

LinTech

keeps you connected

- AT Command List -

06-27.2005

-Instructions-

1. AT Command List.....	4
1.1 Read out firmware version (ATi1)	4
1.1.1 Description:	4
1.1.2 Syntax:.....	4
1.1.3 Defined values	5
1.2 Display available commands (ATi2).....	5
1.2.1 Description:	5
1.2.2 Syntax:.....	5
1.2.3 Defined values	5
1.3 Alternate between standard and user-friendly responses (AT+RATS / AT+UATS).....	5
1.3.1 Description:	5
1.3.2 Syntax:.....	5
1.3.3 Defined values	6
1.4 Switch connection indicator on and off (AT+RSTA / AT+USTA)	6
1.4.1 Description:	6
1.4.2 Syntax:.....	6
1.4.3 Defined values	6
1.5 Read out all settings (AT+RALL)	7
1.5.1 Description:	7
1.5.2 Syntax:.....	7
1.6 Restore all settings (AT+REST)	7
1.6.1 Description:	7
1.6.2 Syntax:.....	7
1.7 Determine security level for connection (AT+RBTS / AT+UBTS)	7
1.7.1 Description:	7
1.7.2 Syntax:.....	7
1.7.3 Defined values	8
1.8 Read out/set Bluetooth PIN (Slave) (AT+RPIN / AT+CPIN).....	8
1.8.1 Description:	8
1.8.2 Syntax:.....	8
1.8.3 Defined values	8
1.9 Read out/change local device name (AT+RLBN / AT+CLBN).....	8
1.9.1 Description:	8
1.9.2 Syntax:.....	8
1.9.3 Defined values	9
1.10 Read out/change local Bluetooth device class (AT+RCOD / AT+CCOD).....	9
1.10.1 Description:	9
1.10.2 Syntax:.....	9
1.10.3 Defined values	9
1.11 Select/change UART settings (AT+RUST / AT+UART).....	10
1.11.1 Description:	10
1.11.2 Syntax:.....	11
1.11.3 Defined values	11
1.12 Read out/change user-defined baud rate (AT+RUSB / AT+SUSB)	11
1.12.1 Description:	11

1.12.2 Syntax:	12
1.12.3 Defined values	12
1.13 Read out local Bluetooth address (AT+RBDA).....	12
1.13.1 Description:	12
1.13.2 Syntax:	12
1.14 Use DSR / DTR to create/end connection (AT+RMCC / AT+SMCC).....	12
1.14.1 Description:	12
1.14.2 Syntax:	13
1.14.3 Defined values	13
1.15 Select COM-HARDWARE service class (Slave) (AT+RSEV / AT+SSEV).....	13
1.15.1 Description:	13
1.15.2 Syntax:	13
1.15.3 Defined values	14
1.16 Change page scan interval (Slave) (AT+RPSC / AT+SPSC).....	14
1.16.1 Description:	14
1.16.2 Syntax:	14
1.16.3 Defined values	14
1.17 Change/switch off inquiry scan interval (Slave) (AT+RISC / AT+SISC).....	14
1.17.1 Description:	14
1.17.2 Syntax:	14
1.17.3 Defined values	15
1.18 Switch Sniff on/off (AT+RLPW / AT+ULPW).....	15
1.18.1 Description:	15
1.18.2 Syntax:	15
1.18.3 Defined values	15
1.19 Set Sniff idle time (AT+RSNI / AT+SSNI).....	15
1.19.1 Description:	15
1.19.2 Syntax:	16
1.19.3 Defined values	16
1.20 Switch LED on/off (AT+RLED / AT+SLED).....	16
1.20.1 Description:	16
1.20.2 Syntax:	16
1.20.3 Defined values	16
1.21 Read out battery voltage – display charge status as a percentage (AT+RBAV).....	17
1.21.1 Description:	17
1.21.2 Syntax:	17
1.22 Switch hardware handshake on / off (AT+RSWH / AT+FSWH).....	17
1.22.1 Description:	17
1.22.2 Syntax:	17
1.22.3 Defined values	17

1. AT Command List

The Bluetooth *RS232 industrial adapter can be set up and configured either via an existing Bluetooth connection or using the serial interface. It is also possible in this way to read out certain information such as the firmware version installed.

