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# K-CTRL

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USER MANUAL - *English version*







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# K-CTRL

RGB LED DMX-controlled  
3-Channel power supply

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## 1.INTRODUCTION

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The K-CTRL DMX-controlled 3-Channel power supply works as the power supply and DMX function controller for the LED component of the K-Array KTL22 series of combined Speaker/Lighting fixtures.

Colourmix, intensity and program operation mode can all be preset. The K-CTRL can also operate using an internal microphone for sound-to-light operation. Any settings are maintained when power is off and will return to the last setting when powered on again. A number of KTL22 series fixtures can be controlled from a single K-CTRL.

To take full advantage of all the functions of the K-CTRL and for your own safety and the safety of your environment, please read these operating instructions carefully before you start using the unit.

## 2.UNPACKING

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Each K-array device is built to the highest standard and thoroughly inspected before leaving the factory.

Carefully inspect the shipping carton, then examine and test your new product. If you find any damage immediately notify the shipping company. Only the consignee may institute a claim for damages incurred

in shipping. It is suggested that you retain the original packaging so that the system can be repacked at a future date if necessary.

Please note that K-array and its distributors cannot accept any responsibility for damage to any returned product through the use of non-approved packaging.

### 3. INCLUDED ACCESSORIES

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**MAIN PARTS:**

- 1 pcs. PS020A main unit
- 1 pcs. mains cable
- 1 pcs. operation manual

**ACCESSORIES PARTS:**

- 1 pcs. Mounting cover
- 2 pcs. Mounting screw
- 1 pcs. connection cable to panel

### 4.SYMBOLS

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 <p>This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual!</p>	 <p>Warning! Dangerous voltages: RISK of electric shock.</p>
 <p>This device complies with Restriction of Hazardous Substances Directive.</p>	 <p>Separate collection of electrical and electronic devices. For information about the disposal of Waste Electrical and Electronic Equipment (WEEE), please refer to the website at <a href="http://www.scanning.datalogic.com">www.scanning.datalogic.com</a></p>
 <p>The item meets all the essential "Health and Safety" requirements of the relevant European Directives.</p>	 <p>This symbol alerts the user to recommendations about the product's use and maintenance.</p>

## 5. WARRANTY

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K-array systems are warranted against manufacturing defects in materials or craftsmanship as determined by the distributor. During the warranty period K-array will, at its discretion, either repair or replace products which prove to be defective provided that the product is returned in its original packaging, shipping prepaid, to an authorized K-array service agent or distributor. K-array cannot be held responsible for defects caused by unauthorized modifications, improper use, negligence, exposure to inclement weather conditions, act of God or accident, or any use of this product that is not in accordance with the instructions provided by K-array. K-array is not liable for consequential damages. This warranty is exclusive and no other warranty is expressed or implied. This warranty does not affect your statutory rights.

## 6. GENERAL WARNINGS

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- Read this manual completely before using the product.
- Keep this manual in your records for future reference.
- Take care of enough distance between this product and sources of hum and noise like electric motors and transformers.
- Carry this product with greatest care. Being dropped or subjected to heavy vibration may damage this product mechanically.
- The manufacturer takes no responsibility for injury or damage caused by not following the safety precautions and instructions printed in this manual.
- Follow all printed security advice on the product itself. The lightning flash with arrowhead within an equilateral triangle makes you aware of non-insulated AC mains voltage inside the unit. The exclamation mark within an equilateral triangle makes you aware of important operating and maintenance instructions in the literature attached to this product.

## 7. SAFETY INSTRUCTION

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- Do not connect the AC power plug to the unit before assembly has been completed.
- Only connect this unit to a mains socket outlet with protective earth connection, ground-fault (earth-fault) protection and overload protection.
- Do not install the power supply in wet or humid locations without using weather protection.
- Do not allow water or any foreign object to get inside the device. Do not put objects containing liquid on, or near, the unit.
- To reduce the risk of overheating the device, avoid exposing it to direct sunlight. Do not install the unit near heat emitting appliances, such as a room heater or stove.
- No naked flame sources such as lighted candles should be placed on the device.
- To pull the AC Cord out of the wall outlet or the unit's AC socket, never pull the cable itself, but only the AC plug.
- Disconnect the unit from AC supply by pulling the AC plug out of the wall outlet or the unit's AC socket before any kind

