Pavilion O,
by Kettal Studio

kettal

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Pavilion O,
Structure & Parts

kettal

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Acoustic ceiling

Canopy acoustic ceiling

Canopy aluminum slats

Canopy wooden slats

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Curved canopy structure

Straight corner canopy

Sliding doors

Swing door

Structure
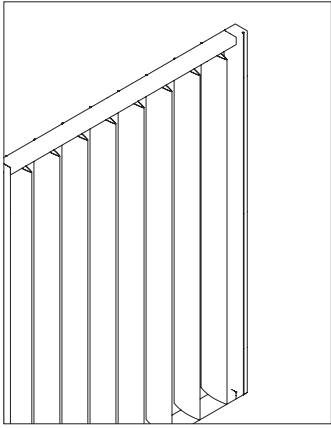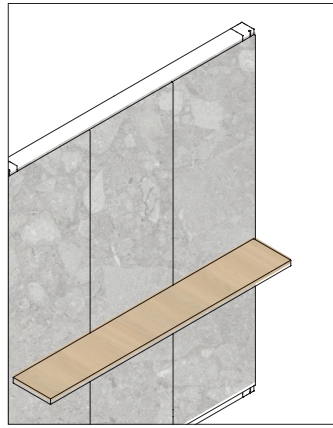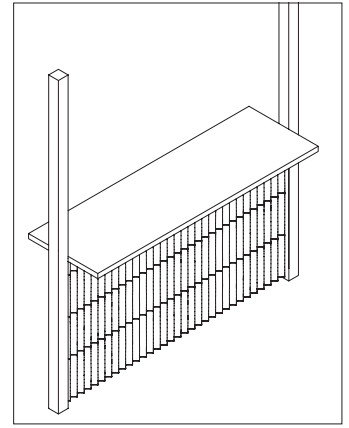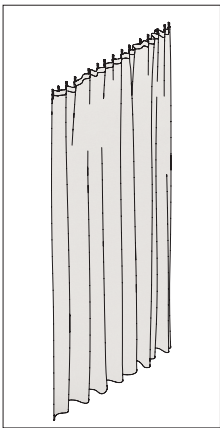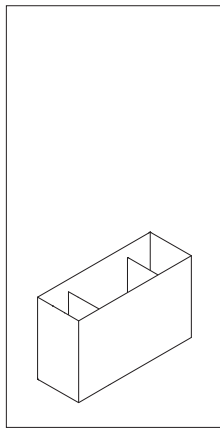
Side panels

Side panels

Louvers

Ceramic + Table

Ceramic

Bar

Curtains

Planter
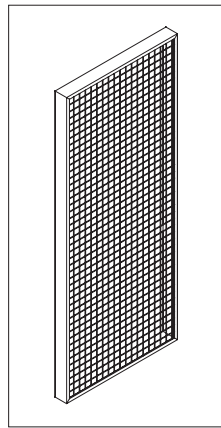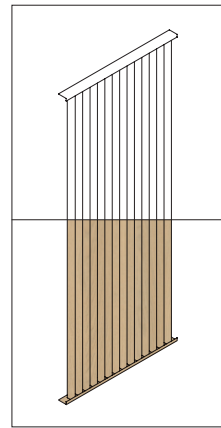
Grid

Aluminum/Wooden slats
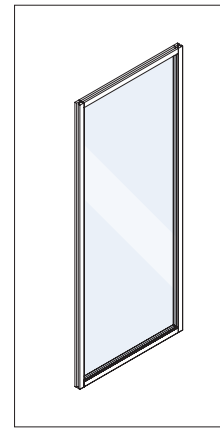
Glass

Acoustic fabric or wood
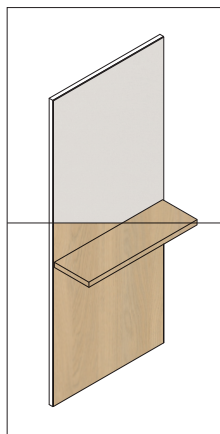
Acoustic fabric or wood with shelf
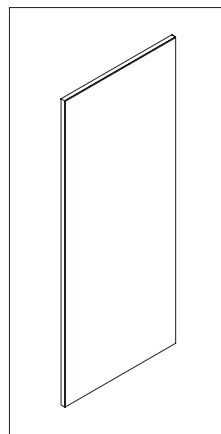
Metalic board
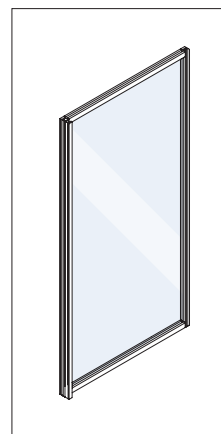
Swing door

Swing door

kettal
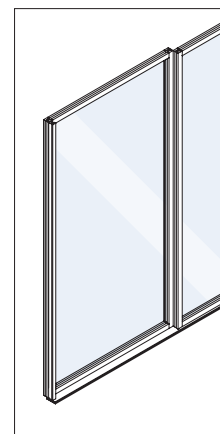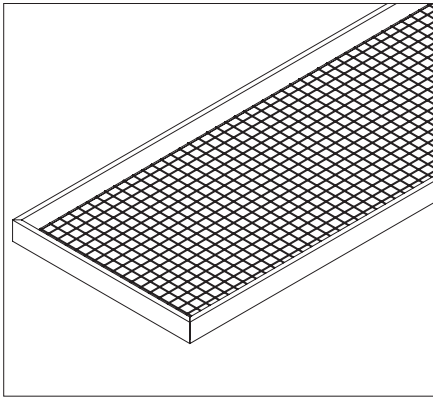
Ceiling

Ceiling

Grid
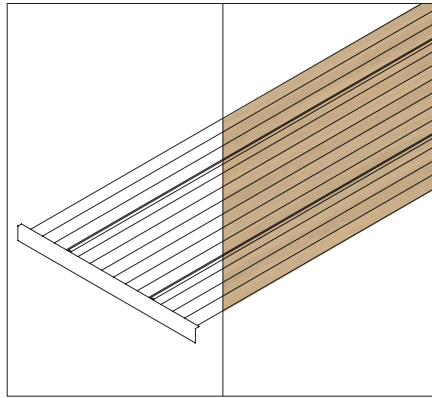
Aluminum or wooden slats with LED track
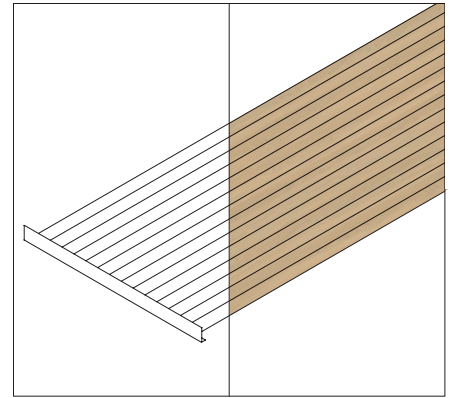
Aluminum or wooden slats
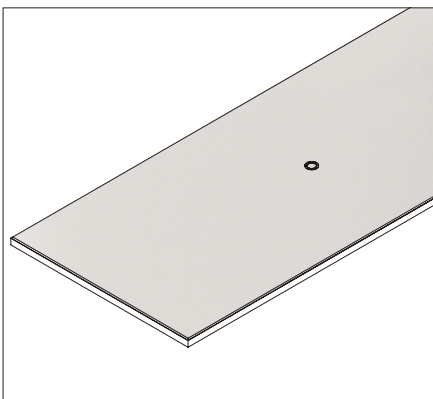
Acoustic electrified ceiling / Acoustic ceiling
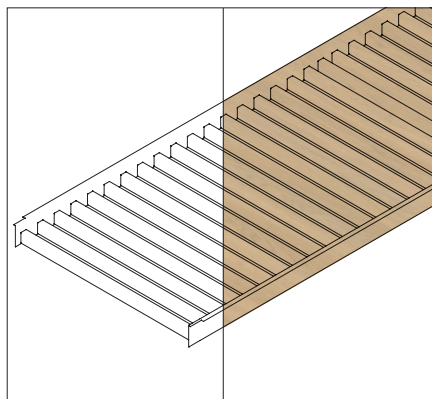
Canopy aluminum slats or wooden slats
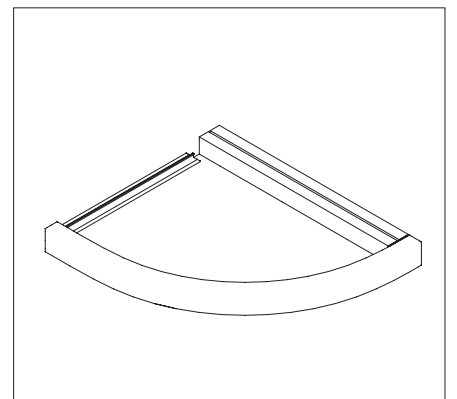
Curved canopy structure
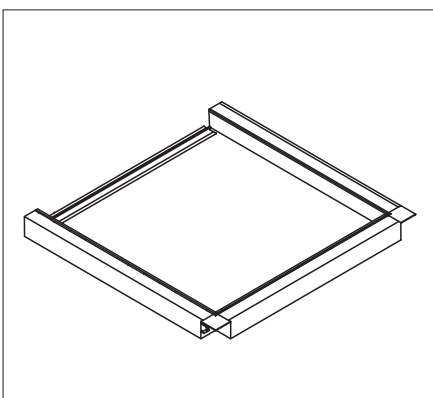
Straight corner canopy

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Accessories

Side accessories
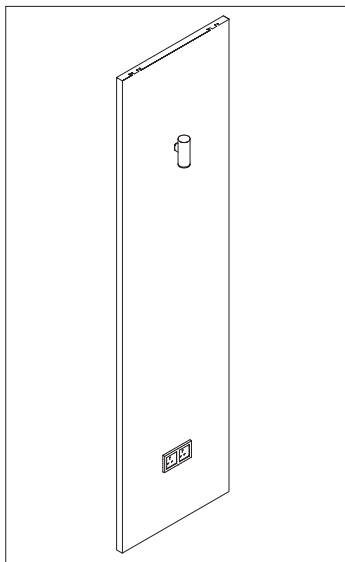
Light and plug

Small display

TV
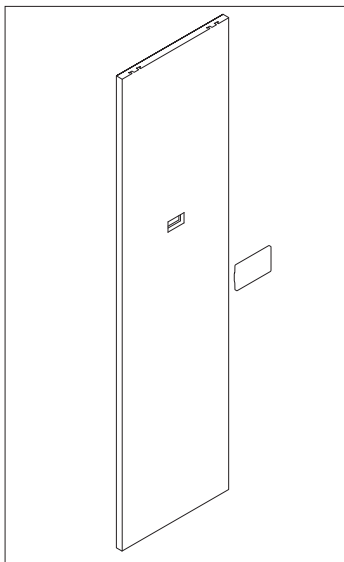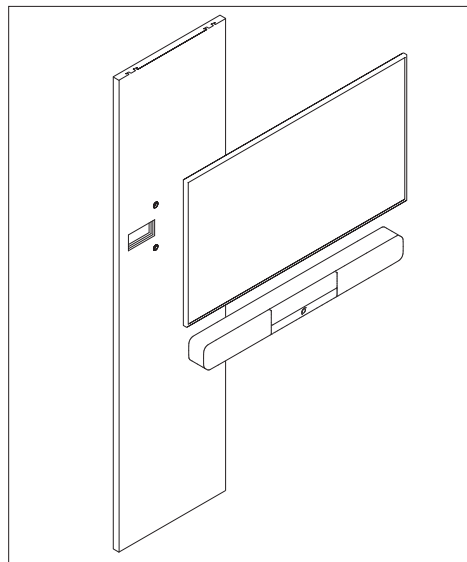
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Pavilion O
Acoustic side panels

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Acoustic plus

Description

All our panels are tested to ensure they meet the required acoustic levels. We have tested some of the wall combinations to provide guidelines with regard to acoustic levels. Acoustic performance varies depending on the material selection for each wall.

The O glass version offers excellent acoustic performance, creating a comfortable and efficient working environment. It is based on 6+6 laminates with a soundproofing membrane to provide an impressive acoustic performance of up to 39dB. We also offer a range of solid wall options in fabric and wood. Many of these alternative wall options offer excellent acoustic performance properties. Our laminated panels not only provide additional acoustic performance, but also come in a range of colors. As a result, you can customize your Pavilion 0 to reflect your brand image or simply to create a bright office space. In addition, the eco-friendly panels reduce and control reverberated noise within the Pavilion, further enhancing the overall soundproofing performance.

Key funtions

- All materials meet the standard B-s2, d0.
- Anti memory acoustic foam
- Easy clean material
- Odor free and antimicrobial

Fabric

Cotton wool panel

Wooden panel

Acoustic insulation panel

Black cotton wool panel

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Acoustic plus

Technical specifications

Ceiling Panel

Sound reduction index, R [dB] / Frequency (Hz)

R_W (C;Ctr)=32(-0;4)dB
R_A =32dBA

Plus Wall Panel

Sound reduction index, R [dB] / Frequency (Hz)

R_W (C;Ctr)=46(-2;9)dB
R_A =44dBA

Plus Acoustic Glass & Glass door

Sound reduction index, R [dB] / Frequency (Hz)

R_W (C;Ctr)=40(-1;-3)dB
R_A =39dBA

kettal
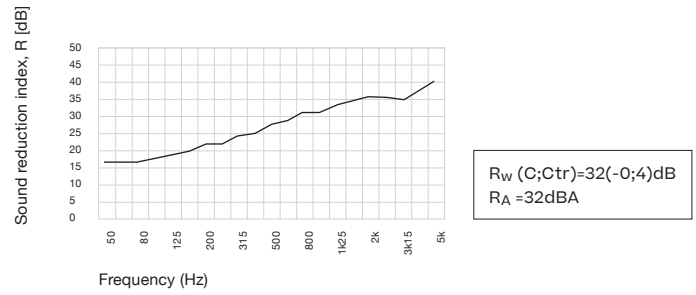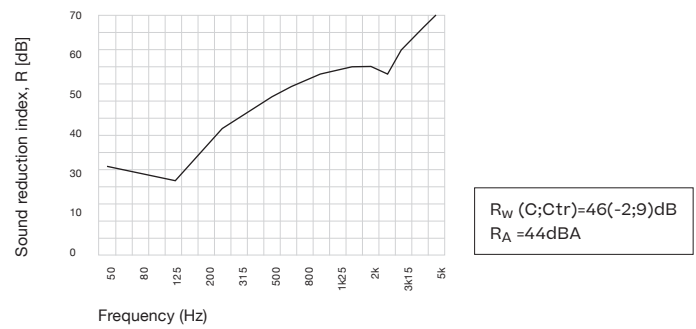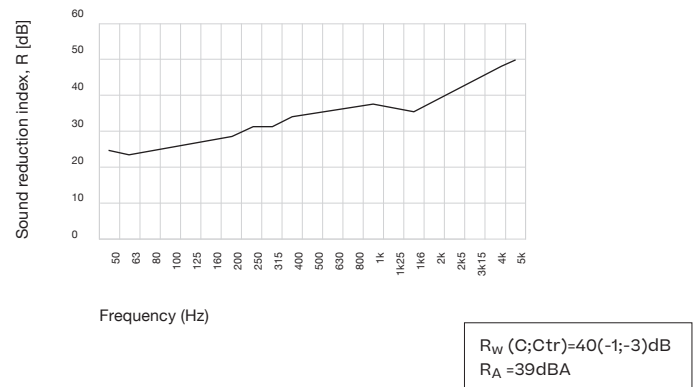
Acoustic comfort

Description

All our panels are tested to ensure they meet the required acoustic levels. We have tested some of the wall combinations to provide guidelines with regard to acoustic levels. Acoustic performance varies depending on the material selection for each wall.

