Rail-R120

USER GUIDE

A combination of innovative audio technology
and high-end lighting

K-ARRAY
Unique Audio Solutions

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IMPORTANT SAFETY INSTRUCTIONS

Read these instructions - Keep these instructions
Heed all warnings

Warning. Failure to follow these safety instructions could result in fire, shock or other injury or damage to the device or other property.

Installation and commissioning may only be carried out by qualified and authorized personnel.

Switch-off the mains power supply before carrying out any connection or maintenance operations.

This fixture is intended for installation in accordance with National Electric Code and local regulation:
To assure full compliance with local codes and regulations, check with your local electrical inspector before installation

Symbols

K-array declares that this device is in compliance with applicable CE standards and regulations. Before putting the device into operation, please observe the respective country-specific regulations!

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

This symbol alerts the user to the presence of recommendations about the product's use and maintenance.

The lighting flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated, dangerous voltage within the product enclosure that may be of magnitude to constitute a risk of electrical shock.

This device complies with Restriction of Hazardous Substances Directive.

General heed and warnings

- Read these instructions.
- Keep this instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- K-array will not shoulder any responsibilities for products modified without prior authorization.

Luminaire

- The fixture has been tested according to the standard IEC 62471:2006 photobiological safety of lamps – the fixture is classified in risk group 1: no danger due to limitation of the product's built-in radiation emission.
- For information on LED replacement please contact K-array.
- The luminaire is used exclusively for lighting and is to be installed in accordance with the national installation regulations. Any other use or installation is regarded as «not according to instructions».

The luminaire wiring is provided with terminal block on one side only.
Ensure the wirings are sealed at both end of the fixture before powering.

Thank you for choosing this K-array product!

To ensure proper operation, please carefully read this reference manual and safety instructions before using the product.

After reading this manual, be sure to keep it for future reference. Should you have any questions about your new device please contact K-array customer service at support@k-array.com or contact the official K-array distributor in your country.

RAIL is an innovative LED lighting system incorporating innovative full-range loudspeakers to meet both lighting and sound needs.

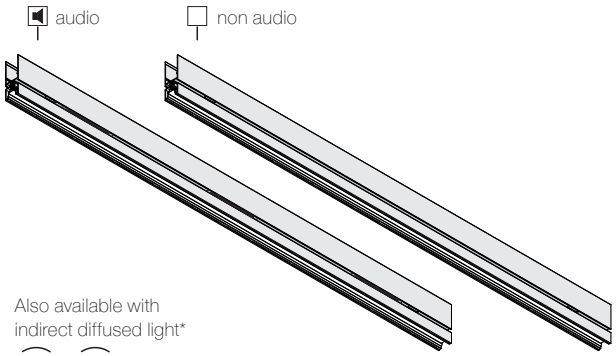
The 1,2-meter line of warm, homogeneous linear LED lights is available in a series of models and versions that suit many applications where lighting and sound coverage are required in an elegant, discreet installation with easy remote control.

As shown in the lighting figures, five RAIL models are available with optional indirect lighting. All RAIL models are available with or without audio:

	Symmetric		Symmetric with indirect lighting
	Symmetric + minispot		Symmetric + Mini Spot with indirect lighting
	Asymmetric		Asymmetric with indirect lighting
	Diffused		Diffused with indirect lighting
	Electrified Track		

The audio version comprises three evenly spaced full-range loudspeakers to be driven by a K-array external amplifier.

Symmetric

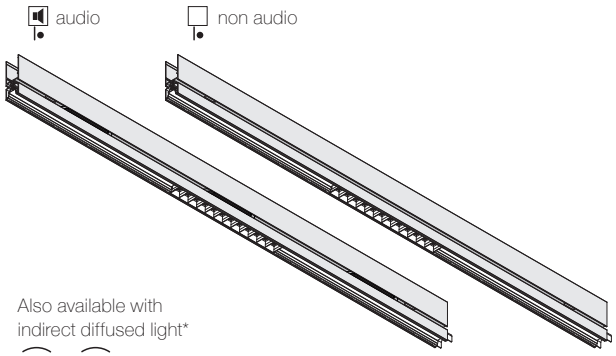


Also available with indirect diffused light*

Accessories	Mounting options
Plafond mounting kit - SINGLE Plafond mounting kit - DOUBLE	Plafond
Ceiling box FLUSHED	Flushed
Ceiling box SEMI-FLUSHED	Semi-flushed
Pendant mounting kit - SINGLE Pendant mounting kit - DOUBLE	Pendant
End closure	

* Indirect light available for Pendant mounting options only

Symmetric + Mini Spot

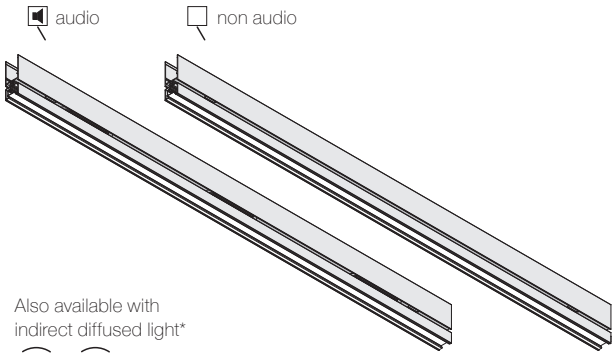


Also available with indirect diffused light*

Accessories	Mounting options
Plafond mounting kit - SINGLE Plafond mounting kit - DOUBLE	Plafond
Ceiling box FLUSHED	Flushed
Ceiling box SEMI-FLUSHED	Semi-flushed
Pendant mounting kit - SINGLE Pendant mounting kit - DOUBLE	Pendant
End closure	

* Indirect light available for Pendant mounting options only

Asymmetric

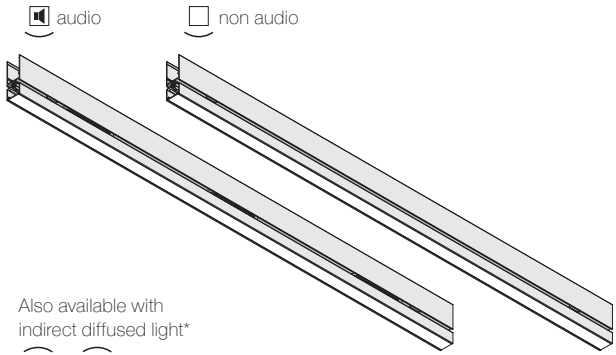


Also available with indirect diffused light*

Accessories	Mounting options
Plafond mounting kit - SINGLE Plafond mounting kit - DOUBLE	Plafond
Ceiling box FLUSHED	Flushed
Ceiling box SEMI-FLUSHED	Semi-flushed
Pendant mounting kit - SINGLE Pendant mounting kit - DOUBLE	Pendant
Applique bracket	Applique
End closure	

* Indirect light available for Pendant and Applique mounting options only

Diffused



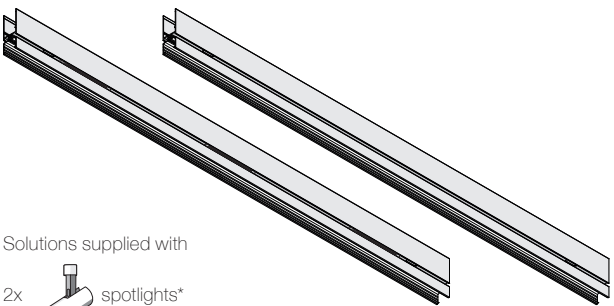
Also available with indirect diffused light*

Accessories	Mounting options
Plafond mounting kit - SINGLE Plafond mounting kit - DOUBLE	Plafond
Ceiling box FLUSHED	Flushed
Ceiling box SEMI-FLUSHED	Semi-flushed
Pendant mounting kit - SINGLE Pendant mounting kit - DOUBLE	Pendant
End closure	

* Indirect light available for Pendant mounting options only

Electrified Track

audio non audio



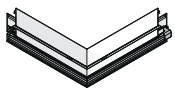
Solutions supplied with
2x spotlights*

Accessories	Mounting options	
Plafond mounting kit - SINGLE Plafond mounting kit - DOUBLE		Plafond
Ceiling box FLUSHED		Flushed
Ceiling box SEMI-FLUSHED		Semi-flushed
End closure		

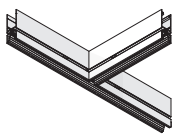
	* Up to 4 spotlights can be installed on a single RAIL electrified track unit

