

### **3.- CONSOLAS DE ILUMINACION**

WHOLE ROAD HOG 4 \* **MEJORA**  
GRAND MA 2 LIGHT \* **MEJORA**





# Road Hog 4 Console

## Technical Data Sheet

<b>Product:</b>	Road Hog 4 lighting console for automated luminaires, dimmer and multimedia controllers.
<b>Manufacturer:</b>	High End Systems, Inc., Austin, Texas 78758 USA.
<b>Configuration:</b>	One internal 22-inch wide screen touchscreen with 10 point multi-touch. Robust Hog 4 Operating Software running on an especially adapted Linux system. Internal Solid State Hard disk drive (SSD). Real time clock. Ten non motorized, LED fitted playback controller (Fader, Choose, Go, Pause, Back & Flash), optional expandable up to 90 Playback Controller/Fader. Programming section including four parameter wheels, number pad and keys for parameters, groups, timing and effects, 12 User Keys. Two dimmable LED-Desklights. Integrated Mini-keyboard. Optional CD/DVD drive (DVD/RW) can be attached.
<b>Connectivity:</b>	Up to eight Playback or Master Wings, Hog 4 and Hog 3 USB Playback Wings are supported. Up to two Expansion Wings, Hog 4 and Hog 3 USB Expansion Wings are supported. Multiple MIDI/LTC Inputs for Show Control and Timecode via optional USB MIDI/LTC Widgets. Four onboard DMX XLR 5-pin outputs for fixtures, dimmers and additional DMX capable devices. Ethernet Connectors for Art-Net or E1.3.1 (sACN) capable devices. Nearly unlimited number of DMX, Art-Net and E1.3.1 (sACN) universes by optional adding external DP 8000 Processors. Wired and wireless Multi-console or Mixed-console setup (Hog 4, Full Boar 4, Road Hog 4 and Nano Hog 4) via Ethernet (Hog-Net). Connectivity with many visualizers directly via Ethernet. USB Ports for Single-, Super- and Super Duper DMX Widgets. One external monitor or touchscreen supported via DVI or VGA.
<b>Features:</b>	On board processing and distributing of the first 8 DMX Universes via Art-Net, E1.3.1 (sACN) and four DMX 5-pin XLR outputs on the console, plus up to four additional DMX XLR 5-pin outputs, realized via optional USB DMX Widgets connected to the console. Processing and distributing of a nearly unlimited number of further 16er DMX Universes via external connected DP 8000 Processors. Almost unlimited amount of Crossfades, Cues, Cue-Lists, Scenes, Chases, Effects, Groups, Paletts, Pages and Macros via dynamic memory management. Booting the console, loading a show or upgrading the software (without reboot) is radical faster than before. Software- and Library-Update via Internet ( <a href="http://www.flyingpig.com">www.flyingpig.com</a> ).
<b>Functions:</b>	Graphical Hog 4 User Interface including an extensive fixture library set of all leading manufacturers of DMX, Art-Net or E1.3.1 (sACN) capable devices, derived from Hog 3 User Interface. Grouped configuring and programming, divided into Intensity, Position, Color, Beam. A rich set of Grouping- and Fanning functions. Calibrated Colour Matching System with Color Picker and Gel Charts. Separate Fade, Delay and Effect Times for each individual fixture, parameter and value. Excellent networking capabilities in conjunction with multiple DP 8000 Processors and additional consoles of the Hog 4 family guarantees fast and effective operating conditions across all consoles. Effects Engine with individual control of each Effect Parameter, e.g. Timing, Size, Offset and many more. Can be modified and extended with Effect Templates. Rapid and easy setup of Art-Net outputs, to connect additional devices like multimedia controllers. Midi Control (MC) or Open Sound Control (OSC) messages allows remote control via Smartphone or Tablet PC's, e.g. via „TouchOSC“ Application. Fixed Kinds and User Kinds for linked parameters. Pin Code Lock function with a 4-digit PIN to prevent unauthorized access. A Backup Button on right screen's main toolbar will quickly generate a backup copy of your show file. Saving a show on USB Stick, CD or Hard disk drive is supported.

More data on the next page.



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 Web: <http://www.hog4.de>



# Road Hog 4 Console

## Technical Data Sheet

<b>Circuit Points:</b>	4 × DMX 5-pin XLR isolated outputs on the back 1 × LAN 1000BaseTX GigaBit for Hog-Net on the back 1 × LAN 1000BaseTX GigaBit for Fixture-Net on the back 1 × USB on the top, 4 × USB on the back 1 × 24-pin DVI-I dual link connector on the back 1 × LED desk light on the top 1 × IEC power port on the back
<b>Electrical requirements:</b>	Mains in 90 - 250VAC, 50/60Hz, 2A maximum
<b>Compliances:</b>	CE, CETL, ETL.
<b>Dimensions and weight:</b>	67.8 × 20.9 × 70.1 cm (screens fix, w × h × d) 17.6 kg (unpacked)
<b>Order numbers:</b>	15.3300 Road Hog 4 Console 15.4430 Road Hog 4 Console Case 15.4100 Hog 4 Playback Wing 15.4110 Hog 4 Master Wing 15.4200 Hog 4 DMX Processor 8000 15.4210 Hog 4 Super Duper Widget 15.4220 Hog 4 Super Widget 15.4230 Hog 4 Single Widget 15.4240 Hog 4 SMPTE/LTC Widget

The delivery is carried out without road case, operational, incl. 1 × LED desklight, 1 × DVI to VGA adapter, dustcover, USB stick, power cable.  
12 months world wide warranty.

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grandMA3

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# grandMA2 light

Art.No.: 120112

120112 | grandMA2 light





The grandMA2 light has 4,096 parameters, 15 motorized executor faders and two touchscreens available. All further features and controls are identical to those on the grandMA2 full-size.

The grandMA2 light is the perfect tool to control all kinds of lighting genres like conventionals, moving lights, LEDs, video and media. It supplies an intuitive and fast control of all connected fixtures and channels. The grandMA2 light can handle an almost infinite number of presets, cues, pages, sequences and effects. It is ideally suited as a standalone console or as a backup device for the grandMA2 full-size. Moreover grandMA series 1-showfiles can be converted to be used with the grandMA2.

All grandMA2 consoles are optionally available as Silent Version with optimised fan for noise-sensitive environments.

## Features

- Real-time control for up to 65,536 parameters per session in connection with MA NPU (equivalent to 256 DMX universes)
- 4,096 HTP/LTP parameters
- 6 DMX outputs
- 2 internal TFT wide mode touchscreens (15.4" WXGA)
- 2 external TFT screens can be connected (UXGA, touchscreens accepted)
- 1 internal command screen – multi-touch (9" SVGA)
- 15 motorized executor faders
- Integrated keyboard drawer
- Built-in uninterruptible power supply (UPS)
- 2 etherCON connectors, 5 USB 2.0 connectors
- Motorized monitor wing
- 2 motorized A/B fader (100mm)
- Individually backlit and dimmable silent (clickless) keys

Supplied with

Technical Specifications

Accessories

## Supplied with



2x MA LED desk lamp  
grandMA2 angle plug 90°  
XLR 4pin, length 27"

Art.No.: 120122



1x Dust cover grandMA2  
light and ultra-light

Art.No.: 120132

Additional scope of delivery

built-in keyboard

## Technical Specifications

<b>Operating voltage/ Supply voltage</b>	120V/230V, 50/60Hz (automatic detection)
<b>Power</b>	350VA
<b>Dimensions</b>	935 x 204 x 652mm / 36.8 x 8 x 25.7inch
<b>Net weight</b>	37kg / 81.6lbs
<b>Output connectors</b>	<ul style="list-style-type: none"> <li>6 x XLR 5pin (DMX)</li> <li>2 x DVI (external monitor)</li> <li>2 x etherCON</li> <li>1 x MA Link (grandMA2 fader wing)</li> <li>5 x USB</li> <li>1 x DIN (MIDI)</li> <li>2 x XLR 4pin (desklight)</li> </ul>
<b>Input connectors</b>	<ul style="list-style-type: none"> <li>1 x XLR 5pin (DMX)</li> <li>1 x XLR 3pin (Sound)</li> <li>1 x XLR 3pin (SMPTE)</li> <li>1 x DIN (MIDI)</li> <li>1 x Sub-D 25pol (Analogue Remote)</li> <li>1 x powerCON</li> </ul>

# Accessories



grandMA2 fader wing  
Art.No.: 120121

[More details >](#)



MA NPU (Network Processing Unit)  
Art.No.: 130032

[More details >](#)



MA Case for grandMA2 light and ultra-light without wheels (by Amptown)  
Art.No.: 121038

[More details >](#)



MA Case grandMA2 light + ultra-light with wheels (by Amptown)  
Art.No.: 121037

[More details >](#)



MA LED desk lamp grandMA2 angle plug 90° XLR 4pin, length 27"  
Art.No.: 120122

[More details >](#)

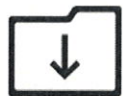


Dust cover grandMA2 light and ultra-light  
Art.No.: 120132

[More details >](#)

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LOOKING FOR ONLINE MANUALS?  
GET DETAILED INFORMATION ON HOW TO USE YOUR MA PRODUCT IN THE BEST WAY.



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## **4. PROYECTORES DE ILUMINACION**

TIPO 1.- SPOTS: VARILITE VL 3000 o R 15 Gold

TIPO 2.- BEAN; ROBE POINTE O R 15

TIPO 3.- WASH; MARTIN MAC AURA o WALLY 3715 ZOOM

TIPO 4.- FRESNEL ARRI 2 KW o DESISTI 2 KW

TIPO 5.- FRESNEL ARRI 1 KW O DESISTI 1 KW

TIPO 6.- RECORTE DE LED TRITON DMX, CUCHILLAS Y IRIS,ETC...

TIPO 7.- PAR LED WALLY 1915 RGBW ZOOM

BARRAS DE LEDS THOMAS PIXEL LINE 1044



# VL3000 Spot

l u m i n a i r e



The VARI\*LITE VL3000 Spot luminaire sets new standards for imagery, beam control, color and brightness in spot luminaires.

The VARI\*LITE VL3000 Spot luminaire features 6:1 zoom optics, CYM color mixing, variable CTO color temperature correction, a six-position color wheel, three gobo/effects wheels, a beam size iris and separate dimmer and ultra-fast strobe mechanisms. A standard pallet of gobos, effects and colors is provided with the unit. Custom gobos, effects and colors are available.

An upper enclosure houses the control electronics as well as the arc power supply for the 1200 watt short arc lamp. The arc power supply is power factor corrected for efficient power distribution.

The VL3000 Spot luminaire can be controlled from a wide variety of DMX512 consoles.

The luminaire is the same size as the VL3000 Wash luminaire, providing a consistent hang configuration and appearance no matter which luminaire type is required.

## Programmable Functions

<b>Color System:</b>	A three-filter CYM cross-fading mechanism. A fixed color wheel with six interchangeable color filters and continuous wheel rotation for additional effects. It includes a variable CTO color temperature correction filter.
<b>Zoom Optics:</b>	A 13-element 6:1 zoom optics system, covering a range from 10° to 60°.
<b>Beam Size Control:</b>	A mechanical iris provides continuous beam size control for rapid and smooth timed beam angle changes.
<b>Intensity Control:</b>	Full field dimming designed for smooth timed fades as well as quick dimming effects.
<b>Strobe:</b>	High-performance dual blade strobe system capable of ultra-fast operation.
<b>Rotating Gobo Wheels:</b>	Three gobo/effects wheels combine to provide 14 rotatable, indexable gobo positions. Each wheel also has one open position.
<b>Edge and Pattern Focus:</b>	Variable beam focus to soften edges of gobos or spots. Remarkable depth of field capability allows morphing effects between all pattern and effects wheels.
<b>Pan and Tilt:</b>	Smooth, time-controlled continuous motion by way of three-phase stepper motor systems.
<b>Range:</b>	Pan - 540°, Tilt - 270°.
<b>Accuracy:</b>	0.3° resolution.

## Description

<b>Source:</b>	1200W Short Arc Lamp	<b>Color Temperature:</b>	6000K
		<b>CRI:</b>	85
<b>Fixture Output:</b>	20,000 lumens.		
<b>Power Requirements:</b>	Standard AC power distribution from 200– 264 VAC, 50/60 HZ. The unit requires 7 to 12 A depending on the AC supply voltage.		
<b>Reflector:</b>	Precision glass reflector system with dichroic cold mirror coating.		
<b>Operational Temperature:</b>	-20° to 122°F (-29° to 50°C).		
<b>Cooling:</b>	Forced air cooling.		
<b>Control:</b>	Completely compatible with a wide variety of DMX512 consoles.		
<b>DMX Channels:</b>	28		
<b>Mounting Position:</b>	The VL3000 Spot luminaire can be mounted and operated in any orientation.		
<b>Spacing:</b>	Hangs on 26 in. (66 cm) centers.		
<b>Weight:</b>	91 lbs (41 kg).		

## Ordering Information

<b>Luminaires:</b>	
20.9678.0001	VL3000 Spot Luminaire, Black, Includes 1200W Short Arc Lamp
<b>Accessories:</b>	
71.9678.0012	1200W Short Arc Lamp
22.9620.0194	Safety Cable Assembly
28.8500.0054	USB Luminaire Programming Kit
55.6840.0001	Truss Hook, Mega-Clamp (For round and square pipe)
55.6841.0001	Truss Hook, Mega-Claw (For 2" round pipe)
PC1BE	AC Input Cable, PowerCon with Bare End (no connector), 1 Meter
PC1GTL208	AC Input Cable, PowerCon with Twist Lock (Male), 250V, 1 Meter

**PHILIPS**  
**VARI\*LITE**

# VL3000 Spot

## L u m i n a i r e

### Specifications

The unit is an integrally designed, remote-controlled, motorized spot luminaire. The head, yoke and enclosure housings are constructed of aluminum alloy for light weight, strength and durability. Low-noise fans provide forced-air cooling for internal components. The rear cap is hinged, providing easy access to the lamp for replacement.

A single AC input PowerCon connection along with two, five-pin DMX512 compatible connectors (in and through) are provided. The unit can be controlled from a wide variety of DMX512 consoles.

Each unit is equipped with an on-board processor providing diagnostic and self-calibration functions as well as internal test routines and software update capabilities.

The unit contains two independent three-phase stepper motors to provide movement of the head through 540° in the horizontal plane (pan) and 270° in the vertical plane (tilt). The pan and tilt mechanisms are belt-driven, providing positional resolution and repeatability of 0.3° on either axis.