In either case, it is first of all necessary to switch the Bluetooth Mini Adapter from normal mode to configuration mode.

In order to simplify the configuration process, LinTech has created Bluetool, an easy to use Windows programme. The instructions for using this software are contained in the document entitled: **Bluetool Configuration Software – Operating Manual**.

For system environments in which the use of this Windows programme for configuration purposes is either impractical or undesirable, AT commands can alternatively be used to set the connection parameters.

The Bluetooth *RS232 industrial adapter can be operated with the aid of AT commands, either via an existing Bluetooth connection (using a terminal programme) or directly via the UART interface. A list of AT commands is contained in this document.

General command syntax:

Commands which are intended to be passed on to the command interpreter must be followed by <CR> (carriage return).

Example:

AT+RSTA<CR>

Commands sent *from* a device have the following format:

Example:

<CR> <LF>KOMMANDO<CR><LF> (LF = Line feed)

Commands sent *to* a device must be as follows:

<CR> <LF>OK<CR><LF> this means: Command was performed successfully.

<CR> <LF>ERROR<CR><LF> this means: Performance of command failed.

1.1 Read out firmware version (ATI1)

1.1.1 Description:

Command used for identifying firmware version.

1.1.2 Syntax:

Command syntax: ATI<n>

Command	Response
---------	----------

AT11	Firmware version
------	------------------

1.1.3 Defined values

<n>

1: Firmware version is read out

1.2 Display available commands (AT12)

1.2.1 Description:

Command used to ascertain supported commands.

1.2.2 Syntax:

Command syntax: AT1<n>

Command	Response
AT12	List and description of commands

1.2.3 Defined values

<n>

2: Supported commands are read out

1.3 Alternate between standard and user-friendly responses (AT+RATS / AT+UATS)

1.3.1 Description:

When set for user-friendly responses, the settings information is displayed as a description; otherwise standard AT commands are outputted.

Note: When set for user-friendly responses, all reading commands result in a description; no OK is transmitted. All writing commands lead to the corresponding reading command being performed in acknowledgement; no OK is transmitted.

1.3.2 Syntax:

Command syntax: AT+RATS - Reading command
 AT+UATS=<n> - Writing command

Command	Response
AT+RATS	+RATS: 1

	OK <i>User-friendly responses</i>
AT+UATS=0 <i>Switch to user-friendly responses</i>	Response given as user-friendly text
AT+UATS=1 <i>Switch to standard responses</i>	Response given as user-friendly text OK

1.3.3 Defined values

<n>

0: User-friendly responses

1: Standard responses

1.4 Switch connection indicator on and off (AT+RSTA / AT+USTA)

1.4.1 Description:

When the connection indicator is switched on, the device supplies an indication of the connection status, without this being specifically requested, whenever the connection status is changed (+RSTA: <mode>,<state>).

1.4.2 Syntax:

Command syntax: AT+RSTA - Reading command
 AT+USTA=<mode> - Writing command

Command	Response
AT+RSTA	+RSTA: <mode>,<state> +RSTA: 0,0 OK
AT+USTA=1 <i>Switch on indicator</i>	OK

1.4.3 Defined values

<mode>

0: Switch off indicator

1: Switch on indicator

<state>

0: Idle

1: Attempt to set up a connection as Master

2: Attempt to set up a connection as Slave (Configuration mode)

3: Attempt to set up a connection as Slave (Transparent mode)

4: Device search

5: Connected

6: Connection failed – Bluetooth profile is not supported (Master)

7: Connection failed – Connection refused (Master)

8: Connection failed – Device out of range (Master)

1.5 Read out all settings (AT+RALL)

1.5.1 Description:

All device settings are read out.

