

ABB TM BLUEAUDIO
USER GUIDE

1. Introduction

BlueAudio supports A2DP (source and sink), AVRCP (controller and target), headset and hands-free profiles defined in Bluetooth specification. Embedded with BlueAudio, end-user's product could work as a Bluetooth AV source, or work as a Bluetooth stereo headset that provide users with the dual capability of listening music in a wireless mode as well as answering phone calls that can be transferred to the headset from their bluetooth enabled cell phone, even when music is being streamed.

This document illustrates use cases of link establishment, call handling and AV remote controlling; it also gives detailed message interface referred to as HBCP (Host-BlueCore Communication Protocol). Hence customers can have a clear idea on how to port Blue Audio into target platform.

2. Description

2.1 System Structure

The hardware contains microcontroller called host and BlueAudio with physical link of UART. The communication protocol between host and BlueAudio (HBCP) is layered over RS232 and functions as software interface between application and BlueAudio shown as following:

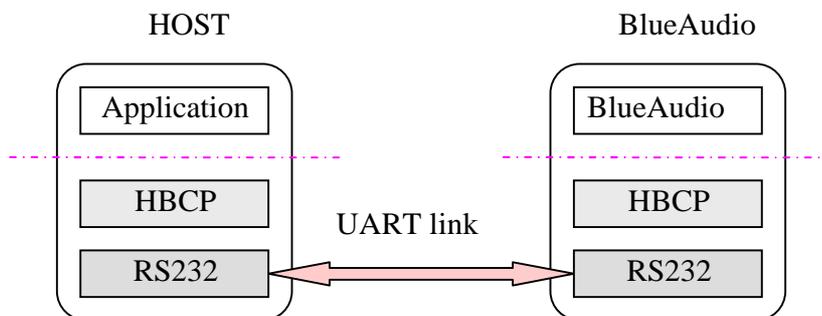


Figure 2.1 HBCP within software layers

Host operates by sending commands to BlueAudio and processing received events. Commands consist of control information or data or both, and events could be response to commands or unsolicited messages.

2.2 Power Saving & Synchronization

On power up, BlueAudio initializes supported profiles (if the auto power up function is enabled, BlueAudio tries connecting to the last used AG and goes into discoverable and connectable mode if no connection established at all). After that, BlueAudio will keep listening to UART for commands sent from host.

However, for power saving, BlueAudio can run into deep sleep mode upon request by host. In this case, it's likely for the commands to be lost. As the status of BlueAudio is unknown for the application side, to ensure BlueAudio is awake when trying to send command, host should send a synchronizing previous to the command(s), as shown in following:

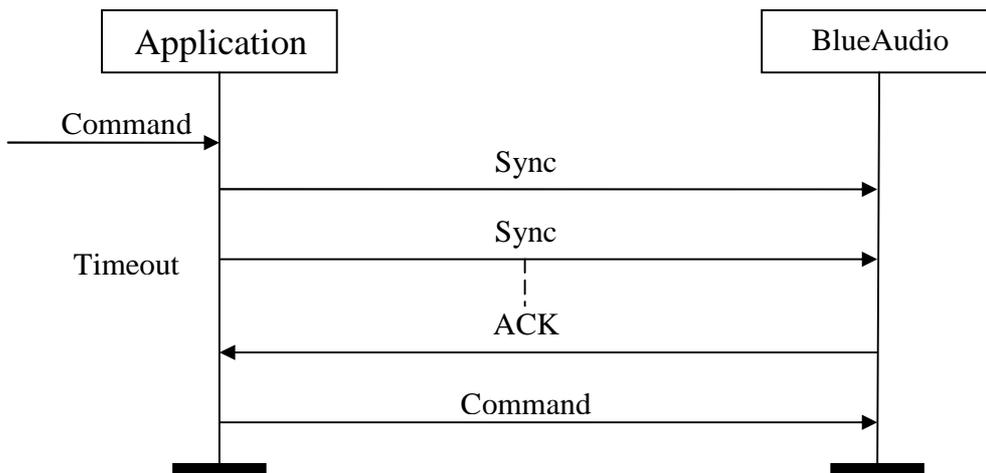


Figure 2.2 Synchronization

2.3 Acknowledgement of Command

By default, BlueAudio will handle the received command silently and return to host the status changed on command operation only. To assure the command is successfully received, upon requested by host, BlueAudio sends back an ACK signal right on the arrival of every following command, shown as figure below:

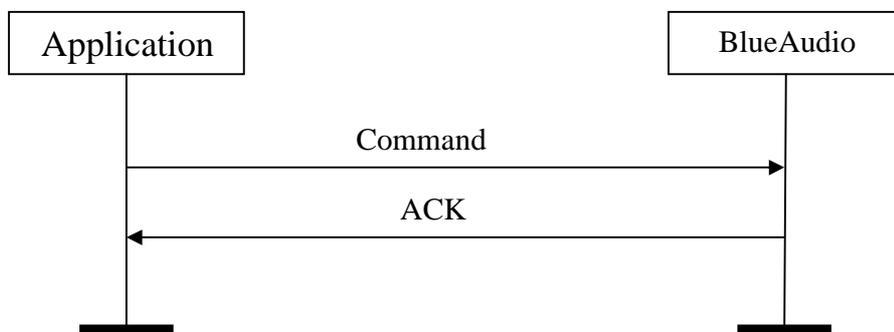


Figure 2.3 Acknowledgement of command

3. Message Format

3.1 UART Configuration

Baud rate	Byte size	Parity	Stop bits	Data stream control
115200	8	No	1	disable

3.2 Syntax Conventions

The conventions for syntax statements in this manual are as follows:

The BlueAudio command set is defined to be an extend subset of AT commands, every command (packet send to BlueAudio) is defined to be an uppercase string and must start with AT and finish with the character `<CR>` (carrier return). Words in angle brackets (`<>`) should be replaced with the corresponding parameters. Do not include brackets in your entry.

By default, the acknowledgement of command is disabled, and can be enabled upon request from host. All characters received by BlueAudio will be echoed back to host if the ACK type is set to 1 or an ACK string will be return if the ACK type is set to 2.

Responses and events (packets send to host) always start and end with `<CR><LF>` (line feed). Words in angle brackets (`<>`) will be replaced with the corresponding value. An `ERR=<error_code>` string will be returned if:

1. Command syntax incorrect, or
2. Command parameters incorrect, or
3. Command cannot be handled because BlueAudio is running in a wrong working mode or wrong status.

Note: `<CR>` and `<CR><LF>` are intentionally omitted within the following descriptions in this document. The maximum length for every event, command, and response is 64 bytes.

3.3 Error Codes

error	description	Resulting from commands
11	Command syntax incorrect	
12	Invalid parameter	
13	Command too long	
14	Device never paired	connect commands
15	AV inactive & no HSP/HFP link	Volume control commands
16	BlueAudio not idle	CVC parameters update
17	Failed allocating memory	CVC parameters update
21	AV not active	AV control commands

22	AVRCP not connected	AV control commands
31	HSP/HFP not connected	DIAL commands
32	Call not active	Mute, DTMF & call control commands
33	Unsupported by HSP	call control commands

3.4 Status defines

status	value	description	note
A2DP	0	ready (to be connected)	A2DP status will be reported to host upon changed.
	1	connecting	
	2	connected	
	3	streaming	
AVRCP	0	ready (to be connected)	AVRCP status will be reported to host upon changed.
	1	connecting	
	2	connected	
HFP	0	ready (to be connected)	HFP status will be reported to host upon changed.
	1	connecting	
	2	connected	
	3	call incoming	
	4	call outgoing	
HSP/HFP connected profile	0	No connected profile	HSP/HFP connected profile status will be reported to host when HSP or HFP connection established.
	1	HSP connected	
	2	HFP connected	
SCO	0	disconnected	The SCO status will be reported to host upon changed.
	1	connected	
MUTE	0	MIC is un-mute	MIC MUTE status will be reported to host upon changed.
	1	MIC is mute	
Work mode	0	AV source mode	BlueAudio works as an A2DP source, HSP/HFP functions are disabled.
	1	AV sink mode	BlueAudio works as is a stereo headset.
	2	DFU mode	All commands sent to BlueAudio will be omitted until firmware is updated completely via USB link.
	3	test mode	DUT mode
	4	HCI mode	host interface in this mode is "UART running BCSP" and VM is disabled.
power	5	AV headset mode	stereo headset without HFP/HSP
	0	off	BlueAudio is idle, neither discoverable nor connectable.
	1	on	BlueAudio is activated.
pairing	2	Powering down	Switching from power on to off status.
	0	success	
	1	timeout	
	2	failed	

	3	Pairing in progress	Discoverable & connectable.
	4	Pairing is cancelled	

3.5 Events

3.5.1 A2DP Status & AVRCP Status

Description:

Report the A2DP status & AVRCP status if changed.