A 6:1 zoom optics system adjusts the projected field angle over a range of 10° to 60°. Variable beam focus is provided to soften the edges of gobos or spots and to provide gobo morphing. The projected image remains in focus throughout the entire zoom range.

The unit contains a CYM color mixing system, as well as variable CTO color temperature correction.

One continuously spinning, removable color filter wheel is included. The color wheel holds six interchangeable dichroic colors to allow for custom configurations. The unit comes equipped with a standard palette of dichroic color filters. (Custom colors are available from Vari-Lite.)

Three gobo/effects wheels – two six-position, one five-position – each containing individually rotating, indexable gobos and patterned glass effects. The rotating gobos are easily interchangeable to allow customization of the unit. The unit comes equipped with a standard set of gobos and effects. (A wide selection of colored and patterned gobos and effects is available from Vari-Lite.)

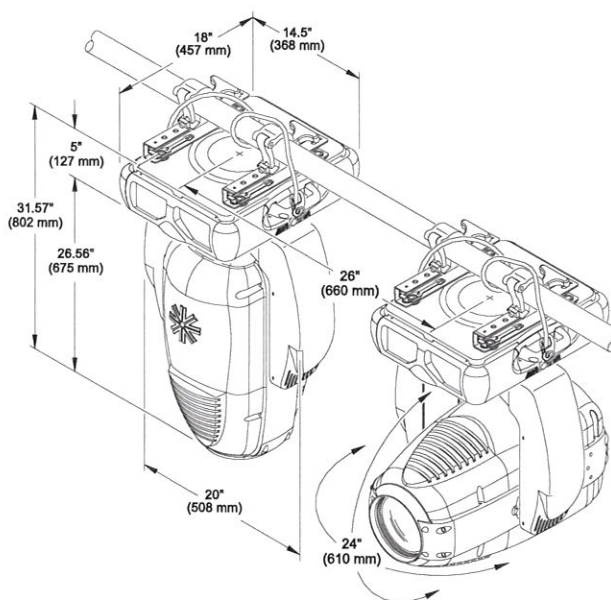
A mechanical iris provides continuous beam size control for rapid and smooth timed beam angle changes.

The unit contains a patterned glass dimmer wheel that provides full field dimming and allows for smooth timed fades and fast blackouts.

A dual blade strobe and dousing system provides variable strobe effects capable of rapid operation.

The unit shall be ETL and ETLc certified and CE-marked. Exterior finish is black.

### Hanging Dimensions



### Photometric Data\*

VL3000 Spot Luminaire - 1200W Metal Halide					
Zoom Lens Position	Candela* (cd)	Beam Angle (degrees)	Beam Diameter TN <sup>1</sup>	Field Angle (degrees)	Field Diameter TN <sup>1</sup>
NFOV	1,201,000	9.0	0.157	10.0	0.175
MFOV	104,400	31.0	0.555	35.0	0.631
WFOV	40,930	46.0	0.849	56.0	1.063

<sup>1</sup> Multiply distance by TN to determine coverage.  
 To calculate center beam illuminance (I), at a specific distance (D): I = cd / D<sup>2</sup>  
 — if (D) is in feet, (I) is in foot candles  
 — if (D) is in meters, (I) is in lux  
 \* Note:  
 All data taken with seasoned light source at 20 hours of life.  
 Fixture output = 20,000 lumens.



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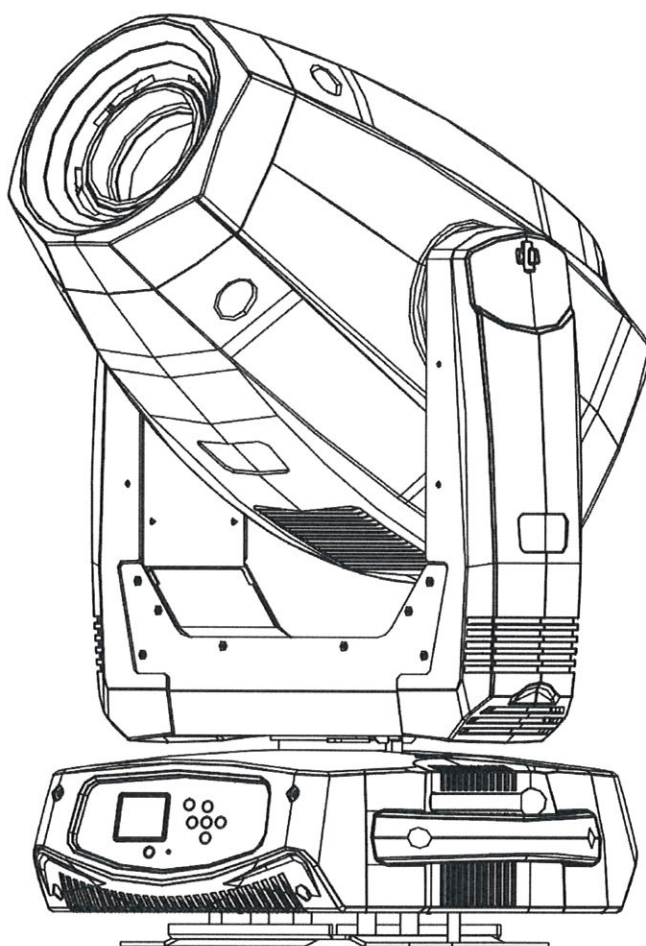
Vari-Lite  
 10911 Petal Street  
 Dallas, TX 75238  
 1.877.VARILITE  
 fax: 214.647.8038  
 www.vari-lite.com



VL3000\_Spot - 073013NA



***PROFESSIONAL LED MOVING HEAD USER MANUAL***



**15R SPOT**

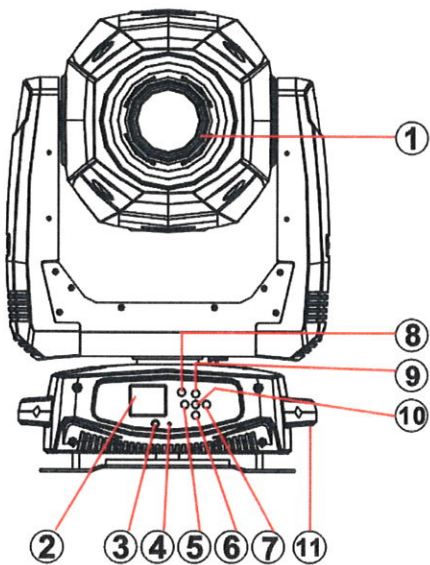
KEEP THIS MANUAL FOR FUTURE NEEDS



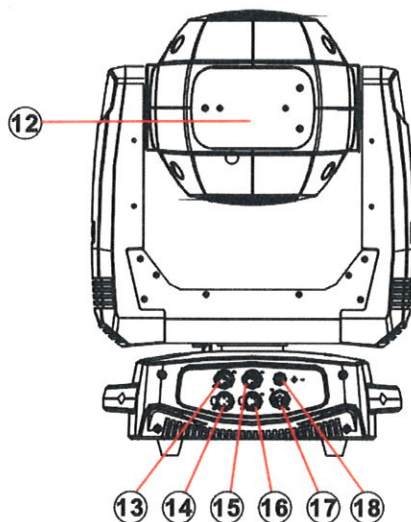


- Iris: motorized linear change from 5%~100%
- Stepless frost, 0%~100% linear change frost
- Zoom: 9°~27° linear zoom
- Control board with full color LCD graphic display and touch-keyboard
- Display: Can be changed 180° reverse to fit for different installation position.
- Strobe/shutter: High speed shutter, 0-13 Hz or random strobe
- Rechargeable Back up Battery for Display, no need external power supply, enable users to enter display menu for address setting or access other functions setting.
- Auto-program: 7 pre-built programs can be selected.
- Software-upload by optional accessory via DMX line

## 2. FIXTURE OVERVIEW



- 1: Lens
- 2: Display
- 3: DC Switch
- 4: Microphone
- 5: Left-button
- 6: Down-button
- 7: Right-button
- 8: Mode/Esc-button
- 9: Up-button
- 10: ENTER-button
- 11: Handle




- 12: Lamp bracket rear metal panel
- 13: 3-Pin DMX in
- 14: 3-Pin DMX out
- 15: 5-Pin DMX in
- 16: 5-Pin DMX out
- 17: Power supply
- 18: Fuse






### 3. SAFETY INSTRUCTIONS

#### 3.1) Important safety warns

	<b>CAUTION!</b> Be careful with your operations. With a dangerous voltage you can suffer a dangerous electric shock when touching wires!
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This device has left the factory in perfect condition. In order to maintain this condition and to ensure a safe operation, it is absolutely necessary for the user to follow the safety instructions and warning notes written in this user manual.

 **Important:**  
*Damages caused by the disregard of this user manual are not subject to warranty. The dealer will not accept liability for any resulting defects or problems.*

If the device has been exposed to temperature changes due to environmental changes, do not switch it on immediately. The arising condensation could damage the device. Leave the device switched off until it has reached room temperature.

This device falls under protection-class I. Therefore it is essential that the device be earthed.

If protection screen, lens or ultraviolet screen in the fixture is apparently damaged or is damaged to exceed their own effective degree, such as cracked and gashed, it must be replaced.

The electric connection must carry out by qualified person.

Make sure that the available voltage is not higher than stated at the end of this manual.


Make sure the power cord is never crimped or damaged by sharp edges. If this would be the case, replacement of the cable must be done by an authorized dealer.


Always disconnect from the mains, when the device is not in use or before cleaning it. Only handle the power cord by the plug. Never pull out the plug by tugging the power cord.

During initial start-up some smoke or smell may arise. This is a normal process and does not necessarily mean that the device is defective, it should decrease gradually.

Please don't project the beam onto combustible substances.

If the external flexible cable or cord of this luminaire is damaged, it shall be exclusively replaced by the manufacturer or his service agent or a similar qualified person in order to avoid a hazard.

	<b>CAUTION!</b> Never touch the device during operation! The housing may heat up
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	<b>CAUTION!</b> Never look directly into the light source, as sensitive persons may suffer an epileptic shock.
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**Please be aware that damages caused by manual modifications to the device are not subject to warranty. Keep away from children and non-professionals.**





GALLERY



## MAC Aura

The MAC Aura is an award-winning wash light that lighting designers have turned to the world over due to its versatility as a powerful beam and wash luminaire of the highest caliber. The result of out-of-the-box creative thinking, it is the first LED moving head wash light to combine multicolor beam LEDs with a backlight LED array that takes the synthetic look out of LED wash lights.

Single-lens wash with fully premixed color

Broad color palette, RGBW color mixing

Eye-candy Aura Effects™

### FEATURES

- Single-lens wash with fully premixed color
- Broad color palette, RGBW color mixing
- Eye-candy Aura Effects™
- Uniform shades
- Built-in FX engine
- 11 to 58° zoom
- 3850 Lumens output
- Rapid movement
- Compact, low weight design (5.6 kg)
- High efficiency, low power consumption, long lifetime

### TECHNICAL SPECIFICATIONS

#### Physical

Length: 302 mm (11.9 in.) across yoke

Width: 302 mm (11.9 in.) across yoke

Height: 360 mm (14.2 in.), head straight up

Weight: 5.6 kg (12.4 lbs.) without accessories

#### Dynamic Effects

Beam color mixing: RGBW

Aura (secondary lens array illumination) color mixing: RGB

Beam color temperature control: CTO, variable 10 000 - 2500 K

Beam and aura electronic 'color wheel' effect: 33 LEE-referenced colors plus white, variable-speed color-wheel rotation effect and random color

Beam and aura independent shutter effects: Electronic, with regular and random pulse, burst and strobe effects

Pre-programmed effects: Range of synchronized and independent beam and aura FX, different FX can be combined

Electronic dimming: Independent beam and aura, four dimming curve options

Pan: 540°

Tilt: 232°

Pan and tilt speed: Adjustable via onboard control panel and DMX

#### Control and Programming

Control options: Independent control of beam (primary output) and aura (secondary lens array illumination)

Macro programs selectable via DMX: Synchronized beam and aura effects

Control: DMX

RDM: Implemented

Control resolution: 8-bit, with 16-bit control of pan & tilt  
DMX channels: 14/25  
Setting and addressing: Control panel with backlit graphic display  
DMX compliance: USITT DMX512-A  
RDM compliance: ANSI/ESTA E1.20  
Transceiver: RS-485  
Fixture software update: Via DMX with Martin™ USB Duo DMX Interface Box

#### Optics

Zoom range: 11° - 58°  
One-tenth peak angle  
Light source: 19x 10W RGBW LED Array System  
LED refresh rate: Beam 1220 Hz, Aura 4395 Hz  
Minimum LED lifetime: 50 000 hours (to >70% luminous output)\*  
*\*Figure obtained under manufacturer's test conditions:*

#### Photometric Data

Total output: 3850 lumens (zoom at maximum)

#### Construction

Color: Black  
Housing: High-impact flame-retardant thermoplastic  
Protection rating: IP20

#### Installation

Mounting points: One M12 threaded hole for rigging clamp  
Location: Indoor use only, must be fastened to surface or structure  
Orientation: Any  
Minimum distance to combustible materials: 100 mm (4.0 in.)  
Minimum distance to illuminated surfaces: 200 mm (7.9 in.)

#### Connections

AC power input: Neutrik PowerCon  
AC power throughput: Neutrik PowerCon  
DMX and RDM data in/out: 5-pin locking XLR

#### Electrical

AC power: 100-240 V nominal, 50/60 Hz  
Maximum total power consumption: 260 W  
Power supply unit: Auto-ranging electronic switch mode  
Main fuse: 5 AT (slow blow)  
Typical power consumption, all effects static, zero light output: <15 W

#### Typical Power and Current

100 V, 60 Hz: 236 W, 2.4 A, PF 0.994  
120 V, 60 Hz: 234 W, 2.0 A, PF 0.992  
208 V, 60 Hz: 229 W, 1.2 A, PF 0.970  
230 V, 50 Hz: 228 W, 1.1 A, PF 0.959  
240 V, 50 Hz: 228 W, 1.0 A, PF 0.953

*Measurements made at nominal voltage with all LEDs at full intensity. Allow for a deviation of +/- 10%.*

#### Thermal

Cooling: Forced air (temperature-regulated, low noise, user-definable levels)  
Maximum ambient temperature (Ta max.): 40° C (104° F)  
Minimum ambient temperature (Ta min.): 5° C (41° F)  
Total heat dissipation (calculated, +/- 10%): 880 BTU/hr.

