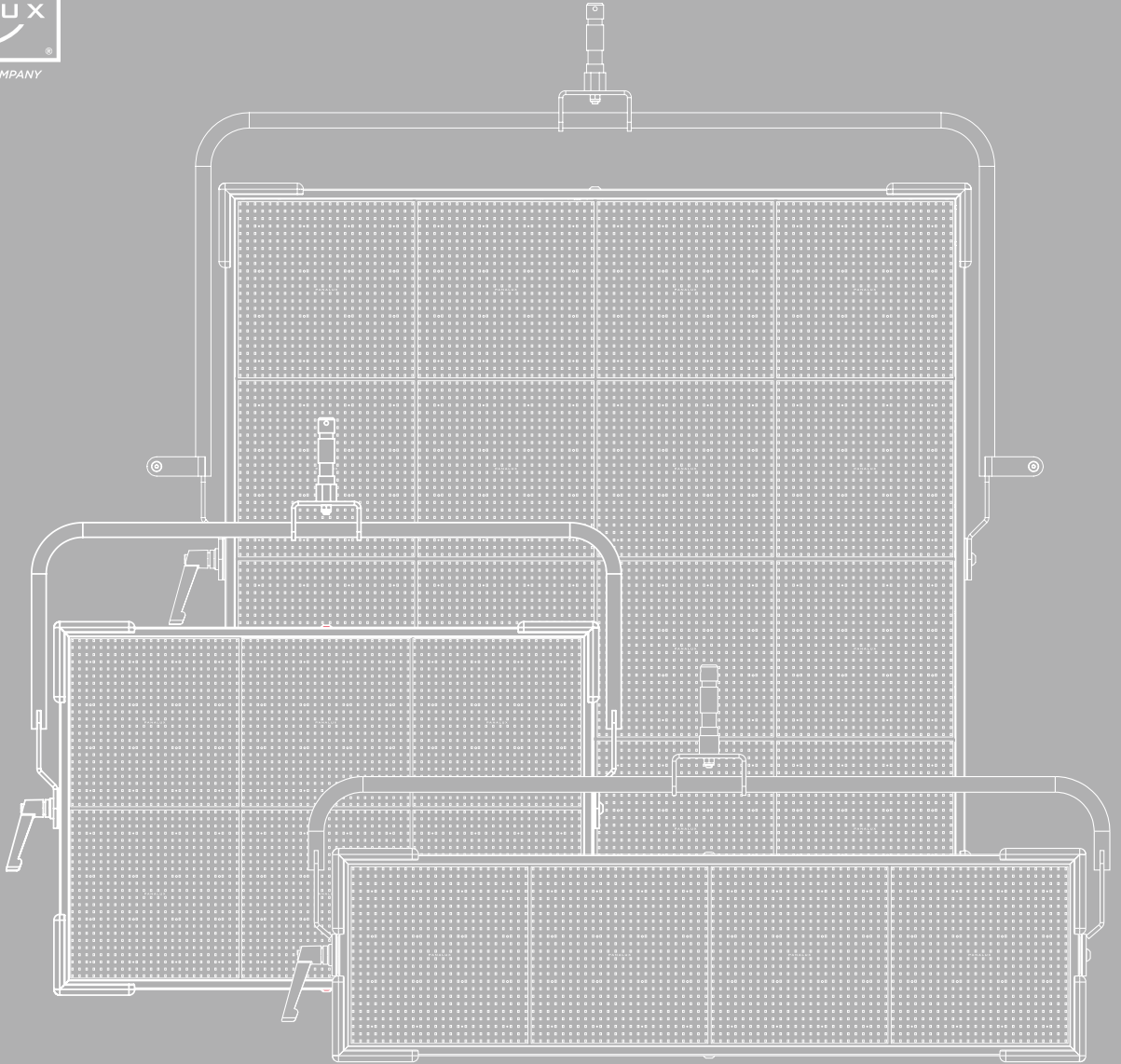


# PANALUX SONARA

*The next-generation, enhanced  
variable white LED soft light.*





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The next-generation, enhanced  
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01

---

# IMPORTANT INFORMATION & WARNINGS



# IMPORTANT INFORMATION

## Safety Information

The symbols below are used throughout this manual to identify important safety information.

Heed all warnings and safety information.

**This product is not user servicable.**

	<b>Warning, Danger, or Caution</b> Risk or injury to yourself, third party, or the product
	<b>Risk of electric shock</b> Risk of severe electric shock

## Changes

**Panalux** provides this manual 'as is' without warranty of any kind, either expressed or implied, including but not limited to the implied warranties or merchantability and fitness for a particular purpose. Panalux may make improvements and/or changes to the product(s) and/or the programmes described in this publication at any time without notice. This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information in this publication; these changes are incorporated in new editions of this publication.

## Measuring Correlated Colour Temperature (CCT), Colour x y

The SONARA™ utilises an LED source that is optimized for the film, TV, and image capture industries. Older colour meters cannot be used to accurately read the Correlated Colour Temperature (CCT) of SONARA™ and other discontinuous spectrum light sources. Older colour meters are designed for a full spectrum source such as incandescent lights. These meters possess only 3 sensors to measure the light output: red, green, and blue. As such, a narrow band or discontinuous spectrum light source may not read correctly. Colour meters such as the Sekonic C800 Spectromaster or UPR Tech MK 350 will provide excellent measurements and include TLCI and SSI metrics as standard.

Panalux have taken great care in ensuring that the CCT and colour spectrum of gel emulations of the light emanating from SONARA™ closely matches traditional tungsten and discharge light sources. This allows you to easily place SONARA™ alongside your traditional lighting fixtures. If in any doubt, it is the user's responsibility, as is customary, to shoot image capture tests when combining sources employing different core technology—such as HMI, florescent, tungsten, or simple RGB and bi-colour LED fixtures—to ensure compatibility. Shoot tests using the camera setup to be used for the project (capture gamut, LUTs, etc.). The spectral power density curve, chip profiles, and coordinates will be different from other fixtures. Matching x y coordinates will only guarantee proximity to the x y coordinates. It will not guarantee a colour match to eye or to camera with another light source.

## Flicker-Free Filming

The only way to guarantee flicker-free filming at any frame rate and shutter angle is by using pure DC power, carbon arc sources, or daylight. There is a chance of flicker in every other scenario with artificial light, even with tungsten mains-powered fixtures.

Visible flicker is also affected by postproduction. Where the contrast is increased, the flicker becomes more visible.

SONARA™ has been validated flicker-free at any dim position up to 10,000 fps. SONARA™ has been tested across a range of dim settings, CCTs, and colours with the high-speed Vision Research Phantom camera as well as Arri Alexa Mini, with the cameras at multiple shutter angles. Not all manufacturers are as thorough. Test whenever in doubt, particularly when shooting high speed.

Flicker factor, the relationship between the maximum and minimum illuminance exhibited in the flicker, can be measured with a flicker meter. 100% means the light goes totally dark at minimum. HMI electronic ballasts tend to have a flicker factor around 1–3%, tungsten lights 0–10%.

With multi-colour LED fixtures, in particular older Stage and Architectural LED fixtures where compatibility with film and digital cameras wasn't a consideration in their design, individual colour channels can be out of sync, causing different colour mixes on different frames, which can cause issues with high-speed filming, stop-frame animation, and still photography.

If in doubt, test and review. Check the footage after running a test, and be aware that some digital cameras do not replay raw footage, so it is advisable to download files first and then check.

## Gel/Filter Emulations and Source Matching

SONARA™ comes pre-loaded with a range of LEE Filter gel emulations. Since the base spectrum of the SONARA™ at 3200K and 5600K is not identical to a tungsten or daylight source, the gel presets are merely emulations. Due to the inherent technology, no LED bi-colour or multi-chip source can perfectly match the spectrum of a subtractive filter laid over a tungsten or daylight source. Even if the x y coordinates appear to be a good match, the spectrum will be different, and the camera will read subtle differences.

If in doubt, test before shooting.



02

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# INTRODUCTION



# INTRODUCTION

## About This User Manual

This manual provides installation, operation, and maintenance instructions for all SONARA™ professional lighting fixtures. This manual applies to the following software versions:

v1.17

## Additional Documentation

For more information regarding DMX512 systems, refer to the DMX512/1990 & AMX 192 Standards publication available from United States Institute for Theatre Technology, Inc. (USITT). Contact by post at USITT, 6443 Ridings Road, Syracuse, NY, 13206-1111, USA; by phone on 1-800-93USITT; or online at [www.usitt.org](http://www.usitt.org).

Art-Net is used for transmitting DMX lighting control protocol and RDM over the User Datagram Protocol (UDP) of the Internet Protocol suite. It is based on the TCP/IP protocol suite and used to communicate between nodes/lighting fixtures and a lighting desk, typically on a private local network such as Ethernet. Art-Net can address over 30,000 universes.

Art-Net™ designed by and copyright Artistic Licence Holdings Ltd.

## Technical Support

For technical support, contact Panalux on +44 20 8233 7000 or at [info@panalux.biz](mailto:info@panalux.biz).

## Disclaimer

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03

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# USER INSTRUCTIONS



# USER INSTRUCTIONS

## General Notes

1. Please read through this manual carefully before operating SONARA™. Keep this manual for future reference.
2. There are numerous safety instructions and warnings that must be adhered to for your own safety.
3. SONARA™ is not intended for residential use. It is only intended for use in a professional studio.
4. SONARA™ must only be serviced by a qualified individual.
5. SONARA™ is rated as IP20, for indoor use and in a dry environment.
6. SONARA™ is not certified for use in hazardous locations.
7. SONARA™ operating temperature is within the range of 0 to 40°C (32 to 104°F).
8. Do not connect to a variable power supply such as a dimmer rack or variac.
9. Use only approved spare parts and accessories. (Refer to Spare Parts/Accessories list on page 37.)

