

MCM-20.4

20-CHANNEL
SUMMING MIXER



USER MANUAL



October/2022 Rev. 1.0.

INTRODUCTION

Thank you for choosing the **MCM-20.4** Summing Mixer. Heritage Audio is dedicated to bringing you ‘the sound of yesterday for tomorrow’. We specialize in capturing that unique, enticing sound that everybody has fallen in love with. For years engineers, producers and musicians have been yearning for that classic vibe. Usually the only option is to search for old, used original equipment that is almost always in a questionable state of operation. This brings with it a whole lot of other issues, making the experience less than desirable. Not to mention the very high prices asked for this equipment, which makes them virtually unobtainable for the great majority. Now it’s possible to obtain that same sound with a brand new piece that will give you all the problem-free, heavy-duty use you’ll need for years of music making history.

Peter Rodriguez
CEO
Heritage Audio - Madrid, Spain



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DESCRIPTION

The MCM-20.4 is a 20 x 4 channel summing mixer with Vintage-topology.

It employs a very unique and flexible configuration, offering 20 input channels arranged as: 16 implemented in 2 rows of 8 channels each with the remaining 4 assigned to the master section, hard panned left and right in pairs. These extra AUX inputs come in handy when you want to stack several units or add another sub mixer in. Unlike classic consoles employing a complicated switching matrix for subgroup assignment, the channels have a fixed assignment in groups of eight. This arrangement not only makes the unit fit in a four-unit rack space, but greatly helps in making it affordable.

Each channel features center detent Pan and Fader concentric controls plus balanced insert and mute switches. The insert send points always have the signal present, so they can alternatively be used as direct outputs for recording without additional patch bays.

The 16 channels implemented on the front panel feature 3 aux sends, 2 mono and one stereo send. AUX 1 and 2 or 3ST can be assigned on a per channel basis, but not all 4 sends can be used on the same channel at the same time. You also have the ability to choose between a PRE or POST channel fader send for the AUXs which will allow you to conveniently use them for FX sends as well as musician CUEs, once again, on a per channel basis. Master send levels are provided as well with their own fader, on/off switches and balanced inserts for even more control.

Each subgroup has its own stereo fader and an on/off switch plus a balanced insert point and all stereo subgroups are passively summed into the master bus. The gain is restored by means of a '73 style Class A, transformer coupled, mic preamplifier, featuring a total of 4 transformers (2 in each channel). These are some of our special custom Carnhill transformers, of course to provide all the vintage flavor desired. This output stage is able to deliver a full +26 dBu output. The master section is also provided with its own balanced, gold plated XLR insert points.

All connections on the back are made by DB 25 connectors following the TASCAM protocol, with the exception of the master bus and monitor connections, which are by dedicated gold plated XLRs. And to top everything off there is a pair of vintage style VU meters to monitor levels.

Comprising vintage quality sound with sophisticated routing options, the MCM-20.4 is the perfect partner for hybrid setups, integrating analog gear with your DAW.

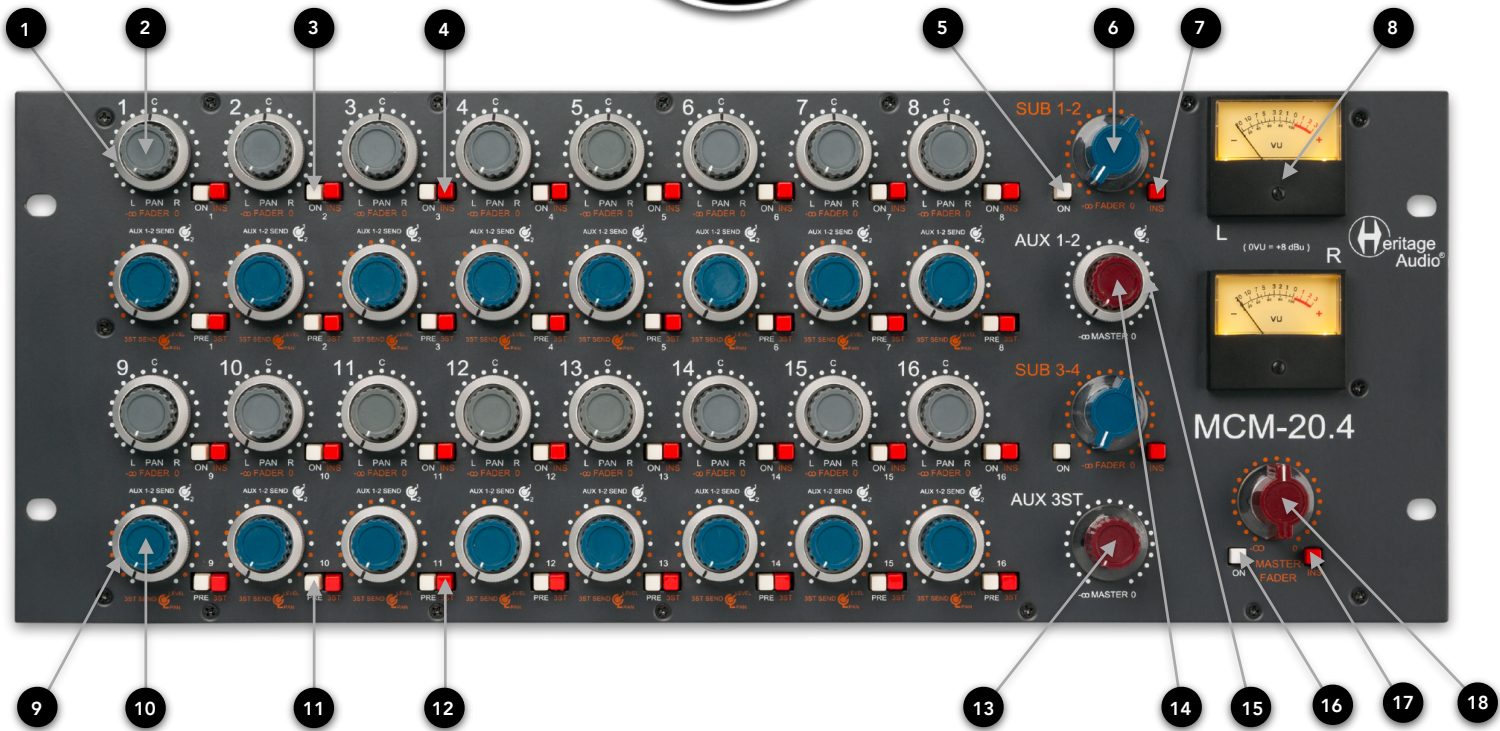
Lots has been written on the pros and cons between active (current) and passive (voltage) summing topologies. Some may claim one is better than the other but the truth is that active summing is less susceptible to noise and voltage, while passive summing has a nice, vintage sound associated with its gain makeup circuit.

The smart hybrid summing topology used in the MCM-20.4, where the channels are current-summed (active) into their corresponding subgroups and the subgroups voltage summed (passive) into the master section, has proven to give massive headroom and lower noise without making any compromises to its vintage characteristic sound. Special care has been taken on improving crosstalk and self-noise figures from those on vintage designs in order to accommodate the new MCM mixers into the digital era.



