kcGateway v8.0
User Guide

Bluetooth v3.0

Firmware User Guide

kcGateway v8.0 Build 4

Introduction

The kcGateway firmware is an audio source/transmitter system that operates in one of two modes, A2DP Source or AGHFP. New with kcGateway v8.0 we have included both KC AT Commands and HFP AT Commands for configuration and operation.

AGHFP mode

AGHFP mode is the default mode, implementing Bluetooth AGHFP profile which is intended to connect to a standard Bluetooth cell phone mono headset. The audio is sampled at 8kHz, and operates two-way communications. The kcGateway does not implement "phone calls" like a phone gateway would, but rather opens the bi-directional audio channel automatically, without the call answer or hang up states.

A2DP mode

A2DP mode implements Bluetooth A2DP Source profile which is intended to connect to standard Bluetooth stereo headsets or speakers. The audio is sampled at 44.1kHz, and transmits stereo audio.

Firmware Editions

Our default kcGateway is released in two editions: our class 1 KC5012 edition, and our class 2 KC6012 edition (also intended for KC6112 modules).

Supported Bluetooth Profiles

Profile	Name	Version	Configured
AGHFP	Audio Gateway Hands Free Profile	1.5	Enabled
A2DP	Advanced Audio Distribution Profile – Source Edition	1.2	Enabled
AVRCP	Audio Video Remote Control Profile – Target Edition	1.0	Enabled

Audio Codec Options

AGHFP mode supports the Bluetooth standard CVSD, aLAW, and uLaw codec formats.

A2DP mode supports the Bluetooth standard SBC (Sub-Band Coding) codec format, and a low latency optional codec, FastStream. FastStream is automatically selected whenever the receiver device supports it.

Firmware Change Log

kcGateway v8.0 b4 changes:

- Added the Paired Device List for multiple previous paired devices.
- Added `AT ConnectConfig` and `PairingMax` commands.

kcGateway v8.0 b3 changes:

- Changed customer specific features.
- Modified `AT Connect` to no longer drop connections while previously connected.
- Updated HFP commands display.
- Added SQ detection upon HFP connection.

kcGateway v8.0 b2 changes:

- Fixed `AT Connect` and `AT Discover` redundancy. `AT Connect` can be used for reconnections only.
- Fixed `AT Disconnect` disconnection problems.
- Synchronized device outputs to match with kcHeadset outputs.
- Changed customer specific features.

kcGateway v8.0 b1 changes:

- Added KC AT Commands
- Added customizable HFP Commands
- Changed system outputs.

kcGateway v6.8 b1 changes:

- Added PTT and SQ PIO features on PIO's 2 and 3.
- Added LED pattern for reconnection and connecting events.
- Updated system messages to include time and profiles.

kcGateway v6.8 b0 changes:

- Added AVRCP output messages, when controls commands are received (Rewind, FastForward, Play, Pause).

Multifunctional ENABLE / BTB

The BTB – Bluetooth button is a multi-featured input button. Most of the features are activated differently based on the current operating mode of the device.

The ENABLE pin is a dual purpose pin, and kcGateway firmware can operate both power switch and power button modes.

First, power button mode is supported, where the ENABLE pin is tied to a momentary button (typically supplied directly from a li-ion battery). In this usage model, the ENABLE pin is used as the BTB. A long press of ENABLE will power up the device, and a subsequent very long press will power off the device. When the device is on, this ENABLE pin will provide the same features as the BTB.

Secondly, power switch mode is supported, where an external system power switch is used, typically to supply a DC power source. In this mode the ENABLE pin will be tied to this switched power source, and will simply turn on/off the device. In this mode, since the ENABLE pin is held HIGH when powered on, then BTB features must be operated using the BTB assigned Pio 4.

The device provides both power switch and power button operations by latching the system ENABLE internally, thus allowing the ENABLE pin to turn on/off the device with simple button presses, and additionally triggering all the features of the BTB when subsequently pressed. However, if the system is powered up, and the ENABLE pin remains HIGH for over 10 seconds, then the ENABLE button disables the internal power latch, which will allow the device to power off immediately upon release of the ENABLE pin (LOW).

Push-To-Talk / SQ

A special Push-To-Talk feature has been added (since kcGateway v6.5.0) that receives a standard Bluetooth cell phone headset button press to toggle the PTT feature in our firmware. This is typically a Voice Activation feature where a phone would open an audio channel in order to receive voice commands. When PTT is toggled OFF, the PTT indicator goes low, and the microphone channel is muted. When toggled ON, the PTT indicator goes HIGH, and the mic channel is unmuted. PTT also acts as a transparent logic between a headset and the gateway. Assigned to PIO 2, when the PTT button is set high on the headset, it is also set high on PIO 2 of the gateway. Once PTT goes low or connection is dropped, PIO returns to low.

There is now also a Squelch button set to PIO 3. Like the transparent logical line of PTT, the SQ is an input on the gateway that sends a Squelch command to the headset. KcHeadsetv.8.2.1 and later can have a PIO output that will mirror this Gateway's PIO 3 being high or low. PTT and SQ features only work in HSP and HFP profiles.

AudioLink

The AudioLink feature is similar to Push-To-Talk, but toggles ON/OFF the entire bi-directional audio channel. This feature can provide significant power savings, as the processor can sleep when the audio channel is not operating. The connection remains open in standby mode when the audio channel is closed. When AudioLink toggled OFF, the STREAMING indicator goes low, and the audio channel is dropped completely. When toggled ON, the STREAMING indicator goes HIGH, and the audio channel is opened.

