

Operating Instructions for SpeakerMate Model Five (M5) 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, with over thirty years of experience in the audio & musical electronics in Cornwall, Ontario, Canada. By utilizing clever innovative design, and, 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 to allow the connection of *multiple* matched imp. *pairs* as well as several mismatched imp. triple cab setups.

SpeakerMate was designed to offer a VAST amount 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 “mystery” cables or the like.

SpeakerMate Model Five incorporates a new design that differs from other SpeakerMate models. Model Five also has a new feature that allows you to compare two different speaker setups, either individually or together, on the same amp, all while maintaining a safe operating load impedance. (discussed further on)

Model Five features genuine Neutrik brand Speakon 2pole, NL2 keyed, locking speaker cable connectors for added safety in high power applications to prevent cables from accidentally becoming loose or disconnected.

Make ALL connections with suitable, Speakon terminated speaker cables BEFORE applying power to your amp, speakers and SpeakerMate

Make sure your amp is turned OFF, *before* making or changing any speaker cable or cabinet connections.

Make sure that all Speakon plugs are fully engaged and locked into the jacks to properly activate the SpeakerMate system.

Connect a speaker cable from your amp’s power output (aka speaker output) jack to the SpeakerMate’s “from amp output jack”.

2 speaker cabinet setups

1. to connect two, 4ohm cabinets:
depress “A” channel link switch to manual position
plug first 4ohm cab into upper “A” jack
plug the second 4ohm cab into lower “A” jack
your amp will “see” approx. 8.3 ohms (equalized power input)
2. to connect two, 8ohm cabinets:
depress “B” channel link switch to manual position
plug first 8ohm cab into upper “B” jack
plug second 8ohm cab into lower “B” jack
your amp will “see” approx. 15 ohms (equalized power input)

- OR,3. alternately, to connect two, 8ohm cabinets:
depress "A" channel link switch to auto position
plug first 8ohm cab into lower "A" jack
depress "B" channel link switch to auto position
plug second 8ohm cab into lower "B" jack
your amp will "see" approx. 4.2 ohms (equalized power input)
3. to connect two, 16ohm cabinets:
depress "A" channel link switch to auto position
plug first 16ohm cab into lower "A" jack
plug second 16ohm cab into "C" jack
your amp will "see" approx. 8.3 ohms (equalized power input)
-

3 speaker cabinet setups

5. to connect two, 4ohm cabs + one 8ohm cab together:
depress "A" channel link switch to manual position
plug first 4ohm cab into upper "A" jack
plug second 4ohm cab into lower "A" jack
plug remaining 8ohm cab into "C" jack
your amp will "see" approx. 4.3 ohms
6. to connect two, 8ohm cabs + one 4ohm cab together:
depress "A" channel link switch to manual position
plug first 8ohm cab into lower "A": jack
plug second 8ohm cab into "C" jack
plug 4ohm cab into upper "A" jack
your amp will "see" approx. 5.7 ohms (EPI not applicable)
7. to connect two, 8ohm cabs + one 16ohm cab together:
depress "A" channel link switch to manual position
plug first 8ohm cab into upper "A" jack
plug second 8ohm cab into lower "A" jack
plug remaining 16ohm cab into "C" jack
your amp will "see" approx. 8.3 ohms
8. to connect two, 16ohm cabs + one 8ohm cab together:
depress "A" channel link switch to auto position
plug first 16ohm cab into lower "A" jack
depress "B" channel link switch to auto position
plug second 16ohm cab into lower "B" jack
plug remaining 8ohm cab into "C" jack
your amp will "see" approx. 4.5 ohms
9. to connect three, 8ohm cabs together:
depress "A" channel link switch to auto position
plug first 8ohm cab to lower "A" jack
depress "B" channel link switch to auto position
plug second 8ohm cab to lower "B" jack
plug remaining 8ohm cab to "C" jack
your amp will "see" approx. 2.75 ohms (equalized power input)
-

4 speaker cabinet setups

10. to connect four,4ohm cabinets together:

depress the “A” channel link switch to manual position
plug first 4ohm cab into upper “A” jack
plug second 4ohm cab into lower “A” jack
depress the “B” channel link switch to manual position
plug third 4ohm cab into upper “B” jack
plug remaining 4ohm cab into lower “B” jack
your amp will “see” approx. 4.3 ohms

to connect four,8ohm cabs, follow the same hookup as #10. Your amp will “see” approx. 8.3 ohms

to connect four,16ohm cabs, follow the same hookup as #10. Your amp will “see” approx 15 ohms

11. to connect two,4ohm cabs + two,8ohm cabs together:

depress “A” channel link switch to manual position
plug first 8ohm cab into upper “A” jack
plug first 4ohm cab into lower “A” jack”
depress “B” channel link switch to manual position
plug second 8ohm cab into upper “B” jack
plug second 4ohm cab into lower “B” jack”
your amp will “see” approx. 6.3 ohms (EPI not applicable)

12. to connect two,16ohm cabs + two 8ohm cabs together:

depress “A” channel link switch to auto position
plug first 16ohm cab into lower “A” jack
plug second 16ohm cab into “C” jack
depress “B” channel link switch to manual mode
plug first 8ohm cab into lower “B” jack
plug second 8ohm cab into upper “B” jack
your amp will “see” approx. 5.7 ohms (EPI not applicable)