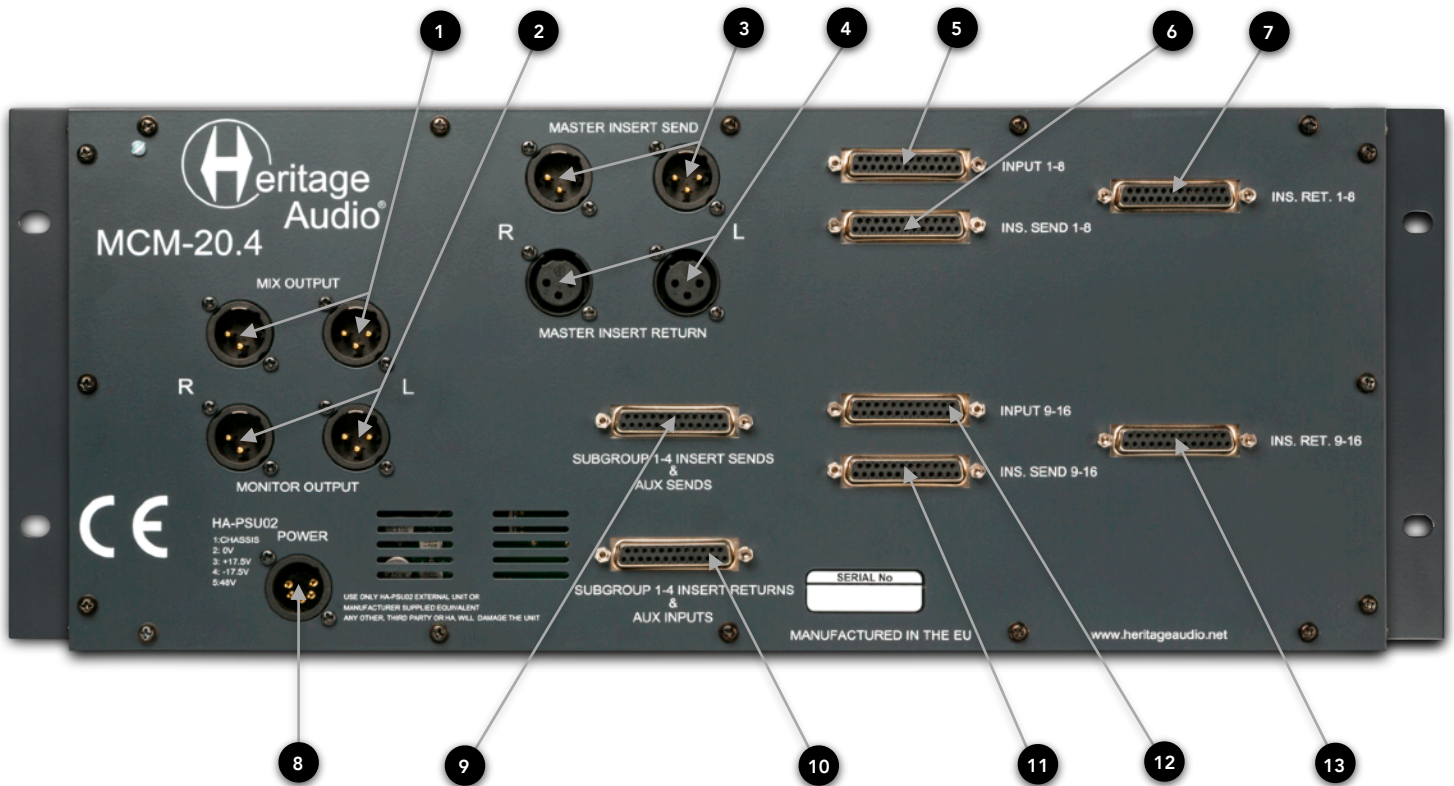
GETTING STARTED

FRONT



<p>1</p> <p>PAN Places the signal within the stereo spectrum, left, center, right or any setting in between.</p>	<p>2</p> <p>FADER Attenuates the signal sent to the Master Bus from unity to minus infinity. The control has a stepped feel for easy recall of settings. All the way clockwise equals unity gain, while at 12 o'clock means an approximate 20 dB of attenuation. (Or -20 dB of gain).</p>	<p>3</p> <p>ON (CHANNEL) When pressed, the related input is added to the subgroup bus.</p>	<p>4</p> <p>INS (CHANNEL) Turns the insert on. The insert send always has the signal present, while pressing the INS switch activates the insert return input.</p>	<p>5</p> <p>ON (SUBGROUP) When pressed, the output of the subgroup is sent to the Master Bus.</p>
<p>6</p> <p>FADER Attenuates the signal sent to the Subgroup bus from unity to minus infinity. All the way clockwise equals unity gain, while at 12 o'clock means an approximate 20 dB of attenuation. (Or -20 dB of gain).</p>	<p>7</p> <p>INS (SUBGROUP) Turns the insert on. The insert send always has the signal present, while pressing the INS switch activates the insert return input.</p>	<p>8</p> <p>VU Meters Measures the average level at the Master outputs. 0 VU = +8 dBu. Reads post fader and post insert.</p>	<p>9</p> <p>AUX 2 / AUX 3ST PAN Depending on the status of the 3ST button this outer ring either adjusts the amount sent to AUX 2 or the Panning of Stereo AUX 3.</p>	<p>10</p> <p>AUX 1 / AUX 3ST SEND Depending on the status of the 3ST button this either adjusts the amount sent to AUX 1 or the Send of Stereo AUX 3.</p>
<p>11</p> <p>PRE Changes the status of the AUX sends from POST to PRE.</p>	<p>12</p> <p>3ST The 3ST button changes control from AUX 1&2 to AUX 3.</p>	<p>13</p> <p>AUX 3ST MASTER Master volume send for Stereo AUX 3.</p>	<p>14</p> <p>AUX 1 MASTER Master volume send for Stereo AUX 1.</p>	<p>15</p> <p>AUX 2 MASTER Master volume send for Stereo AUX 2.</p>
<p>16</p> <p>ON (MASTER) When pressed, the output of the Master is sent to the Output connectors.</p>	<p>17</p> <p>INS (MASTER) Turns the insert on. The insert send always has the signal present, while pressing the INS switch activates the insert return input.</p>	<p>18</p> <p>MASTER FADER Attenuates the Mix's output from unity to minus infinity. The control has a stepped feel for easy recall of settings. All the way clockwise equals unity gain, while at 12 o'clock means an approximate 20 dB of attenuation.</p>		

REAR



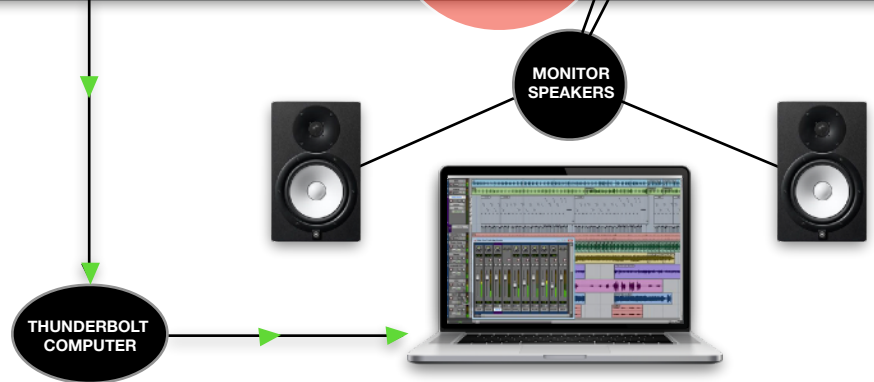
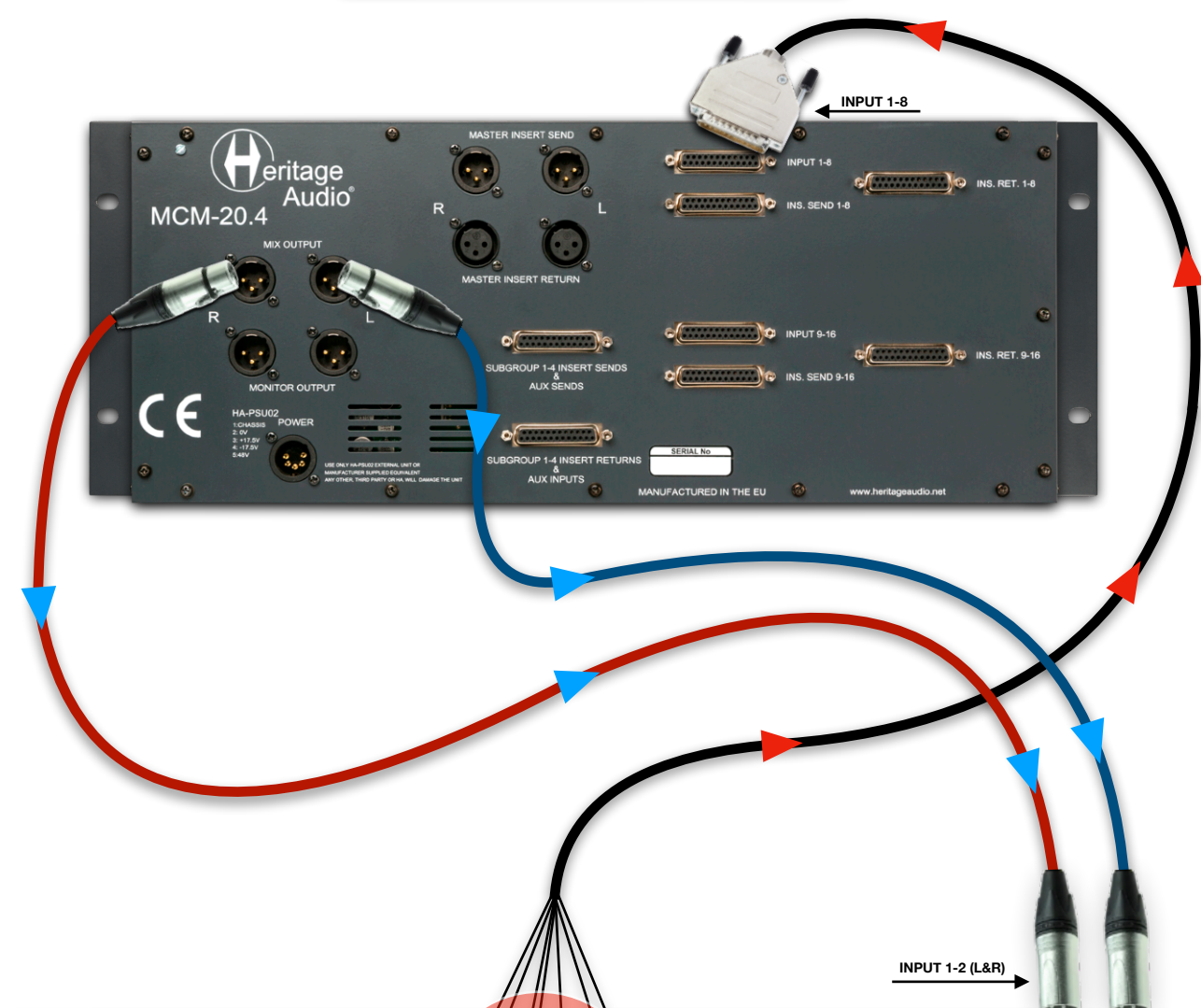
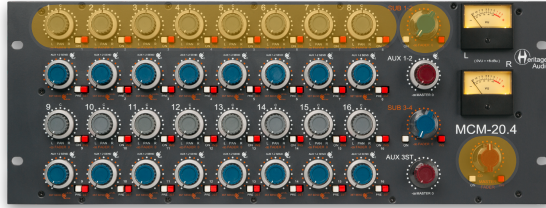
1	2	3	4	5
MIX OUTPUT XLRs for Mix Output L and R.	MONITOR OUTPUT XLRs for Monitor Output L and R.	MASTER INSERT SEND XLRs (2) for Master Insert Send L and R.	MASTER INSERT RETURN XLRs (2) for Master Insert Return L and R.	INPUTS 1-8 DB25 for Channel Input 1-8.
6	7	8	9	10
INS. SENDS 1-8 DB25 for Insert sends 1-8.	INS. RETURNS 1-8 DB25 for Insert Returns 1-8.	POWER 5 pin XLR for the external HA-PSU02 power supply unit.	SUBGROUP 1-4 INSERT SENDS & AUX SENDS DB25 for Subgroup 1-4 Insert sends & Aux sends.	SUBGROUP 1-4 INSERT RETURNS & AUX INPUTS DB25 for Subgroup 1-4 Insert returns & Aux Inputs.
11	12	13	GAIN STRUCTURE <p>The gain structure in the MCM-20.4 is quite simple and intuitive with no compromises being made on the "secondary" inputs and outputs, like the insert sends and returns. Therefore, all connections are balanced and all outputs are nominal +4 dBu and able to drive 600 Ω.</p> <p>The gain structure is such that with all faders up, any input to any output is unity gain.</p> <p>+4 dBu at one channel input, fader all the way up, subgroup fader all the way up, gives +4 dBu at the channel and subgroup insert send points, and at the main send and output as well.</p> <p>+4 dBu at the channel or subgroup insert returns will give +4 dBu at the main send and output as well.</p> <p>+4 dBu at the main insert return will give +4 dBu at the main output.</p> <p>+4 on a channel input, sends pre fader, will give +4 dBu at the corresponding aux output.</p>	
INS. SENDS 9-16 DB25 for Insert sends 9-16.	INPUTS 9-16 DB25 for Channel Input 9-16.	INS. RETURNS 9-16 DB25 for Insert Returns 9-16.		