## Fixture Setup

1. Read these safety instructions carefully to ensure SONARA™ and its accessories are used safely.
2. Ensure the 28mm spigot is securely mounted onto the yoke before rigging.
3. For an alternative method of hanging SONARA™, threads are present on the fixture for attaching an M12 eye bolt in each corner. Ensure the M12 eye bolts are securely attached to SONARA™ before rigging.
4. 6 threads are available on the rear for mounting quick triggers, 1 in each corner and 2 on the outer edge, roughly aligned with the centre line and yoke mounting position.
5. The combined weight of SONARA™ units should be considered when choosing suitable safety bond(s). The safety bond assembly should be rated at the combined weight of the fixture and accessories present. Fixture weights can be found in the **Physical Characteristics** section of the manual.
6. When hanging SONARA™, always use secondary safety cables of suitable length (as short as possible) attached to the safety eye or fitted M12 eyebolts. (Detailed on page 11). **Do not use the yoke to secure safety cables.**
7. For safety purposes, ensure that the yoke locking handle is correctly tightened when manipulating SONARA™ in the required orientation. NOTE: If the locking handle is not tightened correctly, the fixture may tip forward.
8. Lifting handles are provided on the yoke. Ensure the yoke locking handle is tightened before lifting.
9. If SONARA™ is to be used with the yoke detached, accessory handles are available upon request.
10. Ensure the connection cables and any other cables are routed carefully to avoid snagging and pulling.
11. Ensure SONARA™ is stored within the range of -20 to +60°C (-4 to +140°F).

## Attachment of Safety Bonds



Safety Bond Mounting Point



Fitted Safety Bond



Fitted Safety Bond (Eyebolt)

## Ventilation

1. Do not cover air ventilation slots on SONARA™, or the fixture may overheat.
2. Do not use SONARA™ outdoors or in a wet environment without approved accessories. (See the table on p. 37 for outdoor accessories.)
3. Keep SONARA™ a minimal distance of 0.1m (4 inches) away from flammable materials/objects.

## Additional Safety Considerations

1. Do not open SONARA™ when the fixture is powered.
2. Allow SONARA™ to cool before servicing, as internal parts may be hot.
3. Do not alter the design of SONARA™ or tamper with any of the safety features.
4. Do not look directly into SONARA™ bare light source as it may be harmful to the eyes.
5. SONARA™ reaches a maximum surface temperature of 85°C. Please ensure contact on the surface by persons or materials is avoided when the fixture is operating.
6. Do not operate SONARA™ if there are any signs of physical damage. If damage is visible or suspected, contact Panalux Engineering Dept.
7. Before using SONARA™, check for any of the defects listed in the adjacent table.

Part	Possible Defect
Power cable	<b>Physical damage, cut, burnt</b>
Locking handle	<b>Physical damage, loose</b>
Spigot	<b>Physical damage, loose</b>
Lifting eye	<b>Physical damage, loose</b>
Venting ports	<b>Physical damage, bent, covered</b>
Yoke	<b>Physical damage, loose</b>
Casing	<b>Physical damage</b>
Corner protectors	<b>Physical damage, loose</b>



## Power Supply

1. Ensure the power cable is disconnected before servicing.
2. SONARA™ only uses a mains connection. Do not connect to a variable supply such as a dimmer rack, variac, or inverter.
3. The power cable should be plugged into SONARA™ before switching the mains power supply ON. The mains power supply should be switched OFF before removing the power cable.
4. SONARA™ is shipped with a 7A (4:4) or 3A (3:2) fuse in the fuse holder. For use in 110V locations, this should be changed to a 15A (4:4) or 6A (3:2) version (additional fuses not included).

	Approvals
EU	EN 55015:2013 EN 61547:2009 EN 61000-3-2:2014 EN 61000-3-3:2013 EN 61000-4-2:2009 EN61000-4-3:2006+A1:2008+A2:2010 EN 61000-4-4:2012 EN 61000-4-5:2006 EN 61000-4-6:2009 EN 61000-4-8:2010 EN 61000-4-11:2004
FCC	47 CFR of part 15
CSA and UL	CSA C22.2 No. 250.4-14 CAN/CSA C22.2 No. 250.13-14 UL Standard No. 153 UL Standard No. 8750

## Safety Cables

1. A minimum of one safety cable MUST be used when hanging SONARA™ from its yoke or eye bolts or using quick triggers. The length should be as short as possible to reduce travel distance if the primary hanging fails.
2. The safety bond slot (as shown on page 11) MUST be used to attach a safety bond.
3. Ensure safety bonds are capable of supporting the combined load of the SONARA™ and accessories.

	Certifications
ROHS	EPA3050B:1996 EN1122B:2011 EPA3052:1996 EPA7196A:1992 APE3540C:1996 EPA8270D:2007
Europe	EN / IEC 62471

### Note

SONARA™ has been built to conform to international regulatory standards relating to professional lighting equipment. Any modification made to SONARA™ will void the manufacturers' warranty.





04

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# FIXTURE OVERVIEW

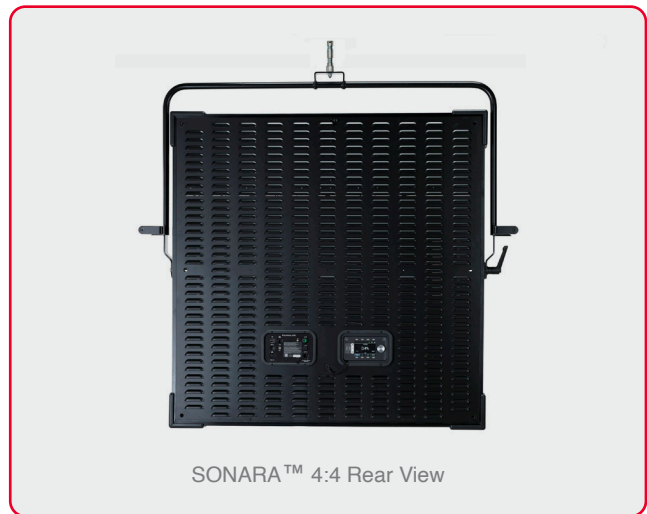
# FIXTURE OVERVIEW

## SONARA™ Components & Controls

SONARA™ units are powerful light fixtures that incorporate Panalux's high-quality proprietary LED arrays. This LED source provides the user with a large volume of high-quality white light at a stable and repeatable CCT, emulating traditional sources and a vast array of tints.

SONARA™ can be controlled in the following ways:

- Via the local controller attached to the back of the fixture.
- Via an external DMX512 signal (5-pin DMX).
- Via wireless DMX.
- Via RJ45 port with ethernet connection.



The SONARA™ user interface/wired remote have been designed to provide a clear and simple display of essential information.

The controller features 1 rotary push encoder, 4 selector buttons (bottom), and 4 memory buttons (top).

The 4 selector buttons are identified with 'soft' labels on the display depending on selected mode.

In white mode (shown), the display will always show:

- Dim position** (percentage)
- CCT Green / Magenta bias**
- DMX base address**
- DMX personality**
- DMX control source** (wired, wireless, Art-Net)



## Controller

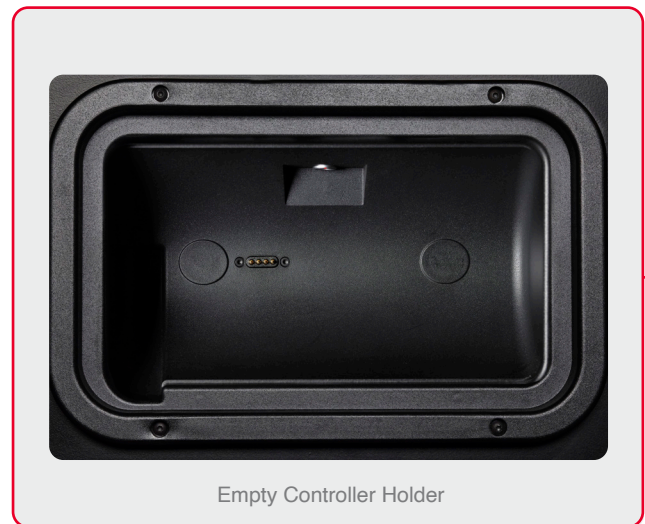
The controller until can be detached from the fixture and linked with the supplied 4m accessory cable, enabling wired remote control when the fixture is out of reach.

The 4m cable connects to the fixture by plugging one end into the Lemo connector on the rear of the controller and the other end of the cable connects to the Lemo connector inside the controller holder.

The controller is attached into to the fixture holder using powerful magnets. There is a D ring on the back plate of the fixture to secure the controller safety lanyard with a quick release for situations when SONARA™ is rigged at height.

