

K&F CP+



User's Manual

Translation of the original instructions

Version 1.1
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**Important Information,
Please Read Before Use!**

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1. Introduction

Thank you for purchasing a KLING & FREITAG product. To guarantee trouble-free operation and enable the device to achieve its full potential, please read these user's manual carefully before use.

This connector panel is a high-quality device.

As the owner of this system, you now have a versatile and highly professional tool which, when operated properly, is a true pleasure to use.

1.1 Icons Used



Warning

This icon indicates a risk of injury or death. Not following these instructions may result in serious health problems including potentially fatal injuries.



Caution

This icon indicates a possibly dangerous situation. Not following these instructions may cause minor injuries or damage.



Notice

This icon marks instructions for proper use of the described products. Not following these instructions may cause malfunctions or damage.



Tip

This icon marks information provided for simplified use of the described products.

1.2 About this Manual

© KLING & FREITAG GmbH. All rights reserved.

All specifications regarding the features of the described products and applicable safety guidelines provided in this manual are based on information available at the time of publishing.

We assume no responsibility for technical specifications, dimensions, weights, and properties.

All information in this manual is subject to change without notice.

All persons who use the speaker system must have this guide and all further information for safe operations available to them during assembly, disassembly, and use. The speaker system may neither be set up nor used until these user's manual has been read, understood and kept readily available on site.

All KLING & FREITAG manuals are originally authored in German.

KLING & FREITAG spare manuals are separately available for order or can be downloaded from our website: www.kling-freitag.de.

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2. Product Description

The CP+ connector panel is a pro-grade audio panel used for making speaker lines and other signal links connected to it available on its front panel.

The device is specifically designed for use with the K&F PLM12K44 and PLM20K44 amplifiers.

Output ports include 5 SpeakOn ports, 4 analog inputs, and 4 analog link ports. In addition, the system offers 2 AES/EBU inputs (1/2 and 3/4) and 2 AES/EBU link ports (1/2 and 3/4). DANTE streams are supported through 1 primary and 1 secondary RJ45 port.

The length of the patch cables at the rear panel is 50 cm (19.7"). In addition to 4 analog inputs (ANALOG IN 1 to 4), there are 2 AES/EBU IN ports (1+2 and 3+4) and 2 2-channel input ports (CH1/CH2 and CH3/CH4).

The patchfield is for commercial use as specified in this document only! Any other use not described in this document is not an intended use

3. General Safety Instructions



Warning

Never place your devices

- where they are permanently exposed to direct sunlight,
- near heat sources or open fire,
- where the airflow for cooling is blocked,
- where they are exposed to high moisture,
- where they are exposed to strong vibrations or dust.

Transportation

When transporting the device, make sure that it is protected from vibrations.

Intrusion of liquids

It should always be ensured that no liquids get into the device.

Maintenance and Technical Service

The user should not perform any maintenance or repair work on the unit which goes beyond the work described in these user's manual. This must be carried out by qualified specialist staff.

The device may only be repaired by qualified specialist staff when, for example:

- objects or liquids have got inside the device,
- the device has been exposed to rain.
- the device doesn't appear to be functioning properly,
- it has fallen down or the housing is damaged.

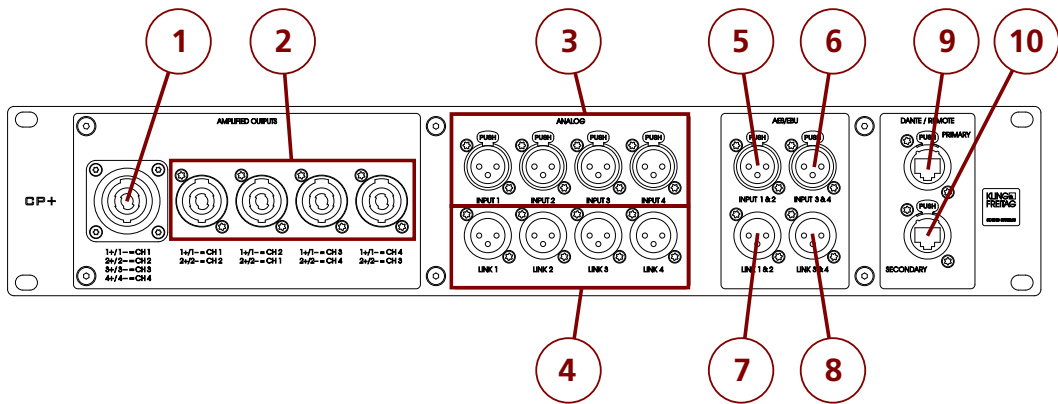
Noise

RF interference at power cords or line cables may result in unwanted noise.

