PUART protocol

Notice

Choose one of A2DP sink and IAP2.

Protocol parameter

transport order	parameter name	byte	description
0	header	1	fixed value. 0xa5
1	index	1	index of each product's command. when the command doesn't care this param, you can use any.
2	conn_id	2	id of BLE's connection, or SPP's handle.
3	Product type	1	
4	command	2	
5	length	2	length of payload
6	payload	0~1024	data to transport
7	check	1	param order 0~6, XOR calculate

Transport method

Big-Endian

Command

MIDI

1. transport data of MIDI to device

MIDI Data I/O Characteristic (UUID:772E5DB-3868-4112-A1A9-F2669D106BF3) notification

product type	command	conn_id	payload	response
0x01	0x0000	0x0001	data of MIDI	true

2. response of transport data of MIDI to device

product type	command	conn_id	payload	response
0x01	0x8000	0x0001	0x00: success;	false
			0x01: failed;	
			0x02: failed, notification is disable;	
			0x03: queue of command is out of range or command format is error,	
			0x04: check value is error	

3. transport data of MIDI to module

MIDI Data I/O Characteristic (UUID:7772E5DB-3868-4112-A1A9-F2669D106BF3) write

product type	command	conn_id	payload	response
0x01	0x0001	0x0001	Send Data to PUART TX	false

BLE

1. transport data of BLE to device

transport data by UUID_BLE_AT_NOTIFY_DATA(UUID:5a87b4ef-3bfa-76a8-e642-92933c31434f) notification

product type	Command	conn_id	payload	response
0x02	0x0000	0x0001	data	true

2. response of transport data of BLE to device

product type	Command	conn_id	payload	response
0x02	0x8000	0x0001	0x00: success;	false
			0x01: failed;	
			0x02: failed, notification is disable;	

			0x03: queue of command is out of range or command format is error, 0x04: check value is error	

3. transport data to PUART TX from UUID_BLE_AT_WRITE_DATA(UUID: 2d86686a-53dc-25b3-0c4a-f0e10c8dee20)

product type	Command	conn_id	payload	response
0x02	0x0001	Any	data	false

4. modify name of BLE

max 20 bytes

product type	Command	conn_id	payload	response
0x02	0x0002	Any	name	true

5. response of modify name of BLE

product type	Command	conn_id	payload	response
0x02	0x8002	Any	0x00: success; 0x01: failed; 0x03: queue of command is out of range or command format is error, 0x04: check value is error	false

6. notification of the status of BLE's connection

product type	Command	conn_id	payload	response
0x02	0x0003		0x00: connection up; 0x01: connection down;	false

7. Set ADV Interval

product type	Command	conn_id	payload	response
0x02	0x0004		Length=2, range [32,16384] ie. Interval = [32,16384]*0.625ms	True

8. Response of Set ADV Interval

product type	Command	conn_id	payload	response
0x02	0x8004		0x00: success	false
			0x03: length of payload < 2	

9. Set ADV User Data

product type	Command	conn_id	payload	response
0x02	0x0005		Max length 26 bytes	True

10.Response of Set ADV User Data

product type	Command	conn_id	payload	response
0x02	0x8005		0x00: success	false
			0x01: fail to write to the flash	
			0x03: length of payload is out of range	

SPP/IAP2

1. transport to SPP

product type	Command	conn_id	payload	response
0x03	0x0000		data	true

2. response of transport to SPP

product type	Command	conn_id	payload	response

0x03	0x8000		0x00: success; 0x01: failed; 0x03: queue of command is out of range or command format is error, 0x04: check value is error	false

3. transport to PUART TX

product type	Command	conn_id	payload	response
0x03	0x0001		data	false

4. status of SPP's connection

product type	Command	conn_id	payload	response
0x03	0x0002		0x00: connection up; 0x01: connection down;	false

BR EDR

1. modify name of BR EDR

max 20 bytes

product type	Command	conn_id	payload	response
0x04	0x0000		name	true

2. response of modify name of BR EDR

product type	Command	conn_id	payload	response
0x04	0x8000		0x00: success; 0x01: failed; 0x03: queue of command is out of range or command format is error, 0x04: check value is error	false