System Messages

Device State

The following messages are output via Uart whenever the device state changes:

Message	Description
-> [State Idle]	No connections.
-> [State Inquiring]	Starting new device discovery.
-> [State Connecting]	Connecting to device.
-> [State Streaming]	Audio is streaming.
-> [State InCall]	A call is active.
-> [State TestMode]	Testmode.

AVRCP Controls

The following messages are output via Uart when Avrcp control signals are received from a remote device:

Message	Description
-> Avrcp Play	Play audio.
-> Avrcp Pause	Pause audio.
-> Avrcp Stop	Stop audio.
-> Avcrp RR Press	Start rewind.
-> Avcrp RR Release	Stop rewind.
-> Avcrp Skip Backward	Previous song/track.
-> Avcrp FF Press	Start fast forward.
-> Avcrp FF Release	Stop fast forward.
-> Avcrp Skip Forward	Next song/track.

A2DP State

The following messages are output via Uart when A2DP state is changed:

Message	Description
-> [A2DP Connected]	Profile connected (no audio channel).
-> [A2DP Disconnecting]	Disconnecting the profile.
-> [A2DP Disconnected]	No current profile connection.
-> [A2DP Paged]	Incoming profile connection request.
-> [A2DP Opening]	Opening an audio channel.
-> [A2DP Open]	Audio channel is open.
-> [A2DP Closing]	Closing an audio channel.
-> [A2DP Starting]	Start streaming audio.
-> [A2DP Streaming]	Audio is streaming.
-> [A2DP Suspending]	Pause audio stream.

AVRCP State

The following messages are output via Uart when AVRCP state is changed:

Message	Description
-> [AVRCP Connected]	Profile connected.
-> [AVRCP Disconnecting]	Disconnecting the profile.
-> [AVRCP Disconnected]	No current profile connection.
-> [AVRCP Paging]	Initiated profile connection.
-> [AVRCP Paged]	Incoming profile connection request.

AGHFP State

The following messages are output via Uart when AGHFP state is changed:

Message	Description
-> [AGHFP Connected]	Profile connected (no audio channel).
-> [AGHFP Disconnecting]	Disconnecting the profile.
-> [AGHFP Disconnected]	No current profile connection.
-> [AGHFP Paged]	Incoming profile connection request.
-> [AGHFP Paging]	Initiated profile connection.
-> [AGHFP AudioOpening]	Opening an audio channel.
-> [AGHFP AudioOpen]	Audio channel is open.
-> [AGHFP AudioClosing]	Closing an audio channel.
-> [AGHFP CallSetup]	Incoming call request.
-> [AGHFP CallActive]	Active call.
-> [AGHFP CallShutdown]	Close call.

Automatic Features

Feature
Reconnect on startup (with previously paired devices)
Search for new headset on startup (if no paired devices)
Reconnect on link loss
Idle shutdown after 30 minutes

Feature Activation

PIO pins are used to activate firmware features. PIO default state is LOW (0V), and activates the assigned feature with a HIGH (3.3V) signal press, and LOW (0V) signal release. The "button presses" are debounced by 4 readings within 15ms. The following timings are configured for a "button press" to activate an assigned feature.

Press	Activation Time		Press	Activation Time
Short	< 1.0 second		Very Long	2.5+ seconds
Double	Within 0.5 seconds		Very Very Long	5.0+ seconds
Long	1.0+ second		Hold	Repeat every 0.25 sec

PIO Assignments

PIN Function	Name	I/O	Feature
ENABLE		Input	Press or Hold Continuously for power up
PIO 2	PTT	Output	HIGH when PTT command is received
PIO 3	SQ	Input	Squelch: sends SQ command to HS
PIO 4	BTB	Input	Bluetooth Button: Multifunctional See Below
PIO 5	VOLUP	Input	Press: Volume Up; Double: Input Gain Up
PIO 6	VOLDN	Input	Press: Volume Down; Double: Input Gain Down
PIO 7	RR	Input	TestMode with RR + FF
PIO 8	FF / AUDIOLINK	Input	Press: Toggle audio streaming on/off
PIO 9	CONNECTED	Output	HIGH when connected
PIO 10	STREAMING	Output	HIGH when audio is streaming

Button Features

Feature	Button	Press	Condition	System Response
System On	ENABLE	Very Long	Only when (firmware) system off	`-> kcGateway v8.0.4 Standard`
System On	BTB	Very Long	Only when (firmware) system off	`-> kcGateway v8.0.4 Standard`
Reconnect	BTB	Short	Only when not connected	`-> Connecting A2dp <64:6E...>`
Search	BTB	Long	Only when not connected	`-> Discover Devices`
Volume Up	VOLUP	Short	Any	`-> Vol Up [14]`
Volume Down	VOLDN	Short	Any	`-> Vol Dn [13]`
Input Gain Up	VOLUP	Double	Any	`-> Gain Up [11]`
Input Gain Down	VOLDN	Double	Any	`-> Gain Dn [10]`
Reset Paired List	VOLUP + VOLDN	Very Long	Any	`-> ResetPairedList`
Enter DFU Mode	PIO 2	HIGH	Only during power up	
Test Mode	RR + FF	Very Long	Toggle test mode on/off	`-> Test Mode Enter`
Set AGHFP mode	VOLUP	Short	Only in test mode	`-> Set Aghfp Mode`
Set A2DP mode	VOLDN	Short	Only in test mode	`-> Set A2dp Mode`
Audio Loopback	RR	Short	Only in test mode	

LED Event and State Indicators

When battery is low, the Red led blinks instead of the Blue led.
When the battery is charging, both Blue and Red blink together.