#### Approvals

EU safety: EN 60598-2-17 (EN 60598-1), EN 62471  
EU EMC: EN 55103-1, EN 55103-2, EN 55015, EN 61547  
US safety: UL 1573  
US EMC: FCC Part 15 Class A  
Canadian safety: CSA E598-2-17 (CSA E60598-1)  
Canadian EMC: ICES-003 Class A  
Australia/NZ: C-TICK N4241

#### Included Items

M12 bolt suitable for use with Martin rigging clamps  
User manual: P/N 35000254

#### Accessories

3 m power cable, 12 AWG, SJT, with PowerCon NAC3FCA power input connector: P/N 11541503  
Neutrik PowerCon NAC3FCA power input connector, cable mount, blue: P/N 05342804  
Neutrik PowerCon NAC3FCB power output connector, cable mount, light grey: P/N 05342805  
Power relay cable with PowerCon connectors, 1.4 m (4.6 ft.): P/N 11850099  
Power relay cable with PowerCon connectors, 2.25 m (7.4 ft.): P/N 11850100  
Set of 5 quick-mount surface mounting brackets: P/N 91606017  
G-clamp: P/N 91602003  
Quick trigger clamp: P/N 91602007  
6-unit flightcase for MAC Aura: P/N 91515020  
Half-coupler (tube) clamp: P/N 91602005

#### Optical Accessories

MAC Aura / Aura XB Soft Lens Kit: P/N 91611730

#### Related Items

Martin USB Duo™ DMX Interface Box: P/N 90703010  
Martin RDM 5.5 Splitter™: P/N 90758150

#### Ordering Information

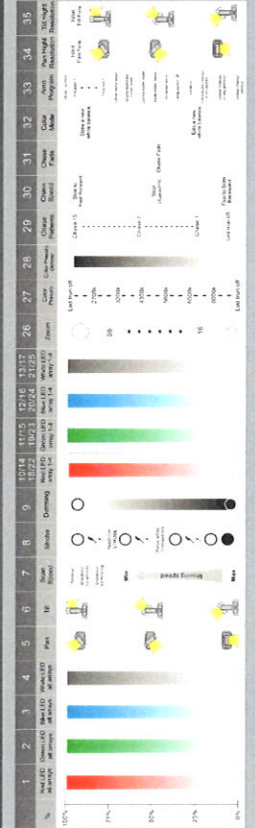
MAC Aura™ in cardboard box: P/N 90232000  
MAC Aura™ in 6-unit flightcase: P/N 90232010  
MAC Aura™, white finish, in cardboard box\*

*\*Available by special order - please contact your Martin™ supplier for details:*



LED MOVING HEAD

# OK370Z-R II



## QUAD LED SERIES



### OPTICS

- 37 x 15W high power LEDs
- RGBW 4 in 1 LED make extremely even and smooth color mixing effect
- Extremely Long Life: 50,000H and low power consumption

### MOVEMENT

- Pan movement: 540°/630° optional (16 bit)
- Tilt movement: 265° (16 bit)
- Advanced moving system: fast, stable and quiet, auto X-Y repositioning

### COLORS

- Excellent color mixing and rainbow effect
- Color temperature linear adjust from 2700K to 8000K, preset color temperature scenes with : 2700K, 3200K, 4300K, 5600K, 6500K, 8000K options

### FEATURES

- 3 Control channel modes: 35/19/49 channels
- 3 operational modes: DMX-512, Master/Slave & Sound Active
- Beam angle: zoom from 16°-56°
- Ring control: can make extremely chasing effect
- Strobe effect with 1-25 flashes per second and pulse effect
- General dimming and blackout for all four colors
- Wireless receiver pre-installed

### DISPLAY

- Friendly touch full color LCD display, with rechargeable battery
- locked automatically after 15 seconds from the last button press to prevent incorrect operation, long press menu button for 3 seconds to activate keys again
- Humanized reset detection set: long press menu and enter button to lock pan/tilt/ reset, can support fixtures do the reset detection in flight case

### SOFTWARE

- 7 pre-built programs can be selected
- the speed of internal programs are adjustable
- Remote DMX addressing, lamp on/off, reset, sound control switch by controller
- Software upgrade: can be called up via DMX controller or through DMX cable conveniently, quickly upgrade software

### OTHER SPEC.

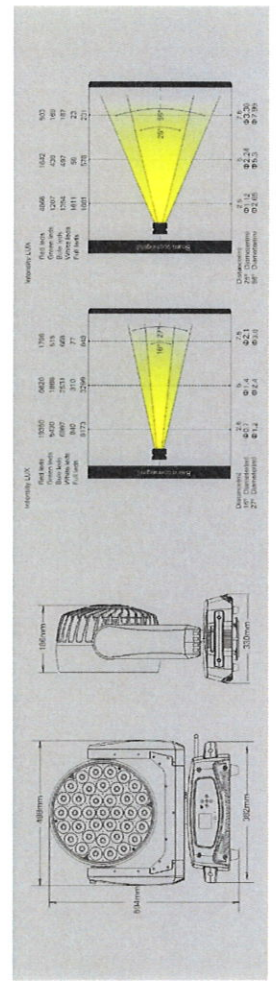
- Advanced RDM function

### POWER

- AC100-240V 50/60HZ

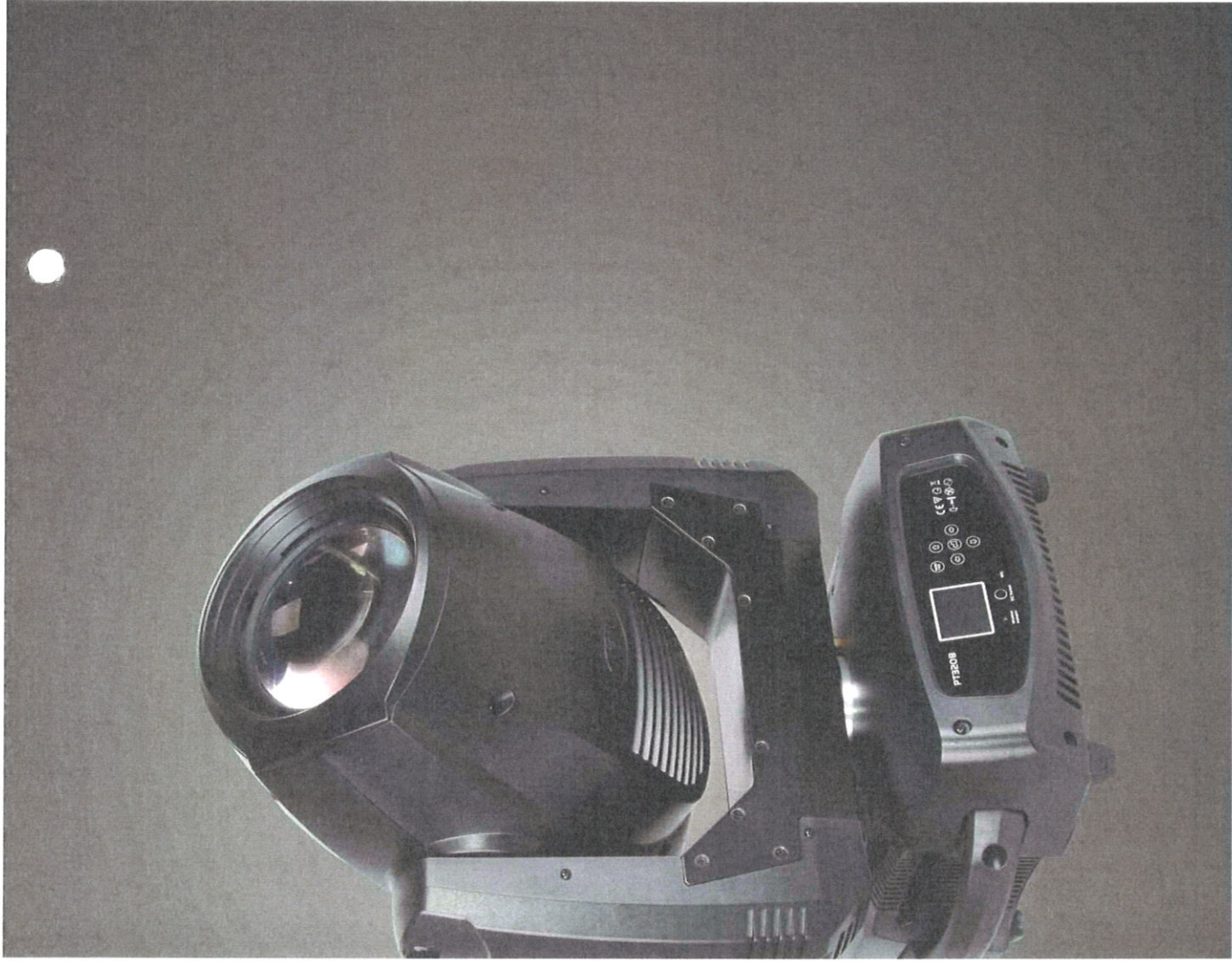
### DIMENSIONS AND WEIGHT

- Packing dimension: 70.5X60.5X43CM
- Net Weight: 22.5Kgs
- Gross Weight: 28.5Kgs



✦ Error and dimensions for every information in this catalogue is not checked. All measurements are subject to change without prior notice.





- Pan movement: 540°/630° optional (16 bit)
- Tilt movement: 270° (16 bit)
- Advanced movement system: fast, stable and quiet, auto X-Y repositioning

#### COLORS

- 1 Color wheel: 8 dichroic filters +open, rainbow effect

#### GOBOS

- 1 Rotating gobo wheel: 8 interchangeable, rotating, indexable, gobos+open
- 1 Static gobo wheel: 13 indexable gobos+open

#### FEATURES

- 3 Control channel modes: 16/14/22 channels
- Rotating prism: 8 facets prism(standard), 5 facets prism(optional) and prism macros
- Focus: motorized focus
- Shutter: Variable from 1-13 flashes or random strobe
- Dimming: 0-100% full range dimming
- Frost: 0-100%
- Beam angle: 1°-4,8°

#### DISPLAY

- Friendly touch full color LCD display, with rechargeable battery
- Locked automatically after 15 seconds from the last button press to prevent incorrect operation, long press menu button for 3 seconds to activate keys again

- 7 pre-built programs can
- Software upgrade: through upgrade software
- Remote DMX addressing: controller

- Display the fixture and know the situation about

#### OTHER SPEC.

- Signal isolation protect is very stable and without
- High temperature automatically as fixture to guarantee fixture safe
- Optional Built-in wireless:
- Advanced RDM function

#### POWER

- AC100-240V, 50/60HZ

#### DIMENSIONS AND WEIGHT

- Packing dimension: 66 x
- Net Weight: 22.5kgs
- Gross Weight: 25.5kgs

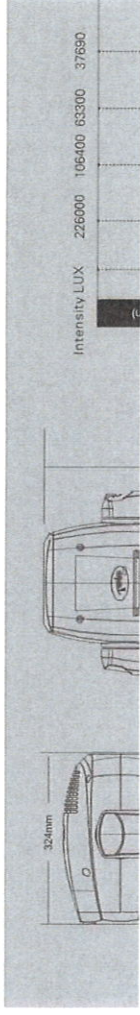
#### Colors



#### Rotating Gobo Wheel



#### Fixed Gobo Wheel









**LIGHT SOURCE**

Osram Sirius HRI 280W RO

**LIGHT OUTPUT**

Beam mode: 9.870 lm, 82.400 lx @ 20 m; Spot mode:  
5.150 lm, 90.000 lx @ 5 m

**ZOOM RANGE**

2,5° - 10° Beam mode, 5° - 20° Spot mode

**EFFECTS**

rotating and static gobo wheel, circular 8-facet and  
linear 6-facet prism

(<https://cdn.robe.cz/fileac>



# TECHNICAL specification

## SOURCE

- Lamp: Discharge short arc lamp with integrated reflector
- Approved model: Osram Sirius HRI 280 W RO
- Lifetime: Standard mode (280 W) - 2.000 hrs, Eco mode (230 W) - 3.000 hrs
- CRI: 75
- CCT: 7000 K
- Control: Automatic and remote on/off
- Ballast: Electronic

## OPTICAL SYSTEM

- Robe's proprietary optical design
- Zoom range:
  - 2.5°-10° beam application
  - 5° - 20° spot application
- Output lens diameter: 110 mm
- Fixture total lumen output:
  - Beam mode: 9.870 lm
  - Spot mode: 5.150 lm
- Light output:
  - Beam mode: 82.400 lx @ 20 m
  - Spot mode: 90.000 lx @ 5 m

## DYNAMIC EFFECTS

- Colour wheel: 13 dichroic filters + white
- Rotating Gobo wheel: 9 rotating, indexable and replaceable "SLOT&LOCK" glass gobos + open
- Static Gobo wheel: 14 gobos + open

- Prism 1: 8-facet circular prism rotating in both directions at different speeds
- Prism 2: 6-facet linear prism rotating in both directions at different speeds
- Frost effect: Separate, variable
- Motorized zoom and focus
- Pre-programmed random strobe & pulse effects
- Dimmer: 0 - 100%

## **CONTROL AND PROGRAMMING**



- Setting & Addressing: ROBE Navigation System 2 (RNS2)
- Display: QVGA Robe touch screen with battery backup, gravitation sensor for auto screen positioning, operation memory service log with RTC
- 3-editable programs, each up to 100 steps
- Stand-alone operation
- Protocols: USITT DMX-512, RDM, ArtNet, MA Net, MA Net2, sACN
- Wireless CRMX™ technology from Lumen Radio: On request
- DMX Protocol modes: 3
- Control channels: 24, 16, 30
- Pan/Tilt resolution: 8 or 16 bit
- Colour wheel positioning: 8 or 16bit
- Rotating gobo wheel positioning: 8 bit
- Gobo indexing & rotation: 8 or 16bit
- Static gobo wheel positioning: 8 bitt
- Frost: 8 bit
- Zoom: 8 or 16bit
- Focus: 8 or 16bit
- Dimmer: 8 or 16bit

## **MOVEMENT**



- Pan movement: 540°
- Tilt movement: 270°
- Controllable speed of Pan/Tilt movement

## **ROTATING GOBOS**



- Glass gobos: 9 rotating gobos
- Outside diameter: 15.9 mm
- Image diameter: 12.5 mm
- Thickness: 1.1 mm
- High temperature borofloat or better glass
- "SLOT&LOCK" system for easy replacement of gobos

