

Amp'edUP HID API Reference Guide

12 April, 2012

TABLE OF CONTENTS

Contents

1	HID SIGNALS.....	3
1.1	HID Command Signals.....	3
1.1.1	SIG_AMP_HID_CONFIG_ProductName	3
1.1.2	SIG_AMP_HID_CONFIG_ProviderName.....	4
1.1.3	SIG_AMP_HID_CONFIG_DeviceSubclass.....	5
1.1.4	SIG_AMP_HID_CONFIG_ReportDescriptor	6
1.1.5	SIG_AMP_HID_LISTEN_REQ	7
1.1.6	SIG_AMP_HID_CONNECT_REQ.....	7
1.1.7	SIG_AMP_HID_SEND	8
1.1.8	SIG_AMP_HID_DISCONNECT_REQ.....	10
1.2	HID Event Signals.....	11
1.2.1	SIG_AMP_HID_CONTROL	11
1.2.2	SIG_AMP_HID_REPORT.....	11
1.2.3	SIG_AMP_HID_GETREPORT.....	12
1.2.4	SIG_AMP_HID_CONFIG_CON.....	13
1.2.5	SIG_AMP_HID_LISTEN_CON.....	14
1.2.6	SIG_AMP_HID_CONNECT_CON.....	15
1.2.7	SIG_AMP_HID_CONNECT_STATUS	16
1.2.8	SIG_AMP_HID_SEND_CON.....	17
1.2.9	SIG_AMP_HID_DISCONNECT_CON	17

1 HID Signals

The functionalities provided by the command and event signals in HID are:

- Connection and disconnection of two devices,
- Sending HID data over the RF link,
- Receiving HID data over the RF link,
- Indicating status of the HID connection/disconnection/data transfer.

For more information about the terms used in this section, please refer to the **BLUETOOTH HUMAN INTERFACE DEVICE PROFILE 1.1** and **USB Device Class Definition for Human Interface Devices (USB HID Specification), Version 1.11**

1.1 HID Command Signals

The following list contains all HID signals going from an embedded application to the AMP.

- a) SIG_AMP_HID_CONFIG_ProductName
- b) SIG_AMP_HID_CONFIG_ProviderName
- c) SIG_AMP_HID_CONFIG_ReportDescriptor
- d) SIG_AMP_HID_CONFIG_DeviceSubclass
- e) SIG_AMP_HID_LISTEN_REQ
- f) SIG_AMP_HID_CONNECT_REQ
- g) SIG_AMP_HID_DISCONNECT_REQ
- h) SIG_AMP_HID_SEND
- i) SIG_AMP_HID_GET_CONNECT_STATUS

1.1.1 SIG_AMP_HID_CONFIG_ProductName

The purpose of this command signal is to allow the application to set the HID **ProductName** attribute descriptor in the SDP database.

Signal Structure Type Name: tSIG_AMPHidConfigProductName

Signal Number	Parameters
SIG_AMP_HID_CONFIG_ProductName	uint32 Transac; uint16 TaskId; uint16 Length; uint8 ProductName[AMP_PRODUCT_NAME_MAX_LENGTH];

1.1.1.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

Length

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The length of ProductName The max value should less then AMP_PRODUCT_NAME_MAX_LENGTH The value of AMP_PRODUCT_NAME_MAX_LENGTH is 25 bytes

ProductName

Size: param pointer

Value	Parameter Description
An array of 25	The ProductName content

1.1.1.2 Event(s) Generated

SIG_AMP_HID_CONFIG_CON event signal will be sent to the application, for more information, please refer to the chapter [1.2.4](#).

1.1.2 SIG_AMP_HID_CONFIG_ProviderName

The purpose of this command signal is to allow the application to set the HID ProviderName attribute descriptor in the SDP database.

Signal Structure Type Name: tSIG_AMPHidConfig_ProviderName

Signal Number	Parameters
SIG_AMP_HID_CONFIG_ProviderName	uint32 Transac; uint16 TaskId; uint16 Length; uint8 ProviderName[AMP_PROVIDER_NAME_MAX_LENGTH];

1.1.2.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

Length

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The length of ProviderName The max value should less then AMP_PROVIDER_NAME_MAX_LENGTH The value of AMP_PROVIDER_NAME_MAX_LENGTH is 25 bytes

ProviderName

Size: param pointer

Value	Parameter Description
An array of 25	The ProviderName content

1.1.2.2 Event(s) Generated

SIG_AMP_HID_CONFIG_CON event signal will be sent to the application, for more information, please refer to the chapter [1.2.4](#).