Event	LED Action	Timing
System On	Blue Flash	1s on
System Off	Red Flash	1s on
Reset Pairing List	Blue+Red Triple Flash	100ms on/off/on/off/on/off
Enter DFU Mode	Blue+Red Triple Flash	100ms on/off/on/off/on/off
Connecting	Blue Fast Blinking	100ms on/off
State	LED Action	Timing
Connectable	Blue Blinking	100ms on, 2500ms off
Connected, No Audio	Blue Double Blinking	100ms on/off/on, 1500ms off
Connected, Audio Streaming	Blue Double Blinking	100ms on/off/on, 1500ms off
Searching	Red/Blue Alternate Fast Blinking	100ms on/off
Reconnecting	Blue Fast Blinking	100ms on/off

Output Volume

Default output volume for new connections is Level 14 = 0 dB.

Level	0	1	2	3	4	5	6	7
Gain	-45.0 dB	-39.0 dB	-35.5 dB	-33.0 dB	-29.5 dB	-27.0 dB	-23.5 dB	-21.0 dB

Level	8	9	10	11	12	13	14	15
Gain	-18.0 dB	-15.0 dB	-12.0 dB	-9.0 dB	-6.0 dB	-3.0 dB	0 dB	+3.5 dB

Input Volume

Default input gain is 0 dB.

Operational Messages

The device will send many different Uart messages during operations, included device state changes, connection and disconnection notices, audio channel usage, and more.

For example, it will display multiple state changes in beginning a discovery search through establishing a HFP connection.

```
-> Discover Devices
-> [State Inquiring]
-> [State Idle]
-> Connecting Aghfp 64:6E:6C:00:00:03
-> [Aghfp Paging]
-> [State Connecting]
-> [Aghfp Connected]
-> PTT Off
```

Stream activity and incoming HFP commands will also generate system messages regarding changes in state and reading information.

```
-> [State Idle]
-> [State Streaming]
-> [Aghfp AudioOpening]
-> [Aghfp AudioStreaming]
-> [State Streaming]
-> HfpCmd [AT+PLR]
```

Tutorial

Startup

Make sure the Bluetooth demo board is either supplied power from the USB port or from a battery connection, or both. Having the USB supply power while the battery is plugged in will charge the battery while the device is in operational and limbo mode. When charging with USB, the device cannot fully shut off. Instead, it will enter a deep sleep (limbo) mode in which only the Enable button is monitored.

To turn the device on, press and hold the Enable button until the LED's flash. If the Enable button is held high for ten seconds after startup, the device can be turned off simply by cutting power from the Enable button. If however the Enable button was released after startup, turning off the device can be accomplished by pressing the button again.

On the side of the demo board are three micro USB ports. The first is a USB port and can be used for charging and downloading DFU firmware updates in DFU mode. Second is the UART port which will be the main use for device outputs and commands to and from the user. Lastly is the SPI port, which will require a SPI adaptor for computer connection. SPI is used for installing .xuv type files as well as reading and writing the device flash memory.

For UART operation, connect your computer to the micro USB port labeled UART. You will then need to open a UART text box terminal. You can download the kcTerminal v5.6 at www.kcwirefree.com/downloads.html. Select the proper COM port after making sure the UART settings are the same as our device default settings (see AT Command Syntax).

After properly powered and connected to UART, a successful startup should look similar to below.
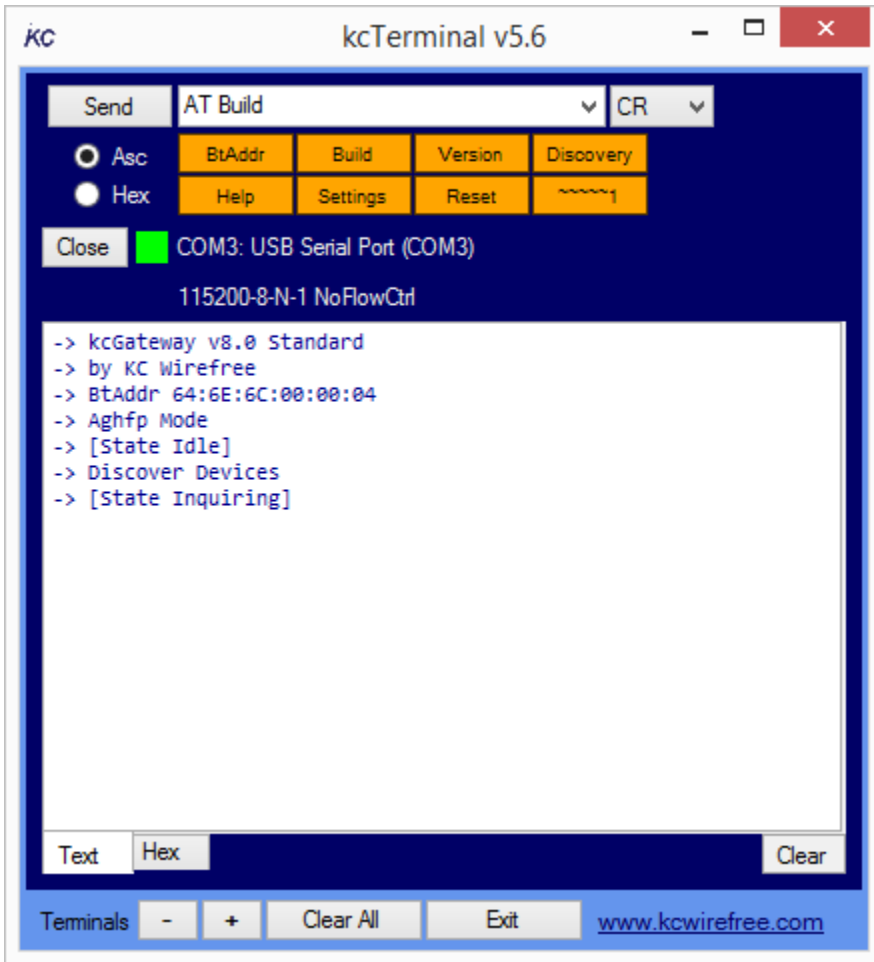
Getting Connected

Device operations can be initiated by either button pressing or using the AT commands from a UART input. Changing device settings and customizing timeouts and features however can only be done from the AT commands.