Notice

4. Connectors and Functions

4.1 Front



- | | |
|--|---|
| <ul style="list-style-type: none"> 1) Amplified Output (SpeakOn NL8) 2) Amplified Outputs (SpeakOn NL4) 3) Analog INPUT 1 to 4 (XLR) 4) Analog Link 1 to 4 (XLR) 5) AES/EBU INPUT 1 and 2 (XLR) | <ul style="list-style-type: none"> 6) AES/EBU INPUT 3 and 4 (XLR) 7) AES/EBU LINK 1 and 2 (XLR) 8) AES/EBU LINK 3 and 4 (XLR) 9) Dante/Remote Primary (RJ45) 10) Dante/Remote Secondary (RJ45) |
|--|---|

4.1.1 Speaker port

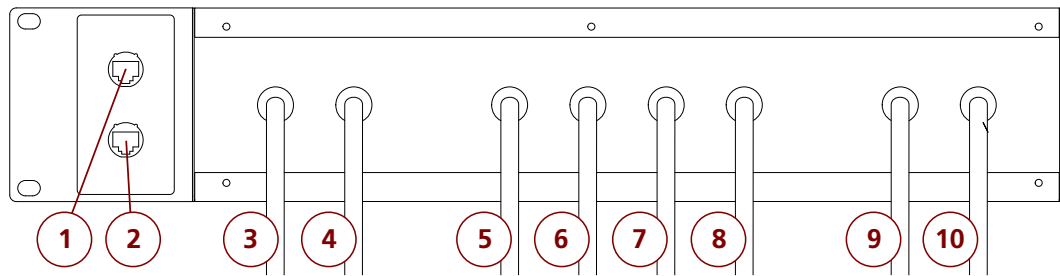
Each of the four SpeakOn output ports (2) delivers 2-channel signals. This allows for implementing system cabling with 4-wire speaker cables.



When using K&F 2-channel speaker systems (NOMOS XLC, SEQUENZA 10, ACCESS T5/T9, etc.), ensure correct channel assignment as well as appropriate connection to the amplifier modules.

Output 1:	Pin 1+/1- = Channel 1 Pin 2+/2- = Channel 2
Output 2:	Pin 1+/1- = Channel 2 Pin 2+/2- = Channel 1
Output 3:	Pin 1+/1- = Channel 3 Pin 2+/2- = Channel 4
Output 4:	Pin 1+/1- = Channel 4 Pin 2+/2- = Channel 3

4.2 Rear



1. Dante/Remote Primary (RJ45)
2. Dante/Remote Secondary (RJ45)
3. AES/EBU IN 3+4 (XLR)
4. AES/EBU IN 1+2 (XLR)
5. ANALOG IN 4 (XLR)
6. ANALOG IN 3 (XLR)
7. ANALOG IN 2 (XLR)
8. ANALOG IN 1 (XLR)
9. CH3/CH4 (SpeakOn)
10. CH1/CH2 (SpeakOn)

The assignment of the ports 3 to 8:

- 1: GND/Shield
- 2: +
- 3: -

5. AES/EBU Link

The AES/EBU Link ports are passively wired in parallel to the input ports.

We recommend using these for a low number of member units and with short leads only—for example, for a direct interconnection of 2–3 racks stacked.

Remember to enable AES/EBU termination on the last amplifier in the chain while leaving it disabled on all other amplifiers!

For information on this feature, also refer to the Lake Controller user instructions.