1.1.3 SIG_AMP_HID_CONFIG_DeviceSubclass

The purpose of this command signal is to allow the application to set the HID DeviceSubclass attribute descriptor in the SDP database.

Signal Structure Type Name: tSIG_AMPHidConfigDeviceSubclass

Signal Number	Parameters
SIG_AMP_HID_CONFIG_DeviceSubclass	uint32 Transac; uint16 TaskId; uint8 DeviceSubclass

1.1.3.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

DeviceSubclass

Size: param pointer

Value	Parameter Description
1 Byte	DeviceSubclass which HID profile defined. for example 0x80 == mouse, 0x00 == Non-standard equipment

1.1.3.2 Event(s) Generated

SIG_AMP_HID_CONFIG_CON event signal will be sent to the application, for more information, please refer to the chapter [1.2.4](#).

1.1.4 SIG_AMP_HID_CONFIG_ReportDescriptor

The purpose of this command signal is to allow the application to set the HID ReportDescriptor attribute descriptor in the SDP database.

Signal Structure Type Name: tSIG_AMPHidConfig_ReportDescriptor

Signal Number	Parameters
SIG_AMP_HID_CONFIG_ProviderName	uint32 Transac; uint16 TaskId; uint16 Length; uint8 *ReportDescriptor;

1.1.4.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

Length

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The length of ReportDescriptor The max value should less then REPORT_DESCRIPTOR_MAX_LENGTH The value of REPORT_DESCRIPTOR_MAX_LENGTH is 150 bytes

ReportDescriptor

Size: param pointer

Value	Parameter Description
An pointer of ReportDescriptor	The HID ReportDescriptor defined in HID specification. The user should alloc buffer use OS_getbuf, and HID Manager will release the buffer after use.

1.1.4.2 Event(s) Generated

SIG_AMP_HID_CONFIG_CON event signal will be sent to the application, for more information, please refer to the chapter [1.2.4](#).

1.1.5 SIG_AMP_HID_LISTEN_REQ

The purpose of this command signal is to allow the application to start the HID server and put it into listen mode. This would also add the HID service information in the SDP database, so that HID clients can perform SDP queries in order to get the service name and connect to the HID server.

Signal Structure Type Name: tSIG_AMPHIDListenRequest

Signal Number	Parameters
SIG_AMP_HID_LISTEN_REQ	uint32 Transac; uint16 TaskId;

1.1.5.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

1.1.5.2 Event(s) Generated

SIG_AMP_HID_LISTEN_CON event signal will be sent to the application with an result code, for more information, please refer to the chapter [1.2.5](#).

1.1.6 SIG_AMP_HID_CONNECT_REQ

The purpose of this command signal is to inform that the application is behaving like the HID client and is trying to connect to the HID server. The server resides in the BD_Addr of the device that was specified by the client under the service name.

Signal Structure Type Name: tSIG_AMPHIDConnectRequest

Signal Number	Parameters
SIG_AMP_HID_CONNECT_REQ	uint32 Transac; uint16 TaskId; tBdAddr BdAddr;

1.1.6.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

BdAddr

Size: 6 Bytes

Value	Parameter Description
A structure with one member called Byte, that is an array of 6 bytes, with the index 0 being the LS byte of the BD_addr	Bluetooth device Address of the remote server.

1.1.6.2 Event(s) Generated

There are two event signals possible for this command.

When HID server received **SIG_AMP_HID_CONNECT_REQ**, **SIG_AMP_HID_CONNECT_CON** event signal will be sent to the application with an result code, for more information, please refer to the chapter [1.2.6](#).

When HID server have get the result of the connection, **SIG_AMP_HID_CONNECT_STATUS** is sent to the application indicating the result that the connection is down or up with the error codes. For more information, please refer to the chapter [1.2.7](#).

1.1.7 SIG_AMP_HID_SEND

The purpose of this command signal is to allow the application to send data over the established HID connection. In order to send data with zero copying, it is mandatory that the data-to-be-sent is present in a RAM buffer. There is an HID API function that needs to be called to get the memory allocated in the RAM.

```
void *OS_getbuf (UINT16 size)
```

Signal Structure Type Name: tSIG_AMPHIDSend

Signal Number	Parameters
SIG_AMP_HID_SEND	uint32 Transac; uint16 TaskId;

Signal Number	Parameters
	uint8 psm; uint8 report_type; uint16 Length; uint8 *pData;

1.1.7.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0xFFFFFFFF (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

Psm

Size: 1 Bytes

Value	Parameter Description
0XX (1 Bytes)	HID_CTRL_PSM =0x11 HID control channel HID_INTR_PSM =0x13 HID interrupt channel

report_type

Size: 1 Bytes

Value	Parameter Description
0XX (1 Bytes)	REPORT_OTHER = 0x00 REPORT_INPUT = 0x01 REPORT_OUTPUT = 0x02 REPORT_FEATURE = 0x03

Length

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	Number of bytes to send (size of the data). The max value should less then 300 bytes

pData

Size: param pointer

Value	Parameter Description
An pointer of Data	The Report Data The user should alloc buffer use OS_getbuf, and HID Manager will release the buffer after use.

