Livio Argentini

LA-117

Livio Argentini

MODULAR MASTERING EQUALIZER

STUDIO DMI Limited Edition

livioargentini.com

SUMMARY


MID - SIDE
INSERT LEVEL
LO CUT
Hz
SIDE
SOLO
OFF
MID
SIDE
FINE
WIDTH
LA 117
OFF
PRE
POST
DRY
WET
INSERT
dBu
dB x2
BOOST
CUT
SOLO
F x2
MID LO
MID
MID HI
HI
KHz
OUT
LO CUT
HI CUT
INPUT
PHASE
PARAM
PEAK
BAX

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LA-117

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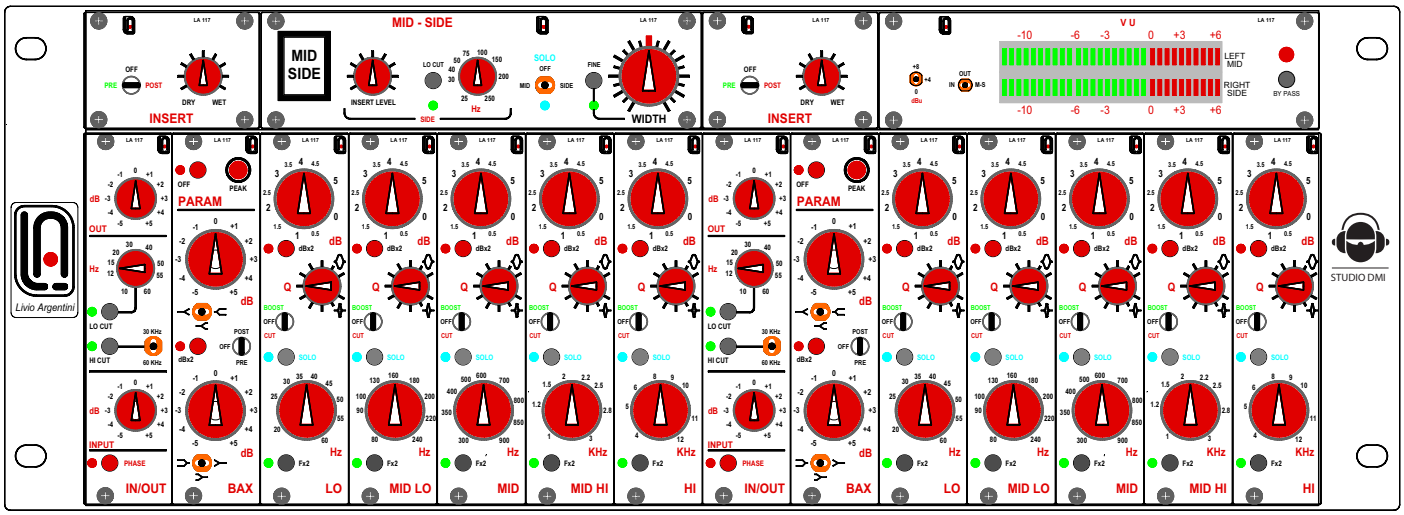
MODULAR MASTERING EQUALIZER



LA-117 MODULAR MASTERING EQUALIZER

The Mastering EQ LA-117 Studio DMI limited edition is the result of collaboration between Livio Argentini and Luca Pretolesi.
Special analog design techniques have been used to obtain a precise control of the sound structure down to the minimum details.

- The LA-117 "Studio DMI edition" is a multirange analog equalizer especially designed for mastering and mixing use where very precise settings are required.
- For this purpose, the LA-117 is equipped with super fine tuning controls enabling an easy manual recall without the use of step controls. The LA-117 larger scale achieves higher resolution (ex. 5 dB range spread on 300° of knob rotation). In this way the manual knob resolution is fifty times the human hearing sensitivity.
- Inside the LA-117 there are two separate EQs, the first is a Baxandall type and the second is a special 5 band Parametric unit.
- The order of the LA-117 Parametric and Baxandall EQs within the signal flow is interchangeable. The interactions between the two equalizers enable the LA-117 to execute any kind of acoustic correction.
- Each parametric band splits the frequency control in two different ranges so that 10 bands can be used. Moreover, the LA-117 features a "solo" control for parametric eq sections that improves the filter usability. This feature is not found in any other analog parametric EQ on the market.
- The parametric unit is based on a special innovative technology designed by Livio Argentini, different from other parametric equalizers on the market. The LA-117 uses a parallel configuration that produces very low distortion, low noise and extremely low phase rotation.
- The extremely large bandwidth (more than 300 kHz) provides a very fast transient response and an extraordinarily natural sound unrivalled in the market.
- The very linear (instrumental type) electronic balanced amplifier, without transformers or servo-amplifiers, allows for a perfect square wave response and absolutely no timbric

alteration in the sound.

- Double gold plated contact connectors.
- Many critical components, like potentiometers, are duplicated and connected in parallel to assure long life, maximum reliability and precision.
- Switching is made by gold contacts and sealed relays.
- The LA-117 use short actuator toggle switches to avoid accidental operation when adiacent knobs are operated.
- The special modular construction allows for a quick servicing and an easy customisation.
- The insertion of a MID-SIDE matrix, suggested by Luca Pretolesi, and the external insert capability, transform the LA-117 in a complete audio Hub.

SAFETY INSTRUCTIONS

WARNING

Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not expose the instrument to liquids and rain. Do not use it near water or in damp or wet conditions, or place containers on it containing liquids. If any liquid seeps turn off the power and unplug the power cord from the AC outlet.
- Do not put burning items, such as candles, on the unit. A burning item may fall over and cause a fire.
- This instrument contains no user-serviceable parts. Do not open the instrument or attempt to disassemble or modify the internal circuit.
- Never insert or remove an electric plug with wet hands.
- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.
- Do not place the power cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.

CAUTION

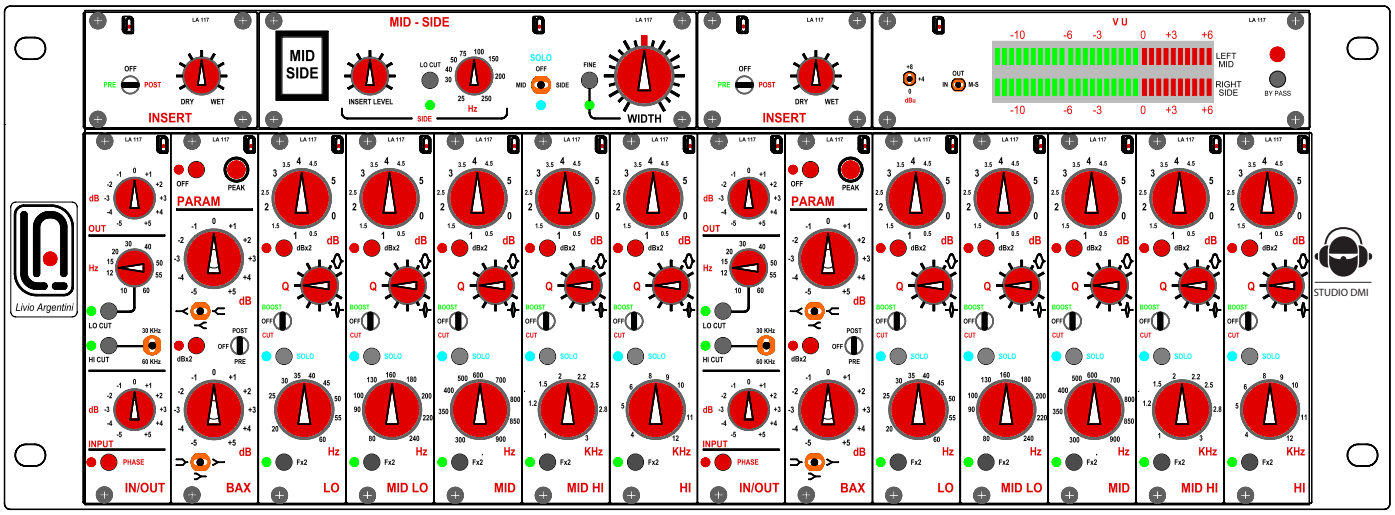
Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not connect the instrument to an electrical outlet using a multiple-connector. Doing so can result in lower sound quality, or possibly cause overheating in the outlet itself.
- When removing the electric plug from the instrument or an outlet, hold the plug itself and not the cord. Pulling by the cord can damage it.
- Remove the electric plug from the outlet when the instrument is not to be used for extended periods of time, or during electrical storms.
- Do not place the instrument in an unstable position where it might accidentally fall over.
- Before moving the instrument, remove all connected cables.
- When setting up the product, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the outlet. Even when the power switch is turned off, electricity is still flowing to the product at the minimum level.
- When you are not using the product for a long time, make sure to unplug the power cord from the wall AC outlet.
- Use only the stand/rack specified for the instrument. When attaching the stand or rack, use the provided screws only. Failure to do so could cause damage to the internal components or result in the instrument falling over.