Syntax:

A2DP=<*status*>

Note: A2DP state is changed to *status*.

AVRCP=<*status*>

Note: AVRCP state is changed to *status*.

3.5.2 HSP/HFP Status

Description:

Report the HSP/HFP status if changed.

Syntax:

HFP=<*status*>

Note: HFP state is changed to *status*.

3.5.3 Ring

Description:

Inform host of an incoming call. This message is sent at a constant frequency until the call is handled.

Syntax:

RING

3.5.4 Caller Number

Description:

BlueAudio passes the caller number to host when a call incoming, if relevant GSM subscriber service is available.

Syntax:

CLID<*number*>

Note: call incoming from *number*.

3.5.5 Dial Number

Description:

BlueAudio passes the number to host when a call outgoing by AG, if AG support it.

Syntax:

DLID<*number*>

Note: Call number by AG.

3.5.6 Caller Name

Description:

BlueAudio passes the caller name (if any) to host when a call incoming, if relevant GSM subscriber service is available.

Syntax:

CLNM<*name*>

Note: *name* enclosed in quotes indicating who the call incoming from.

3.5.7 Call Waiting Number

Description:

Notify host that another call is coming in while engaged with current call.

Syntax:

CLWT<*number*>

Note: call from *number* is waiting.

3.5.8 Call Status

Description:

Inform host that call status is changed.

Syntax:

CALL=1

Note: call established.

CALL=0

Note: call hooked.

3.5.9 SCO Status

Description:

Inform host that SCO status is changed.

Syntax:

SCO=1

Note: SCO connected.

SCO=0

Note: SCO disconnected.

3.5.10 HFP Link Lost

Description:

Inform host that the HFP is disconnected because of link lost.

Syntax:

HLOST

3.5.11 A2DP Link Lost

Description:

Inform host that the A2DP is disconnected because of link lost.

Syntax:

ALOST

3.5.12 Initialize Complete

Description:

Inform host that BlueAudio is complete initialized and ready to receive commands. This event will be sent only if the auto power up function is disabled.

Syntax:

INITOK

3.5.13 Power Status

Description:

Inform host that power status is changed.

Syntax:

PWR=<*status*>

Note: the power state is changed to *status*.

3.5.14 Pairing Status

Description:

Inform host that pairing status is changed.

Syntax:

PAIR=<*status*>

Note: the pairing state is changed to *status*.

3.6 Commands & possible responses

3.6.1 Synchronization

Description:

Send synchronization signal and wait for the acknowledgement to ensure BlueAudio is awake and ready to receive commands. This command should be sent previous to other commands if BlueAudio deep sleep is enabled.

Syntax:

▪ **Command:**

AT

▪ **Possible response:**

OK

Note: BlueAudio is waken up and ready to receive command

3.6.2 Application Version

Description:

Gets the application software version running in BlueAudio.

Syntax:

▪ **Command:**

AT+APP

▪ **Possible response:**

APP=36201

Note: release 1.0, based on platform BlueLab-3.6.2-release.

3.6.3 Deep Sleep Configuration

Description:

By default, the timeout to deep sleep is zero; BlueAudio will never run into deep sleep mode in this case. For power saving, the timeout (seconds) can be set to none-zero value using this command to enable BlueAudio going into deep sleep mode. If enabled, after timeout to the last command received, BlueAudio will probably go into deep sleep mode, and synchronization signal is necessary to be sent previous to commands.

Syntax:

- **Command:**

AT+TTDS

Note: retrieve the value of timeout to deep sleep.

AT+TTDS=<*seconds*>

Note: set timeout to deep sleep to *seconds*. Disable deep sleep mode if *seconds* is set to zero.

- **Possible response:**

TTDS=<*seconds*>

Note: success, timeout to deep sleep is set to *seconds*.

3.6.4 Acknowledgement Configuration

Description:

No ACK signal will be returned by BlueAudio on command received by default. However, host can request BlueAudio echoes back all characters it received by setting ACK type to 1; or returns an ACK string on the arrival of every command by setting ACK type to 2.