Joining Links

Symmetric

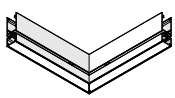


L joining link with symmetric light

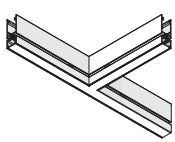


T joining link with symmetric light

Diffused

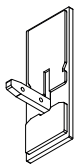


L joining link with diffused light

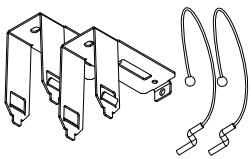


T joining link with diffused light

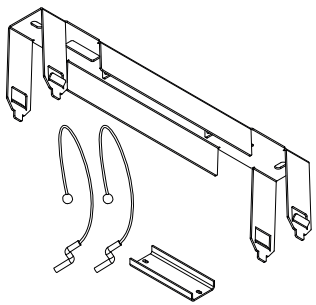
Accessories



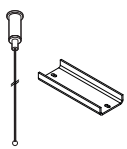
End closure
RTB
RTW



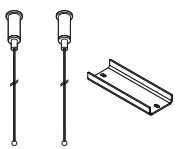
Plafond mounting kit
Single
PLA1-120



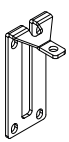
Plafond mounting kit
Double
PLA2-120



Pendant mounting kit
Single
PEN1-120

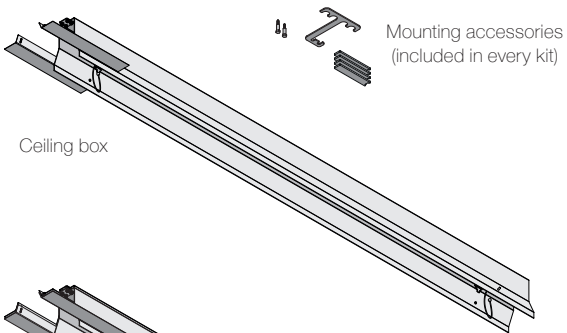


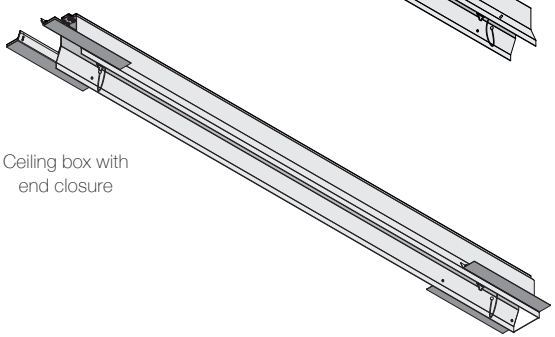
Pendant mounting kit
Double
PEN2-120

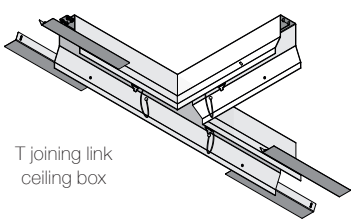


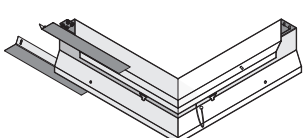
Applique
bracket
APP120

Ceiling box for Flushed mounting

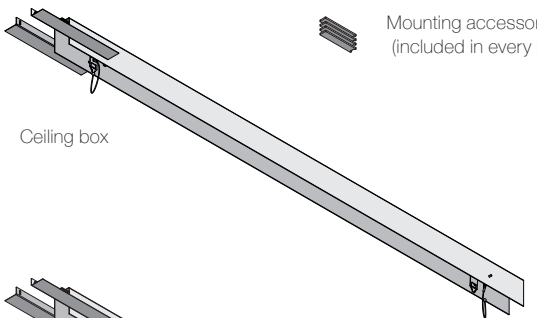


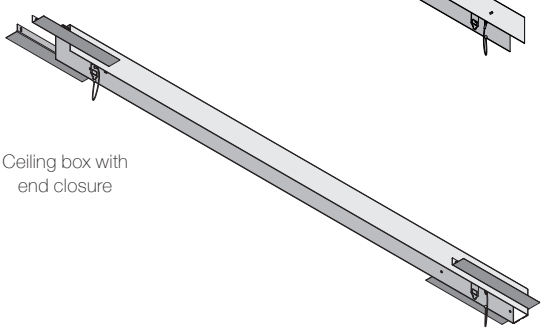


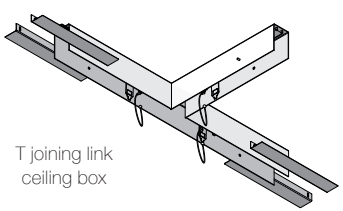


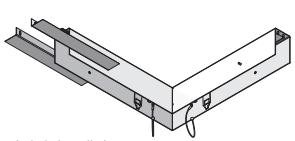


Ceiling box for Semi-flushed mounting



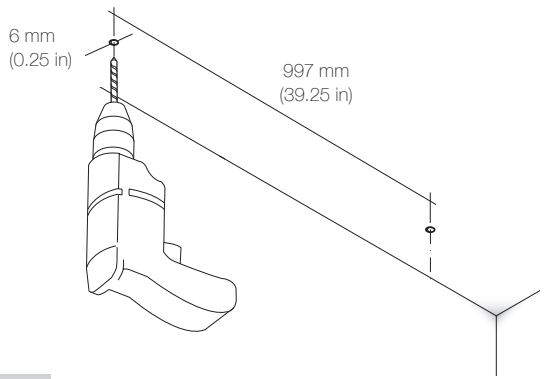




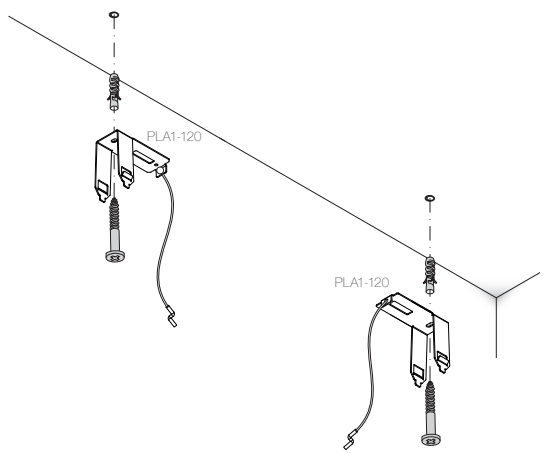


Plafond Installation Instructions

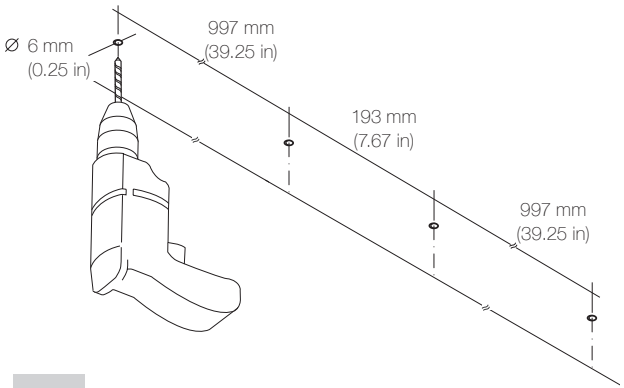
A.1 Single unit installation



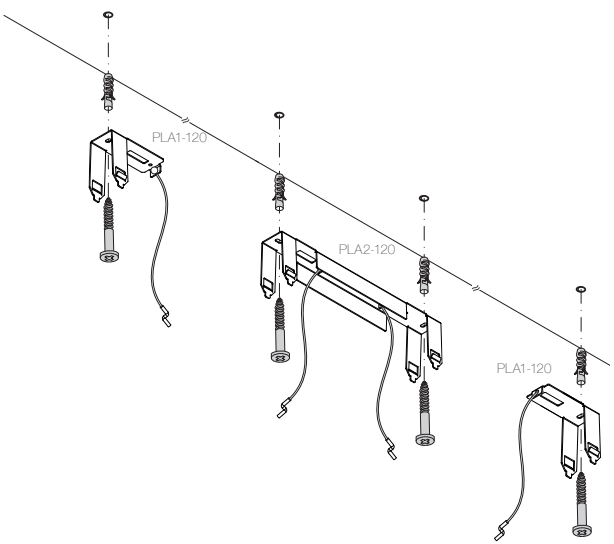
A.2