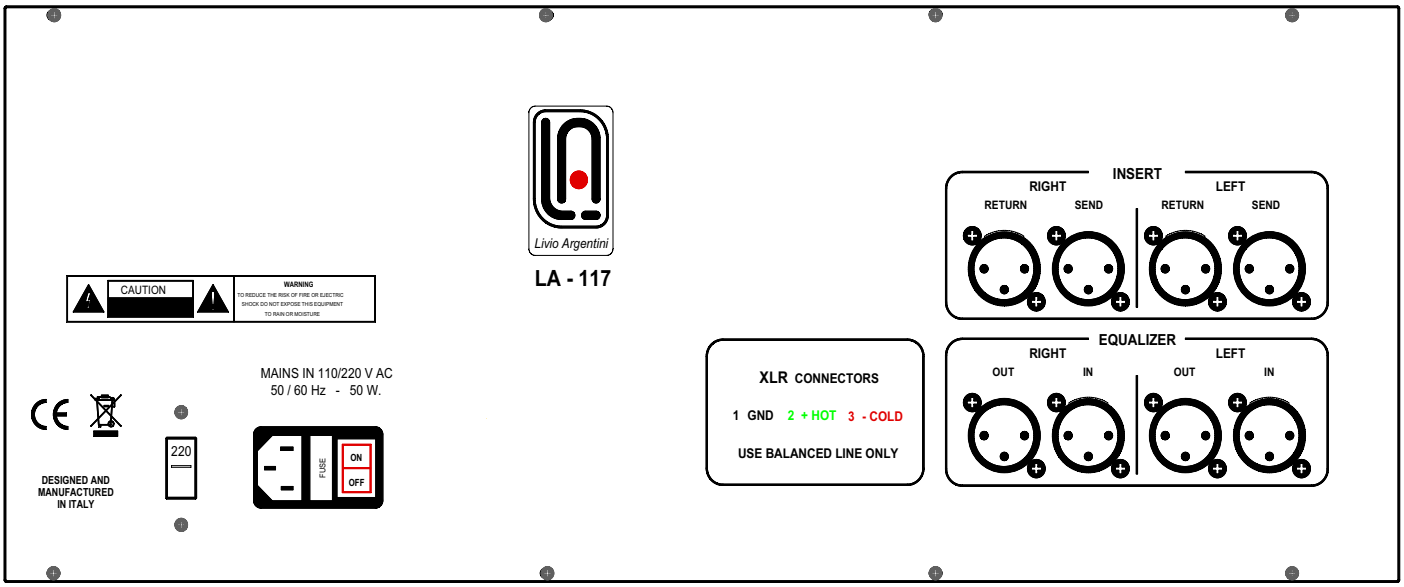
Information for Users on Collection and Disposal of Old Equipment

This special symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.
For proper treatment, recovery and recycling of old products, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC.
By disposing of these products correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.
For more information about collection and recycling of old products, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.
[For business users in the European Union]
If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.
[Information on Disposal in other Countries outside the European Union]
This symbol is only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

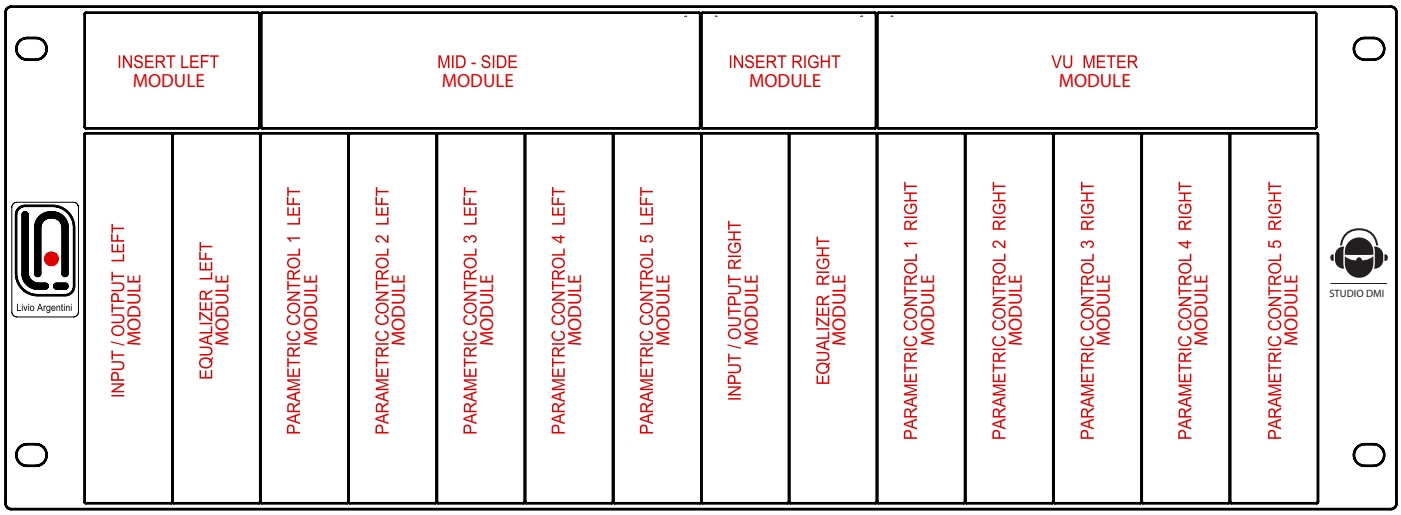
LA-117 MODULAR MASTERING EQUALIZER



FRONT PANEL



REAR PANEL


INSERT LEFT MODULE
MID - SIDE MODULE
INSERT RIGHT MODULE
VU METER MODULE
INPUT / OUTPUT LEFT MODULE
EQUALIZER LEFT MODULE
PARAMETRIC CONTROL 1 LEFT MODULE
PARAMETRIC CONTROL 2 LEFT MODULE
PARAMETRIC CONTROL 3 LEFT MODULE
PARAMETRIC CONTROL 4 LEFT MODULE
PARAMETRIC CONTROL 5 LEFT MODULE
INPUT / OUTPUT RIGHT MODULE
EQUALIZER RIGHT MODULE
PARAMETRIC CONTROL 1 RIGHT MODULE
PARAMETRIC CONTROL 2 RIGHT MODULE
PARAMETRIC CONTROL 3 RIGHT MODULE
PARAMETRIC CONTROL 4 RIGHT MODULE
PARAMETRIC CONTROL 5 RIGHT MODULE
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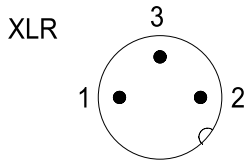
STUDIO DMI