Syntax:

- **Command:**

AT+ACK

Note: retrieve the acknowledgement type of command.

AT+ACK=<*type*>

Note: set the acknowledgement type of command to *type*.

- **Possible response:**

ACK=<*type*>

Note: response the result to the command.

3.6.5 Restore Default Configuration

Description:

Request BlueAudio to restore default configuration, upon this command, BlueAudio will release all connections established before, delete all paired device information stored in BlueAudio local flash memory, disable command acknowledgement and deep sleep, afterwards BlueAudio goes into idle mode.

Syntax:

- **Command:**

AT+DFLT

- **Possible response:**

OK

Note: BlueAudio configuration is restored to default.

3.6.6 Working Mode

Description:

BlueAudio can work in one of 5 modes:

1. DFU mode, all commands sent to BlueAudio via UART will be omitted until firmware is updated completely via USB link.
2. SNK mode, BlueAudio works as is a stereo headset in this mode.
3. SRC mode, BlueAudio works as an AV source; HSP/HFP functions are disabled.
4. DUT mode, BlueAudio works in device under test mode.
5. HCI mode, host interface changed to "UART running BCSP", and VM is disabled.

Note: The value of the working mode can be found at section [3.4 Status Defines](#).

Syntax:

- **Commands:**

AT+MODE=<*work_mode*>

Note: request BlueAudio reboot into *work_mode*.

AT+MODE

Note: retrieve the BlueAudio working mode.

- **Possible response:**

OK

Note: BlueAudio will reboot into the specified working mode if it is different from the current.

MODE=<*work_mode*>

Note: BlueAudio is working in *work_mode*, response to command "AT+MODE", or "AT+MODE=<*work_mode*>" if the current mode is the same as *work_mode*.

3.6.7 Device Name

Description:

The device name is useful for selecting the device to be paired when other Bluetooth device is trying to pair with BlueAudio, and its maximum length is 31.

Syntax:

- **Command:**

AT+NAME

Note: retrieve the device name of BlueAudio.

AT+NAME=<name>

Note: request BlueCore set device name to *name*. The parameter *name* must be enclosed with quotes (" ").

Note: this command is depleted.

- **Possible response:**

NAME=<*name*>

Note: the BlueAudio device name is (set to) *name*. The parameter *name* will be enclosed with quotes (" ").

3.6.8 PIN Code

Description:

PIN code is needed for authentication when other Bluetooth device is trying to pair with BlueAudio. PIN code could be all ASCII characters but numbers are recommended, and its maximum length is 16.

Syntax:

- **Command:**

AT+PIN=<*pin_code*>

Note: set PIN code of BlueAudio set *pin_code*. The parameter *pin_code* must be enclosed with quotes (" ").

AT+PIN

Note: retrieve the PIN code stored in BlueAudio.

- **Possible response:**

PIN=<*pin_code*>

Note: success, PIN code is set to *pin_code*. The parameter *pin_code* will be enclosed with quotes (" ").

3.6.9 Inquire Mode

Description:

In inquire mode BlueAudio will search all types of devices in the range. The search will stop once timeout (61.44 seconds) or 8 devices are discovered. Other functions must only start after the completion of this command because this function may affect other functions. Up to 8 inquiry results (if any) could be returned as response to this command, and an **INQ=E** string will be returned at inquiry stop.

Syntax:

- **Command:**

AT+INQ=1

Note: Request BlueAudio start inquiry.

AT+INQ=0

Note: Request BlueAudio stop inquiry.

- **Possible response:**

INQ=<index>,<bluetooth_address>,<name>

Note: inquire result, the *index* is a number in range of 1 to 8, *bluetooth_address* is enclosed in quotes and format as "*NAP,UAP,LAP*", and *name* is enclosed in quotes.

INQ=E

Note: inquiry stop.

For example, the device found first is named [stereo-headset](#), and its Bluetooth address is NAP=0x02, UAP=0x5A, LAP=0x008805, the response will be:

```
INQ=1,"2,5a,8805","stereo-headset"
```

```
..... (Other inquire results)
```

```
INQ=E
```

3.6.10 List Paired Devices

Description:

Get the list of paired device information (address & name) stored in BlueAudio. Up to 8 results (if any) could be returned as response to this command, and the report list is end with a **LSP=E** string. Only the **LSP=E** string is returned if there is no paired record stored in BlueAudio.

