SERIAL PORT SETTINGS

Baud Rate
Sets baud rate between DT50 and connected serial device

Parity
Sets parity between DT50 and connected serial device

Flow Control
Sets flow control between DT50 and connected serial device

Data Bits
Sets data bits between DT50 and connected serial device

Stop Bits
Sets stop bits between DT50 and connected serial device

FACTORY DEFAULT

Reset
Reset connected DT50 to default serial port settings

DT50
AT Command Set
Reference Guide
V1.0

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i Revision History

Version	Date	Description
1.0	7/4/2015	Original Version

ii Reference Documents

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Contents

1 Introduction

2 Data Mode and AT Mode

The DT50 can be in two different modes AT mode and data mode. It starts in data mode and can be requested to move to AT mode by sending an escape sequence. The default escape sequence consists of three consecutive forward slash characters '/'. The escape sequence character can be changed using the ATS2 command.   In AT mode the DT50 will respond to AT programming commands.

The following criteria must be met for the DT50 to interpret the sequence as a valid escape sequence:

Before the escape sequence there must be silence for 1 second. This time can be changed using the

AT*AMET command.

After the escape sequence there must be silence for 1 second. This time can be changed using the

AT*AMET command.

The entire escape sequence must be sent within 200 ms.

To move from AT mode to data mode, use the "AT*ADDM" command

3 Default Serial Settings

The DT50 does not support auto baud rate. The baud rate is set using the "Write RS232 Settings" command. The default RS232 settings are 57600 bits/s, 8 data bits, no parity, 1 stop bit, and No flow control.

4 AT Commands Over Bluetooth

It is possible to configure and control a remote DT50 via Bluetooth using AT commands. Criteria for using AT commands over Bluetooth:

A Bluetooth connection to the remote device (the device to configure) must exist. The Bluetooth connection can e.g. be established using another DT50, a device with a PC-card/compact flash or a device with embedded Bluetooth support. The remote DT50 must have turned on the support for configuration over Bluetooth, for more information see the "Write Allow Configuration Over Bluetooth" command. Once the connection has been established, the escape sequence must be sent over the Bluetooth connection to the remote DT50 to move it into AT mode.

The same escape sequence rules apply to AT over Bluetooth as for AT over cable, for more information see the section about Data Mode and AT Mode.

Note that the same escape sequence is used for cable and Bluetooth. Therefore, if you are using two DT50s one of the DT50s must have its escape sequence changed using the ATS2 command. This is to keep the first DT50 to enter AT mode instead of the remote DT50.

5 Syntax

5.1 Command Line Format

Each command line sent from the DTE to the DT50 is made up of a prefix, body and terminator. As prefix for the DT50 AT commands, only "AT" (ASCII 065, 084) and "at" (ASCII 097, 116) can be used. There is no distinction between upper and lower case characters. The body is a string of characters in the range ASCII 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>. Commands denoted with a "*" character are extended

AT commands, i.e. DT50 specific AT commands. Multiple commands in the same command line are not supported. Each command has to be terminated by a <CR> before a new command can be sent. A command must not be larger than 300 characters. A command can either be:

- Read commands without parameters: AT<command>?<CR>
- Write commands without parameters: AT<command><CR>
- Read and write commands with parameters: AT<command>=<parameter1>, parameter2>,...<parameterN><CR>

Responses are sent back to the host and can be any of the following:

- Successful final message: <CR><LF>OK<CR><LF>
- Successful intermediate/final message with parameters follows an OK message in some commands. In these cases the OK message works as a confirm message only. <CR><LF><result_response>:<parameter1>, parameter2>, ...<parameterN>
- Error message:<CR><LF>ERROR<CR><LF>

5.2 Data Types

The definition of each command specifies the data types used for values associated with the command. There are four data types:

- String
- Integer
- Enumerator
- Bluetooth Device Address
- Byte Array

5.2.1 String

A string shall consist of a sequence of displayable characters from the ISO 8859-1 (8-bit ASCII) character set, except for characters "\" and """ and characters below 32 (space). A string constant shall be delimited by two double-qoute (""") characters, e.g. "Donald Duck". If the double-quote character (""") is to be used within a string, e.g. "My friend "Bono" is a singer", they have to be represented as "\22". If the back-slash character ("\") is to be used within a string constant, it has to be represented as "\5C". An empty string is represented by two adjacent delimiters, "".

5.2.2 Integer

An integer value consists of a sequence of characters all in the range {0..9}. Numeric constants are expressed in decimal format only.

5.2.3 Enumerator

An enumerator value is actually an integer, where all its possible values are specified in each case. Only the defined values are accepted for the command in question.

5.2.4 Bd_Addr

This type is used to represent the Bluetooth Device Address. The type is composed of six fields, each representing a hexadecimal value using two characters. For example, the Bluetooth Device Address 0x112233AABBCC is represented as 112233AABBCC or 112233aabbcc. Note that the Bluetooth Device Address is **not** delimited with by two double-qoute (""") characters.

5.2.5 Byte Array

This type is used to represent a byte array such as e.g. a UUID. For example, the AT*ADUUID configures a 128 bits UUID as 00112233445566778899AABBCCDDEEFF

6 AT Commands Reference

6.1 Standard AT Commands

6.1.1 Command "AT"

AT Command	Description
AT<CR>	Attention command determining the presence of the DT50.

Response	Description
<CR><LF>OK<CR><LF>	Successful response.

<CR><LF>ERROR<CR><LF>	Error response.

6.1.2 Command "AT*"

AT Command	Description
AT<CR>*	Lists the supported AT commands.

Response	Description
<CR><LF><command>	This response is sent to the host for every supported command.
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

6.1.3 Command "AT&F"

AT Command	Description
AT&F<CR>	Restore all settings to the factory settings. When the command "Store Factory Settings" has been used to update the factory settings database then this command will restore all the settings to the stored factory settings. Note that this command should not be used at every startup to restore the factory settings. Instead it is better not to write to the startup database at all.

Response	Description
<CR><LF><command>	This response is sent to the host for every supported command.
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.
	The command will restore the settings to default factory settings. After

| | the AT&F command has been sent, the module must be reset for the restored settings to take affect. |

6.1.4 Command "ATE"

AT Command	Description
ATE<echo><CR>	Set whether or not the DT50 shall echo incoming characters.

Response	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
echo	integer	0: Incoming characters will not be echoed. 1: Incoming characters will be echoed.

6.1.5 S-Register (ATS)

For Bluetooth Low Energy the S-register command is used to configure link supervision timeout, advertisement interval and connection interval. Common for both Bluetooth Classic and Bluetooth Low Energy is ATS2, configuration of escape character.

AT Command	Description
ATS<XXX>?<CR>	Reads S-register<XXX>.
ATS<XXX>=<value><CR>	Writes S-register <XXX>.
	The module must be restarted for the command to take effect.

Response	Description
<CR><LF><value><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.

<CR><LF>ERROR<CR><LF>	Error response.

S-Register (<XXX>)	Parameters	Type	Value
2	<value>	Integer	Escape Character ASCII value of the escape character. E.g. 47 equals '/'. Default: '/'. Note that the escape sequence will be "///". Hence, the character is used three times.
6000	<value>	integer	Link loss timeout in ms. Range: 100..32000 Default: 2000
6001	<value>	integer	Advertising Interval Min Range: 32 to 16384 Default: N = 1600(1.000 second) Time = N * 0.625 msec Must always be less than or equal to Advertising Interval Max
6002	<value>	integer	Advertising Interval Max Range: 32 to 16384 Default: N = 2000(1.250 second) Time = N * 0.625 msec Must always be greater than or equal to Advertising Interval Min
6003	<value>	integer	Advertising Channel Map Bitmap Bit0: channel 37 Bit1: channel 38 Bit2: channel 39 Default: 7(ch 37,38,39)
6004	<value>	integer	Connection Interval Min Range: 6 to 3200 Default: N=6(0.0075 second) Time = N * 1.25 msec Must always be less than or equal to Connection Interval Max
6005	<value>	integer	Connection Interval Max Range: 6 to 3200 Default: N=6(0.0075 second) Time = N * 1.25 msec Must always be greater than or equal to Connection Interval Min
6006	<value>	integer	Slave latency for the connection in number of connection events Range: 0 to 500 Default: N=0

6007	<value>	integer	Create Connection Timeout in ms Range: 0 to 65535 Default: 5000
6008	<value>	integer	Scan Window Range: 16 - 16384 Default: N=16(0.01 second) Time = N * 0.625 msec Must always be less than or equal to Scan Interval
6009	<value>	integer	Scan Interval Range: 16 - 16384 Default: N=16(0.01 second) Time = N * 0.625 msec Must always be greater than or equal to Scan Window
6010	<value>	integer	Always Connected interval. Interval used for remote peers with "always connected" configuration. Default: 10000 Time = N * 1 ms
7000	<value>	integer	UART receive time out. Default 0 (The time out is depending on the configured baud rate). Range: 0 - 65535 microseconds.
7001	<value>	integer	Number of bytes to receive before triggering an immediate receive time out event. To be used together with AT*AMPSF configurations Sleep on Uart RX or Disconnect on data sent. Default: 0 (Disabled) Range: 0-255 bytes.
7002	<value>	integer	TX power. Default: 255 (Max output power, 4 dbm) Range: 0-255 (128 = 0 dbm)
7003	<value>	integer	Rx gain. Receiver signal strength. Default: 1 (High) Range: 0 (Standard) - 1 (High)
7004	<value>	integer	Initial online period. Value in milliseconds. During this period of time the device does not enter power save mode when DSR is not used to control power save modes. This gives a possibility to enter AT mode for configuration after a reset of the device. Default: 5000 Range:0 - 65535

6.2 GAP Commands

6.2.1 Discoverability Mode (AT*AGDM)

AT Command	Description
AT*AGDM?<CR>	Reads the GAP discoverability mode.
AT*AGDM=<discoverability_mode>,<store_in_startup_database><CR>	Writes the GAP discoverability mode.

Response	Description
<CR><LF>*AGDM:<discoverability_mode><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
discoverability_mode	enumerator	1: GAP non-discoverable mode 2: GAP limited discoverable mode 3: GAP general discoverable mode (default value)
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The DT50 will remember the setting between power cycles. The settings database in the DT50 will be updated.

6.2.2 Connectability Mode (AT*AGCM)

AT Command	Description
AT*AGCM?<CR>	Reads the GAP connectabilitymode.
AT*AGCM=<connectability_mode>,<store_in_startup_database><CR>	Writes the GAP connectability mode.

Response	Description
<CR><LF>*AGCM:<connectability_mode><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.

<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
connectablilty_mode	enumerator	1: GAP non-connectable mode 2: GAP connectable mode (default value)
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The DT50 will remember the setting between power cycles. The settings database in the DT50 will be updated.

