Xonar Essence STU

Hi-Fi USB DAC (Digital-to-Analog Converter)

Opamp Swap Guide
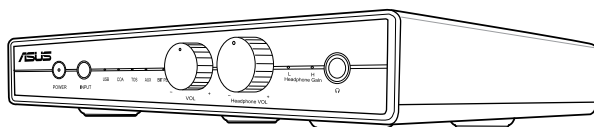
An operational amplifier (op-amp) plays an important role in audio performance and tonal style by creating distinct listening experiences. Catering to the needs of audiophiles, Essence series streamline Op-Amp modifications with easily-swappable op-amp sockets.

1. Swap guide

Change all the OP-amps of the same types in the same slot. For example, if you need to change DAC I/V (slot 1), you would need to change all the OP-amps of the same types in all slot 1. If you need to change LPF (slot 2), you need to change the OP-amps of the same types in all slot 2.
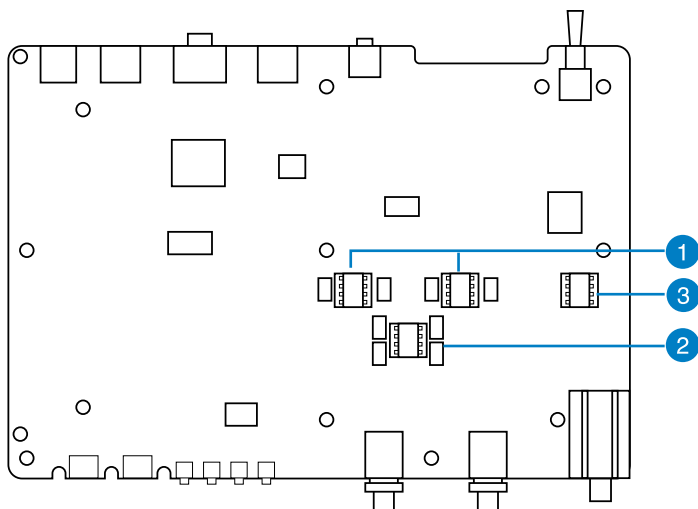
| NO.	Items
1	I/V Slot (slot 1)
2	LPF Slot (slot 2)
3	DC Servo

1. Serves as I/V (current to voltage convertor) that turns current from DAC into voltage for output purpose.
2. Serves as Low Pass Filter that filters background noises.
3. Serves as DC Servo for the headphone. Changing this will affect the headphone output.

2.   Instructions on swapping op-amps

1. Use an IC clamp to clasp an op-amp and remove it vertically upwards.
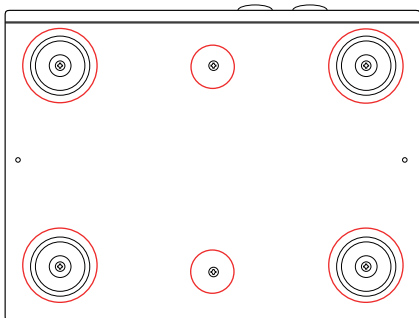2. Replace it with a new op-amp from the op-amp kit.

To avoid reversion, ensure that the half-moon opening on the op-amp points the same way as that on the socket.
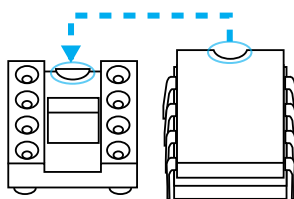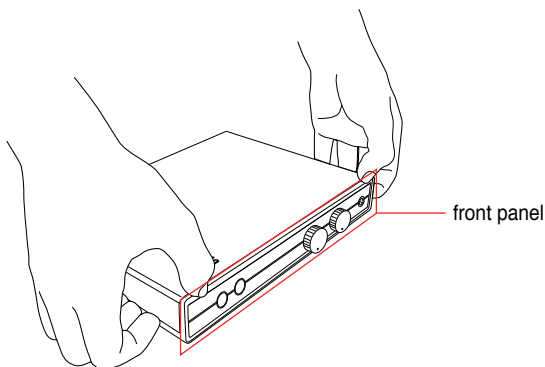

3.   Disassembly

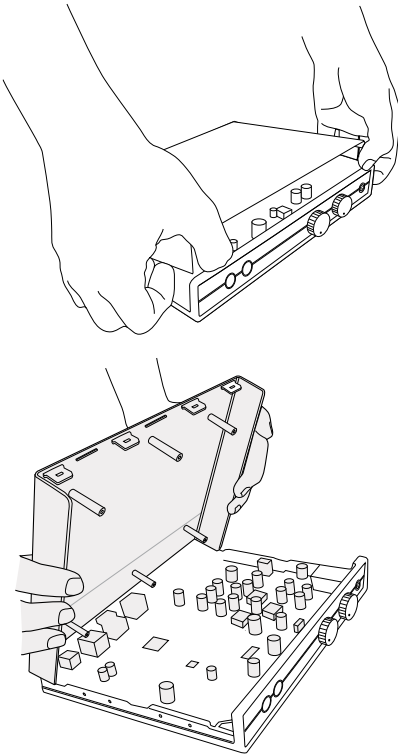1. Remove the six screws on the bottom of the base.

