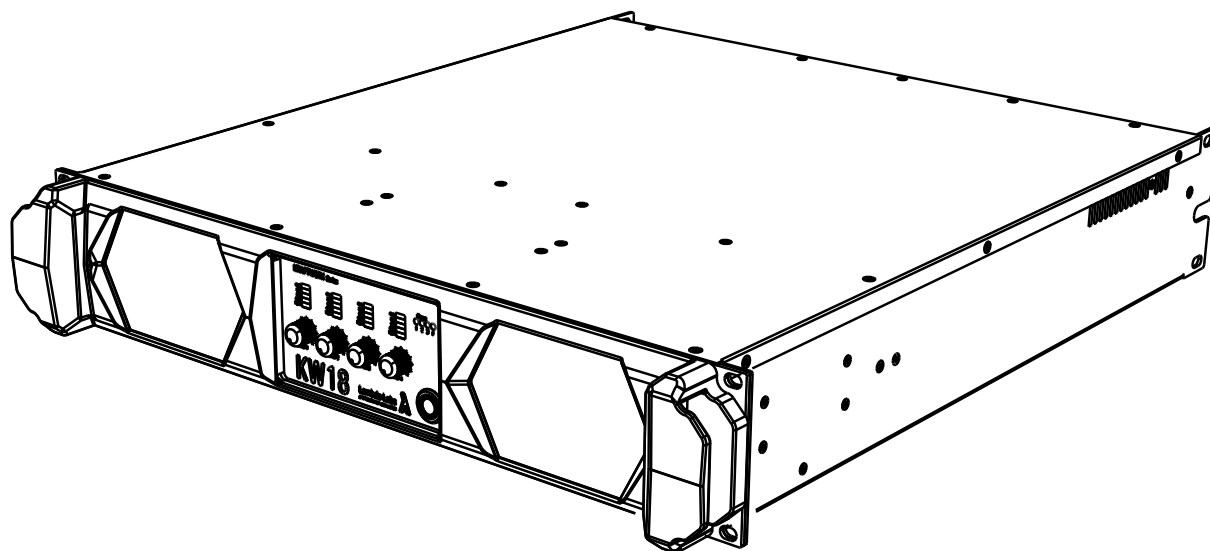


# KW-18 Amplifier Manual



Version 1.4

KW-18 Amplifier Manual

Version 1.4 08/2020

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This manual is optimized to save paper and to print 2 pages per DIN A4 sheet.

**Lambda Labs**  
professional acoustics



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**NOTES:**

[illegible]

## 1. Safety



This manual contains essential information on product safety, installation and usage. Read this manual carefully in order to become familiar with the operation and usage of the product/s. Read this manual carefully **BEFORE** operating the product/s for the first time! Read the **IMPORTANT GENERAL SAFETY REGULATIONS** you can find on the next pages!

- Keep this manual within reach while operating the product/s all the time!
- As a Lambda Labs products rental partner, always attach the appropriate user manuals to the devices. Should you need additional printed manuals, please order them from Lambda Labs or download a latest version!
- When reselling the product/s, hand over the manual to the new owner and provide written documentation about any changes of the system which may have been applied!
- Always use the latest manual edition! Check our website regularly for updates!




While all information in this manual has been prepared to the best knowledge and with the utmost care, Lambda Labs can not guarantee the accuracy of the documentation in all cases. Lambda Labs disclaims any liability for any errors or omissions that may be inferred from this manual or the products described therein. This does not apply to intent and gross negligence. Technical specifications, as well as dimensions, weight and properties do not constitute guaranteed characteristics. Lambda Labs expressly reserves the right to make changes and modifications in accordance with statutory provisions and to improve product features.

### 1.1. Declaration of Symbols and Illustrations of this Manual







In order to point out potential sources of danger and application errors, the following symbols and illustrations are used in this manual:










	<p><b>DANGER:</b></p> <p>The warning symbol "DANGER" indicates that non-observance may pose a danger to the operator or to other persons in close range and the amplifier product!</p>
	<p><b>DANGER! RISK OF ELECTRIC SHOCK:</b></p> <p>The warning symbol "RISK OF ELECTRIC SHOCK" indicates that terminals carry electrical voltage of sufficient magnitude to constitute risk of electric shock!</p>



	<p><b>CAUTION:</b></p> <p>The warning symbol "CAUTION" requires the operator to take particular precautions to prevent possible damage to the amplifier product!</p>
	<p><b>ATTENTION:</b></p> <p>The warning symbol "ATTENTION" indicates that a special attention should be given to certain setup activities or applications!</p>
	<p><b>NOTE:</b></p> <p>This illustration notifies the operator about hints and help to simplify and to accelerate the use of the amplifier, the setup process or to better understand some contexts.</p>

## 1.2. IMPORTANT GENERAL SAFETY REGULATIONS

	<p><b>Intended use!</b></p> <p>When using the KW-18 Amplifier and its accessories, always follow the instructions in this manual! Non intended use might cause damage in the equipment and risk of electric shock! Use only attachments/accessories specified by the manufacturer!</p>
	<p><b>No user serviceable parts inside!</b></p> <p>Do not remove the top cover or the rear section and do not open the KW-18 power amplifier unit! No user serviceable parts inside! Servicing should be always performed by qualified personnel!</p>
	<p><b>Keep away from liquids and moisture!</b></p> <p>To reduce the risk of fire or electric shock, do not expose this device to rain and moisture. The device shall not be exposed to dripping or splashing liquids and no objects filled with liquids! Do not use this device near water!</p>
	<p><b>Mains Connection!</b></p> <p>The device shall always be connected to MAINS sockets outlet with a protective earthing (PE) connection!</p>
	<p><b>Grounding!</b></p> <p>Do not defeat the safety purpose grounding pin of the power plug. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet!</p>
	<p><b>Maintenance!</b></p> <p>Please refer to Chapter 8 „Maintenance“. If any damage or failure scenario of the amplifier occurs, please contact the Lambda Labs technical support and wait for further instructions! Do NOT repair or exchange components by yourself and without support of a qualified service personnel!</p>

