

FREUDE

Digital Signal Processor

User Manual



Digital Signal Processor FP-6

Before using this product, please read the instruction carefully and keep it for reference.

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Notice

Warning:

- To prevent short circuit, please keep the device away from water or wet places.
- If water or any other liquid soak into the device, cut off the power immediately, and call our service engineer of inspection, in case of emergency.
- Users are not allowed to dismount the device, please contact our service engineers when it's necessary.



Pack List

The following items should be placed in the box according to the model you purchased. If there is any missing, please inform the seller or manufacturer as soon as possible.

FP-6	1pc
User Manual	2pcs(1Chinese,1 English)
USB2.0 Cable(1.5m)	1pc
Power high level composite wire	1pc
Installation Bracket	4pcs
Oval Head Screws	4pcs
Mechanical Tooth Head Screws	8pcs

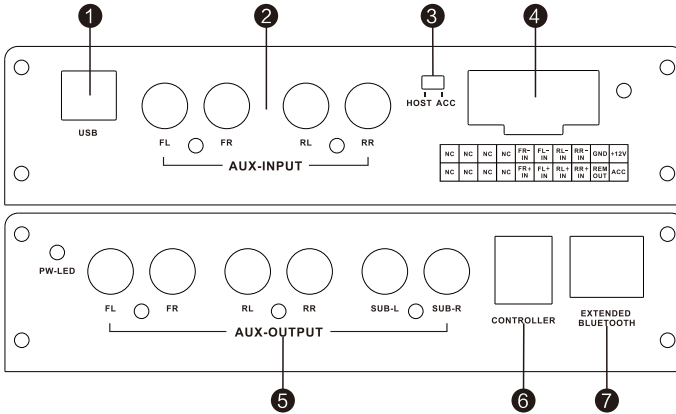
Optional Parts

In addition to the items in the packing of the model you purchased, you can also buy the following accessories separately according to your needs:

Controller (Data call, total volume adjustment)
Bluetooth (Bluetooth play/tune)

Interface Introduction

The machine interface diagram is as follows:



1.USB port,connect to the computer tuning software

Drive-free automatic identification installation.

2.Low level input

Connect up to 4 channel input.

3.REM input selection switch

Put the switch on “ACC” mode to start the device by ACC,put the switch on “HOST” mode to start the device by high level FL IN+/FL IN- input signal.

4.High level input and output port

- "+" is positive pole, "-" is negative pole, "GND" is negative pole of the power supply or ground, "+12V" is positive pole of the power supply.
- "REM OUT" is the output control port and "ACC" is the input control port.
- Only the special wire for the original car is selected, or the user can define the external wiring material by himself.
- Before connecting the power supply, you must confirm that the power supply meets the designed power requirements and connect in strict accordance with the equipment instructions. Otherwise, the equipment may be damaged and may cause accidents such as fire,electric shock, etc.

NC	NC	NC	NC	FR- IN	RL- IN	RL- IN	RR- IN	GND	+12V
NC	NC	NC	NC	FR+ IN	FL+ IN	RL+ IN	RR+ IN	REM OUT	ACC

5.Low Level Output

Connect up to 6 channel output.

6.The controller port

Data call and total volume adjustment can be performed by the line controller.

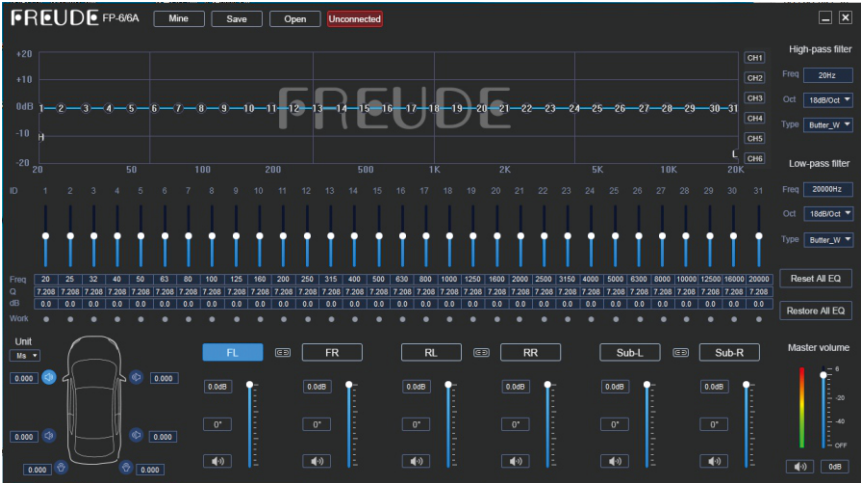
7.External Digital Bluetooth Input

Android Phone, APP function only can be used when on Bluetooth Mode.