## K-CTRL

- of cleaning on the product. Use smooth and dry cloth only for cleaning. Check all connection cables before reconnecting the unit.
- Where the mains plug or an appliance coupler is used as a dis-connect device, the disconnect device shall remain readily operable.
  - Choose the position of the AC cord according to the lowest risk of damage by footsteps or from being squeezed. Take special care of the AC cord outlet on the unit as well as the AC plug and wall outlet at the other end of the cable.
  - Do not open the unit for service. There are no user-serviceable parts inside. Warranty will be void in any case of unauthorized service by the user or other non-authorized persons.
  - Maintain sufficient air convection in the unit's environment to avoid overheating, especially when mounting in an enclosed area. Make sure that the air convection slots are not blocked. Do not operate this unit in environmental temperatures exceeding 40 degrees Celsius.
  - Do not operate the K-CTRL power supply in any closed environment smaller than 10cbm, unless forced air convection is provided.
  - Do not operate the K-CTRL power supply in any position inclined or reclined more than 45 degrees from being upright with the heatsink on top.
  - Never use any accessories or modifications not authorized by the manufacturer of this unit.
  - Choose a location for operation where the unit is protected from vibration and where a fixed mounting position is provided. In case of overhead mounting, follow appropriate rigging rules and your country's regulations for rigging safety. See appendixes if any.
  - If fluids have spilled into the unit or small parts have intruded the unit, immediately switch off the unit and hand it over to the authorized service for a security check.
  - Disconnect the unit from AC supply by pulling the AC plug out of the wall outlet or the unit's AC socket during a thunder-storm in order to avoid any damage on the unit due to AC voltage peaks.
  - In the event of malfunction of this unit or damaged AC cord or other damaged parts, pull immediately the AC plug out of the wall outlet and hand the unit over to the authorized service for a security check.
  - To meet all aspects of functionality and security during maintenance work to be performed on this unit, all parts should be replaced by genuine spare parts. Ensure that your dealer or maintenance company is authorized by the manufacturer.
  - Never use any accessories or modifications not authorized by the manufacturer of this unit.
  - Do not open the unit for service purpose, as there are no user-serviceable parts inside. Warranty will be void in any case of unauthorized service by the user or other not authorized persons.
  - This unit produces and absorbs electromagnetic radiation. The strength of radiation and the sensitivity for disturbing interference matches the CE and FCC requirements. A corresponding sign is printed on the back of the unit. Any change or modification may affect the behavior of the unit concerning electromagnetic radiation, with the CE requirements eventually not to be met any more. The manufacturer takes no responsibility in this case.

## 8. VOLTAGE REQUIREMENTS

K-CTRL operates safely and without audio discontinuity if the AC voltage stays within a operating window from 90 V to 260 V. Check the voltage before connecting the amplifier to the AC power.

A higher voltage could seriously damage the device.

## 9. OPERATION

The K-CTRL DMX-controlled 3-Channel power supply supplies the necessary power to the LED elements in the KTL22 series product range, plus provides all necessary functional control.

Upon the user's choice, the unit can work stand-alone or may be controlled by external DMX-controllers.

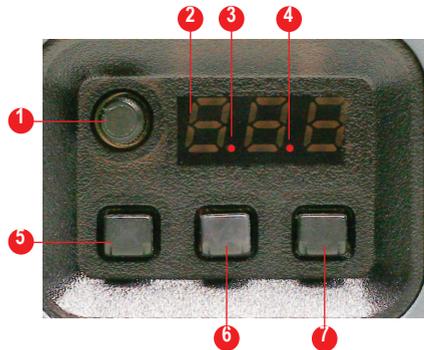
### 9.1 "A" MODE (auto)

Press the MODE button (5) until the first digit on the display shows "A", indicating operation in "A" (AUTO) mode. Then choose your desired pattern by using the UP/DOWN buttons (6/7). (see list below). Changing the setting becomes effective 1 second after the new setting is made to allow stepping through presets without previewing all intermediate presets.

NOTE: The "A" Mode is automatically disabled and cannot be chosen when an external DMX signal is received [DMX indicator LED (3) is lit].