6.2.3 Pairing Mode (AT*AGPM)

AT Command	Description
AT*AGPM?<CR>	Reads the pairing mode.
AT*AGPM=<pairing_mode>,<store_in_startup_database><CR>	Writes the pairing mode.

Response	Description
<CR><LF>*AGPM:<pairing_mode><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
pairing_mode	enumerator	1: GAP non-pairing mode 2: GAP pairing mode (default value)
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The DT50 will remember the setting between power cycles. The settings database in the DT50 will be updated.

6.2.4 Security Mode (AT*AGSM)

AT Command	Description
AT*AGSM?<CR>	Reads the security mode.
AT*AGSM=<security_mode>,<store_in_startup_database><CR>	Writes the security mode.

Response	Description
<CR><LF>*AGSM:<security_mode><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
security_mode	**enumerator**	1. Security Disabled (default value) - Remote Device BT 2.1: Auto accept (No man-in-the-middle attack protection, encryption enabled) - Remote Device BT 2.0: Authentication and encryption disabled. - Bluetooth Low Energy: Auto accept (No man-in-the-middle attack protection, encryption enabled) 2. Security Enabled - Enforce BT 2.0 (Service level authentication and encryption enabled) Please note that the device is not BT 2.1 qualified for this setting. It is included for backward compatibility. Invalid for Bluetooth Low Energy. 3. Security Enabled - Fixed Pin - Remote Device BT 2.1: Service level authentication and encryption enabled. - Remote Device BT 2.0: Service level authentication and encryption enabled. - Bluetooth Low Energy: Service level authentication and encryption enabled. Please note that this security mode will not work with a general BT 2.1 device. However, it will work between two connectBlue

BT 2.1 DT50s. Use security mode 4 to make the device work with a general BT 2.1 device.

4: Security Enabled - Just Works
- Remote Device BT 2.1: Auto accept (no man-in-the-middle attack protection, encryption enabled)
- Remote Device BT 2.0: Service level authentication and encryption enabled.
- Bluetooth Low Energy: Auto accept (no man-in-the-middle attack protection, encryption enabled)
This security mode is intended for pairing in safe environments. When this mode is set, pairability (see AT*AGPM) is automatically disabled. In data mode, pairing can be enabled for 60 seconds by pressing the "External Connect" button for at least
5 seconds. When the module is pairable, the LED will blink. If the mode is changed from Just Works to another, pairability must be enabled again using the AT*AGPM command.

5: Security Enabled - Display Only*
- Remote Device BT 2.1: Service level authentication and encryption enabled. User should be presented a passkey.
- Remote Device BT 2.0: Service level authentication and encryption enabled. No user interaction required.
- Bluetooth Low Energy: Service level authentication and encryption enabled. User should be presented a passkey. This security mode is used when the device has a display that can present a 6-digit value that the user shall enter on the remote device.

6: Security Enabled - Display Yes/No*
- Remote Device BT 2.1: Service level authentication and encryption enabled. User should compare two values.
- Remote Device BT 2.0: Service level authentication and encryption enabled. No user interaction required. This security mode is used when the device has a display that can present a 6-digit value that the user shall verify with yes or no to the remote device's presented value. Invalid for Bluetooth Low Energy.

7: Security Enabled - Keyboard Only*
- Remote Device BT 2.1: Service level authentication and encryption enabled. User should enter a passkey.
- Remote Device BT 2.0: Service level authentication and encryption enabled. No user interaction required.
- Bluetooth Low Energy: Service level authentication and encryption enabled. User should enter a passkey. This security mode is used when the device only has a keyboard where the

		user can enter a 6-digit value that is presented on the remote device. * For security modes 5, 6 and 7 the SPA must be in AT-mode to be able to do bonding because user interaction might be required (If the remote device is BT2.0 no user interaction is required.).
store_in_ startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The DT50 will remember the setting between power cycles. The settings database in the DT50 will be updated.

6.2.5 Name Discovery (AT*AGND)

This command uses different syntaxes for DT50 with Classic and Dual Mode Classic and Low Energy capabilities.   The mode parameter is used to distinguish between Bluetooth Low Energy and Bluetooth classic in dual mode radios.

AT Command	Description
AT*AGND=<bd_addr><CR>	Retrieves the device name of a remote device given its Bluetooth device address. Used for Bluetooth classic radios.
AT*AGND=<bd_addr>,<timeout>,<mode><CR>	Retrieves the device name of a remote device given its Bluetooth device address. Used for Bluetooth Low Energy dual mode radios.

Response	Description
<CR><LF>*AGND:<device_name><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
device_name	String	Null terminated string of maximum 240 characters (8-bit ASCII).
bd_addr	Bd_Addr	Bluetooth device address of the device from which to

		retrieve the name.
timeout	integer	Bluetooth classic: Page timeout measured in Number of Baseband slots Interval Length = N * 0.625 msec (1 Baseband slot) Range for N: 0x0016 – 0xFFFF Time Range: 10 msec -40.9 Seconds Bluetooth Low Energy: Timeout measured in milliseconds Time Range: 10 msec - 65535 msec
mode	Integer	This parameter is only used for Bluetooth Low Energy dual mode radios. 0: Bluetooth classic 1: Bluetooth Low Energy

6.2.6 Device Discovery (AT*AGDD)

AT Command	Description
AT*AGDD=<inquiry_type>,<inquiry_length><CR>	Performs device discovery.

Response	Description
<CR><LF>*AGDD:<no_of_devices><CR><LF>OK<CR><LF>	Successful response.
*AGDDE:<bd_addr>, <cod>, <device_name_valid>, <device_name><CR><LF>	This response is sent for every found device when inquiry_type is 1 or 2
*AGDDE:<bd_addr>, <cod>, <device_name_valid>, <device_name>,<rssi><CR><LF>	This response is sent for every found device when inquiry_type is 3 or 4
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
no_of_devices	Integer	Value in range {0..255}. Number of devices discovered during the inquiry procedure.
Bd_addr	Bd_Addr	Bluetooth device address of a discovered device.
Cod	integer	See Read_Local_COD command.
device_name_valid	Enumerator	1: device_name parameter valid. 0: Device was discovered, but its name could not be retrieved. device_name is parameter invalid and should be

		ignored.
device_name	String	Name of discovered device. ASCII represented string of maximum 240 bytes.
inquiry_type	Enumerator	1: Limited inquiry 2: General inquiry 3: Limited extended inquiry with RSSI 4: General extended inquiry with RSSI
inquiry_length	integer	Maximum amount of time specified before the inquiry is halted. Range: 1-48 Time = inquiry_length*1.28 seconds Range in seconds: 10.24-61.44
rssi	Integer	128: 0 dBm For example, a value of 130 means +2 dBm

6.2.7 Inquiry (AT*AGI)

AT Command	Description
AT*AGI=<inquiry_Type>,<inquiry_length>, <max_no_of_devices_to_find><CR>	Performs an inquiry procedure to find any discoverable devices in the vicinity.

Response	Description
<CR><LF>*AGI:<bd_addr>,<cod>	This response is sent for every found device when inquiry_type is 1 or 2.
<CR><LF>*AGI:<bd_addr>,<cod>,<device_name_valid>,<device_name>,<rssi>	This response is sent for every found device when inquiry_type is 3, 4 or 6.
<CR><LF>*AGI:<bd_addr>,<data>,<rssi>,<adv_data_type>	This response is sent for every found device when inquiry_type is 8 or 9.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Bd_addr	Bd_Addr	Bluetooth device address of a found device.
Cod	integer	See Read_Local_COD command.
inquiry_type	Enumerator	1: Limited inquiry 2: General inquiry 3: Limited extended inquiry with RSSI and device name 4: General extended inquiry with RSSI and device name 6: General extended inquiry with RSSI and device name for Bluetooth Low Energy 8: General extended inquiry with RSSI and complete advertise data for Bluetooth Low Energy 9: Unfiltered extended inquiry with RSSI and complete advertise data for Bluetooth Low Energy. inquiry_length integer Maximum amount of time specified before
inquiry_length	integer	Maximum amount of time specified before the inquiry is halted. Range: 1-48 Time = inquiry_length*1.28 seconds Range in seconds: 1.28-61.44
max_no_of_devices_to_fin d	Integer	0: No limitation on the number of devices to find. 1-255: Maximum number of devices to find.
device_name_valid	enumerator	1: device_Name parameter valid. 0: Device was discovered, but its name could not be retrieved. device_name parameter is invalid and should be ignored.
Device_name	String	Name of discovered device. ASCII represented string of maximum 240 bytes. Note: Name of discovered devices is only returned by devices supporting Bluetooth 2.1 or later.
Rssi	Integer	128: 0 dBm For example, a value of 130 means +2 dBm
Data	Byte_array	Complete advertise / scan response data received from remote device
Adv_data_type	Integer	0: Advertise data

		1: Scan response data

6.2.8 Bond (AT*AGB)

AT Command	Description
AT*AGB=<bd_addr>,<CR>	Performs a GAP bond procedure with another Bluetooth device.During the bonding procedure either the fixed pincode/passkey is used or user interaction is required. Which procedure to use is determined by the security mode. For fixed pincode/passkey see Write Fixed PIN/PASSKEY and Read Fixed PIN/PASSKEY. For user interaction bonding see User Confirmation and User Passkey commands and events. Note that to be able to perform bonding the remote device must be in pairable mode.
AT*AGB=<bd_addr>,<mode><CR>	Same as above but only for Bluetooth Low Energy dual mode radios.

Response	Description
<CR><LF>*AGB:<bd_addr>,<status><CR><LF>OK<CR><LF>	Successful response.
<CR><LF>*AGB:<bd_addr>,<status><CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Bd_addr	Bd_Addr	Bluetooth device address of the device to bond with.
Mode	integer	This parameter is only used for Bluetooth Low Energy dual mode radios. 0: Bluetooth classic 1: Bluetooth Low Energy
Status	Enumerator	0: bonding succeeded 1: bonding failed because of page timeout 2: bonding failed because authentication or pairing failed. This could be due to incorrect PIN/passkey. 3: bonding failed because protection against Man-In-The-Middle attack could not be guaranteed(The generated link key was too weak)

6.2.9 Un-bond (AT*AGUB)

AT Command	Description
AT*AGUB=<bd_addr><CR>	This command un-bonds a previously bonded device.

Response	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Bd_addr	Bd_Addr	Bluetooth device address of the device subject to un-bond. If address FFFFFFFFFFFF is selected all bonded devices will be remove.

6.2.10 Read Bonded Devices (AT*AGBD)

This command uses different syntaxes for Bluetooth classic and Bluetooth Low Energy. The mode parameter is used to distinguish between Bluetooth Low Energy bondings and Bluetooth classic bondings in dual mode DT50 modules.

