DESI DECIBEL

SWETON® SPEAKERS Since 1982

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

A note to our partners

Every big show now hangs a curved column of boxes from the truss, and every customer asks why. This week's Speaker School explains what a line array does in words a dealer can repeat. Our product is the 15 PT 1000 MB [4.0], the fourth version of our most-asked-for 15-inch.

Rahul Agarwal, Sweton Speakers

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Speaker School — Lesson 8

What a line array does, and why it curves

A single cabinet throws sound like a torch: a cone that spreads and fades fast. A line array stacks many cabinets into one tall source, so sound leaves as a sheet instead of a cone. The sheet loses level more slowly with distance; that is the whole point.

1 Point source 6 dB per doubling

A single box loses 6 dB every time the distance doubles: 10 m to 20 m, 20 m to 40 m. The front rows are deafened so the back can hear. No fader fixes this; it is geometry.

> Tell the customer
> **One big box cannot be loud at the back without hurting the front.**

2 The line 3 dB per doubling

A tall column of drivers behaves as a line source in its near field: it loses only 3 dB per doubling. The sheet holds together. The taller the column, the lower the frequency at which this works.

> Tell the customer
> **Stacking boxes vertically changes the physics, not just the loudness.**

3 The curve aiming each box

A straight column throws a narrow beam that overshoots the crowd. Angling the lower boxes down (the J shape) aims them at the front rows at lower level, while the straight top boxes reach the back at full level.

> Tell the customer
> **The top boxes reach the back; the bent boxes cover the front.**

4 What it needs matched drivers, DSP

Every box must sound the same or the sheet tears, which is why Sweton builds array drivers to tight tolerances. A processor sets delay and EQ per box. An array is a system, not a pile of speakers.

> Tell the customer
> **Buy the drivers as a matched set, and build every box to the same drawing.**

Point source vs line array: level at distance

At 10 m	Both 110 dB	Set the same at the front of the crowd
At 20 m	Point 104 · Array 107 dB	The array has gained 3 dB over the single box
At 40 m	Point 98 · Array 104 dB	At the back the array is 6 dB louder

Simplified. The line-source gain holds in the near field, about 30–40 m for a 3 m array; beyond it the array also falls at 6 dB per doubling.

Amp Corner — Amplifiers

Input sensitivity: the knob is not a volume

Input sensitivity is the signal voltage that drives an amplifier to full power. Get it wrong and the mixer clips before the amplifier is loud, or the amplifier clips while the meters look safe.

The rule: the mixer's maximum output should land at the amplifier's full-power input, and no further. Match the two once, mark the knobs, and run the night on the mixer master.

Sensitivity	Input knobs	The match
0.775 V, 1.4 V or 32 dB Common settings: 0.775 V (0 dBu), 1.4 V (+4 dBu) or a fixed gain of 26–32 dB. A lower voltage means a more sensitive amplifier.	**Attenuators, not gain** The front knobs only reduce the signal. Fully open is the sensitivity on the back; turned down, the amplifier needs more from the mixer, which clips first.	**Mixer max to amp max** A mixer that peaks at +18 dBu into a +4 dBu amplifier has 14 dB of surplus: the amplifier clips long before the mixer. Turn the inputs down 14 dB, or pad on the processor.

Example: a demo rig sounded harsh at a modest master level. The amplifier was on 0.775 V sensitivity with knobs fully open, so a mixer at 0 dB already drove it into clip. Switching to 1.4 V gave 5 dB more fader before the clip light.

Three steps to set it once

Play pink noise with the mixer at 0 dB on the meters, raise the amplifier inputs until the clip light just blinks, and mark the knob.

Leave the marks alone all night. Loudness lives at the mixer master, where the meters tell the truth.

If the mark is below half, change the sensitivity switch rather than running the knobs low, which raises noise.

Mixer Desk — Mixers

Graphic EQ: 31 bands, 3 rules

The 31-band graphic sits between the mixer and the amplifiers, and it is the most abused box in sound rental: a smile curve carved in with every slider. Three rules make it useful.

The three rules

1. Cut, never boost. Every slider above the line adds level and invites feedback. The graphic removes room problems; the channel EQ makes things sound nice.
2. Small moves. A 3 dB cut fixes most ringing; a 12 dB cut makes a hole in the music. If a band needs more than 6 dB, move the speaker.
3. Flatten it at every show. Yesterday's hall is not today's. Zero all 31 sliders, ring out as in Issue 5, and cut only what rings.

Where the usual problems live

Boom in a hall
125–250 Hz, cut 3–4 dB

Boxy, honky sound
400–630 Hz: cut 2–3 dB

Harsh, tiring top
2.5–4 kHz: cut 2–3 dB

The smile curve
Ends up, mids down: an untrained hand

Why the smile is wrong: mids down 8 dB and ends up is the same as 8 dB of boost at the ends, which eats headroom, heats the sub coils and pushes the HF drivers. A flat graphic with two small cuts sounds louder and cleaner.