Syntax:

- **Command:**

AT+LSP

- **Possible response:**

LSP=<*index*>,<*bluetooth_address*>,<*name*>

Note: paired information, the *index* is a number in range of 1 to 8 (the smaller it is, the later the device is used), *bluetooth_address* is enclosed in quotes and format as "*NAP,UAP,LAP*", and *name* is enclosed in quotes.

LSP=E

Note: end of responses.

For example, the device paired latest is named [stereo-headset](#), and its Bluetooth address is NAP=0x02, UAP=0x5A, LAP=0x008805, the response will be:

LSP=1,"2,5a,8805","stereo-headset"

..... (Other paired devices)

LSP=E

3.6.11 List Connected Devices

Description:

Obtain the list of connected device(s). The report list is end with a **LSC=E** string. Only the **LSC=E** string is returned if there is no connection established.

Syntax:

- **Command:**

AT+LSC

- **Possible response:**

LSC=<*connected_profile*>,<*name*>

Note: *connected_profile* can only be A2DP, HFP or HSP indicates the local profile connected, and *name* is the remote device name enclosed in quotes.

LSC=E

Note: end of responses.

For example, BlueAudio A2DP is connected to a device named [AV dongle](#), and HSP is connected to a device named [T628](#), the response will be:

LSC=A2DP,"AV dongle"

LSC=HSP,"T628"

LSC=E

If the profile connected to [T628](#) is HFP, the response will be:

LSC=A2DP,"AV dongle"

LSC=HFP,"T628"

LSC=E

3.6.12 Get BlueAudio Status

Description:

Get the BlueAudio current status; the response will always include power status, pairing status, A2DP status & AVRCP status. And, if working in SNK mode, HFP status, HSP/HFP profile connected status, SCO status and MUTE status will always be included.

Syntax:

- **Command:**

AT+ST

- **Possible response:**

ST=<power_state>,<pairing>,<a2dp_state>,<avrcp_state>

Note: SRC mode, response power status, pairing status, A2DP status & AVRCP status only.

ST=<power>,<pairing>,<a2dp>,<avrcp>,<hfp>,<connect-profile>,<sco>,<mute>

Note: SNK mode, the response sequence is power state, pairing state, A2DP state, AVRCP state, HFP state, connected profile, SCO state, and mute state.

The value of pairing status is 1 if pairing is currently enabled, otherwise, it is 0; the other status values can be found at section [3.4 Status Defines](#).

3.6.13 A2DP Connection

Description:

Initiate (or release) an A2DP connection to (from) a remote A2DP supported device. An ERR string could be returned indicating the reason why command cannot be handled. Upon operation, a series of A2DP state change events will be returned accordingly.

Syntax:

- **Command:**

AT+LA+

Note: connect to last used A2DP remote device.

AT+LA+P<index>

Note: connect to A2DP remote device selected in paired list by *index*.

AT+LA+I<index>

Note: connect to A2DP remote device selected in inquire result list by *index*.

AT+LA-

Note: disconnect A2DP from remote device.

- **Possible response:**

A2DP=0

Note: disconnect success, A2DP status changed to ready.

A2DP=1

A2DP=2

Note: connect success, A2DP status change to connecting then connected.

A2DP=1

A2DP=0

Note: connect fail, A2DP status change to connecting then ready.

ERR=12

Note: ERROR, *index* out of range.

ERR=14

Note: ERROR, device never paired.

3.6.14 HSP/HFP Connection

Description:

Initiate (or release) an HSP/HFP connection to (from) a remote HSP/HFP supported device. An ERR string could be returned indicating the reason why command cannot be handled. Upon operation, a series of HSP/HFP state change events will be returned to host accordingly. This series of command is available only if BlueAudio works in SNK mode.

Syntax:

- **Command:**

AT+LH+

Note: connect to last used AG.

AT+LH+P<*index*>

Note: connect to AG selected in paired list by *index*.

AT+LH+I<*index*>

Note: connect to AG selected in inquire result list by *index*.

AT+LH-

Note: disconnect HSP/HFP from remote device.

- **Possible response:**

HFP=0

Note: disconnect success, HFP status changed to ready.