All XLRs are:	MALE XLR	FEMALE XLR
Pin 1: GND Pin 2: Hot Pin 3: Cold	<p>GND Hot (+) Cold (-)</p>	<p>GND Hot (+) Cold (-)</p>

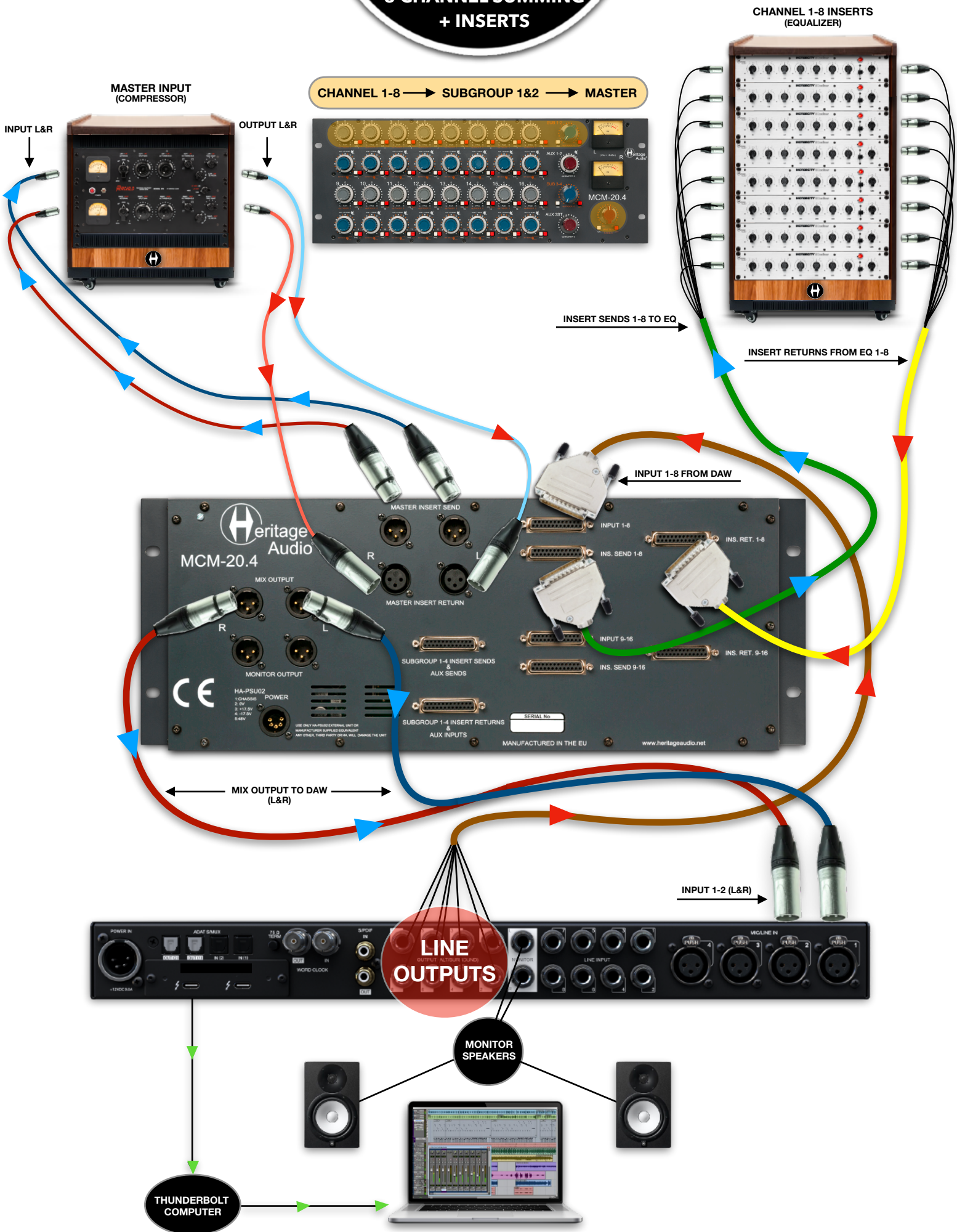
* All XLR connections are Gold Plated

8 CHANNEL SUMMING

CHANNEL 1-8 → SUBGROUP 1&2 → MASTER

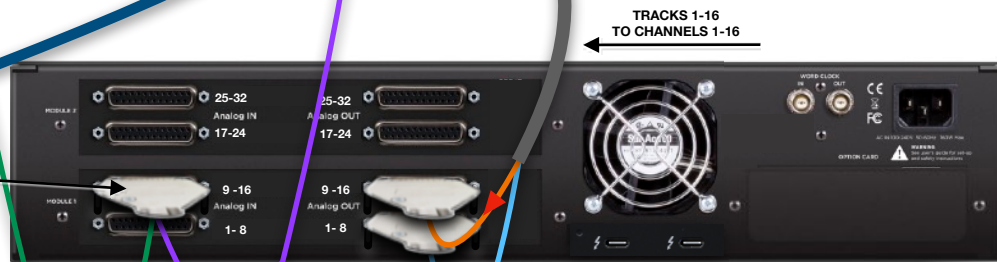
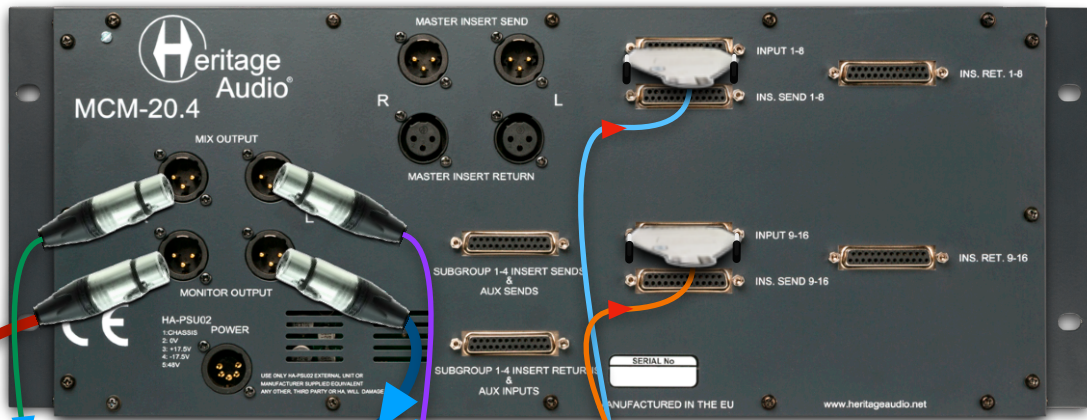
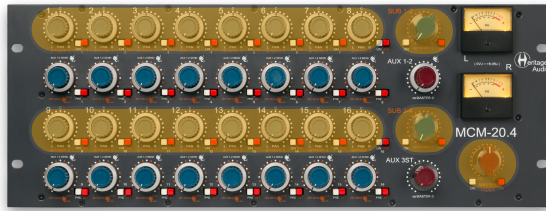