When in pattern A 1 (static scene), turning knob (1) determines the mix, whereas

### FRONT PANEL



1. In A-Mode: Speed Control (except A1 = Mix Control)  
In C-Mode: Level Control
2. Display showing the Mode, DMX-address, LOC-function etc.
3. Indicates presence of a DMX signal
4. Indicates the sound-activated mode (internal microphone)
5. MODE selection button
6. UP-button
7. DOWN-button

### BACK PANEL



8. LED power output
9. Power-Input 90-250V AC
10. Power-Output 90-250V AC (max 19A)
11. Input audio signal selector (Internal Mic./ External line)
12. Input audio signal connector
13. Internal microphone
14. DMX Input connector
15. DMX Output connector
16. Switches on the termination for the last unit in the DMX-chain
17. Switching the display on or off (with delay)
18. Maintenance (not in use)

being in one of the other 26 patterns, knob (1) controls the speed or selects the sound-activated function (refer to pattern list below). The sound-activated function can be activated by setting the knob (1) inside the first 10 degrees of its travel from left detent. In this setting it works from a built-in microphone (8) which picks up the environmental sound. Its activity is shown by the flashing of the right dot (4) in the display. The level for all patterns is maximum.

In “A” mode, the unit does not receive any values from the DMX input, but generates related DMX values on the output according to the selected pattern, so that other similar units from the Multiform LS series can show the same pattern if they are connected by DMX signal cables and set to Slave Mode “SLA”.

If you leave mode “A” for any reason and come back later into mode “A”, the unit will recall the last chosen pattern (even if the unit was switched off in between).

Pattern list:

	<b>Description</b>	<b>Function of Knob (1)</b>
<b>A 0</b>	All off	None
<b>A 1</b>	Static scene	Mix
<b>A 2</b>	Soft fade Out1-Out2	Speed
<b>A 3</b>	Soft fade Out2-Out3	Speed
<b>A 4</b>	Soft fade Out1-Out3	Speed
<b>A 5</b>	Soft fade Out1-MixA	Speed
<b>A 6</b>	Soft fade MixB-MixC	Speed
<b>A 7</b>	Soft fade MixD-MixE	Speed
<b>A 8</b>	Soft fade MixF-MixG	Speed
<b>A 9</b>	Soft fade Out1-Out2-Out3 (RGB)	Speed
<b>A 10</b>	Hard switch Out1-Out2	Sound-activation, Speed
<b>A 11</b>	Hard switch Out2-Out3	Sound-activation, Speed
<b>A 12</b>	Hard switch Out1-Out3	Sound-activation, Speed
<b>A 13</b>	Hard switch Out1-MixA	Sound-activation, Speed
<b>A 14</b>	Hard switch MixB-MixC	Sound-activation, Speed
<b>A 15</b>	Hard switch MixD-MixE	Sound-activation, Speed
<b>A 16</b>	Hard switch MixF-MixG	Sound-activation, Speed
<b>A 17</b>	Hard switch Out1-Out2-Out3	Sound-activation, Speed
<b>A 18</b>	Hard switch Out1-MixA-Out2-MixB-Out3-MixC	Sound-activation, Speed
<b>A 19</b>	Random speed Out1-MixA	None
<b>A 20</b>	Random speed Out2-Out3	None
<b>A 21</b>	Random speed Out1-Out3	None
<b>A 22</b>	Random speed Out1-Out2-Out3	None
<b>A 23</b>	All outputs tacted	Sound-activation, Speed
<b>A 24</b>	Out1 tacted	Sound-activation, Speed
<b>A 25</b>	Out2 tacted	Sound-activation, Speed
<b>A 26</b>	Out3 tacted	Sound-activation, Speed
<b>A 27</b>	Out1-Out2-Out3 chaser tacted	Sound-activation, Speed

## 9.2 “C” Colour Mode

Press the MODE button (5) until the first digit on the display shows “C”, indicating operation in “C” mode. Then choose one of the 19 presets as shown in the list below by using the UP/DOWN buttons (6/7). Changing the setting becomes effective directly. Knob (1) determines the output level.

In “C” mode, the unit does not receive any values from the DMX input but generates related DMX values on the output according to the selected pattern, so that

other similar units from the Multiform LS series can show the same behaviour if they are connected by DMX signal cables and set to Slave Mode “SLA”.