## **STATIC - BEAM GOBOS**



- Aluminium wheel with fixed gobos: 10 gobos & 4 beam reducers

## THERMAL SPECIFICATION

- Maximum ambient temperature: 45°C (113°F)
- Maximum surface temperature: 90°C (194°F)

## ELECTRICAL SPECIFICATION AND CONNECTIONS

- Power supply: Electronic auto-ranging
- Input voltage range: 100-240 V, 50/60 Hz
- Power consumption: 470 W at 230 V / 50 Hz
- Power in connector: Neutrik powerCON
- DMX and RDM data in/out: Locking 3-pin & 5-pin XLR
- Ethernet port in/out: RJ45

## APPROVALS

- CE Compliant
- cETLus Compliant

## MECHANICAL SPECIFICATION

- Height: 575 mm (22.6") - head in vertical position
- Width: 364 mm (14.3")
- Depth: 250 mm (9.8")
- Weight: 15 kg (33 lbs)

## RIGGING

- Mounting points: 2 pairs of ¼-turn locks
- 2x Omega adaptors with ¼-turn quick locks
- Universal operating position
- Pan and Tilt transport locks
- Safety cable attachment point

## INCLUDED ITEMS

- User Manual
- Power cord including powerCON In connector

## ACCESSORIES

- Lamp Osram Sirius HRI 280W RO: 14080047-01
- Doughty Trigger Clamp: 17030386
- Safety wire 35 kg: 99011963
- Single Top Loader Case: 10120140-01

- Dual Top Loader Case: 10120146-01
- Quad Top Loader Case: 10120139-01
- Foam Shell: 20020191

## LEGAL



- Pointe® is a registered trademark of Robe lighting s. r. o.
- Pointe® is patented by Robe lighting s. r. o. and is protected by one or more pending or issued patents



# gobos & colours

## Rotating Gobo Wheel



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## Colour Wheel



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## Fixed Gobo Wheel



	Quantum wash	wally 3715z	M46 WAH	Mac Aura
LONGITUD	452mm	330	290mm	302mm
ANCHURA	431mm	498	189mm	302mm
ALTURA	581mm	594	360mm	360mm
PESO	21Kg	14Kg	7.1Kg	5.6Kg
MEZCLA DE COLORES	RGBW	RGBW	RGBW	RGBW
ZOOM	MOTORIZADO	MOTORIZADO	MOTORIZADO	MOTORIZADO
PAN	540	540	540	540
TILT	270	265	200	232
CONTROL	DMX	DMX	DMX	DMX
DMX CANALES	39/17	13/26/155	14	14/25
FUENTE DE LUZ	50X15W	37X15W	12X10W	19X10W
ZOOM	11-53	10/40	10-60	11/58
AC POWER	120-240V	100-240W	100-240V	100-240V
POTENCIA a 230v 60hz	856w	650w	150w	260w
TOTAL SALIDA	11100 LUMENS	11900 LUMENS	1500 LUMENS	2900 LUMENS

	RUSH MH3	15R BEAM	MH7 HYBRID	15R SPOT	VI.3000
LONGITUD	418mm	321.8mm	301mm	391mm	368mm
ANCHURA	321mm	384.8mm	408mm	419mm	457mm
ALTURA	489mm	534.8mm	644mm	645mm	802mm
PESO	20.5Kg	19Kg	24Kg	22.5Kg	41Kg
COLOR CMY	NO	NO	NO	SI	SI
RUEDAS COLORES	RUEDA DE 14 COLORES	RUEDA DE 12 COLORES	RUEDA DE 10 COLORES+CTO, CTB, UV	RUEDA DE 6 COLORES	RUEDA CON 6 COLORES
RUEDA DE GORODS ROTATORIOS	NO	8 GOBOS	8 GOBOS	8 GOBOS	14 GOBOS
PRISMA	17 GOBOS ESTATICOS	23 GOBOS	12 GOBOS	14 GOBOS	NO
ZOOM	8-FACET	PRISMA 3 FACET Y MICRO-PRISMA	8 FACET CIRCULAR Y 4 FACET LINEAL	8 FACET CIRCULAR	NO
FOCUS	MOTORIZADO	NO	MOTORIZADOS	MOTORIZADOS	MOTORIZADOS
PAN	MOTORIZADOS	MOTORIZADO	MOTORIZADOS	MOTORIZADOS	MOTORIZADOS
TILT	540	540	540	540	540
LAMPARA	220	265	250	270	270
TEMPERATURA DE COLOR	Philips MSD Platinum 5R	PHILIPS MSD PLATINUM 15R	PHILIPS PLATINUM 11R	PHILIPS 15R PLATINUM	OSRAM HMI 1200W/S
CANALES DMX	8000K	8000K	7800 K	8000K	6000K
ZOOM BEAM MODE	19	15/13/20	21	21/23/34	28
ZOOM SPOT MODE	1/3,8	3	2,2/2,4	no	NO
ZOOM WASH MODE	NO	NO	2,5/2,4	9/27	10/60
AC POWER	NO	NO	15/45	no	NO
POTENCIA	100-240V	100-240V	100-240V	100-240V	180/264V
	350W	300W	380W	300W	1500W

<b>Robe Pointe</b>
250mm
3644mm
575mm
15kg
NO
RUEDA 13 COLORES
9 GOBOS
14 GOBOS
8 FACET CIRCULAR Y 6 FACET LINEAR
MOTORIZADOS
540
270
OSRAM SIRIUS HRI 280W RO
16/24/30
2.5/10
5/20
NO
100/240V
470W

# PIXELline 1044 *convection cooled* (IP 65)

## PART NUMBERS

IP65 Unit  
(hard wired dmx)

PLB1044-2A9A702 (SILVER)

## FEATURES

### Light Source

- 1044 high intensity, 5mm, red, green and blue LED's
- High quality, highest color binning
- LED beam angle 20 degrees conical
- 16.6 million color permutations
- 18 cells of resolution

### Preset Programming

- Onboard digital micro-processor accessible from remote user interface that provides: Access to 2 sets of internal effects with up to 31 effects on each set. Variations of speed, intensity, level, and crossfade rate for each effect. High speed strobing up to 28 frames per second (variable up to 10 min)

### Control

- 4 digit alpha-numeric display indicates fixture address & other menu functions
- DMX 512 input and output via 5 pin xlr standard
- R.D.M. ready
- Slave (dmx) mode and master (outputs dmx) mode
- Selectable internal or external operating modes (via onboard user interface)
- Selectable DMX address
- Master intensity controlled via DMX input or adjusted in stand alone mode
- Default factory reset (simple two button reset)
- Personality "selectable resolution" (3, 6, 9, 18, 27 or maximum 54 channel control)
- Self test function

### Diagnostics

- Four blue LEDs provide status information on: Power, data present, master and slave mode. (Indicators are located on remote user interface)

### Cooling

- Proprietary patent pending heat management system, based around a substantial heatsink construction
- Integral fans controlled via electronic sensing
- Low air pressure / low noise design

### Construction

- Robust construction suited for both permanent and temporary applications

### Finish

- Anodized Silver (other colors and finishes available)

### Weight

- Fixture: 24lbs (11 Kg)

### Dimensions

- 4.54" (115mm) wide x 9.12" (232mm) deep x 49.6" (1260mm) long

### Electrical

- Auto ranging 100-240 vac power supply
- 50-60 hz
- 16amp Cee Form 2 pin and earth trailing plug fitted as standard to 1.5 meter mains tail

### Power Consumption

- 175 watts on full intensity @ 120 volts
- 165 watts on full intensity @ 240 volts
- Standby power 22 watts @ 120 volts
- Standby power 7 watts @ 240 volts



## ACCESSORIES

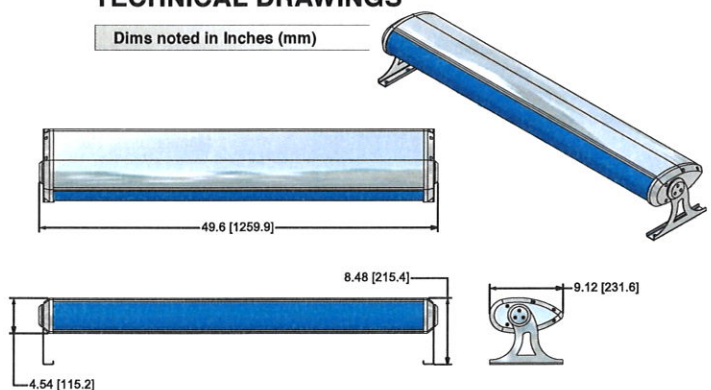
### Description

- A range of beam shaping holographic films are available. The films slot into the front accessory slot of the pixelline series of products. Various other beam shaping filters are available to order.

Order Code	Description
PLB1X902410	10 degree homogenizing film, - smoothes out beam to provide uniform coverage at 10 degrees.
PLB1X20PC10	20 degree film
PLB1X30PC10	30 degree film
PLB1X0.2X40PC10	0.2 x 40 degree film
PLB1XPPP47535	30 x 75 degree film
PLB1X60PE5	60 degree film
PLB1X60X1PC10	6 x 1 degree film
PLB1X80PE5	80 degree film

## TECHNICAL DRAWINGS

### Dims noted in Inches (mm)



10240 Caneel Dr. • Knoxville, TN 37931 USA • (865) 692-3060 • fax (865) 692-9020  
e-mail: salesus@jthomaseng.com

Navigation Complex • Navigation Road • Diglis Trading Estate, Worcester • Worcs. WR5 3DE. United Kingdom  
TEL. (0)1905 363600 • FAX. (0)1905 363601 • e-mail: info@jamesthomas.co.uk

JAMES  
**Thomas**  
ENGINEERING  
www.jthomaseng.com

PixelRange LED luminaires provide the most advanced LED lighting technology available. These compact, high output fixtures are designed for dynamic projection and colorful wash lighting. These fixtures, that are easy to install and maintain, are a perfect complement to both interior and exterior applications.

## Advanced heatsink design

The patent pending heat management system is designed to provide a maximum of heat dissipation from the buildup within the LED array. This is achieved by mounting the LED PCBs to a custom designed heat sink with a dielectric material designed to efficiently transfer the heat from the LED array. This system improves the long-term performance of the LEDs and ensures that all of the PixelRange products will have a long and reliable life while maintaining the highest possible lumen output from the LEDs. Minimal heat is projected from the beam of light.

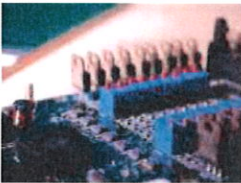


## Universal interface

Every PixelRange product features our standard universal user interface, which provides the user with access to various operating modes and personalities. This allows the fixture to be set to suit a particular application. Each fixture is capable of independent operation, with recall of up to 961 internal pattern / color sequences. It is also possible to setup a fixture to act as a master unit, controlling other fixtures connected to the data line. The unit can also be set to slave mode, to receive dmx data.

## Cutting edge LED array

Every PixelRange product uses only the highest quality LEDs which have been selected with the most stringent color selection available to insure the user a uniformity of colors. The PCBs have been designed to provide exceptional light output from each fixture.

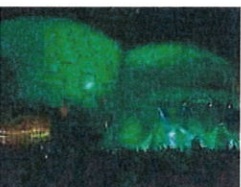


## Power Supply

Each self contained PixelRange product has a superior quality and rated power supply that has been carefully matched to the high efficiency electronics. This design process insures the operation of the power supply is well within its optimal output and eliminates the need to overdrive and thereby shorten operating life of the fixture and components.

## Inherent Quality

The design detail within each PixelRange fixture will provide you with a quality product providing peace of mind and maintenance free operation. Excellence is maintained through the use of high quality components designed for long-term performance even under the continuous operating requirements of 24/7. Given the internal design detail of the PixelRange, we provide up to a year return base warranty as standard across the entire product range. James Thomas Engineering's PixelRange was recently awarded Lumileds Certified Luminaire Manufacturing status in recognition of meeting their design and build criteria.



## Environmental Issues

Every PixelRange product consumes up to 90% less electricity to operate compared to incandescent light sources. By choosing PixelRange you are choosing a product which is both easy to setup and is low in maintenance. You are doing your bit for the environment by helping reduce electrical consumption, aiding the reduction in carbon emissions.

## PixelDrive

Pioneering the convergence of lighting with video, PixelDrive acts as an interface between a dmx lighting desk, as well as being able to run without a desk, this program has been designed with the PixelRange line of fixtures. PixelDrive treats each PixelRange fixture as a pixel of RGB and Amber. This program unlocks the creative potential to explore new and innovative ways of building lighting sequences of multiple dmx universes with playback of up to 20 layers of control. PixelDrive comes as standard with Radlite which expands upon the video control, further enhancing operation to include video output (free PixelDrive evaluation software is available by registering at our website).



\*Available in both PC and Mac versions.



## Proyectores Mini Recorte Triton Blue LED COB 20W



T20-51-3200 (5° Negro)



T20-52-3200 (5° Blanco)



T20Z1-1530-3200 (15°-30° Negro)



T20Z2-1530-3200 (15°-30° Blanco)



T300-3200-2550. Zoom 25°-50°



T300-3200-2550. Zoom 15°-30°

### Proyectores recorte LED COB 20W

- Potencia: 20W.
- Temperatura de color: 3200K.
- Reproducción de color: CRI:  $\geq 96$  Ra.
- R9:  $\geq 95$ . TLCI  $\geq 95$ .
- Apertura de haz: Grado fijo 5° y Zoom 15°-30°.
- Admite gobos fijos montados en porta gobos suministrado.
- Cuchillas de ajuste de salida de luz.
- Colores: Cuerpo negro o blanco.
- Protección IP: IP65.
- Peso: 1,6 kg.