User memory buttons

Status Bar



Selector buttons with soft labels

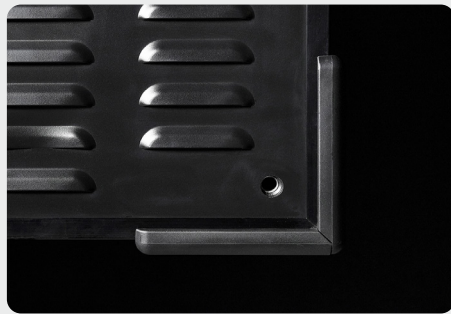
Rotary push encoder

Menu Bar

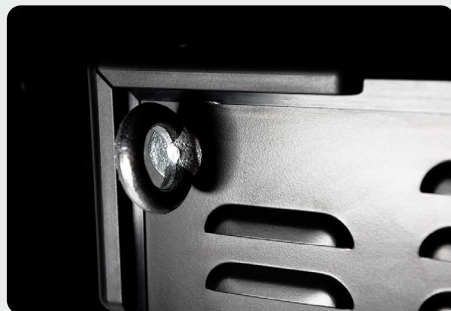
## SONARA™ Fixings



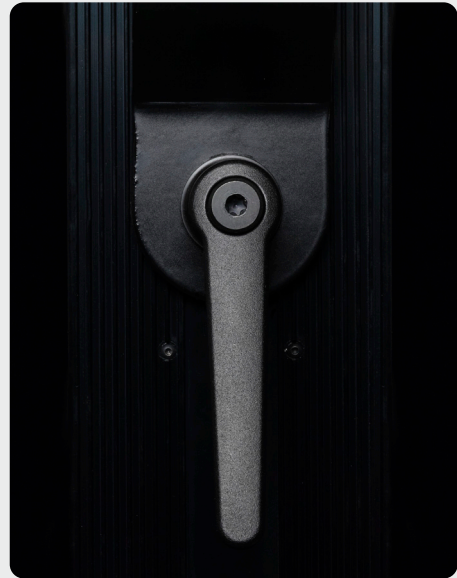
Centre M12 Mounting Points



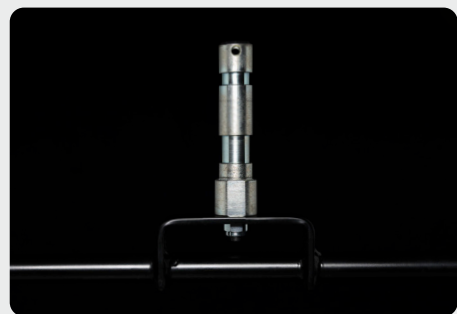
Corner M12 Mounting Points



Mounting Point Fitted With M12 Eyebolt



Locking Handle



Spigot

## Powering Options

SONARA™ is fitted with a Neutrik powerCON TRUE1 NAC3MPX-TOP type connector. Use only Neutrik connectors for power cords. It is the user's responsibility to ensure the power cord is maintained in good condition and any physical damage is addressed.



## Comms Panel

The comms panel features a power on/off switch as well as the following connectors: Power in, DMX in, DMX Thru, Art-Net in RJ45, wireless antenna, 2 x USB, and EXT port.

SONARA™ uses industry standard 5-pin XLR male and female connectors to receive and output DMX signals. The DMX wiring is as follows:

- Pin 1:** Ground
- Pin 2:** Data +
- Pin 3:** Data –
- Pin 4:** Spare
- Pin 5:** Spare

**Please note:** SONARA™ is self-terminating and does not require external DMX termination when used in a chain.

## Accessories

SONARA™ has a range of compatible accessories.

- Controller extension cord**
- Power cord**
- Aerial**
- M12 eye bolts**
- Soft Box**
- Snapgrid® Eggcrate**
- Quarter Grid Cloth**
- Half Grid Cloth**
- Full Grid Cloth**
- Magic Cloth**

Weather kit for SONARA™ 4:4 includes:

- Clear vinyl front cover** (to be used with soft box)
- Rear breathable cover**



05

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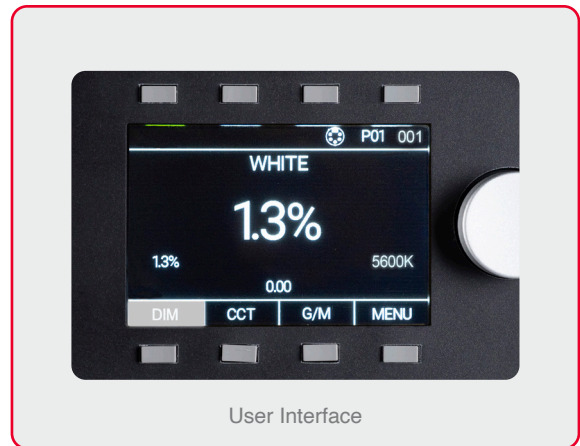
# OPERATION

# OPERATION

## User Interface

SONARA™ provides control over the intensity, colour temperature, green/magenta bias, hue and saturation, x y coordinates, amber/lime/blue, and a range of other parameters for precision control.

Control is via the local user interface on the controller (mounted to the fixture), DMX, Wireless, or Art-Net connection.



In all modes, the **status bar** will show the current state of:

- DMX Base Address**
- DMX Personality**
- DMX Control Source** (wired, wireless, Art-Net)
- DMX Control Priority** (EXT, LTP, LOCAL)
- 'LOCKED'** (when local control is locked)
- 'DEMO'** (when fixture is cycling through a demo)

In white mode (shown above), the display will always show:

- Dim Position** (percentage)
- CCT**
- Green/Magenta Bias**

## Factory Reset

Factory reset and clearing all memory presets is achieved by holding down the bottom left and bottom right buttons together while cycling the power.

**WARNING. ALL STORED PRESETS WILL BE ERASED.**

## Lock Mode

The local controls can be locked and unlocked by holding down the bottom left button for 2 seconds. 'LOCKED' will be shown top centre of the display when local control is disabled.

**To release LOCKED status and DEMO status, hold down bottom left button.**

## Rotary Encoder

The encoder enables scrolling forwards or backwards through the 'live' highlighted item. Also, by pushing the encoder, you are able to jump through presets. It is also used to navigate menus.

'Push' to confirm selection

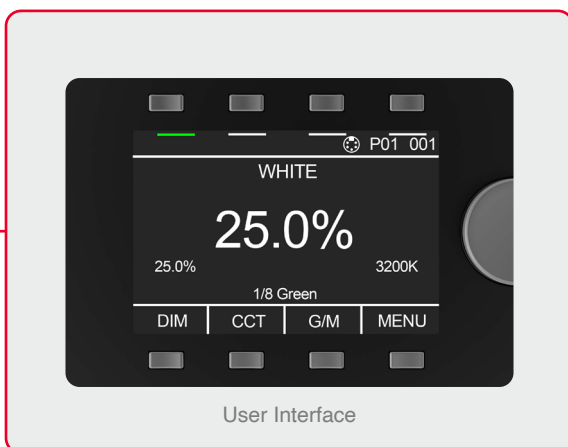
See rotary encoder presets below:

Value	Presets											
Dim	25%	50%	75%	100%								
CCT	1600K	2700K	2900K	3200K	3600K	4300K	5000K	5600K	6500K	7500K	10000K	20000K
G/M	1/8 -G	1/4 -G	1/2 -G	3/4 -G	1 -G	N/C	1/8 +G	1/4 +G	1/2 +G	3/4 +G	1 +G	

After 6 seconds, the encoder always defaults to dimmer in any mode.

The encoder features a ballistic algorithm. The slower it is rotated the higher the resolution. The faster it is rotated the faster it scrolls through the CCT range or gel.

When controlling the dimming this allows ultra-fine control down to 0.1% steps.

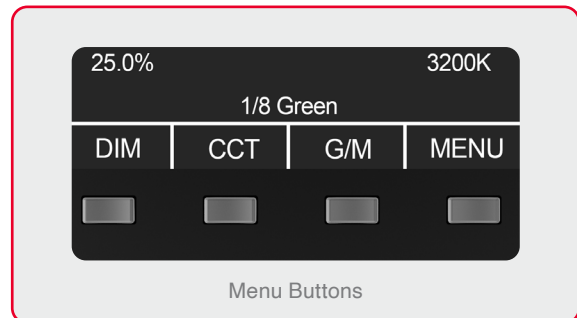
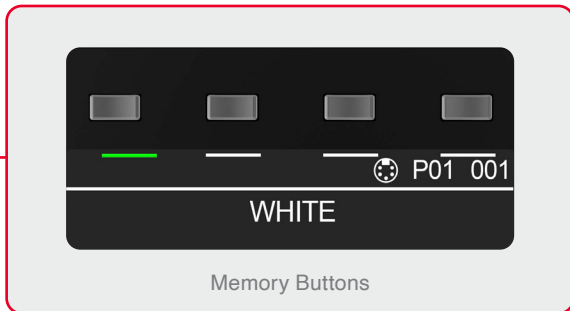


## Menu Buttons

There are 4 quick menu buttons below the screen. In WHITE MODE the first 3 allow the user to assign the encoder to alter key attributes: DIM, CCT, and green/magenta bias (G/M). The fourth selector button (bottom right) is dedicated to MENU selection or BACK functions.

## Memory Buttons

The 4 memory buttons above the screen are reserved for memorising and storing 4 unique user defined scenes.



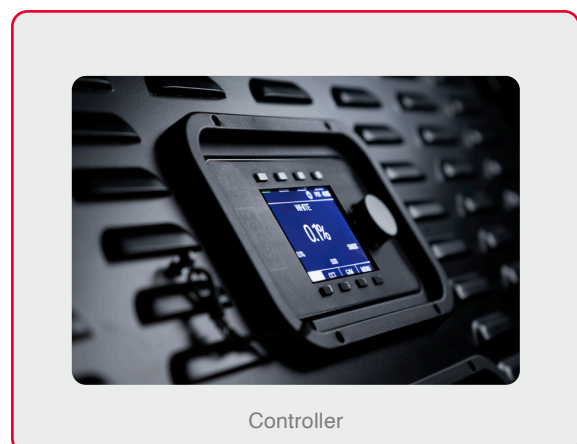
To store a scene, push and hold any button until the screen flashes saved. All scene settings will be saved. For example, in WHITE MODE, dim percentage, CCT, and green/magenta bias will be saved.