WIRING LA-117

LINE INPUT

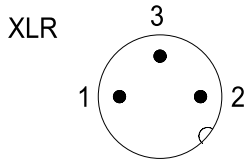


XLR On the back

Balanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = PHASE -

Unbalanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = GROUND

INSERT SEND

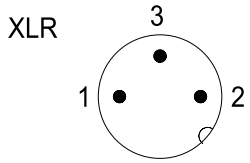


XLR On the back

Balanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = PHASE -

Unbalanced line (-6 dB)
- 1 = GROUND
- 2 = PHASE +
- 3 = LEAVE OPEN

INSERT RETURN

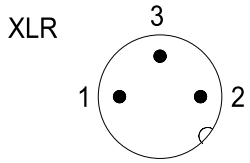


XLR On the back

Balanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = PHASE -

Unbalanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = GROUND

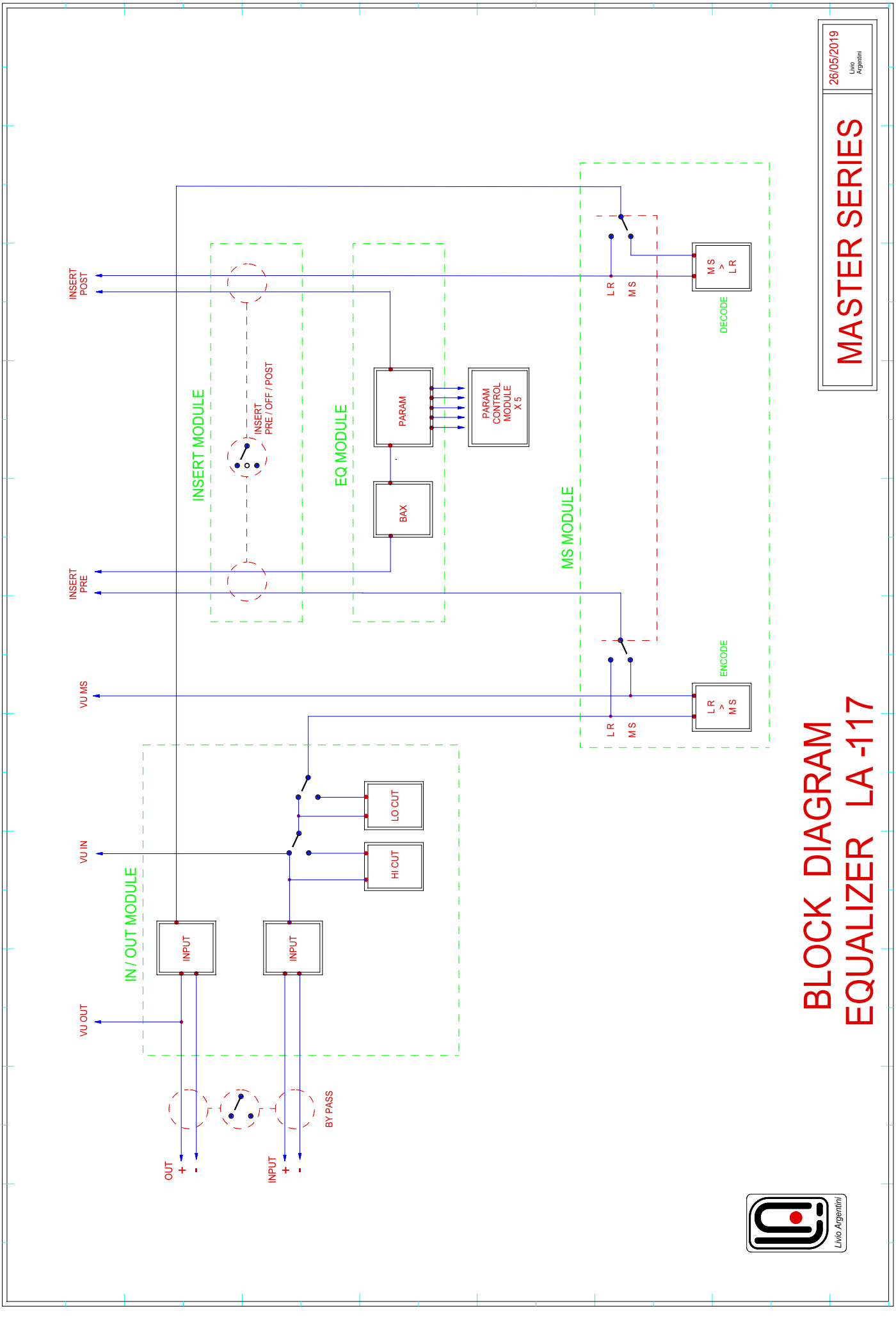
MAIN OUTPUT

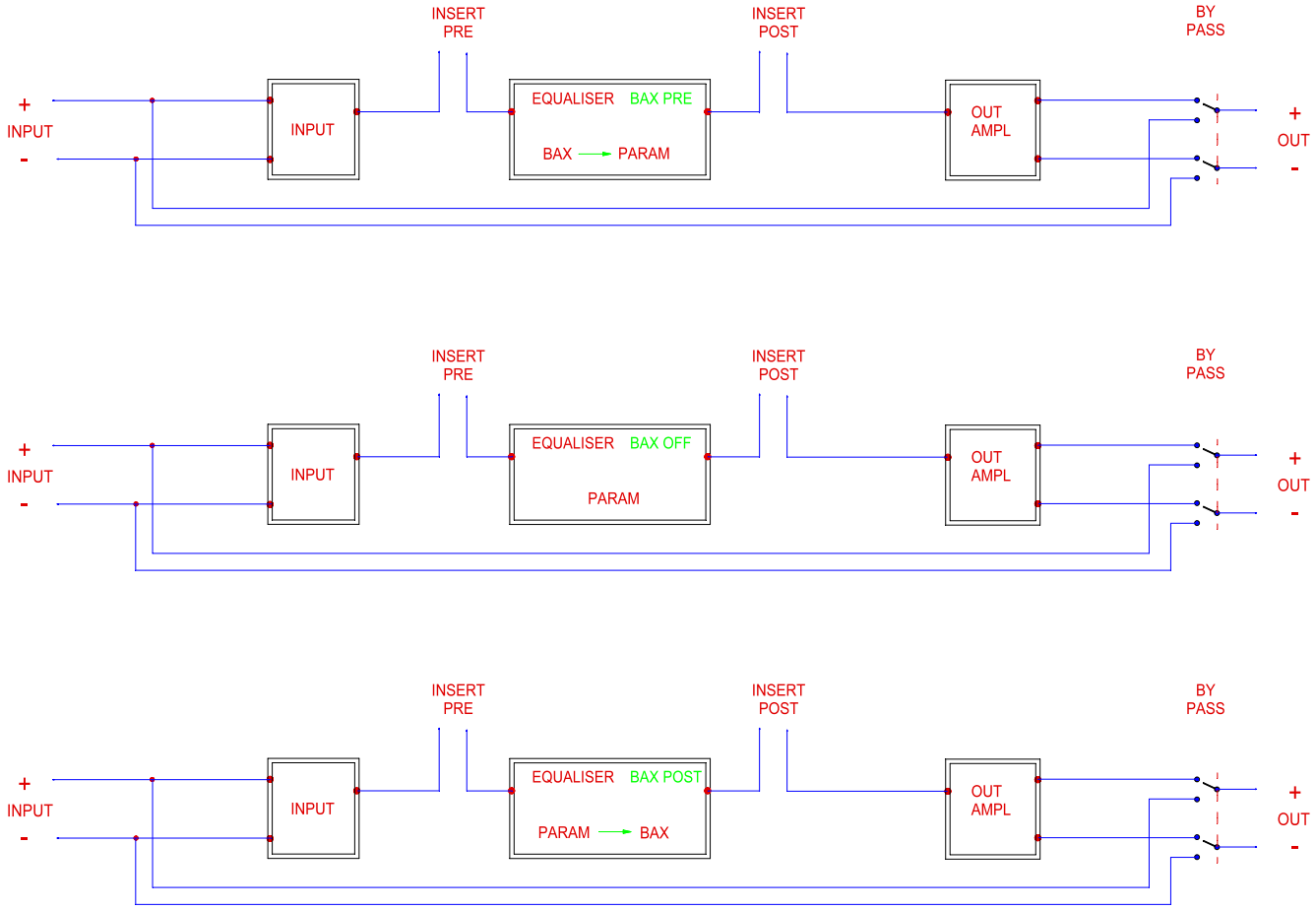


XLR On the back

Balanced line
- 1 = GROUND
- 2 = PHASE +
- 3 = PHASE -

Unbalanced line (-6 dB)
- 1 = GROUND
- 2 = PHASE +
- 3 = LEAVE OPEN


MASTER SERIES
26/05/2019
Livio Argentini
BLOCK DIAGRAM
EQUALIZER LA -117
INSERT POST
INSERT PRE
VU MS
VU IN
VU OUT
INSERT MODULE
INSERT PRE / OFF / POST
EQ MODULE
PARAM
PARAM CONTROL MODULE X 5
BAX
MS MODULE
L R
M S
M S > L R
DECODE
L R > M S
ENCODE
IN / OUT MODULE
INPUT
INPUT
LO CUT
HI CUT
BY PASS
OUT
INPUT
Livio Argentini



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PARAM / BAX SWITCH

EQUALIZER LA-117

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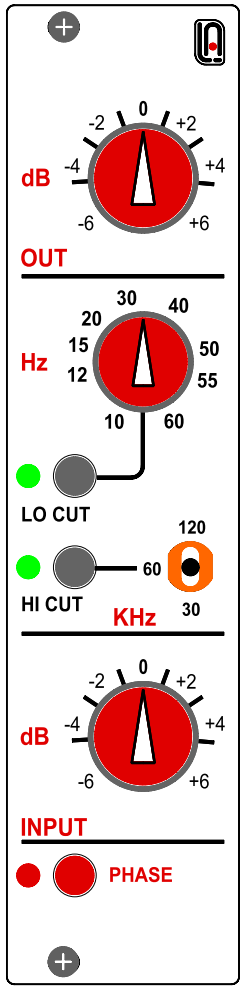
STANDARD VERSION