AT Command	Description
AT*AGBD?<CR>	Read the bonded devices Bluetooth classic.
AT*AGBD=<mode><CR>	Read the bonded devices Bluetooth Low Energy and dual mode radios.

Response	Description
<CR><LF>*AGBD:<no_of_devices><CR><LF>OK<CR><LF>	Successful response.
*AGBDE:<bd_addr>,<device_name_valid>,<device_name><CR><LF>	This response is sent for every found device.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Mode	integer	This parameter is only used for Bluetooth Low Energy and dual mode radios. 0: Bluetooth classic 1: Bluetooth Low Energy
no_of_bonded_ devices	integer	Number of bonded devices.
Bd_addr	Bd_Addr	Bluetooth device address of the device from which to retrieve the name.
device_name_v alid	enumerator	0: device_name parameter valid. 1: Device is bonded but its name is not available. Device_name is parameter invalid.
Device_name	String	Name of bonded device.

6.2.11 Fixed PIN/PASSKEY (AT*AGFP)

The fixed PIN code is used when pairing to a remote BT 2.0 device. The fixed passkey is used when pairing and bonding to a remote BT 2.1 or Bluetooth Low Energy device.

AT Command	Description
AT*AGFP?<CR>	Read the BT 2.0 fixed PIN code used by the Serial Port Adapter during bond and pairing.
AT*AGFP2?<CR>	Read the BT 2.1 passkey used by the Serial Port Adapter during bond and pairing.
AT*AGFP=<pin_code>, <store_in_startup_database><CR>	Writes the BT 2.0 fixed PIN code used by the Serial Port Adapter during bond and pairing.
AT*AGFP2=<passkey>, <store_in_startup_database><CR>	Writes the BT 2.1 / Bluetooth Low Energy passkey used by the Serial Port Adapter during bond and pairing.

Response	Description
<CR><LF>*AGFP:<pin_code><CR><LF>OK<CR><LF>	Successful BT 2.0 read response.
<CR><LF>*AGFP2:<passkey><CR><LF>OK<CR><LF>	Successful BT 2.1 read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Pin_code	string	The BT 2.0 PIN code is a string of one to sixteen alphanumerical characters. It is recommended to use a pin code of at least eight characters of mixed type, e.g. "12w35tg7". The default value is "0".
Passkey	integer	The BT 2.1 / Bluetooth Low Energy passkey is an integer in the range of [0..999999]. The default value is 0.
store_in_startup_database	Enumerator	0: The setting will only be valid for the current power cycle. 1: The DT50 will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.2.12 User Confirmation (AT*AGUC)

AT Command	Description
AT*AGUC=<bd_addr>,<yes_no><CR>	The user confirmation is used together with security mode 6 to respond on a user confirmation request(*AGUC). The command should only be used when bonding has been initiated with AT*AGB and after *AGUC has been received.

Response	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Bd_addr	String	The remote Bluetooth Device address
Yes_no	Enumerator	0: No. The remote and local values are different or the user cancels. 1: Yes. The remote and local values are the same.

6.2.13 User Passkey Entry (AT*AGUPE)

AT Command	Description
AT*AGUPE=<bd_addr>,<ok_cancel>,	The user passkey entry is used together with security mode 7 to respond on a user passkey entry request(*AGUPE). The

<passkey><CR>	command should only be used when bonding has been initiated with AT*AGB and after *AGUPE has been received.

Response	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Bd_addr	String	The remote Bluetooth Device address
Ok_cancel	Enumerator	0: Cancel. 1: Ok.
Passkey	Integer	This is an integer in the range of [0..999999].

6.2.14 Local Name (AT*AGLN)

AT Command	Description
AT*AGLN?<CR>	Reads the local Bluetooth device name.
AT*AGLN=<device_name>, <store_in_startup_database><CR>	Writes the local Bluetooth device name.

Response	Description
<CR><LF>*AGLN:<device_name><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameter	Type	Description
Device_name	String	Max 240 characters. The default name is "Bluetooth Device".
store_in_startu	Enumerator	0: The setting will only be valid for the current power cycle.

p_database		1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.2.15 Local COD (AT*AGLC)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AGLC?<CR>	**Reads the Local Class Of Device code.**
AT*AGLC=<cod>, <store_in_startup_database><CR>	**Writes the Local Class Of Device code.**

Responses	Description
<CR><LF>*AGLC:<cod><CR><LF>OK<CR><LF>	**Successful read response.**
<CR><LF>OK<CR><LF>	**Successful write response.**
<CR><LF>ERROR<CR><LF>	**Error response.**

Parameters	Type	Value
cod	integer	Valid values for this parameter are specified in the Bluetooth Assigned Numbers Document, www.bluetooth.com. The parameter has been divided into three segments, a service class segment, a major device class segment and a minor device class segment (bits 2-7). Extract from the Bluetooth Assigned Numbers Document: Service class (bit mask, bits 13-23): Bit 16: Positioning (Location identification) Bit 17: Networking (LAN, Ad hoc, etc) Bit 18: Rendering (Printing, Speaker, etc) Bit 19: Capturing (Scanner, Microphone, etc) Bit 20: Object Transfer (v-Inbox, v-Folder, etc) Bit 21: Audio (Speaker, Microphone, Headset service, etc) Bit 22: Telephony (Cordless telephony, Modem, Headset service) Bit 23: Information (WEB-server, WAP-server, etc) Major device class (number, bits 12-8): 00000: Miscellaneous 00001: Computer (desktop, notebook, PDA, etc) 00010: Phone (cellular, cordless, modem, etc) 00011: LAN/Network Access point 00100: Audio/Video (headset, speaker, stereo, video display, VCR)

		00101: Peripheral (mouse, joystick, keyboards)
		00110: Imaging (printing, scanner, camera, etc)
		11111: Uncategorized, specific device code not specified
		For the minor device class field please refer to [1].
		The default value is 0.

6.2.16 Get MasterSlaveRole (AT*AGGMSR)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AGGMSR=<bd_addr><CR>	Read the local master-slave role. Returns the role of the Serial Port Adapter, master or slave, for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter.

Responses	Description
<CR><LF>*AGGMSR:<role><CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role	enumerator	0: Slave 1: Master
bd_addr	Bd_Addr	Identifies a device that the Serial Port Adapter is currently communicating with.

6.2.17 Change MasterSlaveRole (AT*AGCMSR)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AGCMSR=<bd_addr>,<role><CR>	Changes the master-slave role. Changes the role of the Serial Port Adapter, master or slave, for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter. Note that the remote device does not have to accept the master/slave switch.

Responses	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
bd_addr	Bd_Addr	Identifies a device that the Serial Port Adapter is currently communicating with. The role will be changed on the connection to this device.
role	enumerator	0: Slave 1: Master

6.2.18 MasterSlaveRole Policy (AT*AGMSP)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AGMSP?<CR>	Reads the role policy of the device.
AT*AGMSP=<role_policy>,<store_in_startup_database><CR>	Writes the role policy of the device.

Responses	Description
<CR><LF>*AGMSP:<role_policy><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role_policy	enumerator	0: Always attempt to become master on incoming connections. 1: Always let the connecting device select master/slave role on incoming connections (default value).
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.2.19 Get RSSI (AT*AGRSS)

AT Command	Description
AT*AGRSS=<bd_addr><CR>	This request returns the current received signal strength, RSSI, for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter. Note that this command can only be used on an existing connection that has been established using the Connect_To_Serial_Service_Data_Mode command and only while still in AT mode.

Responses	Description
<CR><LF>*AGRSS:<rssi><CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
rssi	integer	< 128: The received signal strength is 128-RSSI dB below the optimal signal range. 128: The received signal strength is within the optimal signal range. >128: The received signal strength is RSSI-128 dB above the optimal signal range. For example, a read value of 130 means +2 dB.
bd_addr	Bd_Addr	Identifies a device that the Serial Port Adapter is currently communicating with.

6.2.20 Get Link Quality (AT*AGLQ)

AT Command	Description
AT*AGLQ=<bd_addr><CR>	This request returns the current link quality for the connection between the Serial Port Adapter and the remote device identified by the 'bd_addr' parameter.

Responses	Description
<CR><LF>*AGLQ:<link_quality><CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
link_quality	integer	The link quality is calculated as follows : every 5 seconds a new link quality is calculated based on the packets received during that period. The link quality is based on the ratio of packets received with CRC errors to the total nr of packets with a CRC-protected payload that were received. 50% CRC errors or more is reported as link-quality 0 (i.e. minimal quality). 0% CRC errors is reported as 255 (i.e. maximal quality). Between 0% and 50% CRC errors, link quality is proportional, i.e. 25% is reported as 128. Packet types are not taken into account, i.e. the same physical channel could have a link quality of 100 using DH5 packets while using DM5 would give 255. Please note that the implementation is vendor specific and may differ for future module versions.
bd_addr	Bd_Addr	Identifies a device that the Serial Port Adapter is currently communicating with.

6.2.21 Bluetooth Low Energy Mode (AT*AGLE)

AT Command	Description
AT*AGLE?<CR>	Reads the configuration status.
AT*AGLE=<role>, <store_in_startup_database><CR>	Writes the configuration status.

Responses	Description
<CR><LF>*AGLE:<role><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
role	integer	0: Disabled (default) 1: Low Energy Central 2: Low Energy Peripheral
store_in_startup_database	enumerator	Must be 1 Module must be restarted for the command to take effect.

6.2.22 Low Energy Advertise Data (AT*AGAD)

Command for use of custom advertise data in Low Energy. Any custom advertise data will be appended to the default mandatory flags field. Note that the Inquiry AT command AT*AGI supports scan modes that can be used to see the complete advertising data. This is useful when testing advertising configurations set with the AT*AGAD.

By default the service UUID for the Serial Port Service is part of the scan response data. For details please see the section on advertising vs scan response data.

Note that the local name used in the advertising data is normally set with AT*AGLN. AT*AGAD will override what is set with AT*AGLN. Note that it is highly advised to run AT*AGLN with the correct local name before any AT*AGAD/AT*AGSD to make sure it is the same name for Classic Bluetooth, the GAP device name and the advertising data.

There will be no check whether the same data types are used in AT*AGAD and AT*AGSD. It is up to the application to make sure the data types are used in only one of the advertisement and scan response data.

This is only supported in LE Peripheral mode.

AT Command	Description
AT*AGAD?<CR>	Read custom advertise data.
AT*AGAD=<data>,<store_in_startup_database><CR>	Write custom advertise data.