Product of the week

Sweton PT Series

15 PT 1000 MB [4.0]

Sweton 15-inch mid-bass with 1000 W AES, 96 dB sensitivity and a 4-inch voice coil, for two-way tops, kick bins and stage monitors.



Sweton 15 PT 1000 MB [4.0], 15-inch mid-bass driver

15 PT 1000 MB [4.0] specifications

Nominal diameter	392 mm (15 in)
Impedance	8 Ω
Power handling (AES)	1000 W
Program power	2000 W
Sensitivity (1 W / 1 m)	96 dB
Frequency range	45–4000 Hz
Voice coil	99.3 mm (4 in), copper
Winding	Outside
Former	Glass fibre
Magnet	Ferrite
Gross weight	13.6 kg

Best use and cabinet type

Sweton's datasheet gives four designs. Compact two-way top: 55–62 L tuned 55–57 Hz, cross to HF at 1.2–1.6 kHz. Full-range reflex: 75–85 L tuned 50–52 Hz. Kick bin over subs: 65–70 L tuned 58–60 Hz, 60 Hz to 700–900 Hz. Stage wedge: 45–50 L tuned 58–60 Hz.

Amplifier power needed

1000 to 2000 W at 8 Ω per driver. Limiter per the datasheet: RMS 89.4 V, peak about 125 V.

Keep in mind

- Pair with a 1.4-inch or 2-inch compression driver, crossed at 1.2–1.6 kHz, 24 dB per octave.
- The datasheet suggests a small EQ cut around 250–400 Hz. Build it into the processor preset.

Read it with the four numbers

Power handling

1000 W AES, 2000 W program, on a 4-inch coil. At full power in the recommended box the cone uses only 6 of its 9 mm Xmax: limited by heat, not travel.

Sensitivity

96 dB from a light 167 g cone and a Bl of 25.2 T·m. More sound per watt than any other 15 in the PT range.

Impedance

8 Ω. Two in one cabinet make 4 Ω; four per channel on a 2 Ω amplifier for installs.

Frequency response

45–4000 Hz, Fs 52.8 Hz, Qts 0.46. The compact top plays down to about 53 Hz; the kick bin hands over to the subs at 60 Hz.

Three lines for your counter

1. 96 dB and 1000 W AES: the most sound per watt of any Sweton 15-inch.
2. Four cabinet designs on one datasheet, with crossover, EQ and limiter filled in: no guesswork.
3. Recone kit REC15PT10008E is available. Made in Kolkata, India by Sweton, since 1982.

Open the datasheet | Open the product page

Thiele-Small parameters for cabinet makers

Fs	Qts	Qes	Qms	Vas	Xmax
52.8 Hz	0.46	0.475	14.54	59.92 L	± 9.0 mm

Bl	Sd	Re	Le (1 kHz)	Mms	EBP
25.19 T·m	881.41 cm²	5.44 Ω	1.21 mH	166.77 g	111 Hz

Overall diameter 392 mm, bolt circle 376 mm, baffle cut-out 360 mm, depth 160 mm, flange and gasket 18.5 mm.

Counter Talk

Selling

Customer

"I want to build a line array with eight of your 15-inch drivers. Which model?"

How to answer: the right question first

1. **Ask what the array is for.** A hall of 500 needs four small boxes; a ground of 5,000 needs eight large ones. The count comes from the venue, not the budget.
2. **Explain why a 15 is the wrong array driver.** Above about 1 kHz a 15-inch cone beams and the sheet breaks up. Arrays use 10- or 12-inch drivers with a horn: show the 12 PT 400 LA MB from Issue 07.
3. **Then sell the 15 where it belongs.** The 15 PT 1000 MB [4.0] is the kick bin under the array, in a ported 65–70 L box. He still buys eight drivers; the right eight.

A customer talked out of the wrong design comes back for the subs, the HF drivers and the next project. A customer sold what he first asked for comes back with a complaint.

Myth or truth?

"More boxes in the array always means louder."

Myth

More boxes mean a longer line and a longer reach, but each box must still be angled to cover someone. Boxes aimed at the roof add only weight. The array is as loud as its aiming, not its count.

See the PT Series range on our website

Question of the week

Last week's answer

Qts 0.28: ported box (strong motor, needs the port). Qts 0.55: sealed box (the air spring tightens it).

A 3 m line array covers a 60 m ground. At 15 m the level is 108 dB. Roughly what is it at 30 m and at 60 m? (Near field first, then inverse square.)

WhatsApp your answer to **70444 11800**

The answer is in the next issue.

Next week

Issue 09

Speaker School
Max SPL: what 128 dB means

Amp Corner
Polarity and phase: the sub that cancels

Mixer Desk
Subgroups and DCAs

Next product
15 PT 1500 MB, 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 25 November 2026.