1.5.2 Syntax:

Command syntax: AT+RALL - Reading command

Command	Response
AT+RALL	All settings read out

1.6 Restore all settings (AT+REST)

1.6.1 Description:

All settings revert to standard values and the device restarts.

1.6.2 Syntax:

Command syntax: AT+REST - Writing command

Command	Response
AT+REST	OK

1.7 Determine security level for connection (AT+RBTS / AT+UBTS)

1.7.1 Description:

The Bluetooth security level can be switched on or off. When security is switched on, an authentication is requested and the data is transmitted in encrypted form.

1.7.2 Syntax:

Command syntax: AT+RBTS - Reading command

AT+UBTS=<mode>

- Writing command

Command	Response
AT+RBTS	+RBTS: 1 OK <i>Standard value: Bluetooth security switched on</i>
AT+UBTS=0 <i>Switch off Bluetooth security</i>	OK

1.7.3 Defined values

<mode>

0: Bluetooth Sicherheit switched off

1: Bluetooth Sicherheit switched on

1.8 Read out/set Bluetooth PIN (Slave) (AT+RPIN / AT+CPIN)

1.8.1 Description:

Reads out and changes the Bluetooth PIN for the Slave connection mode

1.8.2 Syntax:

Command syntax:

AT+RPIN

- Reading command

AT+CPIN=<pin>

- Writing command

Command	Response
AT+RPIN	+RPIN: "1234" OK <i>Standard value: Bluetooth Slave PIN</i>
AT+CPIN=0123456789abcdef <i>Change PIN with maximum length</i>	OK

1.8.3 Defined values

<mode>

PIN with maximum length of 16 characters

1.9 Read out/change local device name (AT+RLBN / AT+CLBN)

1.9.1 Description:

Reads out and changes local Bluetooth device name.

1.9.2 Syntax:

Command syntax:

AT+RLBN

- Reading command

AT+CLBN=<name> - Writing command

Command	Response
AT+RLBN	+RLBN: "MyBluetoothName" OK <i>Device name</i>
AT+CLBN=My New Bluetooth Name <i>Change device name</i>	OK

1.9.3 Defined values

<name>

Device names, maximum length of 31 characters (ASCII character set)

1.10 Read out/change local Bluetooth device class (AT+RCOD / AT+CCOD)

1.10.1 Description:

Reads out and changes local Bluetooth device class.

1.10.2 Syntax:

Command syntax: AT+RCOD - Reading command
 AT+CCOD=<ufclass> - Writing command or
 AT+CCOD=<btclass> - Writing command

Command	Response
AT+RCOD	+RCOD: 100,"Unclassified computer" OK <i>Standard device class</i>
AT+CCOD=? <i>Display available device classes</i>	User-friendly list of available classes
AT+CCOD=0A <i>Device class selected from user-friendly list – Desktop workstation'</i>	OK
AT+CCOD=0104 <i>Device class changed in accordance with Bluetooth 'Assigned Numbers' – 'Desktop workstation'</i>	OK

1.10.3 Defined values

< ufclass >

00 : Unclassified peripheral

01 : Keyboard

02 : Pointing device

03 : Combo keyboard/ pointing device

04 : Joystick

05 : Gamepad

06 : Remote control

07 : Sensing device
08 : Digitizer tablet
09 : Unclassified computer
0a : Desktop workstation
0b : Server computer
0c : Laptop computer
0d : Handheld PC/ PDA
0e : Palm sized
0f : Wearable computer (Watch sized)
10 : Uncategorized audio
11 : Headset
12 : Hands free
13 : Microphone
14 : Loudspeaker
15 : Headphones
16 : Portable audio
17 : Car audio
18 : Set top box
19 : Hifi audio device
1a : VCR
1b : Video camera
1c : Camcorder
1d : Video monitor
1e : Display and Speaker
1f : Video conferencing
20 : Gaming toy
21 : Uncategorized imaging
22 : Display
23 : Camera
24 : Scanner
25 : Printer
26 : Multifunctional device
27 : Uncategorized phone
28 : Cellular phone
29 : Cordless phone
2a : Smart phone
2b : Wired modem/ voice gateway
2c : Common ISDN Access
2d : Sim Card Reader

< btclass >

See: Bluetooth Assigned Numbers – Bluetooth Baseband

1.11 Select/change UART settings (AT+RUST / AT+UART)

1.11.1 Description:

Changes UART settings. The settings are only effective in Master and Slave – Transparent modes.