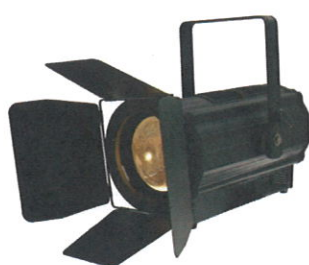
### Proyectores recorte LED COB 300W Zoom 25°-50 y Zoom 15°-30°

- Fuente de luz: LED de 300W.
- Temperatura de color: 3200°K.
- Color: Ra $\geq 96$ , R9 $\geq 95$ , TLCI $\geq 95$ .
- Luminosidad: 18500 Lm.
- Dimmer lineal 0-100% (16 Bit lineal).
- Para gobos de metal tamaño B (gobos y porta gobos no incluido).
- DMX512 (1 canal) y control manual.
- Frecuencia de refresco: 31.25 kHz.
- Entrada: AC 100/230V, 50/60 Hz.
- Consumo: 320W (Full). Ventilador: silencioso.
- Temperatura de trabajo: -10° a 45°C.
- Protección ambiental: IP20.
- Anclaje mediante lira integrada.
- Posición de trabajo: cualquiera 360°.
- Alimentación: entrada/salida corriente mediante conectores PowerCON.
- Entrada y salida de señal DMX mediante conectores XLR de 3 pines.

### Proyector lente plana convexa LED COB 160 vatios 3200°K (blanco cálido)

#### Dotado con lente PC y Zoom motorizado DMX.

Panel de mando incorporado con pantalla LCD desplegable para selección de dirección DMX, selección de número de canales: 2, 3 ó 4. Con un CRI:  $\geq 95$  Ra. Movimiento Zoom 10°-35° control DMX. Con conexiones DMX IN y OUT a través de conectores XLR de 3 pin, toma de alimentación de entrada y salida mediante Powercon. Fuente de alimentación 100-240V / 50-60Hz. Consumo de energía de 160W. Con un sistema de enfriamiento mediante disipador de calor y ventilador silencioso. En acabado negro. Incluso con visera ajustable de 4 palas, porta filtros, soporte fijación y cable de alimentación powerCON.



T160Z-PC-3200




# Proyectores de gobos

## Proyectores de gobos con IP20 e IP65 equipados con LED de 15, 30, 40, 60 y 80W.

Algunos de los modelos tiene incorporado un sistema de rotación de gobos dando mayor versatilidad en las aplicaciones de estos proyectores.



### PROYECTORES DE GOBOS

	Referencia	Potencia	G. Rotativos	Protección
1	PG15ST	15W	NO	IP20
2	PG15R1	15W	SI	IP20
1	PG30ST	30W	NO	IP20
2	PG30R1	30W	SI	IP20
3	PG40R1IP	40W	SI	IP65
3	PG60R1IP	60W	SI	IP65
3	PG80R1IP	80W	SI	IP65



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[www.siluj.com](http://www.siluj.com) | [info@siluj.com](mailto:info@siluj.com) | Espacio producto: [www.siluj.net](http://www.siluj.net)

Calle la Raya, 110 - P.I. Trobajo del Camino

24010 LEÓN - Spain



## **5. REFUERZO DE SONIDO**

6 TOPS LINE ARRAY TURBOSOUND TFS 550 H  
2 SUBS TURBOSOUND TFS 550 L  
1 RACK LAB GRUPEN PLM 2000 X 3  
2 SISTEMAS DE STACADO Y VOLADURA TURBOSOUND TFS 550

### **EQUIPO DE SONIDO 60 PERSONAS**

2 ALTAVOCES MEYER UPM  
2 SOPORTES GRAVITY PARA UPM  
1 MESA DIGITAL YAMAHA  
3 MICROFONOS DE CUELLO DE CISNE SHURE MX SERIES  
1 MICROFONO DE ATRIL SHURE MX SERIES  
1 FUENTE DE REPRODUCCION CD O PC

### **EQUIPO DE SONIDO 100 PERSONAS**

4 ALTAVOCES MEYER UPM  
4 SOPORTES GRAVITY PARA UPM  
1 MESA DIGITAL YAMAHA TF SERIES  
5 MICROFONOS DE CUELLO DE CISNE SHURE MX SERIES  
1 MICROFONO DE ATRIL SHURE MX SERIES  
1 FUENTE DE REPRODUCCION CD O PC

### **EQUIPO DE SONIDO 150 PERSONAS**

6 ALTAVOCES MEYER UPM  
6 SOPORTES GRAVITY PARA UPM  
1 MESA DIGITAL YAMAHA TF SERIES  
10 MICROFONOS DE CUELLO DE CISNE SHURE MX SERIES  
1 MICROFONO DE ATRIL SHURE MX SERIES  
1 FUENTE DE REPRODUCCION CD O PC



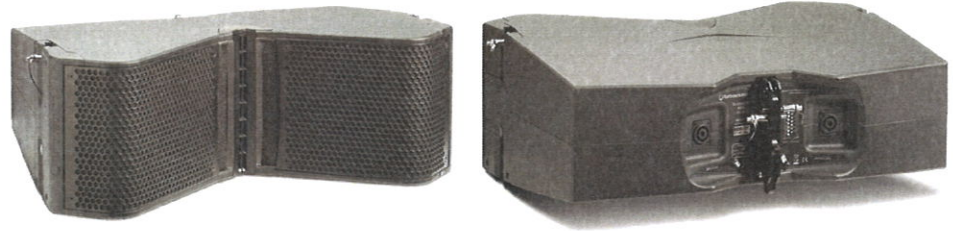
# TFS-550H compact 3-way bi-amped line array

## Features

- Bi-amped three-way line array system
- Integrated flying hardware
- Fly up to 16 cabinets deep
- Lightweight polyurethane composite enclosure
- Neodymium drive units
- Combined Dendritic/ Polyhorn waveguide
- Speakon NL4 connectors
- 110° horizontal dispersion  
Constant phase wavefront

## Applications

- Live concert sound
- Fixed installations
- Theatre
- House of Worship
- Corporate A/V



The small format TFS-550H Flashline Mini line array is a compact three-way bi-amped line array loudspeaker consisting of a proprietary 1" high frequency compression driver on a Dendritic horn, a proprietary 4" high-mid frequency driver on a Polyhorn™ device, and two Turbo-loaded 6.5" low-mid frequency drivers.

In keeping with existing technologies deployed in the larger Flashline and Flex Array systems, the HF Dendritic waveguide features multiple hornlets with identical path lengths designed to give a flat constant phase wavefront with horizontal dispersion of 110°. When coupled to the horn, the waveguide shapes the spherical wave produced by the compression driver into the cylindrical wavefront that is a key component of line source array behaviour.

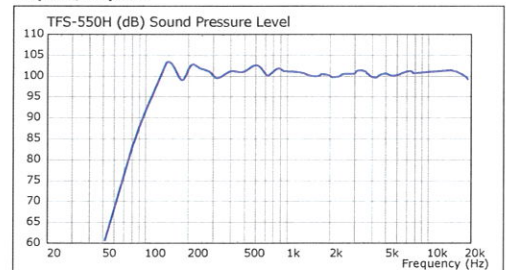
The cabinet is symmetrically loaded to create coplanar symmetry with smooth and consistent horizontal and vertical coverage, creating a co-linear source, the cylindrical domain equivalent of a coaxial arrangement for individual spherical sources. The cabinet is constructed using a polyurethane composite hard foam, making a very lightweight, rigid and non-resonant enclosure. In addition, the precise positioning of the neodymium drive units saves space within the enclosure and enables a very compact package.

Rigging hardware is fully integrated into the end-cheeks at the sides of the cabinet. It consists of drop links which engage into the flyware of the cabinet below, secured by captive pins, which stow away on the cabinet when not in use. The rear flyware provides a range of inter-cabinet splay angles from 0° to 12° in one degree increments. The FB-550 flybar provides multiple pickup points located along a central spine, and allows arrays of both mid/high enclosures and bass cabinets to be flown in a visually unobtrusive array. Two rear-mounted Speakon NL4 connectors provide input and link connections to the

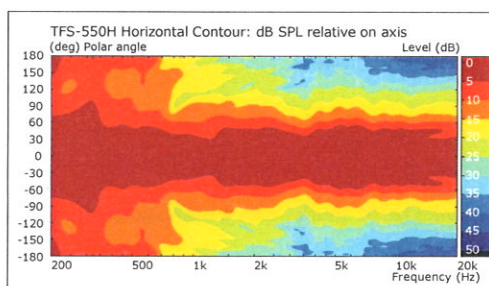
loudspeaker.

Recommended amplification is provided in the form of the highly advanced and extremely powerful 10000DP four channel amplifier with Lake processing and Dante networking built in. Please check the Turbosound website for module files/presets.

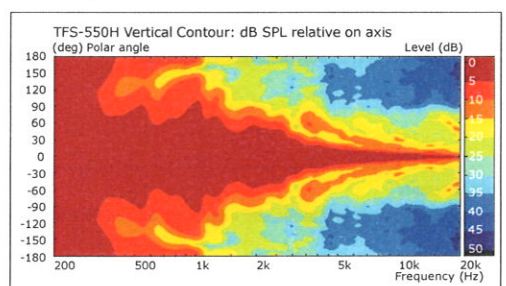
Frequency Response



Horizontal Contour



Vertical Contour



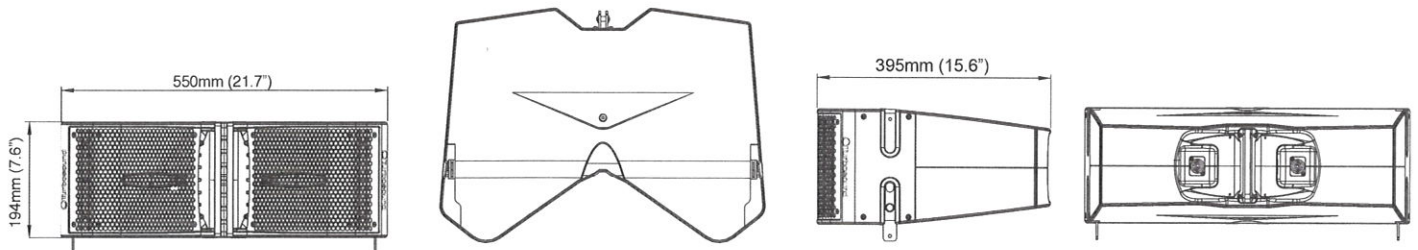
FLASHLINE  
MINI  
series

MUSIC Group IP Ltd.  
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Tortola, British Virgin Islands

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w: www.turbosound.com

# TFS-550H compact 3-way bi-amped line array

<b>DIMENSIONS (HxWxD)</b>	194mm x 550mm x 395mm (7.6" x 21.7" x 15.6")
<b>NET WEIGHT</b>	13.4kg (29.5lbs)
<b>COMPONENTS</b>	2 x 6.5" (165mm) LF drivers, 1 x 4" (101mm) MF driver, 1 x 1" (25.4mm) HF compression driver
<b>FREQUENCY RESPONSE</b>	80Hz – 20kHz $\pm$ 3dB
<b>NOMINAL DISPERSION</b>	110°H x 8°V
<b>POWER HANDLING</b>	LF: 100 watts continuous, 400 watts peak MF/HF: 60 watts continuous, 240 watts peak
<b>SENSITIVITY</b>	LF: 101dB, HF: 106dB (single enclosure)
<b>MAXIMUM SPL</b>	124dB continuous, 130dB peak
<b>IMPEDANCE</b>	LF: 8 ohms; MF/HF: 16 ohms
<b>CROSSOVER</b>	Internal passive crossover at 3k5Hz, 24dB/octave
<b>CONSTRUCTION</b>	Polyurethane composite hard foam
<b>GRILLE</b>	Powder-coated stainless steel
<b>FLYING HARDWARE</b>	Integrated
<b>CONNECTORS</b>	(2) NL4 wired pin1+ LF positive, pin1- LF negative; pin2+ HF positive, pin2- HF negative
<b>OPTIONS</b>	Black textured finish
<b>SPARES AND ACCESSORIES</b>	LS-6509 LF driver RC-6509 LF recone kit LS-4001 MF driver CD-124 HF compression driver RD-124 HF diaphragm FB-550 Flybar
<b>MORE INFO</b>	More information can be found on our website: <a href="http://www.turbosound.com">www.turbosound.com</a>



### Limited Warranty

For the applicable warranty terms and conditions and additional information regarding MUSIC Group's Limited Warranty, please see complete details online at [www.music-group.com/warranty](http://www.music-group.com/warranty)

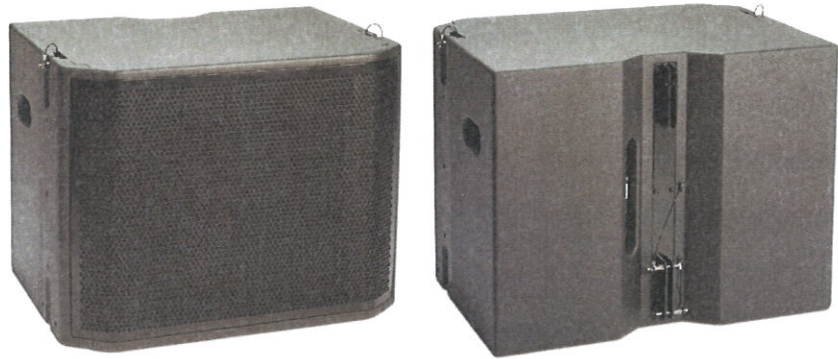
# TFS-550L compact flown subwoofer

## Features

- Flown bass enclosure
- Integrated flying hardware
- High power 12" driver
- Birch plywood cabinet
- Speakon NL4 connectors

## Applications

- Live concert sound
- Fixed installations
- Theatre
- House of Worship
- Corporate A/V



The TFS-550L is a compact flown low frequency enclosure designed to complement the TFS-550H Flashline Mini Line Array system, and consists of a single reflex-loaded 12" low frequency driver in a compact cabinet.

The TFS-550L is designed to be flown at the top of or alongside a Flashline Mini speaker hang, or be ground stacked, producing a small-footprint compact line array with exceptional output. For more demanding applications the TFS-550L would be supplemented by ground-stacked bass enclosures or subwoofers from the Turbosound range.

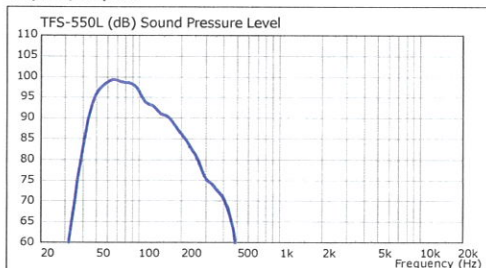
Rigging hardware is fully integrated into the sides of the cabinet and consists of drop links which engage into the flyware of the bass cabinet or TFS-550H enclosure below it, secured by captive rigging pins.

The birch plywood cabinet is finished in durable black semi-matt textured paint and is equipped with flush recessed handles on the sides. Two parallel-linked NL4 connectors provide input and link connections.