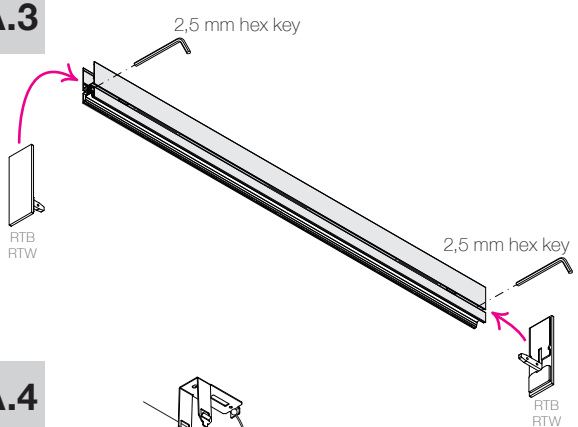
B.1 Multiple units in row setup



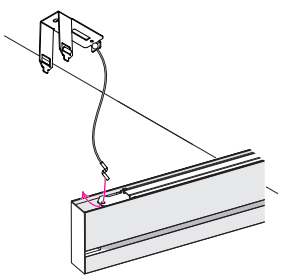
B.2



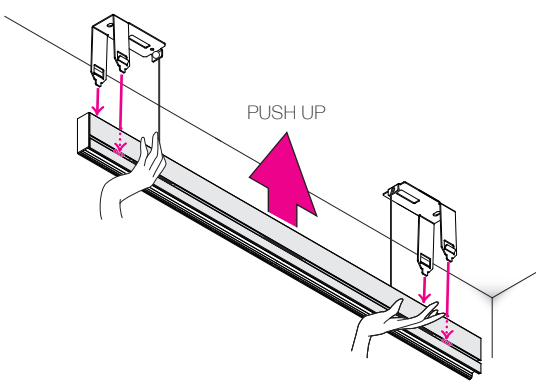
A.3



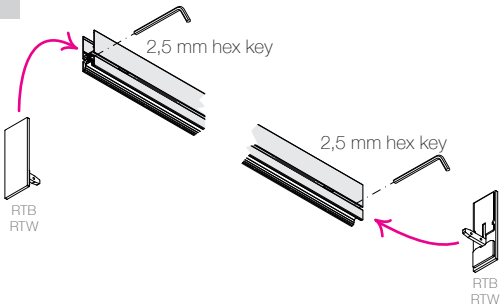
A.4



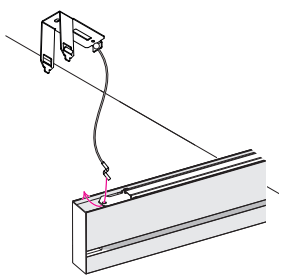
A.5



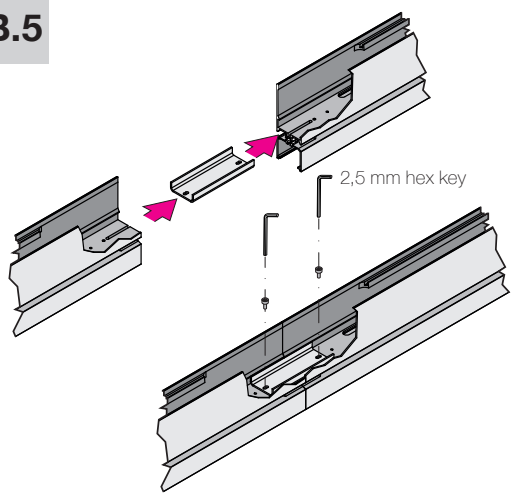
B.3



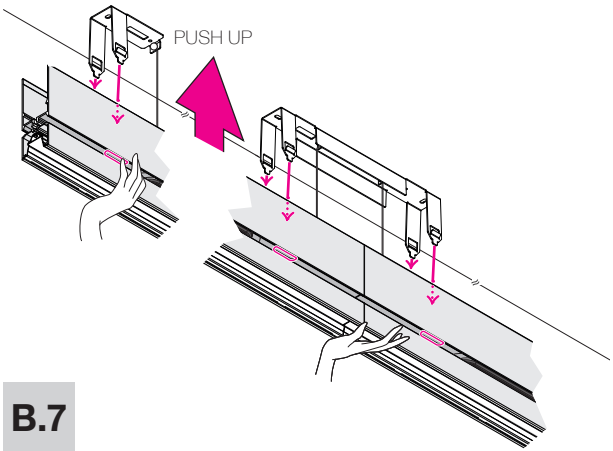
B.4



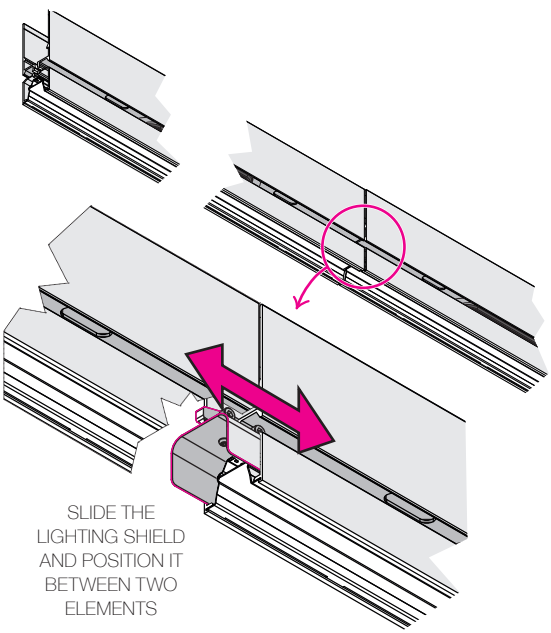
B.5



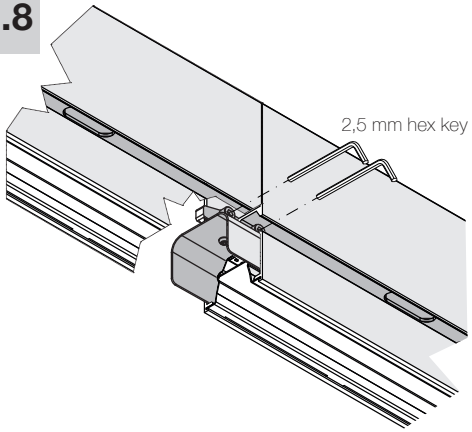
B.6


PUSH UP

B.7


SLIDE THE
LIGHTING SHIELD
AND POSITION IT
BETWEEN TWO
ELEMENTS

B.8

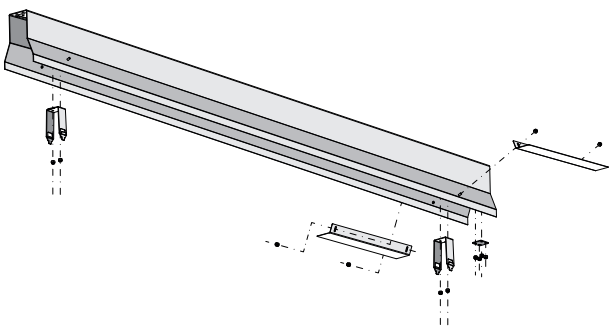

2,5 mm hex key

Ceiling Installation Instructions

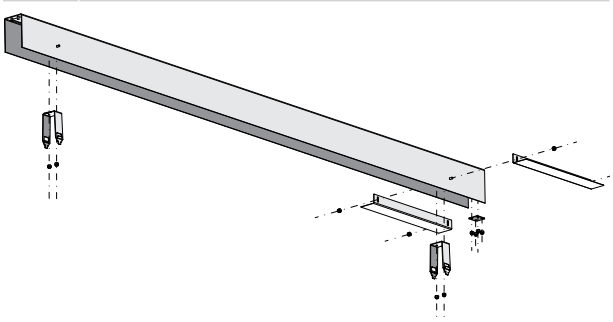
1 Assembling the ceiling box

The RAIL lighting system can be installed in the ceiling either flushed or semi-flushed. The proper ceiling box shall be assembled before setting the RAIL, according to the selected mounting option.

Ceiling box for Flushed mounting

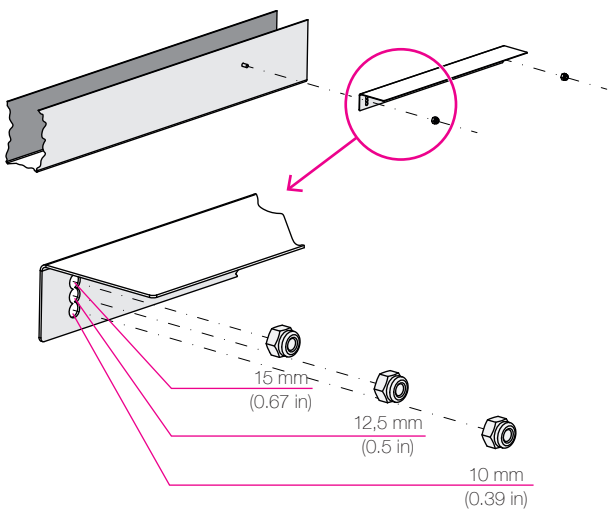


Ceiling box for Semi-flushed mounting



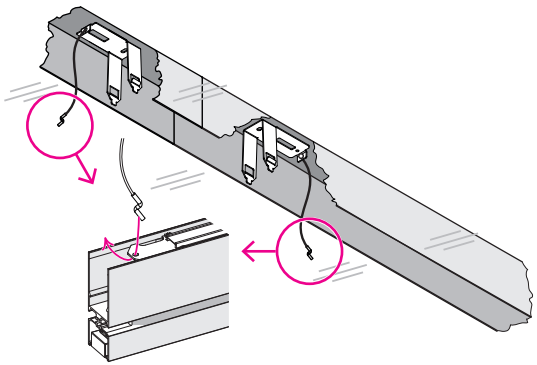
2

While assembling the ceiling box, select the height of the brackets matching the thickness of the ceiling panels.
Three options are available for either 10 mm (0.39 in), 12,5 mm (0.5 in) or 15 mm (0.67 in) ceiling panel thickness.

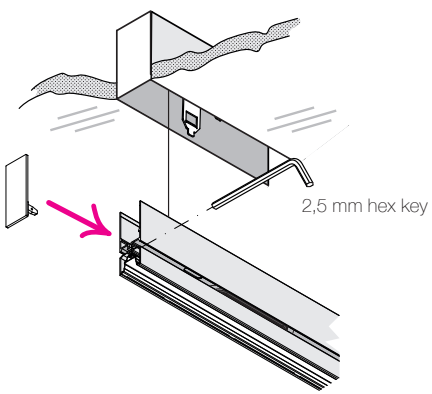


All nuts are M3; use a 5,5 mm wrench for tightening.

