SpeakerMate Model 4 (M4) by Sherlock Audio Canada

Thank you for purchasing this Sherlock Audio product.ALL Sherlock Audio products are designed & hand built,one at a time by Gilles R. Grignon in his own shop, in Cornwall, Ontario, Canada.By utilizing clever innovative design,and,with over thirty years of experience in the audio & musical electronics in combination with premium grade components from Europe & North America,Sherlock Audio can offer unique and superior quality gear at reasonable prices.

SpeakerMate was not designed to match up power levels between mismatched impedance *pairs*(for example: an 8ohm + a 4ohm spkr cab or an 8ohm + a 16ohm cab)but instead for *multiple* matched imp. pairs as well as several mismatched imp. triple cab setups.

SpeakerMate was designed to offer a VAST number of connection "scenarios" so, please take the time to read these instructions thoroughly to fully understand what SpeakerMate can do for you and your *individual* amplifier & speaker setup.A lot of thought and features were designed into this unit to offer as many hookup options as currently possible.Without having to resort to the use of any external switches or "mystery" cables,SpeakerMate self-switches,internally for all configurations; so choose your required setup from the list below and POWER UP!

Make sure your amp is turned OFF,BEFORE making or changing any speaker cable or cabinet connections
Make ALL connections with regular speaker cables BEFORE applying power to your amp,speakers and SpeakerMate
Make sure that all speaker plugs are fully engaged into the jacks to properly activate the SpeakerMate circuitry .

SpeakerMate Model Four Connection Instructions

1.First,connect your amp's output(with a regular speaker cable)to SpeakerMate's "from amp output" jack
Note: some combo amps don't have an output jack but instead run a wire directly from their chassis to the speaker.
If this is the case with your amp,it's a simple matter of disconnecting the two wires going to your amp's speaker and attaching
a regular mono type plug to the amp's speaker wires and then plugging this "new" plug into the SpeakerMate's "from amp
output" jack.You will then need to attach a small length of speaker wire with another plug at one end and connecting the "bare
ends" of the wire to the amp's internal speaker.(see attached diagram for details).

2.If you want to just use ONE speaker,plug your speaker into SpeakerMate's "b" jack at the far right of the unit.
This is the THRU-MODE and your amp will "see" the approx. impedance of that single speaker

3.If you want to run TWO separate speakers,each with an impedance of 16ohms,plug both speakers into both “B” block
jacks.Your amp will “see” approx. 6.5 to 9ohms (MID-Z Mode)

4.If you want to run TWO separate speakers,each with an impedance of 8ohms,plug both speakers into both “B” block
jacks.Your amp will “see” approx. 3.8 to 4.5ohms (LO-Z Mode)

5.If you want to run TWO separate speakers,each with an impedance of 4ohms,plug both speakers into both “C” block
jacks.Your amp will “see” approx. 6.5 to 9ohms (MID-Z Mode)

6.If you want to run four separate speakers,each with an impedance of 4ohms,plug all four speakers into all “A,B and C”
jacks.Your amp will “see” approx 3.8 to 4.5ohms (LO-Z Mode)

7.If you want to run four separate speakers,each with an impedance of 8ohms,plug all four speakers into all “A,B and C”
jacks.Your amp will “see” approx 6.5 to 9ohms (MID-Z Mode)

8.If you want to run four separate speakers,each with an impedance of 16ohms,plug all four speakers into all “A,B,and C”
jacks.Your amp will “see”: approx. 13.5 to 16.5ohms (HI-Z Mode)

9.If you want to run two separate speakers,each with an impedance of 8ohms,AND two additional speakers,each with an
impedance of four ohms and you want to run them all at the same time;
plug one 8ohm spkr & one 4ohm spkr into both “A” block jacks
plug the second 8ohm & second 4ohm spkr into both “B” block jacks
Your amp will “see” approx. 5 to 6.5ohms (LO-Z Mode) ***(see notes below)

10.If you want to run two separate speakers,each with an impedance of 8ohms and ONE additional speaker,having an impedance of 4ohms,plug both 8ohm speakers into both “B” block jacks and the 4ohm speaker into the remaining “C”
block jack.Your amp will “see”approx 9 to10ohms (MID-Z Mode) ***(see notes below)

11.If you want to run two separate speakers,each with an impedance of 8ohms and ONE additional speaker,having an
impedance of 8ohms,plug both 8ohm speakers into both “B” block jacks and the third speaker into the remaining “C”
block jack.Your amp will “see” approx. 12 to 13ohms (HI-Z Mode) ***(see notes below)

12.If you want to run two separate speakers,each with an impedance of 16ohms and ONE additional speaker,having an
impedance of 8ohms,plug both 16ohm speakers into both “B” block jacks and the 8ohm speaker into the remaining “C”
block jack.Your amp will “see” approx. 15.5 to 16.5ohms (HI-Z Mode) ***(see notes below)
If your amp has one,leave it’s impedance selector set to receive 16ohms

13 .if you want to run two separate speakers,each having an impedance of 8ohms,and ONE additional speaker having an impedance of 4ohms,plug both 8ohm speakers into the “B” block jacks,and the third(4ohm)speaker into the remaining “C” block jack.Your amp will “see” approx. 6.5 to 9ohms (MID-Z Mode)
If your amp has one,leave it’s impedance selector set to receive 8ohms
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Additional notes: All readings were done with actual loads(not calculations).Your actual readings may differ slightly, due to varying speakers construction tolerances that can change during performance.It’s assumed that the operator of this equipment is going to use this as designed and intended,with suitably powered amplifiers that can deliver the needed power(i.e. NOT trying to power six,412” cabinets with a PV 15watt Rage or similarly absurd application!).You won’t damage the SpeakerMate but you can start digging a hole for the amp……..