A green bar below a memory button indicates a stored scene. A single button press displays the stored settings without changing the output, and the bar will turn red. A second press will change the output.

**WARNING:** The scene memory can be overwritten. Restoring to factory default will permanently erase all user-memory settings.

## Backlight

The controller screen's backlight activates on user interaction, local or from DMX. After 30 seconds of inactivity it deactivates with a slow fade to 10% brightness.

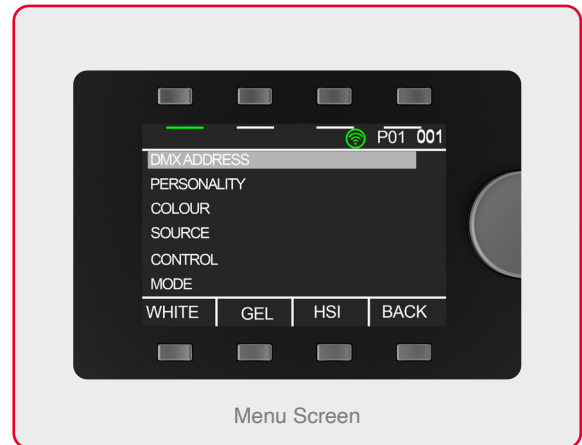


## Colours

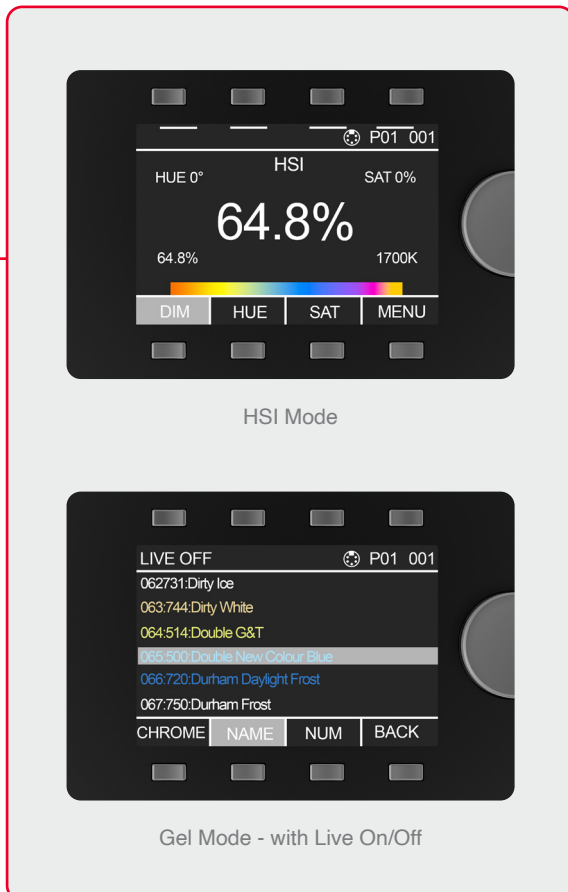
SONARA™ features five standard colour selection options:

- WHITE**
- GEL**
- HSI**
- ALB**
- x y**

One push of the menu button (bottom right) enables the menu and shortcuts to:



### WHITE, GEL, HSI and BACK



**WHITE** allows white point control along the Black Body Locus (BBL) from 1600K – 20,000K and green/magenta bias above and below the Planckian Locus.

**HSI** mode allows the user to control the hue angle and saturation against the set white point.

**GEL** mode accesses a selection of LEE filter emulations sortable by chroma, name, and number.

Full gel list in the Appendix (pp. 39-41). Gel numbers highlighted with a RED background are outside of selected gamut and are desaturated. See gamut section below.

In this screen, the live highlighted bottom button (NAME in the top-left example image) allows toggling of LIVE ON and LIVE OFF. In LIVE OFF mode, you can scroll through a range of colours without changing the output until selected. In LIVE ON mode, the output will change actively whilst scrolling through the gel list.

## Colours (cont.)

**ALB** The primary purpose of SONARA™ is to produce high-quality broad-spectrum whites in an extremely extended range.

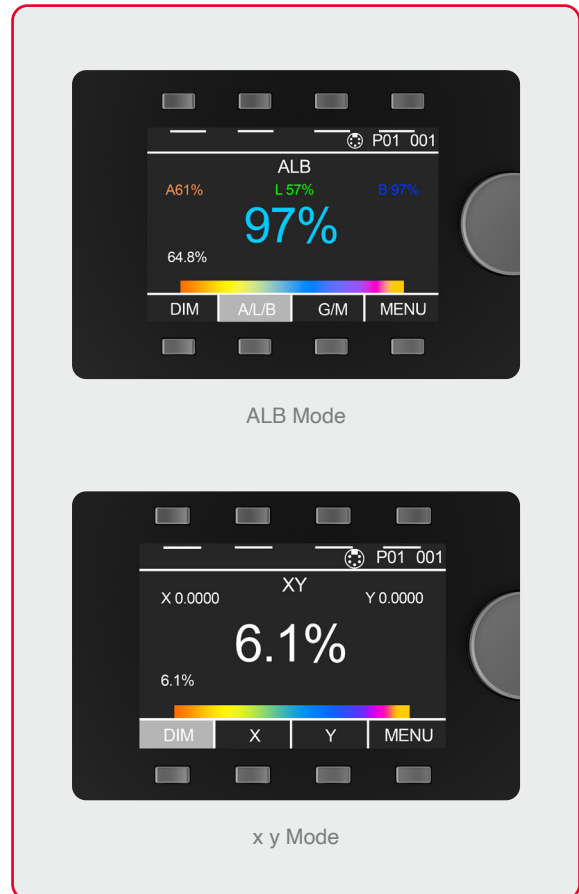
ALB (Amber, Lime, Blue) mode is an incomplete colour wheel.

Repeatedly pressing the ALB button toggles control between Amber, Lime and Green.

**x y** mode allows the user to select an x y coordinate on the CIE 1931 chromaticity chart.

If the chosen colour point is out of gamut, SONARA™ will shut off its output and the font will turn red.

The light will switch off during adjustment as soon as the requested coordinate is unachievable. If the coordinates selected go out of achievable gamut, the coordinate font will turn red.





# 06

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# CONTROL FEATURES & OPTIONS



# CONTROL FEATURES & OPTIONS

## Source

SONARA™ can receive external control from the following sources :

- Wired DMX,
- Wireless DMX with a built-in LumenRadio receiver,
- Art-Net via the RJ45 connector.
- Received DMX is output to the wired DMX socket.

In **PRIMARY/CLONE** mode, the first SONARA™ in the DMX chain behaves as primary, with all subsequent SONARA™ in the chain mimicking its settings.

(All SONARA™ in the chain must be set to the same DMX personality.)

Art-Net is used for transmitting DMX lighting control protocol and RDM using the User Datagram Protocol (UDP) of the Internet Protocol suite. It is used to communicate between nodes/lighting fixtures and a lighting desk, typically on a private

## Control / Dimming Curves

SONARA™ has 4 built-in dimming curves:

Curve	Characteristics
<b>Linear</b> (Default)	In linear mode, 50% equates to half the output, or <b>1 stop down</b> . 25% is quarter output, or <b>2 stops down</b> .
<b>Square Law</b>	A square law curve increases the dimming resolution at lower control levels.
<b>S Curve</b>	S Curve provides a finer control at lower and higher levels while offering coarse control (lower resolution) at medium levels. This dimming curve best emulates a typical incandescent lamp's dimming abilities.
<b>Tungsten Emulate</b>	Tungsten emulate mode combines square law with greater resolution at lower levels and a warming of the CCT as the fixture dims. This operates on any CCT start point between 2700K and 3600K (correlating to an underrun and overrun tungsten bulb). At CCTs outside this range, standard square law is in play.





## Tungsten Emulate Mode

Tungsten Emulate reference values are as below:

Dim	CCT	Dim	CCT	Dim	CCT
100%	3200K	100%	3600K	100%	2700K
85%	3000K	86%	3400K	80%	2480K
71%	2800K	74%	3200K	60%	2220K
58%	2600K	63%	3000K	40%	1920K
48%	2400K	52%	2800K	30%	1760K
38%	2200K	35%	2600K	25%	1695K
31%	2000K	28%	2400K	10%	1600K

## Important Note on Dimming Curves

It is important for consistency that all SONARA™ in a DMX rig are set to the same dimming curve. If set to different dimming curves, fixtures on the same address output won't track with a global dim command.

## Control Output

SONARA™ has two power output modes, **BOOST** (default) and **FLAT**. Due to the inherent efficacy difference between warm white and cold white chips, the photometric output changes at different CCTs. In a studio environment where multiple changes are made to CCT, it is often advantageous that the photometric output remains constant. This is achieved in FLAT mode and is active only in WHITE MODE and only between 2700K and 7000K.