6. Wiring

6.1 Notes

- Only use high-quality speaker cables, (i.e. from KLING & FREITAG).
- Adapters for connections between the Speakon connecting panel of the CP+ and EP-5 / XLR-connectors, as well as for special uses must be professionally constructed.
- For routing analog signals from the mixing console to the CP+ and from the CP+ to the input ports of your amplifier, use 2-pole shielded microphone cables. For transmitting AES/EBU digital audio, use 2-pole shielded cables (110-ohm wave impedance).
- Please pay attention to the respective pin diagrams in these user's manual!
- Avoid creating ground loops.
- Make sure that the +/- polarity of the speakers at the amplifier is correct. When simultaneously using power amplifiers from different manufacturers, be sure to use the correct specific pin configuration. It may be necessary to modify the pin configuration on the power amplifiers or on the connectors leading to them.
- Ensure that the connected speaker channels are working in phase (phase checker). A phase error can also be recognized when the connected channels are used simultaneously. During simultaneous use the bass frequencies become notably quieter or the mid-frequencies such as voices cannot be located.
- The cables should have a sufficient wire gauge. A minimum wire gauge can be easily calculated with the following formula:
Wire Gauge [mm²] = Required Cable Length [m] / 2 x Impedance [Ohm]
- Please make sure that the total impedance of the loudspeakers is not lower than the minimal load impedance indicated on the power amplifier.

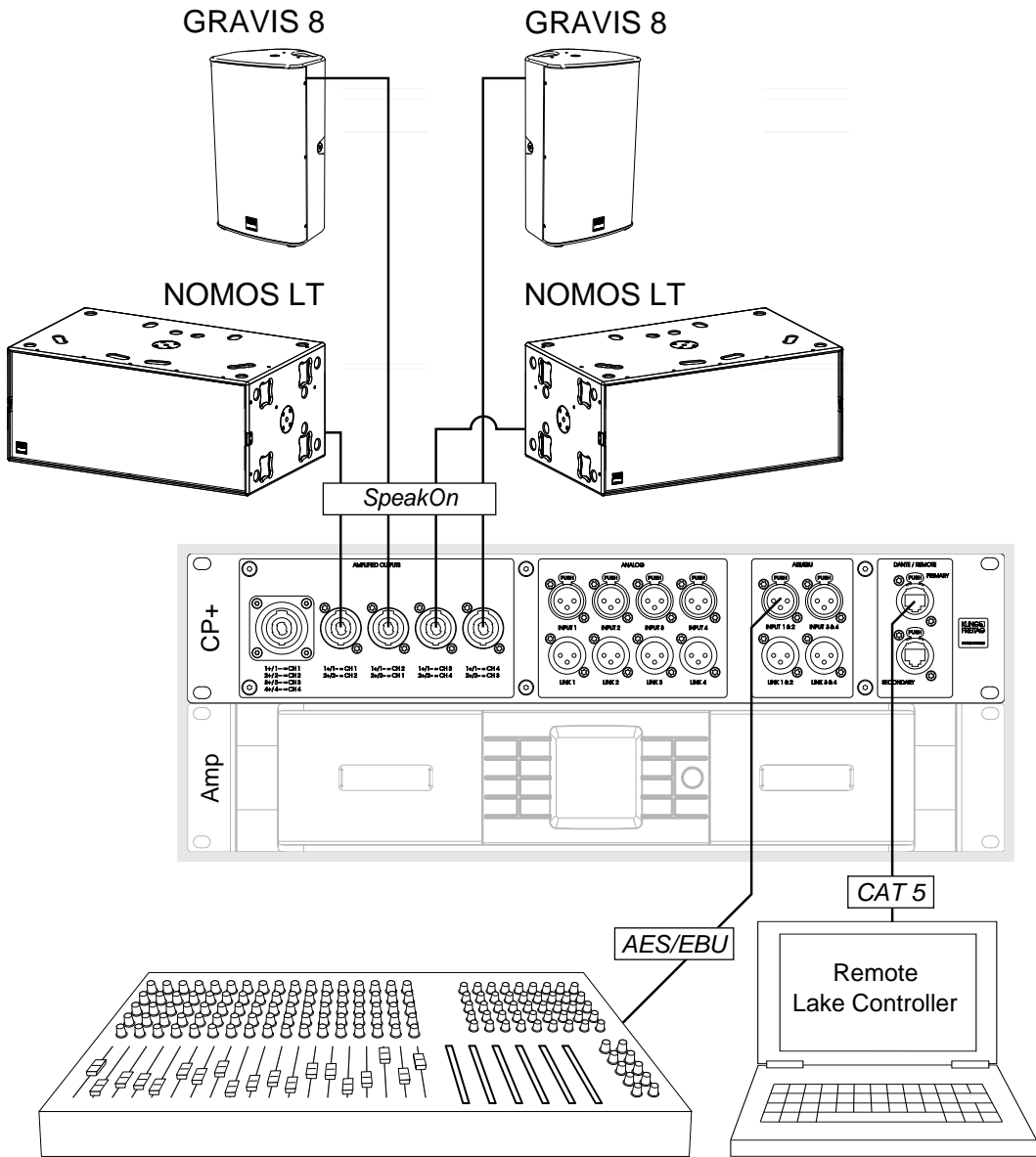
Make sure that all units are switched off and all controls are turned down before connecting your system.