HFP=1

HFP=2,<*connected_profile*>

Note: connect success, HFP status change to connecting then connected (profile connected state will be response next to HFP state separated by a comma).

HFP=1

HFP=0

Note: connect fail, HFP status change to connecting then ready.

ERR=12

Note: ERROR, *index* out of range.

ERR=14

Note: ERROR, device never paired.

3.6.15 Speaker Volume

Description:

This command set is used to adjust or retrieve speaker volume level. The value of volume level must be in range of 0 to 15. The AV volume can be tuned only if the A2DP status is streaming, and HFP volume can be adjusted only if HSP/HFP is connected. This set of command is available only if BlueAudio works in SNK mode.

Syntax:

- **Command:**

AT+VS

Note: retrieve speaker volume level.

AT+VS+

Note: tune volume up.

AT+VS-

Note: tune volume down.

AT+VS+<*steps*>

Note: tune volume up *steps*.

AT+VS-<*steps*>

Note: tune volume down *steps*.

AT+VS=<*level*>

Note: set speaker volume to *level*.

- **Possible response:**

VS=<*av_volume*>,<*hfp_volume*>

Note: the response to AT+VS command, *av_volume* is the volume level for AV play, *hfp_volume* is for HSP/HFP audio.

VSA=<*level*>

Note: AV is active, and volume for AV is tuned to *level*.

VSH=<*level*>

Note: AV is inactive, and HSP or HFP is connected, HFP volume is tuned to *level*.

ERR=15

Note: ERROR, AV inactive and no HSP/HFP connection.

3.6.16 AV Control

Description:

Request BlueAudio send AVRCP command to the connected AV source. This command set is available only if BlueAudio works in SNK mode.

Syntax:

- **Command:**

AT+STP

Note: Stop AV.

AT+P/P

Note: Toggle AV Play/Pause state.

AT+FWD

Note: Next AV (forward).

AT+BWD

Note: Previous AV (backward).

- **Possible response:**

OK

Note: AV control is available.

ERR=22

Note: ERROR, AVRCP not connected.

3.6.17 Dial Functions

Description:

Request the connected AG redial, make a voice dial, or dial a number (number can only be '*', '#', '+' and digits). An ERR string could be returned if there is no HSP/HFP connection established. HFP status will change to "call outgoing" upon command operation. This set of command is available only if BlueAudio works in SNK mode.

Syntax:

- **Command:**

AT+DL

Note: redial.

AT+DV

Note: voice dial.

AT+D<number>

Note: dial *number*. For example, AT+D10086

- **Possible response:**

HFP=4

Note: dialing, the HFP state change to "call outgoing".

FAIL

Note: AG returns dialing failed on command.

ERR=31

Note: ERROR, HSHF not connected.

ERR=33

Note: ERROR, redial and dial number does not supported by HSP.

ERR=12

Note: ERROR, invalid character(s) found in dial number.

3.6.18 Call Handle

Description:

Request BlueAudio to accept or reject an incoming call, or hang up an active call. An ERROR could be returned if the connected profile is HSP, and the function does not supported by HSP.

Syntax:

- **Command:**

AT+CA

Note: answer the incoming call.

AT+CR

Note: reject the incoming call.

AT+CH

Note: hang up the active call.

- **Possible response:**

OK

Note: command is acceptable.

ERR=33

Note: ERROR, command not supported by HSP.

3.6.19 DTMF

Description:

Send DTMF when call is active. This make available to dial an extension number, the DTMF to be sent must be ASCII character in the set 0-9, #, *, and A-D. An ERR string could be returned if HSHF is not in “call active” status.

Syntax:

- **Command:**

AT+DTMF<*ext_number*>

Note: dial *ext_number*. For example, AT+DTMF386

- **Possible response:**

DTMF<*ext_number*>

Note: DTMF string *ext_number* is sent to AG.

ERR=32

Note: ERROR, not in call active state.

ERR=12

Note: ERROR, invalid character(s) found in extension number.

3.6.20 Audio Transfer

Description:

Transfer audio to AG or BlueAudio. An ERROR could be returned if the connected profile is HSP, because this function does not supported by HSP.

Syntax:

- **Command:**

AT+2AG

Note: transfer audio to AG.

AT+2HF

Note: transfer audio to HFP.