In order to get connected to a Headset device, the Headset device must be put into the Discoverable Bluetooth state. The Gateway device will then need to start a device inquiry, where it will find the Headset and begin the pairing process.

Press and hold the BTB (PIO 4) for a couple seconds until the state becomes Inquiring. Do the same on the Headset device to begin its Discoverable mode. If the signal is strong enough and they have the same profiles enabled, they should automatically pair up.

Below is an example of a successful connection using only button presses. This could have also been accomplished by using the "`AT Discover`" command instead of the button presses.
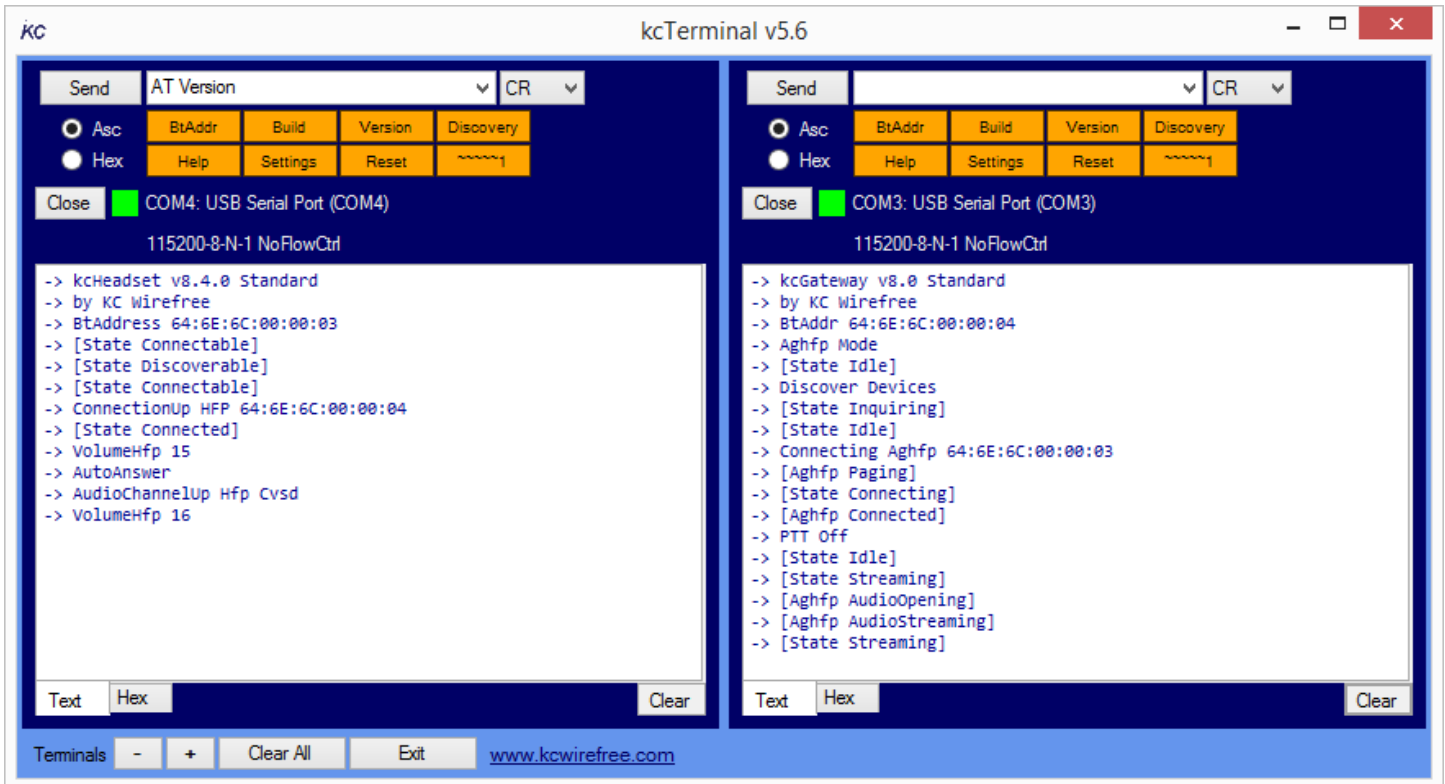
To reconnect to a device after a connection is dropped, quickly press and release the BTB. This issues a reconnection process which, depending on your settings, sends connection requests to all paired devices one at a time or just the last device repeatedly. Below is a successful reconnection after the Headset was turned off
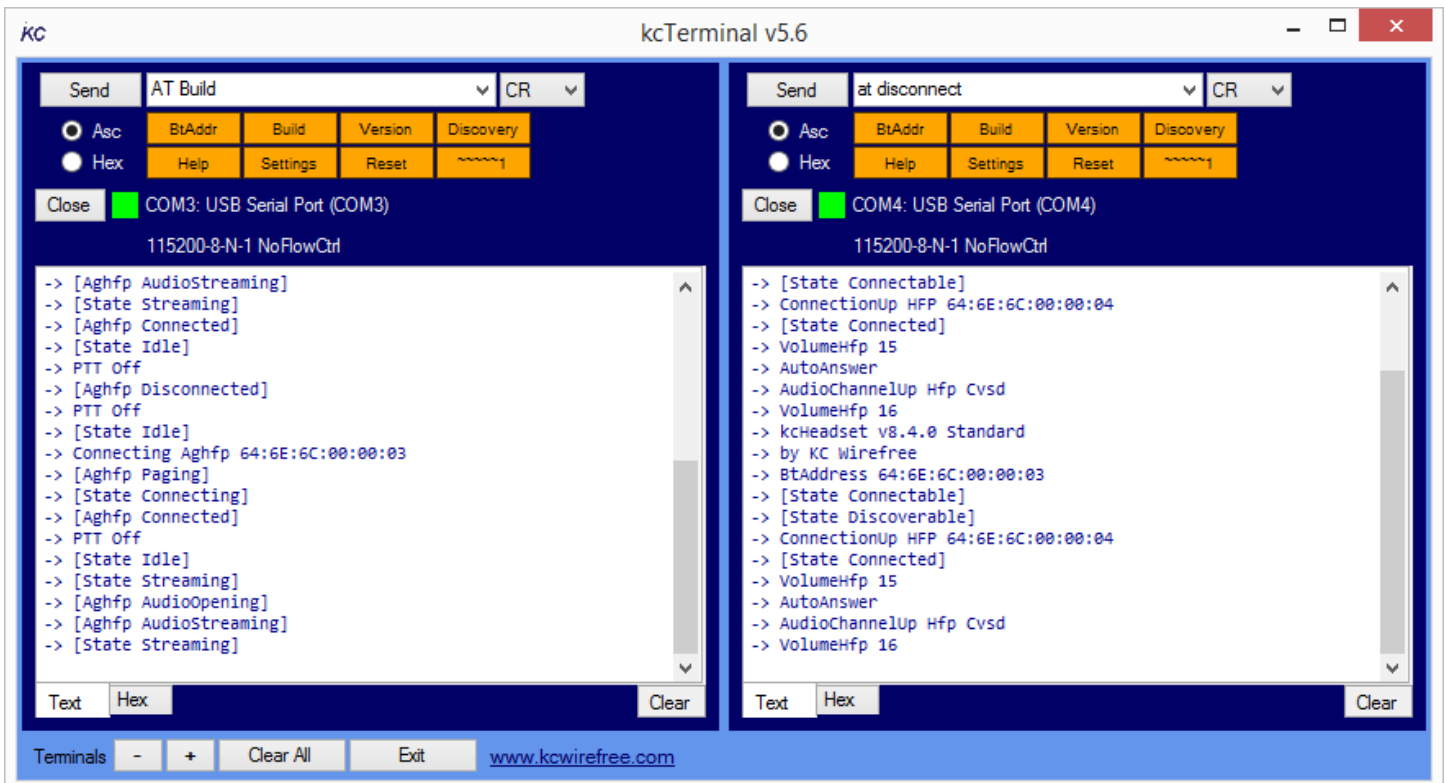
If the reconnection is unsuccessful, you may need to change the profiles back what they were when connected. Deleting pairing information and then going through the pairing process again is often a very effective tool for connecting two devices.