	<p><b>Manual!</b></p> <p>Keep this manual within reach while operating the product/s all the time!</p> <p>As a Lambda Labs products rental partner, always attach the appropriate user manuals to the devices. Should you need further manuals, please order them from Lambda Labs or download a current version!</p> <p>If you resell the system, hand over the manual to the next operator and provide written records about any changes of the system which may have been applied! Check our website regularly for updates in order to use always and only the latest manual version!</p>
	<p><b>Cables!</b></p> <p>Use only high-quality commercially-available speaker cables. All installations or modification should be performed by qualified personnel.</p>
	<p><b>Cabling!</b></p> <p>Lay down all cables with care. Protect the power cord from being walked on or pinched, particularly at plugs/receptacles and the point where they exit from the device. Additionally, secure the cables with duct tape or cable bridges and mark them for safety reasons. Do not place anything on the cables of the device!</p>
	<p><b>Setup environment!</b></p> <p>Keep the device dry and avoid the contact to heavy dust, salt, sand and prolonged exposure to intense sunlight or strong vibrations and impact.</p>
	<p><b>Placement &amp; interaction with other devices!</b></p> <p>The device should not be placed near any heat producing sources or exposed to high temperatures (above 40 degrees Celcius) or temperatures below zero degrees Celcius. Unplug this device during lightning storms or when unused for long periods of time! Sufficient ventilation should be provided when operating the amplifier! Do not block any ventilation openings. Install in accordance with the manufacturer's instructions!</p>
	<p><b>Storing!</b></p> <p>Store the device in a dry, cool and clean environment!</p>
	<p><b>Neutrik PowerCON!</b></p> <p>Neutrik PowerCON is a connector without breaking capacity, therefore the powerCON should not be connected or disconnected under load or live!</p>
	<p><b>Neutrik SpeakON!</b></p> <p>Neutrik SpeakON is a connector without breaking capacity, therefore the SpeakON should not be connected or disconnected under load or live!</p>
	<p><b>Shipping</b></p> <p>Keep the packaging of the device in order to send it in original packaging in case of a fault. This minimizes the risk of possible transport damage.</p>



### 1.3. EC declaration and conformity

Lambda Labs  
Austria

Declares that the following product:  
KW-18 Amplifier

Is in conformity with the provisions of EMC standards and product category:

**Emission:**

EN 55032:2012 with EN 55032:2012 AC 2013  
EN 61000-3-2:2014  
EN 61000-3-3:2013  
FCC Part 15 Sub B

**Immunity:**

EN55103-2:2009

**Product Category:**

EN55103 E-2

Special local EMC compliance regulation may apply!

**SAFETY COMPLIANCE:**

**Safety Class I**

The unit must be grounded to the PE of the Power Network thru the Power connectors! In the case of an Off-Grid use, a proper grounding network must be provided to the PE pins of the Power input connectors of the unit! PE impedance should be always kept low! The use of a GFCI unit is recommended! In the case of single phase power line application, use a common single phase GFCI! In the case of three phase power line application, use a single 3-phase GFCI! Special local electrical safety compliance regulation may apply!



Graz, 17/02/2020

Steffen Kroschel, Chief Technology Officer (CTO)

**WEEE Declaration (Disposal)**

Electrical and electronic devices must be disposed of separately from household or municipal waste at the end of its operational lifetime. Please dispose of this product according to the respective national regulations or contractual agreements. If there are any further questions regarding the disposal of this product, please contact Lambda Labs.



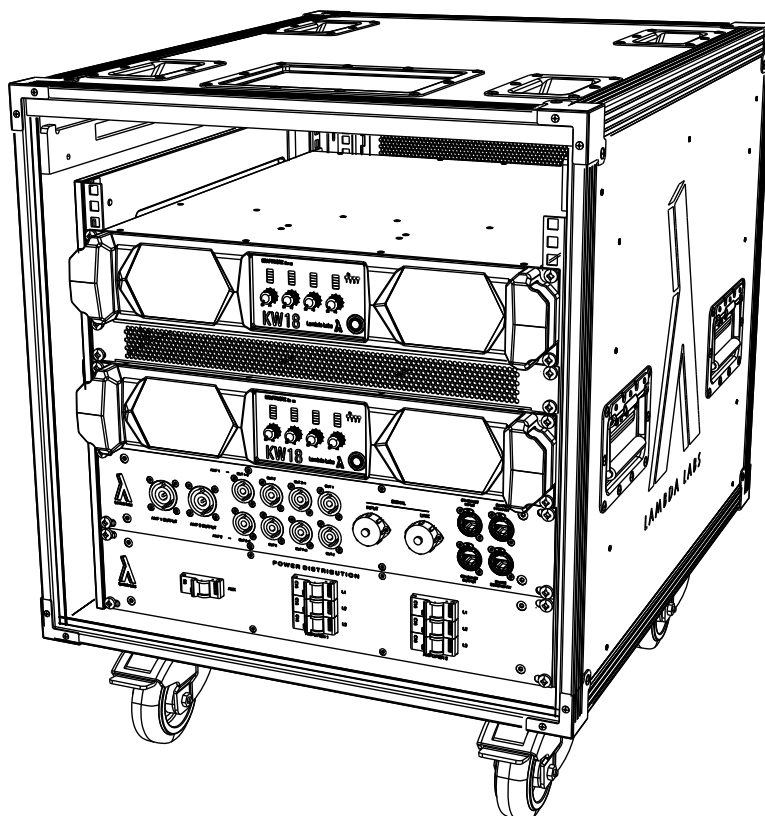
## 2. Preface

Dear Lambda Labs User,

thank you for purchasing the Lambda Labs professional power amplifier KW-18. The KW-18 is a very high power and very high quality professional power amplifier. Lambda Labs recommends the use of KW-18 for the non self-powered Lambda Labs loudspeakers with the factory presets provided by Lambda Labs. For more information about the factory presets please refer to the User Manual of the particular product or the Lambda Labs Presets Reference Guide!

The main features of the KW-18 Amplifier:

- Extreme output power capability, thanks to the 32kW peak power 3 phase regulated SMPS
- Wide bandwidth, high frequency switching amplifier with high reactive current for high end sound
- High damping factor even at 20kHz
- Full power, even when all channels driven with low frequency signal
- Very low, frequency independent distortion
- Extremely low output noise
- Ideal choice for all sound professionals looking for an all in one very high power, reference quality amplifier for a very wide range of applications without sonic tradeoffs
- Very detailed, and precise high frequency sound reproduction
- Extremely powerful low frequency sound reproduction
- Very musical, warm, but precise midrange sound reproduction
- Spectacular 3D stereo imaging
- Flexible AC power options: either single, dual or three phase operation is possible without any power limitations
- Ideal for touring, fixed installation, cinema, and high-end studio applications
- Built in DSP option coming soon...



KW-18 Amplifier Rack





### 3. Technical Data Overview

<b>Output Power (All Channels Driven)</b>	16 Ohms: 4 x 1200 Watts
<b>Output Power (All Channels Driven)</b>	8 Ohms: 4 x 2300 Watts
<b>Output Power (All Channels Driven)</b>	4 Ohms: 4 x 4500 Watts
<b>Output Power (All Channels Driven)</b>	3 Ohms: 4 x 4000 Watts
<b>Frequency Response</b>	10 – 50,000Hz (+0/- 3dB)
<b>Voltage Gain</b>	30 dB
<b>Damping Factor (@1kHz/80hms)</b>	800
<b>Signal to Noise Ratio (A-weighted)</b>	128 dB(A)
<b>Input Impedance (Symmetrical)</b>	10kOhms (20kOhms*)
<b>THD+N (20Hz-20kHz typ. @1/2 Power)</b>	0,02 %
<b>Minimum Load Impedance</b>	2 Ohms / Channel
<b>Display</b>	AC Input OK, Error, Limit -3dB, -6dB, -12dB & Signal LED
<b>Protection Circuitry</b>	Overvoltage protection, Undervoltage protection, Overcurrent protection (both Peak and RMS), Short Circuit protection, Output DC protection, Overtemperature protection, Voltage Clip Limiter, RMS Current Limiter, Peak Current Limiter
<b>AC Power Voltage Range</b>	3 x 90Vac - 3 x 255Vac
<b>Current Draw</b>	3x8 A RMS @230Vac (1/8 Power)
<b>Dimensions</b>	483mm x 584mm x 89mm (19"/2 RU)
<b>Weight</b>	39,7 lbs (18 kg)