2. Place your thumbs on top of the front panel and your other fingers on the sides.
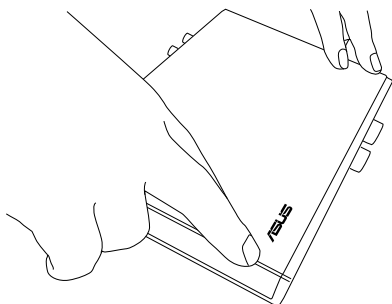

front panel

3. Push the front panel with your thumbs and use your four fingers to carefully lift the top cover upward.

4. After swapping, insert the front side first then snap in the backend to replace the top cover.

ASUS Xonar Essence STU Opamp Swap Guide
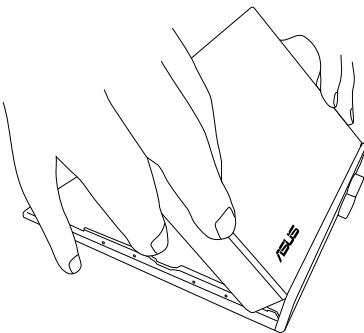
4.   Op-amp pairing impression

Recommended OPamp pairing combinations

Brand	Model name
NS	LME49860
NS	LME49720NA
NS	LM4562NA
TI	OPA2111
TI	OPA2132
TI	OPA2107
ADI	OP275
ADI	AD823
NJRC	MUSE01
NJRC	MUSE02

Sound Impression

The following table lists the sound impression brought by different combinations of op-amp pairing.

DAC I/V Slot 1	DAC LPF Slot 2	Sound Impression
TI – OPA2107	TI – OPA2132	Brighter vocal, slightly less bottom sound
TI – OPA2107	NS – LME49860	Even brighter than the above combination, and more detailed with less but tighter bottom sound
NS – LME49720	NS – LM4562NA	Less warm than stock OP-amps, more extensive detailed and dampened mid-range, Essence ST/STX style
NS – LM4562NA	NS – LM4562NA	Wider sound stage but less detailed than the above combination
NS – LM4562NA	NJRC – MUSE02	Powerful, punchy sound with good sound stage; less detailed present.
NS – LME49720NA	NJRC – MUSE02	Brighter, thinner sound and more detailed than the above combination

Exclusions from this limited Warranty Service

ASUS does not warrant uninterrupted or error-free operation of this Product. The warranty only covers technical hardware issues during the warranty period and under normal use conditions. It does not apply to software issues or customer induced damages or circumstances such as but not limited to:

(a) the Product has been tampered with, repaired and/or modified by non-authorized personnel;

(b) the serial number of the Product, components or accessories has been altered, cancelled or removed;

(c) the warranty seals have been broken or altered;

(d) obsolescence;

(e) damage (accidental or other) to the Product that is cosmetic, meaning damage that does not impact the operation and functioning of the Product, such as without limitation to rust, change in color, texture or finish, wear and tear, gradual deterioration;

(f) damage to the Product caused by war, terrorism, fire, accident, natural disaster, intentional or accidental misuse, abuse, neglect or improper maintenance, use under abnormal conditions;

(g) damage to the Product cause by improper installation, connection or malfunction of a peripheral device such as printer, optical drive, network card, or USB device, etc.;

(h) damage to the Product cause by improper installation, modification and/or repairing of components

(i) damage to the Product caused by an external electrical fault or any accident;

(j) damage to the Product resulting from use outside of the operation or storage parameters or environment detailed in the User's Manual;

(k) damage to the Product caused by third party software or virus(es); or there is software loss or data loss that may occur during repair or replacement;

(l) Un-usability due to forgotten or lost security passwords.

(m) Un-usability of or damage to the Product caused by contamination with hazardous substances, diseases, vermin or radiation.

(n) fraud, theft, unexplained disappearance or willful act;

Except as provided in this Warranty and to the maximum extent permitted by law, ASUS is not responsible for direct, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory, including but not limited to loss of use; loss of revenue; loss of actual or anticipated profits (including loss of profits on contracts); loss of the use of money; loss of anticipated savings; loss of business; loss of opportunity; loss of goodwill; loss of reputation; loss of, damage to or corruption of data; or any indirect or consequential loss or damage whatsoever caused including the replacement of equipment and property, any costs of recovering or reproducing any data stored on or used with the Product. The foregoing limitation shall not apply to death or personal injury claims, or any statutory liability for intentional and gross negligent acts and/or omissions by ASUS. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages; to the extent such jurisdiction is governing this Warranty the above limitations do not apply to You.

The standard warrantee policy applies to all Xonar-related products.