

1. Overview

STA328 board is a digital amplifier with S/PDIF input and output directly to speakers. It also has a analog input for wider use. The volume/channel and other configuration can be easy controlled by a rotary encoder or a remote controller, and value/state will be displayed on the LED module panel. A speaker delay/protection circuit is also build in controlled by the MCU on board.

2. Electrical specifications

Operating conditions Vcc=DC 28V, Tamb = 25°C unless otherwise specified

Table1. Specifications list

PARAMETER	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Vcc (Power supply voltage)	AC (dual rail)		16	20	25	V
	DC		20	28	35	V
Po (Output power)	2.0 channel	RL = 4Ω, VCC = 21 V		40	50	W
		RL = 8Ω, VCC = 35 V		60	80	W
	2.1 channel	RL = 8Ω, VCC = 35 V		32	40	W
SNR				100		dB
Digital attenuation				90	100	dB
Vin(rms) (Analog input signal level)				1.5		V

3. Function Description

3.1 Inputs

3.1.1 Coaxial(CH.1) and Optical(CH.2) input

Up to 192kHz/24bit S/PDIF signal can be accepted.

3.1.2 Analog(CH.3)input

The board accept stereo analog signal and convert it to digital signal then send to DDX unit. The sample rate of ADC on board is 96kHz.

3.2 Outputs

The output can be setup for 2.0 or 2.1 channel. See Hardware setup for setup details. Use connector marked L-OUT (Left output) and R-OUT(Right output) for 2.0 channel setup, and for 2.1 channel, OUT-P(Left + Right positive outputs) and OUT-N(negative outputs) are used for stereo outputs, and L-OUT for 3<sup>rd</sup> channel. Make sure do the setup before use.

3.3 Hardware setup

Some functions can be configured or switch on/off by DIP-4 switch on board list in Table2.

Table2. DIP- 4 switch description

SWITCH NUMBER	NAME	STATE	DESCRIPTION
1	Auto-saving	ON	Auto save the volume/channel/remote code etc. when power off
		OFF	Restore the default data every time power on
2	Display dimming	ON	Display auto off after 5sec
		OFF	Display always keep on
3	Output setup	ON	2.1 channel output
		OFF	2.0 channel output
4	Volume +10dB	ON	Volume +10dB maximum
		OFF	Volume 0dB maximum

3.4 Display and Control

3.4.1 DDX328 use a 3 digital 7-segment LED module as display.

The LED will display sample rate frequency of the input signal. LED will be auto off when DIP-4 switches set to OFF(details in Table2).

3.4.2 Control by rotary encoder(we call it EC in short below)

- Volume adjustment: turn the EC to left or right to control volume down or up.
- Channel switching: press the EC button to control the channel switch from CH1 to CH3 by cycling.
- Standby/Wake-up: press the EC button up to 2 sec to enter the standby mode or back to active(ON) state.
- Setup bass frequency for 3rd channel: power on the board and press the EC button when display the frequency value. The value of bass frequency has a range from 80Hz~360Hz with 20Hz/step, or pass-through with display 000. The amplifier will process forward after about 5sec no pressing action.
- Enter remote learning mode: Remote learning means you can use any remote controller for this board. Press the EC button during power on to enter learning mode. Press button on remote according to the display. Reboot the amplifier after learning.

Table3. Remote learning mode display

DISPLAY	Remote key
000	Standby/ON
111	Mute
222	Volume-
333	Volume+
444	Channel-
555	Channel+
666	EQ
777	MODE
888	MIX
999	DFT
AAA	TONE
BBB	F1
CCC	F2
DDD	F3
EEE	Not used/ recycling

- Adjust the brightness of display: Press the EC button during power on(enter remote learning mode) then turn the EC.

3.4.3 Control by a remote controller

The remote control functions list in table3.

Table4. Remote key functions

Key name	function	Display
POWER	Enter the standby or wake up	. for stand by
MUTE	Mute enter/exit	--- , when mute
VOL+/VOL-	Volume increase/decrease	
CH+/CH-	Channel switch up/down	
EQ	Preset EQ: E.-- =EQ bypass E.00=EQ Flat E.1 3=Bass boost 1 E.1 4=Bass boost 2 E.1 5=Bass boost 3	E.xx (x means value, same as below)
MODE	Enter/exit the remote learning mode	000 when enter
MIX	Switch the left and right channel on output	1-2 or 2-1
DFT	Restore the default configuration	DFT
TONE	Enter the bass volume	Bxx, xx=00-30 range
F1	For testing only	
F2	Display the current channel	CH.x
F3	Adjust the brightness of display	4 levels, level-2 by default

4. Installation

PCB Size: 215\*80mm

5. Q&A

- Q: How can I use a new remote to control the board?  
A: First of all, enter the learning mode, and follow the table 3 to setup every function keys, then, press the MODE key again on the old remote controller, or reboot the board. Enjoy your new remote controller.
- Q: I'm using a new remote now, but how can I back to use the old one?  
A: There are 2 ways to do that, 1<sup>st</sup>: enter the remote learning mode and use the DFT on old remote controller. 2<sup>nd</sup>: setup the DIP-4 sw1 to off and reboot the amplifier.
- Q: The LED do not display sample rate frequency but channel information, why?  
A: Check that the volume is not minimum or muted.
- Q: Can I change the DIP-4 switches when the power on?  
A: We do not suggest that. Some switches like SW-3 should be set according to the output connection. So, please setup the switches when power off.