Responses	Description
<CR><LF>*AGAD:<data><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
data	byte array	Custom advertise data. Maximum 28 bytes. The default value includes AD Flags, Tx power, Slave connection interval and the Complete local name. The data must follow the Bluetooth Specification, see GAP section in ref[4]. Data is divided into different consecutive data blocks, where each block has the following structure: Byte 0: Length of data block, N, excluding length byte. Byte 1: GAP advertisement data type, see below. Byte 2-N: Data. Typical GAP advertisement data types: 0x01 AD Flags (Mandatory for advertising data) 0x02 16-bit Service UUIDs, more available 0x03 16-bit Service UUIDs, complete list 0x04 32-bit Service UUIDs, more available

		0x05 32-bit Service UUIDs, complete list 0x06 128-bit Service UUIDs, more available 0x07 128-bit Service UUIDs, complete list 0x08 Shortened Local name 0x09 Complete Local Name 0x0A Tx Power in dBm 0x12 Slave connection interval range 0xFF Manufacturer Specific Data (The first 2 octets contain the Company Identifier Code followed by additional manufacturer specific data) See GAP section in ref[4] for complete list. Example: "07FF710000112233", where "07" is the length, "FF" is the GAP advertisement data type "Manufacturer Specific Data" and "7100" is the connectBlue Company Identifier written with lowest octet first and "00112233" is the application data.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.2.22.1 Advertising vs scan response data

The serial service UUID was added to the scan response data. It was added to the scan response data instead of the advertising data for backwards compatibility with earlier firmware versions. However, when a central device is using passive scan instead of active scan the central device will only see the advertising data and not the scan response data.

For example Apple recommends filtering on UUIDs when doing a scan in iOS apps and may use passive scan when the app is not active. This may require that the UUID is part of the advertising data instead of the scan response data.

Use the commands below to set the serial service UUID in the advertising data and set the device name in the scan response data:

At command	Description
AT*AGAD=020a04110701d7e9014ff344e7838fe226b9e15624,1	Set advertising data to: Tx power: 4dBm [020a04] 128-bit Service UUIDs, complete list: Serial Service UUID[110701d7e9014ff344e7838fe226b9e1

	5624]
AT*AGSD=07094f4c53343235,1	Set scan response data to: Complete Local Name: OLS425 [07094f4c53343235]where 07 is the length of the data 4f4c53343235 is the name data 09 is the AD type complete local name to set a different name change the length and name data fields

6.2.23 Low Energy Scan Response Data (AT*AGSD)

Command for use of custom scan response data in Low Energy. Any custom scan response data will overwrite the default scan response data. Note that the Inquiry AT command AT*AGI supports scan modes that can be used to see the complete scan response data. This is useful when testing configurations set with the AT*AGSD command.

By default the service UUID for the Serial Port Service is part of the scan response data. For details please see the section on advertising vs scan response data.

This command is only Supported in LE Peripheral Mode.

AT Command	Description
AT*AGSD?<CR>	Read scan response data.
AT*AGSD=<data>,<store_in_startup_database><CR>	Write scan response data.

Responses	Description
<CR><LF>*AGSD:<data><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
data	byte array	Custom scan response data. Maximum 31 bytes. The default value includes Service UUIDs, complete list with connectBle Serial Service UUID. It is recomended to use the connectBlue Serial Service UUID [2456e1b926e28f83e744f34f01e9d701] for filtering when doing scan in smartphone apps. Same format as data parameter of the AT*AGAD command.

store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.2.24 Enable low energy Bluetooth address mode (AT*AGLB)

This command is used to enable the public address tag 'p' and random address tag 'r' appended to the Bluetooth address in all AT-command responses. This must be used when a device needs to connect to all Bluetooth low energy address types i.e. public and random addresses.

Only Supported on Dual Mode modules

AT Command	Description
AT*AGLB?<CR>	Read address mode
AT*AGLB=<mode>,<store_in_startup_database><CR>	Write address mode

Responses	Description
<CR><LF>*AGLB:<mode><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message

Parameters	Type	Value
mode	enumerator	0: Disable low energy address mode 1: Enable low energy address mode
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.3 Service Search Commands

6.3.1 Service Search (AT*ARSS)

Not Supported in DT50 Low Energy devices.

AT Command	Description
AT*ARSS=<bd_addr>,<role_and_profile>, <max_nbr_of_results><CR>	Search for services on a remote device.

Responses	Description

<CR><LF>*ARSS:<matching_service_records ><CR><LF>OK<LR><CR>	Successful response
*ARSRSP:<bd_addr>, <rfcomm_server_chan>, < service_name_valid >, <service_name><CR><LF>	This response is the result of a device B serial port profile service search.
*ARSRDUN:<bd_addr>, <rfcomm_server_chan>, <service_name_valid >, <service_name>, <audio_feedback_support_valid>, <audio_feedback_support><CR><LF>	This response is the result of a GW dial-up networking profile service search.
*ARSRFTP:<bd_addr>, <rfcomm_server_chan>, < service_name_valid >, <service_name><CR><LF>	This response is the result of a file transfer profile service search.
*ARSROPP:<bd_addr>, <rfcomm_server_chan>, < service_name_valid >, <service_name><CR><LF>	This response is the result of a object push profile service search.
*ARSRPANU:<bd_addr>, < service_name_valid >, <service_name><CR><LF>	This response is the result of a PAN-PANU service search.
*ARSRNAP:<bd_addr>, < service_name_valid >, <service_name>, <net_access_type>, <max_net_access_rate><CR><LF>	This response is the result of a PAN-NAP service search.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
bd_addr	Bd_Addr	Bluetooth device address of the device on which to search for services.
role_and_profile	enumerator	0: DevB role, Serial Port Profile 1: Gateway role, Dial-Up Networking Profile 4: File transfer profile 5: Object push profile 8: PAN-PANU profile 9: PAN-NAP profile 128: SPP iPhone 129: SPP Android (according to defined UUID, see AT*ADUUID)
max_nbr_of_results	integer	The maximum number of services to be collected, use value 65535 if no limitation of the number of results is needed.
matching_service_records	integer	The number of matching service records. Range 0 to 255.
rfcomm_server_chan	integer	RFCOMM server channel number on which this service can be found. It is used when connecting to a profile. Range 1 to 30.

service_name_valid	enumerator	0: The service_name parameter could not be retrieved from the remote device and the value is not valid. 1: The service_name parameter could be retrieved from the remote device and the value is valid.
service_name	string	Service name.
audio_feedback_support_valid	enumerator	0: The audio_feedback_support parameter could not be retrieved from the remote device and the value is not valid. 1: The audio_feedback_support parameter could be retrieved from the remote device and the value is valid.
audio_feedback_support	enumerator	0: No, device does not support audio feedback. 1: Yes, device supports audio feedback.
service_description_valid	enumerator	0: The service_description parameter could not be retrieved from the remote device and the value is not valid. 1: The service_description parameter could be retrieved from the remote device and the value is valid.
service_description	string	Manufacturer description of the services a product can provide.
service_ availability_valid	enumerator	0: The service_availability parameter could not be retrieved from the remote device and the value is not valid. 1: The service_availability parameter could be retrieved from the remote device and the value is valid.
service_availability	integer	The service availability parameter available in the LAN Access Profile service record.
Ip_subnet_valid	enumerator	0: The Ip_subnet parameter could not be retrieved from the remote device and the value is not valid. 1: The Ip_subnet parameter could be retrieved from the remote device and the value is valid.
Ip_subnet	string	IP subnet mask to reach the device on the LAN.
net_access_type	integer	Type of network.
max_net_access_rate	integer	Data rate of network.

6.4 Data Mode Commands

6.4.1 Data Mode (AT*ADDM)

AT Command	Description
AT*ADDM<CR>	Request the Serial Port Adapter to move to data

	mode or extended data mode according to configuration (see AT*ADDM=). After a successful response the Serial Port Adapter will leave AT-mode and enter data mode or extended data mode.
AT*ADDM?	Reads the configured mode; data mode or extended data mode.
AT*ADDM=<mode>,<store_in_startup_database><CR>	Configures data mode or extended data mode. This command will not make the module enter data mode. To enter data mode the AT*ADDM<CR> must be called.

Responses	Description
<CR><LF>*ADDM:<mode><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
mode	integer	1: Data Mode (default value) 2: Extended Data Mode. Cannot be used by a module configured as a repeater (see AT*ADWM).
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.4.2 Connect To Serial Service Data Mode (AT*ADCP)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADCP=<bd_addr>, <role_and_profile>, <rfcomm_server_channel>, <must_be_master><CR>	Connect to a serial service enabled on a remote device. This request is used to connect to profiles based on the Serial Port Profile. The connection shall be used in data mode. When the host connects to a service on a remote device it implicitly registers to receive the "Serial Connection Data Mode Closed" event.

Responses	Description
<CR><LF>*ADCP:<connection_handle><CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
bd_addr	Bd_Addr	Bluetooth device address of the device to connect to.
role_and_profile	enumerator	0: DevB role, Serial Port Profile 1: Gateway role, Dial-Up Networking Profile 4: FTP 5: OPP 8: PAN-PANU (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details). 9: PAN-NAP (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details) 14: Serial Port Service Bluetooth Low Energy
rfcomm_server_chan	enumerator	RFCOMM server channel number on which this service can be found. 0: Service search will be performed automatically and the first available <role_and_profile> will be connected. 1-30: RFCOMM server channel number. This server channel number can be retrieved using a service search operation. 31-255: Invalid values. For PAN this denotes the local side PAN role that the client send to the remote side. 8: PANU 9: NAP
must_be_master	enumerator	0: The remote device may choose to become master or slave. 1: This device must be master of the new connection.
connection_handle	integer	The connection handle identifies the connection. The connection handle is used when closing the connection.

6.4.3 Close Serial Connection Data Mode (AT*ADCC)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADCC=<connection_handle><CR>	Close an existing data mode connection.

Responses	Description
<CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
connection_handle	integer	The connection handle identifies the connection.

6.4.4 Default Client Profile (AT*ADDCP)

DT50 Low Energy Devices can only be set to option 14, and "Store in startup database" must always be set to 1.

AT Command	Description
AT*ADDCP?<CR>	This command reads the default client profile. The default client profile is the profile that the Serial Port Adapter uses when it establishes a connection, in data mode, to the default remote peer(s).
AT*ADDCP=<role_and_profile>,<store_in _startup_database><CR>	This command writes the default client profile. The default client profile is the profile that the Serial Port Adapter uses when it establishes a connection, in data mode, to the default remote peer(s).

Responses	Description
<CR><LF>*ADDCP:<role_and_profile><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role_and_profile	Enumerator	0: Serial Port Profile (DevA role)
		1: Dial-Up Networking Profile (DT role)
		3: Serial Port and Dial-Up Networking Profile
		4: File Transfer Profile
		5: Object Push Profile
		6: Serial Port and File Transfer Profile
		7: Serial Port and Object Push Profile
		8: Personal Area Network - PANU (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		9: Personal Area Network - NAP (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		11: Serial Port and Personal Area Network - PANU (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		12: Serial Port and Personal Area Network - NAP (To be used in Extended Data Mode. See "Serial Port Adapter - Extended

		Data Mode" for details) 14: Serial Port Profile Bluetooth classic and Serial Port Service Bluetooth Low Energy 255: No profile (default value)
store_in_startup_data base	Enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.4.5 Default Server Profile (AT*ADDSP)

DT50 Low Energy Devices can only be set to option 14, and "Store in startup database" must always be set to 1.