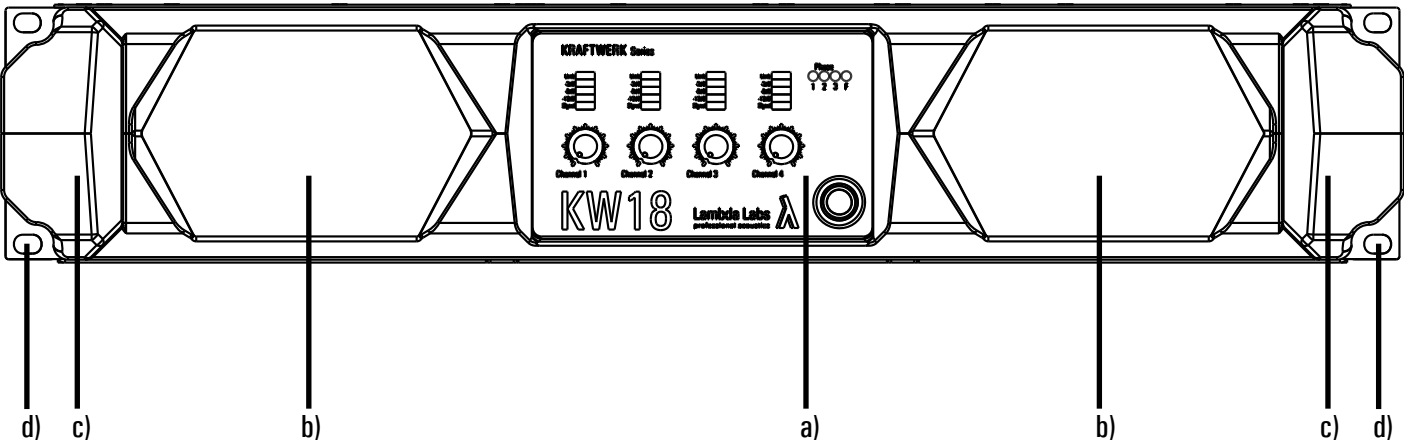
\*Input Impedance depends on the channel input signal attenuator position! For more details please refer to Chapter 3.1 **Input Connections!**



4. Introducing KW-18 Amplifier

4.1. Introducing KW-18 Amplifier Front Panel

4.1 Figure 1: Front Panel Overview (Delivery State)

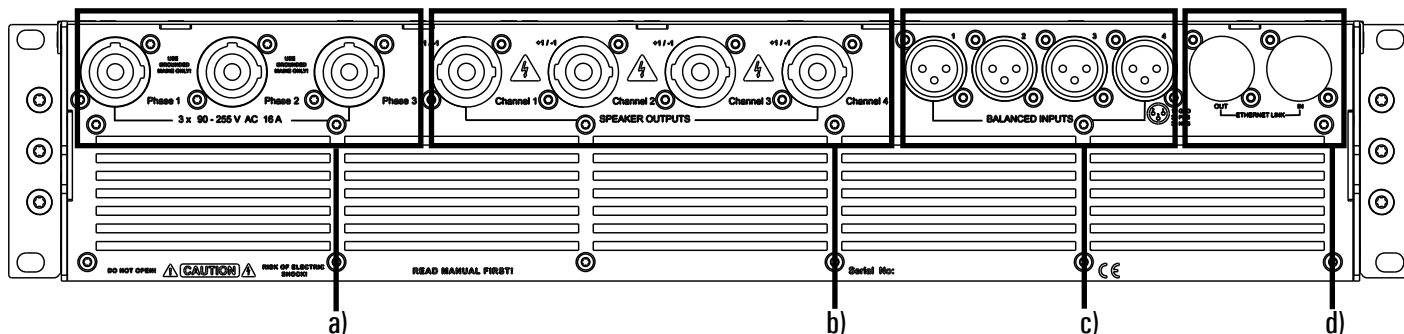


PART	DESCRIPTION of 4.1 Figure 1	REFERENCE
a)	<b>User Interface</b> The KW-18 Front Panel contains the centrally placed User Interface. The User Interface provides the Control Displays showing the status of the amplifier, the Input Signal Attenuators (Input Level Knob), the Limiter LEDs and the On/Off Switch.	Chapter 6.1 Chapter 6.2
b)	<b>Dust Filter Foam</b> To keep the inside of the amplifier as clean as possible, the cooling air is filtered through a Dust Filter Foam. This filter can be easily removed for cleaning.	Chapter 6.3
c)	<b>Carrying Handle</b> Handles to carry or hold the amplifier during a rack mounting procedure.	—
d)	<b>Mounting Holes</b> Use standard 6mm rack screws with plastic washers to mount the amplifier in a 19" standard rack.	—