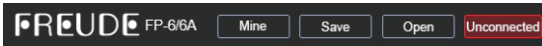
PC Software Operation Introduction

Operation requirements:

Screen resolution higher than 1280x768, otherwise the software UI is incomplete, only suitable for windows operation system laptop, desktop and pads.



1. Main menu edit area



Main features: Mine, Save, Open and connected operation.

- ① Mine: Chinese and English switching, High level model, update/About (Check the version) and restore factory settings.
- ② Save: Save 15 sets of preset sound effects to a machine or computer.
- ③ Open: Turn on the preset sound saved to the machine or computer.
- ④ Connected: Click the "unconnected" button to connect to the host PC.

2. The output channel diagram shows the frequency response curve in the edit area



Figure 1

EQ is adjustable in section 31 of the frequency response curve display area in the output signal channel diagram. Press and hold the left mouse button when the mouse moves to the ordinal position, and drag the mouse up and down to adjust the equalizer gain; Drag the mouse around to adjust the equalizer frequency. When the mouse moves to the left and right green box, press and hold and drag left and right to adjust the Q value of the equalizer. All the above adjustments will display the parameters of the current equalizer in real time in the parameter display and edit area corresponding to the sequence number below, and also update the values in the parameter edit area of the equalizer. The parameter display and edit area are shown in figure 2.

3. Output channel gain, Q value, frequency editing area

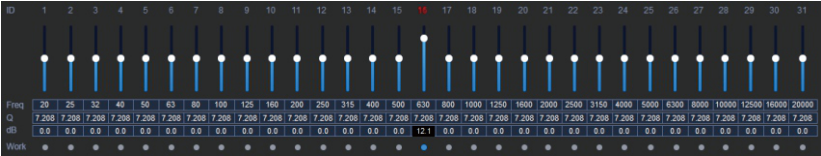
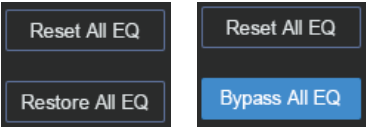


Figure 2

- ① Frequency: In the edit area, you can enter values directly, scroll the mouse wheel and the up and down keys on the keyboard to adjust the frequency.
- ② Q value: In the editing area, the Q value can be adjusted by directly entering the value, the mouse wheel and the up and down keys on the key board (The adjustable range: 0.404~28.85)
- ③ Gain: In the edit area, you can enter values directly, scroll the mouse wheel and the up and down keys on the keyboard to adjust the gain. (adjustment range: -20dB~20dB)

4. Setup the equalizer



- ① Click [reset all equalizers] to restore the parameters of the 31-segment equalizer to the original pass-through mode (the frequency, Q value and gain of the equalizer are restored to the initial value).
- ② When there is channel adjustment, the display of "pass-through all equalization" will be displayed. After clicking, the gain will be restored to the initial value, and then the pass-through equalization button will become "restore all equalization". After clicking, all values (frequency, Q value and gain) will be restored to the value before the pass-through.

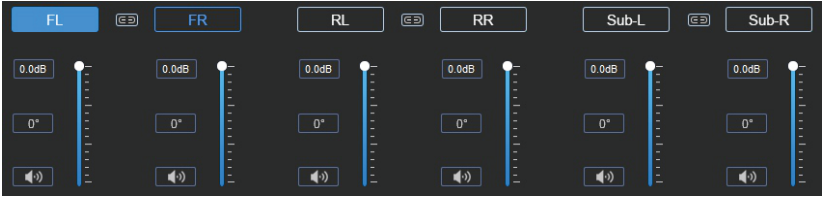
5. Divider editing area

Channel High & Low Pass Filter Setup:

- ① Click the slope drop down list, and you can select 6dB/Oct, 12dB/Oct, 18dB/Oct, 24dB/Oct, and 30dB/Oct.
- ② Frequency adjustment range: 20Hz~20KHz.
- ③ Types: Bessel, Linkwitz-Riley and Butterworth.



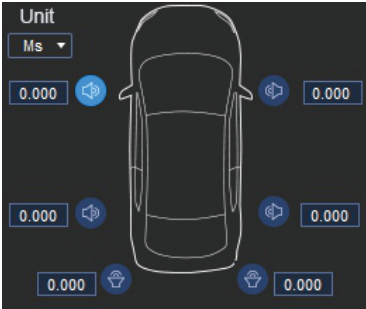
6. Output channel adjustment area



Output channel adjustment area, positive and negative phase of each channel, volume adjustment, mute, joint adjustment, etc.