NOTE: The “C” Mode is automatically disabled and cannot be chosen when an external DMX signal is received [DMX indicator LED (3) is lit].

If you leave mode “C” for any reason and come back later into mode “C”, the unit will recall the last chosen mix (even if the unit was switched off in between).

Available colour presets:

<b>C 0</b>	all off	<b>C10</b>	MixG
<b>C 1</b>	Out1	<b>C11</b>	MixH
<b>C 2</b>	Out2	<b>C12</b>	MixI
<b>C 3</b>	Out3	<b>C13</b>	MixJ
<b>C 4</b>	MixA	<b>C14</b>	MixK
<b>C 5</b>	MixB	<b>C15</b>	MixL
<b>C 6</b>	MixC	<b>C16</b>	MixM
<b>C 7</b>	MixD	<b>C17</b>	MixN
<b>C 8</b>	MixE	<b>C18</b>	MixO
<b>C 9</b>	MixF	<b>C19</b>	All outputs full on

## 9.3 “SLA” DMX Slave Mode

Press the MODE button (5) until the display shows “SLA”, indicating operation in “SLA” (SLAVE) mode. In this mode the unit is set to DMX-channel 001 in order to receive the signals from a master unit of the Multiform LS series being in mode “A” or “C”. The unit interprets CH1 as Out1 level, CH2 as Out2 level and CH3 as Out3 level. CH4 is not in use, and the potentiometer (1) is disabled.

similar units from the Multiform LS series can show the same behaviour if they are connected by DMX signal cables and set to Slave Mode “SLA”.

NOTE: The “C” Mode is automatically disabled and cannot be chosen when an external DMX signal is received [DMX indicator LED (3) is lit].

If you leave mode “SLA” for any reason and come back later into mode “C”, the

unit will recall the last chosen mix (even if the unit was switched off in between). This mode can also be used for remotely controlling the unit if no specific DMX address is needed and channels 001-003 can serve as a default. To indicate that the unit is controlled by an external DMX signal, the DMX LED (3) is lit.

**9.4 “d” DMX Mode**

Press the MODE button (5) until the display shows “d”, indicating operation in “d” (DMX) mode. Shortly after that, the display shows the DMX starting address. You can choose any DMX starting address by simply using the UP/DOWN buttons (6/7). The chosen DMX-address comes effective approximately 3 seconds later and will show up on the display (2) in alternation to the “d”. This allows control

of the unit by any external DMX signal sending on the chosen channel. In this mode the potentiometer (1) is disabled. The unit receives DMX values on a packet of four channels and mirrors the received data on the DMX output (13). If a DMX signal is present the DMX LED (3) will turn on. The four channels control the unit as follows:

DMX channel	Value Range	Function
CH1	000-255	Out1 level
CH2	000-255	Out2 level
CH3	000-255	Out3 level
CH4	000-127	Master level
	128-227	Tact (128=slow / 227=max. speed 23 Hz)
	228-255	Master level full on, Tact off

Addressing has to be done as follows:

001 first device	(CH 1-4)	*factory default*
005 second device	(CH 5-8)	
009 third device	(CH 9-12)	
013 fourth device	(CH 13-16)	and so on.

This setting is stored even if the device is switched off.

**9.5 “P” DMX Preset Mode**

If you want to run the pre-programmed patterns and scenes by an external DMX-controller you can use the DMX Preset Mode. Press the MODE button (5) until

the display shows “P”, indicating operation in “P” (DMX Preset) mode. Set the DMX starting address by simply using the UP/DOWN buttons (6/7). The chosen DMX-

address comes effective approximately 3 seconds later and will show up on the display (2) in alternation to the “P”.

The unit receives DMX values on a packet of four channels and mirrors the received data on the DMX output (13). If a DMX signal is present the DMX LED (3) will turn on. The four channels control the unit as follows:

If DMX-value of channel 3 is lower than 50 the unit works with static colours:

DMX channel	Value Range	Function
CH1	000-255	Output mix choice from presets (see “C” mode)
CH2	000-255	Master level
CH3	000-049	Static mix mode active
CH4	000-049	Tact off
	050-255	Tact (050=slow / 255=max. speed 23 Hz)

Output mix presets can be activated by means of CH1 whilst the chosen mix can be adjusted with CH2. If the value of CH4 is above 50 the unit is set to tact mode. The tact speed for any fixed output mix chosen on the first channel can be adjusted from zero (value <50) to 23 cycles per second (value 255).