8 CHANNEL SUMMING + INSERTS



16 CHANNEL TO 4 SUBGROUPS

CHANNEL 1-16 → SUBGROUP 1-4 → MASTER



AUDIO INTERFACE I/O 32x32

THUNDERBOLT COMPUTER

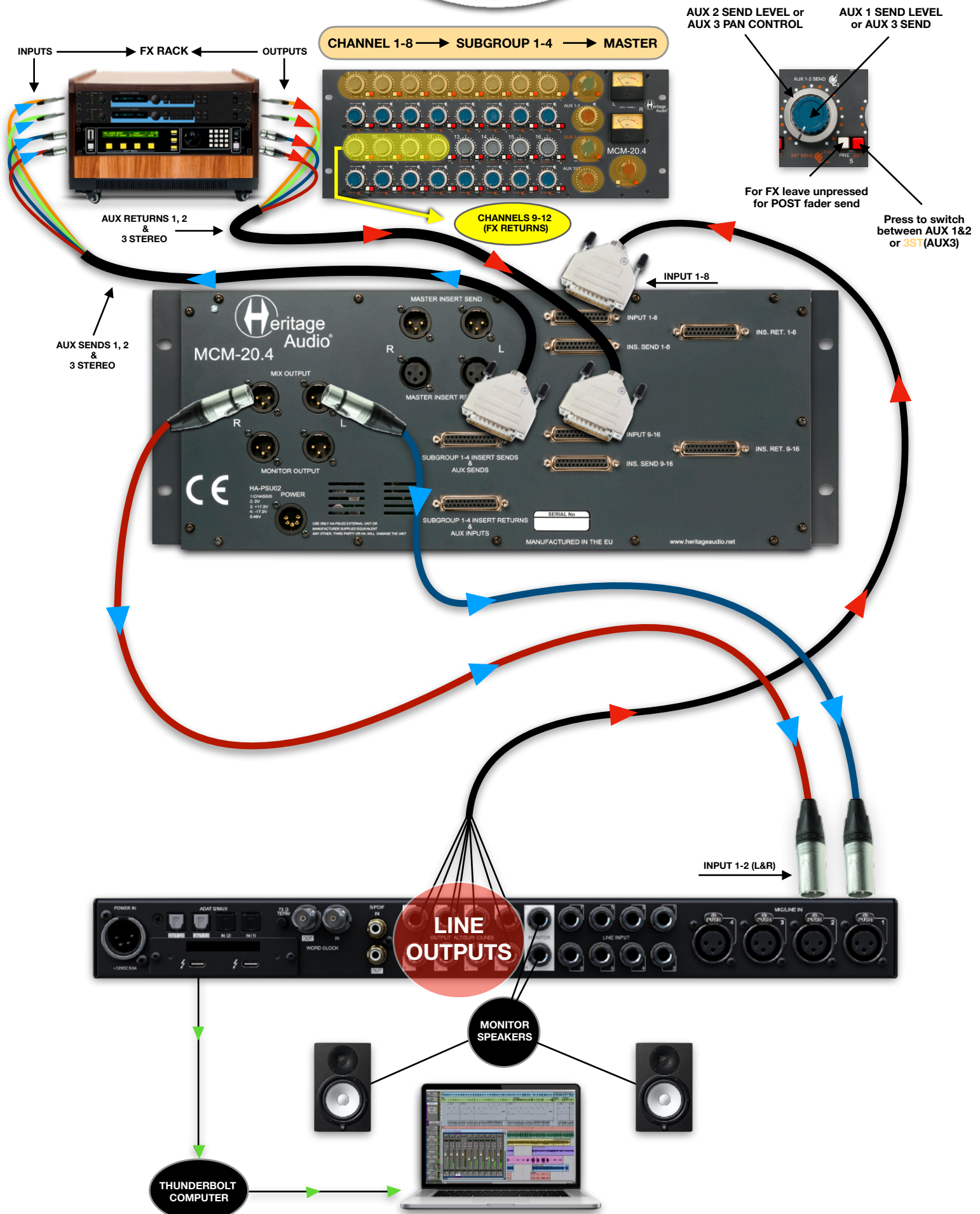
MONITOR L



MONITOR R

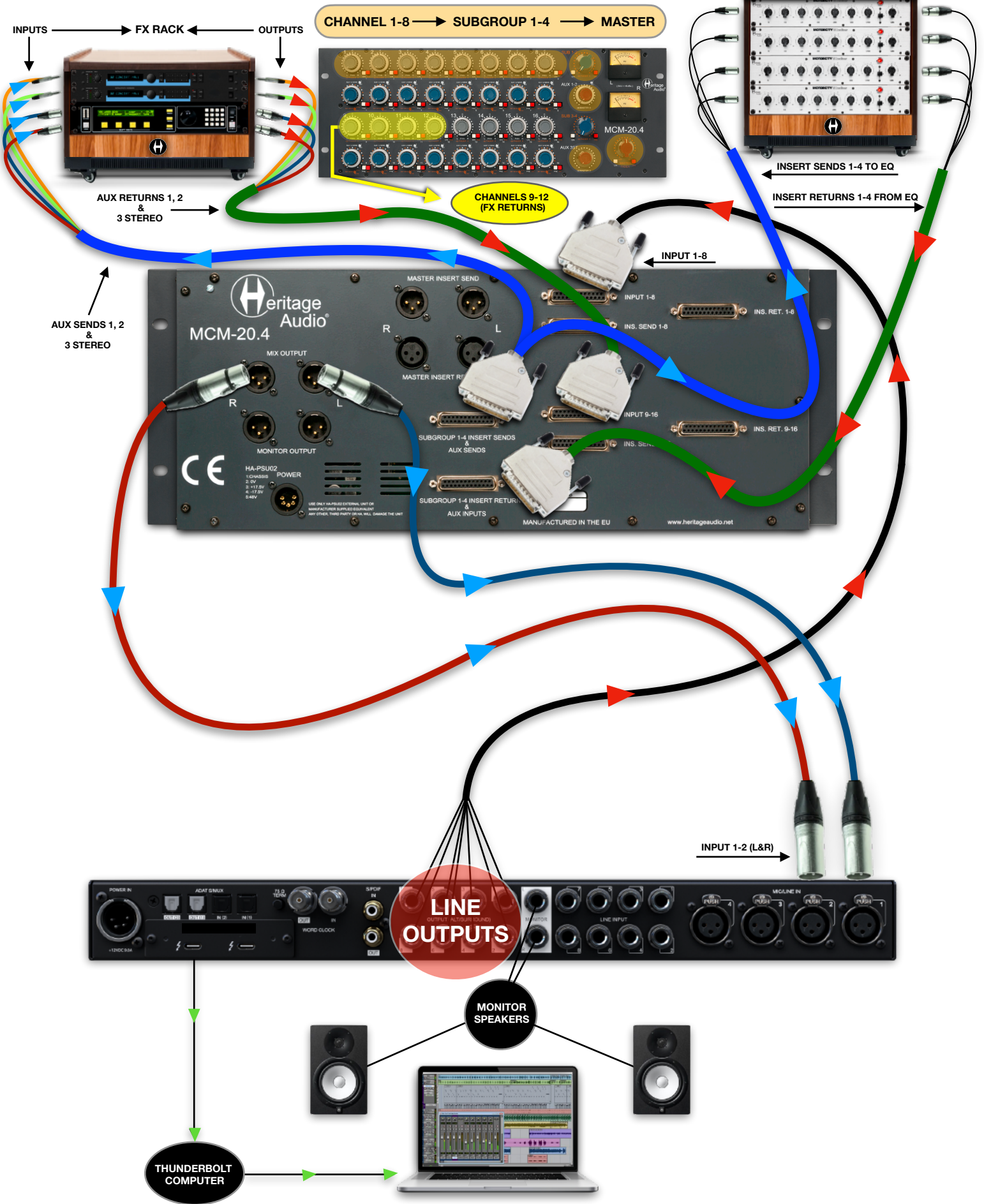


**8 CHANNELS TO
2 SUBGROUPS + FX**



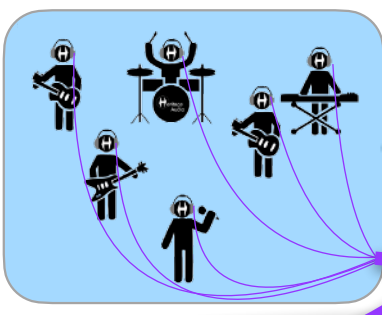
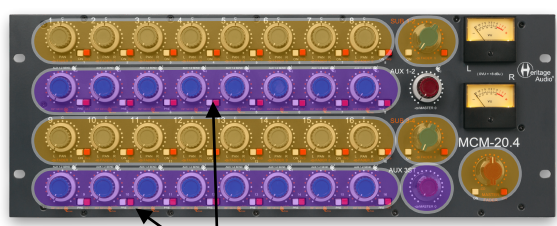
**8 CHANNELS TO
4 SUBGROUPS/INSERTS
+ FX**

