the AT command interface is disabled and it is not possible to enter AT commands anymore.*

6.2 Power-Down State

The Bluetooth RF is activated every 1.25 seconds. Paging requests from other Bluetooth devices will be recognized after that interval and accepted if allowed. Additionally raising the DTR control line will activate the BlueRS+ and may initiate a Bluetooth link, depending on other parameters.

Note: In power-down state, the AT command set is not active; the CTS line is low.

Example 1:

at**cdtr=2	DTR-controlled Bluetooth link
at**pwd=1	Enable power-down mode
at**bpsm=2	Enable paging in power down mode (inquiry will not be answered)
at**cmds=6	Establish Bluetooth link after raising DTR

Example 2:

at**cdtr=4	Accept Bluetooth link independently of DTR status
at**pwd=1	Enable power-down mode
at**bpsm=2	Enable paging in power-down mode (inquiry will not be answered)
at**cmds=12	Accept Bluetooth link

*Note: After setting the command set (**CMDS** command) to a value unequal 0, the AT command interface is disabled and it is not possible to enter AT commands anymore.*

6.3 Idle State

Power-down mode not activated. All functions are available immediately, including connection control using the AT command set.

Example:

at**cdtr=4	Accept Bluetooth link independently of DTR status
at**pwd=0	Disable power-down mode
at**bpsm=3	Enable paging and inquiry
at**cmds=0	Establish Bluetooth link using AT command or accept incoming BT links

7 Appendix

7.1 Diagnostic And Error Messages

In AT command mode, the display of error causes (not a part of the AT command standard) and remote device addresses can be turned on by issuing the **ATW1** command. The displayed error causes use the coding defined by the Bluetooth definition (see below).

7.1.1 AT Result Codes

Result codes (numerical and verbose):

Numeric	Text	Meaning
0	OK	Command completed
1	CONNECT <radr>	Connection established
2	RING <radr>	Indicates an incoming call (link request received)
3	NO CARRIER <berr>	General connection setup error
4	ERROR	Illegal command or error that can not be indicated otherwise
6	NO DIALTONE <berr>	Local connection setup error
8	NO ANSWER <berr>	Connection setup error caused by remote end

<radr> = Address of the remote device

<berr> = Bluetooth release (error) cause, hexadecimal, e.g. NO CARRIER <0104>

7.1.2 Bluetooth Error Codes

Error codes (hexadecimal) and their translations into AT result codes:

Error cause	Meaning	AT result codes
0x0000	No error, no explanation	3
0x0001	Driver and application version mismatch	3
0x0002	Application ID provided is not correct	3
0x0003	Unknown message code in message	3
0x0004	Not enough resources to complete request (out of descriptors etc.)	3
0x0005	At least one parameter of the message is wrong	3
0x0006	No adapter plugged in	3
0x0007	Too much outstanding messages in downstream direction	6
0x0008	Driver is busy, repeat request later	6
0x0009	Error in message transport system (driver not correct installed?)	3
0x0101	(i) HCI_ERR_UNKNOWN_COMMAND	3
0x0102	(i) HCI_ERR_NOCONNECTION	3
0x0103	Bluetooth adapter crashed	3
0x0104/260	Remote Bluetooth device not found (wrong address?, out of range?)	8
0x0105	Authentication error (wrong pin code supplied?)	3
0x0106	(i) HCI_ERR_KEY_MISSING	3
0x0107	(i) HCI_ERR_MEMORY_FULL	3
0x0108/264	Lost connection to remote Bluetooth device (out of range)	3
0x0109	Max. no. of connections exceeded	6
0x010a	Max. no. of voice connections exceeded	6
0x010b	(i) HCI_ERR_ACL_CONN_ALREADY_EXISTS	3
0x010c	(i) HCI_ERR_COMMAND_DISALLOWED	3
0x010d	Connection attempt by remote end rejected	3
0x010e	Connection attempt by remote end rejected	3
0x010f	Connection attempt by remote end rejected	3
0x0110	Connection attempt by remote end timed out	8
0x0111	(i) HCI_ERR_UNSUPPORTED_PARAM_VALUE	3
0x0112	(i) HCI_ERR_INVALID_HCI_PARAMETER_VALUE	3
0x0113	Connection terminated by remote end	3
0x0114	Connection terminated by remote end	3
0x0115	Connection terminated by remote end	3
0x0116	Connection terminated by local side	3
0x0117	(i) HCI_ERR_REPEATED_ATTEMPTS	3
0x0118	Authentication rejected by remote end	3
0x0119	Incompatible remote Bluetooth adapter	3
0x011a	(i) HCI_ERR_UNSUPPORTED_REMOTE_FEATURE	3
0x011b	Audio parameter error	3
0x011c	Audio parameter error	3
0x011d	Audio parameter error	3
0x011e	(i) HCI_ERR_INVALID_LMP_PARAMETERS	3
0x011f	Unspecified error	3
0x0120	(i) HCI_ERR_UNSUPPORTED_LMP_PARAMETER_VAL	3