## 4.2. Introducing KW-18 Amplifier Back Panel

4.2 Figure 1: Back Panel Overview (Delivery State)

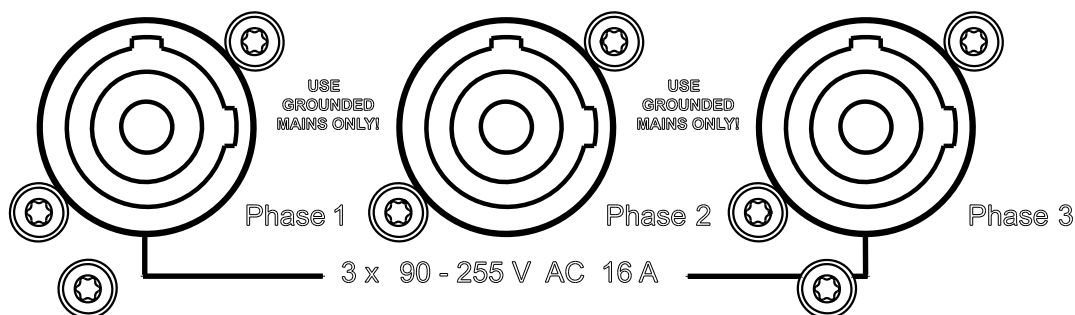


PART	DESCRIPTION of 4.2 Figure 1	REFERENCE
a)	<p><b>Power Connection</b></p> <p>The KW-18 provides 3 x 20 Ampere Neutrik PowerCON Connectors to power the KW-18 amplifier. To ensure the full output power capability, the amplifier needs to run with all 3 connectors connected and powered using 16A Type "C" Circuit Breakers. In the case of lower power use it could be operated however using only two of the Neutrik Powercon connectors and as such, powered from only 2x 16A Type "C" Circuit Breakers.</p> <p><b>NOTE:</b> The Unit can not start when only one of the Powercon connectors is used!</p> <p><b>NOTE:</b> The KW-18 can only work from voltages of 90V AC – 255V AC 50-60Hz! Operation from DC Voltage is not possible! <b>An input voltage higher than 255V AC RMS is not permitted and might cause damage to the KW-18!</b></p>	Chapter 5.1
b)	<p><b>Loudspeaker Output Connection</b></p> <p>The KW-18 provides 4 x Neutrik SpeakON NL4 type Connectors to power the corresponding loudspeakers. All 4 connectors use +1 as „+“ and -1 as „-“ output for the corresponding channel.</p> <p><b>NOTE:</b> +2 and -2 pins are not used! The Loudspeaker connectors used on KW-18 are fully compatible with both Neutrik Speakon NL4 and NL2 type plugs!</p>	Chapter 5.2
c)	<p><b>Audio Input Connection</b></p> <p>The KW-18 provides 4 x standard XLR 3 pin connectors to connect an audio signal. KW-18 uses the new international standard Pinout for the XLR connectors:</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p><b>Pin1: Shield    Pin2: signal + (hot)    Pin3: Signal- (cold)</b></p> </div> <p>The symmetrical audio inputs have 10kOhm impedance, when the channel input signal attenuator (input level knob) is at its minimum position (counter-clockwise). The input impedance with the attenuator at its maximum position (clockwise) is 20kOhms.</p>	Chapter 5.3
d)	<p><b>Ethernet Connection</b></p> <p>The KW-18 provides IN/OUT Ethernet connectors, reserved for the upcoming built-in DSP. Currently not used.</p>	—



## 5. Back Panel / Connection Detailed Description

### 5.1. Power Connection 5.1 Figure 1: Power Connectors



KW-18 uses three pieces of 20A Neutrik PowerCON Connectors to provide enough input power for its extreme output power capability. Use the provided Power cable or any (3 x 1.5mm<sup>2</sup> for max cable length of 1.5m or 3x 2.5mm<sup>2</sup> for a cable length up to 10m) power cable equipped with Neutrik PowerCON connector!

Always use power with Protective Earth (PE) having a sufficiently low impedance! Use **16A Type „C”** Circuit Breakers for **230V** operation!

**The unit must be grounded to the PE of the Power Network thru all three Power connectors!** In the case of an Off-Grid use (for example using a Power Generator), a proper grounding network must be provided to the PE pins of the Power input connectors of the unit!

PE impedance should be always kept low! The use of a GFCI unit is recommended! In the case of single phase power line application, use a common single phase GFCI! In the case of three phase power line application, use a single three-phase GFCI!

**NOTE: Special local electrical safety compliance regulation may apply!**

KW-18 might be used from a single, two or even 3 phase power! **In every case, all three Neutrik PowerCON Connector has to carry Phase, Neutral, and PE! A missing Neutral line might cause damage to the KW-18!**

To ensure the full output power capability, the amplifier needs to run with all 3 connectors connected and powered using 16A Type "C" Circuit Breakers. In the case of lower power use it could be operated however using only two of the Neutrik Powercon connectors and as such, powered from only 2x 16A Type "C" Circuit Breakers.

**NOTE: The Unit can not start when only one of the Powercon connectors is used!**







**NOTE: The KW-18 can only work from voltages of 90V AC – 255V AC 50-60Hz! Operation from DC Voltage is not possible! An input voltage higher than 255V AC RMS is not permitted and might cause damage to the KW-18!**

In the case of **110V** power line we strongly recommend the use of „Delta” circuit – meaning, that each Neutrik PowerCON Connector carries two Phase and one PE line (in this special case Neutral Line is not used!). This would give 190V effective AC for all of the three Power Inputs on the KW-18. For this operation we recommend **20A Type „C”** Circuit Breakers!

Using the KW-18 from single, two or three phase **110Vac** Line(s) with **20A Type „C”** Circuit Breakers could limit the maximum achievable output power! All of our guidelines for using additional GFCI applies also for all types of **110V AC** operations!

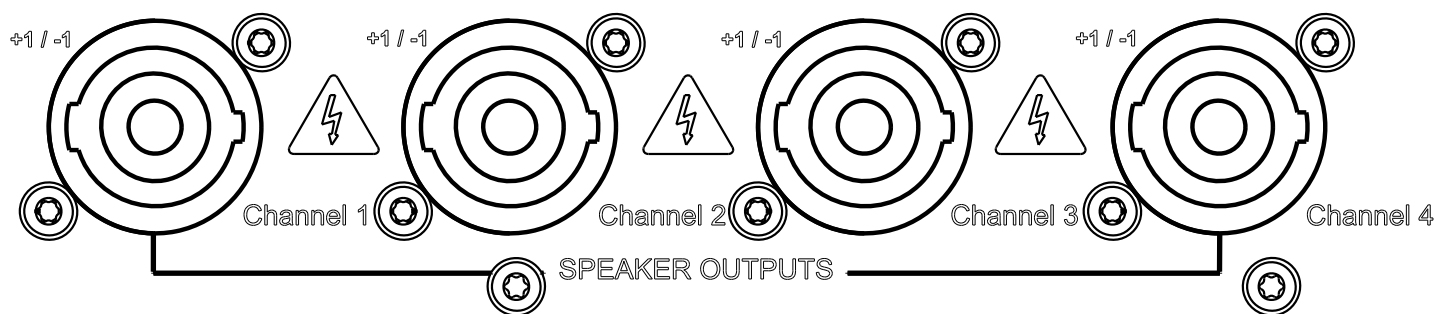
**NOTE: Special local electrical safety compliance regulation may apply!**




	<b>Danger:</b> Do <b>not</b> defeat the safety purpose Grounding Pin of the power plug! If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet! Always use power with Protective Earth (PE) having a sufficiently low impedance! Use <b>16A Type „C”</b> Circuit Breakers for <b>230V</b> operation!
	<b>Danger:</b> Always use cables and Power Distribution Units made by and/or checked by qualified electricians! <b>RISK OF ELECTRIC SHOCK! RISK OF EQUIPMENT DAMAGE!</b>
	<b>Attention:</b> KW-18 always needs power from all three Powercon Connectors to work properly! In the case of lower power use it could be operated however using only two of the Neutrik PowercoCON connectors. The Unit can not start when only one of the PowerCON connectors is used!
	<b>Attention:</b> The KW-18 can only work from voltages of 90V AC – 255V AC 50-60Hz! Operation from DC Voltage is not possible! <b>An input voltage higher than 255V AC RMS is not permitted and might cause damage to the KW-18!</b>
	<b>Attention:</b> Always use Power Cables with double isolation, and with isolation material allowed for the particular use! Please always refer to the local regulations!
	<b>Attention:</b> Neutrik PowerCON is a connector without breaking capacity, therefore the PowerCON should not be connected or disconnected under load or live!