**CHANNEL 1-4 INSERTS
(EQUALIZER)**



RECORDING WITH CUE MIX

CHANNEL 1-16 → SUBGROUP 1-4 → MASTER



GROUP INSTRUMENTS SIGNALS 1-16

CUE MIX FOR MUSICIANS

CHANNEL 1-16 PREAMPS

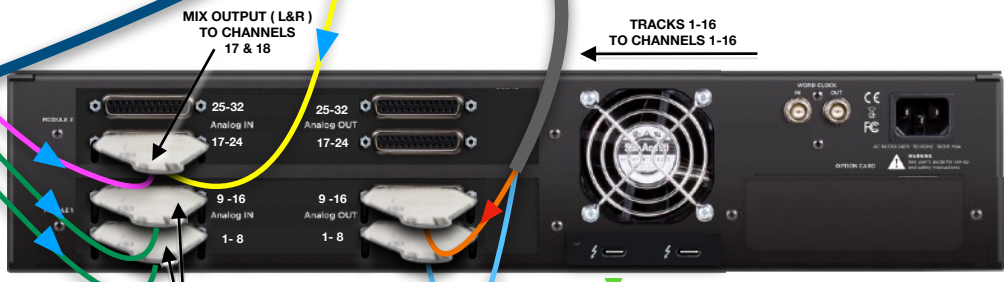
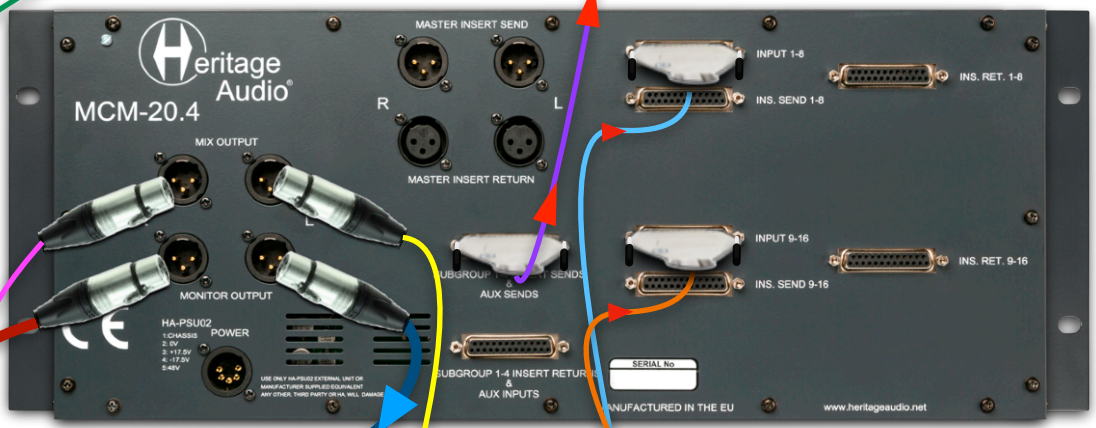


Press to select stereo AUX 3 (3ST)
 Press to change from POST to PRE send



AUX SEND (3ST/PRE) TO HEADPHONE AMP

CHANNEL 1-16 PREAMP OUTPUTS



AUDIO INTERFACE I/O 32x32

MIX OUTPUT (L&R) TO CHANNELS 17 & 18

TRACKS 1-16 TO CHANNELS 1-16

PREAMP OUTPUTS TO DAW INPUTS

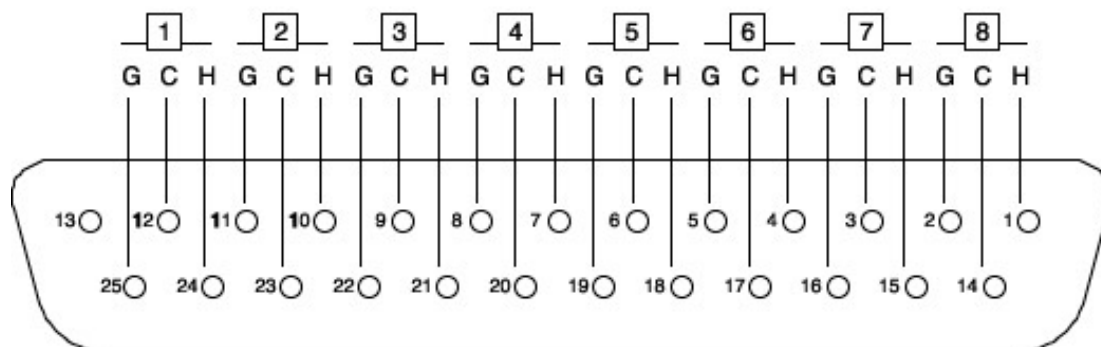
THUNDERBOLT COMPUTER



WIRING FOR DB25 CONNECTORS

All DB25 multi pin connectors are TASCAM protocol. This same protocol is also used by AVID* amongst many others, and is as follows:

Pin-out for TASCAM DB25 8 Channel Balanced Connector



H = HOT
C = COLD
G = GROUND

The list of the DB25 connectors used and their corresponding channels are as follows:

CHANNEL INPUTS

CHANNEL INPUTS 1-8:	
TASCAM DSUB CHANNEL #	CHANNEL I/P 1-8
1	INPUT 1
2	INPUT 2
3	INPUT 3
4	INPUT 4
5	INPUT 5
6	INPUT 6
7	INPUT 7
8	INPUT 8

CHANNEL INPUTS 9-16:	
TASCAM DSUB CHANNEL #	CHANNEL I/P 1-8
1	INPUT 9
2	INPUT 10
3	INPUT 11
4	INPUT 12
5	INPUT 13
6	INPUT 14
7	INPUT 15
8	INPUT 16

It is worth noting that, in order to avoid ground loops, the DB25 ground connections are lifted on the MCM-20.4 side, leaving the ground paths of your DB25 snakes only acting as shields and preventing any current returns.

INSERT SENDS

INSERT SENDS 1-8:	
TASCAM DSUB CHANNEL #	INSERT SENDS 1-8
1	INS SEND 1
2	INS SEND 2
3	INS SEND 3
4	INS SEND 4
5	INS SEND 5
6	INS SEND 6
7	INS SEND 7
8	INS SEND 8

INSERT SENDS 9-16:	
TASCAM DSUB CHANNEL #	INSERT SENDS 9-16
1	INS SEND 9
2	INS SEND 10
3	INS SEND 11
4	INS SEND 12
5	INS SEND 13
6	INS SEND 14
7	INS SEND 15
8	INS SEND 16

INSERT RETURNS

INSERT RETURNS 1-8:	
TASCAM DSUB CHANNEL #	INS RETURNS 1-8
1	INS RETURN 1
2	INS RETURN 2
3	INS RETURN 3
4	INS RETURN 4
5	INS RETURN 5
6	INS RETURN 6
7	INS RETURN 7
8	INS RETURN 8

INSERT RETURNS 9-16:	
TASCAM DSUB CHANNEL #	INS RETURNS 9-16
1	INS RETURN 9
2	INS RETURN 10
3	INS RETURN 11
4	INS RETURN 12
5	INS RETURN 13
6	INS RETURN 14
7	INS RETURN 15
8	INS RETURN 16

SUBGROUP INSERT SENDS 1-4 AND AUX SENDS

SUBGROUP INSERT RETURNS 1-4 AND AUX

SUBGROUP INSERT SENDS 1-4 AND AUX SENDS	
TASCAM DSUB CHANNEL #	SUBGROUP INSERT SENDS & AUX SENDS 1-4
1	SUBGROUP INSERT SEND 1
2	SUBGROUP INSERT SEND 2
3	SUBGROUP INSERT SEND 3
4	SUBGROUP INSERT SEND 4
5	AUX 1 SEND
6	AUX 2 SEND
7	AUX 3L SEND
8	AUX 3R SEND

SUBGROUP INSERT RETURNS 1-4 AND AUX INPUTS	
TASCAM DSUB CHANNEL #	SUBGROUP INSERT RETURNS & AUX INPUTS 1-4
1	SUBGROUP INSERT RETURN 1
2	SUBGROUP INSERT RETURN 2
3	SUBGROUP INSERT RETURN 3
4	SUBGROUP INSERT RETURN 4
5	AUX INPUT 1
6	AUX INPUT 2
7	AUX INPUT 3
8	AUX INPUT 4