The O glass version offers excellent acoustic performance, creating a comfortable and efficient working environment. It is based on 4+4 laminates with a soundproofing membrane to provide an impressive acoustic performance of up to 35dB. We also offer a range of solid wall options in fabric and wood. Many of these alternative wall options offer excellent acoustic performance properties. Our l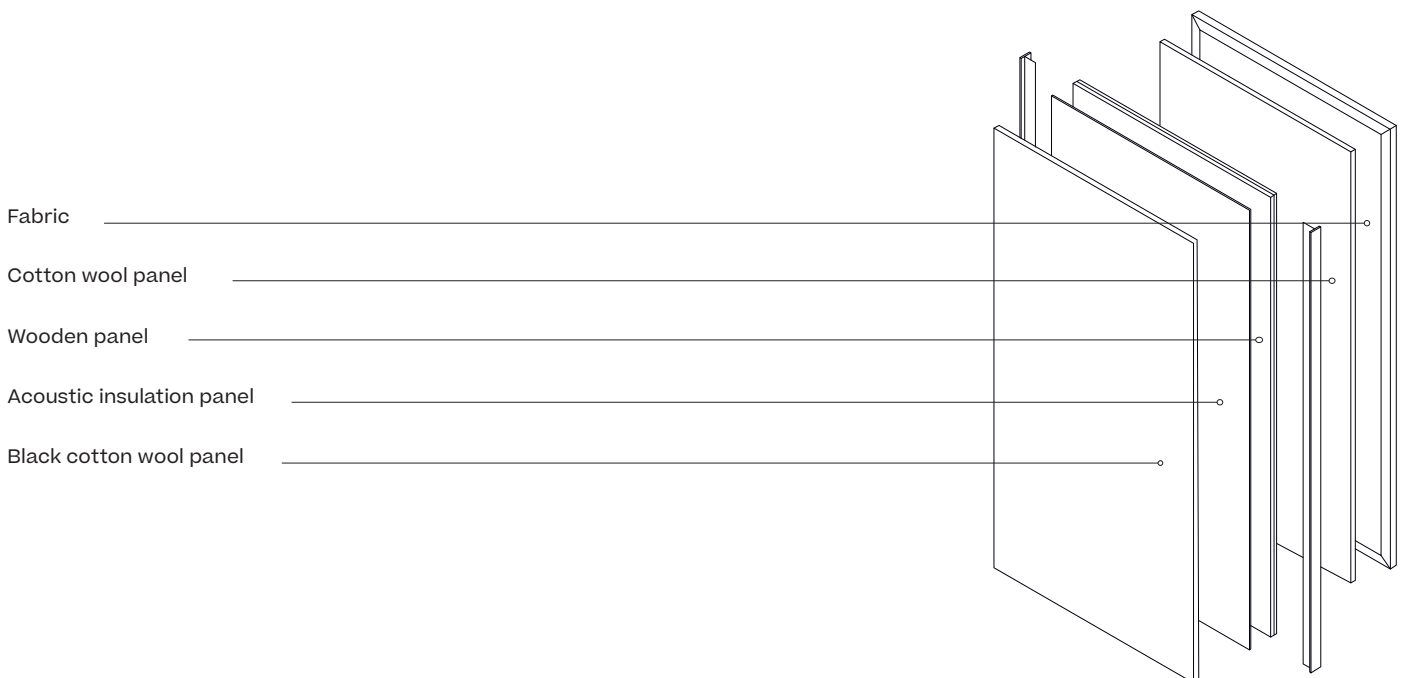aminated panels not only provide additional acoustic performance, but also come in a range of colors. As a result, you can customize your Pavilion 0 to reflect your brand image or simply to create a bright office space. In addition, the eco-friendly panels reduce and control reverberated noise within the Pavilion, further enhancing the overall soundproofing performance.

Key funtions

- All materials meet the standard B-s2, d0.
- Anti memory acoustic foam
- Easy clean material
- Odor free and antimicrobial

Fabric

Cotton wool panel

Wooden panel

Black cotton wool panel
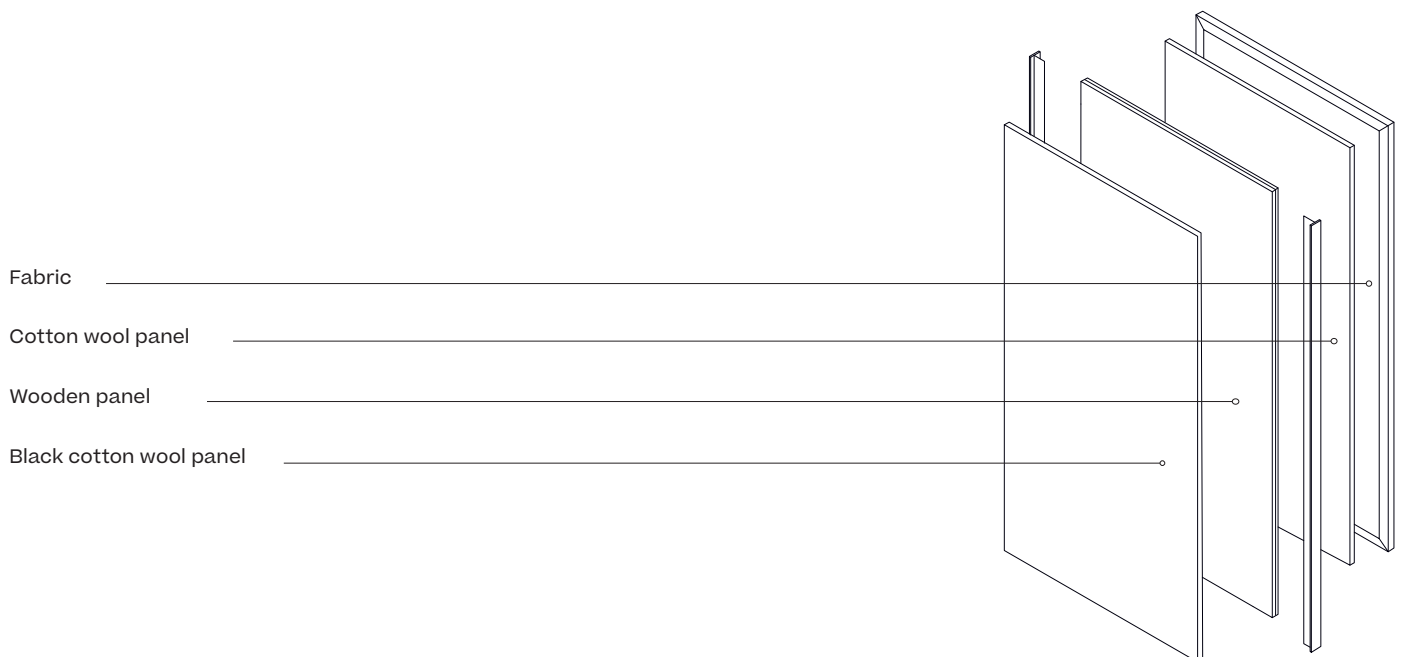
kettal

Acoustic comfort

Technical specifications

Ceiling Panel

R_W (C;Ctr)=32(-0;4)dB
R_A =32dBA
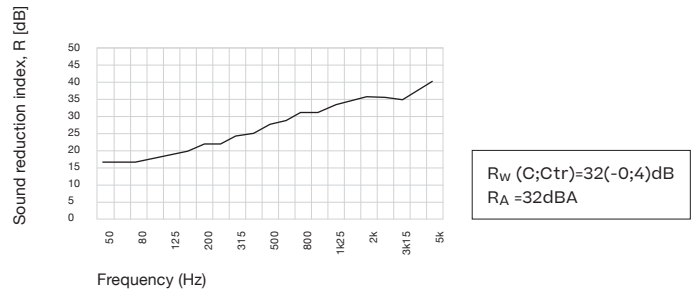
Comfort Wall Panel

R_W (C;Ctr)=38(-2;-8)dB
R_A =36dBA
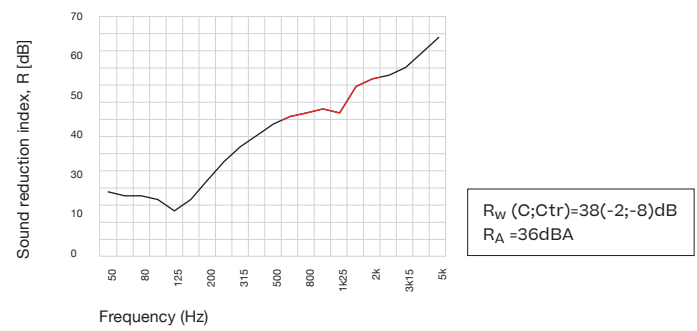
Comfort Acoustic Glass & Glass door

R_W (C;Ctr)=35(0;-3)dB
R_A =35dBA
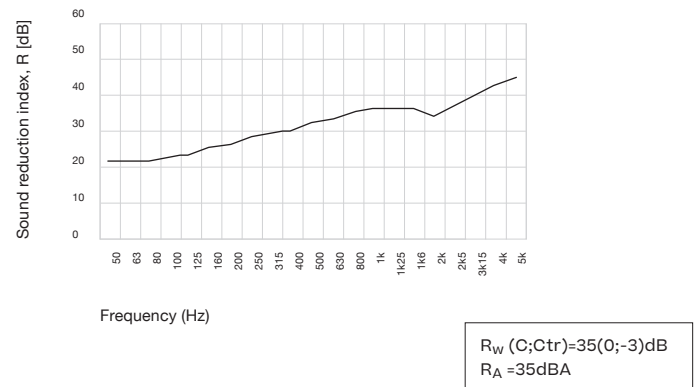
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Pavilion O
Lighting

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Integrated controlable light range

Integrated LED Stripes

LED Track curtain integrated

LED Track integrated

LED Track slats integrated

Pendant / Wall Curtain
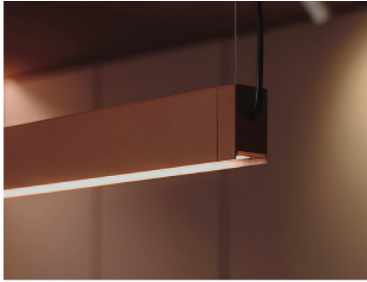
LED Track

Ceiling Lighting

LED Track curtain integrated
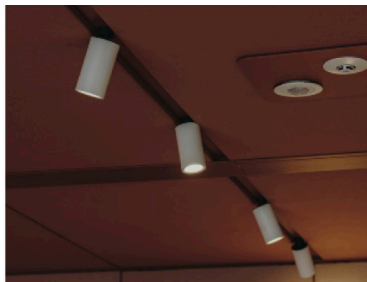
LED Track integrated

LED Track slats integrated

Integrated Decorative Lighting
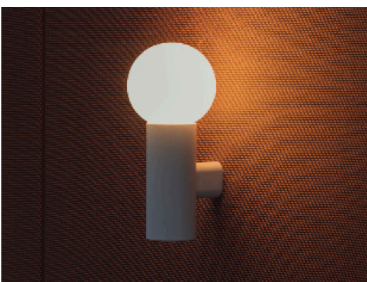
Dots light up
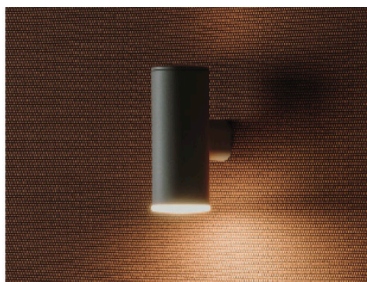
Dots light down

Table Dots lamp (Phonebooths only)

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Lighting

Dots pendant open

This suspended light is based on the Dots spotlight system. With its two open and closed diffusers, it directs most of the light downwards. By directing most of the light downwards, the shade is molded to illuminate spaces while protecting peoples' eyes from any direct glare. The matte white interior of the elliptical shade helps create a uniform light that is ideal for both directed and general ambient lighting needs.

CE

IP 65

24V

18 / 7,1

Ø30 / 11,8

Cm / Inches

kettal
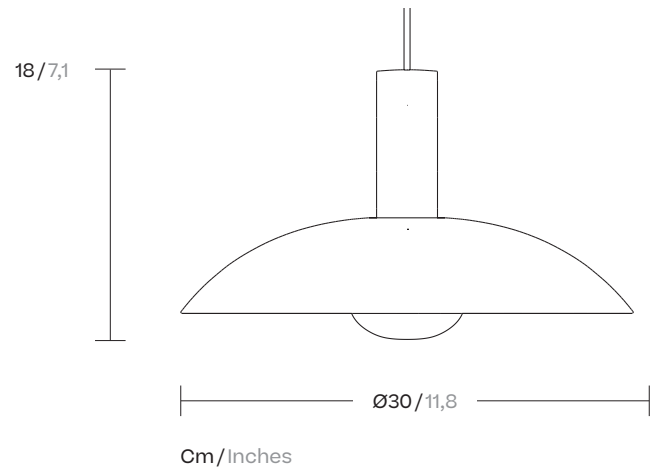
Lighting

Dots pendant open

UL 1598 compliance certificate all internal electrical components.

Maintenance

Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

Codes	KS34-002-00 / KS34-001-00 / etc.
Variant	35 K
Maximum power (W)	8 W
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	1.5 kg/m - 3.3 lbs/m
Light source	Integrated power supply
No. LEDs	8 LEDs
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	900 lm
Luminous efficiency (lm/W)	115 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	5 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

kettal

Lighting

Dots pendant closed

This suspended light is based on the Dots spotlight system. With its two open and closed diffusers, it directs most of the light downwards. By directing most of the light downwards, the shade is molded to illuminate spaces while protecting peoples' eyes from any direct glare. The matte white interior of the elliptical shade helps create a uniform light that is ideal for both directed and general ambient lighting needs.

CE

LED

IP 65

24V

18 / 7,1

Ø16 / 6,3

Cm / Inches

kettal
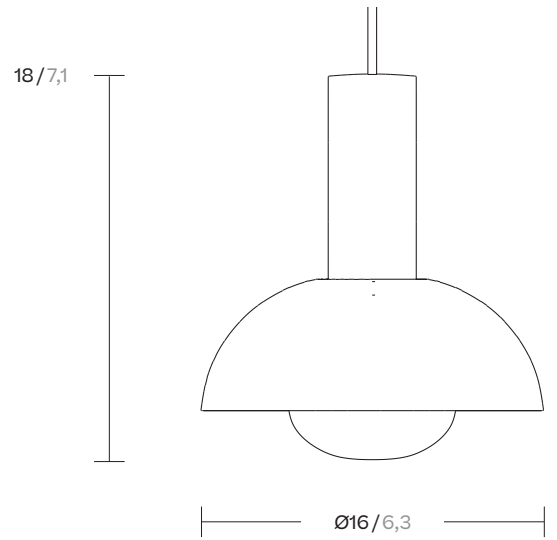
Lighting

Dots pendant closed

UL 1598 compliance certificate all internal electrical components.

Maintenance

Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

Codes	KS34-002-00 / KS34-001-00 / etc.
Variant	35 K
Maximum power (W)	8 W
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	1.5 kg/m - 3.3 lbs/m
Light source	Integrated power supply
No. LEDs	8 LEDs
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	900 lm
Luminous efficiency (lm/W)	115 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	5 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

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Lighting

Pendant LED Track

This system consists of a bar that combines direct or indirect light, suspended by two coaxial cables that provide support and the electrical wiring. Perfect for offices that require excellent light efficiency and visual comfort.

CE · LED · IP 65

5 /1,9

Cm /Inches

3 /1,1

Lighting

Dots light ball up

The Dots wall luminaires feature LED light sources and project light above or below the horizontal plane for an authentic washlighting effect, ideal for selectively illuminating corners, specific spaces, facility corridors, as well as walkways, access routes, signs and so on.

CE   LED   IP 65

24V

11/4,3

Cm/Inches   Ø4,7/1,85
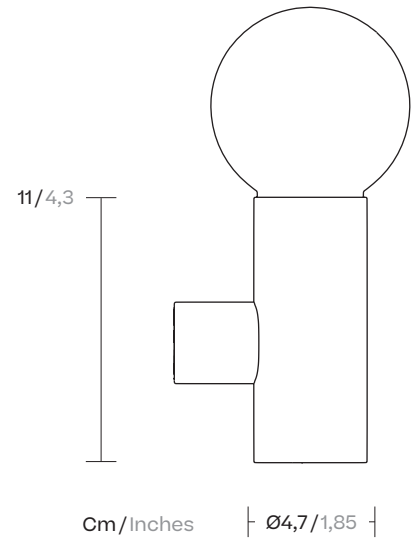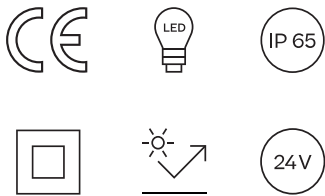
Lighting

Dots light ball up

UL 1598 compliance certificate all internal electrical components.

Maintenance

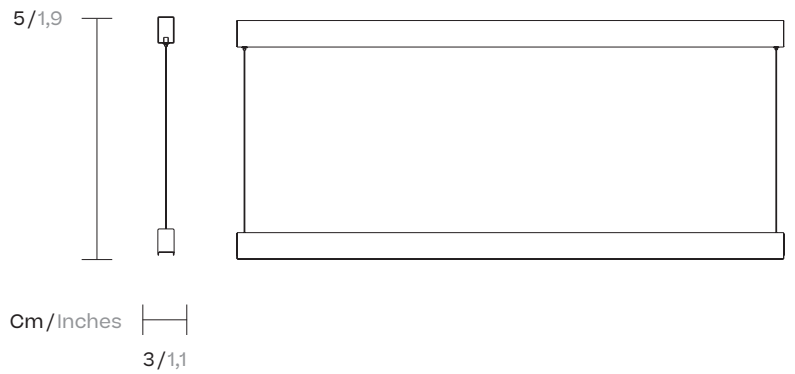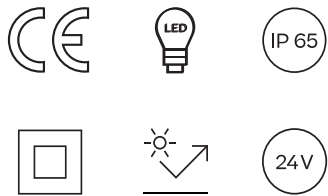Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

Codes	KS34-006-00 / KS34-003-00 / etc.
Variant	35 K
Maximum power (W)	5 W
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	1.5 kg/m - 3.3 lbs/m
Light source	Integrated power supply
No. LEDs	14 LEDs
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	650 lm
Luminous efficiency (lm/W)	98 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	5 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

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Lighting

kettal

Dots light down / up & down

The Dots wall luminaires feature LED light sources and project light above or below the horizontal plane for an authentic washlighting effect, ideal for selectively illuminating corners, specific spaces, facility corridors, as well as walkways, access routes, signs and so on.