A2DP sink

1. status of A2DP sink

product type	Command	conn_id	payload	response
0x05	0x0000		0x00: connection success;	false
			0x01: connection failed;	
			0x02: disconnected;	
			0x03: streaming started;	
			0x04: streaming suspended	

System

1. Change the baud rate of PUART

e.g. current baud rate is 115200, send command to change baud rate to 9600, then you will receive the response in 115200 baud rate. The module will delay about 150ms to change the baud rate after it receives this command.

product type	Command	conn_id	payload	response
0x06	0x0000		3 bytes (range 9600 to 3000000, include 9600, 3000000)	True

2. Response of Change the baud rate of PUART

product type	Command	conn_id	payload	response
0x06	0x8000		0x00: success;	false
			0x01: failed;	
			0x03: queue of command is out of range or command format is error,	
			0x04: check value is error	

3. Auto reconnect to the bond device (A2DP) when the module starts.

product type	Command	conn_id	payload	response
0x06	0x0001		0x01: enable;	True
			0x00: disable.	

4. Response of Auto reconnect to the bond device (A2DP) when the module starts.

product type	Command	conn_id	payload	response
0x06	0x8001		0x00: success;	False
			0x01: failed;	
			0x03: queue of command is out of range or command format is error,	
			0x04: check value is error	

5. The initialization response of the module.

product type	Command	conn_id	payload	response
0x06	0x0002	0x0000	0x00: success;	False
			0x01: failed;	

6. Change the model to the transparent transmission of SPP/IAP2

product type	Command	conn_id	payload	response
0x06	0x0003		Timeout (unit 1s)	true

7. Response of Change the model to the transparent transmission of SPP/IAP2

product type	Command	conn_id	payload	response
0x06	0x8003		0x00: success;	False
			0x01: failed;	

8. Shut Down Sleep（HID OFF)

product type	Command	conn_id	payload	response
0x06	0x0004		No payload	False

Wake's pin is P30. Wake up on rising edge and then the module will restart.

9. Set ADV TX Power

product type	Command	conn_id	payload	response

0x06	0x0005		Length=1, range [-3, 12]dbm	true

The module will restart after the command processed.

10. Response of Set ADV TX Power

return when command 9 of system is error

product type	Command	conn_id	payload	response
0x06	0x8005		0x01: error when write to flash	false
			0x03: length of payload is 0	

Use of param index

order	product type	command	index
0	0x04	0x00 00	0x01
1	0x04	0x80 00	0x01

when you send command order 0, you will get the response order 1.

When you get the response, it can find the corresponding request.

Example of Check calculate

header	index	conn_id	product type	command	length	payload
0xa5	0x01	0x00 00	0x04	0x00 00	0x00 02	0x59 59

0xa5 ^ 0x01 ^ 0x00 ^ 0x00 ^ 0x04 ^ 0x00 ^ 0x00 ^ 0x00 ^ 0x02 ^ 0x59 ^ 0x59 = 0xa2

check is 0xa2

Examples

1. MIDI

header	index	conn_id	product type	command	length	payload	check
0xa5	0x01	0x00 01	0x01	0x00 00	0x00 05	0x80 0x80 0x90 0x3c 0x3f	0x32
0xa5	0x01	0x00 01	0x01	0x80 00	0x00 01	0x00	0x25

send command 0 , receive response command 1.

2. BLE notification

header	index	conn_id	product type	command	length	payload	check
0xa5	0x01	0x00 01	0x02	0x00 00	0x00 05	0x80 0x80 0x90 0x3c 0x3f	0x31
0xa5	0x01	0x00 01	0x02	0x80 00	0x00 01	0x00	0x26

send command 0 , receive response command 1.

3. change name of BR EDR

header	index	conn_id	product type	command	length	payload	check
0xa5	0x01	0x00 00	0x04	0x00 00	0x00 02	0x59 59	0xa2
0xa5	0x01	0x00 00	0x04	0x80 00	0x00 01	0x00	0x21

send command 0 , receive response command 1.

4. Change baud rate

header	index	conn_id	product type	command	length	payload	check
0xa5	0x01	0x00 00	0x06	0x00 00	0x00 03	0x00 25 80	0x04
0xa5	0x01	0x00 00	0x06	0x80 00	0x00 01	0x00	0x23

Change to 9600