If DMX value of channel 3 is equal or upper than 50 the unit works in pattern mode:

CH1	Pattern	CH1	Pattern
000-015	Soft fade Out1-Out2	136-150	Hard switch Out2-Out3
016-030	Soft fade Out2-Out3	151-165	Hard switch Out1-Out3
031-045	Soft fade Out1-Out3	166-180	Hard switch Out1-MixA
046-060	Soft fade Out1-MixA	181-195	Hard switch MixB-MixC
061-075	Soft fade MixB-MixC	196-210	Hard switch MixD-MixE
076-090	Soft fade MixD-MixE	211-225	Hard switch MixF-MixG
091-105	Soft fade MixF-MixG	226-240	Hard switch Out1-Out2-Out3
106-120	Soft fade Out1-Out2-Out3	241-255	Hard switch Out1-MixA-Out2
121-135	Hard switch Out1-Out2		-MixB-Out3-MixC

DMX	Value Range	Function
CH2	000-255	Level
CH3	050-255	Chase speed
CH4	000-049	Tact off
	050-255	Tact (050=slow / 255=max. speed 23 Hz)

The pre-programmed soft fade or hard switching patterns can be chosen by means of CH1 whilst CH2 is used as a level channel. CH3 allows to set the fade time or pattern speed from slow (value 50) to very fast (value 255). If channel 4 reaches a DMX value of 50 or above a tact function will be added to the chases. The tact speed can be adjusted from slow (value 50) to 23 pulses per second (value 255).

In this mode the potentiometer (1) is disabled.

**Note:**

**Whether the unit works in static mix mode or pattern mode depends on the value of channel 3. Set the value of channel 3 below 50 to be in static mix mode. Otherwise you will be in pattern mode.**

Addressing has to be done as follows:

001	first device	(CH 1-4)	*factory default*
005	second device	(CH 5-8)	
009	third device	(CH 9-12)	
013	fourth device	(CH 13-16)	and so on.

This setting is stored even if the device is switched off.

**9.6 Display on/off**

If you wish the display to be lit only when a change in operation is made, the DIP switch (17) should be in the position off. Now if any of the buttons is not pressed for more than approximately 25 seconds the display is switched off. As soon as one of the buttons is pressed again, the display switches on immediately. In this case the first touch of the button is ignored in respect to the normal function of that button.

**9.10 Key lock**

Pressing the MODE button (5) for longer than 3 seconds locks all the buttons (5-7) and the potentiometer (1). The display shows “LOC” in alteration to the mode (changing every 2 seconds). Pressing the MODE button again for more than 3 seconds unlocks the button and potentiometer functions. Please note: If the display is in OFF-mode it will take approximately 25 seconds before the display switches off. It will be switched on again if any key is touched and will switch off again after 25 seconds if the keys are not unlocked by the procedure mentioned above.

### 9.11 Termination

To avoid interference the last unit of a DMX-chain should be terminated. Therefore the DIP switch (9) of the last unit in the DMX-chain must be switched ON.

### 9.12 Maintenance (boot loader)

The Maintenance (boot loader) function enables the unit to receive firmware updates via the DMX connectors. For further information refer to our website and check "Download".

### 9.12 Switch on condition

The unit always returns to the last mode before it was switched off. In DMX Slave "SLA" or DMX Mode "d" or DMX Preset Mode "P" all DMX values are cleared if power is switched off.

### 9.13 DMX signal condition

The device will retain the status that it was in before the DMX signal got lost, but potential tact settings will be automatically cleared.

### 9.14 DMX signal condition

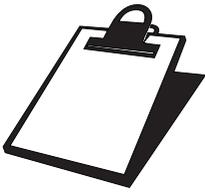
MODE> DMX	A	C	P (CH3<50)	P (CH3>50)	D	SLA
CH1	Out1	Out1	Mix	Pattern	Out1	Out1
CH2	Out2	Out2	Level	Level	Out2	Out2
CH3	Out3	Out3	0-49	Speed	Out3	Out3
CH4	0	0	Tact	Tact	Level/Tact	0

## 10. MAINTENANCE

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This unit does not need regular maintenance. The internal circuit is protected by a 250V/2A slow-blow fuse 5x20mm fuse. If this fuse fails, this usually indicates an internal fault requiring

servicing by a qualified engineer. The fuse shall only be replaced by a fuse of the same specification, and the replacement has to be made by qualified personnel obeying applicable safety rules.