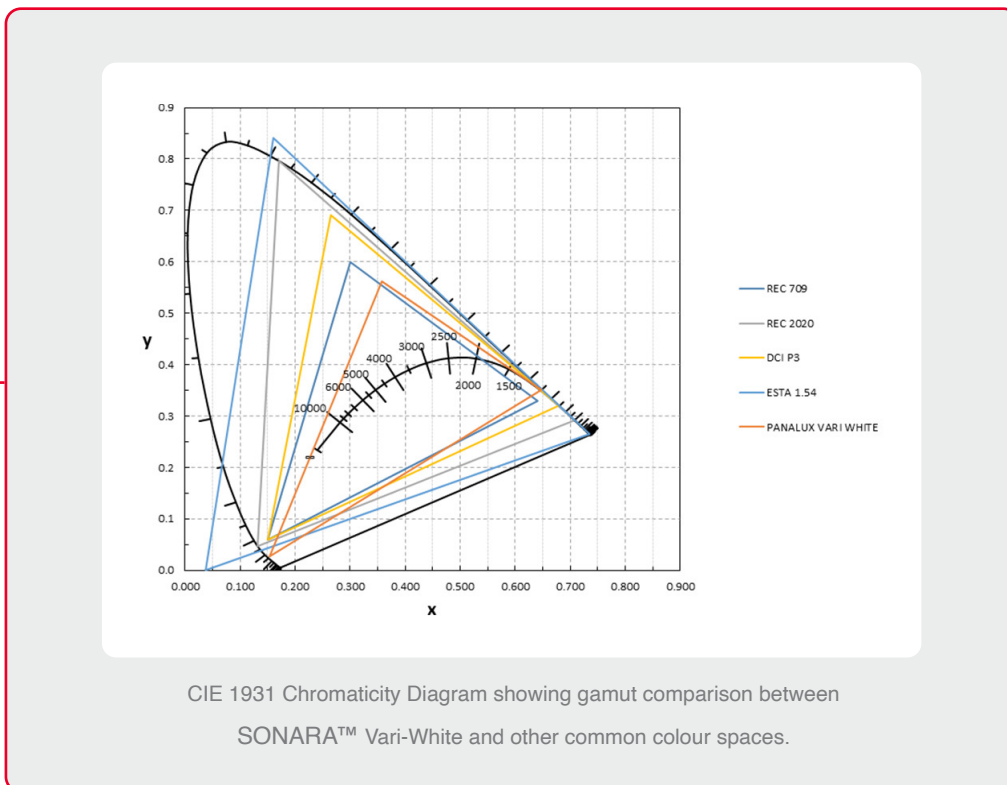
In BOOST mode, maximum output is available, which may be advantageous when working in environments with ambient daylight.



## Control Gamut

SONARA™ output gamut can be either full gamut or restricted to match REC 709 or REC 2020. Due to the different overlaps of the gamuts, selecting REC 709 or REC 2020 will restrict some of SONARA™ output in certain zones. For example, as can be seen in the illustration below, SONARA™ is capable of producing a range of colours in the yellow and deep amber zone that wouldn't be captured in REC 709. In x y mode with REC 709 as the selected gamut, SONARA™ would not output a colour at those x y coordinates, which would be shown in a red font on the display.

In CCT, HSI, ALB, or GEL mode, if the colour is unachievable due to the chosen gamut, the colour produced will be desaturated into the selected white point.



## Control Camera LUTs (Future Feature)

Camera LUTs change both the x y coordinate and spectral mix of whites to match the colour science of various cameras. An image photographed under the same light source will look different on different cameras. The camera LUTs are intended to bring alignment to the same subject shot with different cameras.



## Control Priority

SONARA™ can be controlled by local user interface or by external control (wired or wireless).

3 control priority modes are available, detailed below:

Mode	Characteristics
LTP (Default)	Last Takes Precedence. In LTP mode, SONARA™ will listen to DMX (wired or wireless), Art-Net, and the local User Interface, and will take instructions from any. This allows a DOP or gaffer to 'ride' the dimmer when the talent is moving to a cue, or during setup to make changes whilst talking to the board operator, who may be backstage.
External	Ignores local control and locks the User Interface. To exit this mode, hold down the bottom left button for 5 seconds and the display will go to Control Priority Menu.
Local	Ignores any external input even if wired to DMX.

## Modes

SONARA™ features three operating modes:

Standard – Default mode.

Pixilation – Each individual LED panel in the head is addressed separately.

Attract – SONARA™ runs a continuous preset sequence of colours and effects.

To exit this mode, press and hold the bottom left button.



## DMX Personalities

DMX personalities determine how SONARA™ behaves in relation to DMX control and the number of channels one fixture will occupy. The selected personality is always shown on the top status bar. SONARA™ has 19 available DMX personalities:

Personality	Type	Channels	Personality	Type	Channels
P1	White 8 bit	3	P11	x y 16 bit	7
P2	White 16 bit	5	P12	x y 24 bit BCD	9
P3	HSI 8 bit	4	P13	Ultra	7
P4	HSI 16 bit	8	P14	Extreme	10
P5	Gel 24 bit BCD	6	P15	Crossfade to colour	9
P6	Gel 16 bit	8	P16	Crossfade to ALB	8
P7	Gel Hue 24 bit BCD	9	P17	Crossfade to Gel	11
P8	Gel Hue 16 bit	12	P18	Crossfade Gel to Gel	17
P9	ALB 8 bit	4	P19	Crossfade xy to xy	11
P10	ALB 16 bit	8			

## DMX Personalities - Channel Assignments

White, HSI and ALB personalities are provided with 8 and 16 bit resolutions.

Gel, Gel hue and xy personalities are provided with 16 bit and 24 bit resolutions.

24 bit assigns one 8 bit channel to each digit of the gel or xy value, allowing easy selection of values with simple desks.

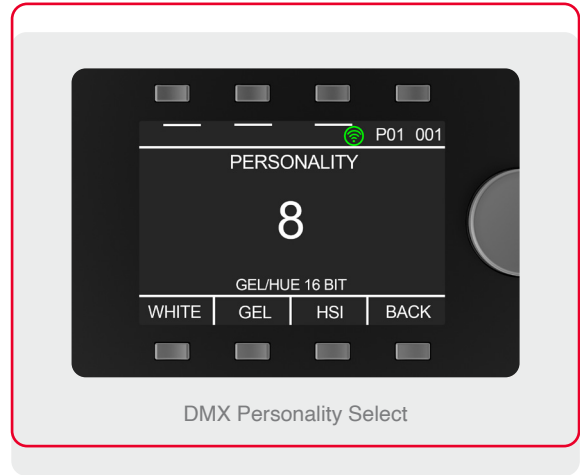
Ultra and Extreme personalities provide direct control over each individual colour in Sonara.

Personalities 15 to 19 provide the ability to cross-fade between a selection of other personalities.



## DMX Personalities - Channel Assignments (cont.)

The parameters controlled in each of the DMX personalities are listed below:



		CHANNEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
P1	WHITE	3	DIM	CCT	+/-G														
P2	16 BIT WHITE	5	DIM	DIM	CCT	CCT	+/-G												
P3	HSI 8 BIT	4	DIM	CCT	HUE	SAT													
P4	HSI 16 BIT	8	DIM	DIM	CCT	CCT	HUE	HUE	SAT	SAT									
P5	GEL 24 BIT BCD	6	DIM	CCT	+/-G	GEL 000	GEL 00	GEL 0											
P6	GEL 16 BIT	8	DIM	DIM	CCT	CCT	+/-G	GEL	GEL	LO-HI									
P7	GEL HUE 24 BIT BCD	9	DIM	CCT	+/-G	GEL 000	GEL 00	GEL 0	+/- HUE	SAT	LO-HI								
P8	GEL HUE 16 BIT	12	DIM	DIM	CCT	CCT	+/-G	GEL	GEL	HUE	HUE	SAT	SAT	LO-HI					
P9	ALB 8 BIT	4	DIM	AMBER	LIME	BLUE													
P10	ALB 16 BIT	8	DIM	DIM	AMBER	AMBER	LIME	LIME	BLUE	BLUE									
P11	x y 16 BIT	7	DIM	DIM	x	x	y	y	SPEC-TRAL BREADTH										
P12	x y BCD	9	DIM	DIM	x.0	x.00	x.000	y.0	y.00	y.000	SPEC-TRAL BREADTH								
P13	ULTRA	7	DIM	DIM	AMBER	LIME	BLUE	WARM WHITE	COLD WHITE										
P14	EXTREME	10	DIM	DIM	AMBER 1	AMBER 2	LIME	BLUE	WARM WHITE 1	WARM WHITE 2	COLD WHITE 1	COLD WHITE 2							
P15	CROSSFADE TO COLOUR	9	DIM	DIM	CCT	CCT	HUE	HUE	SAT	SAT	CROSS-FADE TO COLOUR								
P16	CROSSFADE TO ALB	8	DIM	DIM	CCT	CCT	AMBER	LIME	BLUE	CROSS-FADE TO ALB									
P17	CROSSFADE TO GEL	11	DIM	DIM	CCT	CCT	GEL	GEL	HUE	HUE	SAT	SAT	CROSS-FADE TO GEL						
P18	CROSSFADE GEL TO GEL	17	DIM	DIM	CCT	CCT	GEL A	GEL A	HUE A	HUE A	SAT A	SAT A	GEL B	GEL B	HUE B	HUE B	SAT B	SAT B	CROSS-FADE GEL TO GEL
P19	CROSSFADE X Y TO X Y	11	DIM	DIM	x A	x A	y A	y A	x B	x B	y B	y B	CROSS-FADE xy TO xy						

# RDM

## SONARA™ is RDM Enabled

RDM functionality gives the ability to remotely identify the fixture, set its DMX address and DMX personality, and other options. This feature also enables information about SONARA to be read remotely, such as the temperature of the LED arrays. See the full list of RDM functions and monitoring options below:

	Function	Type
1	UID (Unique Identifier) to allow recognition of individual fixtures	Monitoring
2	RDM Protocol Version	Monitoring
3	Device Model Description	Fixed
4	Manufacturer Label	Fixed
5	Software Version	Fixed
6	Serial Number	Fixed
7	DMX Footprint	Monitoring
8	DMX Personality Description	Monitoring
9	DMX Start Address	User Editable
10	DMX Personality	User Editable
11	Dimming Curve	User Editable
12	Output Mode	User Editable
13	Colour Gamut	User Editable
14	Camera LUT	User Editable
15	Device Hours	Monitoring
16	Lamp Hours	Monitoring
17	Power Output	Monitoring
18	Reset device to factory defaults and wipe saved scenes	User Editable

## SONARA RDM Sensors

See the full list of remote sensor monitoring options below:

Sensor	Type	Reading
1	Temperature	Array temperature in degrees Celsius
2	Temperature	Array temperature in degrees Celsius
3	Temperature	Array temperature in degrees Celsius
4	Temperature	Array temperature in degrees Celsius
5	Temperature	Array temperature in degrees Celsius
6	Temperature	Array temperature in degrees Celsius
7	Temperature	Array temperature in degrees Celsius
8	Temperature	Array temperature in degrees Celsius
9	Temperature	Array temperature in degrees Celsius
10	Temperature	Array temperature in degrees Celsius
11	Temperature	Array temperature in degrees Celsius
12	Temperature	Array temperature in degrees Celsius
13	Temperature	Array temperature in degrees Celsius
14	Temperature	Array temperature in degrees Celsius
15	Temperature	Array temperature in degrees Celsius
16	Temperature	Array temperature in degrees Celsius
17	Temperature	Master driver processor temperature in degrees Celsius

## SONARA Menu Tree

DMX ADDRESS	▶ 1 - 512	
PERSONALITY	▶ 1 - 19	
COLOUR	▶ WHITE	
	▶ GEL	
	▶ HSI	
	▶ ALB	
	▶ X Y	
SOURCE	▶ WIRED	
	▶ WIRELESS	
	▶ ARTNET	
	▶ PRIMARY/CLONE	
CONTROL	CURVES	▶ LINEAR
		▶ SQUARE LAW
		▶ S CURVE
		▶ TUNGSTEN EMULATE
	OUTPUT	▶ BOOST
		▶ FLAT
	GAMUT	▶ PX VARI WHITE
		▶ REC 2020
		▶ REC 709
		▶ DCI P3
		▶ ESTA 1.54
	CONTROL PRIORITY	▶ LTP
▶ EXTERNAL		
▶ LOCAL		
MODE	▶ STANDARD	
	▶ PIXILATION	
	▶ ATTRACT	



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GENERAL

# General Information

## Power Characteristics

Characteristic	SONARA™ 4:4	SONARA™ 3:2	SONARA™ 4:1
AC power / nominal input voltage	110-240V (AC) 50-60Hz	110-240V (AC) 50-60Hz	110-240V (AC) 50-60Hz
Max input current	14A (110V) / 7A (230V)	6A (110V) / 3A (230V)	6A (110V) / 3A (230V)
Max power input	1500W	500W	350W

## Physical Characteristics

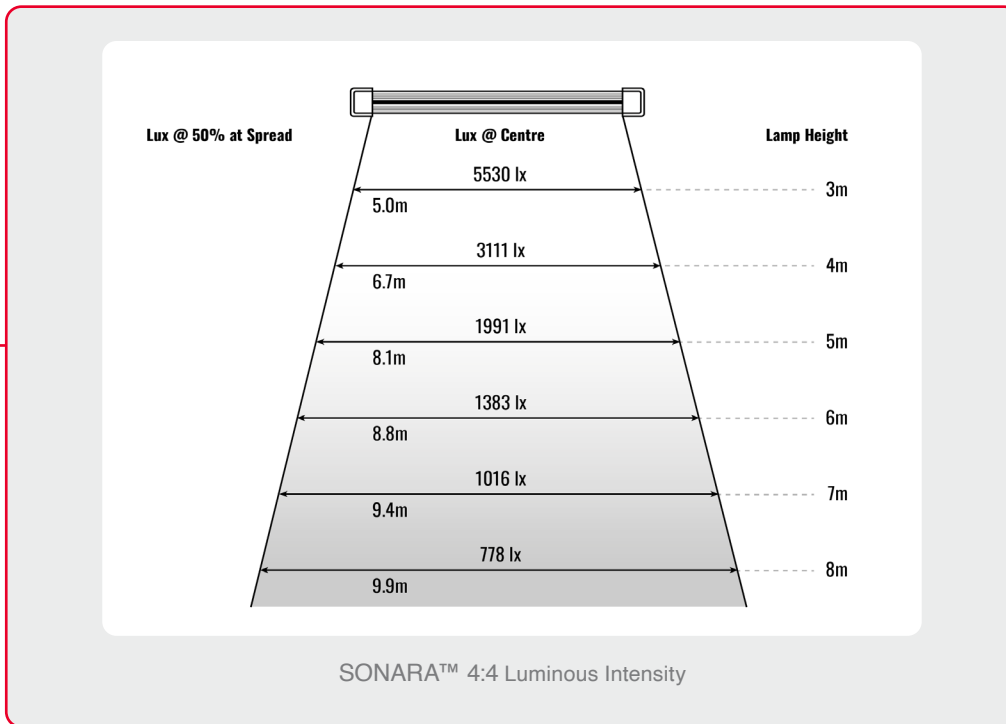
Characteristic	SONARA™ 4:4	SONARA™ 3:2	SONARA™ 4:1
Dimensions (excluding yoke)	1248 x 1248 x 134 (mm) 49 x 49 x 5.25 (inches)	648 x 948 x 134 (mm) 25.5 x 37 x 5.25 (inches)	1248 x 348 x 134 (mm) 49 x 13.7 x 5.25 (inches)
Dimensions (including yoke)	1486 x 1546 x 163 (mm) 58.5 x 61 x 6.5 (inches)	1097 x 1001 x 152 (mm) 43.2 x 39.4 x 6 (inches)	1370 x 646 x 134 (mm) 54 x 25.5 x 5.25 (inches)
Weight (excluding accessories)	44kg	25kg	18.5kg
Weight (excluding yoke)	38kg	19kg	13.5kg

## Fault Finding Tips

Issue	Possible Solution
No power seen and rocker switch not lit	<b>Fuse in fuse holder blown. Try replacement</b>
No response from controller on power up or splash screen	<b>Confirm that the controller is located firmly and squarely in the holder and held by the magnets. Check to see if the lanyard is hindering the controller's positioning.</b>
No response from controller in remote mode	<b>Confirm that both ends of the cable are fitted correctly into the housings on the head and the controller and that the keyway aligns.</b>
Two or more fixtures on the same address are behaving differently on dimming or CCT	<b>Ensure that all fixtures are set in the same option for personality, dimming curve, and FLAT/BOOST.</b>
One or more fixtures on a DMX Universe are flashing or behaving oddly	<b>Confirm that none of the fixtures are in PRIMARY/CLONE mode.</b>

## SONARA™ 4:4 Optical Characteristics

The waterfall diagram shows a typical spread of light when SONARA™ 4:4 is suspended at various heights. Measurements were taken with a temperature stabilised SONARA™ 4:4 set at 4300K at maximum intensity.



## SONARA™ 4:4 Lux Variation with Height and Spread

Further detailed measurements listed below were taken with a SONARA™ 4:4 at 4300K as above.

Height (m)	Lux (lx) variation with height (m) and diameter (m)											
	Spread	Centre	1.2	2.4	3.7	4.9	6.1	7.3	8.5	9.8	11.0	12.2
3	5.0	5533	4682	4128	3575	2724	2128	1575	1192	894	724	553
4	6.7	3111	2636	2332	2028	1553	1220	906	689	518	421	322
5	8.1	1991	1701	1539	1384	1102	899	694	545	423	352	276
6	8.8	1383	1186	1088	997	813	681	539	435	345	293	234
7	9.4	1026	874	808	750	620	529	427	351	283	245	199
8	9.9	778	670	623	583	487	421	344	287	235	206	169



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## Warnings & Cautions

SYMBOL	MEANING
	<p><b>Risk of electric shock / risk of fire</b></p> <p>Do not open. To reduce the risk of electric shock, do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.</p>
	<p><b>Burning Injuries</b></p> <p>Be aware of high case temperatures of 60-85°C during and after use of SONARA™. Don't touch the metal cases, frames or LED's to avoid burning issues.</p>
	<p><b>Flammable Materials</b></p> <p>Keep flammable materials away from the installation. The installation should be such that the amount of air flow required for safe operation of the equipment is not compromised. Proper ventilation must be provided.</p>
	<p><b>ESD and LEDs</b></p> <p>LED components used in SONARA™ are sensitive to electro-static discharge (ESD). To prevent the possibility of destroying LED components do not touch during operation or when SONARA™ is switched off.</p>
	<p><b>Light output</b></p> <p>Due to high light-output intensity do not look directly into the bare LED array. Use diffusers when exposing the light to human eyes.</p>
	<p><b>Disconnect Device</b></p> <p>When the appliance inlets of any individual SONARA™ are not accessible, the socket outlets supplying the rack shall be installed near the equipment and be easily accessible, or a readily accessible general disconnect device shall be incorporated in the fixed wiring. Disconnect device should state 3mm separation in both poles and should include reference to national wiring rules.</p>
	<p><b>This equipment MUST be earthed</b></p> <p>In order to protect against risk of electric shock, the installation should be properly grounded. Defeating the purpose of the grounding type plug will expose you to the risk of electric shock.</p>
	<p><b>Mains cords</b></p> <p>Use only a Neutrik PowerCon TrueOne NAC3FX-W-TOP Connector. The user is responsible for ensuring power cables are of adequate condition for each application. If the power cords are damaged, replace them only with new ones. Never try to repair a power cord.</p>
	<p><b>Environmental: Disposal of old electrical &amp; electronic equipment</b></p> <p>This symbol on the product or on its packaging indicates that this product shall not be treated as household waste.</p>