AT+TRN

Note: transfer audio to HFP if audio is active at AG, or vice versa.

- **Possible response:**

OK

Note: command is acceptable.

ERR=33

Note: ERROR, command not supported by HSP.

3.6.21 Multiparty Call Functions

Description:

This command set is used to handle multiparty calling functions. An ERROR could be returned if the connected profile is HSP, because this function does not supported by HSP.

Syntax:

- **Command:**

AT+RHRW

Note: release the held call or reject the waiting call.

AT+RAWH

Note: release the active call and accept the other call (i.e. waiting or held).

AT+SWAP

Note: swap calls, hold active call and accept the other call.

AT+ADDH

Note: add held call to conversation.

- **Possible response:**

OK

Note: command is acceptable.

ERR=33

Note: ERROR, command not supported by HSP.

3.6.22 MIC Mute

Description:

Change the microphone mute status. The MIC can mute only in call active status, and un-mute automatically when the call is hung up.

Syntax:

- **Command:**

AT+MUTE=<*mute*>

Note: mute MIC if the parameter *mute* = 1, un-mute if 0.

- **Possible response:**

MUTE=<*mute_state*>

Note: command is acceptable and mute state change to *mute_state*.

ERR=32

Note: ERROR, not in call active state.

3.6.23 Phonebook Records

Description:

Retrieve the phonebook records stored in mobile phone from *index1* to *index2* (the parameter *index2* is optional, and must be bigger than *index1*), up to 12 records can be retrieved with one request. Upon success, records retrieved will be returned to host one by one, and the respond list is end with a **PB=E** string.

If the optional parameter *index2* is not present, the *index1* record stored in mobile phone will be returned on success.

The **PB=E** string is always returned to the phonebook commands indicating the end of results, and only this string is response if the requested record is empty or operation failed. Any other commands should only be sent after this response.

Syntax:

- **Command:**

AT+PBMC=<*index1*>[,<*index2*>]

Note: retrieve the missed call list stored in AG.

AT+PBRC=<*index1*>[,<*index2*>]

Note: retrieve the received call list stored in AG.

AT+PBDC=<*index1*>[,<*index2*>]

Note: retrieve the dialed call list stored in AG.

AT+PBME=<*index1*>[,<*index2*>]

Note: retrieve the phonebook records stored in AG's memory.

AT+PBSM=<index1>[,<index2>]

Note: retrieve the phonebook records stored in AG's SIM card.

- **Possible response:**

ERR=31

Note: ERROR, no HFP connection.

ERR=12

Note: ERROR, invalid parameter ($index1 > index2$ or $index2 - index1 \geq 12$).

PB=E

Note: the requested call list is completed.

PB=<index>,<number>,<name>,<time>

Note: The result of the requested call list, parameters *number*, *name* and *time* will be enclosed in quotes. Depending on the AG response, *name* and *time* may not be returned, only quotes (") will be returned in the corresponding field in this case. The *name* (if any) returned will be UTF-8 encoded.

3.6.24 Power ON/OFF

Description:

Activate or deactivate BlueAudio.

Syntax:

- **Command:**

AT+PWR

Note: retrieve the BlueAudio power status.

AT+ON

Note: power up BlueAudio.

AT+OFF

Note: turn BlueAudio power off.

- **Possible response:**

PWR=<status>

Note: Power status is *status* after command operation.

3.6.25 Pairing ON/OFF

Description:

Request BlueAudio enter (or exit from) pairing mode. In pairing mode, BlueAudio is discoverable and connectable.

Syntax:

- **Command:**

AT+PAIR=<*timeout*>

Note: request BlueAudio exit from pairing mode immediately if *timeout* is zero. Or enter into pairing mode if *timeout* is non-zero, in this case, BlueAudio will automatically exit from pairing mode after *timeout* seconds or paired with other device(s) successfully. The maximum *timeout* is 65535 seconds.

- **Possible response:**

No response. Pairing status changed event(s) will be raised instead.

3.6.26 Send Data via SPP

Description:

Send data via SPP.

Syntax:

- **Command:**

AT+SPP=<Data>

Note: send the data via SPP interface.

- **Possible response:**

OK

Note: command is acceptable.

3.6.27 Get Data via SPP

Description:

Get data via SPP.

Syntax:

SP=<Data>

Note: Data got from SPP interface.