11/4,3

Cm/Inches

Ø4,7/1,85

CE   LED   IP 65

24V
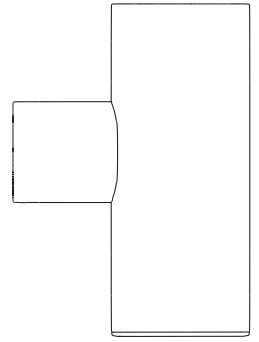
Lighting

Dots light down / up & down

UL 1598 compliance certificate all internal electrical components.

Maintenance

Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

|	
Codes	KS34-006-00 / KS34-003-00 / etc.
Variant	35 K
Maximum power (W)	5 W
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	1.5 kg/m - 3.3 lbs/m
Light source	Integrated power supply
No. LEDs	14 LEDs
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	650 lm
Luminous efficiency (lm/W)	98 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	5 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

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Lighting

Articulated LED Track

Our surface-mounted range that uses an LED light source. This system is composed of linear LED strips mounted on aluminum extrusion micro-profiles of varying lengths. These light modules are combined with adjustable 360° Dots spotlights that are available with different beam optics.

Ø4,7 / 1,85

8,5 / 3,3

Cm / Inches

CE   LED   IP 65   24V
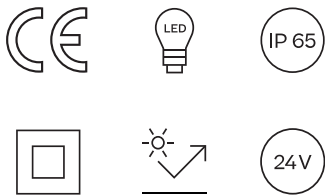
Lighting

Articulated LED Track

UL 1598 compliance certificate all internal electrical components.

Maintenance

Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

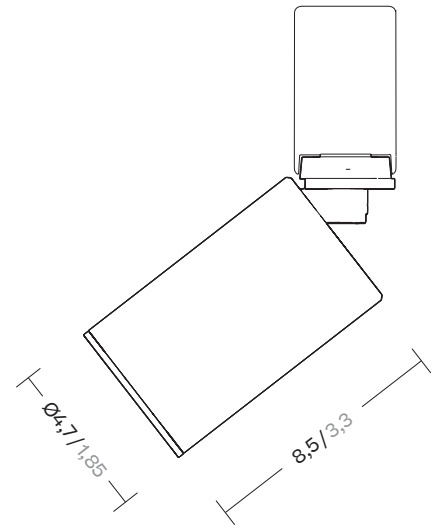|	
Codes	A3DIL-TO2-1O / A3DIT-TO2-1O / etc.
Variant	35 K
Maximum power (W)	8 W/u
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	2.5 kg/m - 5.5 lbs/m
Light source	Integrated power supply
No. LEDs	8 LEDs
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	900 lm
Luminous efficiency (lm/W)	115 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	1 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

kettal

Lighting

Integrated LED Track

An integrated LED lighting system that offers solutions suited to any type of installation. It provides pleasant and efficient visual comfort, combined with high-quality performance and aesthetics.

4,7 / 1,8

Cm / Inches

Lighting

Integrated LED Track

UL 1598 compliance certificate all internal electrical components.

Maintenance

Clean the surface with a damp cotton cloth. Avoid direct contact with solvents and oxides. (text to be agreed)

Technical specifications

Codes	A3CIL-TO2-1O / A3CIT-TO2-1O / etc.
Variant	35 K
Maximum power (W)	22 W/m
Input voltage	100-240 V ~50/60 Hz
Nominal voltage (V)	24 Vdc
Weight (kg)	2.5 kg/m - 5.5 lbs/m
Light source	Integrated power supply
No. LEDs	240 LEDs/m
Protection type (IP)	IP 65
Dimmable	Yes (Kettal provides a ROS integrated homologated)
Colour temperature (K)	3500 K
Luminous flux (lm)	2800 lm/m
Luminous efficiency (lm/W)	136 lm/w
CRI	90 CRI
Service life (h)	IES TM21 L70 > 50,000 h
Applicable standards	UNE-EN 60598 / UNE-EN 55015 / UNE-EN 60529
Material	Aluminium / PMMA
Packaging (unit/volume)	1 u box (0.1 m3 / 2.2 cu ft)
Energy efficiency class	A++
Power factor	0.90
Cable length	1 m
Indoor/outdoor use	Suitable for indoor and outdoor use
Guarantee	2 years

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Lighting

Curtain LED Track

A recessed lighting system equipped with an LED light source. Specially designed for wall-washer lighting, the LED Curtain incorporates lenses to provide optimum light distribution. The LED Curtain range is available in different lengths which means it can be adjusted to suit any space, while its compact size facilitates simple integration within the Pavilion O system.

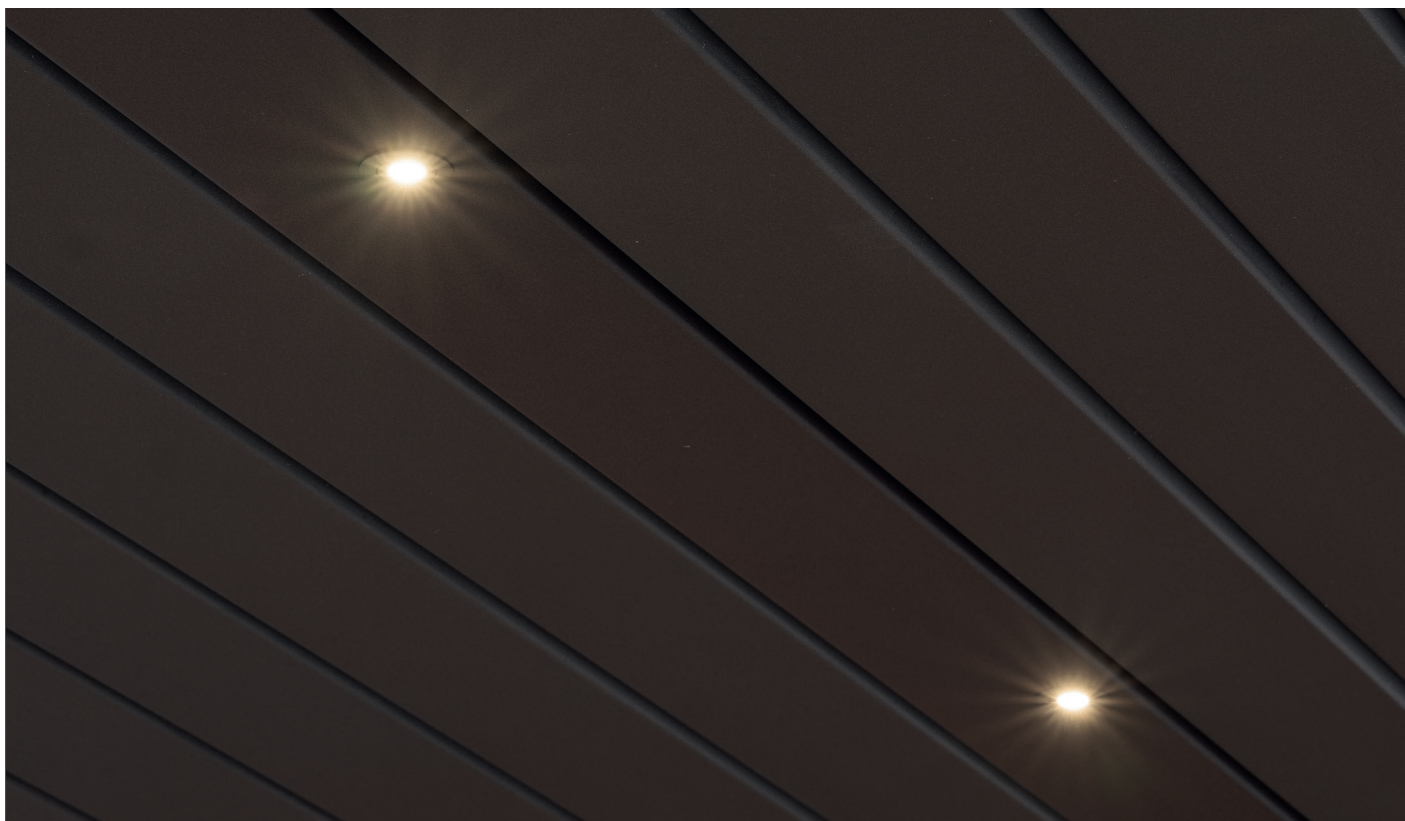4,7 / 1,8

Cm / Inches

kettal

Lighting

Microdots

A recessed lighting system in crossbars or aluminium slats. Indoor and outdoor use. Aluminium body. Dimmable bioclimatic ceiling lighting.

Ø4,6 / 1,8

4,7 / 1,8

Cm / Inches

Ø5,2 / 2

CE

LED

24V
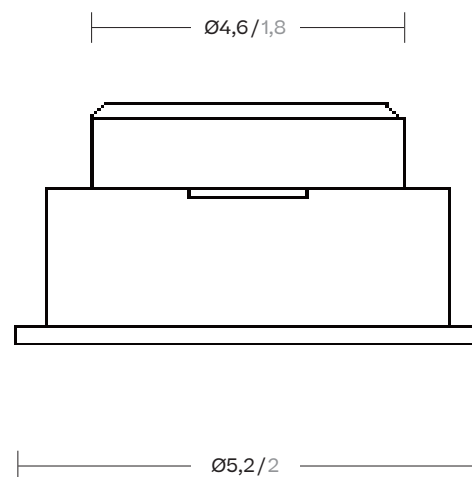
kettal

Pavilion O
Accessories

kettal

Monitor

Key functions & features

- Samsung monitor
- Slim video monitor
- Plug & Play system
- 3 different Sizes
- Incredible 4K picture quality
- Intelligent UHD upscaling
- Dynamic crystal color
- Clean cable management
- Wi-Fi and Bluetooth built-in

146,2 / 57,6
124,2 / 48,9
97,3 / 38,3

83,7 / 32,9
71,2 / 28
56,1 / 22

cm / Inches
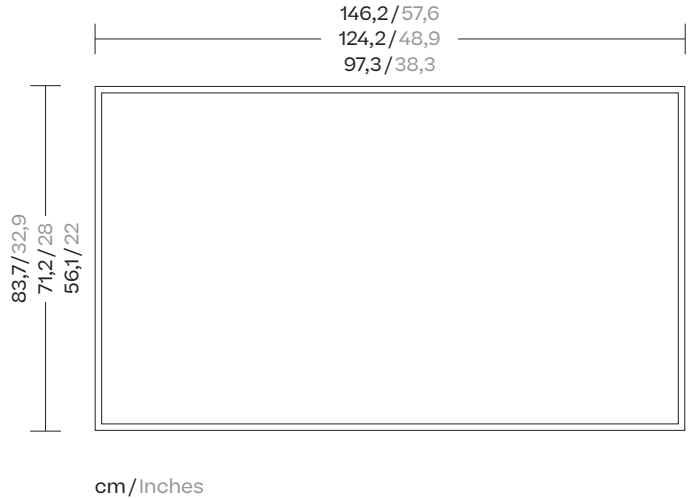
Technical Specifications - Monitor

Model	ME651	ME551	ME431
Type	LCD 651	LCD 551	LCD 431
Technology	IPS direct LED backlight	IPS direct LED backlight	IPS direct LED backlight
Resolution	UHD (3840 x 2160)	UHD (3840 x 2160)	UHD (3840 x 2160)
Power Supply	100-240 V AC	100-240 V AC	100-240 V AC

Clickshare CX-20

Small room wireless presentation and conference system for PC / MAC or mobile devices.

It allows you to make presentations and use the room camera remotely.

It allows an easy, efficient and continuous user experience.
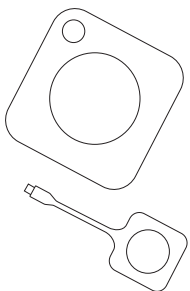
Clickshare CX-20 device

Technical Specifications - Clickshare CX-20

Power Supply	110/220 V AC Standard
Power Consumption	Max. 24 W
OS	Windows 8/8.1/10. macOS 10.13 and later updates. Android v9 and later updates (ClickShare app) iOS 12 and later updates (ClickShare app)
Video Output	4K UHD (3840x2160), 30 Hz. HDMI 1.4b
Audio Output	USB, HDMI
Native protocols	Airplay, Google Cast, Miracast
Reach	Max. 30m (100 ft)
Certifications	FCC / CE
Net Conexion	LAN and WiFi

kettal

Wireless system

Clickshare C-5

Small room wireless presentation and conference system for PC / MAC or mobile devices.

It allows an easy, efficient and continuous user experience.
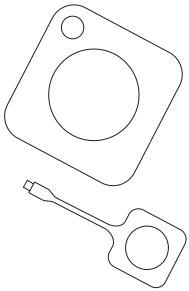
Clickshare C-5 device

Technical Specifications - Clickshare C-5

Power Supply	110/220 V AC Standard
Power Consumption	Max. 24 W
OS	Windows 8/8.1/10. macOS 10.13 and later updates. Android v9 and later updates (ClickShare app) iOS 12 and later updates (ClickShare app)
Video Output	4K UHD (3840x2160), 30 Hz. HDMI 1.4b
Audio Output	USB, HDMI
Native protocols	Airplay, Google Cast, Miracast
Reach	Max. 30m (100 ft)
Certifications	FCC / CE
Net Conexion	LAN and WiFi

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Soundbar & camera

Creston bar

- 4K camera with 150º viewing
- Intelligent HD Camera - Digital autozoom intelligently detects the people in the room and frames them perfectly for an optimal view
- Surrounding audiosystem
- Full set of configurable
- Plug & Play - compatible with major computer OS platforms running any web conferencing software

324 / 234

11.4 / 4.3
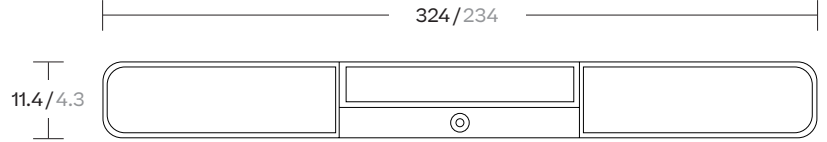
Technical Specifications

Camera model	Huddly HQ (mounted internally)
Image Sensor	12 megapixel Sony® IMX477 Type 1/2.3 CMOS sensor
Lens	High precision, ultra wide angle, six element aspherical glass lens
Field of View	150º diagonal 120º horizontal 90º vertical
Aperture	f/2.8
Processor	Intel® Movidius® Myriad® X VPU
Pan/Tilt/Zoom	3x
Autozoom	Yes
Dynamic Light Optimization	Auto-adjust light levels and white balance
Noise reduction	3D noise reduction
Scalling	Real-time scalling
People Counting	Yes
Video Output Resolution	HD 1080p at 30fps
Main Power	100-240 VAC, 50/60 Hz
Power Consumption	22W
Weight	15 lb (6.8 kg)

Compliance

C, IC, UL 62368-1, CSA C22.2 62368-1, EN 62368-1, IEC 62368-1, FCC Part 15 Class B, ICES-003 Issue 5 Class B, EN55022:2010 Class B, AS/NZS CISPR22:2010 Class B, AS/NZS CISPR 22:2010 Class B, EN55024:2010, EN1000-3.2:2014, EN61000-3-3:2013, RoHS compliant

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Room reservation screen

Key funtions

- Booking management through Touch Screen
- Room reservation linked to your Calendar
- Management through third-party Cloud solution
- Room booking management from email

Installation: Installation can only be performed on a 7" screen acoustic or wood panel.

Wiring: The equipment is supplied by a POE RJ45 network cable provided by Kettal.

Settings: The control screen requires prior programming by Kettal to customise the screen with the client's data and link operation with the company's (client) calendar system. Screen installation is subject to the data provided by the client.