0x0121	Master-slave role switch not allowed	3
0x0122	Connection lost to remote Bluetooth adapter (link manager)	3
0x0123	(i) (HCI_ERR_LMP_ERROR_TRANSACTION_COLLISION	3
0x0124	(i) HCI_ERR_LMP_PDU_NOT_ALLOWED	3
0x0125	Attempt to enable encryption failed	3
0x0126	Information: unit key used	3
0x0127	(i) quality of service not supported.	3
0x0128	(i) HCI_ERR_INSTANT_PASSED	3
0x0129	(i) unit key not supported	3
0x0164	(i) HCI_ERR_ILLEGAL_HANDLE	3
0x0165	Initialization of adapter failed (timeout)	6
0x0166	Initialization of adapter failed (synchronization)	6
0x0201	(i) connection went to state pending	3
0x0202	Protocol not supported by remote end	3
0x0203	Connection refused due to security conditions	3
0x0204	Out of resources	3
0x02ee	Remote end timed out	3
0x0301	Version of remote SDP entity not compatible	3
0x0302	Invalid service record handle	3
0x0303	Invalid request syntax	3
0x0304	Invalid PDU size	3
0x0305	Continuation state is invalid	3
0x0306	Not enough resources to complete operation	3
0x0364	Client received unhandled SDP opcode	3
0x0365	No answer from server (timeout)	3
0x0366	Specified service not found	3
0x0367	Syntax Error in Response from server	3
0x0464	Connection setup was rejected by remote end (DM), e.g. the Pin exchange has failed in restricted mode	3
0x0465	Connection timed out (no response)	8
0x0466	Non-supported command received (incompatible remote end)	3
0x0467	Illegal parameter	3

Note: Error codes marked (i) are internal errors.

7.2 Table for Coding Bluetooth Services

List of Bluetooth services (profiles/UUIDs):

Code	Text	Meaning
1101	SerialPort	Serial port, serial data link without any restriction
1102	LANAccessUsingPPP	LAN Access with PPP protocol
1103	DialUpNetworking	Dial-up networking to establish switched connections to the ISDN or PSTN
1104	IrMCSync	
1105	OBEXObjectPush	OBEX Object Push
1106	OBEXFileTransfer	OBEX File transfer
1107	IrMCSyncCommand	
1108	*Headset*	*Headset access via Bluetooth*
1109	Cordless Telephony	
1100	Intercom	
1111	Fax	Fax
1112	*HeadsetAudioGateway*	*Headset Gateway for audio signals*
1113	WAP	
1114	WAP_CLIENT	

8 History

Version	Release Date	By	Change description
2.00	25.04.2006	ta	Initial version
2.01	02.08.2006	ta	Added automatic connection establishment, Added remote configuration, Improved English language
2.02	18.01.2007	ta	Added new parameter value cdtr=1, Added new parameters bosrv2, bsname2, txfto
r03d01	05.09.2007	bg	New template
r03	18.12.2007	ta	Added support for BlueMod+C11/G2, Removed support for BlueMod+C11/RS+C1/V2, Removed hidden parameter TXFTO, Removed baud rate BR=26 – 10400 bps, Parameter RIDLE not hidden anymore, removed note, Enhanced description of AT&R, BINQLIST, BINQ, BLINKP, BNAME commands, Added new value of BPSRM command, Added description of S30 register, Added new commands RFMAXTXPWR, BPSRI, BPSRW
r04	16.09.2008	ta	Added baud rates 460,800 and 921,600 bps, Enhanced description of RFMAXTXPWR command, Added ATDL command, Corrected examples for power down and deep sleep, More sufficient description of CMDS command
	06.03.2009	ta	Added SERMODE command, Added optional parameter “baud rate” for FLASH command
	19.03.2009	ta	Added support for PAN1455/PAN1555 and removed support of old BlueRS+ models, Corrected timer in RSTTIM parameter, Corrected description of AT&F parameter
r05	18.06.2009	ta	Added new value range and new default value of BNDSIZE parameter Corrected headline of RIDLE and RPC command

Life Support Policy

This Stollmann product is not designed for use in life support appliances, devices, or systems where malfunction can reasonably be expected to result in a significant personal injury to the user, or as a critical component in any life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness. Stollmann customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Stollmann for any damages resulting.

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