

DESI DECIBEL

SWETON[®]
S P E A K E R S
Since 1982

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

A note to our partners

Welcome to the first Desi Decibel, the weekly newsletter from Sweton Speakers. Every week, in four pages, we bring you one lesson on loudspeakers, one useful tip each on power amplifiers and audio mixers, and a straight review of one Sweton speaker. Read it in ten minutes. Use it at your counter the same day.

Rahul Agarwal, Sweton Speakers

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Speaker School

Lesson 1

How to read a speaker specification sheet

Four numbers on a loudspeaker specification sheet decide most of the sale: power handling, sensitivity, impedance and frequency response. Learn them and you can compare any two DJ or PA speakers in a minute.

1 Power handling AES vs Program vs Peak
Power handling is the amplifier power a speaker can take without damage. It is not loudness. **AES power** is the real continuous rating, tested for two hours on pink noise. **Program power** is $2 \times$ AES. **Peak power** is $4 \times$ AES. So 2500 W AES, 5000 W program and 10,000 W peak can be the same speaker.

Tell the customer

Compare AES with AES. A big peak watt number on a carton means nothing by itself.

2 Sensitivity in dB at 1 W / 1 m
Speaker sensitivity is how loud a speaker plays with 1 watt, measured 1 metre away. This is the real loudness number. Every 3 dB more gives the same loudness with half the amplifier power. Compare within one type only: a subwoofer with a subwoofer.

Tell the customer

Higher sensitivity means less money spent on amplifiers.

3 Impedance 8, 4 and 2 ohm loads
Speaker impedance is the electrical load the amplifier sees. Most pro speakers are 8 ohm (8 Ω). Two 8 Ω speakers in parallel make 4 Ω . Four make 2 Ω . The lower the load, the more power is pulled from the amplifier, and the more heat.

Tell the customer

Never go below the minimum load printed on the amplifier.

4 Frequency response in hertz (Hz)
Frequency response is the band of notes a speaker is built for. Low numbers are bass, high numbers are treble. Each driver has its own job: a subwoofer for the lowest bass, a mid-bass for punch and body, a compression driver for the clear top.

Tell the customer

Choose the driver for the job, then feed it only its own band through the crossover.

Sensitivity vs amplifier power: same loudness, half the watts

Speaker A	95 dB	+ 30 dB from 1000 W amplifier	125 dB
Speaker B	98 dB	+ 27 dB from 500 W amplifier	125 dB

Calculated maximum output at 1 metre. Three decibels of speaker sensitivity are worth as much as doubling your amplifier power.

Amp Corner

Amplifiers

How to match an amplifier to a speaker

A small amplifier pushed into clipping is harder on a speaker than a bigger amplifier running clean.

The amplifier matching rule: look at the amplifier's RMS power at the speaker's impedance. It should sit between the speaker's AES power and its program power.

AES		Program
Too small	The right zone	Too big
Below AES To get loud, the operator pushes it into clip. A clipped signal gives the voice coil no rest, so it keeps heating.	AES to Program Clean power, with headroom for the loud beats.	Above Program One mistake on the fader can burn the voice coil or throw the cone past its limit.

Example: a speaker rated 2500 W AES and 5000 W program at 8 Ω needs an amplifier that gives 2500 to 5000 W at 8 Ω for each speaker. With a careful operator and a limiter set, go nearer program power. For rough, all-night use, stay nearer AES.

Three checks that protect the voice coil

The clip light on the amplifier should only blink on the loudest beats. If it glows steadily, bring the level down.

Read the amplifier's power at the load you are really connecting (8, 4 or 2 Ω), not the biggest number on the front panel.

A burning smell, or sound that gets duller as the night goes on, means the voice coil is overheating. Reduce the level at once.

Mixer Desk

Mixers

How to set mixer gain: gain is not volume

On an audio mixer, the gain knob sets how strongly the signal enters a channel, and the fader sets how much goes out. Confuse the two and you get noise or distortion. Getting it right is called gain staging.

Gain staging in four steps

- 1 Pull the channel fader and the master down. Turn the gain fully down.
- 2 Play the loudest part of the song, or ask the singer to sing loudly. Press PFL (or Solo) on that channel.
- 3 Raise the gain until the meter peaks around 0 dB: top of the green, just touching yellow. Red must never light.
- 4 Now set loudness with the fader and master only. Leave the gain alone.