In Slave mode, it is only possible to disconnect an existing connection

1.14.2 Syntax:

Command syntax: AT+RMCC - Reading command
 AT+SMCC=<conn_mc> - Writing command

Command	Response
AT+ RMCC	+ RMCC: 0 OK <i>Standard: DSR / DTR not used</i>
AT+ SMCC =1 <i>DSR / DTR used to control connections</i>	OK

1.14.3 Defined values

<conn_mc>
 0: DSR / DTR not used to control connections
 1: DSR / DTR used to control connections

Note:

The device initiates a connection on a rising edge of DSR (male)/ DTR (female).
 The device disconnects a connection on a falling edge of DSR (male)/ DTR (female).

When the device is connected DTR (male) / DSR (female) is on.
 When the device is not connected DTR (male) / DSR (female) is off.

1.15 Select COM-HARDWARE service class (Slave) (AT+RSEV / AT+SSEV)

1.15.1 Description:

Service can be selected between Serial Port Profile (SPP) and Dialup Networking (DUN).

1.15.2 Syntax:

Command syntax: AT+RSEV - Reading command
 AT+SSEV=<conn_mc> - Writing command

Command	Response
AT+RSEV	+ RSEV: 0 OK <i>Standard: SPP</i>
AT+SSEV=1 <i>DUN service class used</i>	OK

1.15.3 Defined values

<conn_mc>
 0: Bluetooth SPP service class
 1: Bluetooth DUN service class

1.16 Change page scan interval (Slave) (AT+RPSC / AT+SPSC)

1.16.1 Description:

The page scan interval can be changed with respect to power consumption and response time of the device. The command only has an effect on the Slave Transparent mode.

1.16.2 Syntax:

Command syntax: AT+RPSC - Reading command
 AT+SPSC=<page_iv> - Writing command

Command	Response
AT+RPSC	+ RPSC: 2 OK <i>Standard: Normal</i>
AT+SPSC=?	Available settings are displayed
AT+SPSC=3 <i>Quickest response time/greatest power consumption</i>	OK

1.16.3 Defined values

<conn_mc>
 1: Slowest response time / lowest power consumption
 2: Normal response time / normal power consumption
 3: Fastest response time / highest power consumption

1.17 Change/switch off inquiry scan interval (Slave) (AT+RISC / AT+SISC)

1.17.1 Description:

The inquiry scan interval can be changed or deactivated with respect to the power consumption and response time of the device. The command only has an effect on the Slave Transparent mode.

1.17.2 Syntax:

Command syntax: AT+ RISC - Reading command
 AT+SISC =< inqu_iv > - Writing command

Command	Response
---------	----------

1: Status LED is in use

1.21 Read out battery voltage – display charge status as a percentage (AT+RBAV)

1.21.1 Description:

Enables battery voltage or charge status (in per cent) to be read out

1.21.2 Syntax:

Command syntax: AT+RBAV - Reading command

Command	Response
AT+RBAV	+RBAV: 3900,79 OK <i>Battery voltage 3900 mV, charge status 79%</i>

1.22 Switch hardware handshake on / off (AT+RSWH / AT+FSWH)

1.22.1 Description:

The usage of hardware handshake can be configured.

1.22.2 Syntax:

Command syntax: AT+RSWH - Reading command
 AT+FSWH=<use> - Writing command

Command	Response
AT+ RSWH	+RSWH: 0 OK <i>Hardware handshake is enabled</i>
AT+ FSWH =1 <i>Hardware handshake is disabled</i>	OK

1.22.3 Defined values

<use>

0: Hardware handshake enabled

1: Hardware handshake disabled