

# Digital Sound Processor

## Protocol

The central control can be controlled via UDP and RS232.

When controlled by UDP, the default port is 50000, and the port can be set in "Device Settings" through the host computer software set up.

When controlled by RS232, the default baud rate is 115200, data bit 8, stop bit 1, no parity bit, which can be set it in "Device Settings". When sending RS232, the interval between messages needs to be kept above 100 milliseconds.

If the central control needs to reply, please turn on the central control reply switch in the "device settings". 0- means success, other values indicate specific errors.

Central control commands can be viewed through PC software-Help-Central Control Commands.

The command format for level acquisition is as follows: (hexadecimal format)

Channel	Input	Output
1	B3220d002b010c0000000000	B32205002701080000000000
2	B3220e002b010c0001000000	B32206002701080001000000
3	B3220f002b010c0002000000	B32207002701080002000000
4	B32210002b010c0003000000	B32208002701080003000000
5	B32211002b010c0004000000	B32209002701080004000000
6	B32212002b010c0005000000	B3220a002701080005000000
7	B32213002b010c0006000000	B3220b002701080006000000
8	B32214002b010c0007000000	B3220c002701080007000000
9	B32215002b010c0008000000	B3220d002701080008000000
10	B32216002b010c0009000000	B3220e002701080009000000
11	B32217002b010c000a000000	B3220f00270108000a000000
12	B32218002b010c000b000000	B3221000270108000b000000
13	B32219002b010c000c000000	B3221100270108000c000000
14	B3221a002b010c000d000000	B3221200270108000d000000
15	B3221b002b010c000e000000	B3221300270108000e000000
16	B3221c002b010c000f000000	B3221400270108000f000000

For example, to obtain the level of input channel 2, send B3220e002b010c0001000000, and then receive a reply B322B002B010 000100D4D6. At this time, 0x0100 (blue font) represents the channel number, The corresponding floating point value of 0xD4D6 (decimal System: -11050) -110.5 dBFS is the required level. (Note: please turn on the central control reply switch.)

Note: The channel number starts from 0, channel 3 is 2, and channel 1 is 0. Floating point values need to be multiplied by 100 or divided by 100 (integer conversion).

Software coding rules: (v1 version, V1 version supports fixed length 12 bytes, currently does not support variable length, will be supported soon.)

Total:12 bytes.

Byte1	Byte2	Byte3	Byte4	Data Byte5~12
0xb3	Message type	Checksum		Return value

Checksum: 12 bytes are added to take the lower 8 bits.

Return value: Use when opening reply.

Message type: 0x21 (parameter control) or 0x22 (parameter acquisition) or 0x13 (switch scene)

### 0x21 (parameter control)

At this time, Databyte5~12 are as follows

Data byte 5~6	Data byte 7~8	Data byte 9~10	Data Byte11~12
Module ID	Parameter type	Parameter value 1	Parameter value 2

See Appendix 1 for the module ID.

See appendix 2 for parameter types.

When there is only one parameter, only parameter value 1 is valid, for example, control compressor switch.

Parameter value 2 is valid when there are 2 parameters, for example, controlling input channel 1 to mute.

Parameter 1: the input channel number

parameter 2: 1 (mute).

There is a special case. Matrix routing has three parameters. The first is the input

channel number, and the second is the output channel number. The third is the routing switch. At this time, please fill in the byte9 of parameter value 1 with input and byte10 with output, and parameter value 2 with routing switch.

### 0x22 (parameter acquisition)

The parameter acquisition rule is the same as parameter control, the difference is that the acquired value is filled in the parameter value 1 and parameter value 2.

### 0x13 (switch scene)

Please fill the scene number (1~16) in byte5.

Byte6~12 fill in 0.

Appendix 1:

Module ID

Module name	ID	Module name	ID
Input source	299	Output channel 1-32 high and low pass	167~198
Input channel 1-32 expander	1~32	Output channel 1-32 equalizer	199~230
Input channel 1-32 compressor	33~64	Output channel 1-32 delayer	231~262
Input channel 1-32 automatic gain	65~95	Output channel 1-32 limiter	263~294
Input channel 1-32 equalizer	97~128		
Input channel 1-32 feedback suppression	129~160		
Automatic mixing	161	Echo cancellation selector	162
Echo cancellation	163	Noise suppression selector	164
Noise suppression	165		
Sound mixer	166		
Output	295		
System control	296		

Appendix 2:

Parameter Type

Module name	Parameter type	Description
Input source	0x1	Gain
	0x2	Mute

	0x3	Sensitivity
	0x4	Phantom power switch
	0x5	Signal generator type
	0x6	Signal generator frequency
	0x7	Sine wave gain
	0x8	Channel name
	0x9	Inverted
	0x10	Gain step
	0x11	Link
	0x12	Channel level
Output	0x1	Gain
	0x2	Mute
	0x3	Channel name
	0x4	Inverted
	0x5	Sensitivity
	0x6	Gain step
	0x7	Link
	0x8	Channel level
Delayer	0x1	Bypass switch
	0x2	millisecond
	0x3	Microsecond
Equalizer	0x1	Equalizer master switch
	0x2	Subsection switch
	0x3	frequency
	0x4	Gain
	0x5	Q value
	0x6	Type
Extender	0x1	switch
	0x2	Threshold
	0x3	ratio
	0x4	Establishment time
	0x5	Release time
Compressor	0x1	Compressor switch
	0x2	Compressor threshold
	0x3	Compressor ratio
	0x4	Establishment time
	0x5	Recovery Time
	0x6	Gain compensation
Mixer	0x1	Mixing switch
	0x2	Mixing gain
High and low pass	0x1	High pass switc
	0x2	Qualcomm type

	0x3	High pass slope
	0x4	High pass frequency
	0x5	Mixing gain
	0x11	Low pass switch
	0x12	Low pass type
High and low pass	0x13	Low pass slope
	0x14	Low pass frequency
	0x15	Low pass gain
Feedback suppression	0x1	switch
	0x2	Feedback point frequency
	0x3	Feedback point gain
	0x6	Preset
	0x7	Clear
	0x8	Panic threshold
	0x9	Feedback depth
Automatic mixing	0x1	Master mute
	0x2	Total gain
	0x3	Slope
	0x4	Response time
	0x5	Channel automatic switch
	0x6	Channel mute
	0x7	Channel gain
	0x8	priority
	0x9	Automatic mixing switch
Automatic gain	0x1	switch
	0x2	Threshold
	0x3	Target threshold
	0x4	ratio
	0x5	Establishment time
	0x6	Release time
Echo cancellation	0x1	Echo cancellation switch
	0x2	Echo cancellation mode
Noise suppression	0x1	Noise suppression switch
	0x2	Noise suppression mode
System control	0x1	System mute
	0x2	System gain

### Appendix 3: Examples

**Control input channel 3 mute: (channel number starts from 0, channel 3 is 2, channel 1 is 0)**

The input channel module ID is 299, the mute parameter type is 0x2, and the value (mute is 1, cancel mute is 0)

Then, the central control command is:

B32105002b01020002000100

**Control the mixer input 3 to output channel 4 to start mixing:**

The mixing module ID is 166 and the mixing parameter type is 0x1.

Then the central control command is:

B3218100A600010002030100

**Get the level of output channel 3:**

The ID of the output module is 295, and the level parameter type is 0x7,

Then, the central control command sent is:

B32207002701080002000000