Recommended amplification is provided in the form of the highly advanced and extremely powerful 10000DP four channel amplifier with Lake processing and Dante networking built in. Please check the Turbosound website for module files and presets

**FLASHLINE**  
**MINI**  
series

## Frequency Response

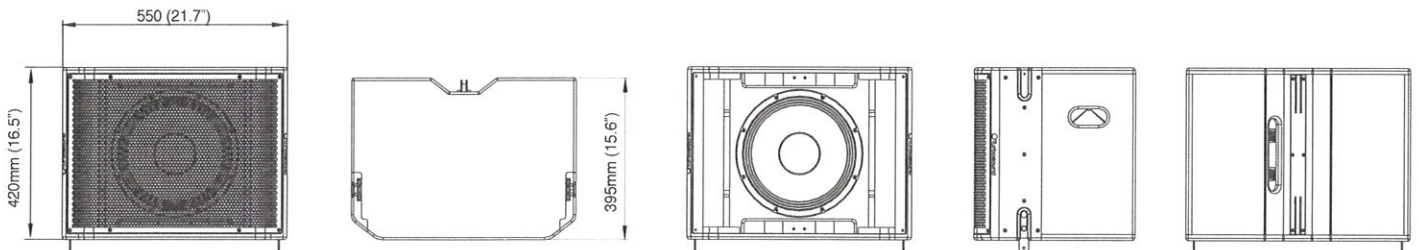


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# TFS-550L compact low frequency enclosure

<b>DIMENSIONS (HxWxD)</b>	420mm x 550mm x 395mm (16.5" x 21.7" x 15.6")
<b>NET WEIGHT</b>	27kg (59.5lbs)
<b>COMPONENTS</b>	1 x 12" (305mm) LF driver
<b>FREQUENCY RESPONSE</b>	40Hz – 150Hz ±3dB
<b>POWER HANDLING</b>	400 watts continuous, 1600 watts peak
<b>IMPEDANCE</b>	LF: 8 ohms
<b>SENSITIVITY</b>	98dB (half space)
<b>MAXIMUM SPL</b>	124dB continuous, 130dB peak
<b>CROSSOVER</b>	Recommended crossover point at 102Hz, 48dB/octave
<b>CONSTRUCTION</b>	Weather resistant coated plywood; two recessed carrying handles
<b>GRILLE</b>	Powder-coated stainless steel
<b>FLYING HARDWARE</b>	Integrated
<b>CONNECTORS</b>	(2) NL4, wired pin1+: positive, pin1-: negative; pin2+ and pin2-: n/c
<b>SPARES AND ACCESSORIES</b>	LS-1228 LF driver RC-1228 LF recone kit FB550 Flybar
<b>MORE INFO</b>	More information can be found on our website: <a href="http://www.turbosound.com">www.turbosound.com</a>



**Limited Warranty**

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# PLM 20K44 / PLM 12K44



## PLM+ Powered Loudspeaker Management System

The PLM+ range is the flagship touring platform by Lab.gruppen and sets the benchmark for Powered Loudspeaker Management Systems. PLM+ combines four channels of amplification with unrivalled signal processing and audio management, allowing complete integration in the devices and offering many unique functions not found in other amplifier and DSP "combined" platforms.

PLM+ has been designed with total integration at the core of the system, allowing complete control and monitoring of the whole platform ecosystem – including networking, audio I/O, signal processing, amplifiers, power supply and connected mains supply – delivering unique operational benefits and system control for the user via Lake Controller, CAFÉ and Third Party Protocol integration.

Building on the TEC Award winning PLM 20000Q, PLM+ offers 4 x 5000 Watts output power (PLM 20K44), twice the processing power and throughput, and a whole host of additional features and

improvements designed to offer real world benefits. PLM+ makes any production life cycle easier to specify, smoother to run, more efficient to control and monitor – at the system design stage, during the show, and right through to final load out. Proven at all levels of concert touring, the PLM+ series incorporates road tested and environmentally conscious technologies.

The PLM 12K44 offers a touring technology first: Rational Power Management (RPM™), a new proprietary Lab.gruppen innovation that rationalises power allocation between channels to optimise performance and potentially minimise amplifier inventory.

As with previous generations of PLM, the new PLM+ models benefit from the proven package of onboard Lake Processing and Dante™ digital audio networking, plus redundant audio inputs as well as onboard load monitoring to fulfill the requirements of mission-critical live sound applications, where the show must go on, no matter what.

## PLM+ Features and Benefits

- ▶ 4 x 3000 W nominal output power for a total of 12000 W (12K44)  
4 x 5000 W nominal output power for a total of 20000 W (20K44)
- ▶ Any channel is capable of delivering up to 5900 W power output, from total available power
- ▶ 2U chassis weighing only 16.5 kg (12K44), 17 kg (20K44)
- ▶ Four 'Lake Class' analog inputs with Iso-Float™ ground isolation
- ▶ Two AES3 on XLR digital inputs (4 audio channels)
- ▶ Eight dual-redundant Dante network audio inputs and outputs
- ▶ Compatible with PLM, Lake, LM Series and D Series
- ▶ Rational Power Management (RPM) - Flexible power output allocation across channels of the 12K44 model to match requirements, enabling more efficient use of amplifier inventory
- ▶ Copper-finned Intercooler with transverse-mounted output devices
- ▶ Rugged - road tested construction
- ▶ Unique universal, Regulated Switch-Mode Power Supply (R.SMPS™) maintains stability despite mains voltage fluctuations
- ▶ Best-in-class Power Factor Correction (PFC) helps maintain full output during extended power bursts
- ▶ Current Draw Modelling (CDM™) reduces mains peak draw
- ▶ Breaker Emulation Limiter (BEL™) - Tailors PLM+ Series to the available mains distribution
- ▶ Under-Voltage Limiting (UVL) enables continued operation with mains voltage sags as low as 65 V
- ▶ Power Average Limiter (PAL) with software-controlled Breaker Emulation Limiter (BEL) prevents mains fuse tripping
- ▶ Amplifier Design: Class TD® output stage
- ▶ Digitally controlled and recallable 'amplifier gain' adjustable in 0.1 dB steps
- ▶ Digital output attenuation in 0.25 dB steps from -inf to 0 dB
- ▶ Digitally implemented, zero-overshoot Inter-Sample Voltage Peak Limiting (ISVPL) adjustable in 0.1 V steps from 17.8 to 194 V
- ▶ LoadSmart load verification
- ▶ Extensive loudspeaker preset database (LoadLibrary™)
- ▶ LoadPilot™, Dual Pilot tone Generating and Monitoring
- ▶ CAFÉ Integration
- ▶ Dante low-latency digital network included as standard
- ▶ Full support for Dante Controller
- ▶ Lake's exclusive classic/linear-phase/FIR speaker processing platform with four throughputs
- ▶ Group control with Raised Cosine™ MESA EQ™ asymmetric filters
- ▶ LimiterMax™ peak and RMS limiters
- ▶ Comprehensive clocking management system with low latency sample rate conversion
- ▶ Multiple and redundant inputs with programmable fallover
- ▶ Primary and secondary network connections
- ▶ High-resolution daylight viewable front-panel LCD display
- ▶ Moisture resistant silicone touchpad for front-panel display mode selection and menu navigation



# PLM+ SERIES: Technology Overview

## Proven Lab.gruppen Technologies

Reliability, durability, sound quality and pure power remain the fundamentals for any touring amplifier, and in this regard PLM+ rigorously maintains Lab.gruppen's industry-leading reputation. The amplifier output stages are the Lab.gruppen patented Class TD@ which couples the efficiency of Class D topologies to the sonic purity of Class A/B designs.

Equipped with the Intercooler cooling system, PLM+ amplifiers dissipate heat more effectively and eliminate "end of tunnel" output device over-temperature problems. PLM+ also offers a full suite of protection features, including thermal "show-must-go-on" limiting, short circuit protection, excessive average current limiting, sustained

VHF (very high frequency) protection, DC protection and voltage-and current-clip limiting. None of the limiters introduce slow, long term gain changes that can risk altering the balance of a tuned system.

A Breaker Emulation Limiter (BEL) prevents power interruption while Under-Voltage Limiting (UVL) allows continued operation despite severe voltage drops. The Regulated Switch Mode Power Supply (R.SMPS) connects to any mains supply in the world. The design also incorporates power factor correction (PFC) to reduce peak current draw from the mains. In addition, the inherent rail regulation maintains stable rail voltages during extended bursts; extreme low-frequency beats will not affect mid- and high-frequency headroom.

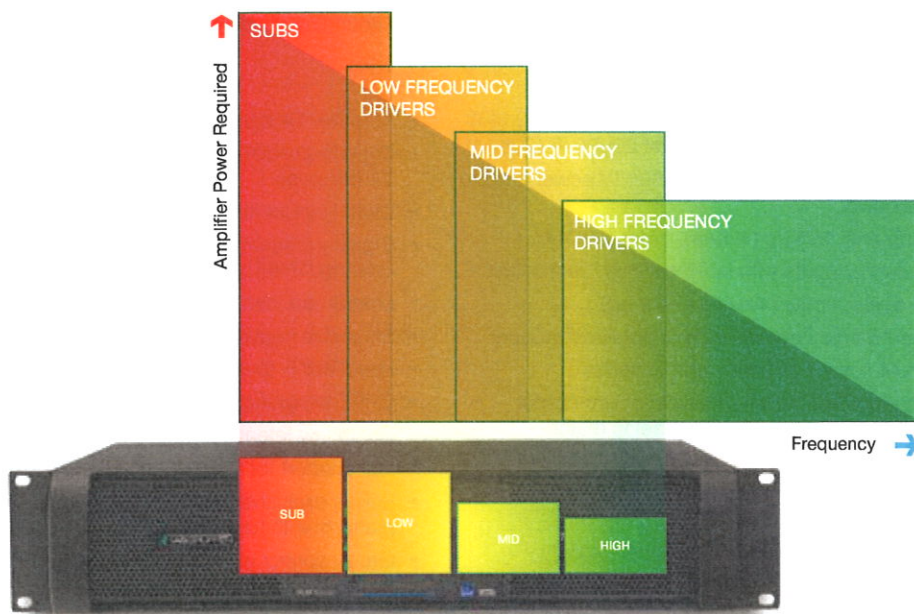
## Rational Power Management (RPM)

On top of the outstanding performance users have come to expect from a PLM, the PLM+ series also contains Rational Power Management (RPM), a proprietary Lab.gruppen technology that gives system designers and techs unprecedented freedom to allocate the output power available on each channel for optimum performance with specific load conditions. This enables the user to minimize equipment costs, reduce rack space and improve long-term energy efficiency – all without compromising sonic performance.

RPM enables the re-allocation of total output power capacity among the four channels. Any channel of the 12K44 model can supply up to 5900 W, with the provision of keeping within the total power outtake

of 12000 W. The maximum output channel(s) can be used for power-hungry low-frequency systems, while the remaining output power can be allocated as needed for the mid-frequency and high frequency drivers, providing a smarter and more efficient way to distribute total power across any large scale PA.

From within the CAFÉ software, RPM allows the desired power demand to be calculated for the various loads in several different ways. RPM then analyses the desired power in relation to the channel and device constraints across the two PLM+ models, and guides the system designer towards the most effective way to power the PA.



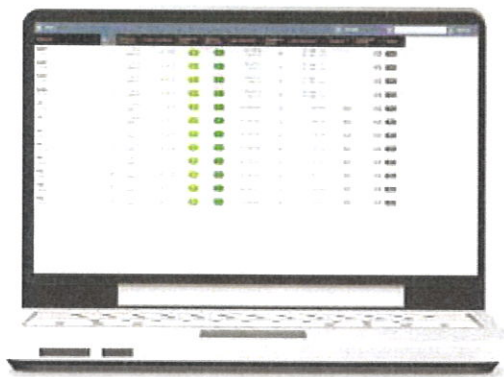
PLM+ Series - Amp channels power adjusted to match the loudspeaker requirements



### CAFÉ and RPM for Green Credentials

PLM+ can be configured and monitored using Lab.gruppen's CAFÉ (Configuring Amplifiers For the Environment) software suite. In addition to providing comprehensive system surveillance and configuration of RPM and other amplifier features such as ISVPL and Breaker Emulation Limiter (BEL), CAFÉ also includes valuable help to save the environment. In combination with the RPM configuration CAFÉ can accurately predict, based on the true SPL and speaker requirements of the individual loads for the given project, estimations of average mains current draw and generated heat in BTU. With

PLM+ Series' innovative power supply technologies (true Power Factor Correction utilizing Current Draw Modelling) the required mains draw is already best in class in relation to burst power output, but in combination with the BEL the mains draw can also be safeguarded to the predicted level. The end result is precise mains management and thermal control, which allows more accurate (rather than over-specified) provision of mains distribution, cabling and cooling. This technology suite reduces lifetime running costs and minimizes environmental impact. It also reduces demands on UPS systems.



### CAFÉ and Equipment Specification Predictor (ESP)

CAFÉ also features an innovative design aid – the Equipment Specification Predictor (ESP). ESP examines the system SPL and speaker requirements for a given project and aids in transforming that data into circuit and amplifier channel requirements. On a system level,

CAFÉ supplies a recommendation for optimized placement of channels into amplifiers for the most cost effective solution. The recommendation includes model and quantities of PLM+ Series required with most rational use of amplifiers, minimizing wasted headroom.

### Lake Processing

PLM+ devices provide extraordinary input flexibility, the legendary power of exclusive Lake processing algorithms, comprehensive control and load monitoring via Lake Controller, and seamless integration into Dante digital audio networks. All PLM+ models incorporate four full-featured Lake Processing modules, with four discrete channels of audio throughput input to output. Audio signals are selectable from four channels of analog (with Iso-float ground isolation), four channels via AES3 digital inputs and eight dual redundant Dante networked digital inputs. Input signals are individually selectable for each channel, with programmable failover to a lower prioritized input.

The full-featured, on-board Lake processor includes group control with Raised Cosine MESA EQ asymmetric filters to match the responses of any loudspeaker system. LimiterMax peak and RMS limiters set the industry standard for loudspeaker protection and sonic transparency.

The included Lake Controller software provides a unified interface for control of Lake functions and for comprehensive monitoring of both amplifier status and connected loudspeaker loads. Optimized for a wireless tablet PC, Lake Controller is easy and intuitive to operate, with the "feel" of real-time analog faders and controls. Lake Controller also features seamless integration with third party, real-time sound system measurement, optimization, and control software packages. Users can measure spectrum and transfer function and adjust system EQ at the same time, using the same user interface.