Secure enpoint   Cloud solution   Calendaring

Mail systems allowed

Office 365   Exchange

G Suite   Ad Astra

Cloud solutions

tesm   EMS   AskCody®

nfs   SharingCloud   new wave WORKSPACE

          SPACE CONNECT   APPSPACE

matrix booking   ZOOM   GINGCO.NET

Robin
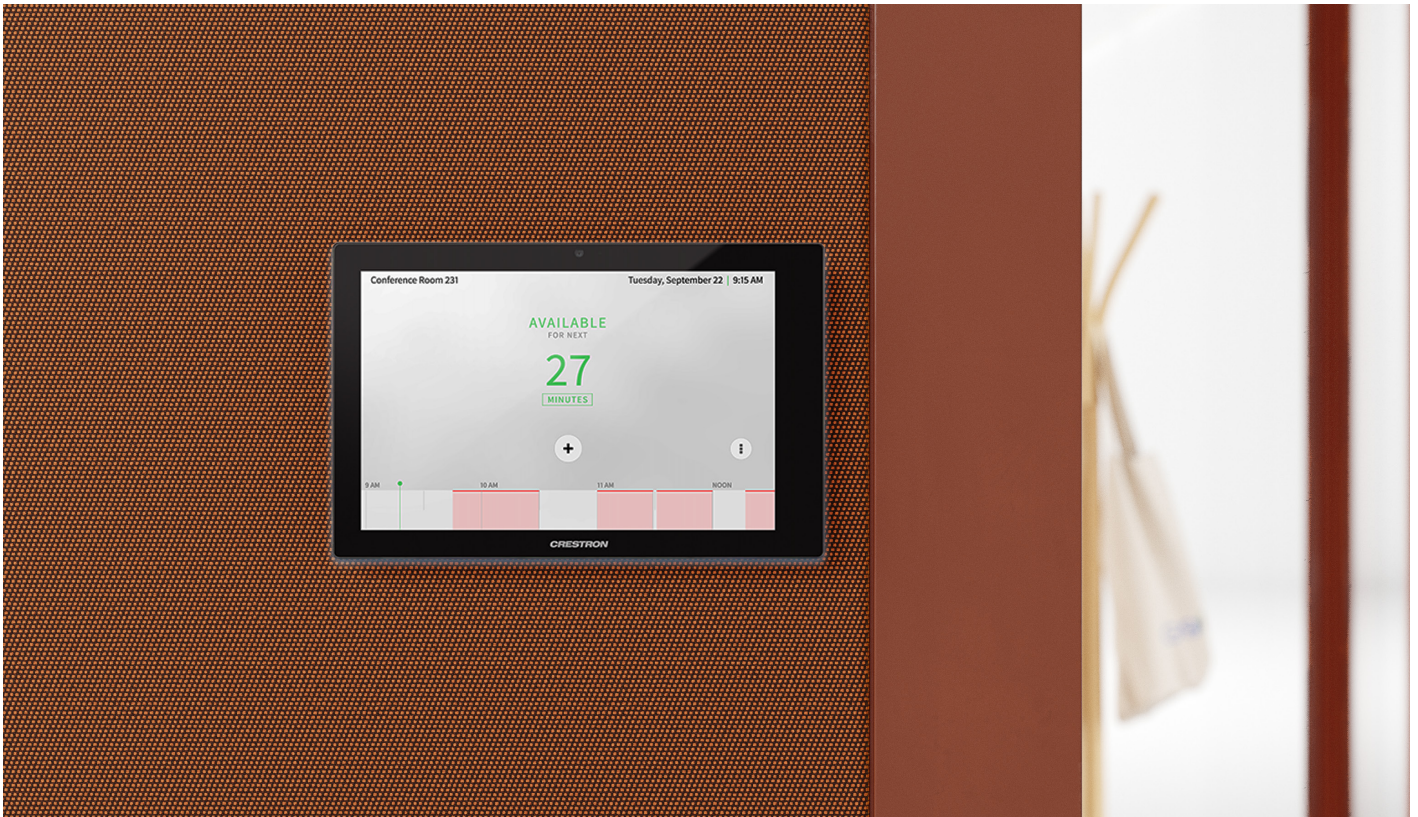
Safety

Key funtions

_____

•   Smoke detection (*)
•   Sprinklers (*)

(*) For technical information see
Product Specifications section

(*) Kettal only provides roof adaptation for customer's
sprinkler installation

Smoke detector   Sprinklers

Client security hardware integration

Smoke detector -
Siemens
(Provided by client)

Smoke detector -
Siemens
(Provided by client)

Light control (black)

Electrical cable for pavilion
(Under column)

kettal
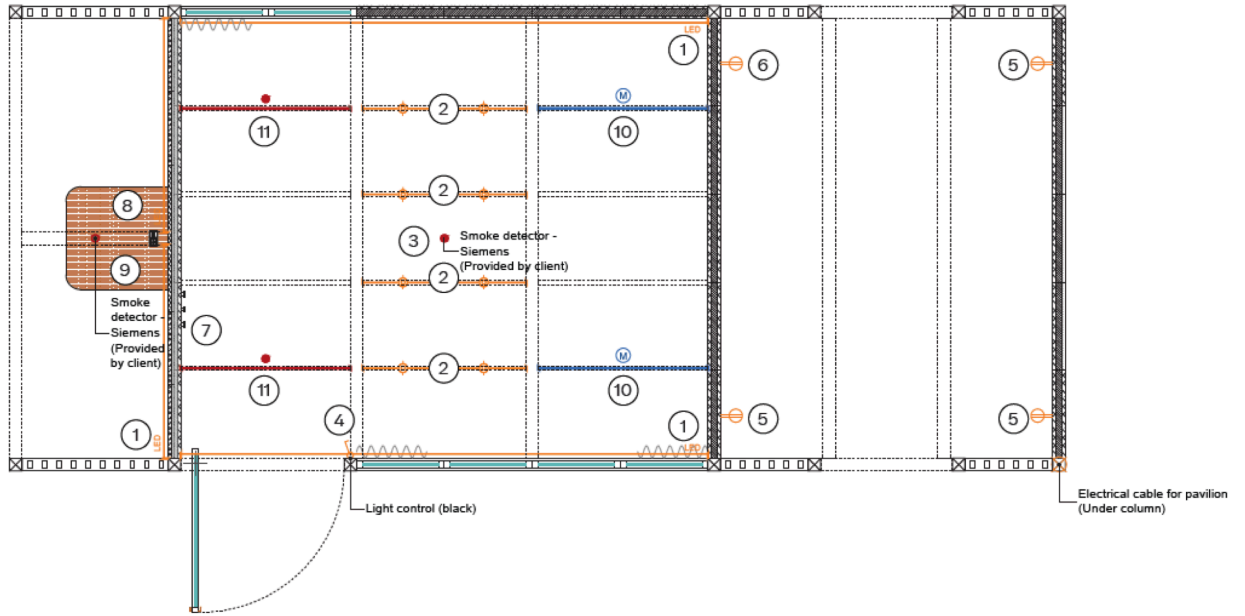
Wall mounted outlets

Key funtions

- Data Port
- HDMI
- Power Outlet
- USB

- Configurable
- Shatter-proof
- Flat design line

The outlets are mounted 325cm from floor to center and centered to the panel.

There are different combinations:

- Double plug
- Plug + Net
- Plug + USB A + USB C

15 / 6

8.1 / 3.1
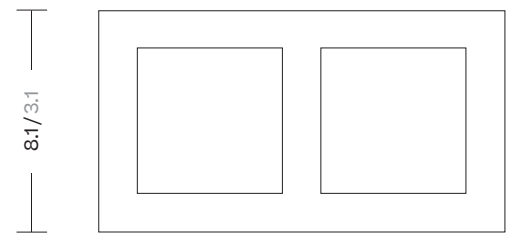
cm / Inches

Table mounted outlets

Hardware

- Simple design
- Power Connections
- USB
- Plug and outlet types (UK, FRA, US, SUI, AUS,...)

10,2 / 4,01

5,2 / 2,04

Pavilion O
Management System

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Introduction.
Control management

The Pavilion system allows 4 project layers depending on what the client prefers:

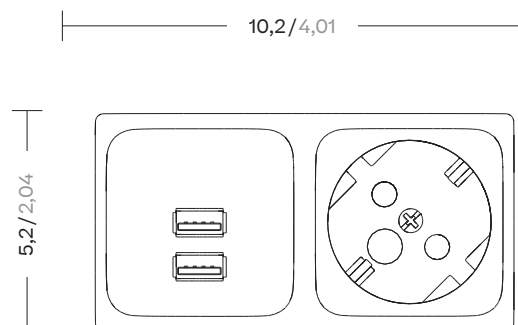|	Stand Alone	Hub Basic	Hub Server Pro	Hub Bacnet
Control from presence sensor and push buttons	✓	✓	✓	✓
Control / Dimming from app and mobile device	✗	✓	✓	✓
Status / Ocupation	✗	✓ (información % instantaneo)	✓	✓
Location map Statis / Ocupation	✗	✗	✓	✓
Usage hours	✗	✓ (información % instantaneo)	✓	✓
Air renewal control	✗	✓	✓	✓
Room booking with schedule	✗ **	✗ **	✗ **	✓
Notification 10 minutes before the end of the reservation	✗	✗	✗	✓
Equipment failure warning	✗	✓	✓	✓
Sensor CO_2 Bacnet	✗	✗	✗	✓
Warranty	2 years	5 years	5 years	5 years
Remote support	✗	✓	✓	✓
Scenes and schedules programming	✗	✓	✓	✓

Extra information:
*In case of not selecting any Hub option, all the material only has a 2-year warranty.
*In case of not selecting any Hub option, we cannot offer remote support.
**Can't be done through the ROS System but can be managed from most of the third part accesory booking screen.

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Control management.
Pavilion System Layers

Hub Bacnet

ASHRAE **BACnet**™

Allows the connection of each
Phone Booth and Pavilion O
to the building's BMS (Building
Management System) through
the Bacnet IP protocol.

Stand Alone

Push buttons/
Dimmer
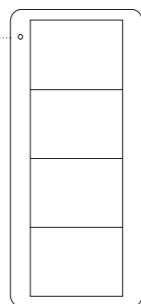
- Push buttons
- Presence sensor
- It doesn't need a Hub
- RFA connection ⋙ with the Hub
- Lighting control

Hub Basic

Smart device
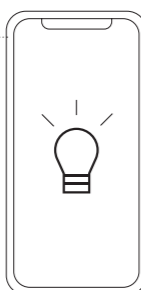
- Works through a Hub & a
  Management Software
- Smart devices
- Scene control, energy saving, room
  booking, lighting control

...

Hub Server Pro

Smart device
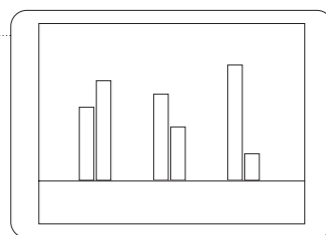
- Server & Hub installed on
  customer's building
- Includes all functions of Hub
  Basic
- Allows the management of
  long-term data

Hub

Control
via Wi-Fi

kettal

Control management

The Pavilion system allows 4 project layers depending on what the client prefers:

A. Stand alone

(*)

This system allows you to control the lighting from the presence sensor and the push buttons. It is not connected to any control / management system.

(*) Phonebooth only works through presence sensor (always integrated and located under the table).
It doesn't have any push buttons.

Presence sensor

The presence sensor is located on the crossbar, and it is previously defined and programmed according to customer needs.

All the rooms come with a sensor by default, but the client can remove it if they prefer.

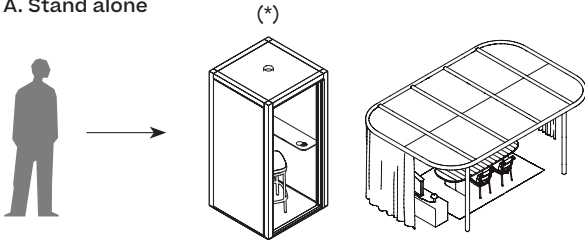The sensor can be set by time and operating mode (it can't be configured in the case of Phone Booth). in the following table are defined the different parameters that can be edited in the Sensor configuration.

Function	Option	Description
Auto-ON	Enabled	Sensor turns lights ON and OFF automatically (default setting)
	Low Light	Same as Enabled but lights turn ON only in low ambient light conditions
	Disabled	Lights turn ON manually only, sensor turns lights OFF automatically
Activity	Low	Intended for spaces where ocupants will be seated most of the time (default setting)
	Medium	Intended for spaces that experience normal activity
	High	Intended for spaces where ocupants do high motions such as foot traffic
Timeout	30 minutes	Lights turn OFF automatically after 30 min without presence
	15 minutes	Lights turn OFF automatically after 15 min without presence (default setting)
	5 minutes	Lights turn OFF automatically after 5 min without presence

Push buttons

There are two types of push buttons.

General (dimmer)
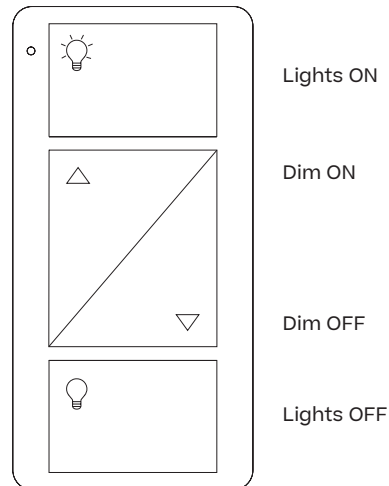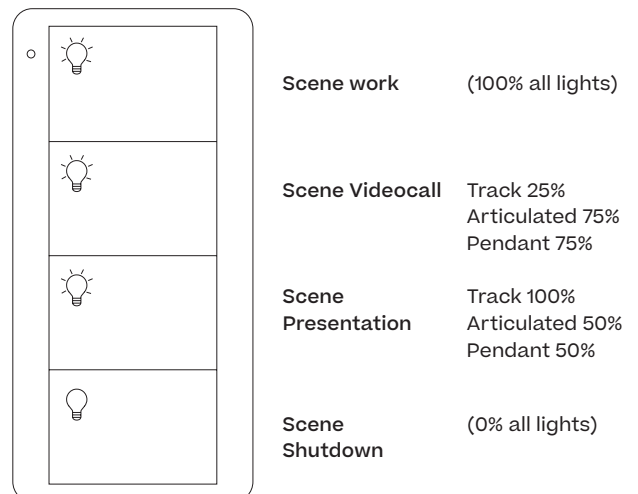
Lights ON

Dim ON

Dim OFF

Lights OFF

Scene

Scene work	(100% all lights)
Scene Videocall	Track 25% Articulated 75% Pendant 75%
Scene Presentation	Track 100% Articulated 50% Pendant 50%
Scene Shutdown	(0% all lights)

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Control management
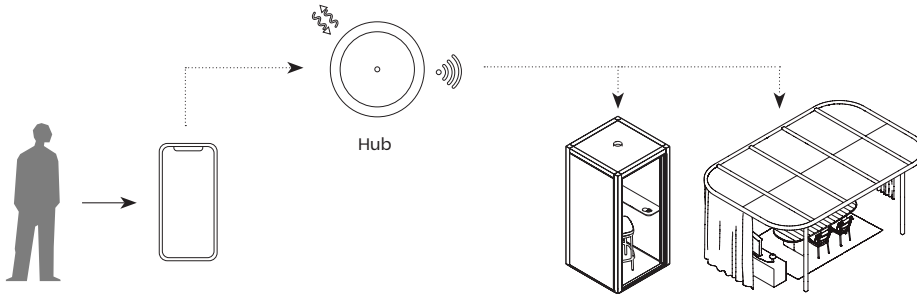
B. Hub Basic —— Control

Hub

This system includes all of the above and also allows the connection of each Phone Booth and Pavilion O to a Management Software for the client. It can be managed from electronical devices such as mobile, tablet or computer.

This is achieved through a HUB (which is installed in the customer's building), which must be connected to the network (Ethernet) and which interconnects all rooms and Phone Booths. The devices that interact with the HUB must be connected to the same Wi-Fi Network as the HUB, or to the network generated by the HUB itself.

Through this system, it's possible to manage the following* and to get energy saving and room occupancy data at the current time.

Wireless controls and sensors that communicate with the Hub

Remote control

Presence & natural light sensors

Lighting controllers

Home appliance charge controllers

Integrated luminaire control and sensors

Hub

Wired/Ethernet

Demand response   Bacnet integration   API integration

Communication protocols

Communicate by RF with control components

Communicate over WiFi with smart devices

Communicate via Ethernet cable to the hub

Software interface

Rooms / Areas

Timelines
Next: Lights off (8.00PM)

Lights control and devices

Data

Energy saving
Use of space
Alerts

1 Hub —— 1 interface
Many hubs —— Many interfaces

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Control management

B. Hub Basic —— **Control** (Continues)

Through this system, it's possible to manage the following*.

	Energy saving and space utilization	Quickly review and display energy usage information to make decisions and demonstrate savings.
	Response to electricity demand	Easily set turndown levels that respond automatically during times of peak electricity use.
	Timelines	Use a 365-day calendar to automatically adjust lights based on the time of day, including single-day events and holidays.
	Scene control	Create and configure scenes to control individual devices, areas, or groups of areas on demand.
	Lighting control	Directly adjust light levels remotely from any smart device. Easily respond to occupant requests without the need to be in the physical space.
	Alerts	View proactive alerts that show issues like low batteries or inactive devices to help improve building maintenance efficiency.