Red: never

Yellow: loudest peaks only

Green: normal level

Gain too low: you push the faders up and hear hiss. **Gain too high:** the mixer clips, and that distortion travels to the amplifier and the speakers. Nothing after the mixer can clean it.

Product of the week

Sweton KL Series

18 KL 1860 SUB

Sweton 18-inch subwoofer speaker with 2500 W AES power and a 6-inch voice coil, built for outdoor DJ and PA sound.



Sweton 18 KL 1860 SUB, rear and front view

18 KL 1860 SUB specifications

Nominal diameter	490 mm (18 in)
Impedance	8 Ω
Power handling (AES)	2500 W
Program power	5000 W
Sensitivity (1 W / 1 m)	94 dB
Frequency range	50–2000 Hz
Voice coil	152 mm (6 in), copper
Winding	In/out
Former	Glass fibre
Magnet	Ferrite, 330 mm
Gross weight	47 kg

Best use and cabinet type

Outdoor programmes, DJ and competition set-ups. Suited to bass reflex and horn loaded subwoofer cabinets. Before the customer cuts any wood, send us the application and we will suggest the cabinet direction.

Amplifier power needed

2500 to 5000 W at 8 Ω for each driver, run without clipping.

Keep in mind

- It weighs 47 kg. Plan the cabinet, and the lifting, for two people.
- It needs a serious amplifier. For a customer with a smaller one, show the 18 KL 1845 SUB (3600 W program, 94 mm coil).

Read it with the four numbers

Power handling

2500 W AES is a true continuous rating. The reason is the 152 mm voice coil: a bigger coil has more surface to throw off heat.

Sensitivity

94 dB. With 2500 W, that calculates to about 128 dB at 1 metre from one driver.

Impedance

8 Ω . Two drivers in one cabinet, wired in parallel, make 4 Ω : a comfortable load for most pro amplifiers.

Frequency response

Range 50–2000 Hz, Fs 57 Hz. Give it the low bass only. Above about 100–120 Hz, the mid-bass usually takes over.

Three lines for your counter

- 1 6-inch voice coil, 2500 W AES. That rating is continuous, not peak.
- 2 Recone kit REC18KL1860SUB is available, so the speaker can be repaired and put back to work.
- 3 Made in Kolkata, India by Sweton, in this business since 1982.

[Watch the test video](#)
[Open the spec sheet](#)

Thiele-Small parameters for cabinet makers

Fs	Qts	Qes	Qms	Vas	Xmax
57 Hz	0.52	0.53	18.49	45.67 L	± 7.7 mm
Bl	Sd	Re	Le (1 kHz)	Mms	EBP
38.0 T·m	1237.86 cm ²	5.86 Ω	1.20 mH	365 g	108 Hz

Baffle cut-out 422 mm, bolt circle 472 mm, depth 195 mm.

Counter Talk

Selling

Customer

“This imported speaker says 3000 W and it costs less. Why should I pay more for Sweton?”

How to answer: three questions about that 3000 W

- 1** Which watt is that 3000: AES, program or peak? If the carton does not say, treat it as peak. 3000 W peak is only about 750 W AES.
- 2** What is the sensitivity, and how big is the voice coil? If the seller cannot show a specification sheet, there is nothing to compare.
- 3** When the cone tears after two seasons, can you get a recone kit for it?

Then open the Sweton spec sheet on swetonspeakers.com. AES power, sensitivity, voice coil size and the full parameters are written there. Numbers on paper are your best salesman.

Myth or truth?

“An 18-inch speaker always gives deeper bass than a 15-inch.”

Myth

How low a speaker plays depends on its design and its cabinet, not on its size. A bigger cone moves more air, so it gives more output at the same low note.

[Read our blog: 15-inch vs 18-inch speaker](#)

Question of the week

Speaker A is 97 dB and runs on a 500 W amplifier. Speaker B is 94 dB and runs on a 1000 W amplifier. Which one plays louder?

WhatsApp your answer to **70444 11800**

The answer is in the next issue.

Next week

Issue 02

Speaker School

Speaker impedance: 8, 4 and 2 ohm wiring.

Amp Corner

Bridge mode: when to use it, when not to.

Mixer Desk

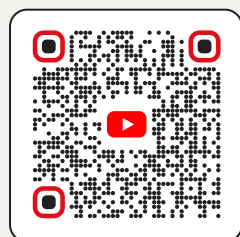
Mixer EQ: cut before you boost.

Product of the week

12 PT 500 MB GOLD, a 12-inch mid-bass speaker.

Stay with Sweton

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