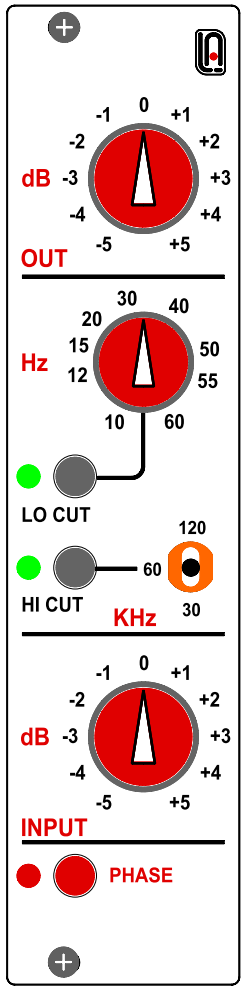
OUT LEVEL CONTROL
CONTINUOUS
CENTER CLICK

LO CUT FREQUENCY CONTROL
CONTINUOUS

HI CUT FREQUENCY

INPUT LEVEL CONTROL
CONTINUOUS
CENTER CLICK

OPTIONAL VERSION



OUT LEVEL CONTROL
1 dB STEP

LO CUT FREQUENCY CONTROL
CONTINUOUS

HI CUT FREQUENCY

INPUT LEVEL CONTROL
1 dB STEP

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IN / OUT MODULE

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LA 117 IN / OUT

Module must be placed in the first slot only.

PHASE

The input phase can be reversed by a push button with red LED.

INPUT LEVEL

The input level is + 4 dBu and can be trimmed by the input level control.

The range is +/- 6 dB in the standard module, continuous rotation with center click and +/- 5 dB in the optional module with 1 dB step.

The input level, after regulation, must be read on the VU meter module.

HI CUT FILTER

Activated by a push button with green LED.

This filter is designed to cut off noise caused by digital systems only and not for cutting audible audio frequencies, since it decreases the transient speed.

3 frequencies are selectabled by a toggle switch, 30 / 60 / 120 kHz. 12 dB/octave.

The LA-117 frequency range is very large (over 300 kHz), so that LA-117 is sensitive if a connected DAC is not well filtered.

Use the HI CUT only if absolutely necessary.

LO CUT FILTER

Activated by a push button with green LED.

The cutoff frequency can be continuosly controlled by a rotary knob.

The freqency range is 10 / 60 Hz, 12 dB / octave.

The use of a 10/20 Hz filter can be good for speakers protection.

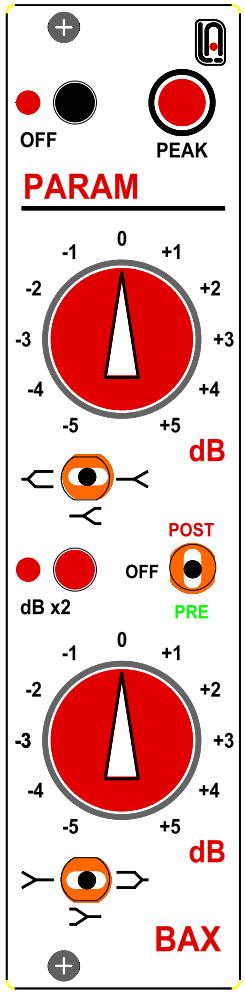
OUTPUT LEVEL

The output level is + 4 dBu and can be trimmed with the output level control.

The range is +/- 6 dB in the standard module, continuous rotation with center click and +/- 5 dB in the optional module with 1 dB step.

The output level, after regulation, must be read on the VU meter module.

STANDARD VERSION



PARAMETRIC OFF

PEAK LED

LEVEL CONTROL
CONTINUOUS

HI FREQUENCY
CROSSOVER
3 STEP

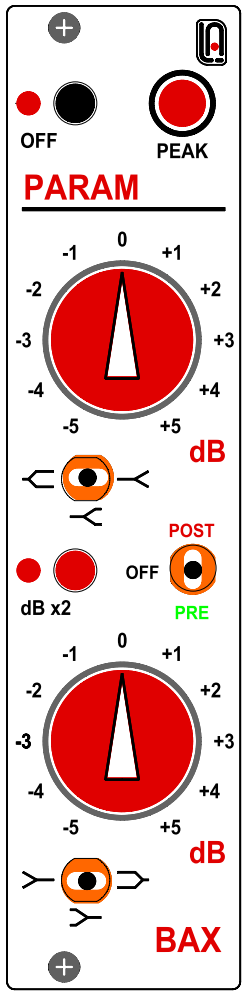
INCREASE THE LEVEL
CONTROL TO +/- 10 dB

BAX ON - POST PARAM
BAX OFF
BAX ON - PRE PARAM

LEVEL CONTROL
CONTINUOUS

LO FREQUENCY
CROSSOVER
3 STEP

OPTIONAL VERSION



PARAMETRIC OFF

PEAK LED

LEVEL CONTROL
1 dB STEP

HI FREQUENCY
CROSSOVER
3 STEP

INCREASE THE LEVEL
CONTROL TO +/- 10 dB

BAX ON - POST PARAM
BAX OFF
BAX ON - PRE PARAM

LEVEL CONTROL
1 dB STEP

LO FREQUENCY
CROSSOVER
3 STEP

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EQ MODULE

EQUALIZER LA-117

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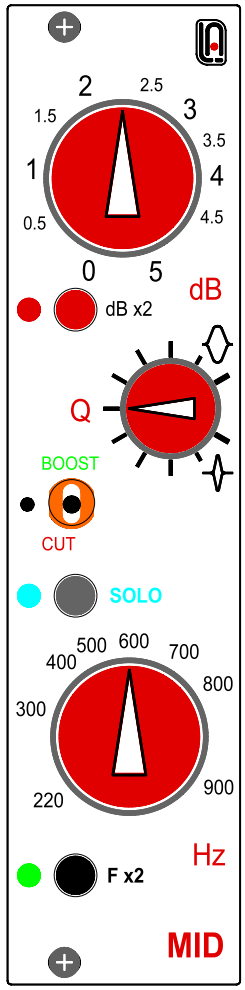
LA–117 BAX/PARAM MODULE

LA 117 BAX/PARAM module must be placed in the second slot only.
Inside of BAX/PARAMETRIC module there are two different equalizers, the first section is a Baxandall type and the second section is the core of parametric unit.

BAX
One illuminated toggle switch can activate the BAX filter and put it pre or post the PARAMETRIC unit.
The Bax filter has two separate sections: LOW and HI.
Two toggle switches can select 3 crossover frequencies for LOW and HI bands.
The CUT/BOOST level control with +/- 5 dB range is continuos in the standard version and 1 dB stepped in the optional version.
One push button (dB x 2) with red LED increase the level range of +/- 10 dB.

PARAMETRIC
This module contains the core only of the parametric EQ, while the controls are placed in the other 5 modules.
A push button with red LED disables the 5 control modules.
Peak red LED. It is calibrated 6 dB lower than the maximum out level. When the red light is on, it warns that you are reaching a very high level.

STANDARD VERSION



INCREASE THE LEVEL CONTROL TO 10 dB

LEVEL CONTROL FUNCTION

DISABLE THE OTHER PARAMETRIC MODULES

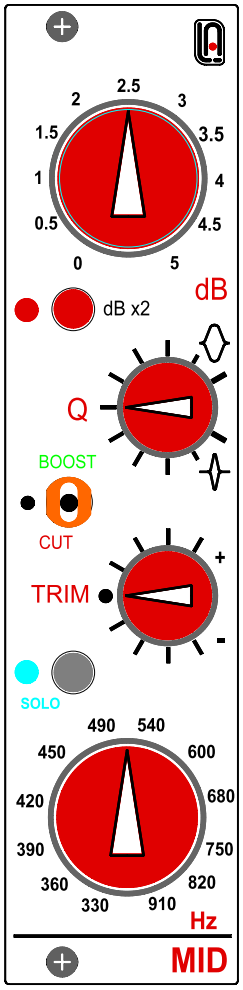
FREQUENCY RANGE X 2

LEVEL CONTROL
CONTINUOUS

Q CONTROL
CONTINUOUS

FREQUENCY CONTROL
CONTINUOUS

OPTIONAL VERSION



INCREASE THE LEVEL CONTROL TO 10 dB

LEVEL CONTROL FUNCTION

DISABLE THE OTHER PARAMETRIC MODULES

LEVEL CONTROL
0.5 dB STEP or CONTINUOUS

Q CONTROL
11 STEP or CONTINUOUS

FINE FREQUENCY CONTROL +/- 10%
CONTINUOUS CENTER CLICK

FREQUENCY CONTROL
12 STEP

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PARAMETRIC CONTROL MODULE

EQUALIZER LA-117

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PARAMETRIC CONTROL MODULE

The parametric control module must be placed in 3>7 position.
It is possible to install any number of modules (max 5) standard and optional as well.
One illuminated toggle switch puts the level control in 3 stage BOOST.
OFF
CUT
The range of level control is 0/5 dB.
5 dB range on a 300 degree of rotation allows a very fine manual recall. In the optional version the level control is stepped with 0.5 dB/step.
One push button (dB x 2) with red LED increases the level range to 0/10 dB.
Q control with large range is continuos in standard version and it as 11 steps in the optional version.