AT Command	Description
AT*ADDSP?<CR>	This command reads the default server profile. The default server profile is the profile that other devices can connect to when the Serial Port Adapter is in data mode. The default server profile is activated when the Serial Port Adapter is moved to data mode if no connection exists. The default server profile is deactivated when the Serial Port Adapter is moved from data mode to AT mode.
AT*ADDSP=<role_and_profile>, <store_in_startup_database><CR>	This command writes the default server profile. The default server profile is the profile that other devices can connect to when the Serial Port Adapter is in data mode. The default server profile is activated when the Serial Port Adapter is moved to data mode if no connection exists. The default server profile is deactivated when the Serial Port Adapter is moved from data mode to packet mode.

Responses	Description
<CR><LF>*ADDSP:<role_and_profile><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role_and_profile	Enumerator	0: Serial Port Profile (DevB role) (default value) 1: Dial-Up Networking Profile (Gateway role) For the serial port and dial-up networking profiles, the number of services is equal to the maximum number of slaves. 3: Serial Port Profile (DevB role) and Dial-Up Networking (Gateway role) The number of services for each profile is equal to the number of slaves divided by two rounding up. E.g. if three slaves are allowed, there will be two SPP and two DUN services

		registered
		4: File Transfer Profile
		5: Object Push Profile
		6: Serial Port and File Transfer Profile
		7: Serial Port and Object Push Profile
		8: Personal Area Network - PANU (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		9: Personal Area Network - NAP (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		11: Serial Port and Personal Area Network - PANU (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		12: Serial Port and Personal Area Network - NAP (To be used in Extended Data Mode. See "Serial Port Adapter - Extended Data Mode" for details)
		14: Serial Port Service Bluetooth Low Energy + Serial Port Profile (DevB role)
		255: No profile
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle.
		1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.4.6 Read Service Name (AT*ADRSN)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADRSN=<role_and_profile><CR>	This command reads the service name of the selected role and profile.
	The service name is read by a remote SPA with AT*ARSS.

Responses	Description
<CR><LF>*ADRSN:<service_name><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role_and_profile	Enumerator	0: Serial Port Profile (DevB role)
		1: Dial-Up Networking Profile (Gateway role)
		4: File Transfer Profile
		5: Object Push Profile
		8: Personal Area Network - PANU
		9: Personal Area Network - NAP

service_name	string	The service name can be max 15 characters.

6.4.7 Write Service Name (AT*ADWSN)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADWSN=<role_and_profile>,<service_name>,<store_in_startup_database><CR>	This command writes the service name for the selected role and profile. If an empty string is provided the default service name is used("SPP", "DUN"). Note that the module must be reset before the changes take place. Hence, "store_in_startup_database" must be set to 1.

Responses	Description
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
role_and_profile	Enumerator	0: Serial Port Profile (DevB role) 1: Dial-Up Networking Profile (Gateway role) 4: File Transfer Profile 5: Object Push Profile 8: Personal Area Network - PANU 9: Personal Area Network - NAP
service_name	string	The service name can be max 15 characters.
store_in_startup_database	Enumerator	0: Invalid value 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. The module must be reset for command to take affect.

6.4.8 Max No Of Remote Peers (AT*ADMRP)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADMRP?<CR>	For some Serial Port Adapters it is possible to have more than one remote peer defined. This command reads the maximum number of allowed remote peers.

AT Command	Description
AT*ADMRP?<CR>	For some Serial Port Adapters it is possible to have more than one remote peer defined. This command reads the maximum number of allowed remote peers.

Responses	Description
<CR><LF>*ADMRP:<max_no_of_remote_peers> <CR><LF>OK<CR><LF>	Successful response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
max_no_of_remote_peers	integer	The maximum number of allowed remote peers.

6.4.9 No Of Remote Peers (AT*ADNRP)

Dual Mode devices:

> Supports max 7 remote peers if Bluetooth Low Energy is disabled (AT*AGLE).
> Supports max 3 remote peers if Bluetooth Low Energy is enabled (AT*AGLE).

Low Energy devices:

> Supports max 1 remote peer.
> Module must be restarted for the AT command to take effect. Hence, store_in_startup_database must always be set to 1.

AT Command	Description
AT*ADNRP?<CR>	For some Serial Port Adapters it is possible to have more than one remote peer defined. This command reads the number of remote peers defined.
AT*ADNRP=<no_of_remote_peers>, <store_in_startup_database><CR>	This command writes the number of remote peers defined. The number of remote peers may not be greater than the number returned by the Read_Max_No_Of_Remote_Peers command. After writing the number of remote peers the host must use the Write_Default_Remote_Peer command to write all the remote peers to the Serial Port Adapter.

Responses	Description
<CR><LF>*ADNRP:<no_of_remote_peers> <CR><LF>OK<CR><LF>	Successful read response.
<CR><LF >OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
no_of_remote_peers	integer	The number of remote peers currently defined. The default value is 0.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the

	Serial Port Adapter will be updated.

6.4.10 Default Remote Peer (AT*ADRDRP/AT*ADWDRP)

The remote peer command works for both Bluetooth classic and Bluetooth Low Energy. To configure a Bluetooth Low Energy remote peer, the <connect_scheme> bit 8 must be set.

AT Command	Description
AT*ADRDRP=< peer_id ><CR>	This command reads the Bluetooth device address and device name of the selected default remote peer (peer id).
AT*ADWDRP=<peer_id>,<bd_addr>, <connect_scheme>, <update_remote_peer_on_incoming>, <device_name>, <store_in_startup_database><CR>	This command writes the Bluetooth device address, connect scheme and device name of the currently selected default remote peer.

Responses	Description
<CR><LF>*ADRDRP:<bd_addr>,<connect_scheme>, <update_remote_peer_on_incoming>, <device_name><CR><LF>OK<CR><LF>	Successful read response.
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error response.

Parameters	Type	Value
peer_id	integer	The peer ID can be between 0 and the value written by the Write_No_Of_Peers command -1 or read by the Read_No_Of_Peers command -1.
bd_addr	Bd_Addr	Bluetooth device address of the default remote peer.
connect_scheme	integer	This parameter is a bit field. Bit 0 is the least significant bit. Each bit is defined as follows: Bit 0: Connect on data Try to connect to default remote peer on data traffic. Bit 1: Always connected Always try to be connected to the default remote peer when in data mode. Bit 2: External connect Try to connect to default remote peer on external signal. The external signal is implementation specific, e.g. some Serial Port Adapters might have a button. Note that the external signal/button must not be pressed more than 1 second. Bit 3: Connect to name On reset, try to connect to a device with the name given by the <device_name> parameter. The <device_name> may specify a part of, or the full name of the remote device. The SPA will at reset perform an inquiry followed by name requests on devices found during inquiry until a matching device is found. If no matching device is found the SPA will stop this procedure and operate as normal. If a matching device is found, the SPA will

		try to connect to this device. If no matching device is found, this is seen as an LED error indication.
		Bit 4: Reserved
		Bit 5:Connect to name permanent
		The functionality is the same as for " Connect to name" except that a matching device will be stored in the startup database and used as remote peer even after a reset. The <bd_addr> parameter must be set to 000000000000 for the SPA to start the "connect to name" procedure. Any other address will be interpreted as the remote peer is already found and no connect to name procedure will be initiated.
		Bit 6:Easy connect
		The SPA will search for and try to any device at close range. At reset the SPA will perform an inquiry at low output power (-36dBm). If one single device is found during the inquiry then the SPA will try to connect to it and store it as a remote peer in the startup database. Note that if several devices are found, then the SPA will not initiate a connection. The <bd_addr> parameter must be set to 000000000000 for the SPA to start the easy connect procedure. Any other address will be interpreted as the remote peer is already found and "no easy connect" procedure will be initiated.
		Bit 7:Connect to service name
		The SPA will search for and try to connect to a Serial Port Profile service with the name specified by the <device_name> parameter.
		Bits 3,5,6 and 7 cannot be combined.
		Bit 8: Bluetooth Low Energy remote peer.
		Bit 9-15: Reserved for future use.
		Advanced:
		Bit 16-23: Always connected period
		This field can be used to define the period for connection attempts for always connected (Bit 1 set). If not set or set to 0 then the default period 10s is used. Time in seconds.
		Bit 24-31: Page timeout
		The page timeout. This field defines for how long the module tries to connect to the remote device. The time is defined in units of 80ms. For example, to set the page time out to 1,040s choose the value 0x0D. If not set or set to 0 then the default page timeout 5,12s is used.
update_remote_ peer_on_incoming	enumerator	1: Every time a remote device connects to the selected DefaultServerProfile, update the remote peer device address to the device address of the connecting device. The new remote peer device address will be stored in the startup database. Only one of all the remote peers can use this feature.
		0: Do not update the remote peer device address on incoming

		connections.
device_name	string	Maximum 240 characters.
store_in_startup_data base	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

Device	Special Constraint
Dual Mode	For Bluetooth Low Energy only "connect on data", "always connected" and "external connect" is valid. Others are not valid.
Low Energy	Warning! Setting a remote peer in cB-OLS425/426 will enable directed advertisement. When directed advertisement is activated it will lock up the module CPU for 1,28 s, implying that the module is not receptive to any input during this time. If connect_scheme "always connected" is used, this means the module will be non-receptive for 1,28 s in each period of attempt. In this state, the module can for example not enter AT-mode.
	Only Bluetooth Low Energy remote peers can be configured. Hence, the <connect_scheme> bit 8 must be set.
	The "connect on data", "always connected" and "external connect" connect_schemes are valid. Others are not valid.
	The advanced settings for the connect_scheme are not valid.
	update_remote_peer_on_incoming and device_name are not supported.
	Module must be restarted for the AT command to take effect. so, store_in_startup_database must always be set to 1.

6.4.11 Wireless Multidrop Configuration (AT*ADWM)

Dual mode modules with Bluetootoh Low Energy Disabled support up to 7 links.

Dual mode modules with Bluetooth Low Energy Enabled are restricted as follows:

- Repeater is not supported.
- Max 3 links allowed in total(Bluetooth Classic plus Bluetooth Low Energy central) for version =< v5.2.1
- Max 6 links allowed in total(Bluetooth Classic plus Bluetooth Low Energy central) for version => v5.3.0 for -14/16
- Max 7 links allowed in total(Bluetooth Classic plus Bluetooth Low Energy central) for version => v5.3.0 for -24/26
- Peripheral can handle one Bluetooth Low Energy link

Module must be restarted for the AT command to take effect. Hence, store_in_startup_database must always be set to 1.