Lake Processing also offers classical crossovers (selectable up to 48 dB per octave) as well as linear-phase crossovers capable of slopes exceeding 180 dB per octave for greater control to limit lobing and off-axis cancellation.

## PLM+ SERIES: Technology Overview

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### Lake Controller Software

Lake Controller software provides a unified interface for control and monitoring of all functions of the PLM+, including control and monitoring of exclusive PLM+ features: digital input gain and attenuation and load verification and performance monitoring via LoadSmart. The flexible Lake Controller software environment can control extensive networks of powered loudspeaker management

systems from a single computer. The user interface is based on discrete processing modules, with each module assigned to power outputs defining single or sets of band-limited drivers (e.g. low, mid, high, subs). Adjustments can be made in real time to any parameter of any module on the network.

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### Group Control

Modules may be assigned to groups representing subsystems in larger systems, such as main arrays, delays, and fills in an arena system. Because each module can be assigned to more than one group, Lake Controller can simultaneously address multiple groups for global adjustments as needed while maintaining independent control of separate subsystems and individual components. The Lake Controller software is optimized for a wireless Tablet PC. The same Lake Controller

interface can be used to operate PLM Series, LM Series, and D Series as part of a unified system.

Another feature is seamless integration with third party real-time sound system measurement and optimization software packages via the Lake Analyzer Bridge. Users can measure spectrum and transfer function while simultaneously adjusting system EQ on the same user interface.

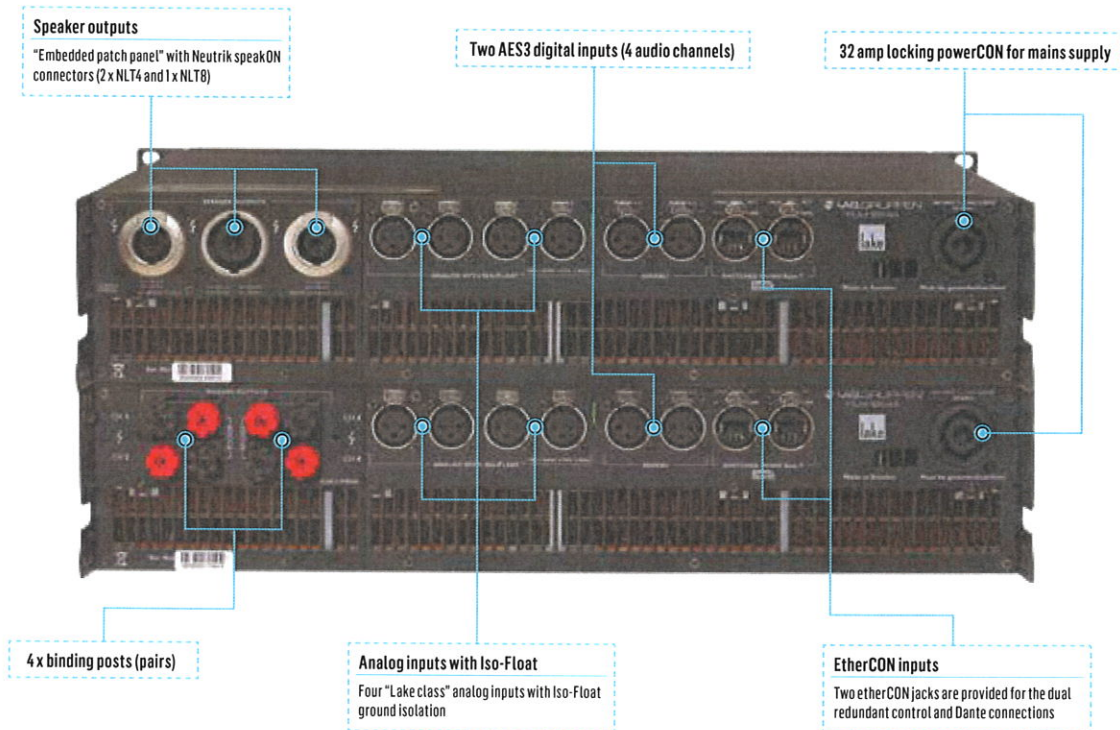
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### Dante Digital Audio Network

PLM+ Series Powered Loudspeaker Management systems are equipped with Dante, a self-configuring digital audio networking solution from Audinate®, based on the newest developments in networking technology. Dante provides reliable, sample-accurate audio distribution over Ethernet with extremely low latency. Dante incorporates Zen™, an automatic device discovery and system configuration protocol which

enables PLM+ Series products and other Dante-enabled products to find each other on the network and configure themselves.

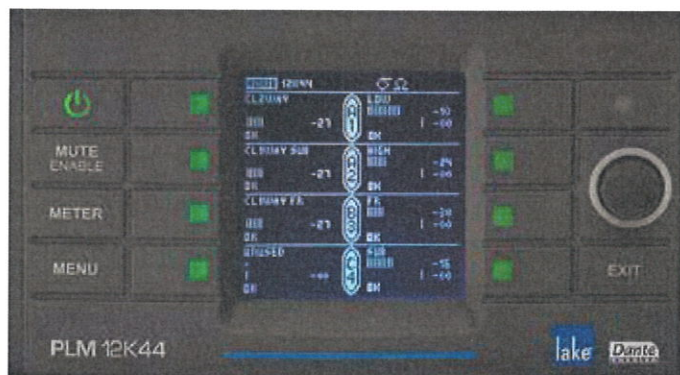
PLM+ seamlessly incorporates any of the eight available Dante input channels into the Lake Modules, while simultaneously transmitting eight unprocessed Dante channels onto the network.



### Connectivity

The PLM+ is available with either binding posts or an 'embedded patch panel' with Neutrik speakON connectors (2 x NLT4 and 1 x NLT8). Common connectors include: 4 x analog inputs across 4 x

XLR-F connectors with switchable Iso-Float, 4 channels of AES/EBU across 2 x XLR-F connectors, 2 x etherCON for linking or redundancy. A 32 amp powerCON connector is used for mains supply.

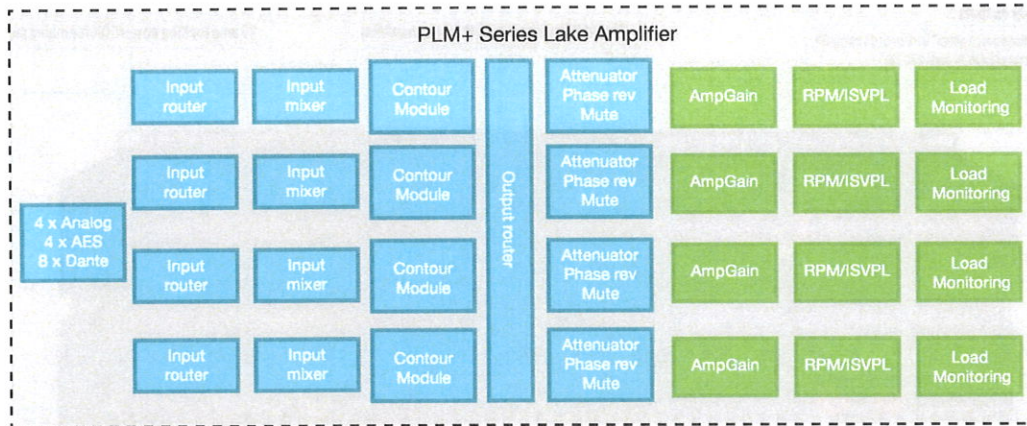


### Front Panel Interface

The front panel is the "local control center" for the PLM+. An intuitive, menu driven interface allows quick access to key functions using the moisture resistant silicone touchpad. Information is clearly displayed

on the daylight-readable, 2.5-inch LCD panel. The soft-button keypad and precision rotary encoder provide control of processing and amplification functions, with key lock available.

# PLM+ SERIES: Technology Overview



## System Block

The input section (inputs, input router and input mixer) allows for mixing capabilities as well as redundant and prioritized inputs with automatic switch-over in case of signal failure. Up to four Lake Processing

modules provide user EQ and loudspeaker processing, including LimiterMax limiting. Each power output channel provides individual channel processing, including ISVPL limiter, RPM and load monitoring.

# Specifications

	PLM 12K44	PLM 20K44
<b>General</b>		
Processing / Network	Lake / Dante	Lake / Dante
Numbers of amplifier channels	4	4
Total burst power all channels (share among channels with RPM)	12000 W	20000 W
<b>Max. Output Power (all ch.'s driven) <sup>1)</sup></b>		
2 ohms	3000 W	4400 W
2.67 ohms	3000 W	5000 W
4 ohms	3000 W	4400 W
8 ohms	1900 W	2300 W
16 ohms	950 W	1150 W
Hi-Z 70 V	3000 W	3300 W
Hi-Z 100 V	3000 W	4700 W
<b>Max output power single channel <sup>1)</sup></b>		
2 ohms	4400 W	4400 W
2.67 ohms	5900 W	5900 W
4 ohms	4600 W	4600 W
8 ohms	2300 W	2300 W
16 ohms	1150 W	1150 W
Hi-Z 70 V	3300 W	3300 W
Hi-Z 100 V	4700 W	4700 W
<b>Amplifier output modules (all models, all channels)</b>		
Peak output voltage	194 V	194 V
Max output current	67 A	67 A
Rational Power Management (RPM)	Any channel has potential to deliver the max single channel output power	Any channel has potential to deliver the max single channel output power
Default voltage limitation (can be lifted with RPM configuration)	175 V	194 V
Protection features	Current Average Limiter (CAL), Very High Frequency Protection (VHF), Direct Current Protection (DC), Short Circuit Protection, Current-Clip Limiter, Voltage Clip Limiter, Temperature protection	Current Average Limiter (CAL), Very High Frequency Protection (VHF), Direct Current Protection (DC), Short Circuit Protection, Current-Clip Limiter, Voltage Clip Limiter, Temperature protection
<b>Audio Performance (Amplifier platform with digital input)</b>		
THD + N 20 Hz - 20 kHz for 1 W	< 0.05 %	< 0.05 %
THD + N at 1 kHz and 1 dB below clipping	< 0.04 %	< 0.04 %
Dynamic range	> 114 dB	> 114 dB
Channel separation (Crosstalk) at 1 kHz	> 70 dB	> 70 dB
Frequency response (1 W into 8 ohm, 20 Hz - 20 kHz)	+/- 0.05 dB	+/- 0.05 dB
Internal sample rate / Data path	96 kHz / 32 bit floating point	96 kHz / 32 bit floating point
Product propagation delay AES 96 kHz / analog input	1.61 / 1.68 ms	1.61 / 1.68 ms
<b>Lake processing</b>		
Loudspeaker processing	Up to 4 modules of Classic/linear-phase/FIR crossover, EQ, delay, LimiterMax™ - peak and RMS limiters Group control with Raised Cosine™ MESA EG™ asymmetric filters	Up to 4 modules of Classic/linear-phase/FIR crossover, EQ, delay, LimiterMax™ - peak and RMS limiters Group control with Raised Cosine™ MESA EG™ asymmetric filters
System tuning	Automatic 4 level input redundancy / 4 input mixers Comprehensive 3rd party protocol over UDP Ethernet	Automatic 4 level input redundancy / 4 input mixers Comprehensive 3rd party protocol over UDP Ethernet
Input redundancy / Matrix System integration		
<b>Measurement &amp; Analysis</b>		
Pilot tone generation and analysis	Yes	Yes
Load impedance analysis	Yes	Yes
Real Time Analyzer (RTA), 3rd party integration	Yes	Yes
<b>Dante Audio Network</b>		
Dante I/O	8 x 8	8 x 8
Network topology / redundancy	Flexible topology / Supports Dual redundant networks	Flexible topology / Supports Dual redundant networks
Sample rates / transport	48, 96 kHz / Uni + Multicast	48, 96 kHz / Uni + Multicast
Network latency	0.25, 0.5, 1.0, 2.0, 5.0 ms	0.25, 0.5, 1.0, 2.0, 5.0 ms
<b>Device Presets</b>		
Local memory locations for the settings of the product	100	100
<b>AES Inputs</b>		
Inputs	4 AES inputs	4 AES inputs
Supported sample rates/ resolution	44.1, 48, 88.2, 96, 176.4, 192 kHz / up to 24 bits	44.1, 48, 88.2, 96, 176.4, 192 kHz / up to 24 bits
Sample rate conversion THD + N 20 Hz - 20 kHz unweighted	0.00003 %	0.00003 %
<b>Analog Inputs</b>		
Inputs	4 high quality inputs with Iso-Float™ ground isolation	4 high quality inputs with Iso-Float™ ground isolation
Maximum input / digital reference	+ 26 dBu / + 21 dBu	+ 26 dBu / + 21 dBu
Sampling rate / resolution	96 kHz / 24 bit	96 kHz / 24 bit
Input impedance balanced / unbalanced	20 k / 10 k ohm	20 k / 10 k ohm
THD + N (typical at 1 kHz unweighted)	0.00022 %	0.00022 %
THD + N (typical at 20 Hz and 20 kHz unweighted)	0.00033 %	0.00033 %
<b>Limiters</b>		
Adjustable Inter-Sample Voltage Peak Limiter (ISVPL)	17.8 - 194 V, step size 0.1 V	17.8 - 194 V, step size 0.1 V
Current Peak Limiter < 300 ms	67 A peak	67 A peak
Current Average Limiter (CAL) > 300 ms	33 Arm	33 Arm
LimiterMax (rms and peak limiters)		
MaxRMS (rms voltage limiter)	Yes	Yes
MaxPeak (peak voltage limiter)	Yes	Yes