## 5.2. Loudspeaker Output Connection






5.2 Figure 1: Loudspeaker Output Connection



	<b>Danger! RISK OF ELECTRIC SHOCK:</b> Terminals marked with this symbol carry electrical voltage of sufficient magnitude to constitute risk of electric shock!
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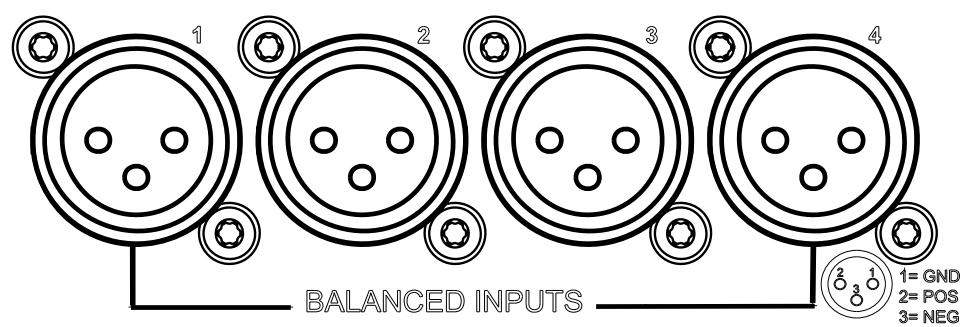
Loudspeaker output connectors are of Neutrik SpeakON **NL4** type. All 4 connectors use +1 as + and -1 as – output for the corresponding channel. The +2 and -2 pins are not used!



	<b>Danger:</b> Loudspeaker Outputs can carry dangerously high output voltages! <b>RISK OF ELECTRIC SHOCK!</b>
	<b>Attention:</b> The +2 and -2 pins are not used! The Loudspeaker connectors used on KW-18 are fully compatible with both Neutrik SpeakON <b>NL4</b> and <b>NL2</b> type plugs!
	<b>Attention:</b> Neutrik SpeakON is a connector without breaking capacity, therefore the SpeakON should not be connected or disconnected under load or live!
	<b>Attention:</b> Always use Loudspeaker Cables with sufficient wire gauge! 2x2.5mm <sup>2</sup> is recommended only for lengths below 10m! 2x4mm <sup>2</sup> Cables are recommended above 10m length up to 25m!
	<b>Attention:</b> Always use Loudspeaker Cables with double isolation, and with isolation material allowed for the particular use! Please always refer to the local regulations!

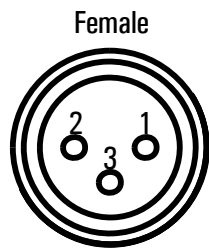
5.3. Audio Input Connection

5.3 Figure 1: Loudspeaker Output Connection



Audio input signal can be applied to the KW-18 using standard XLR 3 pin connectors. Lambda Labs recommends the use of Neutrik gold plated XLR plugs or Switchcraft XLR connectors (tin plated)! The use of silver or silver plated pin XLR connectors is NOT recommended!

KW-18 uses the new international standard Pinout for the XLR connectors:





PIN	Assignment (Balanced)
1	Ground
2	Signal + (hot)
3	Signal - (cold)



The symmetrical audio inputs have 10kOhm impedance, when the channel Input Signal Attenuator (Input Level Knob) is at its minimum position (counter-clockwise). The input impedance with the attenuator at its maximum position (clockwise) is 20kOhms.

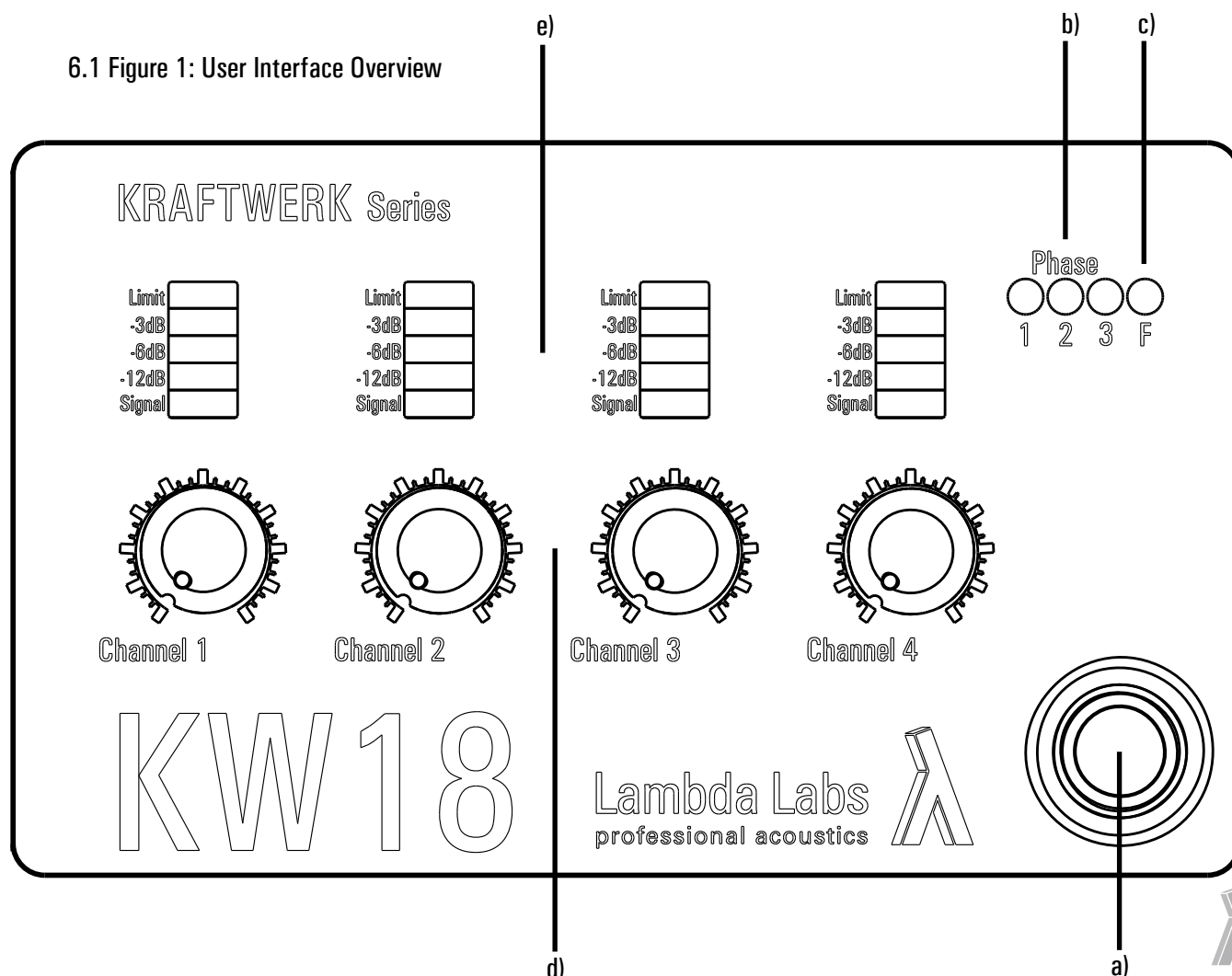
Usual drive capacity of DSP units on the market is 600 Ohms. Daisy chaining more inputs (and/or more KW-18 units) is limited therefore to **16 inputs** altogether (625 Ohms) with the input signal attenuators at their minimum positions. With all attenuators at their maximum position, the number of inputs driven in parallel (daisy chained) could be as high as **32**! Voltage gain of the KW-18 power amplifier is **30dB** with the Input Signal Attenuator at its maximum position.