- ①The output alignment:Click the tone button to tune the output channel.
- ②Sound adjustment:Slide the scroll up and down to adjust the sound level of the channel, or input the value or scroll the mouse wheel in the sound input box to adjust the sound size. Click the horn button to switch between mute.
- ③Positive phase adjustment:Click [0°] or [180°] to switch between positive phase and reverse phase.

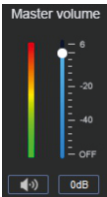
7.Delay positioning the edit area



- ①Delay: Set the delay value by scrolling the mouse wheel in the delay input box, or enter the value to set the delay value.
Milliseconds range:0.000~10.000;
Centimeters range:0~346.
- ②Set delay unit:millisecond,Centimeter.

8.Main Volume Adjust Zone

Adjustment Range:On/off, -59dB ~ 6dB. Click the speaker button to mute the main volume.



Product Technology Data

Technical specifications

Dynamic Range(RCA Input)	≥ 105dB
S/N (RCA Input)	≥ 90dB
THD	≤ 0.01%
Frequency Response	20Hz ~ 20KHz
Decoding Capability	32bit/48KHz
Input Impedance	Low Level input: 12KΩ , High Level input: 240Ω
Low Level Output Impedance	100Ω
Signal Input & Output Range	RCA input: 5.5Vpp; High level input: 26Vpp; RCA Output: 5.5Vpp
Working Temperature	-20 ~ 70°C
Power	DC 9V ~ 16V
REM Input	High level start (FL+/FL-), ACC start optional
REM Output	+12V Start-up Voltage Output(0.1A)
Standby Power	≤ 0.1W
Weight	Approx 0.9KG
Product Dimension	176(L) *141.2(W) *40(H)mm

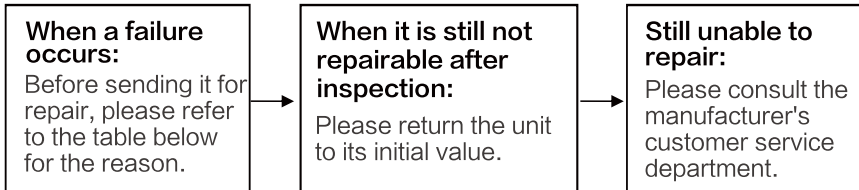
Technical Sheet

Input Signal Type	4 Channel high level, 4 Channel Low Level , external digital Bluetooth(high and low level hardware mixing)
Output Signal Type	6 Channel low level output
Output Signal Gain	Gain Range: Mute,-59dB ~ 6dB
Output Signal EQ	31 Levels EQ 1.Frequency Range : 20Hz ~ 20KHz,1Hz Accuracy 2.Q Value(Slope) : 0.404 ~ 28.85 3.Gain : -20.0dB ~ +20.0dB, 0.1dB Accuracy
Output Signal Crossover	Ach output is equipped with a multi-order high-low pass independent filter. 1.Professional filter type:Butterworth,Linkwitz-Riley, Bessel 2.Filter Crossover Point:20Hz ~ 20KHz,Resolution 1Hz 3.Filter Slope Setup:6dB/Oct ~ 30dB/Oct.
Output Phase and Time Alignment	Adjust phase and time alignment for every output channel. Phase:In Phase or Out Phase(0° ~ 180°). Time Alignment:0.000 to 10.000ms, 0 to 346cm.
Presets	Save 15 presets into the device.

Troubleshooting

Troubleshooting

Check all the cables and ports all perfectly safe before you switch on the power. Common troubleshooting procedure:



Troubleshooting method

No.	Malfunction	Reason and Solution
1	No Power	① Check the power connection ② Check the ACC connection
2	No Sound	① Is it in mute mode ? ② Have you choose the right input signal channel.
3	Unable to connect USB	① Check the USB connection. ② Check if the driver “HID-compliant device” has been installed in your PC.

The contents of this manual and the specifications of this product are subject to change without notice. SICHERHEIT reserves the right to make changes to the specifications and materials contained therein without notice.



SICHERHEIT (ASIA) CO., LIMITED
Address: Flat/rm 815 8/f Star House 3 Salisbury Road
Tsim Sha Tsui, Kowloon, Hong Kong

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