FREQUENCY CONTROL
In the standard version it is continuous with a range 1:4 circa.
One push button (Fx x 2) with red LED doubles the frequency range.
In the optional version the frequency control is made by 12 steps switch.
The 12 fixed frequencies can be optimized by a trim continuous control with a range of +/- 10 % and a center click.
This is very important since with fixed stepped frequencies it can be critical to position an accurate narrow band filter, for example to filter out single frequency noises. The trim can be used to adapt to the exact desired frequency.
Standard and optional modules can be mixed.

SOLO
The solo switch, unique in analog EQ, is actuated by a push button with a blinking blue LED.
When pressed, it disables the other parametric control modules to make an easier regulation.
It is possible to activate two or more solo at the same time.

PARAMETRIC FREQUENCY TABLE

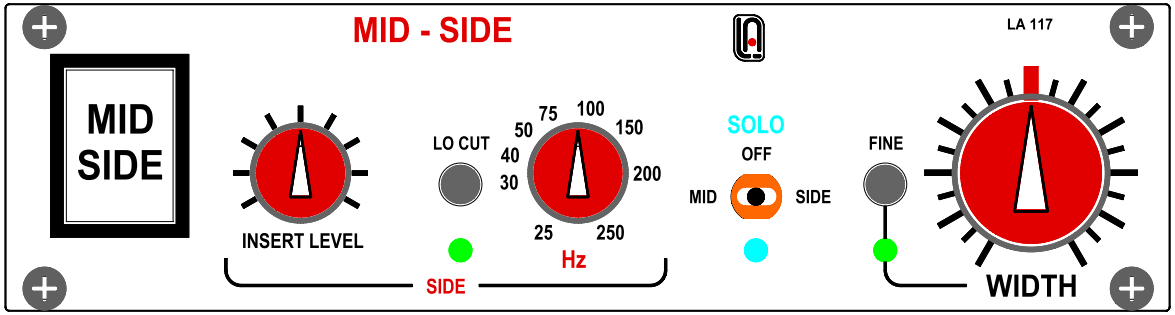
LA-117 STANDARD VERSION (continuos)

FREQUENCY BAND	F X 2 OFF	F X 2 ON
LO	15-65 Hz	30-130 Hz
MID LO	60-260 Hz	120-520 Hz
MID	220-900 Hz	440-1800 Hz
MID HI	750-3200 Hz	1500-6400 Hz
HI	3000-13000 Hz	6000-26000 Hz
CUSTOM	XX-XX Hz	XX-XX Hz

LA-117 OPTIONAL VERSION (step)

FREQUENCY BAND	
LO	15-20-25-30-35-40-45-50-57-65-73-82 Hz
MID LO	91-100-110-1250140-160-180-200-220-240-270-300 Hz
MID	330-360-390-420-450-490-540-600-680-750-820-910 Hz
MID HI	1-1.1-1.2-1.3-1.4-1.5-1.6-1.8=2.1-2.4-2.8-3.3 KHz
HI	3.9-4.7-5.6-6.8-8.2-10-12-15-18-22-27 KHz
CUSTOM	XX-XX Hz

LO CUT
FREQUENCY
CONTROL
CONTINUOUS



STEREO WIDTH
CONTINUOUS
CENTER CLICK

SIDE INSERT LEVEL
CONTINUOUS

LO CUT

SOLO

REDUCE WIDTH RANGE
CONTINUOUS
WITH CENTER CLICK

MID - SIDE MODULE

EQUALIZER LA-117

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MID-SIDE MODULE

The MID-SIDE module is placed on the upper side of the EQ cabinet. One large illuminated push button activates the mid-side mode.
Left EQ works as the MID and right EQ as the SIDE.
The SIDE function has an unique control which can increase the level with a range of 15 dB. This level, after regulation, can be read on the VU meter module and monitored in SOLO.
This function is very interesting because allows to use the external insert at exact standard level (+4 dBu), important when a limiter/compressor is connected.
This control increases the insert send level and in the meantime decreases the insert return level so to not perform changes in the stereo width control.

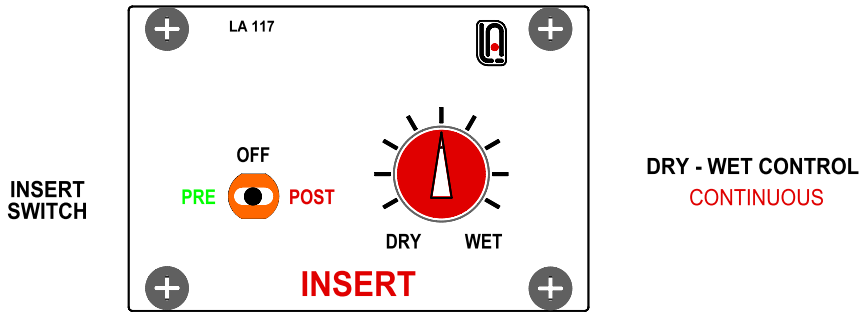
LO CUT FILTER
Activated by a push button with green LED; it can be used in SIDE function only.
The cutoff frequency it is controlled by a rotary knob.
The frequency range is 25/250 Hz, 12 dB/octave.

STEREO WIDTH
A rotating knob controls the SIDE level in order to increase/decrease the stereo image.
In the fully counterclock position the stereo image collapses into mono.
In mid position (center click) the stereo image is the same as original.
In fully clockwise position the stereo image is enhanced.
In fully clockwise position the SIDE level is increased by 8 dB, more of the standard (6 db), to allow for a big widening.

FINE
Push button with LED reduces the range of the stereo width control in order to do a very precise adjustment.

SOLO
One 3 position toggle switch with blinking LED allows to monitor the MID only or the SIDE only. This function is very important especially when external gear is connected in insert.

When SOLO is active, the MID or the SIDE channel is monitored in mono on both speakers.
Pay attention!! In SOLO mode, the SIDE is monitored at the insert level (+4 dBu) and not at the real level, normally 15/20 dB lower. The human hearing sensitivity changes at different sound levels (see Fletcher and Munson research) so that it seems very important to monitor the MID and the SIDE at the same level.



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INSERT MODULE

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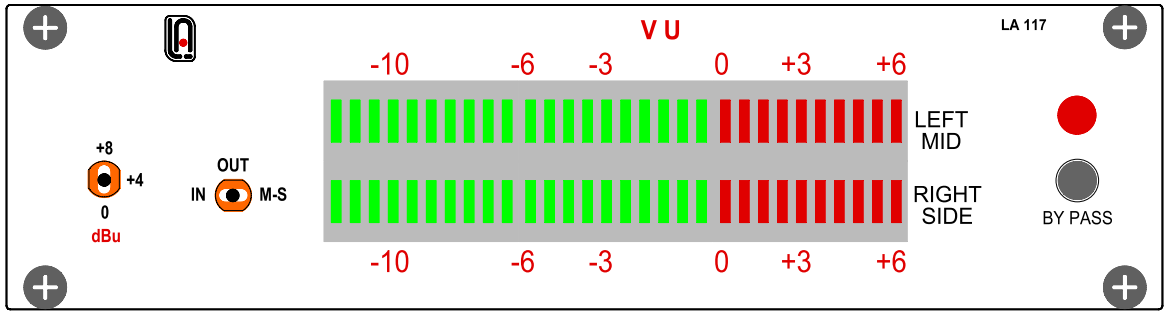
INSERT MODULE

Two insert modules, one for each channel, are placed on the upper side of the EQ cabinet.
One illuminated 3 positions toggle switch set the insert point:
INSERT PRE EQ
INSERT DISABLE
INSERT POST EQ.
A rotating DRY/WET control knob is especially designed to allow the parallel compression.