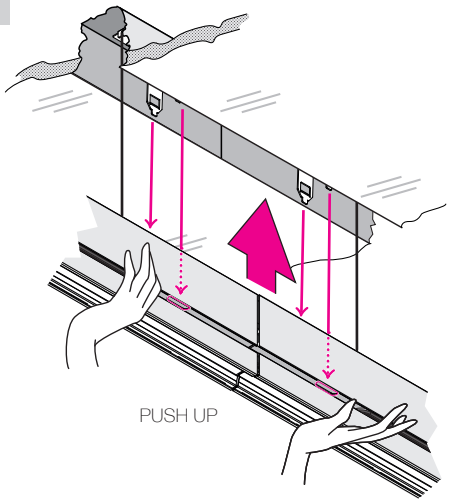
C.1 Semi-flushed ceiling box installation



C.2



C.3



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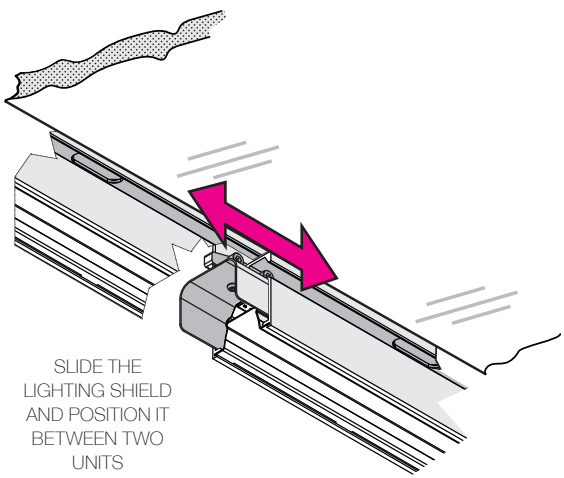

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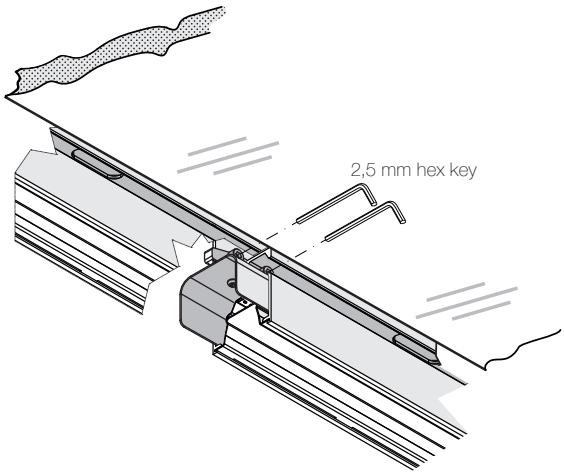
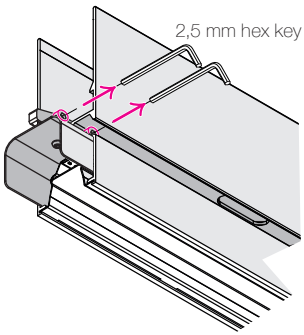
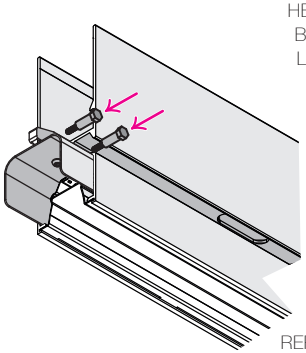


D.1 Flushed ceiling box installation



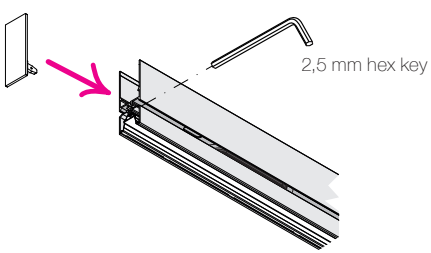
D.2

REMOVE THE HEXAGON SOCKET BOLTS FROM THE LIGHTING SHIELD

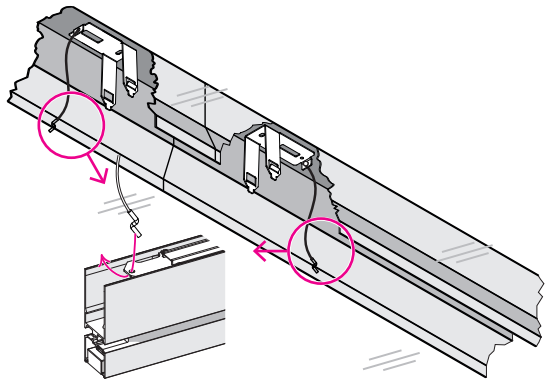


REPLACE THE BOLTS WITH THE ONES PROVIDED WITH THE CEILING BOX

D.3



D.4



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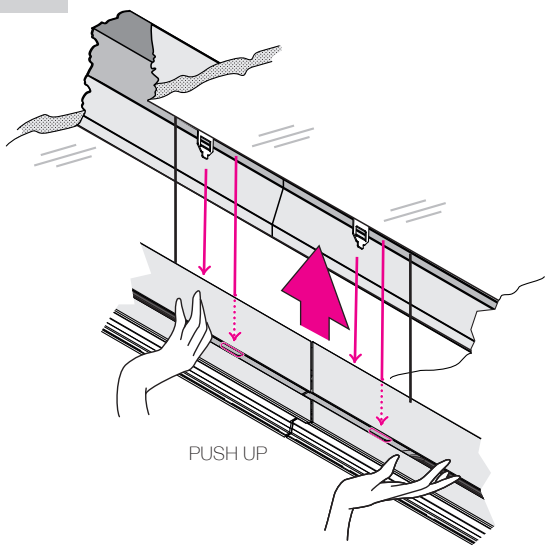

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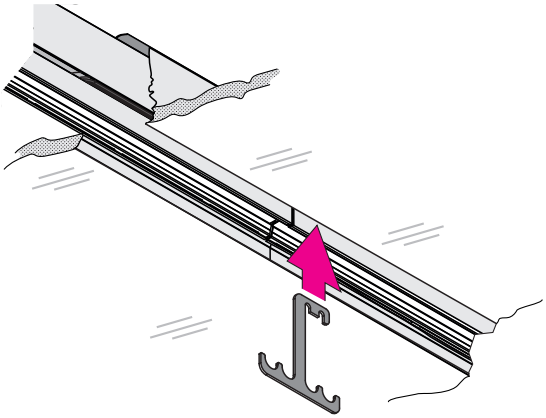
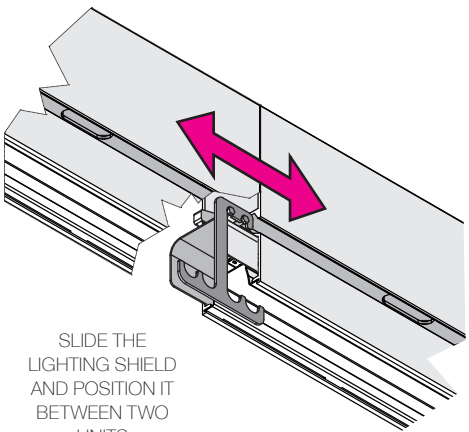
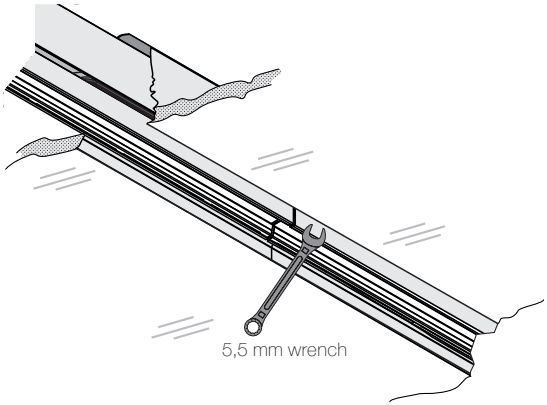




SLIDE THE LIGHTING SHIELD AND POSITION IT BETWEEN TWO UNITS

D.7

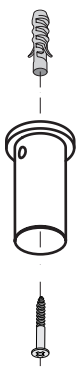


Pendant Installation instructions

1 Assembling the ceiling griplock

PEN1-120
PEN2-120

2



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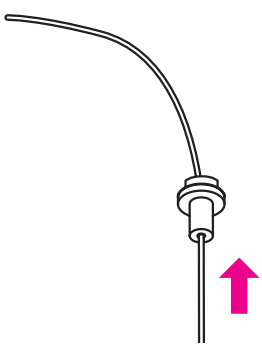

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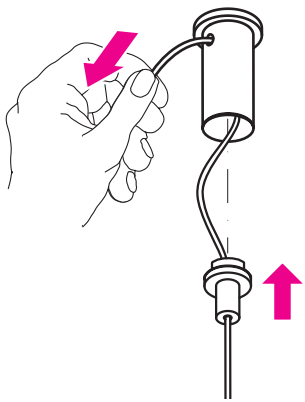