SPECIFICATIONS



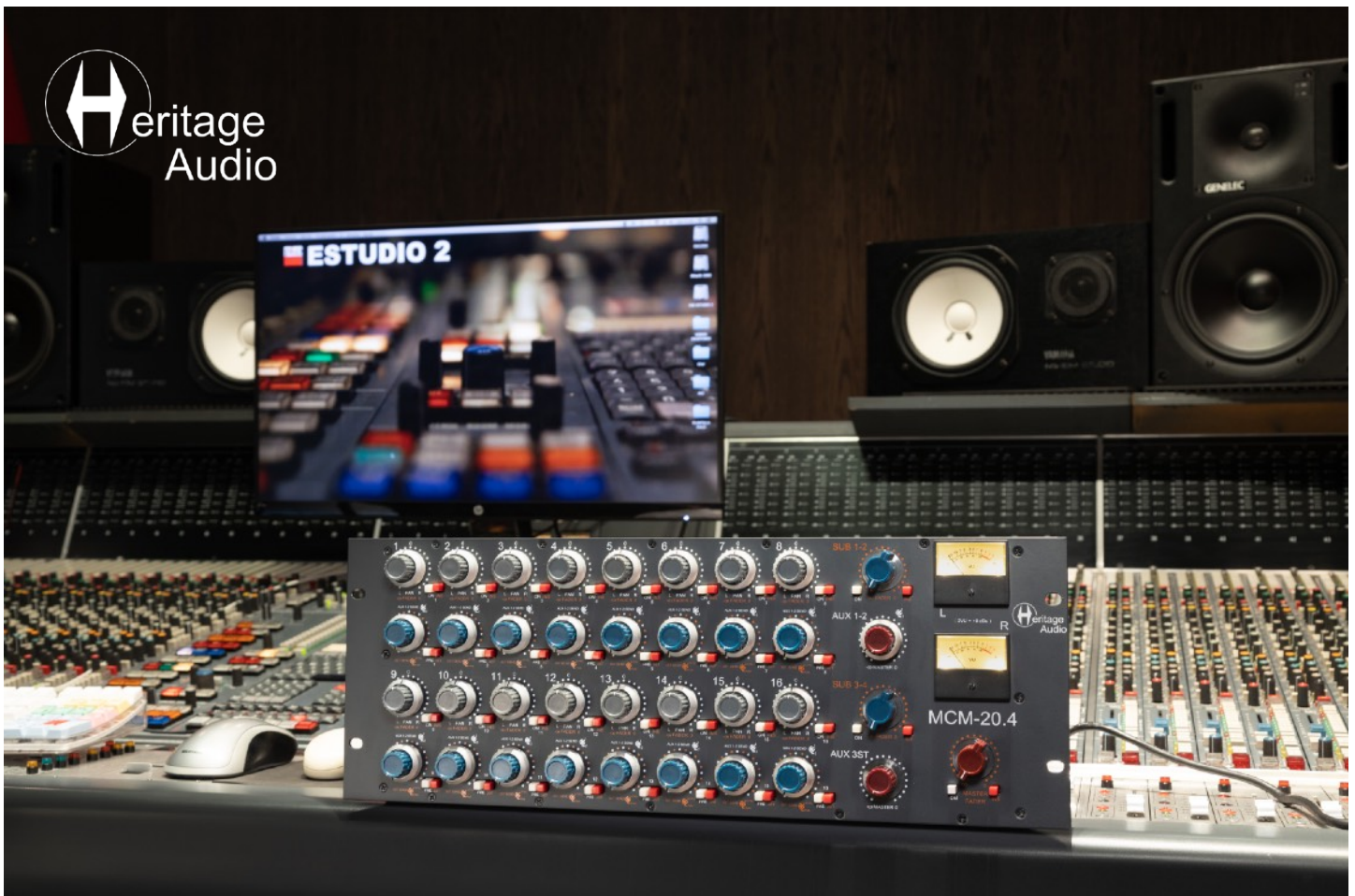
- **Channel Input Impedance:** Greater than 20 k Ω .
- **Maximum channel input level:** Greater than +26 dBu.
- **Maximum insert return input level:** Greater than +26 dBu.
- **Maximum insert send level:** Greater than +27 dBu, able to drive 600 Ω .
- **Maximum output level:** Greater than +26 dBu into 600 Ω .
- **Frequency response:** ± 0.5 dB 20 Hz to 20 kHz.
- **THD + N:** Not more than 0.07% from 50 Hz to 10 kHz at +20 dBu output (22 Hz to 22 kHz bandwidth) into 600 Ω .
- **Noise:** All faders up, all subgroups in, measured at the main output, 22 Hz to 22 kHz. Better than -80 dBu.

MCM-20.4 POWER SUPPLY

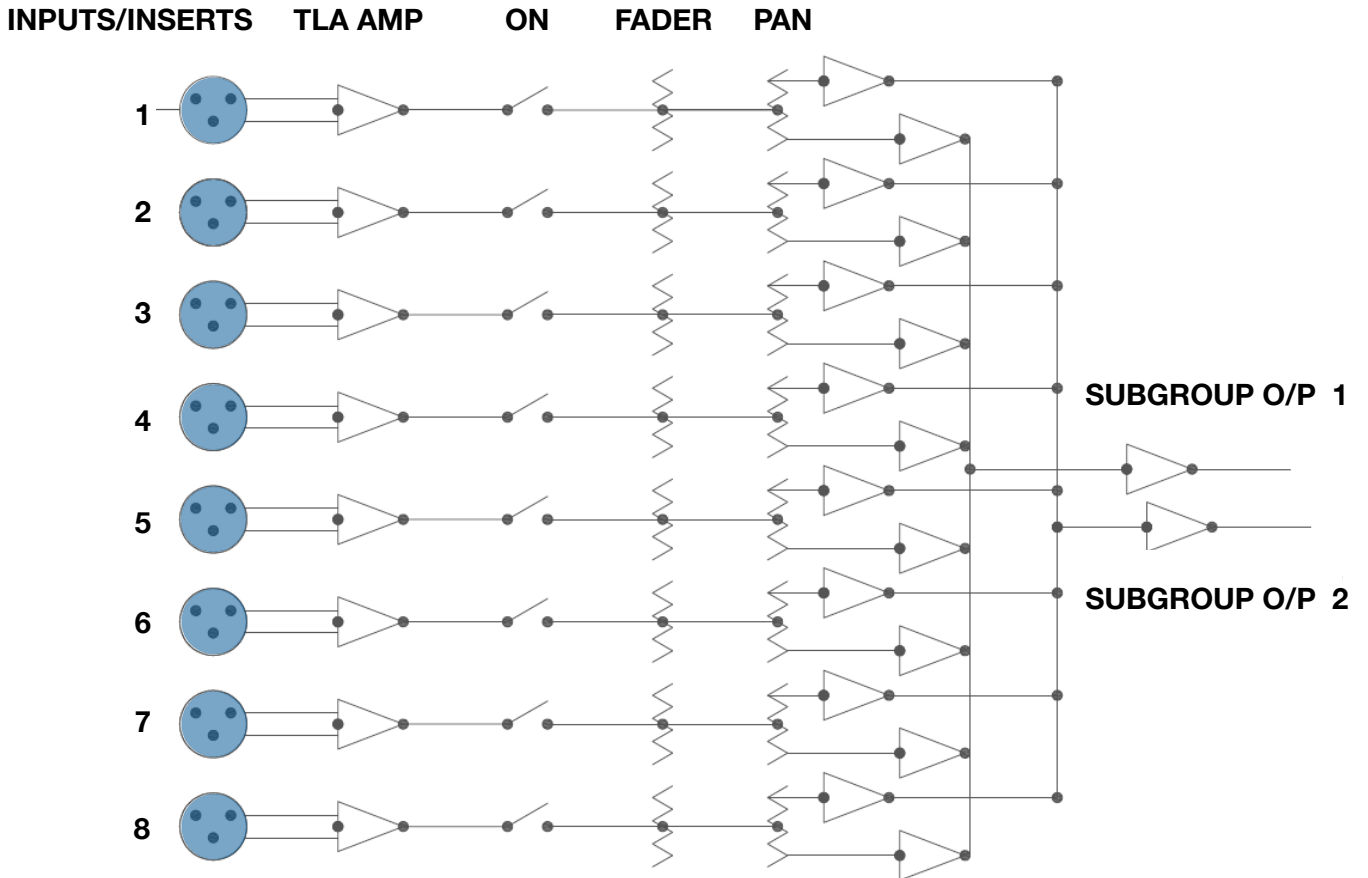
The MCM range of summing mixers features a hybrid power supply concept, in a very similar way to famous On Slot Technology (OST) employed in Heritage Audio's successful 500 series enclosures range.

An external switching power supply enters the unit by means of a 5 pin XLR connector, where it is further filtered using a PI configuration, using a big common mode choke.