	<b>Danger:</b> Always design your grounding scheme before connecting input signal to the unit! Ground loop could damage the equipment! As a rule of thumb, in problematic cases one should remove the shield of the signal cable only on the receiver unit's side! Do never defeat the safety purpose grounding pin of the power plug!
	<b>Caution:</b> XLR audio shield pins are directly connected to the housing of the unit and to the power input PE pins!

## 6. Front Panel Detailed Description

### 6.1. Introducing User Interface

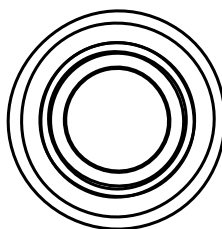
6.1 Figure 1: User Interface Overview



PART	DESCRIPTION of 6.1 Figure 1	REFERENCE
a)	<b>ON/OFF Switch</b> ON/OFF Switch to switch the amplifier on and off. Push the button inwards to switch the amplifier on and off.	Chapter 6.2.1
b)	<b>Phase OK LEDs</b> Status indicators, indicating that (correct) voltage is applied to the connector.	Chapter 6.2.2
c)	<b>Fault LED</b> Status indicator, indicating a function fault.	Chapter 6.2.3
d)	<b>Input Signal Attenuators</b> Rotary control to adjust the signal level for the respective channel.	Chapter 6.2.4
e)	<b>Level Meter LEDs</b> Status indicators, indicating signal levels and limits.	Chapter 6.2.5

## 6.2. User Interface Detailed Description

### 6.2.1. ON/OFF Switch



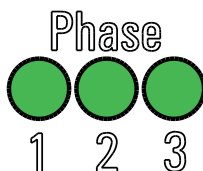
You can switch the KW-18 power amplifier on and off using this front panel switch. If the unit is switched on, the white ring on the ON/OFF Switch will be illuminated!

	<b>Caution:</b> Always check the „Phase OK“ and the „Fault“ LEDs status when switching the unit on! If one or more „Phase OK“ LEDs are not illuminated, please check the power connection, and the corresponding power input's voltage! For more information please refer to Chapter 5.1 <b>Power Connection</b> section of this manual!
	<b>Attention:</b> Neutrik PowerCON is a connector without breaking capacity, therefore the PowerCON should not be connected or disconnected under load or live!
	<b>Attention:</b> Independent from the ON/OFF Switch's status, the unit will not switch on when there is not at least two power input used with the correct voltage or if there is a fault in the KW-18 unit. In the case of a fault, the „Fault“ LED is illuminated!





### 6.2.2. Phase OK LEDs (Green)



Lites up when there is power available on the corresponding power input and the voltage is in the normal range. For more information please refer to the Chapter 5.1 **Power Connection** section of this manual!

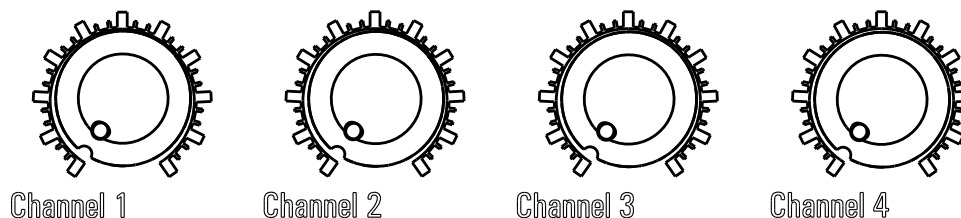
### 6.2.3. Fault LED (Red)



Lites up when there is a fault in the KW-18 power amplifier unit. In the case of fault please contact Lambda Labs or a local Lambda Labs sales partner!



	<p><b>Danger:</b> Do not remove the top cover (or the rear section) and do not open the KW-18 power amplifier unit! No user serviceable parts inside! Servicing should be always performed by qualified personnel!</p>
	<p><b>Danger:</b> Do not use or switch on a faulty KW-18 unit and do not apply voltage to the power input connectors in the case of a fault!</p>
	<p><b>Attention:</b> In the case of a fault, please note the „Phase OK“ and the „Fault“ LEDs status, as this could ease the diagnostics when you contact Lambda Labs or a sales partner!</p>

### 6.2.4. Input Signal Attenuators



The four input signal attenuators can be used to attenuate the signal for the corresponding channel of the KW-18 power amplifier unit.



	<p><b>Attention:</b> In the minimum position (fully counter-clockwise), a nearly infinite attenuation is provided. In this case, the input impedance of the corresponding channel is 10kOhms.</p>
	<p><b>Attention:</b> In the maximum position (fully clockwise), no attenuation is provided and the voltage gain of the corresponding channel is 30dB. In this case, the input impedance of the corresponding channel is 20kOhms.</p>

### 6.2.5. Level Meter LEDs

Limit	
-3dB	
-6dB	
-12dB	
Signal	

Limit	
-3dB	
-6dB	
-12dB	
Signal	

Limit	
-3dB	
-6dB	
-12dB	
Signal	

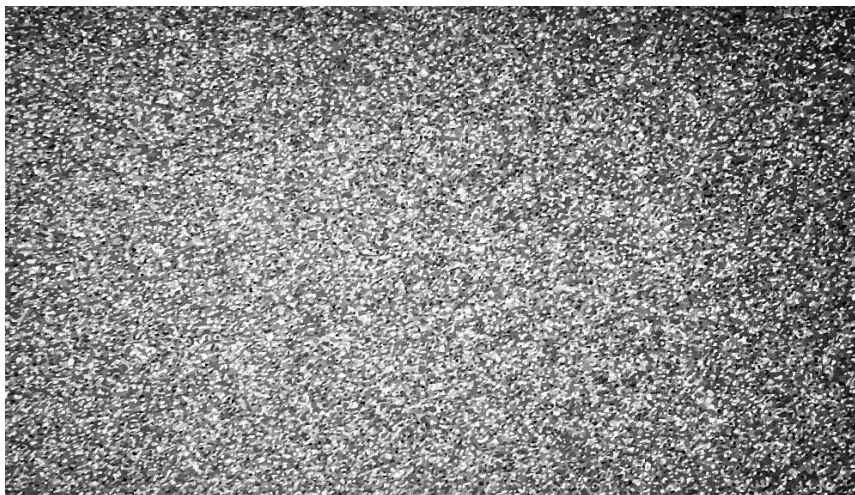
Limit	
-3dB	
-6dB	
-12dB	
Signal	

Limit	
-3dB	
-6dB	
-12dB	
Signal	





LEDs	Meaning
<b>Limit LED (Red)</b>	Lites up when either of the following scenarios occur: -Peak voltage limiting -Peak Current limiting -RMS Current limiting
<b>-3dB LED (Yellow)</b>	Lites up when the input signal of the channel reaches 3dB below CLIP level
<b>-6dB LED (Green)</b>	Lites up when the input signal of the channel reaches 6dB below CLIP level
<b>-12dB LED (Green)</b>	Lites up when the input signal of the channel reaches 12dB below CLIP level
<b>Signal present LED (Green)</b>	Lites up when the input signal of the channel reaches 50dB below CLIP level