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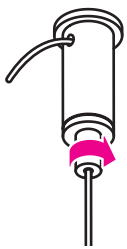
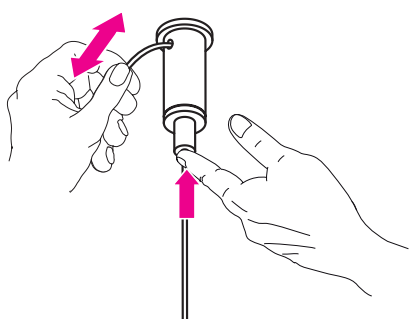
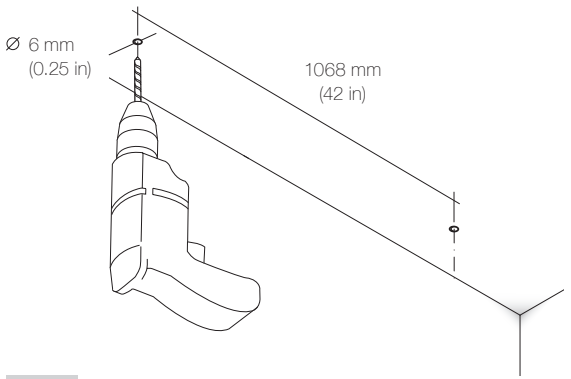
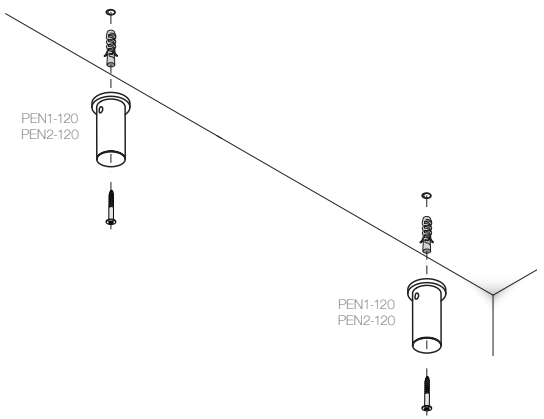




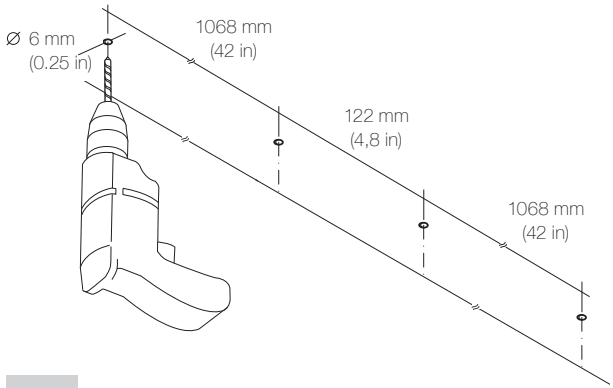
E.1 Single unit installation



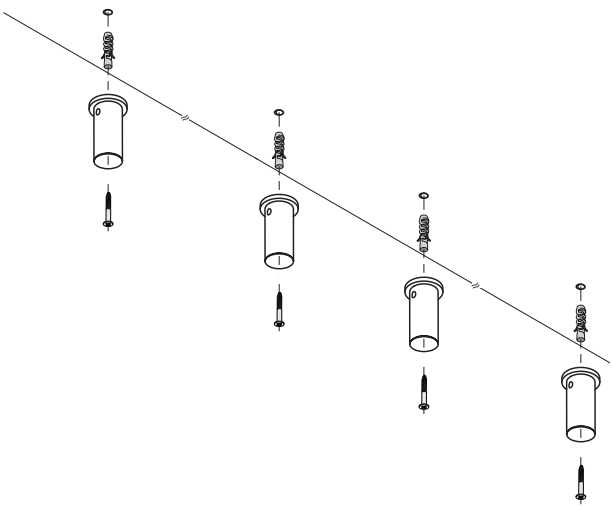
E.2



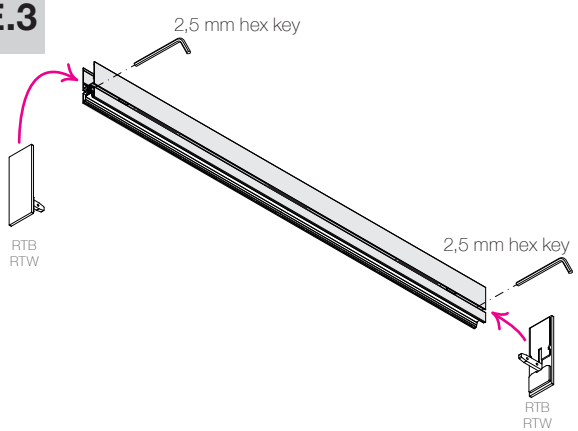
F.1 Multiple units in a row setup



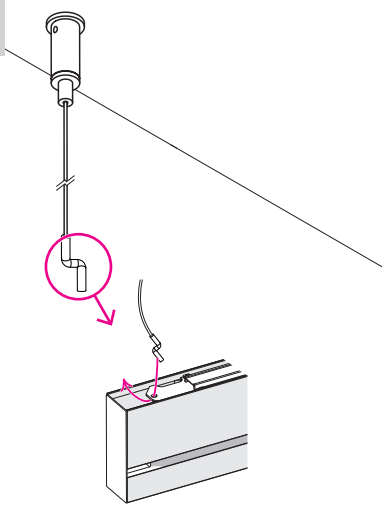
F.2



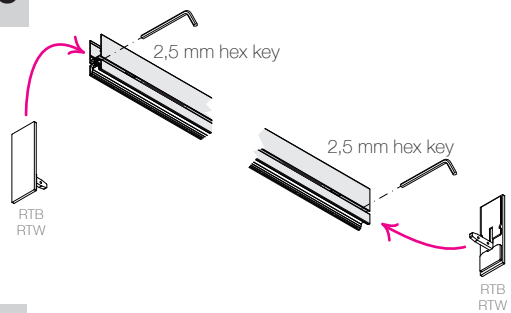
E.3


2,5 mm hex key
RTB
RTW
2,5 mm hex key
RTB
RTW

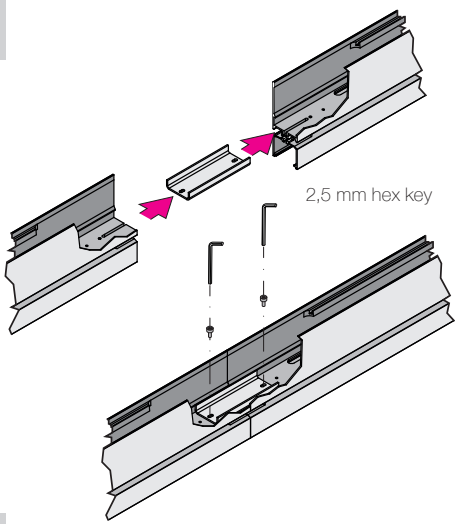
E.4



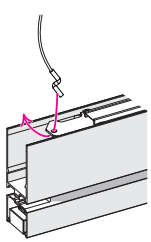
F.3


2,5 mm hex key
RTB
RTW
2,5 mm hex key
RTB
RTW

F.4


2,5 mm hex key

F.5



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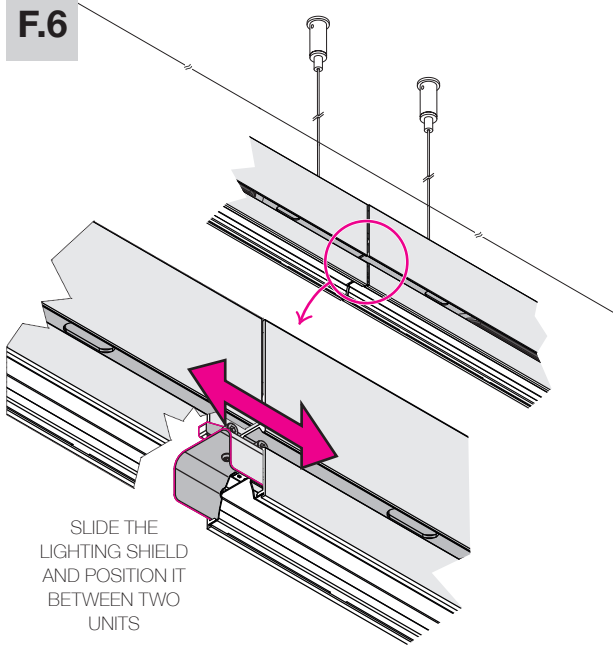
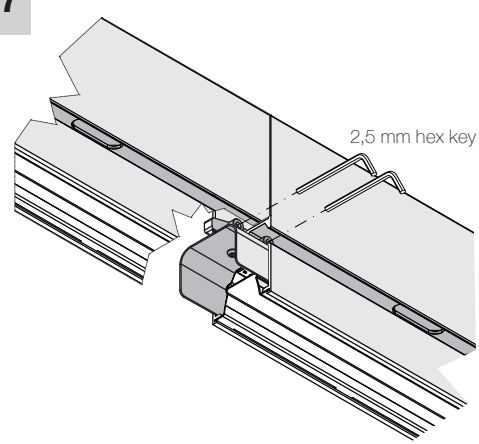
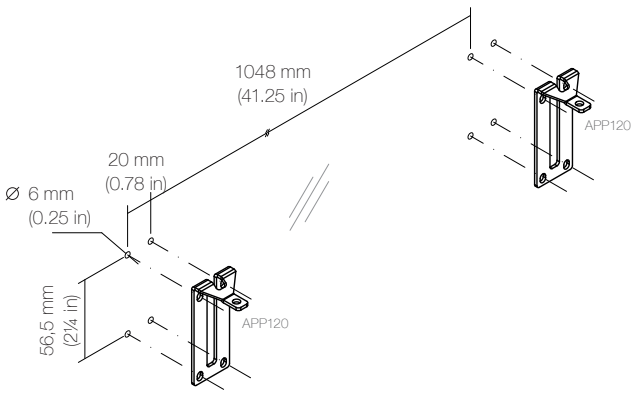