DT50 Low Energy devices support only point to point connection and will not respond to this command.

AT Command	Description
AT*ADWM?<CR>	This request returns whether or not the Wireless Multidrop™

	feature has been enabled. When the Wireless Multidrop™ has been enabled; all data sent to the Serial Port Adapter in data mode will be forwarded to all connected devices. Data received from a remote device will be forwarded to the host. If the Auto_Forward parameter is set to TRUE is will also forward all received data to all the other connected devices. Connections to remote devices can be established using three methods: Let the Serial Port Adapter connect to the desired devices when it is in data mode. The host uses the request Write_No_Of_Remote_Peers and Write_Default_Remote_Peer to tell the Serial Port Adapter how many devices to connect to, which devices to connect to and when to connect to the defined devices. A server has been enabled using the request Write_Default_Server_Profile and one or several devices connect to this server. One or several connections are established in packet mode using the request Connect_To_Serial_Service_Data_Mode. After all desired connection have been setup by the host it moves to data mode. When the Wireless Multidrop™ has been disabled; only one connection at a time can be established. A maximum of one remote peer can be defined.
AT*ADWM=<enable>, <auto_forward>, <store_in_startup_database> <CR>	Writes the Wireless Multidrop™ configuration.

Responses	Description
<CR><LF>*ADWM:<enabled>, <auto_forward><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
enabled	enumerator	0: Wireless Multidrop™ disabled (default value). 1: Wireless Multidrop™ enabled enabled for maximum number of slaves. 2-7: Wireless Multidrop™ enabled for the parameter "enabled" number of slaves. Hence, if 2 is selected, only 2 slaves are allowed.
auto_forward	enumerator	0: Data received from a connected device will only be forwarded to the host (default value). 1: Enables repeater functionality which means that no data will be transmitted to or from the host. Data received from one Bluetooth connection is

		transmitted on all others (if any). A module configured as a repeater cannot use extended data mode.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.4.12 Android Setting (AT*ADUUID)

Normally, a Serial Port service class UUID is set in the SPP service record. A remote device typically use the service class UUID to retrieve the service name and a server channel in order to be able to set up the connection to the correct service. The Serial Port service class UUID is defined in the Bluetooth specification (Assigned Numbers Service Discovery) and it is the same for all SPP devices.

With Android phones, the service class UUID is set by each Android application and it does not need to apply to the Serial Port service class UUID. Instead any 128-bit number is used to identify the Android application. The idea is to increase the number of Serial Port services from 32 which is the limitation using server channels to 2^16 different numbers. The selected number is not registered anywhere but hopefully it will not collide with other Android applications. Of course it is still possible to set the standard Serial Port Service Class UUID to work with standard Serial Port devices. Note that there may only be one Android application that registers this number for this to work

The Serial Port Adapter accept one additional 128 bit service class UUID to support also Android phones. The 128 bit UUID is set using the command AT*ADUUID (see AT command specification for details). This UUID is used by the Serial Port Adapter both for server and client functionality and it must match the UUID of the requested Android application.

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADUUID?<CR>	Reads the Android UUID
AT*ADUUID=<uuid>,<store_in_startup_database><CR>	Writes the Android UUID.

Responses	Description
<CR><LF>*ADUUID:<uuid><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
uuid	byte array	Android App UUID 128 bit service class UUID

		For example 00112233445566778899AABBCCDDEEFF A <uuid> value of 0 will remove the UUID configuration.
store_in_startup_database	enumerator	Must be 1. The Serial Port Adapter will remember the setting between power cycles.

6.4.13 Device Identifier Record (AT*ADDIP)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*ADDIP?<CR>	Reads the Device Identifier Record.
AT*ADDIP=<vendor_id>, <vendor_id_source>, <product_id>, <version>, <startup_database><CR>	Writes the Device Identifier Record.

Responses	Description
<CR><LF>*ADDIP:<vendor_id>,<vendor_id_source>, <product_id>,<version><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
vendor_id	integer	A UInt16 to uniquely define the vendor of the device. The device vendor id can be assigned by the Bluetooth SIG or by the USB Implemeters forum. By default it is set to 0x0071, which is the connectBlue vendor id defined by the SIG.
vendor_id_source	integer	A Uint16 that defines from where the <vendor_id> was assigned. If the <vendor_id> was assigned by the SIG it is set to 0x0001 or if the <vendor_id>was assigned by the USB Implementers forum it is assigned to 0x0002. By default it is set to 0x0001.
product_id	integer	A Uint16 that shall identify different products from the same vendor. By default it is set to 0x0106.
version	integer	A Uint16 with the structure of 0xJJMN for version JJ.M.N. JJ is the major version, M is the minor version and N is the sub-minor version. By default it will be the firmware version of the module. Hence, for firmware version 4.0.0 it will be 0x0400.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings

	database in the Serial Port Adapter will be updated.

6.4.14 GATT Device Information Service (AT*ADDIS)

Not supported on DT50 Dual Mode Modules.

AT Command	Description
AT*ADDIS?<CR>	Reads the Device Information Service configuration.
AT*ADDIS=<manufacturer>, <model_number>, <fw_revision>, <sw_revision>, <startup_database><CR>	Writes the Device Information Service configuration. An omitted value means that the default value is used.

Responses	Description
<CR><LF>*ADDIS:<manufacturer>, <model_number>, <fw_revision>, <sw_revision><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response.
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
manufacturer	string	String identifying the manufacturer of the device. Default value is set to "connectBlue".
model_number	string	String identifying the model_number of the device.
fw_revision	string	String identifying the firmware revision of the device.
sw_revision	string	String identifying the firmware revision of the device.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.5 Informational Commands

6.5.1 Read Local BD ADDR (AT*AILBA)

AT Command	Description
AT*AILBA?<CR>	Reads the Bluetooth Device Address of the local device.

Responses	Description
<CR><LF>*AILBA:<bd_addr>,<CR><LF>OK<CR><LF>	Successful response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
bd_addr	Bd_Addr	Local Bluetooth device address.

6.5.2 Read Local Version Information (AT*AILVI)

AT Command	Description
AT*AILVI?<CR>	This command reads the local version information to the Serial Port Adapter.

Responses	Description
<CR><LF>*AILVI:<manufacturer>, < sw_ver>, <host_stack_sw_ver>, <link_manager_sw_ver>, <bluetooth_hardware_manufacturer><CR><LF>OK<CR><LF>	Successful response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
manufacturer	string	Serial Port Adapter manufacturer.
sw_ver	string	Serial Port Adapter software version.
host_stack sw_ver	string	Bluetooth host stack version.
link_manager_sw_ver	string	Bluetooth link manager version.
bluetooth_hardware_manufacturer	string	Bluetooth hardware manufacturer.

6.6 Miscellaneous Commands

6.6.1 RS232 Settings (AT*AMRS)

AT Command	Description
AT*AMRS?<CR>	This command reads current RS232 settings from the Serial Port Adapter.
AT* AMRS=<baud_rate>, <data_bits>, <stop_bits>, <parity>, <flow_control>, <change_after_confirm>, <store_in_startup_database><CR>	This command applies new RS232 settings to the Serial Port Adapter. If 5, 6 or 7 data bits are selected the Serial Port Adapter will not change its RS232 settings until the next power cycle. If the command is successful, the baud rate is changed after the response. Wait 100ms from that the response is received before sending a new command to the Serial Port Adapter.

Responses	Description
<CR><LF>*AMRS:<baud_rate>, <data_bits>, <stop_bits>, <parity>, <flow_control><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
baud_rate	enumerator	Standard baud rates: 1: 300 2: 1200 3: 2400 4: 4800 5: 9600 6: 19200 7: 38400 8: 57600 (default value) 9: 115200 10: 230400 11: 460800 12: 921600 Non standard baud rates: 17: 7200 18: 31250 19: 75000 20: 93750 21: 136000 22: 187500 23: 230000 24: 125000 25: 312500 26: 625000 Special baudrates: A value above 256 will be interpreted as a baudrate in raw format. If the SPA is able to generate the baudrate with less than 2% error then the baudrate is accepted. If not, the baudrate is not accepted and error is returned.
data_bits	enumerator	1: 8 data bits (default value) 2: 7 data bits 3: 6 data bits 4: 5 data bits
stop_bits	enumerator	1: 1 stop bit (default value) 2: 2 stop bits
parity	enumerator	1: no parity (default value) 2: odd parity 3: even parity
flow_control	enumerator	1: CTS/RTS used for flow control (default value) 2: CTS/RTS not used.
change_after_confirm	integer	0: New settings takes affect after a reset. 1: New settings takes affect directly after confirmation of command.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting

	between power cycles. The settings database in the Serial Port Adapter will be updated.

Module	Special Constraint
Dual Mode Modules	5-7 data bits not supported. Baud rate of 300 bits/s not supported. In Extended Data Mode, the parameter <change_after_confirm> must be set to 0. Hence, it is not possible to change the baud rate without resetting the module.
Low Energy Only Modules	Supported values: baud rates: (1200 - 115200) (Warning! 115200 is not recommended) data bits: 1 (8 bits) stop bits: 1-2 (1-2 bits) parity: 1 (no parity) flow control: 1 (CTS/RTS) and 2 (off) Module must be restarted for the AT command to take effect. Hence, store_in_startup_database must always be set to 1.

6.6.2 Serial Interface Type (AT*AMSIT)

Not supported in DT50 Low Energy devices

AT Command	Description
AT*AMSIT?<CR>	This command reads the serial interface type currently used.
AT*AMSIT=<serial_interface_type>, <store_in_startup_database><CR>	This command writes the serial interface type currently used. Note that the Serial Port Adapter does not change serial interface type until the next time it is restarted.

Responses	Description
<CR><LF>*AMSIT:<serial_interface_type> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
serial_interface_type	enumerator	1: RS232 (default value) 2: RS422

		3: RS485
		4-255: Reserved for future use.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.3 Allow Configuration Over Bluetooth (AT*ACCB)

DT50 Low Energy devices must be restarted for change to take effect, therefore store_in_startup_database must always be set to 1.

AT Command	Description
AT*ACCB?<CR>	Reads allow configuration over Bluetooth. If enabled, it is possible to read/write AT commands over air.
AT*ACCB= <allow_configuration_over_bluetooth>, <store_in_startup_database><CR>	Writes allow configuration over Bluetooth.

Responses	Description
<CR><LF>*ACCB:<allow_configuration_over_bluetooth> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
allow_configuration_over_bluetooth	enumerator	0: Configuration over Bluetooth is not allowed (default value). 1: Configuration over Bluetooth is allowed.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.4 Power Save Mode (AT*AMPM)

In Dual Mode devices, mode 4 is not supported.

In Low Energy Devices, only modes 1 and 3 are supported.

All devices must be restarted for change to take effect, therefore store_in_startup_database must always be set to 1.