5 speaker cabinet setups

to connect four,8ohm cabs + one additional 8ohm cab together:

depress “A” channel link switch to manual position
plug first 8ohm cab into upper “A” jack
plug second 8ohm cab into lower “A” jack
depress “B” channel link switch to manual position
plug third 8ohm cab into upper “B” jack
plug fourth 8ohm cab into lower “B” jack
plug remaining fifth 8ohm cab into “C” jack*
your amp will “see” approx. 4.15ohms (EPI not applicable)

* by substituting a 16ohm cab into the “C” jack(in place of the 8ohm unit): your amp will “see” approx. 5.5 ohms

14. to connect two,8ohm cabs + two,4ohm cabs + one additional 8ohm cab together:

depress the “A” channel link switch to manual position
plug first 4ohm cab into upper “A” jack
plug first 8ohm cab into lower “A” jack

depress the “B” channel link switch to manual position
plug the second 4ohm cab into upper “B” jack
plug the second 8ohm cab into lower “B” jack
plug the remaining 8ohm cab into the “C” jack
your amp will “see” approx. 5.5 ohms (EPI not applicable)

An additional “side-benefit” of Model Five’s circuit design is a feature that allows you to “audition” separate speaker setups, either individually or at the same time on just about any Transistor (solid state) output bass head or power amp.

Now you can take a Model Five along with you to your favorite bass shop/P.A dealer (if they haven’t one already for the same purpose) when you’re shopping around for a new cabinet setup. SpeakerMate Model Five helps the “process” along by allowing you to evaluate several cabinets quickly, reducing the time consuming hassle of plugging/unplugging multiple cabinets repeatedly.

Here’s how to get started: (make sure your amp is off, *before* making any connections)

Comparing two, 4ohm cabinets, separately on a 4ohm minimum amp (example: 410 vs 410, or 410 vs 115, etc)

Comparing two, 8ohm cabinets, separately on an 8ohm minimum amp

15. depress the “A” channel link switch to the auto position
plug your “main” cab into the lower “A” jack
depress the “B” channel link switch to the manual position
plug the “comparison” cab into the lower “B” jack
power up the amp, adjust and take note of the volume & eq settings and play ! you will hear only the “main”(A) cab.
lower the volume control to zero (remember where you had it set)
depress the “A” channel link switch to manual
depress the “B: channel link switch to auto
return the volume control where you had it previously set and play
you will now hear only the “comparison” (B) cab

16. Comparing two, 4ohm cabinets, at the same time on a 4 to 8ohm minimum amp.
depress the “A” channel link to the auto position
plug your “main” 4ohm cab into the lower “A” jack
plug the “comparison” 4ohm cab into the upper “A” jack
power up the amp, adjust & take note of the volume & eq settings and play! you will hear only the “main”(A) cab.
lower your volume to zero
depress the “A” channel link switch to manual
return the volume control to where you previously had it set
you will now hear BOTH (A + B) cabinets in tandem* (your amp “sees” approx. 7.7ohms)

*in this mode: depending on the combined impedance and efficiency of cabinets, it is normal to have to re-adjust the volume and e.q settings to some degree, depending on the player’s preferences. Many player’s will tend to favour the louder of two cabinets as being “better”.

17. Comparing two,8ohm cabs (+ or -) on a 4ohm minimum amp(example: adding a 2x10" to your existing 1x15")
depress the "A" channel link switch to the manual position
plug your "main" cab into the "C" jack
plug your "comparison" cab into the lower "A" jack
power up,adjust all needed controls and play-you will hear only the main cab
lower the volume to zero and depress the "A" channel link switch to auto position
you will now hear BOTH (A+C)cabs so take note when re-adjusting your volume control & e.q settings
(your amp will "see" approx. 4.2ohms)

18. Comparing two,8ohm cabs,separately (+ or -) with an 8ohm cab on a 4 ohm minimum amp
(example: 2x10" vs 1x15" with 4x10" vs 1x15")

depress "A" channel link switch to the manual position
plug "main" speaker into "C" jack
plug first "comparison" cab into lower "A" jack
depress "B" channel link switch to manual position
plug the second "comparison" cab into lower "B" jack
power up and adjust controls as needed and play-you will hear only the main cab connected to "C"
lower the volume to zero and depress the "A" channel link switch to auto position
return to your volume settings
you will now hear the combination of your "main" (C) speaker cab and the (A) cab(your amp will "see" approx. 4.2ohms)
lower the volume to zero
return the "A" channel link switch to the manual position
now,depress the "B" channel link switch to the auto position
return to your volume settings
you will now hear the combination of your "main" (C) speaker cab and the (B) cab(your amp will "see" approx.4.2ohms)

While the debate over "tone" is sometimes heated & subjective,we hope that SpeakerMate Model Five allows players to better evaluate ALL aspects of any given cabinet setup more accurately!

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,(EPI mode).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 other's 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

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 1 watt input at 1 meter (some manufacturer's test at 3 feet). 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 39 inches)	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 “things” happen). So, no matter how much input power you want to apply to spkr#2, it'll 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 its 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 let's power each speaker with its 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 its 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,one 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 warranted 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 an 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 WARRANTY 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.