SLIDE THE
LIGHTING SHIELD
AND POSITION IT
BETWEEN TWO
UNITS

F.7

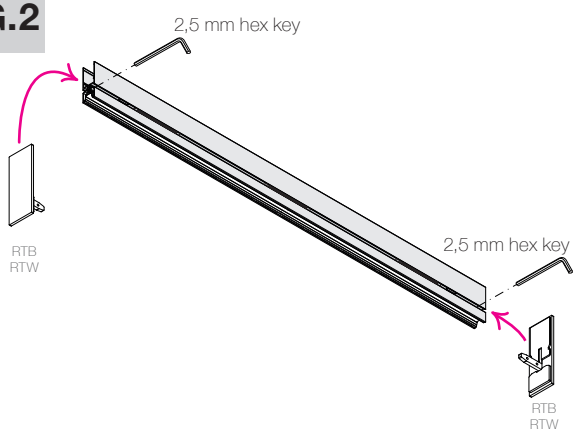

2,5 mm hex key

Applique Installation Instructions

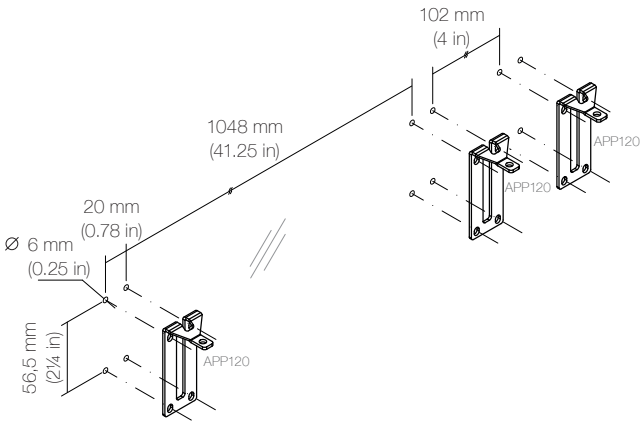
G.1 Single unit installation



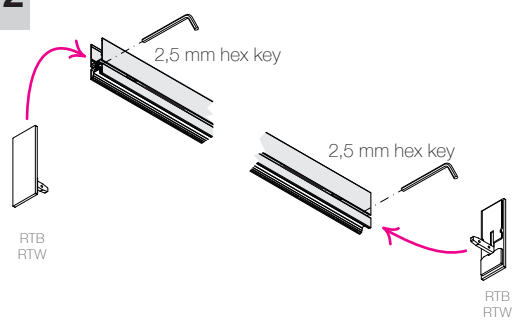
G.2



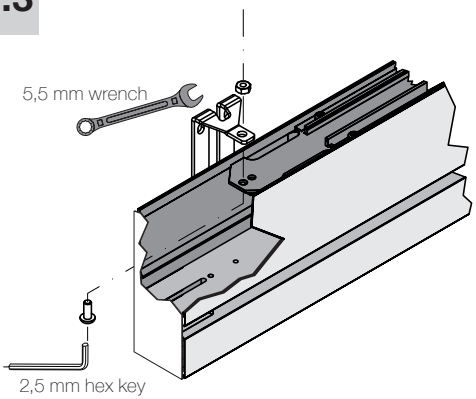
H.1 Multiple units in row setup



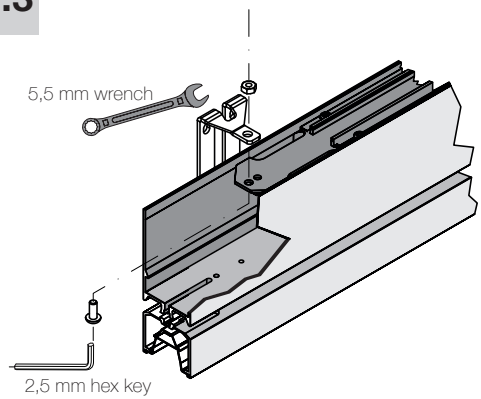
H.2



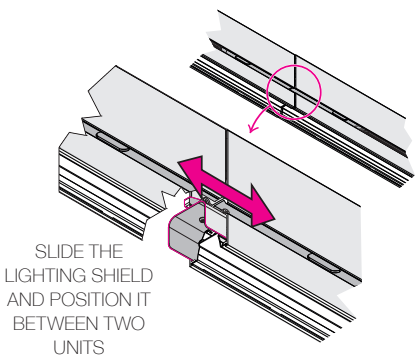
G.3


5,5 mm wrench
2,5 mm hex key

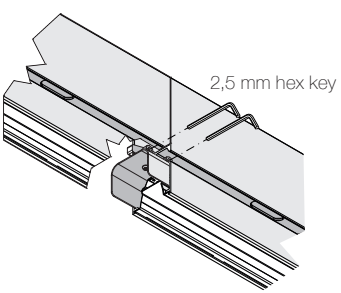
H.3


5,5 mm wrench
2,5 mm hex key

H.4

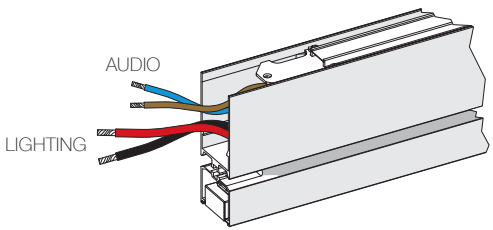

SLIDE THE
LIGHTING SHIELD
AND POSITION IT
BETWEEN TWO
UNITS

H.5


2,5 mm hex key

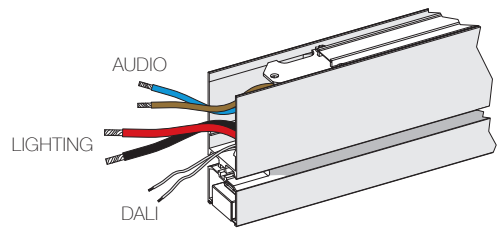
Connectivity

Two wiring pairs are always present on each RAIL model: the RED/BLACK pair is dedicated to powering the luminaire and the BLUE/BROWN pair carries the audio signal.



To guarantee the power, audio signal and control signal are carried to all units in a system, wirings need to be passed through then sealed only on one end by utilizing a removable end closure.

Two further WHITE wires are provided for DALI (Digital Addressable Lighting Interface) control protocol in DALI equipped models.



Ensure the wirings are sealed
at both ends of the fixture before powering.

Lighting

Stating the power consumption and current draw of the luminaire, no more than 5 units can be connected in cascade. The suggested power supply unit is a 24 ±1,0% V_{DC} Constant Voltage.

Model	Power Consumption			
Symmetric		32 W		50 W
Symmetric + Mini Spot		32 W		50 W
Asymmetric		32 W		50 W
Diffused		32 W		50 W
Spotlight (Electrified Track)		7 W	4x	28 W

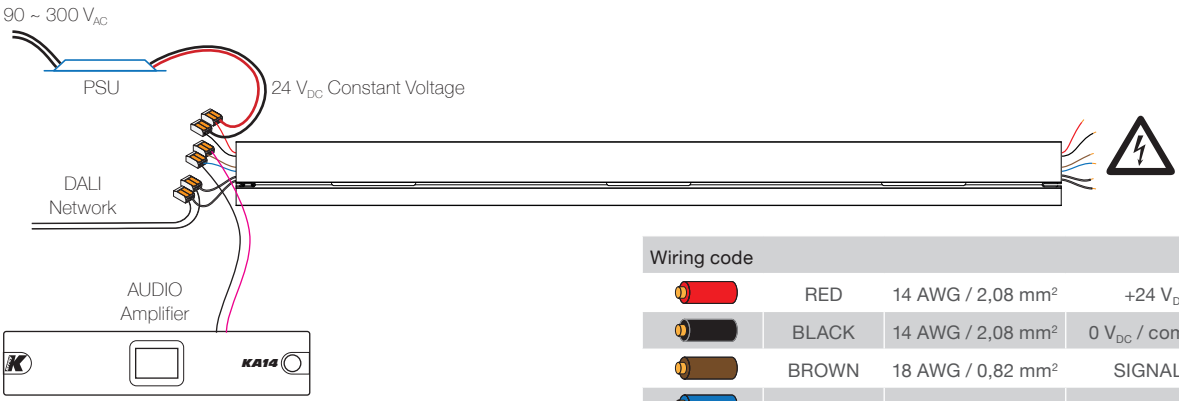
Audio

In case of a long cable run from the amplifiers to the loudspeakers, a 14 AWG / 2 mm^2 backbone wiring is suggested.

K-array Kommander series amplifiers can drive up to 12 RAIL units per output channel.