### 6.3. Dust Filter



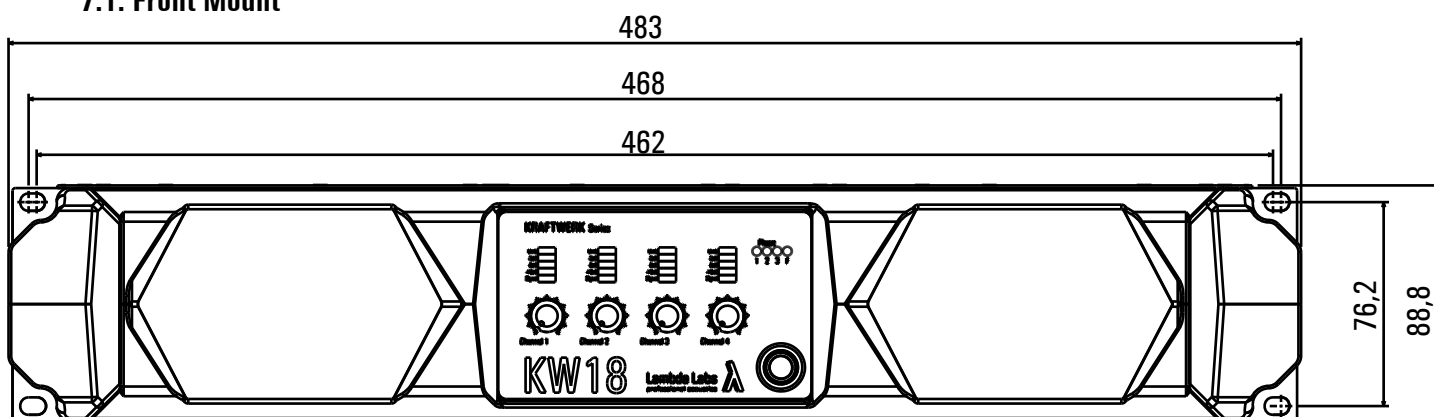
Dust filter foam could be saturated and blocked by dust and dirt. In such a case the cooling of the amplifier will get strongly limited. Therefore regular cleaning of the dust filter is mandatory for proper use! Check the filter foam after every use! If needed, clean it with water!

	<p><b>Danger:</b> Reinsert the filter foam only after it is dry!</p>
	<p><b>Danger:</b> Do not use the amplifier without a dust filter!</p>
	<p><b>Attention:</b> Using hazer and/or fog machine fluid can cause a very fast saturation/blockage of the amplifier dust filter foam! In such cases, Lambda Labs recommend checking/cleaning the dust filter on a daily basis!</p>
	<p><b>Attention:</b> Having reserve dust filter foam is also recommended. Filter foams could be purchased from Lambda Labs directly or from local sales partners.</p>



## 7. Rack Installation

### 7.1. Front Mount

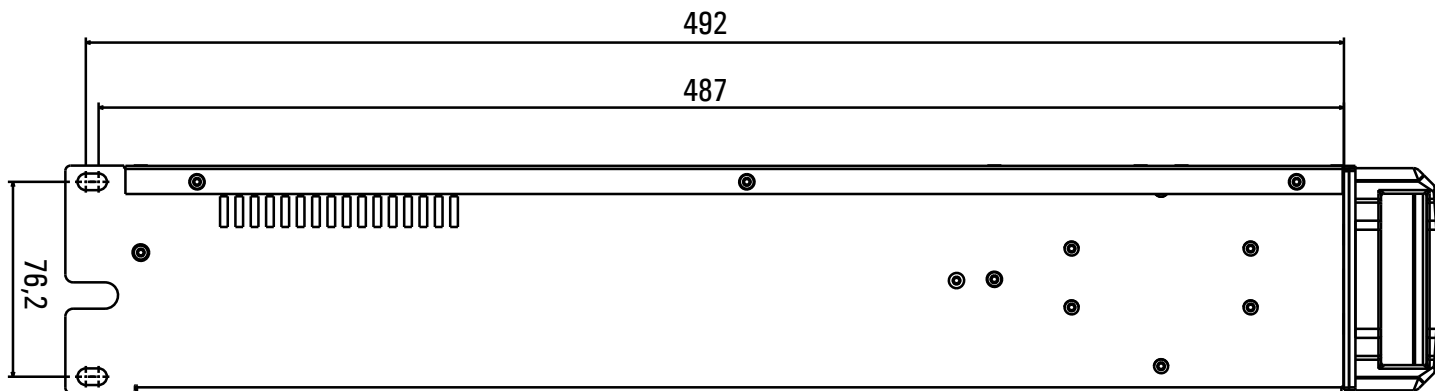


The KW-18 professional power amplifier can be mounted into a standard 19" rack case. The dimensions (mm) for the rack mounting is depicted on the drawings above.

	<b>Danger:</b> You should always use all 4 screws for the front mount in a 19" rack! Use standard 6mm rack screws to mount the amplifier!
	<b>Caution:</b> Use always rack-screws equipped with plastic washer to avoid damage of the KW-18 surface!
	<b>Attention:</b> Lambda Labs recommend the use of shock mount rack rail equipped 19" racks for heavy-duty touring usage!
	<b>Attention:</b> The 19" rack should have sufficient total inside depth in order to avoid damage of the cables/connectors plugged in to the KW-18 amplifier unit! Lambda Labs recommend racks with a minimum total inside depth of 645 mm!

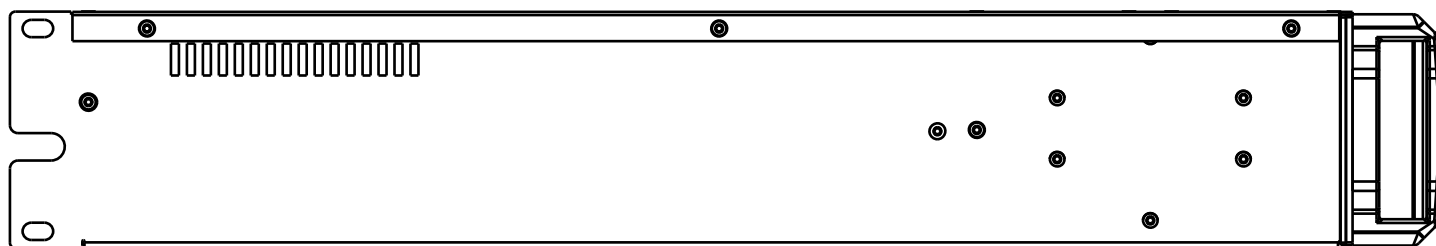


## 7.2. Rear Mount





The KW-18 professional power amplifier can be mounted into a standard 19" rack case also at the rear side, providing a more stable position. Lambda Labs recommends using both rear and front mounting of the KW-18 in every case! The dimensions (mm) for the rear rack mounting is depicted on the drawings above. The rear width is 444 mm.