Sending HFP Commands

During HFP profile connections, wireless commands are sent between the devices in the form of HFP AT commands. These are not the same as the UART commands and have different formatting.

The UART "AT HfpCmd" command can be used to send your own custom HFP AT commands to a Hands Free Profile connected device. Details on how to format the command can be found in the AT HfpCmd section further below.

The device will also display any custom HFP commands that it receives. An example of sending and receiving proper custom HFP commands between a Headset and Gateway is shown below.
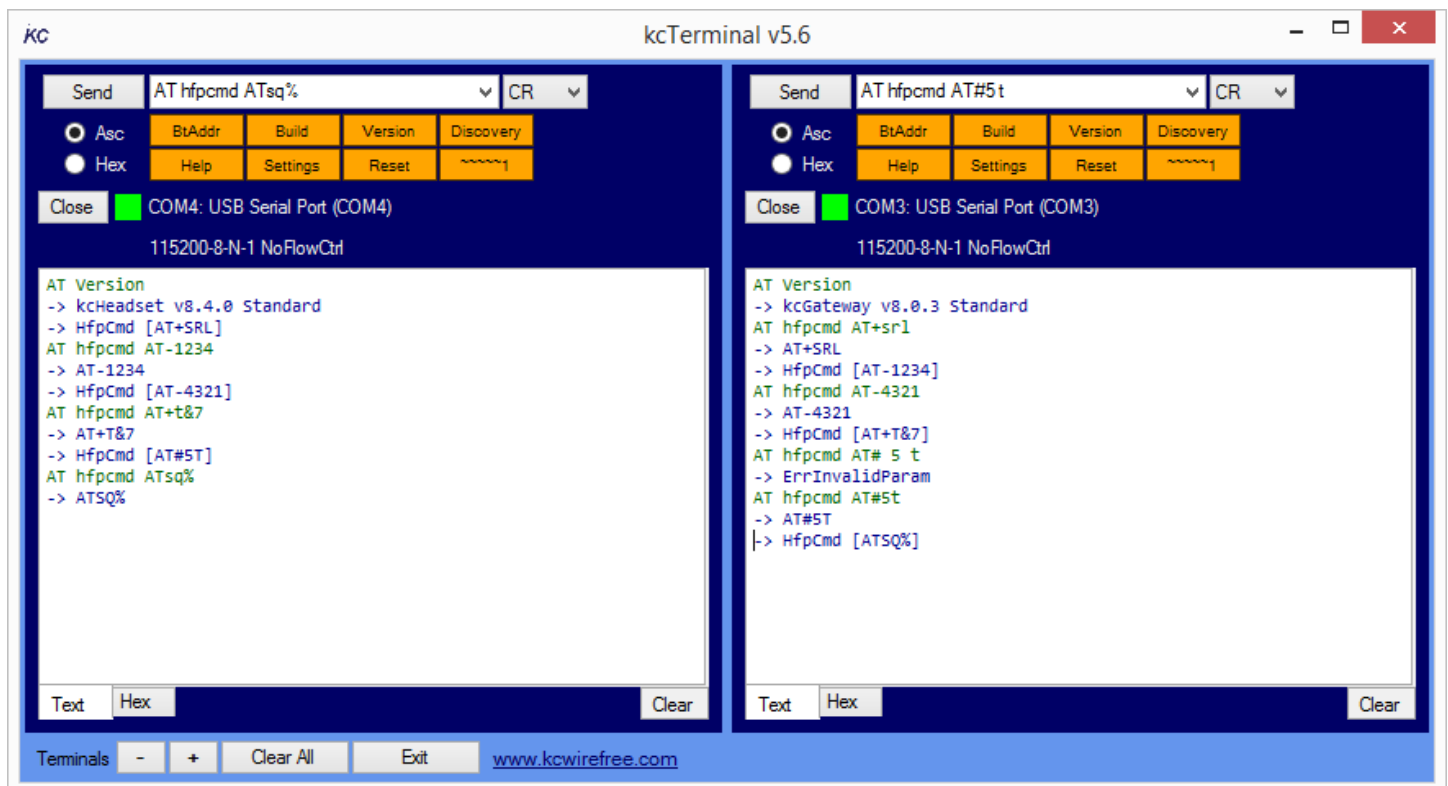