## Spare Parts & Accessories

Description	SONARA™ 4:4	SONARA™ 3:2	SONARA™ 4:1
Lamp head	HIN98AR	HINWIAR	HIO8QAR
Yoke	JINKBAR	JIO1FAR	JIO8RAR
Locking handle	GN.15633	GN.15633	GN.15633
Eye bolt	JINKOAR	JINKOAR	JINKOAR
Controller	JIN9LAR	JIN9LAR	JIN9LAR
Controller extension cable	CIN9MAR	CIN9MAR	CIN9MAR
Controller extension cable pouch	YINBOAR	YINBOAR	YINBOAR
Aerial	HINXFAR	HINXFAR	HINXFAR
Power cord	VIKLI7	VIKLI7	VIKLI7
Soft box	JIN9OAR	JIO0RAR	
Soft box bag	YIN9PAR	YIO0SAR	
Full Grid Cloth	JIN9RAR	JIO0UAR	
Half Grid Cloth	JIN9SAR	JIO0VAR	
Quarter Grid Cloth	JIN9TAR	JIO0WAR	
Magic Cloth	JIN9QAR	JIO0TAR	
Egg crate	GJNBPAJ	GJO1HAJ	
Egg crate bag	YJNBQAJ	YJO1IAJ	
Rain cover – front	JINR8AR		
Rain cover – rear (flat)	JINR9AR		
Rain cover – rear (domed)	JINRAAR		



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# APPENDIX

## Gel Library

	Gel Name
2	Rose Pink
3	Lavender Tint
4	Medium Bastard Amber
7	Pale Yellow
8	Dark Salmon
9	Pale Amber Gold
10	Medium Yellow
13	Straw Tint
15	Deep Straw
17	Surprise Peach
19	Fire
20	Medium Amber
21	Gold Amber
22	Dark Amber
24	Scarlet
25	Sunset Red
26	Bright Red
27	Medium Red
29	Plasa Red
35	Light Pink
36	Medium Pink
46	Dark Magenta
48	Rose Purple
49	Medium Purple
52	Light Lavender

53	Paler Lavender
58	Lavender
61	Mist Blue
63	Pale Blue
68	Sky Blue
71	Tokyo Blue
75	Evening Blue
79	Just Blue
85	Deeper Blue
88	Lime Green
89	Moss Green
90	Dark Yellow Green
100	Spring Yellow
101	Yellow
102	Light Amber
103	Straw
104	Deep Amber
105	Orange
106	Primary Red
107	Light Rose
108	English Rose
109	Light Salmon
110	Middle Rose
111	Dark Pink
113	Magenta
115	Peacock Blue

116	Medium Blue-Green
117	Steel Blue
118	Light Blue
119	Dark Blue
120	Deep Blue
121	LEE Green
122	Fern Green
124	Dark Green
126	Mauve
127	Smokey Pink
128	Bright Pink
130	Clear
131	Marine Blue
132	Medium Blue
134	Golden Amber
135	Deep Golden Amber
136	Pale Lavender
137	Special Lavender
138	Pale Green
139	Primary Green
140	Summer Blue
141	Bright Blue
142	Pale Violet
143	Pale Navy Blue
144	No Colour Blue
147	Apricot

## Gel Library (cont.)

148	Bright Rose
151	Gold Tint
152	Pale Gold
153	Pale Salmon
154	Pale Rose
156	Chocolate
157	Pink
158	Deep Orange
159	No Colour Straw
161	Slate Blue
162	Bastard Amber
164	Flame Red
165	Daylight Blue
169	Lilac Tint
170	Deep Lavender
172	Lagoon Blue
174	Dark Steel Blue
176	Loving Amber
179	Chrome Orange
180	Dark Lavender
181	Congo Blue
182	Light Red
183	Moonlight Blue
184	Cosmetic Peach
186	Cosmetic Silver Rose
187	Cosmetic Rouge

188	Cosmetic Highlight
189	Cosmetic Silver Moss
191	Cosmetic Aqua Blue
192	Flesh Pink
194	Surprise Pink
195	Zenith Blue
196	True Blue
197	Alice Blue
198	Palace Blue
199	Regal Blue
200	Double C.T. Blue
201	Full C.T. Blue
202	Half C.T. Blue
203	Quarter C.T. Blue
204	Full C.T. Orange
205	Half C.T. Orange
206	Quarter C.T. Orange
207	Full C.T. Orange + .3 ND
208	Full C.T. Orange + .6 ND
212	L.C.T.Yellow (Y1)
213	White Flame Green
217	Blue Diffusion
218	Eighth C.T. Blue
219	LEE Fluorescent Green
221	Blue Frost

223	Eighth C.T. Orange
224	Daylight Blue Frost
225	Neutral Density Frost
230	Super Correction L.C.T.
232	Super Correction W.F.
236	H.M.I. (to Tungsten)
237	C.I.D. (to Tungsten)
238	C.S.I. (to Tungsten)
241	LEE Fluorescent 5700 Kelvin
242	LEE Fluorescent 4300 Kelvin
243	LEE Fluorescent 3600 Kelvin
244	LEE Plus Green
245	Half Plus Green
246	Quarter Plus Green
247	LEE Minus Green
248	Half Minus Green
249	Quarter Minus Green
278	Eighth Plus Green
279	Eighth Minus Green
281	Three Quarter C.T. Blue
283	One and a Half C.T. Blue
285	Three Quarter C.T. Orange
286	One and a Half C.T. Orange

## Gel Library (cont.)

287	Double C.T. Orange
322	Soft Green
323	Jade
327	Forest Green
328	Follies Pink
332	Special Rose Pink
343	Special Medium Lavender
345	Fuchsia Pink
352	Glacier Blue
353	Lighter Blue
354	Special Steel Blue
363	Special Medium Blue
366	Cornflower
441	Full C.T. Straw
442	Half C.T. Straw
443	Quarter C.T. Straw
444	Eighth C.T. Straw
500	Double New Colour Blue
501	New Colour Blue (Robertson Blue)
502	Half New Colour Blue
503	Quarter New Colour Blue
504	Waterfront Green
505	Sally Green
506	Marlene
507	Madge

508	Midnight Maya
511	Bacon Brown
512	Amber Delight
513	Ice and a Slice
514	Double G&T
525	Argent Blue
550	ALD Gold
600	Arctic White
601	Silver
602	Platinum
603	Moonlight White
604	Full C.T. Eight Five
642	Half Mustard Yellow
643	Quarter Mustard Yellow
650	Industry Sodium
651	HI Sodium
652	Urban Sodium
653	LO Sodium
700	Perfect Lavender
701	Provence
702	Special Pale Lavender
703	Cold Lavender
704	Lily
705	Lily Frost
706	King Fals Lavender
707	Ultimate Violet

708	Cool Lavender
709	Electric Lilac
710	Spir Special Blue
711	Cold Blue
712	Bedford Blue
713	J.Winter Blue
714	Elysian Blue
715	Cabana Blue
716	Mikkel Blue
717	Shanklin Frost
718	Half Shanklin Frost
719	Colour Wash Blue
720	Durham Daylight Frost
721	Berry Blue
722	Bray Blue
723	Virgin Blue
724	Ocean Blue
725	Old Steel Blue
727	QFD Blue
728	Steel Green
729	Scuba Blue
730	Liberty Green
731	Dirty Ice
733	Damp Squib
735	Velvet Green
736	Twickenham Green

## Gel Library (cont.)

738	JAS Green
740	Aurora Borealis Green
741	Mustard Yellow
742	Bram Brown
744	Dirty White
746	Brown
747	Easy White
748	Seedy Pink
749	Hampshire Rose
763	Wheat
764	Sun Colour Straw
765	LEE Yellow
767	Oklahoma Yellow
768	Egg Yolk Yellow
770	Burnt Yellow
773	Cardbox Amber
774	Soft Amber Key 1
775	Soft Amber Key 2
776	Nectarine
777	Rust
778	Millennium Gold
779	Bastard Pink
780	AS Golden Amber
781	Terry Red
787	Marius Red