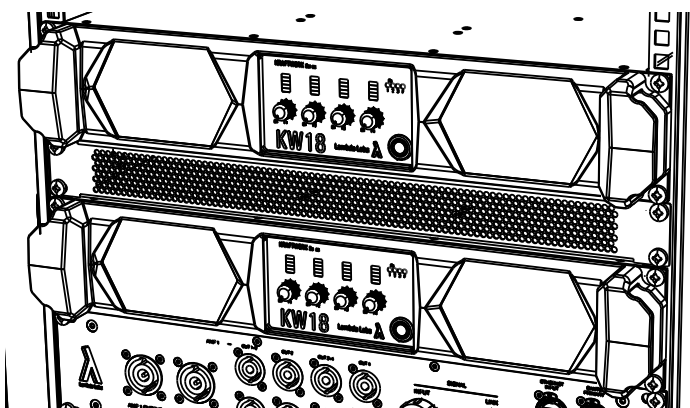
## 7.3. Ventilation



It is of utmost importance to ensure sufficient ventilation for the KW-18 professional amplifier unit! KW-18 uses forced air cooling to ensure safe operating temperature inside the unit. This kind of cooling relies on sufficient fresh air supply. To achieve this, KW-18 has air vents on its front panel, rear panel and on its sides. These air vents should never be covered!









	<p><b>Caution:</b> For sufficient cooling, the dust filters on the front panel air vents must be always kept clean and dry! For more information on cleaning the dust filters please refer to the Chapter <b>6.3 Dust Filter &amp; 8 Maintenance</b> in this manual!</p>
	<p><b>Attention:</b> To further increase the cooling effect, Lambda Labs recommends using a blank 1RU 19" perforated plate between the KW-18 units, if more KW-18 units are used in a rack!</p>

Example of using a 1RU 19" perforated plate between installed KW-18 amplifiers.



## 8. Maintenance




Regular maintenance is necessary to keep the amplifier in a good working condition! Dust filter foam could be saturated and blocked by dust and dirt. In such a case the cooling of the amplifier will get strongly limited. Therefore regular cleaning of the dust filter is mandatory for proper use! Check the filter foam after every use! If needed clean it with water!

	<b>Danger:</b> Do not remove the top cover (or the rear section) and do not open the KW-18 power amplifier unit! No user serviceable parts inside! Servicing should be always performed by qualified personnel!
	<b>Danger:</b> Always disconnect the KW-18 from power before you perform maintenance!
	<b>Danger:</b> Reinsert the filter foam only after it is dry!
	<b>Danger:</b> Do not use the amplifier without a dust filter!
	<b>Danger:</b> Do not switch on or even connect the KW-18 to the power until it is not completely dry!
	<b>Attention:</b> Neutrik PowerCON is a connector without breaking capacity, therefore the PowerCON should not be connected or disconnected under load or live!
	<b>Attention:</b> Using hazer and/or fog machine fluid can cause a very fast saturation/blockage of the amplifier dust filter foam! In such cases, Lambda Labs recommend checking/cleaning the dust filter on a daily basis!
	<b>Attention:</b> Having reserve dust filter foam is also recommended. Filter foams could be purchased from Lambda Labs directly or from our local sales partners.

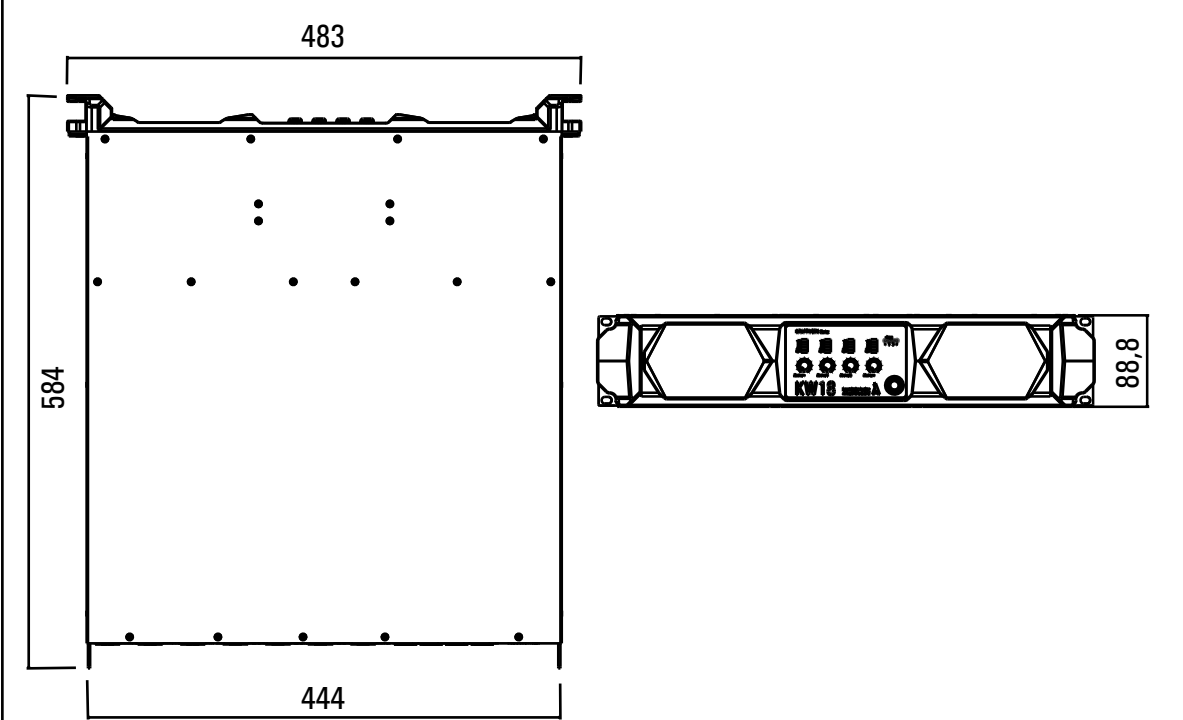


8.1. Cleaning

Keep your KW-18 units clean and dry! Cleaning should be performed regularly using dry or slightly wet cloth! After removing the dust filters, you might use clean (oil and liquid free) high pressure air to remove dust from the inside. Never use air with a too high pressure for the cleaning! Lambda Labs recommends air pressure of **2-4 Bar**.

	<b>Danger:</b> Always disconnect the KW-18 from power before you perform maintenance!
	<b>Danger:</b> Do not switch on or even connect the KW-18 to the power until it is not completely dry!
	<b>Attention:</b> Neutrik PowerCON is a connector without breaking capacity, therefore the PowerCON should not be connected or disconnected under load or live!

9. Dimensions

Dimensions (mm)	Weight
	18 kg / 39,7 lbs



**Lambda Labs**  
professional acoustics