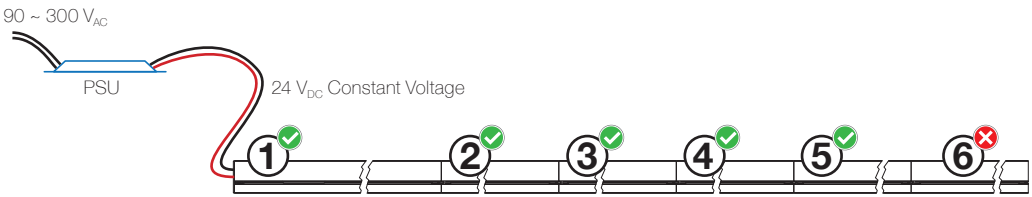
Number of units in parallel	1	2	3	4	6	8	12
Impedance	48 Ω	24 Ω	16 Ω	12 Ω	8 Ω	6 Ω	4 Ω

Wiring



Wiring code			
	RED	14 AWG / 2,08 mm²	+24 V_{DC}
	BLACK	14 AWG / 2,08 mm²	0 V_{DC} / common
	BROWN	18 AWG / 0,82 mm²	SIGNAL +
	BLUE	18 AWG / 0,82 mm²	SIGNAL –
	WHITE	22 AWG / 0,32 mm²	DALI
	WHITE	22 AWG / 0,32 mm²	DALI

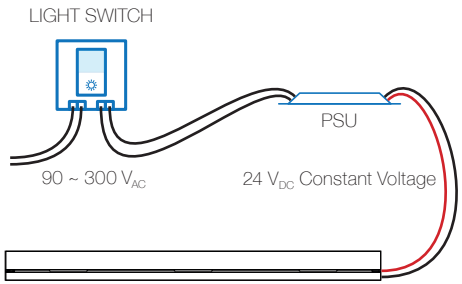
Cascade connection



Regardless of the power supply output capability for lighting,
up to 5 RAIL units only can be connected in a cascade (daisy chain).

Dim Lighting

The RAIL luminaire can be controlled by a traditional light switch to toggle it completely on and off. Light dimming can be achieved by connecting a PWM Dimming Controller between the power supply and the RAIL.



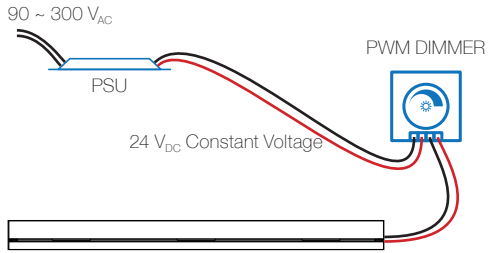
The RAIL models with DALI implement a control gear that integrates the luminaire into a DALI network for lighting in building automation.

The DALI RAIL models with a single luminaire (Symmetric, Asymmetric, Diffused, Electrified Track) are addressable with a single DALI channel per unit. A further channel per unit is available on the Symmetric + Mini Spot model, or when the optional indirect diffused light is present.

The Symmetric + Mini Spot model with indirect light is a three-channel luminaire.

Model	DALI Channels	
	1 channel	Direct light
	2 channels	1st: Direct light 2nd: Indirect or spot light
	3 channels	1st: Direct light 2nd: Spot light 3rd: Indirect light

The PWM Dimming Controller shall be compatible with 24 V_{DC} Constant Voltage, 10 A_{min} LED light application.



The Digital Addressable Lighting Interface (DALI) is a network-based system designed to overcome the limits of the old 0–10 V lighting control system. DALI is an open standard (IEC 62386 and IEC 60929) alternative to Digital Signal Interface (DSI), on which it is based.

A DALI network consists of a controller, a power supply (which may be built into the controller) and one or more slave devices. The controller can monitor and control each device by means of a bi-directional data exchange. The DALI protocol permits devices to be individually addressed and it also allows multiple devices to be addressed simultaneously via multicast and broadcast messages.

A single pair of wires comprise the bus used for communication to all devices on a DALI network. The bus is used for both signal communications and powering the controllers. The network can be arranged in a bus or star topology, or a combination of these. Each device on a DALI network can be addressed individually.

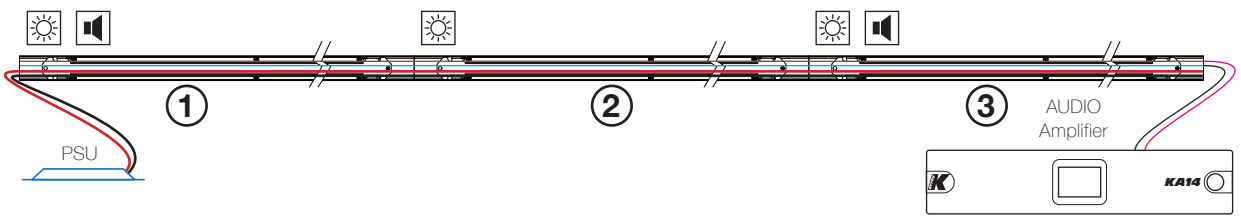
Examples

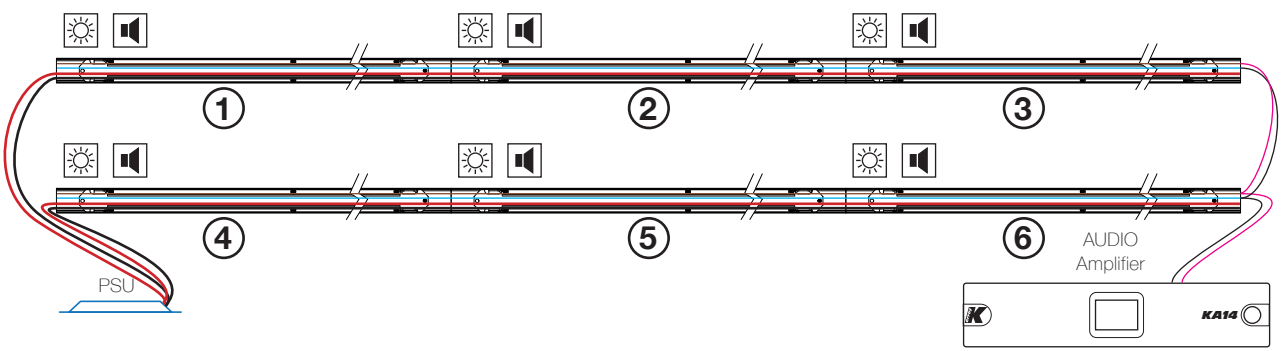
The following pictures are shown just to introduce the features of the product and may not represent real installation conditions.

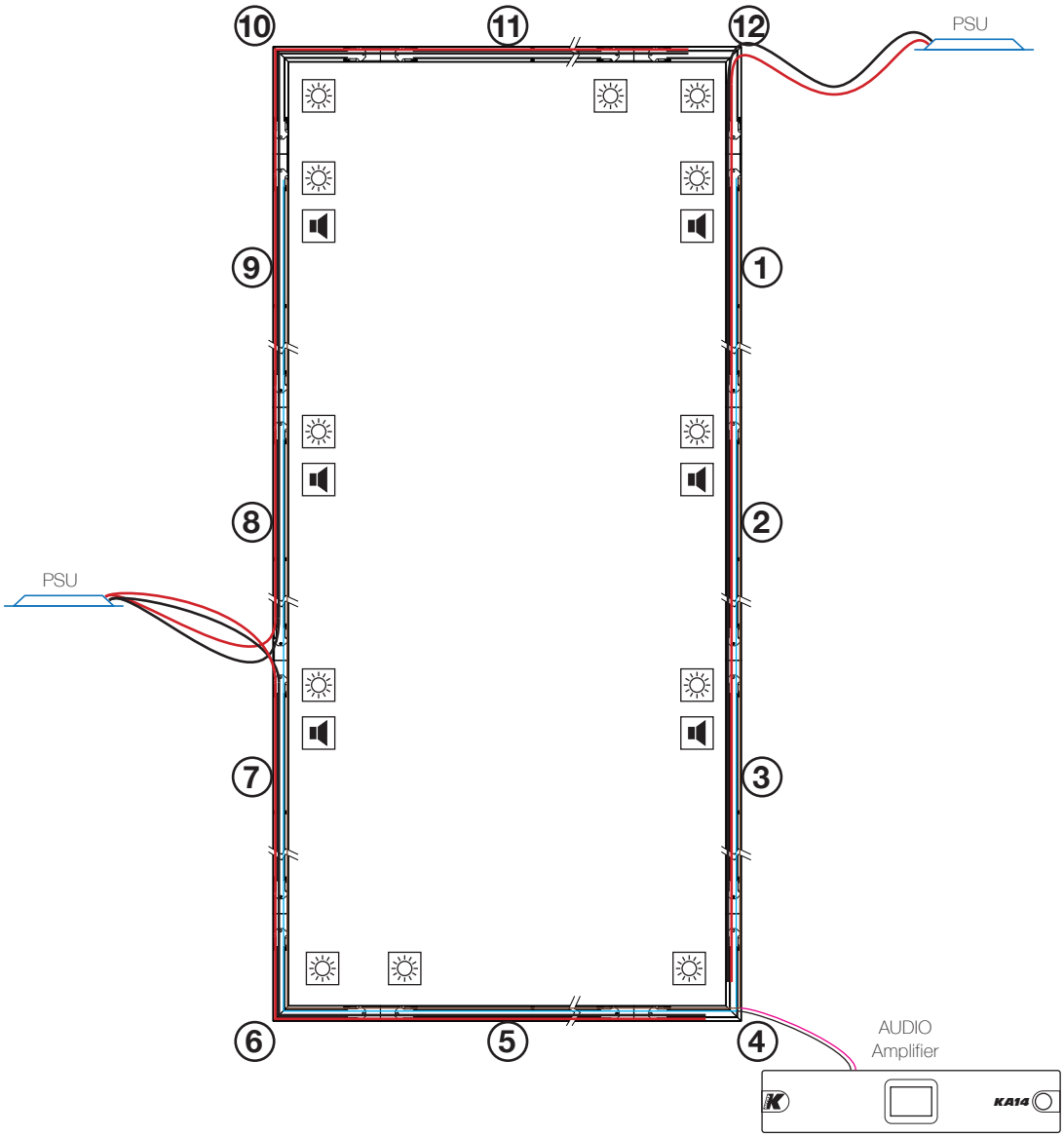
For DALI networking please refer to specified publications.
As main rules, please consider that:

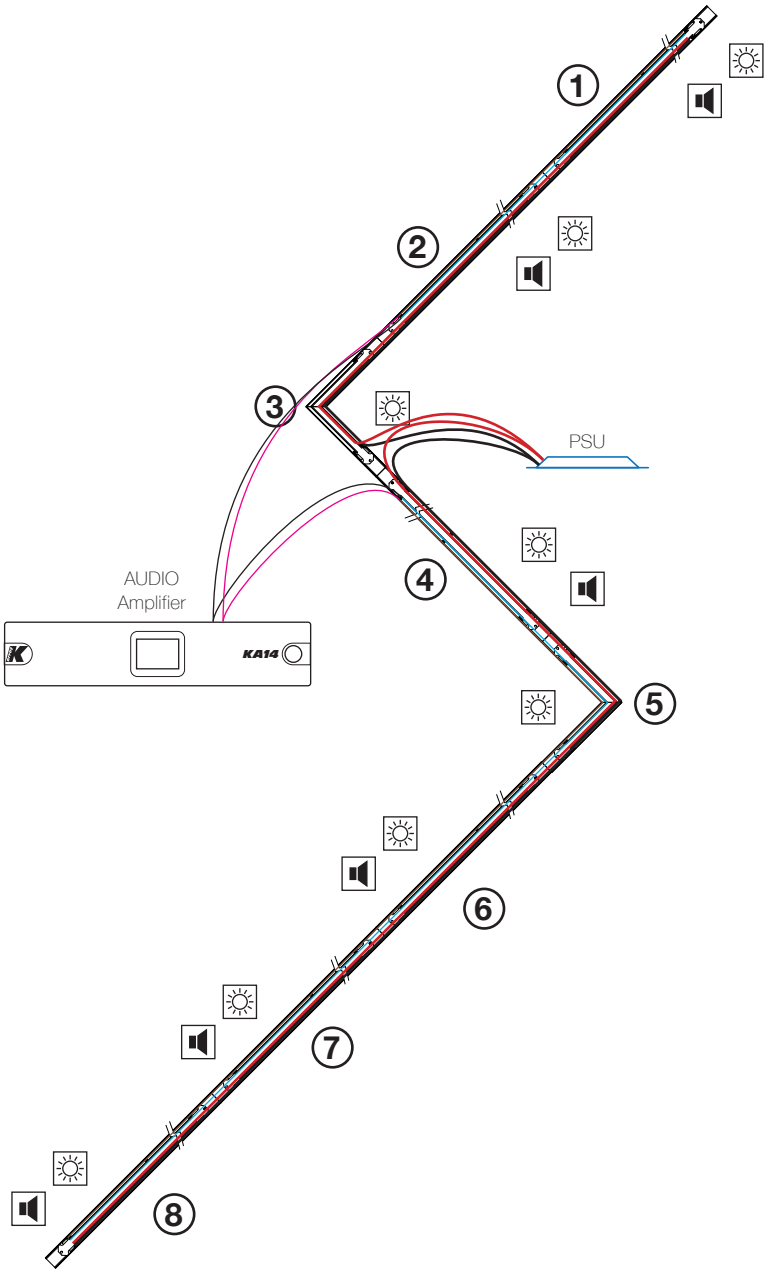
- Lighting: up to 5 RAIL units can be connected in daisy chain (parallel connections overcome this limit);
- Audio: up to 12 RAIL units can be connected to a single amplifier output channel.

Legend			
	RAIL with light		+24 V_{DC}
	RAIL with audio		0 V_{DC} / common
			AUDIO SIGNAL +
			AUDIO SIGNAL –






10
11
12
PSU
9
1
8
2
PSU
7
3
6
5
4
AUDIO
Amplifier
KA14


1
2
3
PSU
AUDIO
Amplifier
KA14
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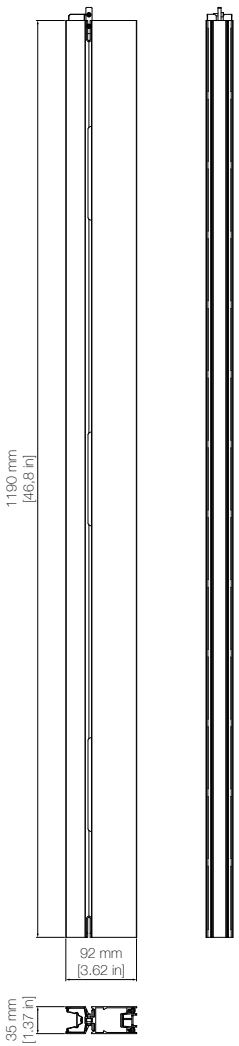
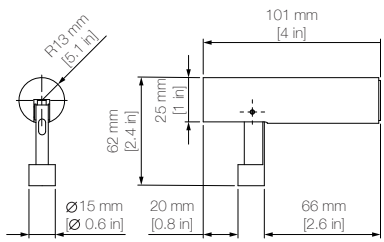
Summary of the Configurations

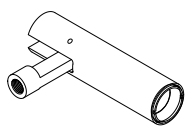
Audio / Non Audio	Light Geometry	Dimming Control	Lighting Options	Mounting Options
Audio	Symmetric	24V	Direct only	Pendant
				Flushed
				Semi-Flushed
Non audio		DALI	Direct - Indirect	Pendant
				–
Audio	Symmetric + Mini Spot	DALI	Direct only	Pendant
				Flushed
				Semi-Flushed
Non audio			Direct - Indirect	Pendant
				–
Audio	Asymmetric	24V	Direct only	Pendant
				Flushed
				Semi-Flushed
Non audio		DALI	Direct - Indirect	Pendant
				Applique
Audio	Diffused	24V	Direct only	Pendant
				Flushed
				Semi-Flushed
Non audio		DALI	Direct - Indirect	Pendant
				Applique
Audio	Electrified Track	DALI	Direct only	Pendant
				Flushed
				Semi-Flushed
Non audio			–	–
				–

Mechanical Drawings



Spotlight





Spotlight technical specifications	
Color Temperature	3000 K
Color Rendering Index	CRI > 90 (UNI 10380)
Luminous Power	290 lm
Efficiency	127 lm/W
Ingress Protection Code	IP40
Power Consumption	7 W
Input Voltage	24 Vdc constant voltage

Technical Specifications

Light	
Lighting source	NICHIA T02 LED on rigid PCB (either direct and indirect lighting)
Light reflector	Parabolic MIRO-SILVER® Aluminum reflector with more than 98% efficiency
Color Temperature	3000 K (on request 2700 K or 4000 K)
Color Rendering Index	CRI > 90 (UNI 10380)
Luminous Power	3680 lm @ 3000 K
LED lifetime	LM-80: 60.000 hours
Efficiency	111 lm/W @ 3000 K
Control Interface	on/off, DALI on request
Ingress Protection Code	IP40
Power Consumption	32 W (+ 18 W for optional indirect light) per 120 cm unit
Input Voltage	24 Vdc constant voltage
Regulations	EN 60598-1:2015 – EN 60598-2-1:1989 – EN 62471:2008

Audio	
Type	Distributed point sources
Drivers	3 x 1” x 5” neodymium magnet drivers with 0.75” voice coil
Frequency Response	60 Hz – 20 kHz (-6 dB) [full-range preset @ 84 dB max SPL] 200 Hz – 20 kHz (-6 dB) [w/ subwoofer preset @ 97 dB max SPL]
Rated Power	75 W peak
Maximum SPL	100 dB (peak)
Nominal Impedance	48 Ω
Coverage	V: 10° | H: 110° (unit set in vertical position)
Recommended Audio Amplifier	Kommander-KA02, Kommander-KA14, Kommander-KA24

Handling and Finishes	
Dimensions (WxHxD)	1190 x 35 x 92 mm (46.8 x 1.37 x 3.62 in)
Weight	3,0 kg (6.61 lb)
Colors & Finishes	Black, White, Custom RAL color

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Designed and Made in Italy

K-ARRAY surl
Via P. Romagnoli 17 | 50038 Scarperia e San Piero - Firenze - Italy
ph +39 055 84 87 222 | info@k-array.com

www.k-array.com