AT Command	Description
AT*AMPM?<CR>	This command reads the current power save mode setting.
AT*AMPM=<mode>, <store_in_startup_database><CR>	This command writes a new power save mode setting to the Serial Port Adapter.

Responses	Description
<CR><LF>*AMPM:<mode> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
mode	enumerator	1: Allow only online mode. The Serial Port Adapter will never enter sleep or stop mode to save power. 2: Allow sleep mode (default value). The Serial Port Adapter will enter sleep mode when possible to save power. 3: Allow sleep mode and stop mode. The Serial Port Adapter will enter sleep or stop mode when possible to save power. 4: As online mode except that the internal clock will always be 32 MHz. 5 - 255: Power modes reserved for future use.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.5 Max Output Power (AT*AMMP)

All devices must be restarted for change to take effect, therefore store_in_startup_database must always be set to 1.

AT Command	Description
AT*AMMP?<CR>	Read the maximum output power used by the Serial Port Adapter when communicating.
AT*AMMP=<max_output_power>, <store_in_startup_database><CR>	Set the maximum output power to be used by the Serial Port Adapter when communicating.

Responses	Description
<CR><LF>*AMMP:<max_output_power> <CR><LF>OK<CR><LF>	Successful read response

<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
max_output_power	integer	255: Use the highest output power supported by the Serial Port Adapter as the maximum output power (default value). 128-m: -m dBm (m<30) 128: 0 dBm 128+n: n dBm (n<30) For example, a value of 130 means +2 dBm.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.6 Esc Sequence Timing (AT*AMET)

DT50 Low Energy devices must be restarted for change to take effect, therefore store_in_startup_database must always be set to 1.

AT Command	Description
AT*AMET?<CR>	For an escape sequence to be valid, a period of no data activity is required before and after the escape sequence. This command reads the minimum time of no data activity required before and after the escape sequence.
AT*AMET=<min_before_time>, <min_after_time>, <store_in_startup_database><CR>	For an escape sequence to be valid, a period of no data activity is required before and after the escape sequence. This command sets the minimum time of no data activity required before and after the escape sequence.

Responses	Description
<CR><LF>*AMET:<min_before_time>, <min_after_time> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
min_before_time	integer	50-5000 ms.

		The default value is 1000.
min_after_time	integer	50-5000 ms. The default value is 1000.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.7 Watchdog Settings (AT*AMWS)

DT50 Low Energy devices do not use the parameters <bt_connect_timeout> and <bt_disconnect_reset>. Low energy devices must be reset for the command to take effect, so store_in_startup_database must always be set to 1.

AT Command	Description
AT*AMWS?<CR>	Read current watchdog settings. Watchdog settings are only active in data mode and not AT mode.
AT*AMWS=<bt_write_timeout>, <bt_inactivity_timeout>, <bt_connect_timeout>, <bt_disconnect_reset>, <reset>, <store_in_startup_database><CR>	Write watchdog parameters. The watchdog functionality is only active in data mode and not AT mode. Furthermore, the power mode must also be set to online (see AT*AMPM).

Responses	Description
<CR><LF>*AMWS: <bt_write_timeout>, <bt_inactivity_timeout>, <bt_connect_timeout>, <bt_disconnect_reset>, <reset><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
bt_write_timeout	integer	Time in seconds before SPA disconnects if out of credits. 0: Disabled > 0: Timeout in seconds (default value 10s) Note: AT*AMWFM may be used to set timeout in milliseconds instead.
bt_inactivity_timeout	integer	Time in seconds before SPA disconnects if no activity. 0: Disabled (default value) > 0: Timeout in seconds Note: AT*AMWFM may be used to set timeout in

		milliseconds instead.
bt_connect_timeout	integer	Max connection time in seconds before a connection is terminated. 0: Disabled (default value) > 0: Timeout in seconds Note: AT*AMWFM may be used to set timeout in milliseconds instead.
bt_disconnect_reset	integer	0: Disabled (default value) 1: An SPA acting as a server will reset on a terminated connection.
reset	integer	Will always read a value of 0. If written, 1 means reset of module. Other parameters are then ignored.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.8 DTR DSR Settings (AT*AMDS)

For dual mode modules, DSR mode 2 cannot be configured if module is configured for stop mode (see AT*AMPM).

Not supported on DT50 Low Energy devices. (see **AT*AMDS2)**

AT Command	Description
AT*AMDS?<CR>	Read current DTR/DSR configuration.
AT*AMDS=<dtr_cfg>, <dsr_cfg>, <store_in_startup_database><CR>	Write DTR/DSR configuration.

Responses	Description
<CR><LF>*AMDS: <dtr_cfg>, <dsr_cfg><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
dtr_cfg	integer	Configuration of module behavior on the UART DTR pin. 1: DTR is activated when module is started. (default value) 2: DTR is active if there is a Bluetooth connection. If there is no connection, DTR is inactive.
dsr_cfg	integer	Configuration of module behavior on the UART DSR

		pin. 1: DSR is ignored. (default value) 2: If DSR goes from inactive to active, the module will try to connect to a remote peer if a remote peer is configured. If DSR goes from active to inactive, the module will disconnect. For the remote peer, the external connect scheme must be set. See" Write Default Remote Peer command".
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.9 DTR DSR Settings Low Energy (AT*AMDS2)

Configure the low energy module to let the host control the module operation using the DTR and DSR pins of the UART interface to achieve a customized behavior. The DTR pin is output from the module and the DSR pin is input to the module.

Module must be restarted for the AT command to take effect. Hence, store_in_startup_database must always be set to 1.

The wake-up time from stop mode is 150µs. This means that when DSR is used to wake the module from stop mode the module is ready to receive data on the UART after 150µs.

ONLY supported on DT50 Low Energy. For other devices see AT*AMDS

AT Command	Description
AT*AMDS2?<CR>	Read current DTR/DSR configuration.
AT*AMDS2=<dtr_cfg>, <dsr_cfg>, <store_in_startup_database><CR>	Write DTR/DSR configuration.

Responses	Description
<CR><LF>*AMDS2: <dtr_cfg>, <dsr_cfg><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
dtr_cfg	integer	UART DTR pin configuration (module output pin). *Currently this value is ignored and the "AT*AMDS2?" command always returns 0.* Default behavior is that DTR is active if there is a

			Bluetooth connection. If there is no connection, DTR is inactive.
dsr_cfg	integer		UART DSR pin configuration (module input pin).

This parameter is a bit field. Bit 0 is the least significant bit.

Bit 0 and 1 (Default 11): DSR control of Stop Mode

00: DSR does not affect stop mode.
11: When DSR is active, stop mode is not allowed and the module will leave stop mode. When DSR is inactive, stop mode is allowed.

Note that the module may not enter stop mode just because the host allows it. There may be internal conditions that does not allow it or delays it.

When the module power mode is not set to *stop mode* (see AT*AMPM) these bits have no effect, since the module is always awake. Please note that the module must be awake to be able to receive data on the UART.

Bit 2 and 3 (Default 00): DSR control of Discoverability and Connectability

00: DSR does not affect discoverability or connectability.
11: When DSR is active, discoverability and connectability are enabled. When DSR is inactive, discoverability and connectability are disabled**.**

Discoverability is only affected if *general discoverability* (see AT*AGDM) is enabled and connectability is only affected if module is configured to be*connectable* (see AT*AGCM).

Bit 4 (default 0): DSR control of External Connect

0: External connect is not affected.
1: If module is configured for external connect (see AT*ADWDRP), a DSR transition from inactive to active will trigger the connection attempt.

Bit 5 (default 0): DSR control of Disconnection

0: LE connection is not affected by DSR
1: A DSR transition from active to inactive will trigger a disconnect.

| store_in_startup_database | enumerator | 0: The setting will only be valid for the current power cycle. |
| | | 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated. |

6.6.10 Power Save Feature Low Energy (AT*AMPSF)

Configure the low energy module to use different power save features.

Module must be restarted for the AT command to take effect. Hence, store_in_startup_database must always be set to 1.

ONLY supported on DT50 Low Energy devices.

AT Command	Description
AT*AMPSF?<CR>	Read current power save feature configuration.
AT*AMPSF=<cfg>, <store_in_startup_database><CR>	Write power save feature configuration.

Responses	Description
<CR><LF>*AMPSF: <cfg><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
cfg	integer	Power save feature configuration.
		This parameter is a bit field. Bit 0 is the least significant bit.
		Bit 0 and 1 (default 00):Connection control of Stop Mode
		00: Stop mode is not affected by the connection.
		11: When the connection is active, stop mode is not allowed. When disconnected, stop mode is allowed.
		When the module power mode is not set to *stop mode* (see AT*AMPM) these bits have no effect, since the module is always awake. Please note that the module must be awake to be able to receive data on the UART.
.store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle.
		1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.11 Link Policy (AT*AMLP)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AMLP?<CR>	Read current Link Policy.
AT*AMLP=<link_policy>, <parameter>, <store_in_startup_database> <CR>	Write link policy. The link policy can be chosen to optimize the link for a specific application. The link policy can be chosen to reduce power consumption, get faster response times, increase the range or to optimize the SPA as either sender or receiver. **Note!** **Using other link policies than the default may lead to interoperability problems. Verify that the chosen link policy works with other devices your application is intended to interoperate with. If not, use the default link policy.** Link policy 3,4,10,12 gives the shortest response times. Link policy 8 combined with stop mode (AMPM: 3) gives the lowest power consumption. When using a baud rate of 460 kbps or more on the serial interface, a combination of link policy 2 on the sender and link policy 1 on the receiver gives the highest throughput. When using a slower baud rate, then the default link policy gives equally high throughput. If the remote device rejects the link policy requested by the SPA, then the red LED gives an error indication. If the remote device rejects the link policy, then the default link policy is used.