6.2 Connection

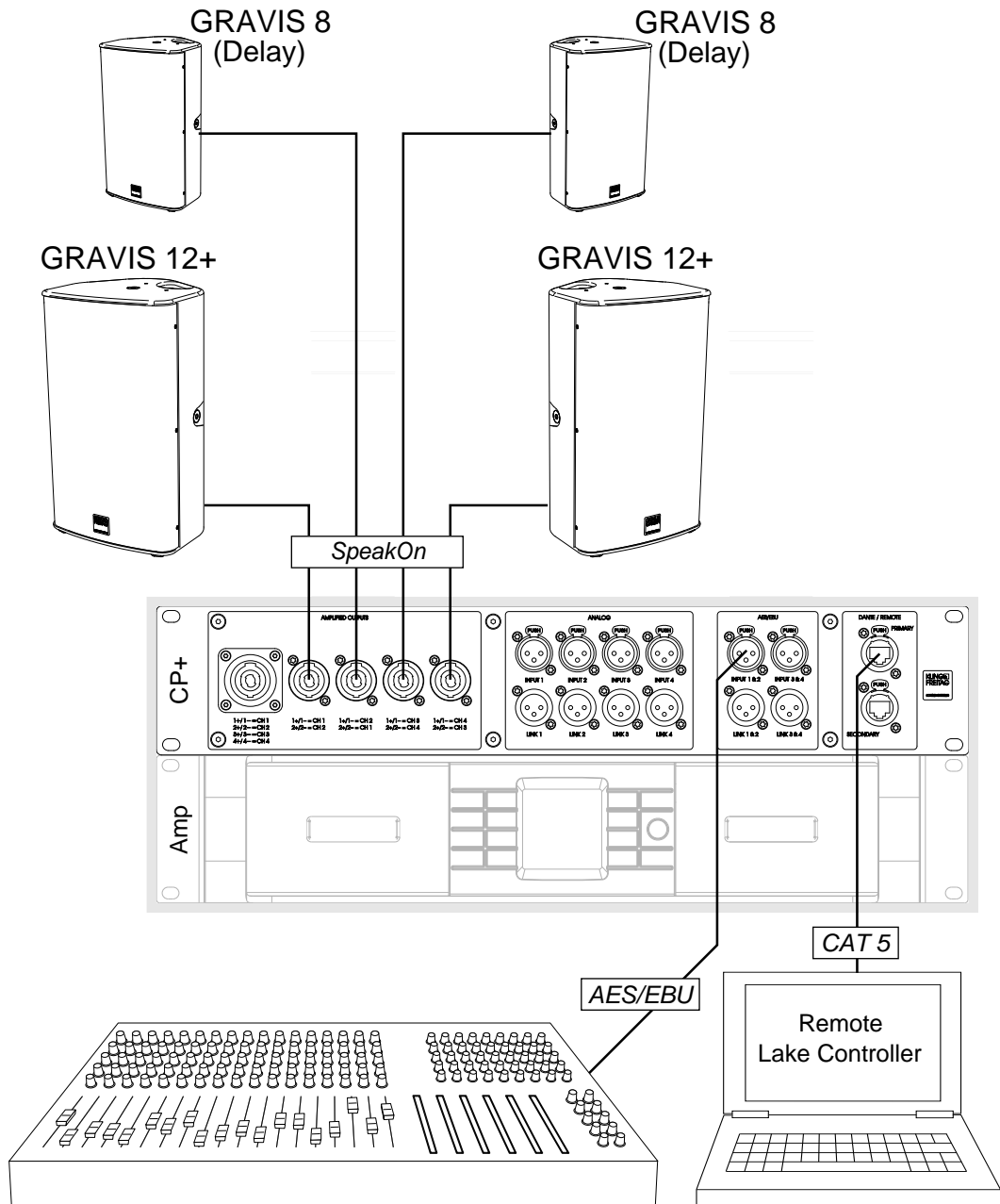
To wire the CP+ connector panel inside a rack, connect the amplifier to the rear-panel ports. Doing so will make all ports (speakers, analog and AES/EBU inputs, and network ports) available at the front panel of the rack. This allows for connecting mixing consoles, speakers, players, and other devices right at the front panel.