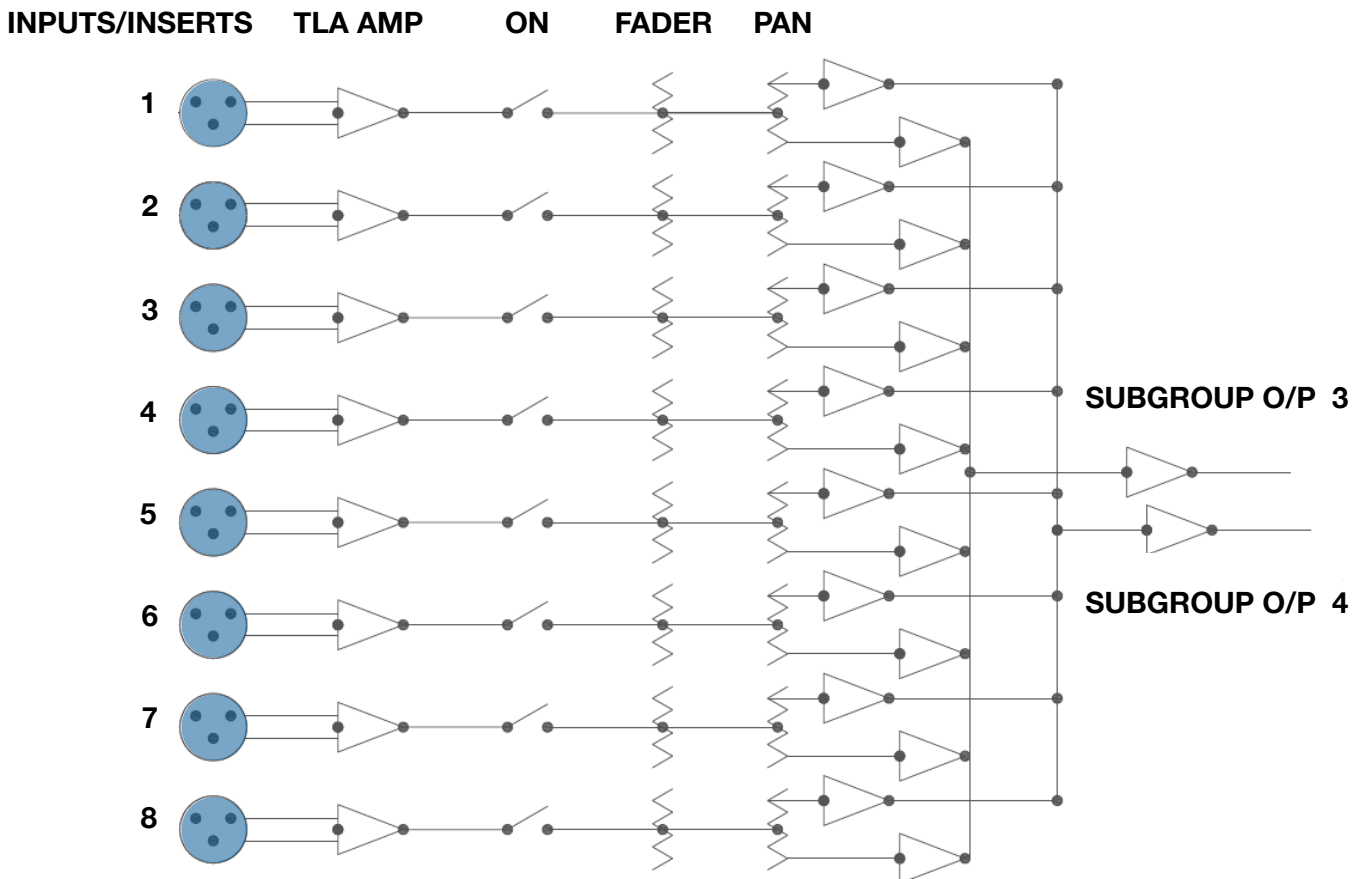
Further, linear regulation stages are used. Different regulation is used for channels and buses, and output stages.



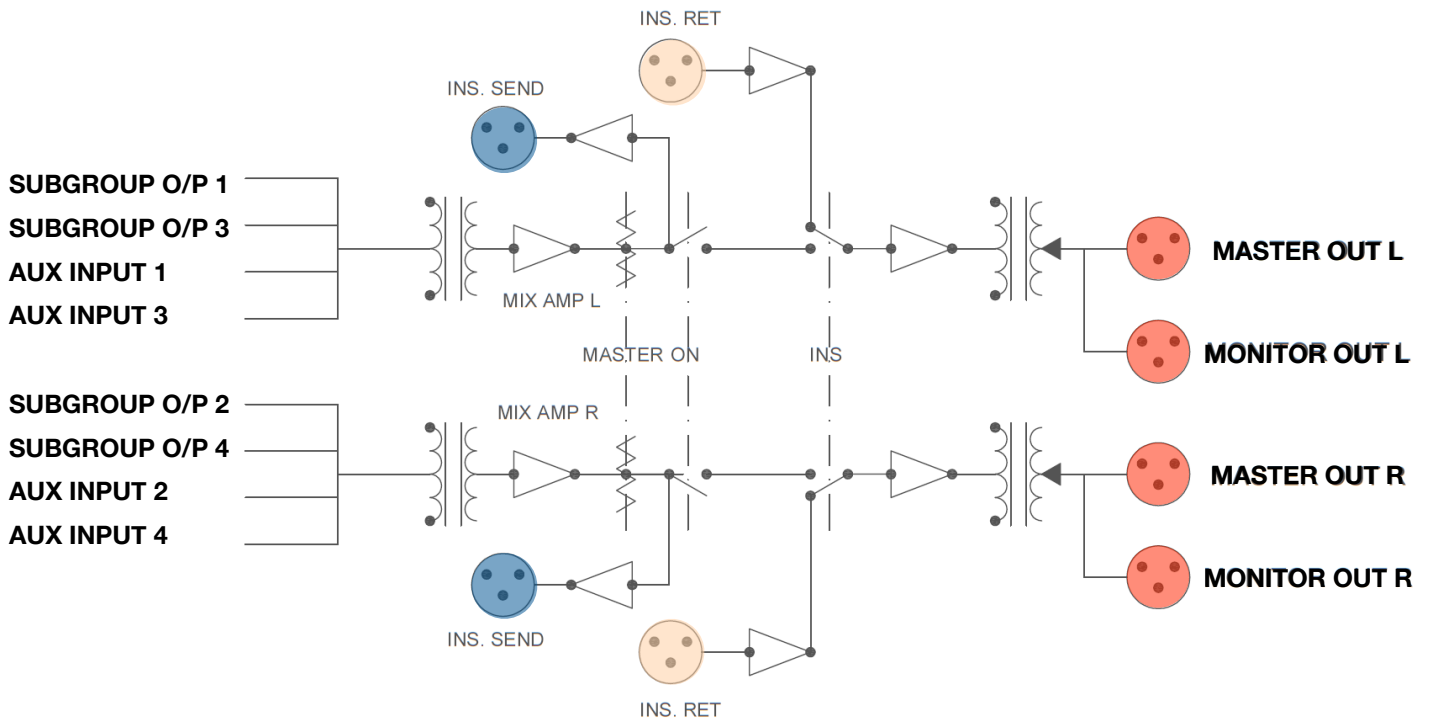
CHANNEL 1-8 SECTION



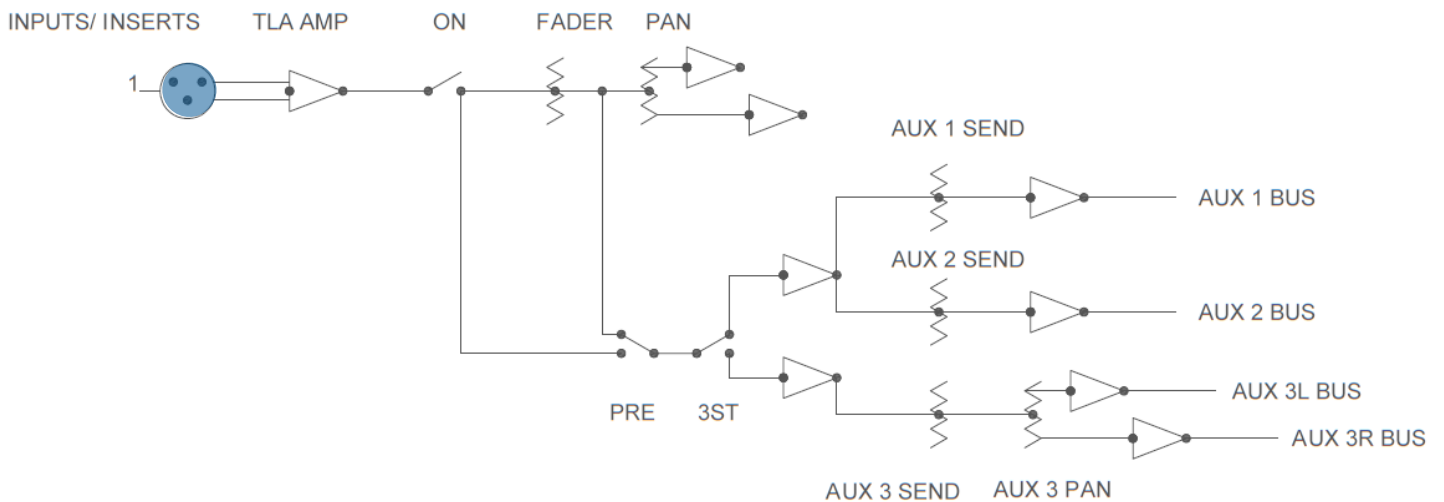
CHANNEL 9-16 SECTION



MASTER SECTION



DETAILED AUX SEND SECTION (SAME ALL CHANNELS)