### **Cleaning:**

- Clean the product enclosures using a soft, dry cloth only.
- Do not use any solvents, chemicals, or cleaning solutions containing alcohol, ammonia, or abrasives.
- Do not use any sprays near the product or allow liquids to spill into any openings.

## 11. SERVICE

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To obtain service:

- 1) Contact the official K-array distributor in your country. They will direct you to the service centre.
- 2) If you are calling for service, have the serial number(s) of the unit(s) at hand for reference. Ask for Customer Service, and be prepared to describe the problem clearly and completely.
- 3) If the problem cannot be resolved over the phone, you must return the unit for service.

4) You will be given an RA (Return Authorization) number for job tracking. Refer to this number on shipping materials and in all correspondence concerning the repair. Shipping charges are the responsibility of the purchaser.

**Any attempt to modify or replace components of the device will invalidate your warranty. Service must be performed by an authorized K-array service center.**

## 12.SPECIFICATIONS

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Mains Input.....	AC90-250V~ 50/60Hz
Type.....	switch mode power supply
Power Consumption.....	max. 45W
Fuse.....	250V 2A T (slow blow, 5x20mm glass)
Sound control.....	internal microphone with Automatic Gain Control (AGC)
DMX connections.....	3 pin XLR (Male / Female)
Modulation Type.....	Advanced Bit Angle Modulation (ABAM)
Control protocol.....	DMX 512 (1990)
Output.....	8-pole connector with 3 outputs 24V DC & 3 sensing lines
Max. Load.....	total 1600mA (Out 1: 450mA, Out 2: 570mA, Out 3: 580 mA)
Dimensions.....	W 135 x H 109 x D 38 mm
Weight .....	0,6 kg

## 13.STANDARDS

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This product complies with the following standards:

EU safety.....	EN 60065:2001 +A1
EU EMC.....	EN61204-3:2001
EU Harmonics .....	EN61000-3-2:2001
EU Flicker .....	EN61000-3-3:1995
US safety .....	UL60065
US EMC.....	FCC Part 15

This product meets both the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC.

## 14. APPENDIXES

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### A. Safety rules for overhead rigging:



**Risk of injury: Overhead mounting requires extensive experience, including among others calculating working load limits, good knowledge of the installation material being used, and periodic safety inspection of all installation material and the unit. If you lack such qualifications, do not attempt the installation yourself. Improper installation can result in body injury. Be sure to complete all rigging and installation procedures before applying power to the unit.**

- The unit should be installed out of reach of people and outside areas where persons may walk by or be seated.
- Make sure that the installation area can hold a minimum point load of 10 times the device's weight.
- In fixed installations, fix the unit with self-locking screws/nuts to the mounting point.
- When mounting the unit to truss be sure to secure an appropriately rated clamp to the hanging yoke using a M10 screw fitted through the center hole of the hanging yoke.
- Always use a certified safety cable that can hold 12 times the weight of the device when installing the unit. This secondary safety attachment should be installed in a way that no part of the installation can drop more than 20cm if the main attachment fails.
- Never stand directly below the device when mounting, removing, or servicing the fixture. Make sure the area below the installation place is free from unwanted persons during rigging, de-rigging and servicing.
- The operator has to make sure that the safety-relating and machine-technical installations are approved by an expert before using them for the first time. The installations should be inspected every year by a skilled person to be sure that safety is still granted.

## APPROVAL

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K-array declares that this device is in compliance with the applicable CE standards and regulations.

Before putting the device into operation, please observe the respective country-specific regulations!

### WEEE



Please dispose of this product at the end of its operational lifetime by bringing it to your local collection point or recycling centre for such equipment.

The contents of this manual are furnished for informational purpose only. Hp Sound Equipment s.r.l. assumes no responsibility for any errors or inaccuracies that may appear in this manual.

Hp Sound Equipment s.r.l. reserves the right to make modifications without prior notice.



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