Although the SpeakerMate *primary* design function is to allow as wide a range of multiple speaker combinations as possible with many amps,it DOES perform a number of multiple impedance *matching* functions as well,.However,it’s worth noting that in certain instances where EPI mode doesn’t apply, a very audible mismatch in output
volume can occur.This happens when *that* spkr configuration is out of the SpeakerMate’s impedance matching range.This difference in volume levels usually occurs between a set of speakers and one “odd-duck” cabinet(usually the odd-duck being louder than the rest of the system)However,there are a number of workaround remedies possible for this:

1.In a guitar/bass spkr setup,the “loudest” is placed in the center of the array(in a 3spkr setup)
2.In a guitar/bass spkr setup,the “loudest” is placed on the “bottom” of the stack
3.In a guitar/bass spkr setup,the “loudest” is placed at the far end of the stage,so the bassist can hear the guitarist at the opposite end of the stage(or vice versa)without having to send each others signal into the monitors
4.In a monitor setup,the “loudest” is placed nearest the drummer(instead of at the front of the stage with the “regular” monitors)
5.In a P.A. setup,the “lower” volume spkr(s) can be installed in the remote locations
6.In a P.A. setup,the “loudest” spkr(s) can be installed in the higher/long throw locations
7.In a studio setup,the “loudest” is the one that “goes” into the isolation booth for close miking,away from the “regular” cabs in the main room
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A brief discussion on speaker/cabinet *efficiency*

Even in scenarios with two cabinets having the SAME impedance,it frequently occurs that *one* cabinet still sounds louder than the other.How can this be,if they're BOTH the same impedance?.They SHOULD both have the same volume level, we assume.This is where speaker *efficiency* comes into play.In a nutshell,efficiency is a given speaker's ability to take input power(electrical watts) and process/transfer that, into actual (acoustic)watts.
This efficiency is (normally referred to with a test measurement),in db(decibels)with a 1watt input at 1meter(some manufacturer's test at 3feet).Without getting knee-deep in "speaker-math",we'll explain the scenario above as to why one cab sounds louder than the other.For our "imperfect" ears,it takes TEN times the amount of input power for us to notice an increase of TWICE the volume level.

Spkr#1 efficiency : (same impedance as #2)	Spkr#2 efficiency:
100db 1watt input at 1metre(actually 39inches)	97db 1watt input at 1 metre
103db 10watts input	100db 10watts input
106db 100watts input	103db 100watts input

Assuming two quality guitar speakers,we're pretty much at the maximum input power they'll take(before " nasty things" happen to them).So,no matter how much input power you want to apply to spkr#2, it will never be any louder than spkr#1.

This is only "part" of the story.Read on.Now let's assume a *mismatched impedance* between two speakers (let's say an 8ohm and a 16ohm unit).Based *only* on impedance, we'd assume the 8ohm speaker *should* be "louder" than the 16ohm unit(due to it's lower impedance).We'd actually be *wrong*.How can that happen?.Let's take a look.(BTW-we've simplified "the numbers & math" here to make it easier to get the point across,so engineers-put your calculators back in their holsters,please.)

Spkr#1, 8ohms, efficiency	Spkr#2, 16ohms,efficiency
97db 1watt input at 1metre	100db 1watt input at 1metre
100db 10watts input	103db 10watts input
103db 100watts input	106db 100watts input

Now,for the sake of explanation lets power each speaker with it's own identical 100watt poweramp and the same input signal going to both amps. At 10watts into 8ohms,spkr#1 is showing up with 100db.Since spkr#2 is getting ½ as much power (5watts)applied to it,because of it's 16ohm impedance,you'd think you'd be getting ½ as much actual volume(db) level from it right? Not exactly.Even with 5watts(half of the other speaker's 10watt input),the "assumed" "lower" volume,16ohm speaker is still capable of delivering an "easy" 100(or slightly more)db! Why? Simply because *this* 16ohm speaker is MORE efficient than the lower impedance 8ohm unit.You can now see that impedance isn't the only thing to consider in a multi-speaker setup.

How does this all apply in the real world? Before dismissing any given setup with *mismatched* impedances(say, 4 + an 8 or an 8 + a 16)connect them and actually *listen*.In many instances,you might be surprised to find there really isn't much of a difference in volume levels,contrary to what "the math" says.

WARRANTEE INFORMATION

All Sherlock Audio SpeakerMate products are warranteed for TWO YEARS parts & labour against manufacturing defects when used for their intended purpose.

THERE ARE NO CONSUMER LEVEL/USER SERVICEABLE PARTS IN THIS UNIT.

SpeakerMate features integral hi-power RF shielding seal & circuit links,internally surrounding the enclosure and using the enclosure lid as a cross link.In order to maintain the operational integrity of the circuitry,safety requirements and protect the internal components against environmental elements,the lid & enclosure have been chemically welded at time of manufacture .

Any user attempt to disassemble/repair/modify unit will break this continuous seal and render the unit unreliably inoperable and VOID ANY WARRANTEE or continued unit performance to the user.

Do not place this unit near strong magnetic fields as this will possibly damage the operational integrity of the SpeakerMate.

NO other warranties expressed or implied