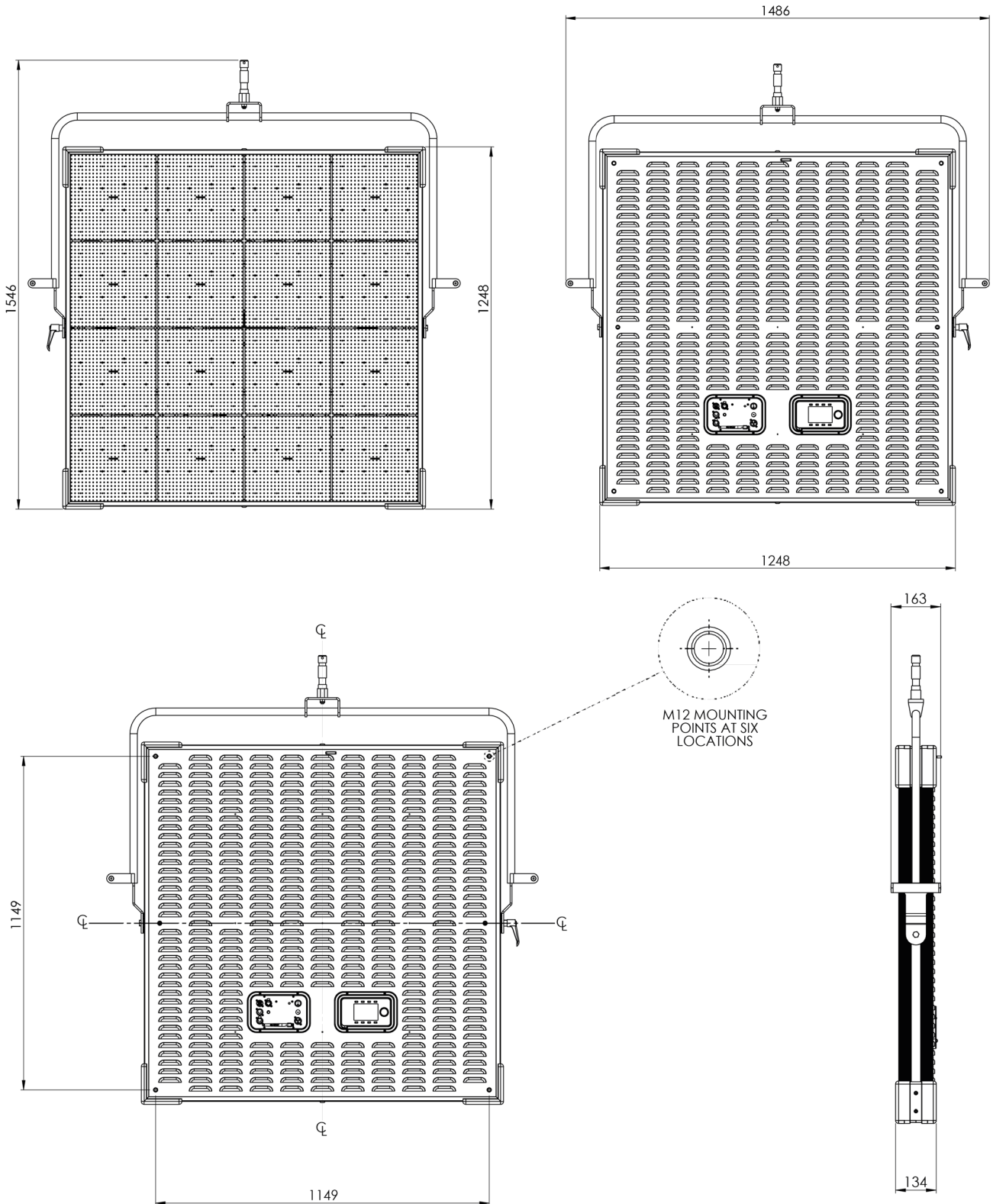
789	Blood Red
790	Moroccan Pink
791	Moroccan Frost
793	Vanity Fair
794	Pretty 'n Pink
795	Magical Magenta
797	Deep Purple
798	Chrysalis Pink
799	Special KH Lavender
801	Zircon Minus Green 1
802	Zircon Minus Green 2
803	Zircon Minus Green 3
804	Zircon Minus Green 4
805	Zircon Minus Green 5
806	Zircon Warm Amber 2
807	Zircon Warm Amber 4
808	Zircon Warm Amber 6
809	Zircon Warm Amber 8
810	Zircon Diffusion 1
811	Zircon Diffusion 2
812	Zircon Diffusion 3
813	Zircon Warm Amber 5
814	Zircon Warm Amber 9
815	Zircon Dark Density
816	Zircon Mid Density
817	Zircon Pale Density

818	Zircon Cool Blue 6
819	Zircon Cool Blue 8
820	Zircon Cool Blue 10
840	Special Cyan 15
841	Special Cyan 30
842	Special Cyan 60
850	Panalux Inky Blue
851	Panalux Full Amber
852	Panalux Phosphor Green
855	Panalux Midnight Layla
856	Panalux Backlight Blue
857	Panalux Deep Congo
858	Panalux Neon Pink
859	Panalux Salty Dog Sea
860	Panalux Lush Lavender
861	Panalux Deepest violet

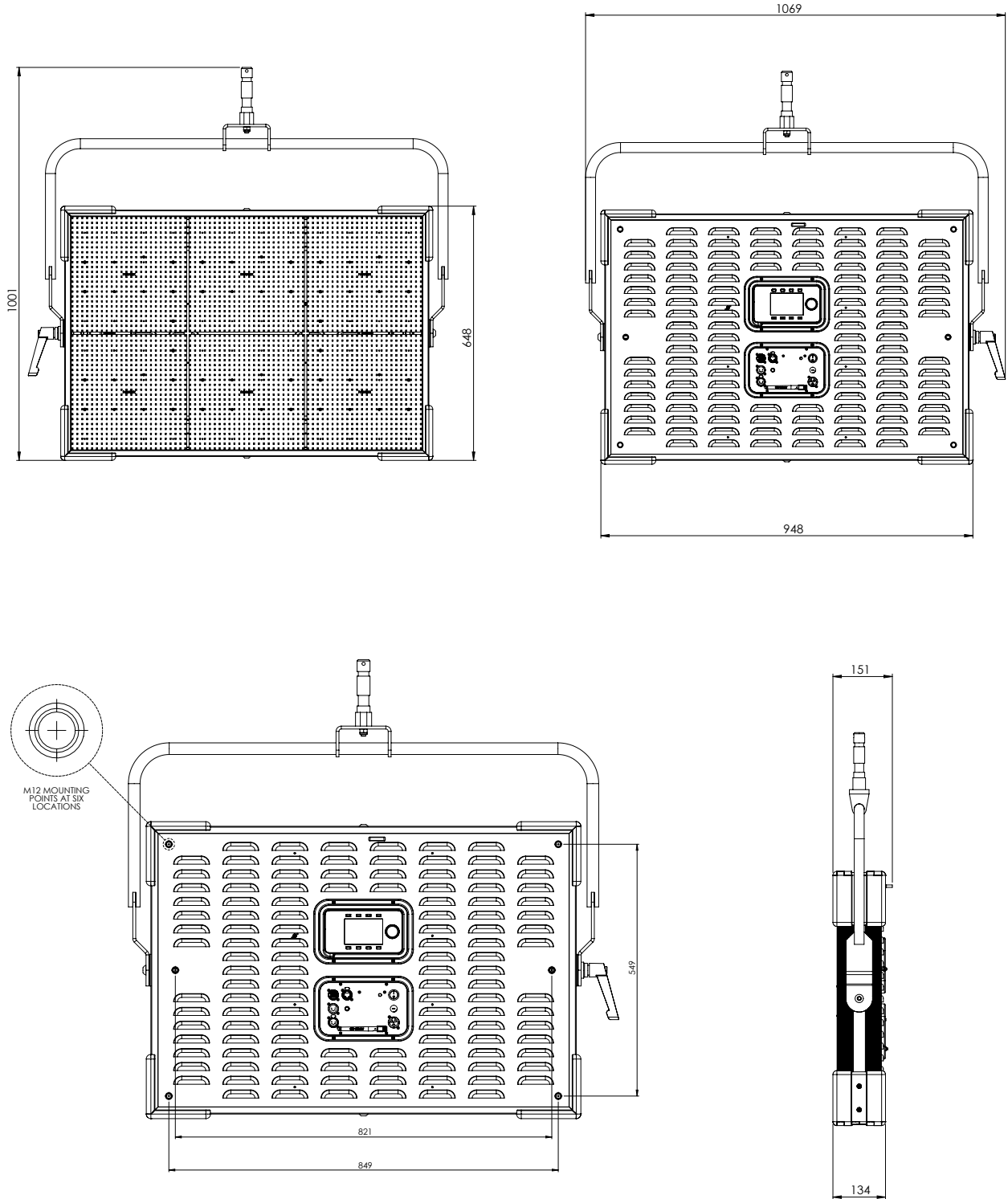
## Source Emulation List

900	SM - Candle flame 1700K	921	SM - Flourescent neutral white
901	SM - Candle flame 1850K	922	SM - Flourescent cold white
902	SM - High Quality Filament style domestic Tungsten LED	923	SM - Flourescent old green
903		924	SM - Halophosphate florescent
904	SM - Carbon arc	925	SM - Auto Xenon headlamp
905	SM - Low pressure sodium	926	SM - Auto Old style sealed beam headlamp
906	SM - Sodium vapour	927	SM - Auto Indicator lamp (modern)
907	SM - High Pressure sodium - stadium lighting	928	SM - Auto Indicator lamp (classic)
908	SM - Mercury vapour	929	SM - Auto side light (classic)
909	SM - Xenon	930	
910	SM - Arena lighting	931	
911	SM - Frosty night	932	
912	SM - Val d'isere	933	
913	SM - Watery winter sunlight	934	
914	SM - Shadow side winter sun	935	SM - Green screen (narrow band)
915	SM - Overcast winter dusk no sun	936	SM - Blue screen (narrow band)
916		937	SM - Green screen (power)
917	SM - Sunlight - 5790K - clear blue sky - midsummer	938	SM - Blue screen (power)
918	SM - Electronic flash	939	
919		940	
920	SM - Flourescent warm white		

## SONARA™ 4:4 Overall Dimensions & Rigging Centres



## SONARA™ 3:2 Overall Dimensions & Rigging Centres



## SONARA™ 4:1 Overall Dimensions & Rigging Centres