Sample configurations:

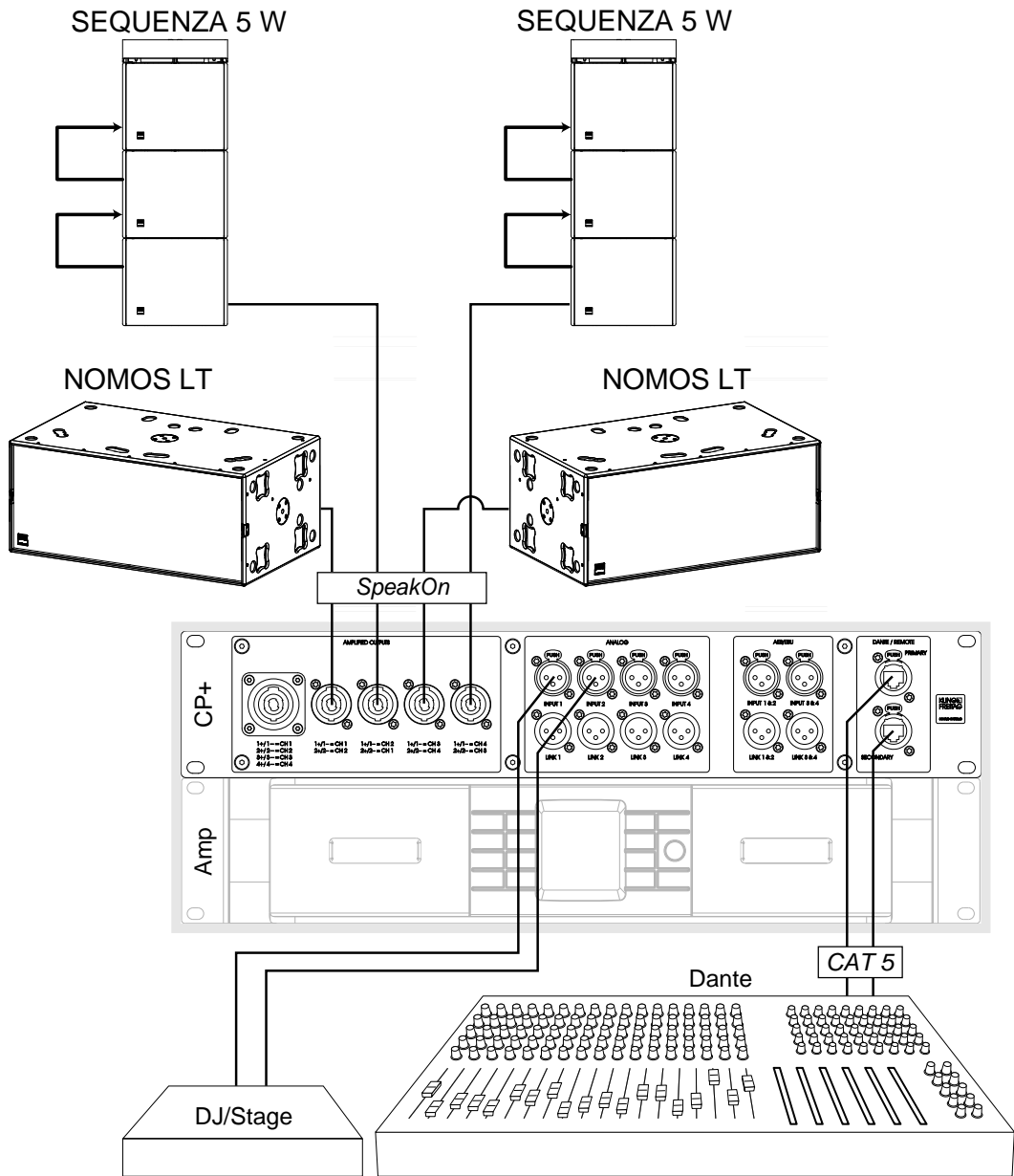
6.2.1 Example 1



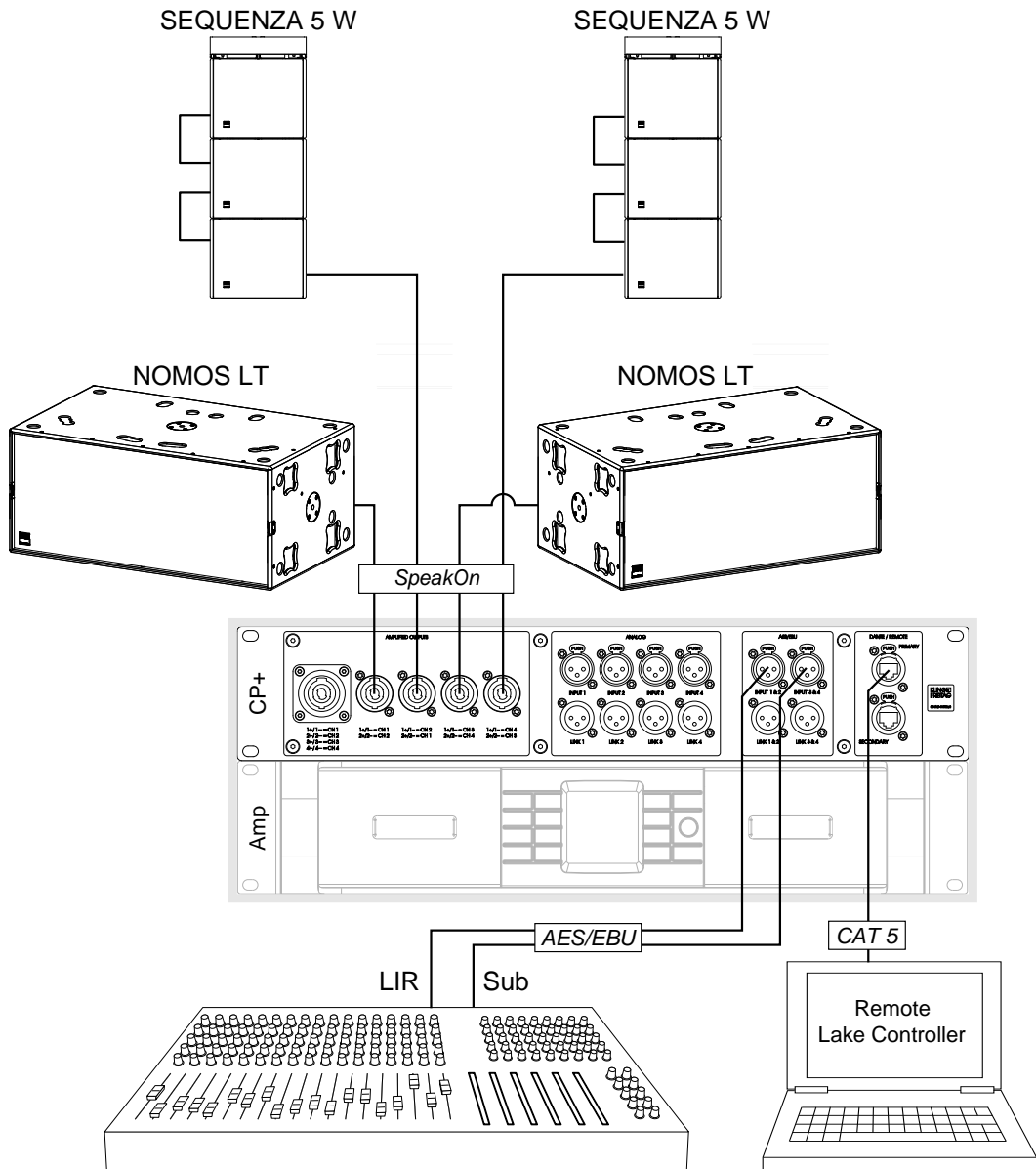
6.2.2 Example 2



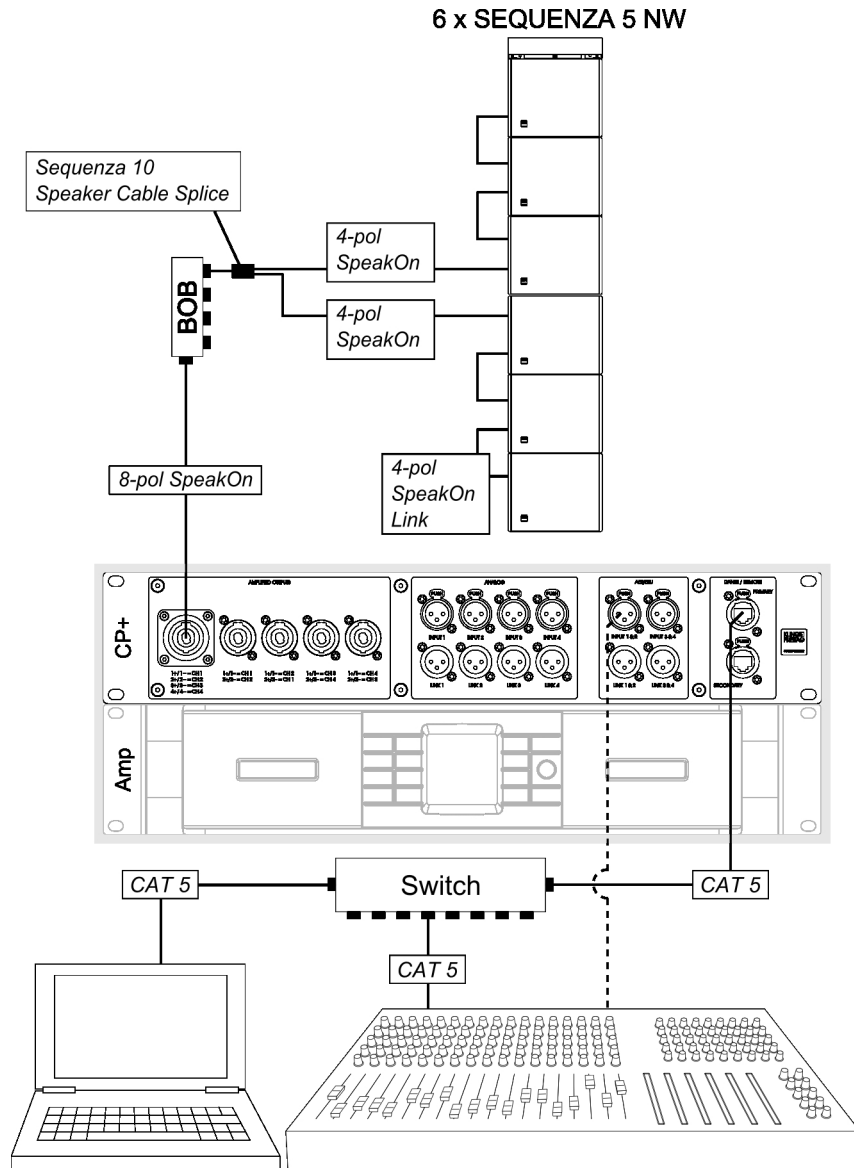
6.2.3 Example 3



6.2.4 Example 4



6.2.5 Example 5



7. First-time Use

- Operating the Controller
- Switch off all equipment and turn down all level controls of the mixing console and the power amplifiers.
- Wire the speaker systems according to the instructions in these user's manual.
- Now switch on the mixing console first and at last, the power amplifiers. Always use the before mentioned switching order. Otherwise switching noises may damage the system.
- If there is interference, turn off all appliances in the reverse order and check all cable connections.
- Successively turn up the individual power amplifier channels and send a signal with low volume to the system. Check to see if the desired signals are applied to the intended speakers and make sure there is no interference. Make sure everything works properly, i.e. if the signals come from the correct speaker paths (high signals from the tweeters, bass signals from the bass speaker).
- Turning down the input level controls may not always prevent distortions in the input section of the power amplifier, especially if this section has a relatively low headroom. A clipping signal may not be displayed by the clipping indicator then! To prevent signal interruptions caused by protection circuits or damages to the speakers, turn the level controls of the power amplifier to the maximum position, if possible. Only turn up the signal level at the mixing console or on the controller far enough so that the power amplifiers are not overloaded; or reduce the limiter threshold.
- When turning off the system, the input controls for the power amplifiers should be turned down first followed by the power switches of the amplifiers. After that, the other appliances can be turned off.

