DESI DECIBEL

SWETON® SPEAKERS Since 1982

Loudspeaker, amplifier and mixer knowledge for the people who sell sound. Every week.

A note to our partners

Thank you for the replies to Issue 01. Several of you asked the same question: why does the amplifier shut down when four speakers are connected to one channel? This week's Speaker School answers it. We also look at the 12 PT 500 MB GOLD, the 12-inch mid-bass that line array builders ask for by name.

Rahul Agarwal, Sweton Speakers

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Speaker School — Lesson 2

Speaker impedance: 8, 4 and 2 ohm wiring

Speaker impedance (ohm, Ω) is the electrical load a speaker puts on the amplifier. Wiring changes that load, and the wrong load is the most common reason an amplifier overheats, shuts down or burns.

1 Parallel — load goes down

Every plus goes to the amplifier's plus, every minus to minus. Two 8 Ω speakers in parallel make 4 Ω; four make 2 Ω. The amplifier pushes more current, gives more power and makes more heat.

> **Tell the customer**
> **Parallel is the usual way, but count the load before you connect.**

2 Series — load goes up

The plus of one speaker goes to the minus of the next, like a chain. Two 8 Ω speakers in series make 16 Ω. Safe load, but the amplifier gives less power into it.

> **Tell the customer**
> **Series is for safety, not for loudness.**

3 Minimum load — the amplifier's limit

Every amplifier has a minimum load printed on the back: 4 Ω or 2 Ω per channel. Below it, the amplifier overheats, trips or burns. A 2 Ω stable amplifier takes four 8 Ω speakers in parallel; a 4 Ω amplifier cannot.

> **Tell the customer**
> **Read the back panel before you count the speakers.**

4 Mixed impedance — avoid it

A 4 Ω and an 8 Ω speaker on one channel do not share power equally: the 4 Ω one takes twice as much, plays louder and gets overdriven first.

> **Tell the customer**
> **Put the same impedance on each channel.**

Wiring four 8-ohm speakers: what the amplifier sees

All four in parallel	**2 Ω**	Most power, most heat. Only for amplifiers marked 2 Ω stable
Two pairs: series, then parallel	**8 Ω**	Safe for any amplifier; power shared equally
Two per channel, in parallel	**4 Ω / ch**	The usual set-up with a two-channel amplifier

Rule of thumb: equal speakers in parallel divide the impedance by the number of speakers; in series, multiply it.

Amp Corner — Amplifiers

Bridge mode: when to use it, when not to

Bridge mode joins an amplifier's two channels into one with roughly double the power. Useful for a subwoofer; also the easiest way to burn an amplifier.

The bridge rule: in bridge mode each channel sees half the load, so a 4 Ω speaker works each channel at 2 Ω. The minimum load in bridge mode is double the normal one, usually 8 Ω. The amplifier's spec sheet says so.

Use it	Avoid it	Check first
A single subwoofer One 8 Ω subwoofer that needs more power than one channel gives.	**Low loads** Two or more speakers in parallel. A 4 Ω load bridged is 2 Ω per channel, which most amplifiers cannot take.	**The switch and the wiring** Set the bridge switch, then wire the speaker across the two plus terminals exactly as the back panel shows.

Example: an amplifier gives 1000 W per channel at 4 Ω and 2000 W bridged at 8 Ω. One 8 Ω subwoofer rated 1000 W AES: bridge it. Two in parallel (4 Ω): do not bridge; run one on each channel.

Three signs of a wrong bridge set-up

The amplifier goes into protection on bass-heavy songs even at moderate level.

The heat sink is hot within minutes, while in stereo mode it runs cool.

Sound is thin or missing: the bridge switch is on but the speaker is wired to one channel.

Mixer Desk — Mixers

How to use mixer EQ: cut before you boost

The EQ knobs on a mixer channel (low, mid, high) raise or lower a band of frequencies. Most operators turn them up. Professionals turn them down first: a cut cleans the sound without adding level, feedback or distortion.

EQ in four steps

1. Start with every EQ knob at the centre (flat). Set gain and fader as in Issue 01.
2. Listen for the problem: boomy, muddy, harsh or hissy. Decide which band it lives in.
3. Cut that band three to six dB and listen again. Most problems disappear with a cut.
4. Only now boost, and only a little. A boost asks the amplifier for more power.

Common fixes

Boomy, heavy bass
Cut the low knob, or the low-mid around 200–400 Hz

Muddy voice
Cut the low-mid around 250–500 Hz

Harsh, tiring treble
Cut the high-mid around 2–4 kHz

Feedback
Find the ringing band and cut it

Why cutting is safer: every boost adds level, which pushes the mixer and amplifier closer to clipping and invites feedback. A cut does the opposite and keeps the headroom you set in gain staging.