Note that most ASCii characters can be sent. Also be aware that it is best to send smaller strings.

Push-To-Talk and SQ

The PTT and SQ features are only available for HFP connections, just like the HFP commands.

The functionality of PTT is to suspend audio playback while the PTT PIO is high without terminating the audiostream. For our kcGateway devices, pressing the PTT button on the Headset (setting PIO 2 high) will send an HFP AT command to the Gateway, suspending the audio and also setting the kcGateway equivalent PTT (PIO 2) to high. Releasing the Headset PTT button (dropping PIO 2 to low) sends another HFP AT command that will resume audio playback and drop the PTT PIO.

SQ works similarly to PTT, except that no audio is suspended and it is a PIO 3 change on the Gateway that is sent to the Headset. Below is an example of a Headset connecting to a Gateway, holding the PTT high for one second, then releasing it. Afterwards, the Gateway holds the PIO for SQ (PIO 3) high for one second before releasing it.
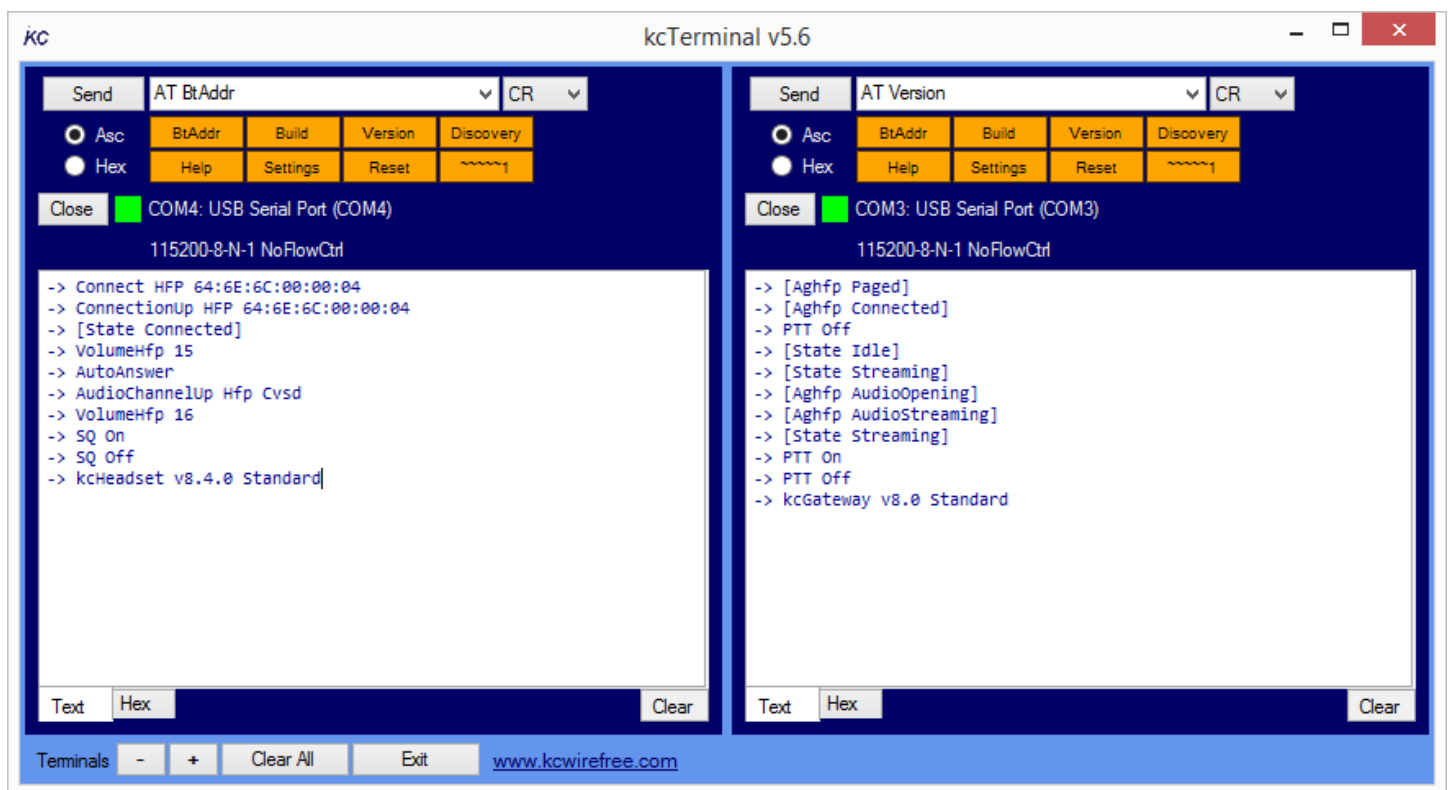
What cannot be seen is that while PTT was on, Gateway PIO 2 was high and audio was suspended. Those changed after PTT turned off. While SQ was on, Headset PIO 3 was high, but then switched to low after SQ turned off.