Lighting control strategies to maximize efficiency | Potential saving

Icons	Description	Potential saving
Busy: ON / Empty: OFF	An **occupancy/vacancy sensor** turns lights on when occupants are in a space and off when they vacate.	20 - 60% Lighting
Completely ON / Attenuated	**Daylight harvesting** dims electric lights when there is daylight that can brighten the environment.	25 - 60% Lighting
7:00 am attenuated / 7:00 pm OFF	**Scheduling** allows for pre-programmed changes in lighting levels, based on time.	10 - 20% Lighting
Completely ON / Attenuated	**Demand response** automatically reduces lighting loads during times of peak electricity use.	30 - 50% Peak period
ON Device / OFF Device	**Plug-in load control** automatically turns off loads after occupants leave the space.	15 - 50% Controlled load
Max: 100% / Max: 80%	**High-level dimming** sets the maximum light level based on customer requirements in each space.	10 - 30% Lighting
Completely ON / Attenuated	**Personal dimming control** allows occupants to adjust the light level.	10 - 20% Lighting
Heating / Cooling	**HVAC integration** controls heating, ventilation and air conditioning systems via contacts or the BACnet protocol.	5 - 15% HVAC
Saving 60% Before / Saving 70% After	**System's Optimization Service** identifies important adjustments to lighting control to save additional energy and create a more productive work environment, on an ongoing basis.	Variable

kettal

Control management

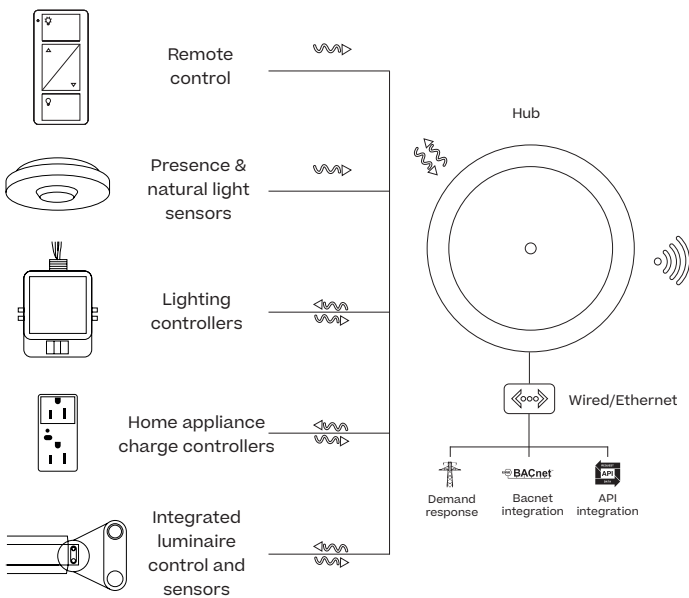**C. Hub Server Pro** —— **Control + Management**
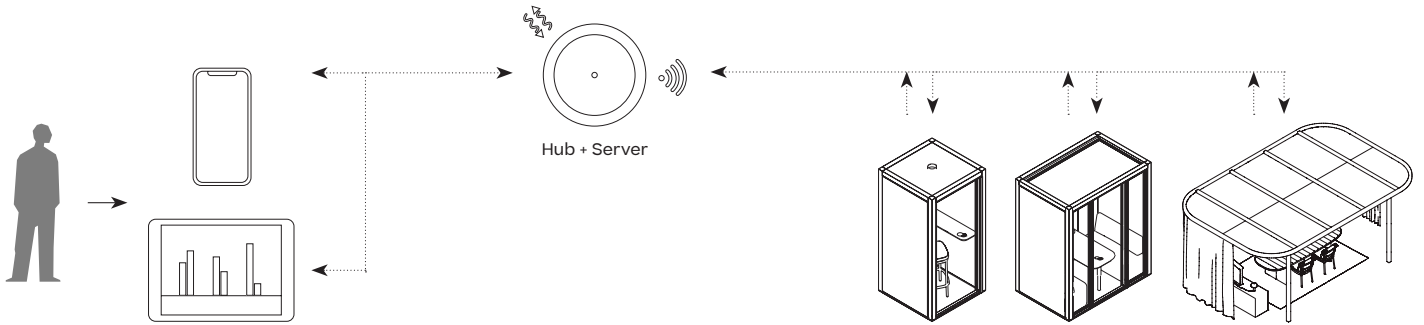
Hub + Server

This system includes all of the above and also allows the connection of each Phone Booth and Pavilion O to a Management Software for the client.

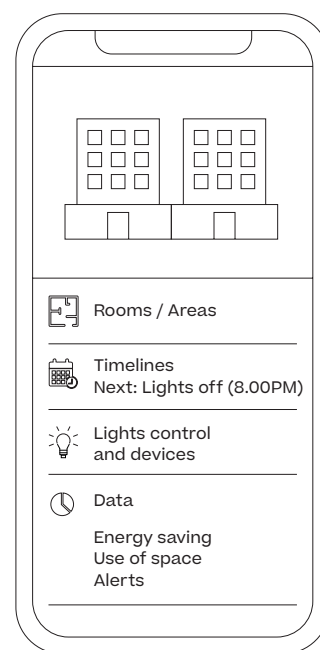This project layer allows for much greater control and visualization of data.

This is achieved through a HUB (which is installed in the customer's building), which must be connected to the network and which interconnects all rooms and Phone Booths. In addition, a server must be installed to be able to manage all the data and activate the system's functionalities:

Intuitive control
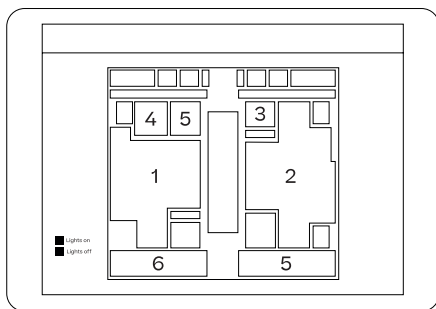
See status, control lights and optimize your building quickly and efficiently with a graphical plan. For example, a screen outside the room with a graph describing the status of all rooms.

Space optimization
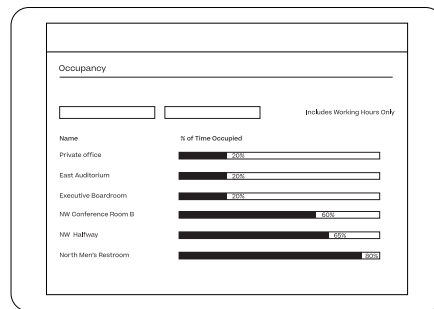
Improve building layout based on actual occupancy and usage information. With space utilization reports, you can quickly identify overused and underused spaces to improve building efficiency without expanding your footprint.

Save energy with a certain goal
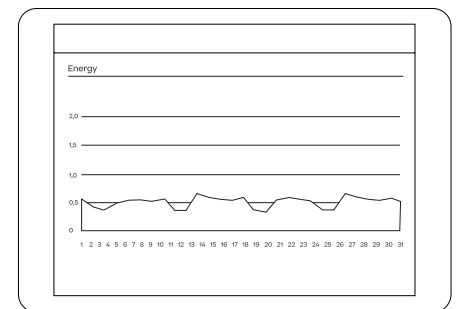
Energy reports allow you to view and control your energy savings. With insights into energy consumption trends over time and easily customizable reports, Vive Vue software helps you demonstrate the energy-saving benefits of wireless lighting control.

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Control management

D. Hub Bacnet —— Bacnet Integration
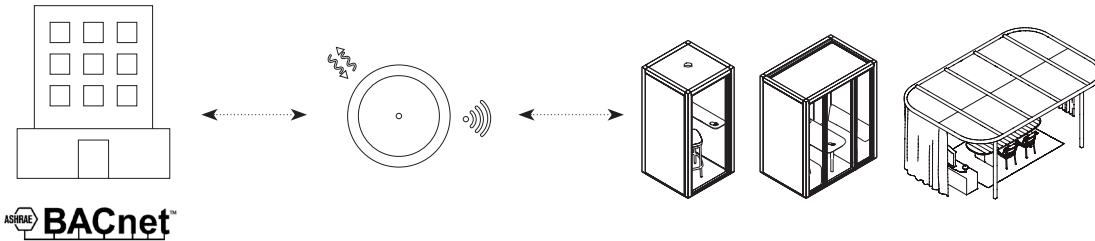
Allows the connection of each Phone Booth and Pavilion O to the building's BMS (Building Management System) system through the Bacnet IP protocol.

This is achieved through a Bacnet licensed Hub (which is installed in the customer's building), which must be connected to the network and which interconnects all rooms and Phone Booths.

How to determine the number of Hubs per project

The number of Hubs per project should be studied based on the layout of the rooms and the project based on the following product specifications.

It is necessary to connect to the customer's network through the RJ45 connection provided by the Hub.

All wireless devices to be associated with the wireless hub must be within 22 m (71 ft) of the wireless hub and must be on the same floor as the hub.
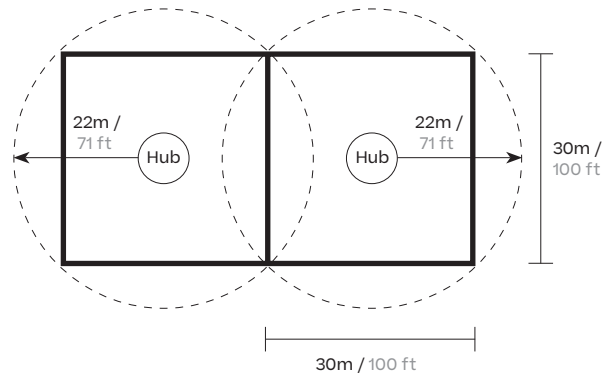
* See more information of the Pavilion Management System in the Annexes.

Pavilion O
Technical data

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General data

The electrical system within the Pavilion O is designed to be discreet, elegant and practical. Embedded in the structure, it is easily accessible and thought within the design.

Electrical input

Connection from underfloor   Connection from ceiling
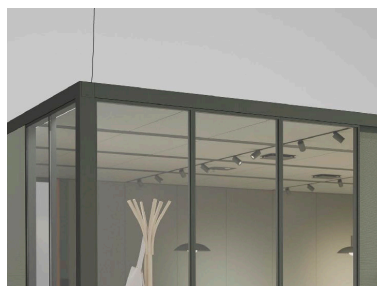
Electrical HUB
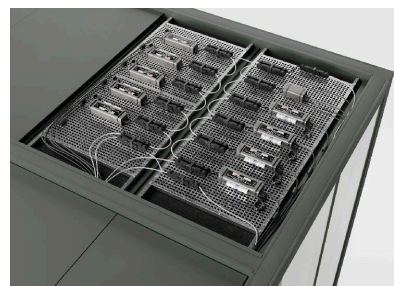
Modular wiring
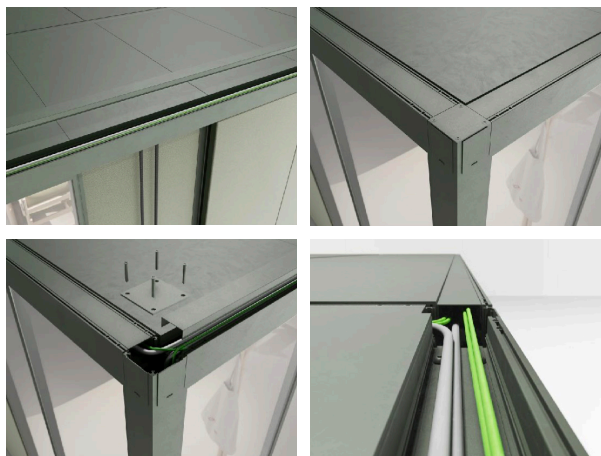
Wiring to panel connection

kettal

General data

Electrical line

The electrical system of the pavilion is divided into the following distribution lines:

**C1   Voltage Input: 100-240VAC (single-phase)
Frequency Input: 50-60Hz**

This line will be necessary as long as they are installed in the pavilion any of these accessories:
· Lighting
· Ventilation
· Control
· Network distribution System

The customer must provide a multiconductor cable of at least 3x2.5mm^2 (L, N, G).

The technical specifications of the cable and the protection of this line must comply with the electrical regulations of the applicable country.

The maximum diameter of the multiconductor cable coating must not exceed 14mm.

**C2   Voltage Input: 100-240VAC (single-phase)
Frecuency Input: 50-60Hz**

This line will be necessary as long as any of these accessories are installed in the pavilion:
· Power outlets
· USB charger units
· Soundbar

The customer must provide a multiconductor cable of at least 3x2.5mm^2 (L, N, G).

The technical specifications of the cable and the protection of this line must comply with the electrical regulations of the applicable country.

The maximum diameter of the multiconductor cable coating must not exceed 14mm.

Network line

This line will be necessary as long as any of these accessories are installed in the pavilion:
· TV Panel
· Room booking
· Network Plug

The entire network system at the level of wiring and connections comply with the CAT6A standard.

The client must supply a network cable based on the specifications of its installation and the regulations that apply.

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General data

Power connection

Pavilion O has 3 power and network connection systems:

1. Connection through the base of the column
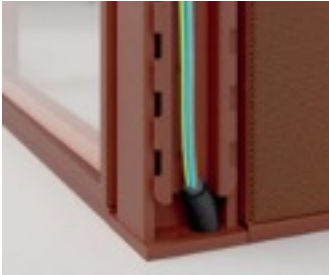
Illustration 1 - Power and data connection through column base
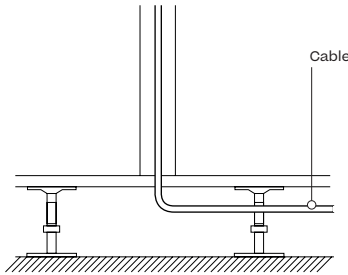
Cable

Illustration 2 - Cable route under technical flooring

When:
If the client has a raised floor and prefers the room's power supply connection to be hidden.

How:
At the room base labelled "power supply and data input", Kettal will provide 5 metres of multicore cable (3G 2.5mm2) to connect the room to the power supply line provided by the client.
The end of the above-stated multicore cable will be fitted with a (male) GST18i3 connector. For safe, quick connection, Kettal provides a female connector to attach to the client's cable that is of the same type as the connector in the room.
A 5 meter RJ45 (male) CAT6A network cable is also supplied to connect the pavilion data system.

2. Connection through one side of a column

Illustration 3 - Power and data connection through column side

When:
If the client does not have a raised floor and needs a surface-laid connection to the pavilion, the client must select this type of connection for the room.

How:
The column selected as "power supply and data input" will have a (male) GST18i3 surface connector and a RJ45 CAT6A connector.
The client must provide a power line up to that point.
To make the connection, Kettal provides a (female) GST18i3 connector which the client must attach to their power cable to enable simple, quick connection to the pavilion. The customer must also reach that point with an RJ45 cable (male) to connect to the pavilion

2. Connection fromc ceiling
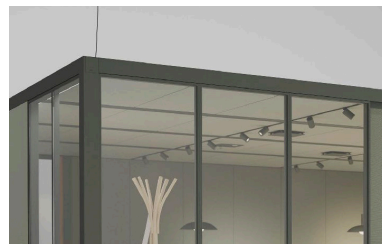
Illustration 4 - Power and data connection from ceiling
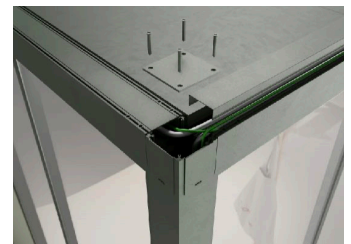
Illustration 5 - Modular wiring

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Technical data, Connector

General data

Nominal current	20 A
Nominal voltage	250 V
Short-circuit voltage	4 kV
Canopy	Yes
Pollution degree	2
Mechanical coding	Code 1
Lockable	Self-locking (tool release)
Colour code	Black
Pin marking	L, N, PE
Canopy colour	Black

Connection data

Cable diameter, max.	10.5 mm
Cable diameter, min.	6.5 mm
Solid conductor cross-section, mm2 max.	2.5 mm2
Solid conductor cross-section, mm2 min.	0.75 mm2
Stranded conductor cross-section, mm2 max.	2.5 mm2
Stranded conductor cross-section, mm2 min.	0.75 mm2
Endings per pin	1
Cable stripping	38.5 mm
Wire stripping	7 mm

Material

Casing material	Polyamide
Halogen-free	Yes
Contact material	Cu-Zn
Heat load	0.089 kWh
Insulation components, continuous temperature	100ºC

Illustration 3 - (female) GST18i3 connector for the client's power line

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Control

PIR Sensor

Using the established settings, the presence sensor (PIR) enables automatic control of lighting and ventilation.

Operation:

Entry – When a person enters the room in OFF state, all luminaires switch on 100% (ON state).

Exit – When the person leaves the room, the lighting and ventilation will switch to the OFF state after 15 minutes.

Room in Use – While the room is in use, the user can regulate the lighting from the button panel or the App (Only with HUB).
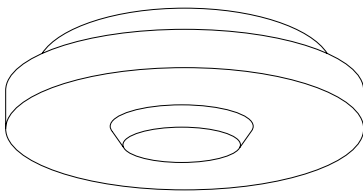
PIR Sensor

Smart devices
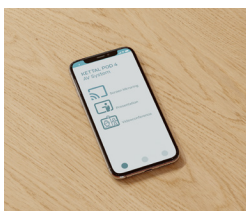
Smartphone

Tablet

* See more information of the Pavilion O Control management in the Management System section.

A system for controlling room lighting using Wireless.

Pavilion O provides 2 ways of controlling lighting:

1. 4-Channel button panel: Each room has at least one 4-channel button panel. This accessory enables interaction with all luminaires.

Location: This item operates through the scenes pre-configured. Among other benefits, it does not need any wiring, so it can be placed anywhere in the room, even inside a piece of furniture (it can be fastened with an adhesive strip).
The standard location will be at the column on the door side.

These configurations will come std from the Kettal's factory. in case of having a Hub, the client can modify them

2. APP: Each room and project has a standard setting that enables interaction with all luminaire groups (on, off and adjust)

The settings programmed by Kettal enable the user to have an Administrator account. Only avaliable with Hub system.

Administrator

Overall control of all the project's rooms from a central point. Possibility of modifying, deleting or adding scenes, routines, equipment, etc.

User

Limited control of the rooms' functions. Possibility of turning on, turning off and adjusting separately the different lines in the room.