1.1.7.2 Event(s) Generated

SIG_AMP_HID_SEND_CON event signal would be generated and sent to the application , for more information please refer to the chapter [1.2.8](#).

1.1.8 SIG_AMP_HID_DISCONNECT_REQ

The purpose of this command signal sent by the application is to disconnect the HID connection.

Signal Structure Type Name: tSIG_AMPHIDDisconnectRequest

Signal Number	Parameters
SIG_AMP_HID_DISCONNECT_REQ	uint32 Transac; uint16 TaskId;

1.1.8.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

TaskId

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	The Task ID of APP

1.1.8.2 Event(s) Generated

There are two event signals possible for this command.

When the **SIG_AMP_HID_DISCONNECT_REQ** command has been received by HID server, then **SIG_AMP_HID_CONNECT_CON** event signal would be generated and sent to the application, for more information, please refer to the chapter [1.2.9](#).

Afer **SIG_AMP_HID_DISCONNECT_REQ** command is finished , the **SIG_AMP_HID_CONNECT_STATUS** will be sent to the application indicating the result that the connection is down or up with the error codes. For more information, please refer to the chapter [1.2.7](#).

1.2 HID Event Signals

The following list contains all HID signals going from the AMP to an embedded application.

- a) SIG_AMP_HID_CONTROL
- b) SIG_AMP_HID_REPORT
- c) SIG_AMP_HID_GETREPORT
- d) SIG_AMP_HID_CONFIG_CON
- e) SIG_AMP_HID_LISTEN_CON
- f) SIG_AMP_HID_CONNECT_CON
- g) SIG_AMP_HID_CONNECT_STATUS
- h) SIG_AMP_HID_DISCONNECT_CON
- i) SIG_AMP_HID_SEND_CON

1.2.1 SIG_AMP_HID_CONTROL

When received a HID_CONTROL command from from the remote HID Host, HID server will send SIG_AMP_HID_CONTROL to to inform the application.

Signal Structure Type Name: tSIG_AMP_HidControl

Signal ID	Parameters
SIG_AMP_HID_RECV	uint32 Transac; uint8 cmd;

1.2.1.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information. Usually set to 0.

cmd

Size: 1 Byte

Value	Parameter Description
0xXX (1 Byte)	SUSPEND = 0x03 EXIT_SUSPEND = 0x04 VIRTUAL_CABLE_UNPLUG = 0x05

1.2.2 SIG_AMP_HID_REPORT

The purpose of this event signal is to inform the application about any report that has been received from the remote HID host. The responsibility of releasing the data buffer memory (pData) is with the application. The application must call the following API function with the parameter pData after consuming the received data.

```
void OS_freebuf (void *bptr)
```

Signal Structure Type Name: tSIG_AMPHidReport

Signal ID	Parameters
SIG_AMP_HID_REPORT	uint32 Transac; uint8 psm; uint8 report_type; uint16 Length; uint8 *pData;

1.2.2.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXX (4 Bytes)	Context information from the application

Psm

Size: 1 Bytes

Value	Parameter Description
0xXX (1 Bytes)	HID_CTRL_PSM =0x11 HID control channel HID_INTR_PSM =0x13 HID interrupt channel

report_type

Size: 1 Bytes

Value	Parameter Description
0xXX (1 Bytes)	REPORT_OTHER = 0x00 REPORT_INPUT = 0x01 REPORT_OUTPUT = 0x02 REPORT_FEATURE = 0x03

Length

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	Number of bytes to send (size of the data). The max value should less then 300 bytes

pData

Size: param pointer

Value	Parameter Description
An pointer of Data	The Report Data The user should release buffer use OS_freebuf

1.2.3 SIG_AMP_HID_GETREPORT

When received a HID_GETREPORT command from the remote HID host, HID server will send SIG_AMP_HID_GETREPORT to to inform the application. The application should send a HID report back to the remote HID host.