AT Command Syntax

Default UART setting is 115200-8-N-1, without hardware flow control.

Enter AT Commands via UART as standard strings, with a CR End Of Line marker (0x0D), and optionally LF (0x0A). Output messages are terminated with CRLF (0x0D 0x0A).

Each AT Command accepts a "?" parameter, which will then display the required and optional parameters for that particular command.

The "*"indicates that the parameter is an optional one.

Entering an AT Command without any required parameters, in most cases, will simply display the current parameter settings.

Case is ignored for AT Commands. However, commands like AT Name will preserve the case of the parameters. This User Guide presents commands in proper case for legibility. Firmware output responses are typically in proper case.

HFP AT Commands are a completely separate system, and are implemented according to Bluetooth HFP specifications. The KC Wirefree HfpCmd will accept an HFP AT Command solely as a parameter, which will be transferred verbatim to the remote Hfp device, and will be handled according to the manufacturer implementation of HFP profile. Typically HFP AT Commands are sent for changing remote volume, indicating incoming phone calls, hanging up a call, etc. Several kcGateway functions relating to remote phone control, are actually sending and receiving these HFP AT Commands in the background.

AT Command List

AT AudioLink	AT Event	AT Profile
AT BtAddr	AT Gain	AT Reset
AT Build	AT Help	AT SQ
AT Connect	AT HfpCmd	AT State
AT ConnectConfig	AT Linktest	AT TimeoutIdle
AT Dfu	AT Name	AT TimeoutInq
AT Disconnect	AT PairingDelete	AT Version
AT Discover	AT PairingMax	AT Volume
AT Discoverable		

Command lines are parsed and executed when an EOL carriage return is received.

AT Commands

AT AudioLink

The AudioLink command toggles on or off the audio streaming from the gateway to all connected devices. "E" toggles on and "D" toggles off for streaming. Audio streaming is enabled by default upon new connections.

Command	`AT AudioLink <e/d>`

Example	`AT AudioLink d`
	`-> [Aghfp AudioClosing]`
	`-> [Aghfp Connected]`
	`-> [State Idle]`
	`-> PTT Off`

AT BtAddr

The Build command outputs the full Bluetooth address.

Command	`AT BtAddr`
Example	`AT BtAddr` `-> BtAddr 64:6E:6C:00:00:04`

AT Build

The Build command outputs the full firmware version information.

Command	`AT Build`

Example	`AT Build`
	`-> [Build]`
	`-> BtAddress: 64:6E:6C:00:00:04`
	`-> Bluetooth: v3.0`
	`-> Hardware:  KC-6012`
	`-> Firmware:  kcGateway`
	`-> Version:   v8.0`
	`-> Build:     3`
	`-> Edition:   Standard`
	`-> Date:      Jun 29 2015 16:18:50`
	`-> [Build End]`

AT Connect

The Connect command initiates a reconnection sequence. AT Connect has the same operation as the Connect button short press when not connected. If issued while currently connected, then it will respond with the connection type.

Command	AT Connect
Example	AT Connect -> Connecting Aghfp 64:6E:6C:00:00:03

AT ConnectConfig

The ConnectConfig command will set the settings the AT Connect and Connect button press will use for reconnection. The first parameter is the type of reconnection that will be made. Either "LAST" which sends all connection attempts to the last connected device, or "LIST" which will send attempts one at a time through previously connected devices on the paired device list. The second (optional) parameter sets the number for connection attempts. The number of attempts in "LIST" mode will determine how many times the device goes through the entire Paired Device List. Default is LAST type and 3 attempts.

Command	AT ConnectConfig <Type> <*number>
<Type>	Type of reconnection. "List" or "Last"
<*number>	Amount of attempts to connect the device will make
Example	AT ConnectConfig last 2 -> Last 2

AT Dfu

The Dfu command is used to set the device into firmware update mode. The device will immediately reboot into the Dfu mode, where the DfuWizard application can download a new firmware image into the device via USB interface. Please see Firmware Update section regarding specific procedure details.

Command	AT Dfu
Example	AT Dfu -> DfuMode [Reboot]

AT Disconnect

The Disconnect command will disconnect all currently connected devices, and revert to Idle mode. If the device is not connected, this command can be used to stop a search mode and return to the Idle state

Command	AT Disconnect
Example	AT Disconnect -> Disconnecting -> [State Idle]

AT Discover

The Discover command initiates a Discovery and Connect sequence, known as Inquiry. It searches for other discoverable headset/speaker devices and will automatically connect to the unit with the strongest signal strength.

Command	AT Discover
Example	AT Discover -> Discover Devices -> [State Inquiring]

AT Discoverable

The Discoverable command immediately turns on or off Discoverable (Pairing) mode. The device remains Discoverable for 90 seconds by default.