TROUBLE SHOOTING



PROBLEMS	SOLUTIONS
My audio signal is not appearing at the Stereo Master.	Have you pushed the white 'ON' button for that channel?.
Still no audio signal at the Stereo Master.	You need to increase the inner grey knob for more channel volume.
Yet still no signal arriving at the Stereo Master.	You might need to increase the volume on the blue Subgroup knob.
Even still, no signal arriving at the Stereo Master.	Have you pushed the white 'ON' button for that Subgroup?
Even after checking all of that, the signal still isn't arriving at the Stereo Master.	Make sure you haven't pushed an INS (Insert) button without having anything inserted or the without the patchbay being 'normalled'.
I'm only receiving audio on the 'Left' side of the Stereo Master.	Check to see if the outer ring 'PAN' control has been set to the extreme left side. There is a center detent to assure equal signal to both sides.
There is no signal at all appearing at the Stereo Master.	Double check your cables and connections.
I'd like to get a Direct Out from each channel. Is it possible?	Yes, of course. Just tap the INSERT SEND signal, which is always active. This goes for Channels as well as Subgroups and Stereo Master.
I'd like to have a 12 channel bus for my drums. How could I configure it?	Just use the first 8 channels, sent to their Subgroup 1&2. Take the output from Subgroup 1&2 and send it to channels 9&10. Then at the Subgroup 3&4 you will have channels 1-8 and channels 11-16. So that would allow you a drum bus of up to 14 channels.
I don't want my AUX(FX) RETURNS hard panned Left or Right. Is there another way to configure my setup to have more control over their position in the stereo MASTER Output?	Yes, by simply routing them to Channel Inputs you can position them anywhere in the stereo field. <i>Just remember not to also send to the AUXs on those channels as it will produce feedback loop.</i>

* For any further doubts or questions please get in contact with us at: support@heritageaudio.com

WARRANTY STATEMENT

LIMITED 2 YEAR WARRANTY

Heritage Audio **MCM-20.4** Summing Mixer is warranted by Heritage Audio SL to be free from defects in materials and workmanship for the period of 2 years to the original purchaser. In the event of such defects, the product will be repaired without charge or, at our option, replaced with a new one if delivered to Heritage Audio prepaid, together with a copy of the sales slip or other proof of purchase date. The warranty excludes problems due to normal wear, abuse, shipping damage or failure to use the product in accordance with the specifications.

Heritage Audio shall not be liable for damages based upon inconvenience, loss of use of the product, loss of time, interrupted operation or commercial loss or any other damages, whether incidental, consequential or otherwise.

This warranty is not transferable.

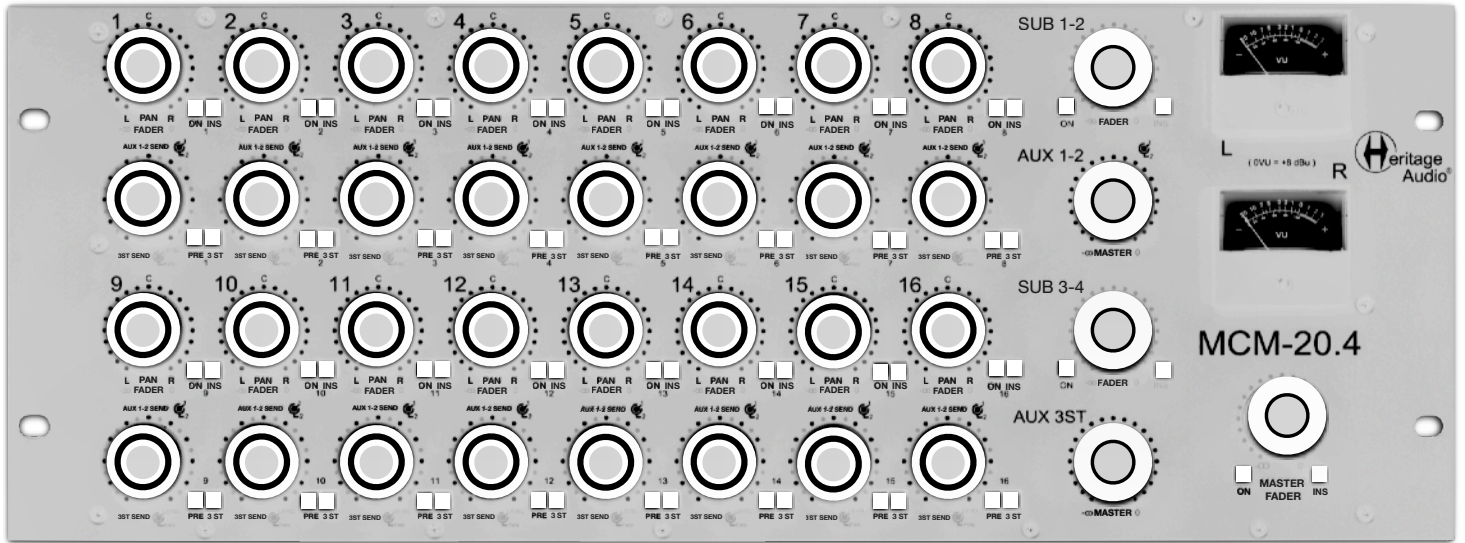
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REGISTRATION

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RECALL SHEETS

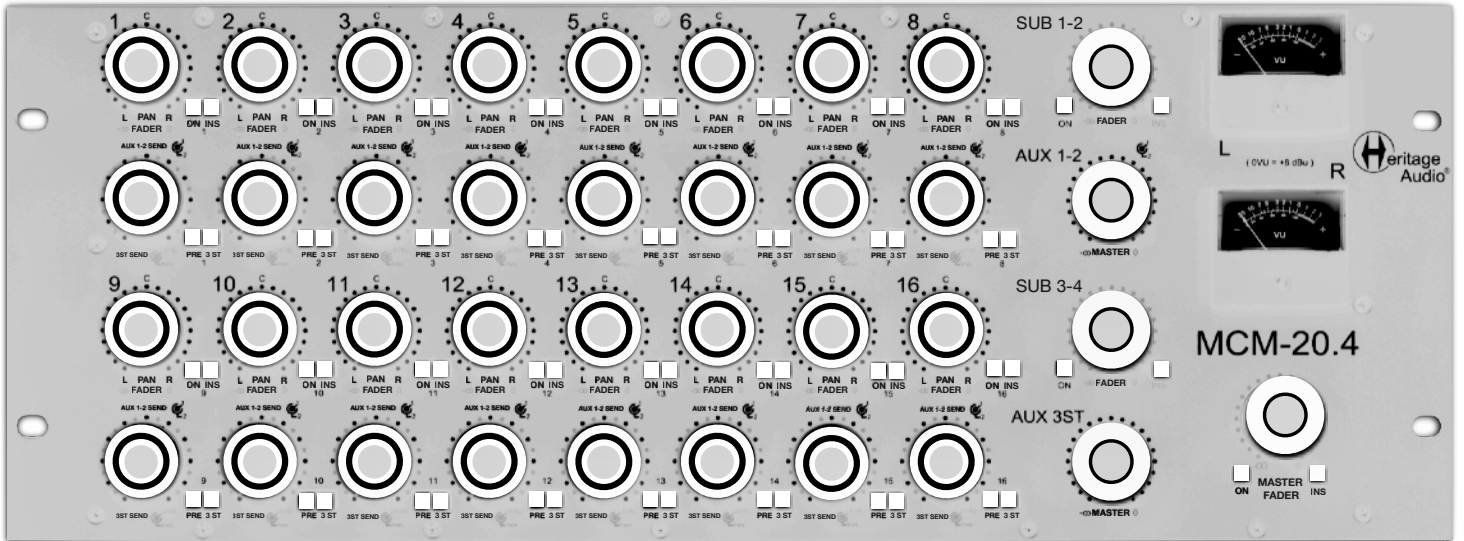


Session / Title: _____ Track: _____ Connected Equipment: _____

Switch ON

Date: _____ Instrument: _____ Notes: _____

Switch OFF



Session / Title: _____ Track: _____ Connected Equipment: _____

Switch ON

Date: _____ Instrument: _____ Notes: _____

Switch OFF



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