8. Technical Specifications CP+

I/O	
Analog ports	4x Analog INPUT 1 to 4, 4x Analog LINK 1 to 4
AES/EBU Inputs	2 INPUT ports (1/2, 3/4), 2 LINK ports (1/2, 3/4), direct wiring
DANTE/REMOTE (network)	2 RJ-45 EtherCon™ ports (primary and secondary ports), 100/1000BaseT compliant (for Ethernet / IP connection)
Dimensions and Weight	
Dimensions (W x H x D*)	2 RU rack mount, 483 x 88 x 168 mm
Weight	2.7 kg

9. EC Declaration of Conformity

EG-Konformitätserklärung

(Declaration of EG-Conformity)



Hersteller:
(Manufacturer)

Kling & Freitag GmbH
Junkersstraße 14
30179 Hannover
Deutschland

**Bevollmächtigter
für die Zusammenstellung der
technischen Unterlagen:**

(Authorized representative
for the compilation of technical
documents)

Kling & Freitag GmbH
Abt. Entwicklung
+49 (0)511 / 96997-50
Deutschland

Produkt:
(Product)

**Rack-Anschlussfeld
CP+**

Wir erklären, dass das genannte Produkt den aufgeführten Schutzanforderungen der folgenden EG-Richtlinien entspricht:

(We declare that the designated product is in conformity with the protection requirements imposed by the following EU directives:)

- 2014/35/EU, Niederspannungsrichtlinie (Low Voltage Directive)
- RoHS II 2011/65/EU

Hannover, 20.4.2016

Jürgen Freitag, Geschäftsführung (CEO)

A handwritten signature in black ink, consisting of several loops and a crossbar, positioned above a horizontal line.

10. Disposal

Please recycle the packaging material of the device.

10.1 Germany

Don't dispose of waste electrical equipment through household waste.

Don't deliver it to official recycling points either.

All KLING & FREITAG products are plain business-to-business (B2B) products. Therefore, KLING & FREITAG GmbH is exclusively responsible for disposing of all KLING & FREITAG waste equipment marked with a garbage-can icon. Please call the below phone number when you have a KLING & FREITAG product (marked with the garbage-can icon) for disposal. We will offer you a straightforward and professional disposal at no cost.



KLING & FREITAG equipment with no such icon was sold before 24 March 2006; in that case, the owner is legally responsible for disposal. We will, however, gladly assist you by naming appropriate ways of disposal.

For further disposal information of KLING & FREITAG waste products, call +49 (0)511-96 99 7-0

Background information: The Electrical and Electronic Equipment and Appliances Act (ElektroG) is the German implementation of the European (EU) Waste Electrical and Electronic Equipment Directive (WEEE, 2002/96/EC).

Therefore, starting on 24 March 2006, KLING & FREITAG GmbH has marked all products subject to the WEEE that are distributed in Germany with an icon showing a crossed-out garbage can with a white bar below it. The icon indicates that the equipment was distributed on or after 24 March 2006 and must not be disposed of through household waste.

KLING & FREITAG GmbH is legally registered as a manufacturer with the German waste-equipment registration authority (EAR). The WEEE registration number is: DE64110372.

We substantiated towards the EAR that our products are for B2B trade only.

10.2 EU, Norway, Iceland, and Liechtenstein

Don't dispose of waste electrical equipment through household waste.

Starting on 13 August 2005, KLING & FREITAG GMBH has marked all products subject to the WEEE directive that are distributed in any member state of the European Union (except Germany), Norway, Iceland, or Liechtenstein with an icon showing a crossed-out garbage can with a white bar below it.



The icon indicates that the equipment was distributed on or after 13 August 2005 and must not be disposed of through household waste.

Unfortunately, the European WEEE directive was implemented in different national legislation in the EU member states, making it impossible to offer a consistent disposal solution throughout Europe.

The local distributor (sales partner) in the respective country is responsible for complying with the applicable legislation.

Contact your retailer or the local authorities for information on the regulations applicable in any EU member state (except Germany).

10.3 All Other Countries

Contact your retailer or the local authorities for information on the regulations applicable in any country not listed above.

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