Signal Structure Type Name: tSIG_AMPHidGetReport

Signal ID	Parameters
SIG_AMP_HID_GETREPORT	uint32 Transac; uint8 report_type;

1.2.3.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

report_type

Size: 1 Bytes

Value	Parameter Description
0xXX (1 Bytes)	REPORT_OTHER = 0x00 REPORT_INPUT = 0x01 REPORT_OUTPUT = 0x02 REPORT_FEATURE = 0x03

1.2.4 SIG_AMP_HID_CONFIG_CON

When the **SIG_AMP_HID_CONFIG_XXX** command has been accepted, then **SIG_AMP_HID_CONFIG_CON** event signal will be sent to the application with an result code.

Signal Structure Type Name: tSIG_AMPHidConfigCon

Signal ID	Parameters
SIG_AMP_HID_CONFIG_CON	uint32 Transac; uint16 Status;

1.2.4.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	<ul style="list-style-type: none">a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors).b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command.c) AMP_RESULT_NO_RESOURCES (0x0007) – When there are no resources (for example no memory or no connection)d) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.

1.2.5 SIG_AMP_HID_LISTEN_CON

When the **SIG_AMP_HID_LISTEN_REQ** command has been accepted, then **SIG_AMP_HID_LISTEN_CON** event signal will be sent to the application with an result code.

Signal Structure Type Name: tSIG_AMPHIDListenCon

1.2.5.1 Signal Parameters

Signal ID	Parameters
SIG_AMP_LISTEN_CON	uint32 Transac; uint16 Status;

1.2.5.2 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXX (4 Bytes)	Context information from the application

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors). b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command. c) AMP_RESULT_NO_RESOURCES (0x0007) – When there are no resources (for example no memory or no connection) d) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.

1.2.6 SIG_AMP_HID_CONNECT_CON

When the **SIG_AMP_HID_CONNECT_REQ** command has been accepted, then **SIG_AMP_HID_CONNECT_CON** event signal will be sent to the application with an result code.

Signal Structure Type Name: tSIG_AMPHIDConnectCon

Signal ID	Parameters
SIG_AMP_HID_CONNECT_CON	uint32 Transac; uint16 Handle; uint16 Status;

1.2.6.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXX (4 Bytes)	Context information from the application

Handle

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	Port handle to be used to send data in the Client. Application must save this information.

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors). b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command. c) AMP_RESULT_NO_RESOURCES (0x0007) – When

Value	Parameter Description
	<p>there are no resources (for example no memory or no connection)</p> <p>d) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.</p>

1.2.7 SIG_AMP_HID_CONNECT_STATUS

The purpose of this event signal is to inform the HID client application about the result of the connection which is sent in response to connect as well as disconnect.

Signal Structure Type Name: tSIG_AMP_HID_ConnectStatus

Signal ID	Parameters
SIG_AMP_HID_CONNECT_STATUS	Transac Handle Status

1.2.7.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

Handle

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	Port handle used to send data.

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (2 Bytes)	<p>a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors).</p> <p>b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command.</p> <p>c) AMP_RESULT_NO_RESOURCES (0x0007) – When there are no resources (for example no memory or no connection)</p> <p>d) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.</p>

1.2.8 SIG_AMP_HID_SEND_CON

The purpose of this event signal is to inform the client application that the SIG_AMP_HID_SEND_REQ is processed.

Signal Structure Type Name: tSIG_AMPHidSendCon

Signal ID	Parameters
SIG_AMP_HID_DISCONNECT_CON	Transac Status

1.2.8.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (Lower 2 Bytes)	a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors). b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command. c) AMP_RESULT_NO_RESOURCES (0x0007) – When there are no resources (for example no memory or no connection) d) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.

1.2.9 SIG_AMP_HID_DISCONNECT_CON

The purpose of this event signal is to inform the client application that the HID connection is going to be disconnected or there is any error in disconnect request.

Signal Structure Type Name: tSIG_AMPHIDDisconnectCon

Signal ID	Parameters
SIG_AMP_HID_DISCONNECT_CON	Transac Status

1.2.9.1 Signal Parameters

Transac

Size: 4 Bytes

Value	Parameter Description
0XXXXXXXXX (4 Bytes)	Context information from the application

Status

Size: 2 Bytes

Value	Parameter Description
0XXXXX (Lower 2 Bytes)	<ul style="list-style-type: none">a) AMP_RESULT_SUCCESS(0x0013) – the command has been accepted successfully (No errors).b) AMP_RESULT_FAIL(0x0014) – occurred an error when process the command.c) AMP_RESULT_NO_RESOURCES (0x0007) – When there are no resources (for example no memory or no connection)a) AMP_RESULT_PARAMETER_ERROR (0x0002) – In all other cases.