62 / 2,6

33 / 1,28

9 / 0,34
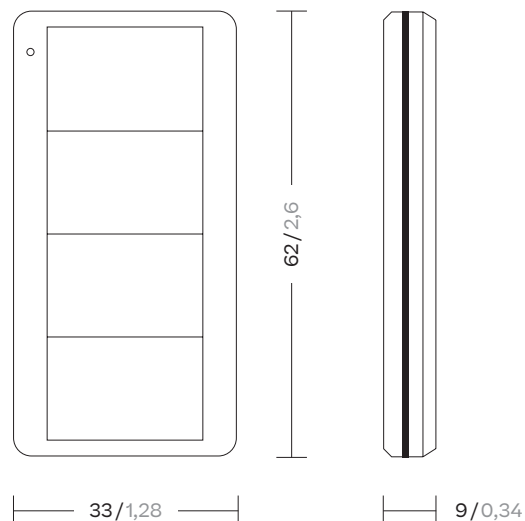
4-channel Casambi button panel (dimensions)

Luminaire groups

Luminaires

The luminaires will be grouped in a standard layout for control by Kettal if no instructions are given otherwise.

As a general rule, groups will be created consisting of: LED Track, Dot Track and Pendant.

There will be one or more luminaire groups of this type, depending on room size. Each group will be identified by a generic photograph to show which type it belongs to.

If the client thinks it necessary, the images, names and luminaire groups can be modified with the Administrator account.

LED Track
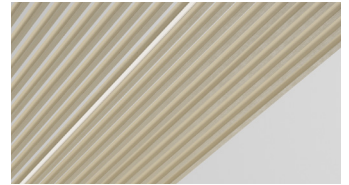
Dot Track Articulated
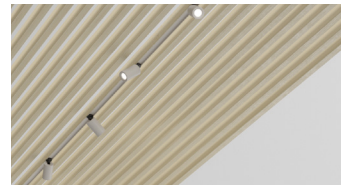
Pendant

* See more information in the Lighting section.

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Videoconferences and presentations

All Pavilions O can be equipped with our AV Pack: videoconferencing and presentation equipment for performing any activity to professional standards.

All systems available in the Pavilion O are based on a BYOD (Bring Your Own Device) system. This means that users can use their own devices (laptops, tablets, smartphones …) to benefit easily, securely and professionally from the room's amenities.

Our AV Pack includes: TV Panel (panel, internal support, plugs and TV stand), Videoconference bar, Wireless System and Room reservation screen. Two years of after-sales service are included with the purchase of this pack.

The equipment can be used with any operating system (Windows, iOS, etc.).

NEC monitor

Smart 4K monitor for professional use for presentations from an external device.

Charging and data accesories on TV Panel:

All TV panels will be equipped with 4 accessories, which will be hidden once the monitor has been installed. These will consist of the following:
2 Power + Double Network (RJ45 CAT6A)
+ USB/HDMI
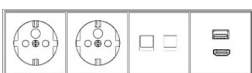
Installation: Installation will be carried out on the Screen or Screen + SoundBar panel

Smart Soundbar & Camera Crestron

Illustration 5 - Crestron Soundbar & Camera

Connects the user's computer to the room's loudspeakers and camera via USB.

Installation: Installation will be carried out on the Screen + SoundBar panel.

Wiring: The equipment has enough cable length to power the equipment and enough USB cable to reach the central table, where the user's personal device will be located.
The necessary cables are provided by Kettal.

Client table sockets

TV Screen

Client technical floor

HDMI

USB

USB
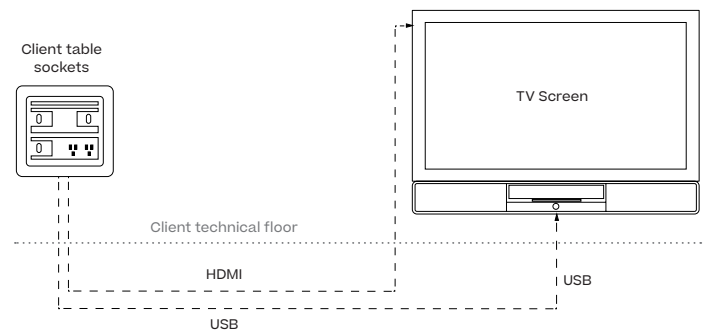
This wiring, shown in the image above, must be installed from the TV+SoundBar panel, through the client's raised floor, to where the equipment for controlling the peripheral devices must be located. Our pavilion does not have a raised access floor for routing cables.

If a raised floor is not available for routing the cables and the client wishes to have this equipment in the room, another solution must be found with the client for installing the cables or, alternatively, the Wireless system can be purchased.

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AV Panel and AV Integration

kettal
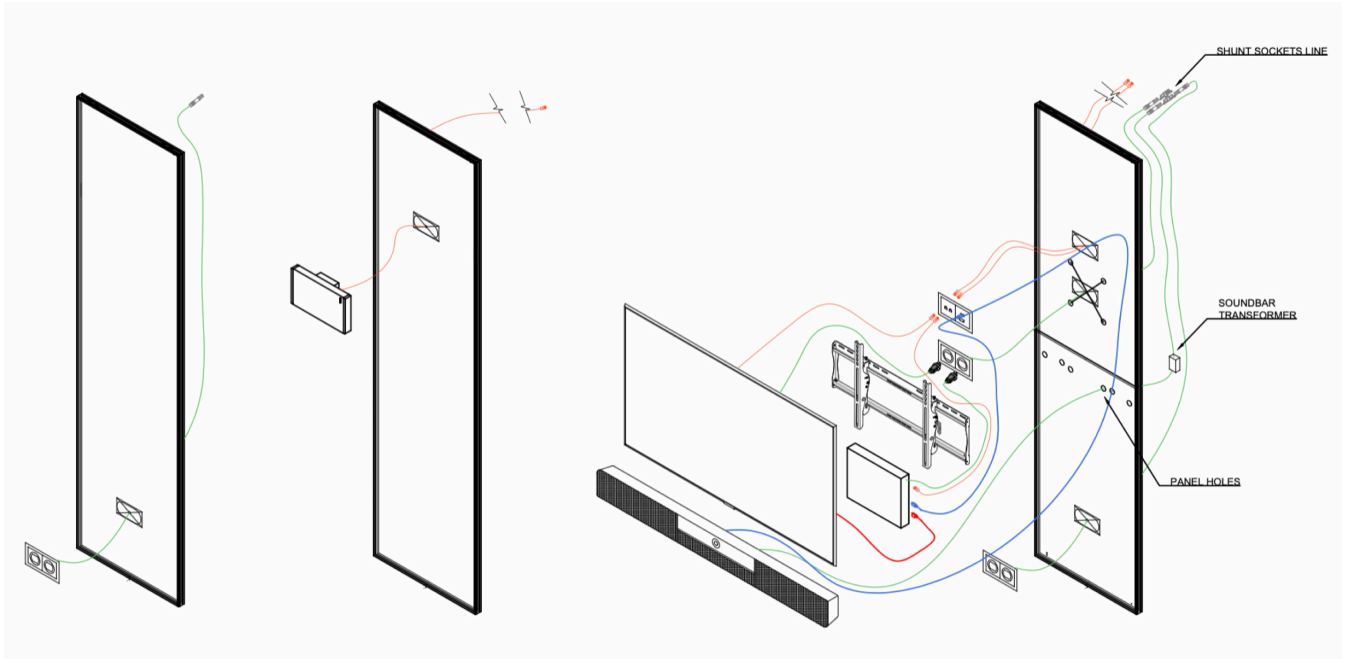
Room reservation screen

IT Network

ETHERNET SWITCH

LUTRON HUB VIVE

CLIENT ETHERNET WIRE
FTP CAT6

INTERNAL WIRING
FTP CAT6
TO WALL ETHERNET PLUGS

SHUNT
SOCKETS LINE

MONITOR

DATA & AV
PLUGS

SOUNDBAR
TRANSFORMER

ETHERNET WIRE
CAT6 - CONNECTED POE
POWER SUPPLY& NETWORK

PANEL HOLES

CRESTRON ROOM
BOOKING TSW-770

BARCO CX-20
CLICKSHARE

SOCKETS
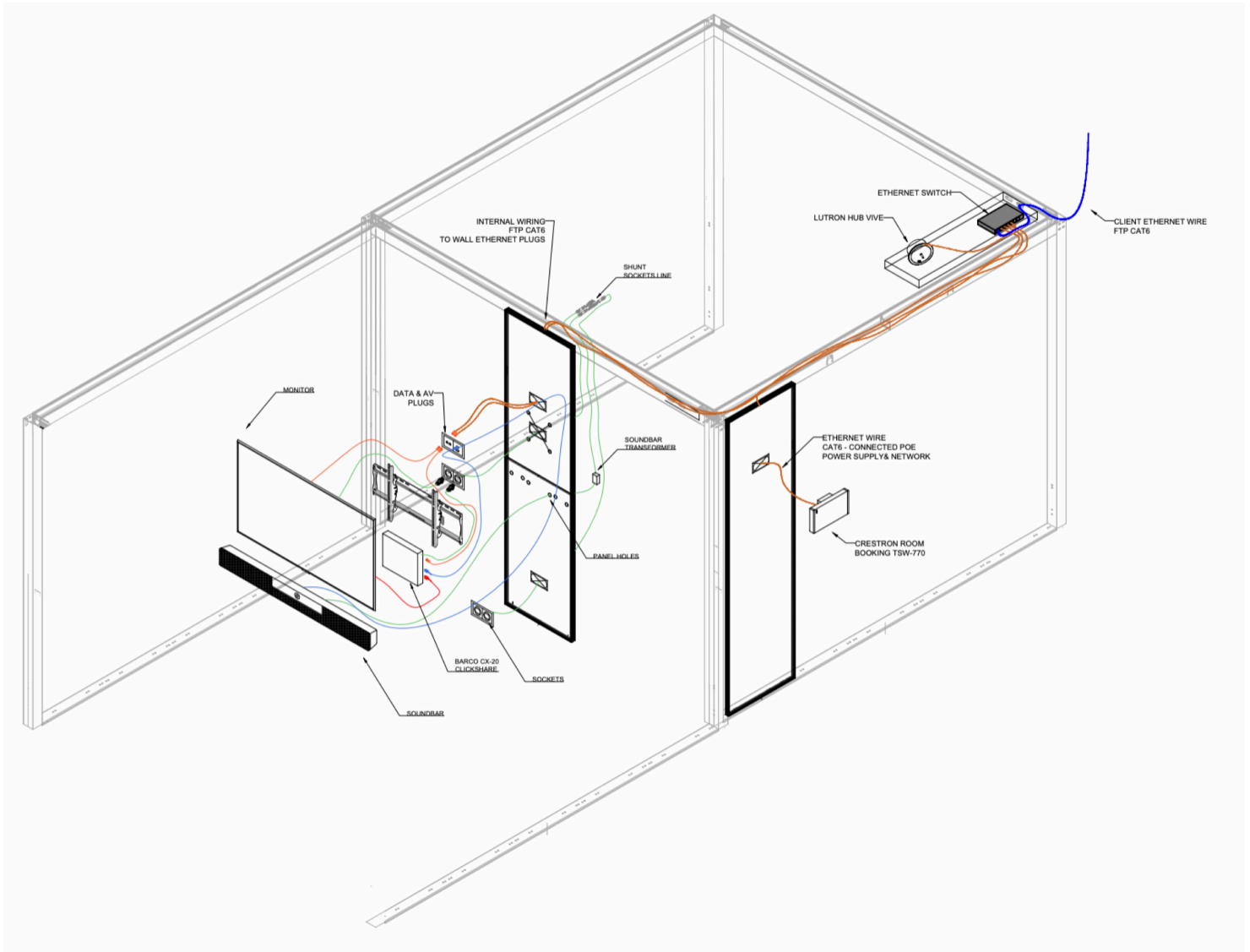
SOUNDBAR

Videoconferences and presentations

Wireless system CX-20
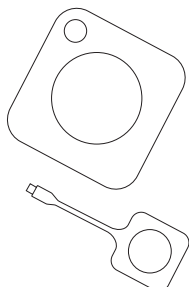
Clickshare CX-20 device

If the client prefers to make wireless connections with the room monitor and the soundbar and camera, they must buy this equipment.
Professional, quickly set-up presentation and videoconferencing system.
With this system, you can connect to the room's peripheral equipment (monitor, soundbar and camera, etc.)
remotely, quickly and securely from your personal device (PC, MAC, smartphone or tablet), using any videoconferencing system.

In case the customer has only TV in their living room (without SoundBar), they can select the Barco C-5 equipment. This is best suited for presentation applications.

TV Screen

HDMI

CX-20

Soundbar

USB

kettal
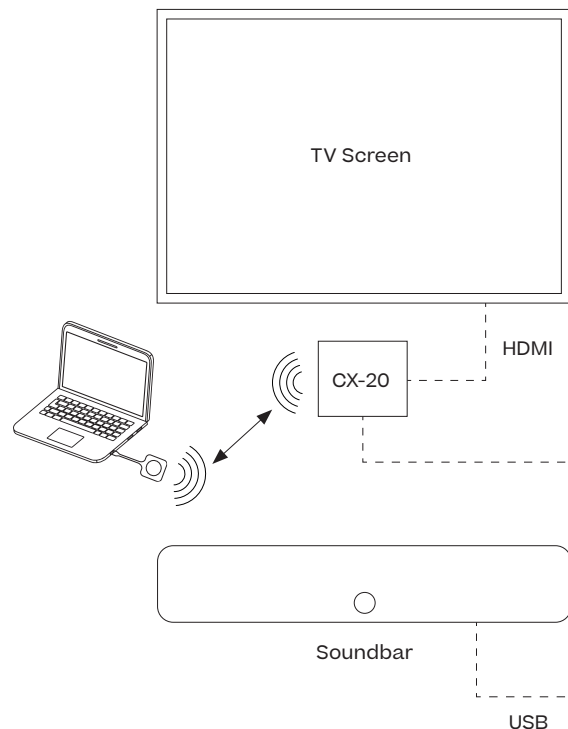
Charging and data accessories

The panels can be equipped with:

2 x Power

- Voltage: 230 VAC 50 Hz (110VAC 60 Hz USA version)
- Settings adapted to country
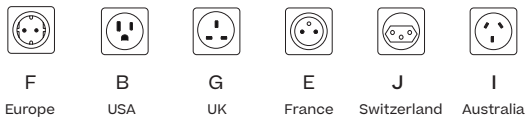
F	B	G	E	J	I
Europe	USA	UK	France	Switzerland	Australia

- Maximum power consumption per pavilion must not exceed 16 A
- Each socket can take up to 10 A

15,2/5,9

8,1/3,1
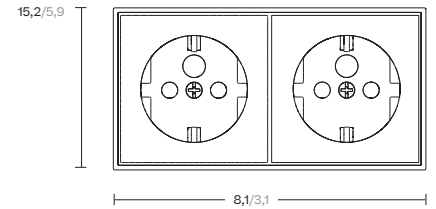
Power + Network

Socket

- Voltage: 230 VAC 50 Hz (110VAC 60 Hz USA version)
- Settings adapted to country

F	B	G	E	J	I
Europe	USA	UK	France	Switzerland	Australia
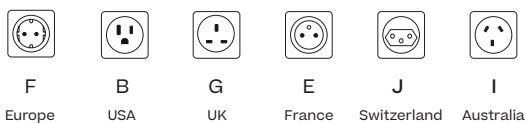
- Maximum power consumption per pavilion must not exceed 16 A
- Each socket can take up to 10 A
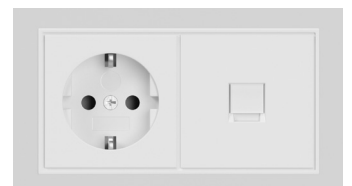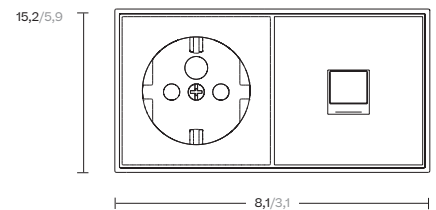
Network socket

- Network connection RJ45 CAT6A
- 8-pin network connection

15,2/5,9

8,1/3,1

kettal

Charging and data accessories

Power + USB Charge (Type A and C)

- Voltage: 230 VAC 50 Hz (110VAC 60 Hz USA version)
- Settings adapted to country

F	B	G	E	J	I
Europe	USA	UK	France	Switzerland	Australia
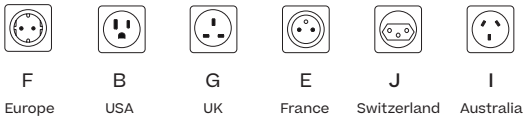
- Maximum power consumption per pavilion must not exceed 16 A
- Each socket can take up to 10 A USB charge
- Number of sockets 2
- 1 type A and 1 type C
- Maximum charging current 3000 mA
- Input voltage: 100-240 VAC 50/60 Hz
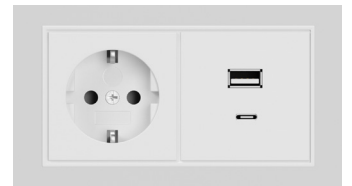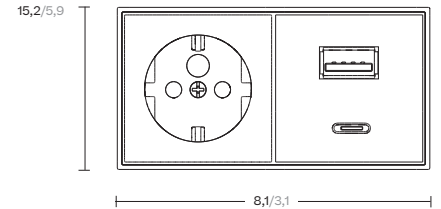
Smoke detector