Product of the week

Sweton PT Series

12 PT 500 MB GOLD

Sweton 12-inch mid-bass speaker with 500 W AES power, 98 dB sensitivity and a 3-inch voice coil, built for line arrays and PA cabinets.



Sweton 12 PT 500 MB GOLD, 12-inch mid-bass driver

12 PT 500 MB GOLD specifications

Nominal diameter	314 mm (12 in)
Impedance	8 Ω
Power handling (AES)	500 W
Program power	1000 W
Sensitivity (1 W / 1 m)	98 dB
Frequency range	55–4500 Hz
Voice coil	76.2 mm (3 in), copper
Winding	In/out
Former	Glass fibre
Magnet	Ferrite
Gross weight	9.2 kg

Best use and cabinet type

Large-format line arrays, two-way PA cabinets, stage monitors and mid-bass bins. Suited to bass reflex (ported) enclosures. Sweton's enclosure guide recommends 55–65 litres net, tuned at 65 Hz, with two 4-inch by 6-inch ports; a sealed 40–50 litre box gives a tighter, punchier response.

Amplifier power needed

500 to 1000 W at 8 Ω for each driver, run without clipping.

Keep in mind

- It is a mid-bass, not a subwoofer. Below 55 Hz, give the work to an 18-inch.
- Pair it with a 1-inch or 1.4-inch compression driver of 80–100 W AES. Ask us for the crossover points for your cabinet.

Read it with the four numbers

Power handling

500 W AES, 1000 W program. A mid-bass does not need subwoofer power; what it needs is control, and the 3-inch coil with in/out winding gives it.

Sensitivity

98 dB is high for a 12-inch. With 500 W, that calculates to about 125 dB at 1 metre. It gets loud on a modest amplifier.

Impedance

8 Ω. Two in one line array cabinet, in parallel, make 4 Ω. Four across two channels, two per channel, stay at 4 Ω per channel.

Frequency response

55–4500 Hz with a low Qts of 0.23: a tight, punchy driver that wants a ported cabinet. Cross it to the compression driver in the 1.5 to 2 kHz region.

Three lines for your counter

1. 98 dB sensitivity: it plays as loud on 500 W as an ordinary 12-inch plays on 1000 W.
2. Built on the Klippel Analyzer and tested on CLIO 12.5, so every piece measures the same as the spec sheet.
3. Recone kit REC12PT500MBG is available. Made in Kolkata, India by Sweton, since 1982.

Open the enclosure guide | Open the spec sheet

Thiele-Small parameters for cabinet makers

Fs	Qts	Qes	Qms	Vas	Xmax
53 Hz	0.23	0.24	20.03	57 L	± 4.72 mm
Bl	**Sd**	**Re**	**Le (1 kHz)**	**Mms**	**EBP**
22.42 T·m	530.93 cm^2	5.7 Ω	0.40 mH	62.3 g	221 Hz

Baffle cut-out 282 mm, bolt circle 296 mm, depth 147 mm, flange and gasket 15 mm.

Counter Talk

Selling

Customer

"Four of your 12-inch speakers on one channel, and my amplifier keeps shutting down. Your speakers are faulty."

How to answer: three questions before blaming the speaker

1. **How were the four wired?** All in parallel makes 2 Ω. The amplifier's protection is doing its job.
2. **What minimum load is printed on the amplifier?** If it says 4 Ω, that channel takes two speakers, not four.
3. **Can we rewire them?** Two pairs, series then parallel, give 8 Ω; or two on each channel at 4 Ω.

Then test one speaker alone on the channel. If it plays cleanly, the load was the problem. Draw the wiring on the carton for the customer; it earns more trust than an argument.

Myth or truth?

"Bridge mode gives double the power for free."

Myth

It gives more power, but halves the load each channel can accept and works both channels hard. Real gain on a single 8 Ω speaker; a burnt amplifier on a low load.

See the PT Series range on our website

Question of the week

Last week's answer

Both play equally loud, about 124 dB: 3 dB of sensitivity equals doubling the amplifier.

Four 8 Ω speakers, one two-channel amplifier rated 4 Ω minimum per channel. How do you connect them so all four play safely at full power?

WhatsApp your answer to **70444 11800**

The answer is in the next issue.

Next week

Issue 03

Speaker School
What a crossover does, and why each driver gets one band.

Amp Corner
Reading the clip and protect lights

Mixer Desk
Monitor mix: what the singer hears

Next product
15 PT 500 MB GOLD, 15-inch mid-bass

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Desi Decibel is the weekly dealer newsletter of Sweton Speakers. Sweton is an Indian loudspeaker brand, established in 1982 and manufactured by Octune Electronics LLP in Kolkata. Power ratings follow the AES2-1984 test standard. Specifications are as shown on swetonspeakers.com on 14 October 2026.