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VU METER

EQUALIZER LA-117

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VU MODULE

VU module is placed on the upper side of the EQ cabinet. The visualization is peformed by two 30 LED display microprocessor controlled with peak memory.
One 3 position toggle switch select the VU input.
1* EQ input level (left / right)
2* EQ output level (left / right)
3* Mid-Side level (mid / side)

One 3 position toggle switch selects the VU level.
1* Standard level +4 dBu.
2* +8 dBu
3* +12 dBu
One push button with blinking red LED sets the EQ in hard bypass.

LA-117

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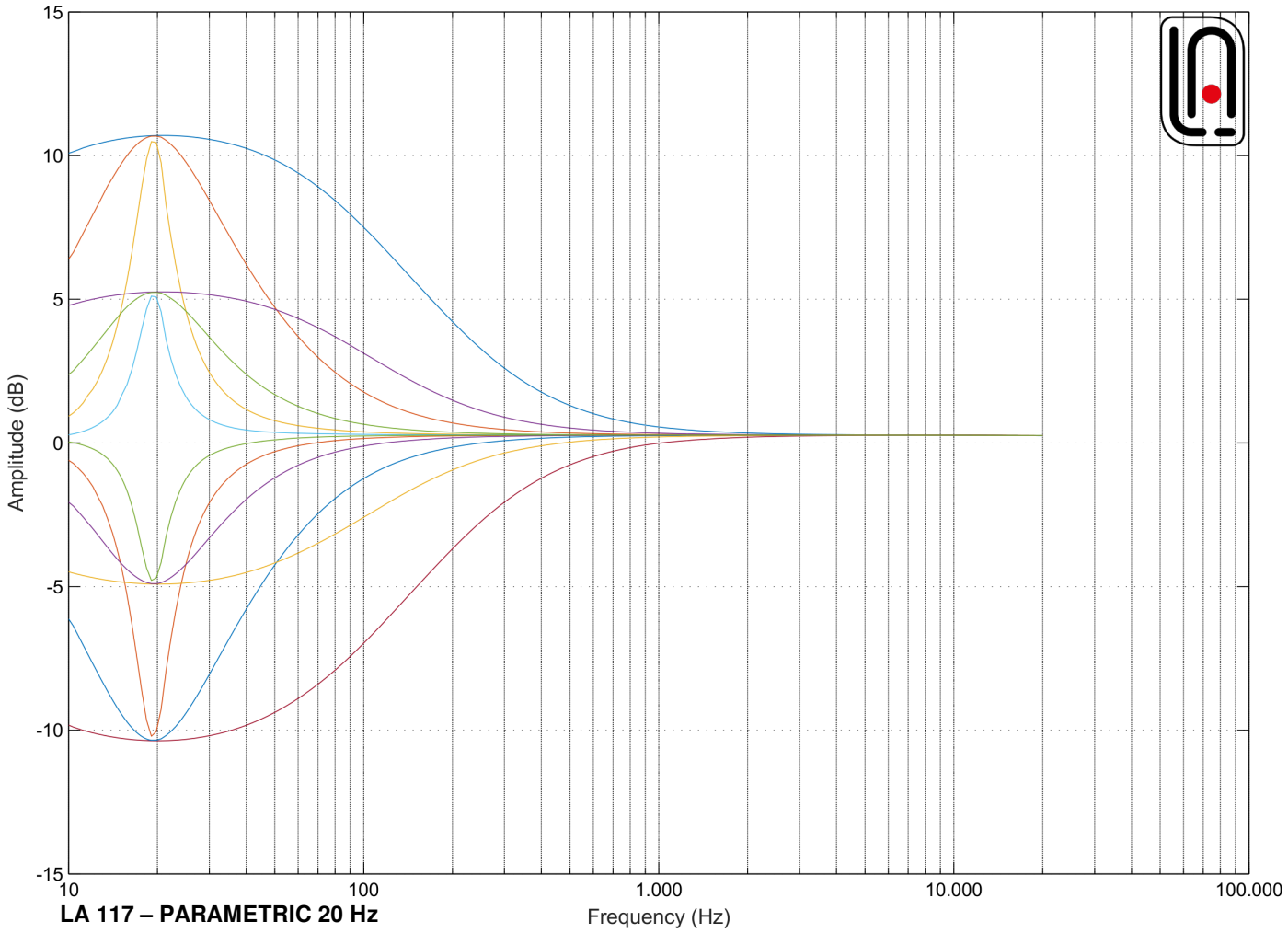
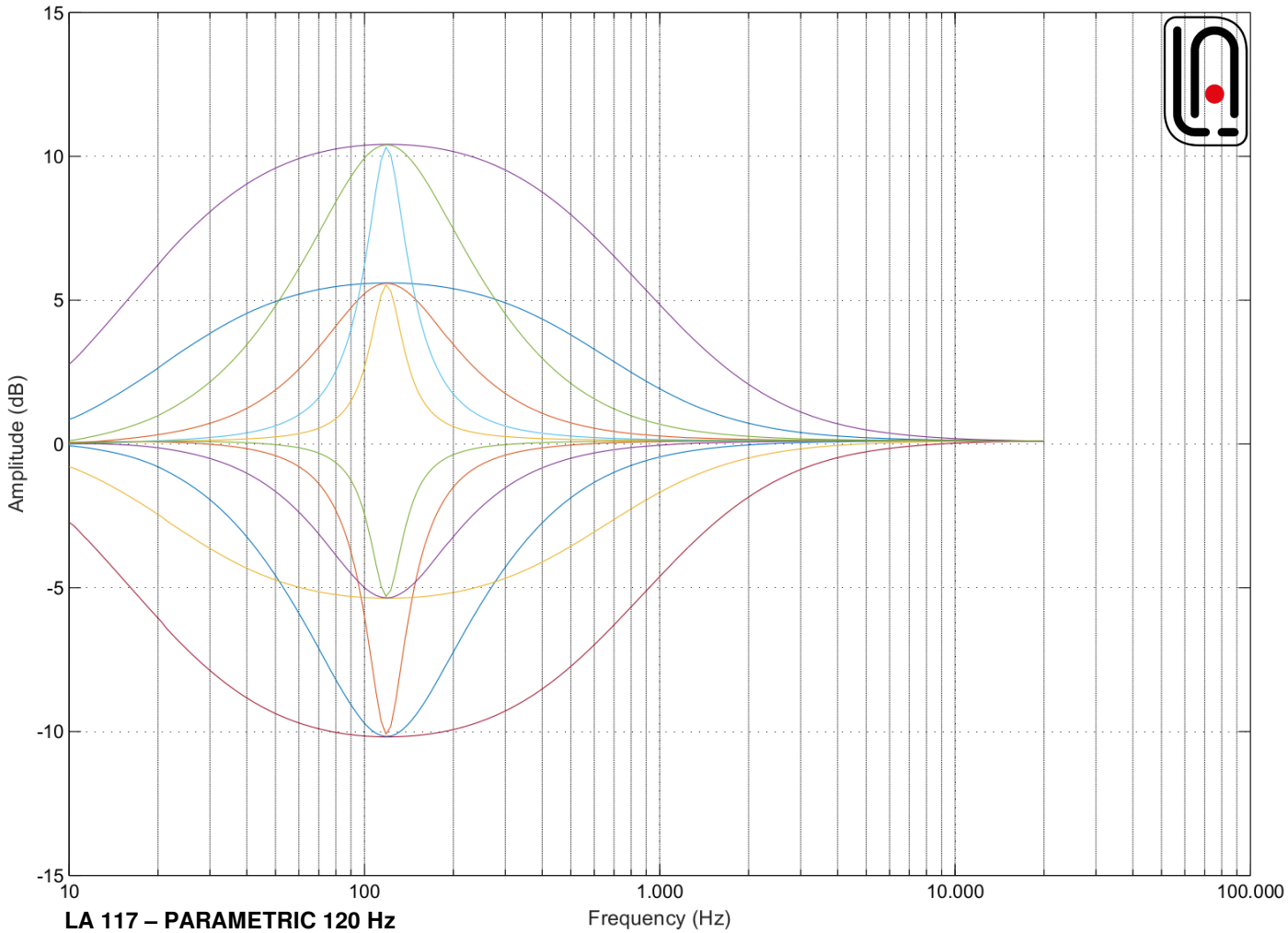
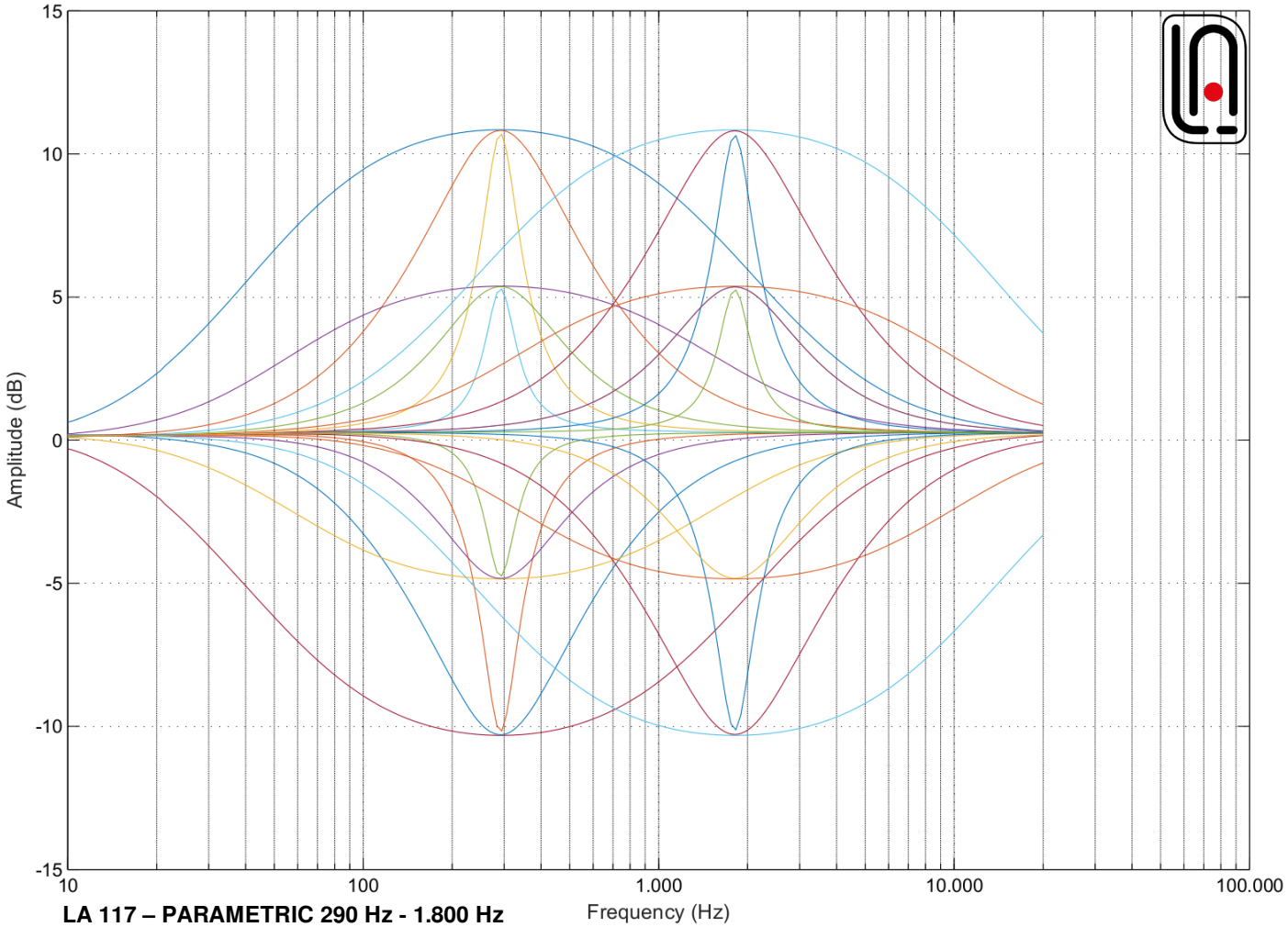
EXAMPLES CHARACTERISTIC CURVES