Responses	Description
<CR><LF>*AMLP: <link_policy>, <parameter><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
link_policy	integer	Link policy configurations: 0: Default, No sniff, Exact packet configuration depends on <parameter> and module type. 1: Receiver, No sniff, 1 slot Basic Rate (BR) packets only. 2: Sender, No sniff, 5 slot packets (including EDR packets if supported). 3: QoS, No sniff, Basic Rate (BR) packets only, Short poll interval 4: Sniff, interval 10ms, 1 slot Basic Rate (BR) packets 5: Sniff, interval 50ms, 1 slot Basic Rate (BR) packets 6: Sniff, interval 100ms, 1 slot Basic Rate (BR) packets

		7: Sniff, interval 200ms, 1 slot Basic Rate (BR) packets 8: Sniff, interval 500ms, 1 slot Basic Rate (BR) packets The link policies with sniff may be used to get a link with a specific response time or to decrease the power consumption. 9: Long range, DM1 packets 10: Long range, DM1 packets and QoS 11. Long range, all DM packets 12. Long range, all DM packets and QoS 13. Basic Rate (BR) packets only The link policies using only DM1 packets extend the range of the SPA on the cost of a decreased data throughput. Wireless Multidrop™ QoS or Sniff mode is not activated until maximum number of links are connected. This is to ensure that page scan is allowed and that every connection can be setup. If a link goes down the QoS or Sniff mode is disabled until all links are setup again.
parameter	integer	This parameter has different meaning for different link policies and for link policy 0 also module types. *Default link policy (0)* OBS411, OBS419 0 (default): connectBlue RSSI based packet control is enabled with both EDR and BR packets. 1: connectBlue RSSI based packet control is disabled. OBS433, OBS421 0 (default): connectBlue RSSI based packet control is enabled with BR packets only. 1: connectBlue RSSI based packet control is disabled. 3: connectBlue RSSI based packet control is enabled with EDR packets only (faster for short range). OBS410, OBS418 0 (default): Basic Rate 1 and 3 slot packets only. OEMSPA3xx 0 (default): Basic Rate (BR) packets only. *Link policies with sniff (4-8):* Bit 0: Exit sniff on data activity. Only used when link policy supports sniff. If set the SPA will try to temporarily exit sniff when receiving data on the serial interface. When no data has been received on the serial interface for 1s, then the link will be put back into sniff mode. If not set, then the link will always be in sniff. Using exit sniff on data activity may be useful when using longer sniff intervals since these links have a low throughput.

		Link policies with QoS (3,10,12): If set to 0 then the shortest pollinterval possible is used. If different from 0 then the value defines the pollinterval. If multidrop is enabled, the pollinterval will not change until the max numbers of clients are connected. *For the other link policies this parameter has no meaning and shall be set to 0.* **Only OEMSPA333* *Link policies with All packet sizes (0, 2, 3):* If set to 1, then the device is optimized for throughput. Note, for link policy 3 a value of 1 will also set the shortest possible pollinterval.
store_in_startup_da tabase	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.12 Feature Mask (AT*AMRFM/AT*AMWFM)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AMRFM=<feature_mask_id><CR>	Read current feature mask.
AT*AMWFM=<feature_mask_id>, <mask_value>, <store_in_startup_database><CR>	Write feature mask. A set of special features can be enabled/disabled using this command. The Serial Port Adapter must be reset for a new feature mask to take affect.

Responses	Description
<CR><LF>*AMRFM: <feature_mask_id>, <mask_value><CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
feature_mask_id	integer	Feature mask to write. Currently only feature mask 1 is used.
mask_value	integer	Feature mask 1: *Bit 0: Disable LEDs in stop mode* This feature disables the LEDs when the Serial Port Adapter is in stop mode. If the Serial Port Adapter has an active connection, then the Blue LED will be

		enabled.
		Bit 1: Enable fast connection. Increased page scan activity for faster response to incoming connections.
		Bit 2: Enable fast discovery. Increased inquiry scan activity for faster detection of the device during inquiry or device discovery.
		Bit 3-4: Reserved
		Bit 5: Windows 7 authentication work-around Solves an authentication problem detected on some Windows 7 PCs.
		Bit 6: Reserved
		Bit 7: UART fast poll This will improve latency but may also increase the power consumption slightly. For iAP1 throughput will also be improved.
		Bit 8: Force un-sniff on data activity. If there is data to transmit and sniff is active, the module will leave sniff mode and then transmit data no matter what link policy that is set.
		Bit 9: Delay DTR connect mode.
		Bit 10: Extended Data Mode start event. If the module is started or restarted, the start event is sent in Extended Data Mode.
		Bit 11-13: Reserved
		Bit 14: Power reduction. Reduces power consumption. Suitable for applications running baudrates up to 115200. cB-OBS421 based modules only.
		Bit 15: Watchdog milliseconds. Watchdog timeouts set with AT*AMWS will be interpreted as milliseconds instead of seconds.
		Bit 16-17: *Reserved*
		By default all bits are set to 0.
store_in_startup_data base	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.13 Channel Map (AT*AMCM)

Not supported on DT50 Low Energy Devices.

AT Command	Description
AT*AMCM? <CR>	Read static channel map. Does not include any changes caused by the adaptive

	frequency hopping algorithm. Hence, the channel map is the same for all channels in the case of Wireless Multidrop™. Also see "Dynamic Channel Map".
AT*AMCM= <channel0to15>, <channel16to31>, <channel32to47>, <channel48to63>, <channel64to78>, <store_in_startup_database><CR>	Write static channel map. This command can be useful to avoid channels that are already preoccupied by other technologies. However, the adaptive frequency hopping algorithm works very well and it is recommended not to use this command. Each channel in the spectrum is represented by a bit in the bit masks passed as parameters to this command. Set the bit to enable the channel and clear the bit to disable the channel. A minimum of 20 channels must always be enabled. The channel map only has effect when the Serial Port Adapter acts as master.

Responses	Description
<CR><LF>*AMCM:<channel0to15>, <channel16to31>,<channel32to47>, <channel48to63>,<channel64to78> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
channel0to15	Integer	Bit mask used to enable or disable channels 0 to 15 (Bit 0 = Channel 0). Default value is 0xFFFF.
channel16to31	Integer	Bit mask used to enable or disable channels 16 to 31. Default value is 0xFFFF. (Bit 0 = Channel 16)
channel32to47	Integer	Bit mask used to enable or disable channels 32 to 47 (Bit 0 - Channel 32). Default value is 0xFFFF.
channel48to63	Integer	Bit mask used to enable or disable channels 48 to 63 (Bit 0 = Channel 48). Default value is 0xFFFF.
channel64to78	Integer	Bit mask used to enable or disable channels 64 to 78 (Bit 0 = Channel 64). Default value is 0x7FFF.
store_in_startup_database	enumerator	0: The setting will only be valid for the current power cycle. 1: The Serial Port Adapter will remember the setting between power cycles. The settings database in the Serial Port Adapter will be updated.

6.6.14 Dynamic Channel Map (AT*AMRCM)

Not supported on DT50 Low Energy devices.

AT Command	Description
AT*AMRCM? <CR>	Read dynamic channel map. The dynamic channel map is the static channel map adjusted by the adaptive frequency hopping algorithm. The static channel map is the same for all channels but the dynamic channel map may differ between channels. Also see "Static Channel Map".

Responses	Description
<CR><LF>*AMRCM: <channel0to15>, <channel16to31>,<channel32to47>, <channel48to63>,<channel64to78> <CR><LF>OK<CR><LF>	Successful read response
<CR><LF>OK<CR><LF>	Successful write response
<CR><LF>ERROR<CR><LF>	Error message.

Parameters	Type	Value
channel0to15	Integer	Bit mask used to enable or disable channels 0 to 15 (Bit 0 = Channel 0). Default value is 0xFFFF.
channel16to31	Integer	Bit mask used to enable or disable channels 16 to 31. Default value is 0xFFFF. (Bit 0 = Channel 16)
channel32to47	Integer	Bit mask used to enable or disable channels 32 to 47 (Bit 0 - Channel 32). Default value is 0xFFFF.
channel48to63	Integer	Bit mask used to enable or disable channels 48 to 63 (Bit 0 = Channel 48). Default value is 0xFFFF.
channel64to78	Integer	Bit mask used to enable or disable channels 64 to 78 (Bit 0 = Channel 64). Default value is 0x7FFF.

6.6.15 Read / Write IO (AT*AMCIO / AT*AMRIO / AT*AMWIO)

IO Configuration is not yet implemented in DT50 Low Energy devices. The commands may not return an error in all cases, but they cannot be used to set the outputs or read the correct values from the inputs.

Note: On the Classic and Dual Mode devices, output 0 will be on by default when the module starts up.

AT Command	Description
AT*AMCIO=<io_pin>,<cfg><CR>	Configure IO for input or output.
AT*AMRIO=<io_pin><CR>	Read IO.
AT*AMWIO=<io_pin>,<value>,<CR>	Write IO.

Responses	Description
<CR><LF>OK<CR><LF>	Successful configuration or write response
<CR><LF>ERROR<CR><LF>	Error message.
<CR><LF>*AMRIO: <value><CR><LF>OK<CR><LF>	Successful read response.

Parameters	Type	Value
io_pin	Integer	IO pin to configure, read or write. DT50 Classic and DT50 Dual Mode: 10: Input 0 11: Input 1 12: Output 0 14: Output 1
cfg	Integer	IO pin configuration DT50 Classic and DT50 Dual Mode: Input 0 will work on startup, and will accept all 3 input configurations. Input 1 will always read as ON until explicitly set to configuration 2. This is required every time the device is restarted. Input 1 will only accept a configuration of 2. Output 1 will not accept any write commands until it is explicitly set to configuration 0. This is required every time the device is restarted. 0: Output Push-Pull 1: Input pull-up 2: Input pull-down 3: Input floating *Configuring an input pin as an output or an output pin as input will not return an error message in some cases, but the pin will not work properly unless set to the correct value.*
value	Integer	IO pin value to read or write. DT50 Classic and DT50 Dual Mode: On startup, output 0 will have a default value of "Active" 0: Inactive 1: Active See Electrical and Mechanical data sheet for details.

6.7 Events

6.7.1 Serial Connection Data Mode Closed (*ADCCO)

Not supported on DT50 Low Energy devices.

Event	Description
*ADCCO:<connection_handle>,<reason><CR><LF>	A connection to a remote device has been disconnected.

Event Parameters	Type	Value
connection_handle	integer	Identifies the connection.
reason	enumerator	0: Disconnected by command 1: Disconnected by link loss 255: Reason unknown

6.7.2 User Confirmation (*AGUC)

AT Command	Description
*AGUC:<bd_addr>,<numeric_value><CR><LF>	This event is used during bonding with security mode 6 to indicate that user confirmation of a numeric value is required. If the local and remote sides numeric values are equal a positive reply with AT*AGUC should be issued, otherwise a negative reply.

Event Parameters	Type	Value
bd_addr	Bd_Addr	The remote Bluetooth Device address
numeric_value	integer	This is an integer in the range of [0..999999].

6.7.3 User Passkey Display (*AGUPD)

AT Command	Description
*AGUPD:<bd_addr>,<passkey><CR><LF>	This event is used to indicate to the user a passkey to be entered on the remote device during a bonding procedure with security mode 5. The event should not be replied on.

Event Parameters	Type	Value
bd_addr	Bd_Addr	The remote Bluetooth Device address
passkey	integer	This is an integer in the range of [0..999999].

6.7.4 User Passkey Entry (*AGUPE)

AT Command	Description
*AGUPE:<bd_addr><CR><LF>	This event is used during bonding with security mode 7 to indicate that a passkey is required from the user. The event should be responded with AT*AGUPE.

Event Parameters	Type	Value

| bd_addr | Bd_Addr | The remote Bluetooth Device address |