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# Specifications

	PLM 12K44	PLM 20K44
<b>Gain</b>		
Amplifier gain	22 - 44 dB, step size 0.1 dB	22 - 44 dB, step size 0.1 dB
Analog attenuator	- Inf to 0 dB, step size 0.25 dB	- Inf to 0 dB, step size 0.25 dB
<b>Rear-panel interface</b>		
Analog inputs	4 x 3 pin XLR, electronically balanced	4 x 3 pin XLR, electronically balanced
AES inputs	2 x 3 pin XLR	2 x 3 pin XLR
Output connectors	Neutrik speakON (1 x NLT8, 2 x NLT4) or 4 binding posts (pairs)	Neutrik speakON (1 x NLT8, 2 x NLT4) or 4 binding posts (pairs)
Auto 100/1000, Auto Uplink	2 x RJ45 etherCON	2 x RJ45 etherCON
Control and monitoring interface	Via Ethernet for Lake Controller software, or DLM (the 3rd party protocol)	Via Ethernet for Lake Controller software, or DLM (the 3rd party protocol)
Detachable mains cord	Neutrik powerCON 32 A	Neutrik powerCON 32 A
Cooling	Three fans front-to-rear airflow, temperature controlled speed	Three fans front-to-rear airflow, temperature controlled speed
<b>Front-panel interface</b>		
Display	2.5 inch, Black / white, daylight readable LCD	2.5 inch, Black / white, daylight readable LCD
Fault / Warning / Limit / Clip indicators	RGD LED's and detailed fault description on display	RGD LED's and detailed fault description on display
Mute and soft function buttons	8 provided	8 provided
Standby Power button	On / Standby	On / Standby
Mute Enable button	Enables muting of outputs and inputs via soft-button keypad	Enables muting of outputs and inputs via soft-button keypad
Meter button	Toggles through meter views	Toggles through meter views
Menu button	Provides a menu driven interface for full function front panel control	Provides a menu driven interface for full function front panel control
Rotary Encoder	Yes	Yes
Exit button	Provides a "back" function	Provides a "back" function
<b>Mains power</b>		
Nominal voltage	100 - 240 V AC 45- 66 Hz	100 - 240 V AC 45- 66 Hz
Operating voltage	70 - 265 V AC	70 - 265 V AC
Mains wall plug	NEMA L5-30 "Twist lock" 125 V / 30 A, and CEE 7/7 "Schuko" 230 V / 16 A	NEMA L5-30 "Twist lock" 125 V / 30 A, and CEE 7/7 "Schuko" 230 V / 16 A
<b>Power supply features</b>		
Soft start / Inrush power	Yes / Max 8 Ampere	Yes / Max 8 Ampere
Power Factor Correction (PFC)	0.98	0.98
Regulated switch mode power supply	Yes	Yes
Breaker Emulation Limiter (BEL)	Configurable current threshold and breaker profile	Configurable current threshold and breaker profile
BEL max current threshold	25 A	32 A
Power Average Limiter (PAL)	Yes	Yes
Under Voltage Limiter (UVL)	Yes	Yes
Mains under voltage and overvoltage protection and mains glitch tolerance	Yes	Yes
<b>Dimensions</b>		
Rack rail to rear panel	W: 483 mm (19"), H: 88 mm (2 U), D: 424 mm (16.7")	W: 483 mm (19"), H: 88 mm (2 U), D: 424 mm (16.7")
Overall depth including handles and rear support	D: 498 mm (19.6")	D: 498 mm (19.6")
<b>Weight</b>	16.5 kg (36 lbs)	17 kg (37 lbs)
<b>Finish</b>	Black painted steel chassis with black painted steel / aluminium front	Black painted steel chassis with black painted steel / aluminium front
<b>Approvals</b>	CE, ANSI / UL 60065 (ETL), CSA C22.2 NO. 60065, FCC, PSE, RCM, BIS India	CE, ANSI / UL 60065 (ETL), CSA C22.2 NO. 60065, FCC, PSE, RCM, BIS India

**Note 1):** Lab.gruppen burst power (1 kHz, 25 ms burst power @ 150 BPM, 12 dB Crest factor)

All specifications are subject to change without notice.

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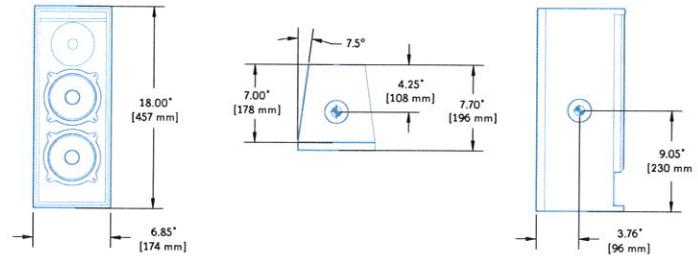
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Item no. TDS-PLM+\_V1 - 13.10.2014

UPM-1P : Ultra-Compact Wide Coverage Loudspeaker



<b>Dimensions</b>	6.85" w x 18.00" h x 7.70" d (174 mm x 457 mm x 196 mm)
<b>Weight</b>	21 lbs (9.53 kg)
<b>Enclosure</b>	Premium birch plywood
<b>Finish</b>	Black textured
<b>Protective Grille</b>	Powder-coated hex-stamped steel, foam covering
<b>Rigging</b>	Three 3/8"-16 or metric M10 nut plates

The UPM-1P is a remarkably compact, self-powered professional sound reinforcement loudspeaker system. It is ideally suited to applications requiring a relatively small and inconspicuous loudspeaker that can also provide high sound pressure levels, extremely low distortion, and uniform directional control.

The UPM-1P loudspeaker provides vocal-range reinforcement as a small PA system, or as a fill or delay loudspeaker in larger indoor or outdoor systems. A full-range system can be created with the addition of an optional subwoofer.

The UPM-1P high-frequency section comprises a 1-inch metal dome tweeter on a symmetrical constant-directivity high-frequency horn with 100-degree beamwidth. At lower frequencies, sophisticated phase-correction circuitry assures true point-source performance without the off-axis

cancellation effects that plague customary dual-woofer designs. Two 5-inch low-frequency cone drivers are driven in parallel at low frequencies to take advantage of their combined acoustic output. To prevent destructive interference and comb filtering effects in the mid-band frequencies close to the crossover area, one of the drivers rolls off above 320 Hz.

Two channels of power amplification are provided (350 watts total), along with an active crossover, driver protection voltage limiters, and frequency- and phase-response alignment circuitry. A laser-trimmed differential input stage affords superior common-mode rejection to allow long signal runs through shielded twisted-pair cable. The standard UPM-1P is switchable between the 115 V AC and 230 V AC ranges. A 100 V AC version is also available. The UPM-1P's integral power supply suppresses high-voltage transients, while

two PowerCon AC connectors facilitate AC looping.

The rugged cabinet is coated with a textured black finish. Mounting is via three 3/8"-16 or metric M10 threaded recessed nut plates. Optional U-bracket, yoke, and pole-mount hardware is available. The UPM-1P loudspeaker can be supplied with either the standard audio input module incorporating looping XLR connectors, or an alternate that adds attenuation and a polarity switch. The UPM-1P easily integrates with the RMS™ remote monitoring system network and software (optional). RMS displays signal and power levels, driver status, limiter activity, and amplifier temperature on a remote Windows® computer.

Options available for the UPM-1P cabinet include weather protection and finishes in custom colors for fixed installations and situations requiring specific cosmetics.

FEATURES & BENEFITS

- Exceptional fidelity and power capability in an ultra-compact package
- Wide, symmetrical pattern covers broad listening areas
- Unique crossover design eliminates combing for consistent midrange response
- Metal dome driver delivers exceptionally smooth high-frequency characteristic

APPLICATIONS

- Frontfill and under balcony
- Theatrical sound reinforcement
- Portable and installed audio-visual systems
- Cinema surround sound and effects
- Compact voice reinforcement systems

## UPM-1P SPECIFICATIONS

<b>ACOUSTICAL</b>	Operating Frequency Range <sup>1</sup>	75 Hz – 20 kHz
	Frequency Response <sup>2</sup>	80 Hz – 16 kHz ±4 dB
	Phase Response	300 Hz – 18 kHz ±60°
	Maximum Peak SPL <sup>3</sup>	123 dB
	Dynamic Range	>110 dB
<b>COVERAGE</b>	Horizontal	100°
	Vertical	100°
<b>CROSSOVER</b>		1300 Hz <sup>4</sup>
<b>TRANSDUCERS</b>	Low Frequency <sup>5</sup>	Two 5" cone drivers Nominal impedance: 8 Ω Voice coil size: 1" Power-handling capability: 200 W (AES) <sup>6</sup>
	High Frequency	One 1" metal dome tweeter Nominal impedance: 8 Ω Voice coil size: 1" Diaphragm size: 1" Power-handling capability: 20 W (AES) <sup>6</sup>
<b>AUDIO INPUT</b>	Type	Differential, electronically balanced
	Maximum Common Mode Range	±15 V DC, clamped to earth for voltage transient protection
	Connectors	Female XLR input with male XLR loop output
	Input Impedance	10 kΩ differential between pins 2 and 3
	Wiring	Pin 1: Chassis/earth through 220 kΩ, 1000 pF, 15 V clamp network to provide virtual ground lift at audio frequencies Pin 2: Signal + Pin 3: Signal – (optional polarity reversal switch) <sup>7</sup> Case: Earth ground and chassis
	DC Blocking	Differential DC blocking up to maximum common mode voltage
	CMRR	>50 dB, typically 80 dB (50 Hz – 500 Hz)
	RF Filter	Common mode: 425 kHz; Differential mode: 142 kHz
	TIM Filter	<80 kHz, integral to signal processing
	Nominal Input Sensitivity	0 dBV (1 V rms, 1.4 V pk) continuous average is typically the onset of limiting for pink noise and music
<b>AMPLIFIERS</b>	Input Level	Audio source must be capable of producing a minimum of +20 dBV (10 V rms, 14 V pk) into 600 Ω to produce maximum peak SPL over the operating bandwidth of the loudspeaker
	Type	Complementary MOSFET output stages (class AB/bridged)
<b>AC POWER</b>	Output Power <sup>8</sup>	350 W total
	THD, IM, TIM	<.02 %
	Load Capacity	4 Ω low channel, 8 Ω high channel
	Cooling	Convection
<b>RMS NETWORK (OPTIONAL)</b>	Connector	PowerCon with looping output
	Voltage Selection	External 115/230 V AC switch (100 V AC version available) <sup>9</sup>
	Operating Voltage Ranges <sup>10</sup>	105 V AC – 130 V AC (115 V AC); 210 V AC – 260 V AC (230 V AC)
	Current Draw:	
	Idle Current	0.13 A rms (115 V AC); 0.065 A rms (230 V AC); 0.15 A rms (100 V AC)
Max Long-Term Continuous Current (>10 sec)	1 A rms (115 V AC); 0.5 A rms (230 V AC); 1.2 A rms (100 V AC)	
Burst Current (<1 sec)	1.3 A rms (115 V AC); 0.65 A rms (230 V AC); 1.5 A rms (100 V AC)	
Ultimate Short-Term Peak Current Draw	2.9 A pk (115 V AC); 2 A pk (230 V AC); 3.3 A pk (100 V AC)	
Inrush Current	18 A pk (115 V AC); 12 A pk (230 V AC); 15 A pk (100 V AC)	
		Equipped for two-conductor twisted-pair network, reporting all amplifier operating parameters to system operator's host computer.

### NOTES:

1. Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
2. Free field, measured with 1/3 octave frequency resolution at 4 meters.
3. Measured with music at 1 meter.
4. At this frequency, the transducers produce equal sound pressure levels.
5. To eliminate interference at short wavelengths, the two 5" drivers work in combination at low frequencies below 320 Hz. Above 320 Hz only the cone driver closer to the tweeter is fed from the crossover up to the crossover frequency to maintain optimal polar and off-axis frequency response characteristics.
6. Power handling is measured under AES standard conditions: transducer driven continuously for two hours with a band-limited noise signal having a 6 dB peak-to-average ratio.
7. Two additional input module options are available with polarity reversal switch and an attenuator (0 dB to -18 dB): one looping and one with two inputs for mono summing.
8. Amplifier wattage rating based on the maximum unclipped burst sine-wave rms voltage the amplifier will produce in to the nominal load impedance. Low and high channels 30 V rms (42 V pk).
9. 100 V AC version, range 90 – 100 V AC; recommended maximum 115 V AC.
10. Fuse-protected above 135 V AC (115 V AC switch position) and 265 V AC (230V AC switch position).

Made by Meyer Sound Laboratories  
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## ARCHITECT SPECIFICATIONS

The loudspeaker shall be a self-powered, full-range system. The transducers shall consist of two 5-inch diameter cone drivers and a 1-inch metal dome tweeter.

The loudspeaker system shall incorporate internal processing electronics and a two-channel amplifier. Processing functions shall include equalization, phase correction and signal division and driver protection for the high- and low-frequency sections. The crossover point shall be 1.3 kHz. Each amplifier channel shall be class AB/bridged with complementary MOSFET output stages. Burst capability shall be 350 watts total with nominal 4 ohms low channel and 8 ohms high channel resistive load. Distortion (THD, IM, TIM) shall not exceed 0.02%.

Performance specifications for a typical production unit shall be as follows, measured at 1/3 octave resolution at 4 meters. Operating frequency range shall be 75 Hz to 20 kHz. Phase response shall be ±60° from 300 Hz to 18 kHz. Maximum SPL

shall be 123 dB at 1 meter. Horizontal coverage and vertical coverage shall both be 100 degrees.

The audio input shall be electronically balanced with a 10 kΩ impedance and accept a nominal 0 dBV (1 V rms, 1.4 V pk) signal. Connector shall be XLR (A-3) type female with parallel looping male. RF filtering shall be provided, and CMRR shall be greater than 50 dB from 50 Hz to 500 kHz. Two input module options shall be offered: one with loop-through output and another with an attenuator and polarity reversal switch in addition to the loop-through output.

Two versions shall be available: a switchable 115/230 V and a non-switchable 100 V-only version. The voltage selection needs to be manually selected. The internal power supply shall perform EMI filtering, soft current turn-on and surge suppression. Powering requirements shall be nominal 100 (100 V version) and 110 or 230 V AC (115/230 version) line current

at 50 or 60 Hz. UL and CE operating voltage range shall be 115 V AC – 240 V AC. Ultimate short-term peak current draw shall be 2.9 A at 115 V AC, 2 A at 230 V AC and 3.3 A at 100 V AC. Current inrush during turn-on shall not exceed 18 A at 115 V AC. AC power connectors shall be PowerCon with looping output. The loudspeaker system shall provide facilities for installing Meyer Sound's optional RMS™ remote monitoring system.

All loudspeaker components shall be mounted in an acoustically vented trapezoidal enclosure constructed of premium birch plywood with a black textured finish. The front protective grille shall be hex-stamped steel covered by charcoal gray foam. Dimensions shall be 6.85" wide x 18" high x 7.70" deep (174 mm x 457 mm x 196 mm). Weight shall be 21 lbs (9.53 kg). Rigging shall be three 3/8"-16 or M10 nut plates.

The loudspeaker shall be the Meyer Sound UPM-1P.