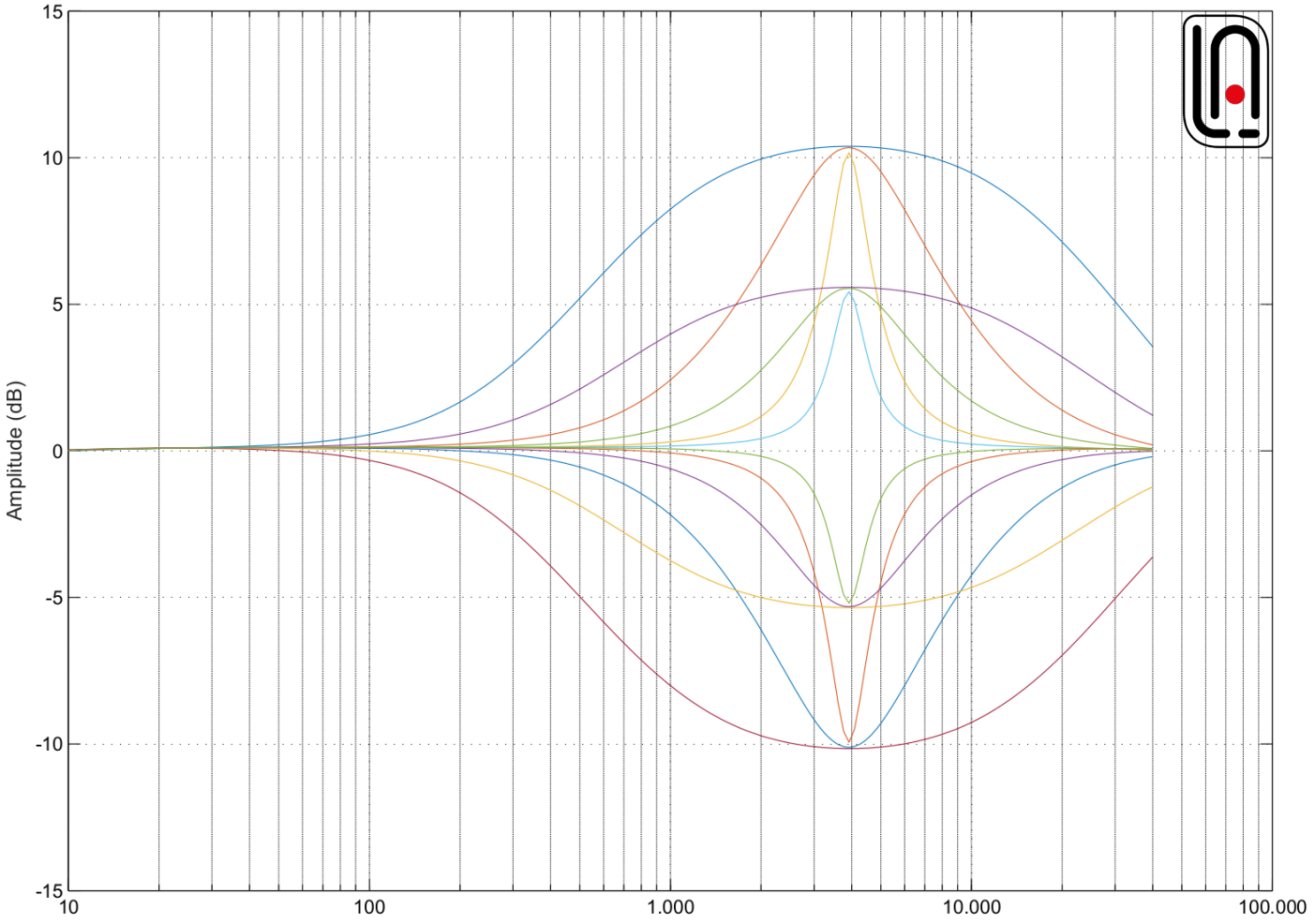
LA 117 – PARAMETRIC 20 Hz



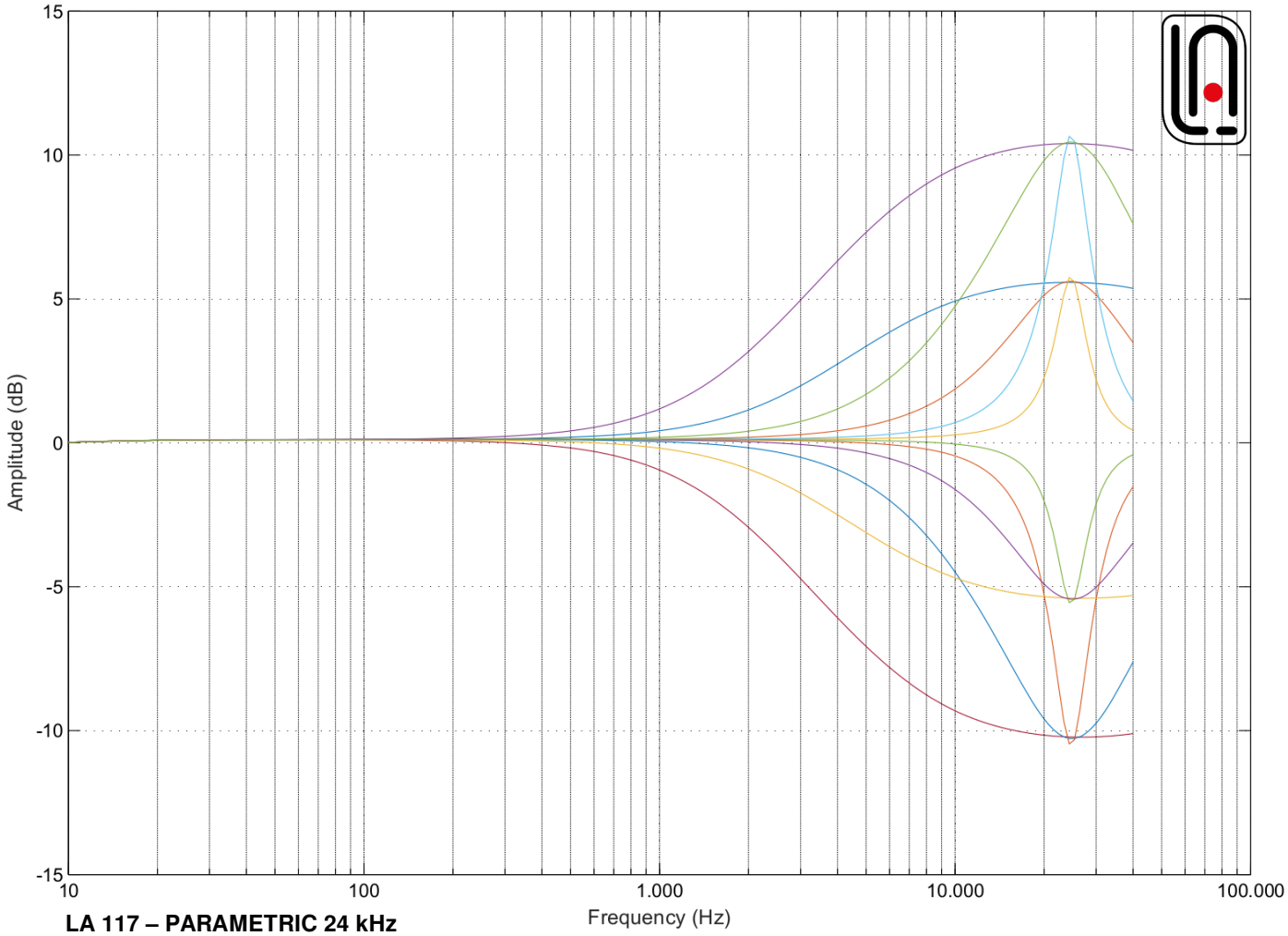
LA 117 – PARAMETRIC 120 Hz



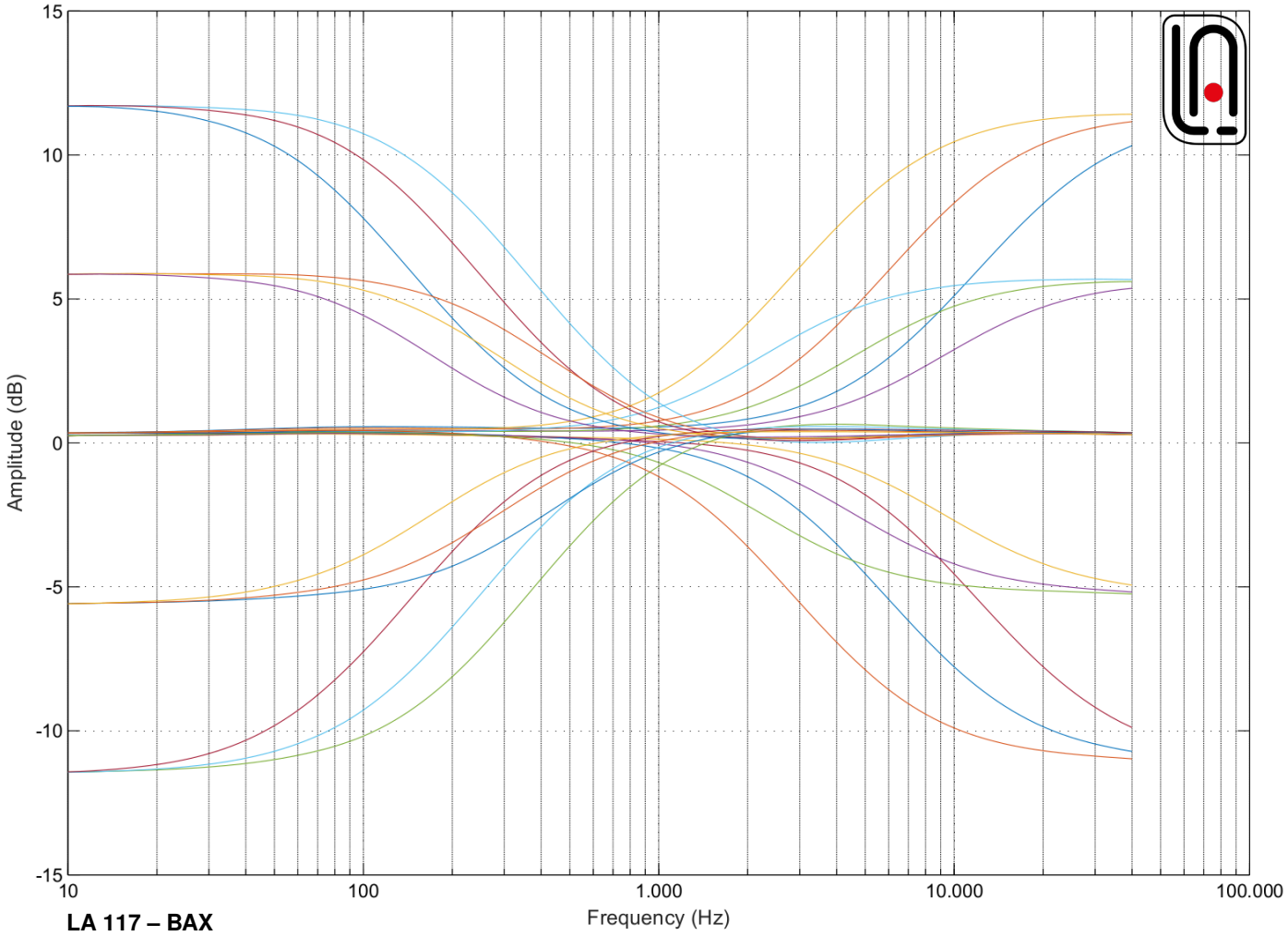
LA 117 – PARAMETRIC 290 Hz - 1.800 Hz



LA 117 – PARAMETRIC 4 kHz



LA 117 – PARAMETRIC 24 kHz



LA 117 – BAX

LA-117 TECHNICAL SPECIFICATION

Channels	2
Input Input level Input impedance	Electronically balanced +4dBu, Max +28dBu > 10 kΩ
Output Output Level Output impedance	Electronically balanced +4dBu, Max +28dBu 100Ω (minimum external load 600Ω).
Insert Send Send Level Send Impedance	Electronically balanced +4dBu, Max +28dBu 100Ω (minimum external load 600Ω).
Return Return Level Return Impedance	Electronically balanced +4dBu, Max +28dBu > 10 kΩ
Bandwidth	4 - 350.000 Hz 0/-1dB, perfect square wave up to 50 kHz
Distortion + Noise	0.005% (typical 0.001 %)

Connectors	Rear Panel 3 poles XLR
Power Supply Operating Voltage Power Consumption Rear Panel AC mains Rear Panel Main Switch	Linear Regulator (Balanced Toroidal Transformer) 220V 50 Hz, (110V 60 Hz version switchable) 60 W IEC C13 16 A connector, AC mains cord with IEC Schuko Power On/Off switch

Construction **Dimensions** **Weight**	4Unit, 19" rack mount metal box W 483 mm / 19”, H 177 mm / 7” (4 unit), D 317 mm / 12,5” 7 kg / 22 lb

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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