- Changeable insect protection
- Lithium battery with passivation protection
- Battery life: 12 years
- Processor technology with two sensors (smoke + heat)
- Maximum real alarm precision
- Suitable for kitchen use
- 88 dB alarm signal at distance of 3 m
- Measurements (Ø x H): 10 x 3.8 cm
- Detection range: up to 60 m2 (depending on installation conditions)
- Optimal storage temperature: +10 ... + 35ºC, <70% relative humidity
- User-friendly, large check/stop key (78 cm2)
- Magnetic fastening with mounting by glue or drill hole
- Compliant with strictest requirements of the vfdb 14-01 directive
- CE in accordance with EN 14604-2005/AC-2008
- TÜV Nord Cert (Kriwan no. 1772-CPR-150500)
- Colour: Alpine white

15,2/5,9

8,1/3,1

3,8/1,4   Ø10/3,9

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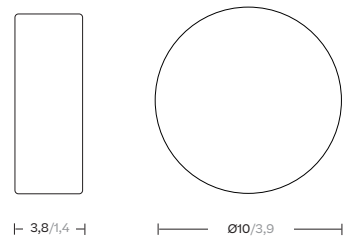
Lighting simulation

Pavilion 4970X5570
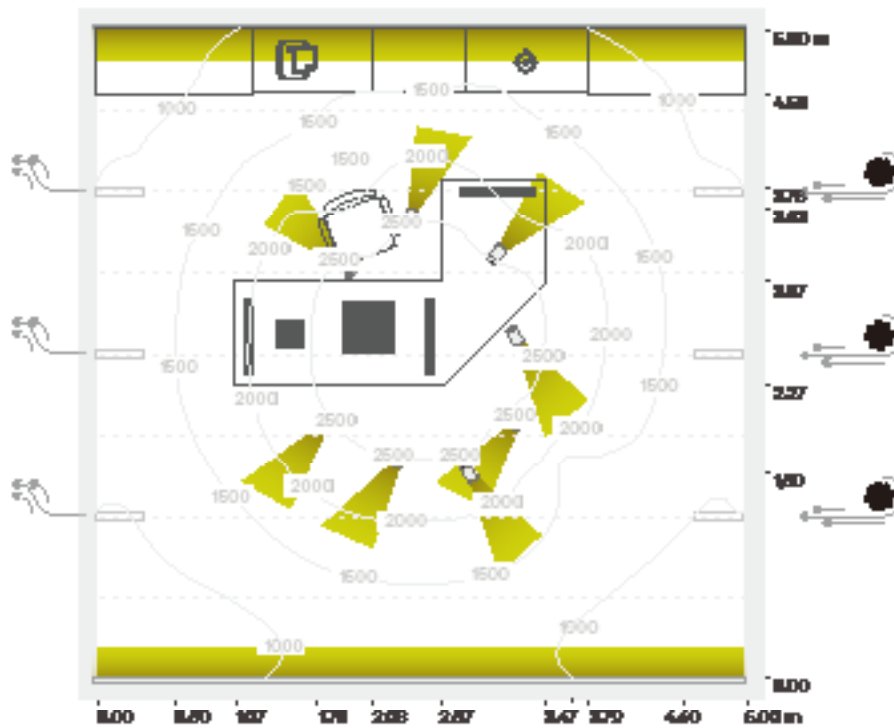
UL 1598 compliance certificate all internal electrical components.

Regulations:

UNE-EN 60598
UNE-EN 55015
UNE-EN 60529

Maintenance

Clean with a smooth cloth. Do not use ammonia products, solvents or abrasives.
Pursuant to the legislation in force, this product is guaranteed for two years starting from the date of purchase.

Total (W)	355 W
Input voltage	100 - 240V
Frequency	50-60 Hz
Nominal voltage	24Vdc
Color temperature	3500K
Luminous efficacy	120lm/w
Luminous flux	43000lm
Lighting level	500 Lx (on a center table) 300 Lx (general space)
Average lifetime	50.000h L80B20
IRC	90
Light source	Built-in Light source
Materials	Aluminium body & PMMA diffuser
Dimming control	Kettal provides a ROS integrated homologated
Light Electrical consuption (examples)	417x417cm Room / 4-6P: 287,38W 557x557cm Room / 6-8P: 338,98W

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HVAC

Ventilation

The Pavilion O has a flow rate of 150m³/h per ventilation unit.

It is aimed to have more than 15 air renewals per hour in each of the rooms.

This is calculated for each room size, and the number of machines required is counted: 1, 2, 3, or 4 machines.

Additionally, G3 grade filters are used to filter out dust and ensure proper functioning of the ventilation machines.

Ventilation ceiling (top) location and connection

Ideal building AC Diffuser Location

ELECTRICAL TRAY ACCESSIBLE FROM THE INSIDE BY REMOVING THE CEILING PANELL

CABLE ROUTING HIDE INSIDE PROFILE STRUCTURE

CONNECTORS WIELAND GST

VENTILATION

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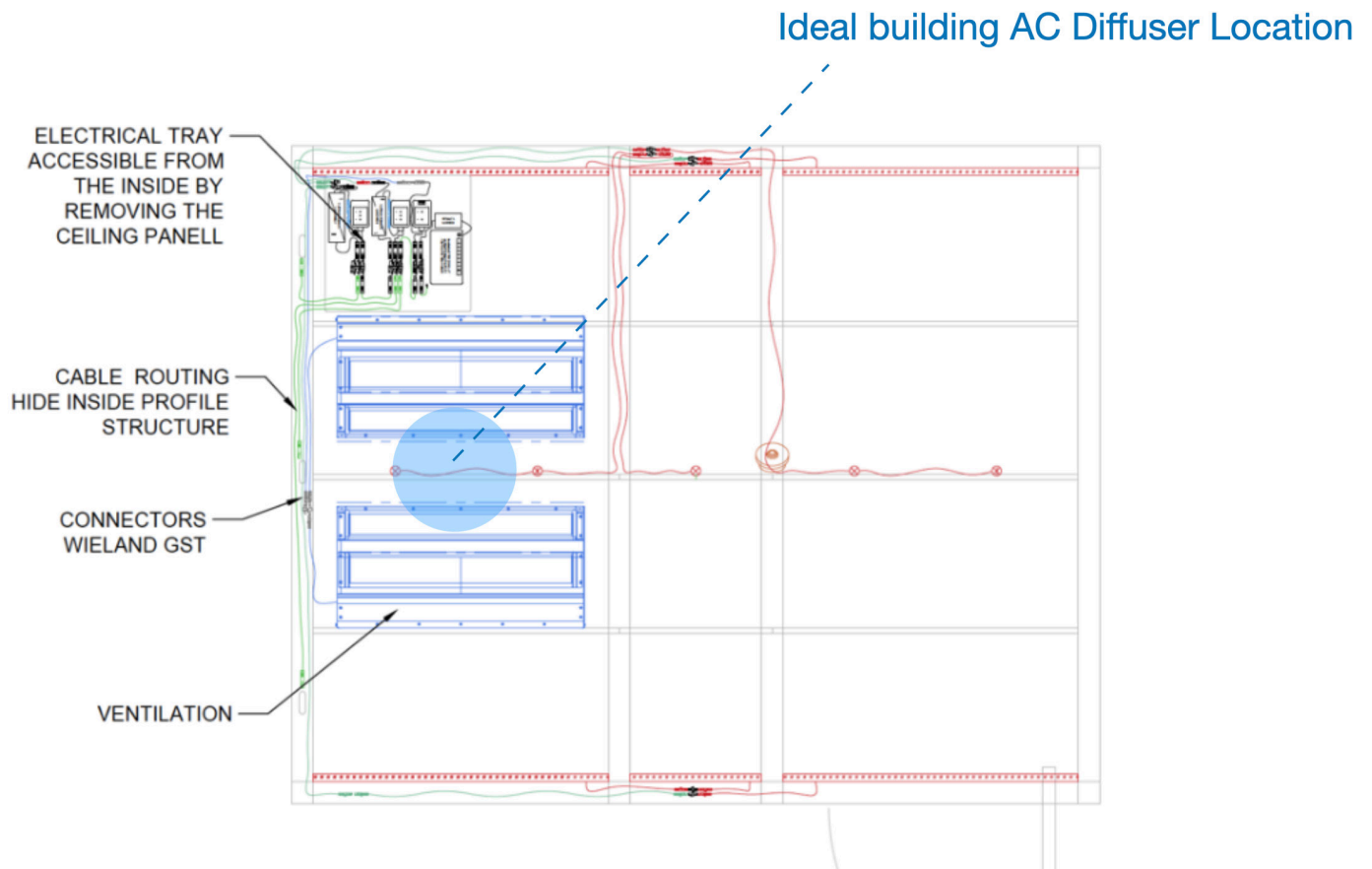
HVAC

Ventilation set-up examples and Air flow efficiency
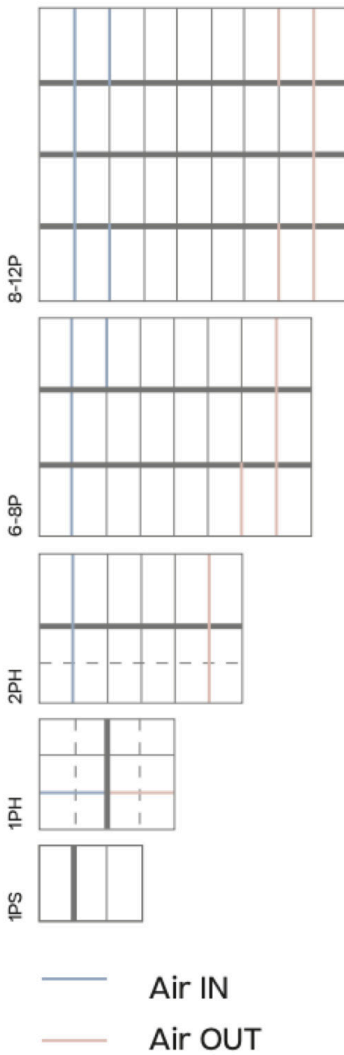
8-12P	
Height	2,31 m
Weight	5,3 m
Depth	4,7 m
Ventilation modules	6 units
Flow	150 m3/h
Renewals per hour	15,6
Liters per second	250 L/s

6-8P	
Height	2,31 m
Weight	4,7 m
Depth	3,5 m
Ventilation modules	4 units
Flow	150 m3/h
Renewals per hour	15,8
Liters per second	166,6 L/s

2PH	
Height	2,31 m
Weight	3,5 m
Depth	2,3 m
Ventilation modules	2 units
Flow	150 m3/h
Renewals per hour	16,1
Liters per second	83,3 L/s

1PH	
Height	2,31 m
Weight	2,3 m
Depth	1,7 m
Ventilation modules	1 units
Flow	150 m3/h
Renewals per hour	16,6
Liters per second	41,6 L/s

1PS	
Height	2,31 m
Weight	1,7 m
Depth	1,1 m
Ventilation modules	1 units
Flow	100 m3/h
Renewals per hour	23,1
Liters per second	27,7 L/s

Air IN
Air OUT

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Pavilion O
Aesthetics & materiality

kettal

Materials

Structural Aluminium

Extruded and hollow profiles of this alloy will be used to build up the structures of each booth.

This is a light and ductile alloy, with great strength and magnificent finishing characteristics. It is ideal for works that require high quality and perfect finishes.
It has excellent corrosion resistance, similar to that of stainless steel. Follows the UN-EN-AW 10204 3-1 regulation.
KETTAL uses 80% recycled aluminum in the extrusion of its profiles in order to reduce greenhouse
gases, thus contributing to a more sustainable production of our customers' products.

Recyclable   80%   Local supplier
                    recycled

Chemical composition (UN-EN 10204 3-1 Regulation)

%	Min. Máx.
Si	0.30 0.60
Fe	0.10 0.30
Cu	- 0.10
Mn	- 0.10
Mg	0.35 0.60
Cr	- 0.05
Zn	- 0.15
Ti	- 0.10

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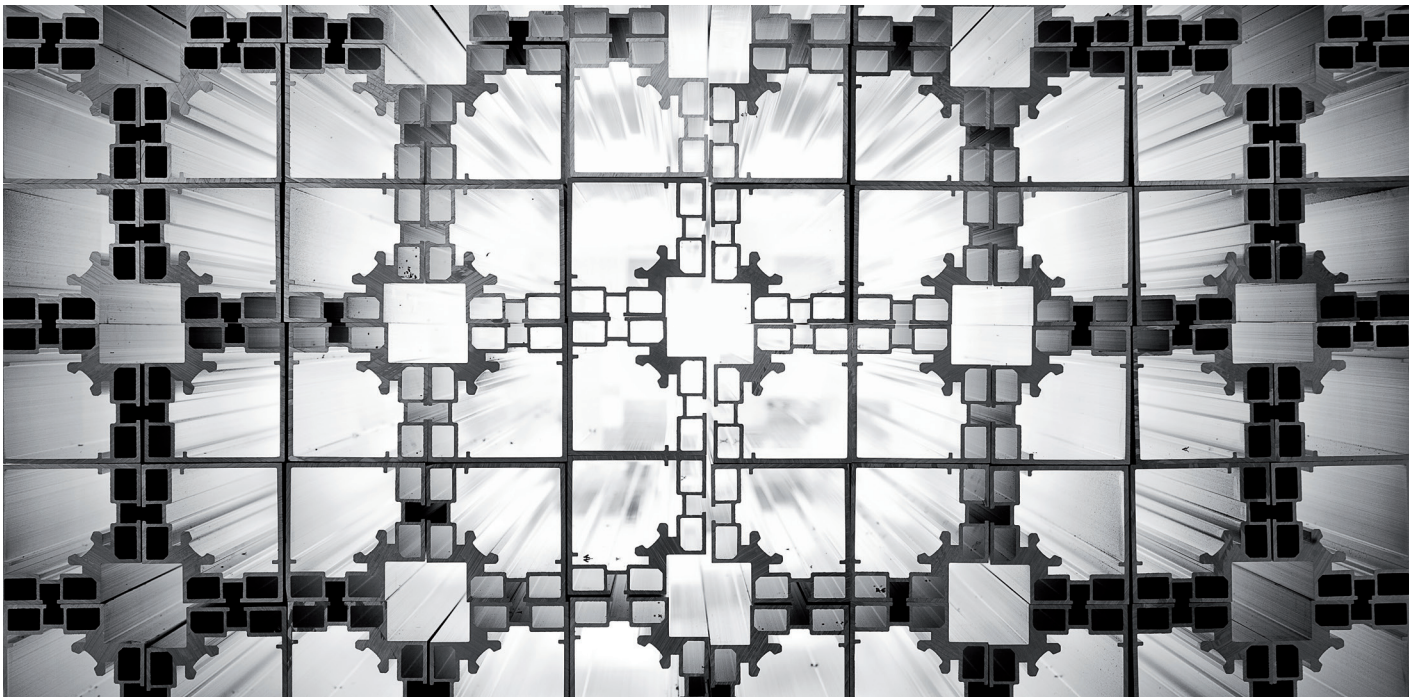
Materials

Technical wood

The technical wood is one of the main components to create the acoustic lateral panel and ceiling. 10mm fire-fighter.
Complies with E1 regulation

The environmental product declaration is in accordance with ISO 14025 and EN 15804.

Comply with standards EN 622- 1, EN 622-5 and EN 14322. They are considered reliable products used as raw material for the construction and furniture industry.

Characteristics	Test	Units
Density	EN 323	kg/m3
Flexural strength	EN 310	N/mm2
Formaldehyde emission	EN 717-1	ppm
Reaction to fire	EN 13501-1	Euroclase
Absorption acoustic coefficient	UNE EN 13986:2006+A 1 :2015	α
Acoustic insulation	UNE EN 13986:2006+A 1 :2015	db
Biological durability	UNE EN 335	Clase de uso

Type 2
From cradle to gate with options

Local supplier

Formaldehyde free

kettal

Materials

Soundproof Safety Glass

6 mm / 1 PVB / 6 mm

Soundproof safety glass, consists of two or more glass sheets joined by one or more Polyvinyl Butiral (PVB) films,

Direct acoustic isolation 39 dB.

If a laminated glass is broken, the PVB film retains a large part of the glass fragments, that is, the residual strength and the maintenance of the glazing are kept in the same place until they are replaced.

These glasses filter 99% of the UV rays and contribute to extend the life of curtains, rugs, fabrics, objects, etc., which are exposed daily to natural light.

It offers protection against a need for security and complies with the requirements of current norms and regulations, both for homes, shops or offices.

In case of breakage, the fragments remain attached to the sheet.

Chemical composition

SiO_2	69 - 74 %
Na_2O	10 - 16 %
CaO	5 - 14 %
MgO	0 - 6 %
Al_2O_3	0 - 3 %
Others	0 - 5 %

Belgian
supplier

Soundproof
safety glass

ISO
9001:2015

CE

Materials

Terrain Coatings

Terrain Coatings are designed for aluminum profile coatings used in architecture and for other substrates where maximum outdoor resistance is needed.

It is a powder coating formulated with polyester resins and free of TGIC, pigments and additives. They offer excellent exterior durability with very good gloss retention and color stability.