Command	AT Discoverable <e/d>
<e/d>	Enable/Disable discoverable mode
Example	AT Discoverable E -> E

AT Event

The Event command provides a quick method to trigger system functions or responses. Most system events are highly dependent upon the current device state and many other device settings, so the actual effect can be unexpected. This command is provided as an experimental option, or perhaps used as simple backdoor method to trigger an otherwise unimplemented function or response. The table of all events and id numbers is listed below.

00	Button_Connect_ShortPress	07	AudioLink_Off	0E	Mic_Off
01	Button_Discover_LongPress	08	Sq_On	0F	Mic_On
02	GainUp	09	Sq_Off	10	Spkr_Off
03	GainDn	0A	Btn_RR	11	Spkr_On
04	VolUp	0B	Btn_FF	12	Connect_Second_Device
05	VolDn	0C	Clear_PDL	13	PTT_Press
06	AudioLink_On	0D	TestMode	14	PTT_Release

Command	AT Event <event>
<event>	Event ID number. 2 max Hex Digits (Event 0x05 is VolumeDown)
Example	AT event 05 -> 5 -> Vol Dn [12]

AT Gain

The Gain command adjusts the microphone input gain without modifying the default gain setting. The adjusted input gain setting is not saved in memory.

Command	`AT Gain <+/->`
<+/->	`Either + increment gain, - decrement gain`
Example	`AT MicGain +` `-> 7`

AT Help

The Help command will list all implemented AT Commands. Also, each command can accept an optional "?" parameter, which will output the list of command arguments.

Command	`AT Help`

Example	`AT Help`
	`-> [Help]`
	`-> AT BtAddr`
	`-> AT Build`
	`-> AT Connect`
	`...etc`
	`-> [Help End]`

AT HfpCmd

The AT HfpCmd sends a custom or standard HFP AT Command to a connected headset device. Standard commands will be used directly by the headset device, while custom (unrecognized) commands are likely ignored by commercial headsets, but will be output via Uart by kcHeadset firmware. The formatting of the command must begin with "`AT`". A line return character is appended automatically. All At commands are automatically converted to upper case.

Command	`AT HfpCmd <at cmd>`
<at cmd>	`Custom or established HFP At Command. Must begin with "AT".`
Example	`AT hfpcmd AT+ssfrt` `-> AT+SSFRT`
Example	`AT hfpcmd AT-SsdF` `-> AT-SSDF`

AT LinkTest

The LinkTest command is used to provide link quality information between the local device and a designated remote device. You can set the number of iteration the test measures and then averages. Results are the average signal strengths in decibels. Default iteration count is ten.

Command	AT LinkTest <addr> <iterations*>
<iterations>	Number of individual attempts to test the radio strength. Average is returned.
Example	AT linktest 646E6CFFFFFF 14 -> LinkTest Connecting -> Average RSSI = -18

AT Name

The Name command is used to set the name of this device reported when other Bluetooth devices perform discoveries. Note: most devices are not searching for Bluetooth Gateway devices, so this device may not be included in a device discovery listing. Typically smart phones are screening for discoverable devices, to only find Headset types. The name is saved in flash memory.

Command	AT Name <devicename*>
<key>	Up to 32 character name.
Example	AT Name My Speaker -> Name My Speaker

AT PairingDelete

The Pairing delete command deletes the paired device information of the previously connected device. If connected, the device will drop the connection before deleting the information.

Command	AT PairingDelete
Example	AT PairingDelete -> ResetPairedList

AT PairingMax

The PairingMax command is used set the limit for how many previous devices the device can store in the Paired Devices List. The default limit is 7. The acceptable range is 1-7.

Command	AT PairingMax <max>
<max>	Limit of Bluetooth devices to remember in PDL. 1-7
Example	AT PairingMax 4 -> 4

AT Profile

The AT Profile command selects between the A2DP or HFP profiles. The profile selection will be updated during a reset. Note that A2DP and AVRCP are enabled and disabled together.

Command	AT Profiles <A2dp/Hfp>
<profile>	Select from either A2DP of HFP
Example	AT Profiles a2dp -> Set A2DP Mode

AT Reset

The Reset command will simply cold reset the device.

Command	AT Reset
Example	AT Reset -> Reset [Reboot]

AT SQ

The SQ command acts as the Uart equivalent of the SQ PIO, which sends a custom SQON or SQOFF(on or off Squelch commands) to be recognized by a kcAudioHS device. The AT SQ command accepts "on" or "off" for toggling.

Command	AT SQ <switch>
<switch>	Toggle "On" or "Off"
Example	AT SQ on -> On

AT State

The State command allows the user to display the device's current state of operation.

Command	AT State
Example	AT State -> [Streaming]

AT TimeoutIdle

The Timeout Idle command sets how long the gateway will remain on and disconnected in idle mode before it automatically powers off. Default timeout is 30 minutes.

Command	AT TimeoutIdle <min>
< min >	Timeout in Minutes.
Example	AT TimeoutIdle 24 -> 24 min

AT TimeoutInq

The Timeout Inquiry command sets how long the gateway will search for a new device for pairing. The device goes to Idle state after an unsuccessful inquiry timeout.

Command	`AT TimeoutInq <sec>`
< sec >	`Number for the timeout in seconds. Note the return value is in milliseconds.`
Example	`AT TimeoutInq 12` `-> 12000 ms`

AT Version

The Version command simply outputs the complete version. Version 6.9 followed by the specified build.

Command	`AT Version`
Example	`AT Version` `-> kcGateway v8.0.4 Standard`

AT Volume

The Volume command increments and decrements the currently volume level of the currently active profile (A2DP or HFP). Volume levels are saved in flash memory per device, as separate levels for each A2DP and HFP.

Command	`AT Volume <+/->`
<+/->	`Either + increment volume, or – decrement volume`
Example	`AT Volume +` `-> +`
Example	`AT Volume -` `-> -`

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