Class A2   Polymerization at 160°   Local supplier

kettal

Materials

Terrain Coatings

Characteristics	Min.	Max.	Method
Baking time / temperature	24 to 150 °C / 75,2 to 302 °F	26 to 150 °C / 78,8 to 302 °F	Total time
Gloss at 60° angle	6	9	ISO 2813
Direct impact 12.5 mm	30		ISO 2813
Indirect impact 12.5 mm	30		ISO 2813
Cross-cut adhesion	0	0	ISO 2813
Erichsen Cupping test	5	11	ISO 2813
Bend test (Cylindrical Mandrel)		6	ISO 2813
Avg. Particle size	50	55	MALVERN
Particle size % < 100 MICRONS	80	95	MALVERN
Particle size % < 50 MICRONS	50	65	MALVERN
Particle size % < 10 MICRONS	4	8	MALVERN
Delta E colour		VISUAL	CIELAB
General appearance	Textured		NIZI-001

Certificates

kettal

Materials

Kvadrat Relate Fabrics

Relate is a sophisticated twill weave upholstery textile designed by Patricia Urquiola made from Trevira CS, which has a soft hand resembling natural fibres.

The versatile palette for Relate comprises 35 colourways and expresses confident colour combinations by combining warm notes with closely related nuances.

Relate is suitable for contract and private use.

Technical specifications

Composition	100% Trevira
Width	Approx. 140 cm
Weight per m²	Approx. 328/m²
Fire test	AS/NZS 3837 class 2, BS 5852 Crib 5, BS 5852 part 1 with treatment, DIN 4102 B1, EN 1021-1/2, IMO FTP Code 2010 Part 8, NF D 60 013, NF P 92 503 M1, NFPA 701, SN 198 898 5.2, UNI 9177 Classe 1, US 1 Cal. Bull. 117-2013, ÖNORM B1/Q1
Lightfastness	5-7 (ISO 1-8)
Shrinking	App 2%
Abrasion Martindale	80.000 Martindale
Wash load	Half
Pilling	4-5 (ISO 1-5)
Colour	Slight differences may occur
Produced in environment	Greenguard Certification www.greenguard.org

kettal

Materials

Floor carpet

A subtle linear pattern together with a refreshed colour range provides the perfect counterpoint for contemporary and sustainable interior design. Combining soft floor comforts with a hard floor appearance it gives a laid back, modern and natural feel.

Colour Options

Nordkapp
CP1
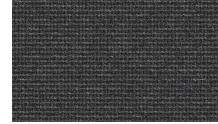
Reykjavik
CP2

Bergen
CP3

kettal

Materials

Floor carpet

Technical specifications

Composition	100% Solution Dyed Nylon, contains recycled content						
Pile Yarn Weight (g/m^2)	400 ± 5%						
Total Weight (g/m^2)	3649 ± 5%						
Total Thickness (mm)	4.4 ± 0.5%						
Gauge / Ends 10 cm	5/64 - 50.4						
Tufts per m^2	176,400 ± 5%						
Backing Type	Graphlex ®						
Wear Classification	Heavy Contract (EN 1307) Class 33 / LC1						
Radiant Panel	(EN ISO 9239-1) Euroclass Cfl s 1 (EN 13501-1)						
Dimensional Stability	≤ 0.2% (EN 986)						
Impact Sound Insulation (ΔL_w)	14 dB (EN ISO 10140-3)						
Rating of Sound Absorption	α_w 0.15 (EN ISO 11654)						
Sound Absorption	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	(EN ISO 354)
	0.01	0.00	0.06	0.17	0.32	0.30	α_s

EN 14041

DOP: 1037/116771
textile floor covering
EN 1307

Materials

Terrain Elements

This is a range of premium fabrics for indoor and outdoor furniture.
The hydrophobic technology applied works by impeding the liquids that permeate the fabric, forcing them to roll out of the fabric in the form of drops. The fabric protection that brings out the liquids allows for drops of water and oil to be eliminated during normal washing without leaving any traces.
Solution-dyed acrylic; is dyed before thread is created. A liquid acrylic solution is mixed with dye and then formed into a fiber and spun on thread.

Composed of different 3 shades of unique colors.
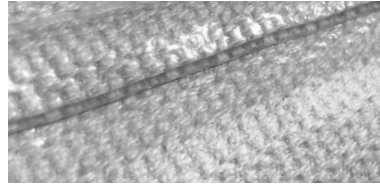
Thermal welding in all stitching applied
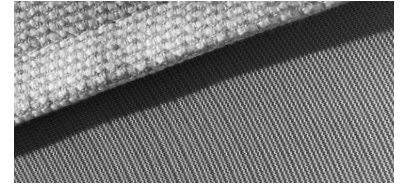
Air circulate system

Water repelent

Laminated

Anti-mould

UV-Resistant

NFPA 260

CAL 117

kettal
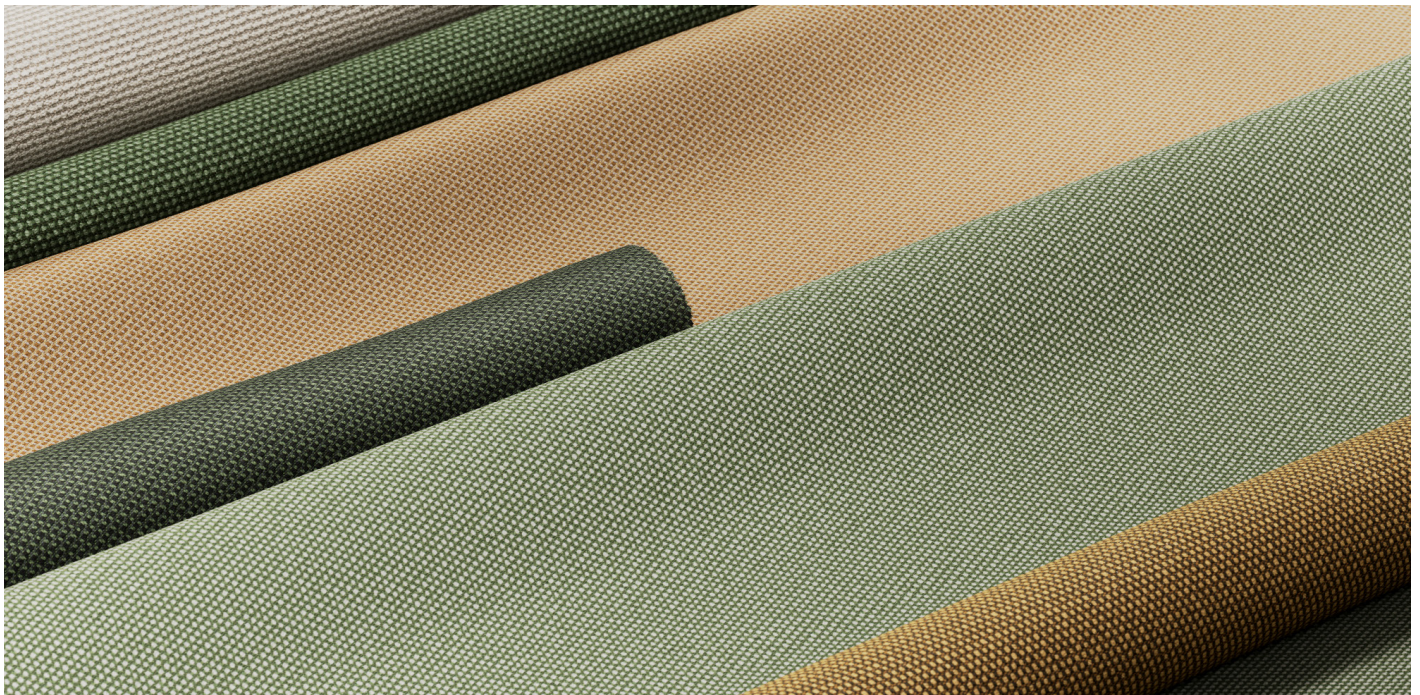
Materials

Technical Specifications

Material	100% acrylic, dyed	
Grammage	400 g/m2	ISO 2286-2
Resistant to superficial wetting	100 ISO 24920	ISO 24920
Oil resistance	6	AATCC 118
Colour fastness to artificial weathering	7-8 blue scale (8)	ISO 105-B04
Colour fastness to light	7-8 blue scale (8)	ISO 105-B02
Title warp and weft	Nm 2/34 Nm 6/34	
Tensile strength, warp	180 daN/5 cm	ISO 13934
Tensile strength, weft	240 daN/5 cm	ISO 13934
Tear resistance, warp	21.0 daN	ISO 4674-1
Tear resistance, weft	29.0 daN	ISO 4674-1
Abrasion resistance (Martindale)	30,000 cycles	ISO 12947-2
Abrasion resistance (Wyzenbeek)	15,000 double rubs	ASTM D4157
Cigarette ignition classification	Class 1	NFPA 260
Material resistance to ignition without flame	Pass	CA TB 117

kettal

Materials

Colour Shades
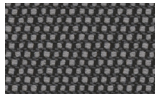
Charcoal 01L	**Cumulus** 02L	**Fog** 09L	**Porous Grey** 08L
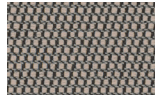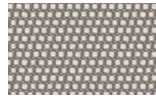
Snowcap 03L   **Moonstone** 07L   **Karakum** 06L   **Cambium** 12L
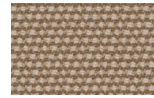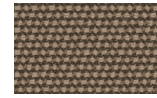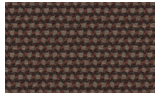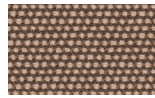
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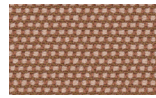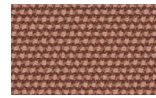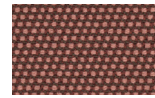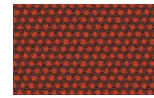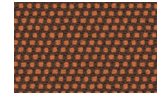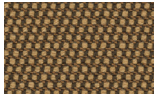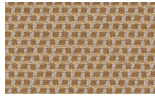
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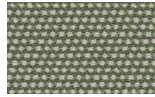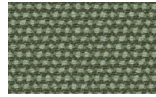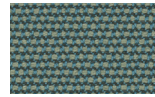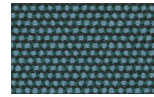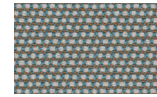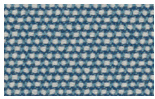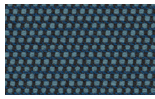
Nautica 26L   **Blue Reef** 27L   **Cosmos** 28L   **Amethyst** 29L
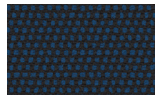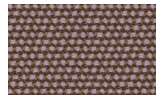
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Materials

Maya (Curtains)

Maya is a rhythmic, airy curtain textile designed by Doshi Levien, offering an open structure and a light, matte expression. Despite its delicate look, it is extremely robust.

Constructed with a leno weave, Maya creates a beautiful play of light and shadow, as conditions change throughout the day. The design is inspired by Indian saris, which combine different transparencies to consistently reveal subtle nuances.

Care instructions

Technical specifications

Composition	100% Trevira
Yarn type	Spun
Binding	Leno
Lightfastness	Note 7 ISO 105-B02
Width	Approx. 300 cm
Weight	Approx. 300 g/lin.m
Repeat	Approx V. 1 cm H. 0 cm
Fire retardant	AS/NZS 1530.3 · BS 5867 part 2 type B · IMO FTP Code 2010 Part 7 · JIS L 1091 A-1 D · NF P 92 507 M1 · NFPA 701 SN 198 898 5.2 · UNI 9177 Classe 1 · DIN 4102 B1 · EN 13 773 class 1 · ASTM E84 Class A Unadhered · CAN ULC S109 · EN 13501-1, B-s1, d0 · AS/NZS 1530.2

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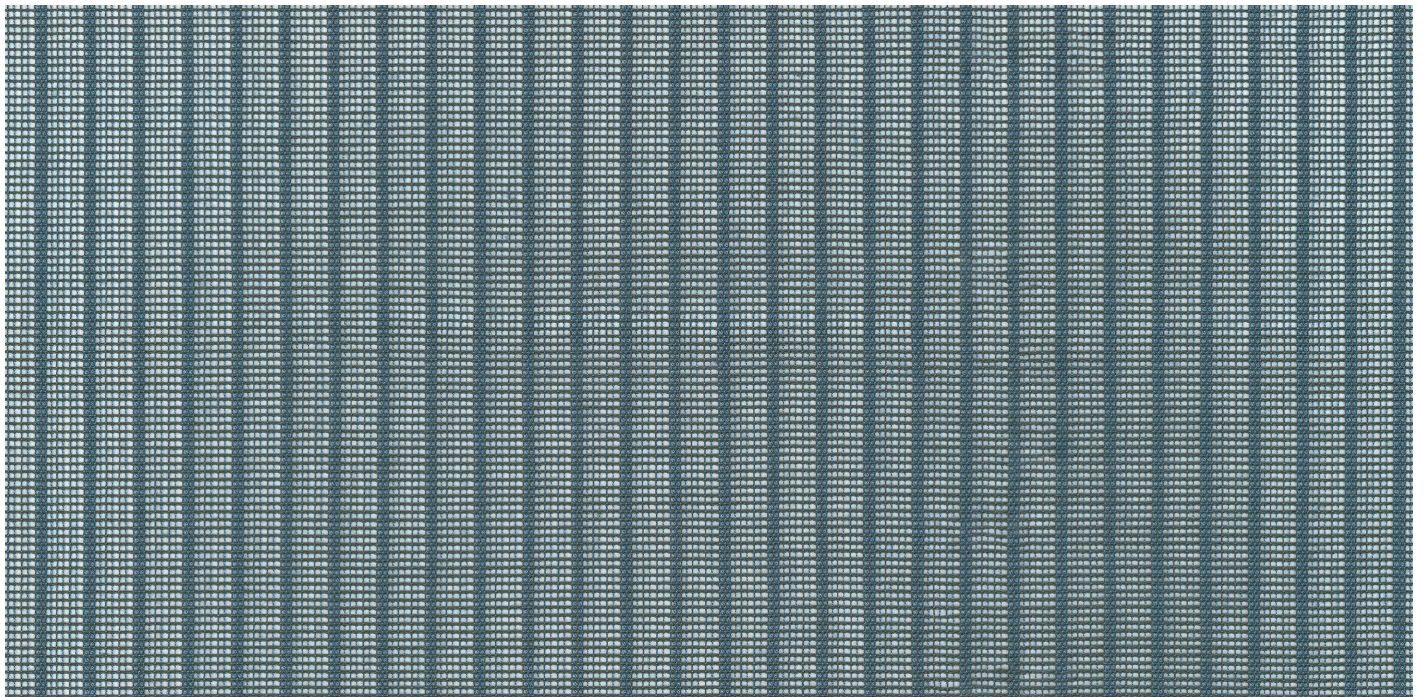
Materials

Technical wood

Technical Wood is made of original tropical hard wood fibers that undergo a high-pressure and high-temperature steaming process. Hence it shares similar characteristics of natural solid wood but has the added advantage of being pest and fungus-resistant, in accordance to the international standard.

Technical specifications

Density (kg/m^3)	760-730 EN 323
Flexural strength (N/mm^2)	14 EN 310
Formaldehyde emission (ppm)	≤0.05 EN 717-1
Reaction to fire	B-s2,d0 EN 13501-1
Absorption acoustic coefficient (α)	0.25 UNE EN 13986:2006+A 1 :2015
Acoustic insulation (db)	24 UNE EN 13986:2006+A 1 :2015
Biological durability	1 UNE EN 335

Type 2
From cradle to gate with options

Local supplier

Formaldehyde free

Materials

Recycled Cotton Wool

1. Ecological Product. Bio-sustainable. 80% recycled and 100% recyclable.
2. Safe in its installation: It does not cause discomfort or itching as it is based on natural fibers.
3. Elastic product. Does not break when folding. Its modulus of elasticity compared to rock wool is: 7 times better.

It does not promote combustion. Fire classification: M1 Certified 09/32300075 and 76 + according to UNE 23721-90, EN 13501-1.

Type 2 From cradle to gate with options	Local supplier	**R** Recyclable

Frequency	Rockwool 4cm	Cotton 3cm
100	40,7	43,8
200	43,8	42
250	46,8	33,2
400	47,2	46,8
500	47,8	53,3
1000	54,4	54
1250	55,6	56,8
1600	56,6	57,5
2000	59,3	60,1
2500	61	61,2
3150	64,3	66
4000	66,1	68
GLOBAL	53 dBA	54,6 dBA

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Materials

Soundproofing Membrane

High-density, polymer-based, asphalt-free synthetic soundproofing membrane.

Note

No substances including in the LIST OF PROHIBITED SUBSTANCES in CRADLE TO CRADLE CERTIFIED PRODUCTS PROGRAM are used in the manufacturing of the product range Soundproofing Membrane so those substances are not expected to be on the final product.

Local supplier

Restricted Substances (REACH Annex 17)"

The item(s) stated within section "2" of this declaralion satisfy the requirements that are defined in Tille VIII of Regulation (EC) No. 1907/2006 (REACH regulation }, including the restrictions listed in Annex 17 of REACH.

Link: htt12s://echa.euro12a.eu/substances-restricted-under-reach

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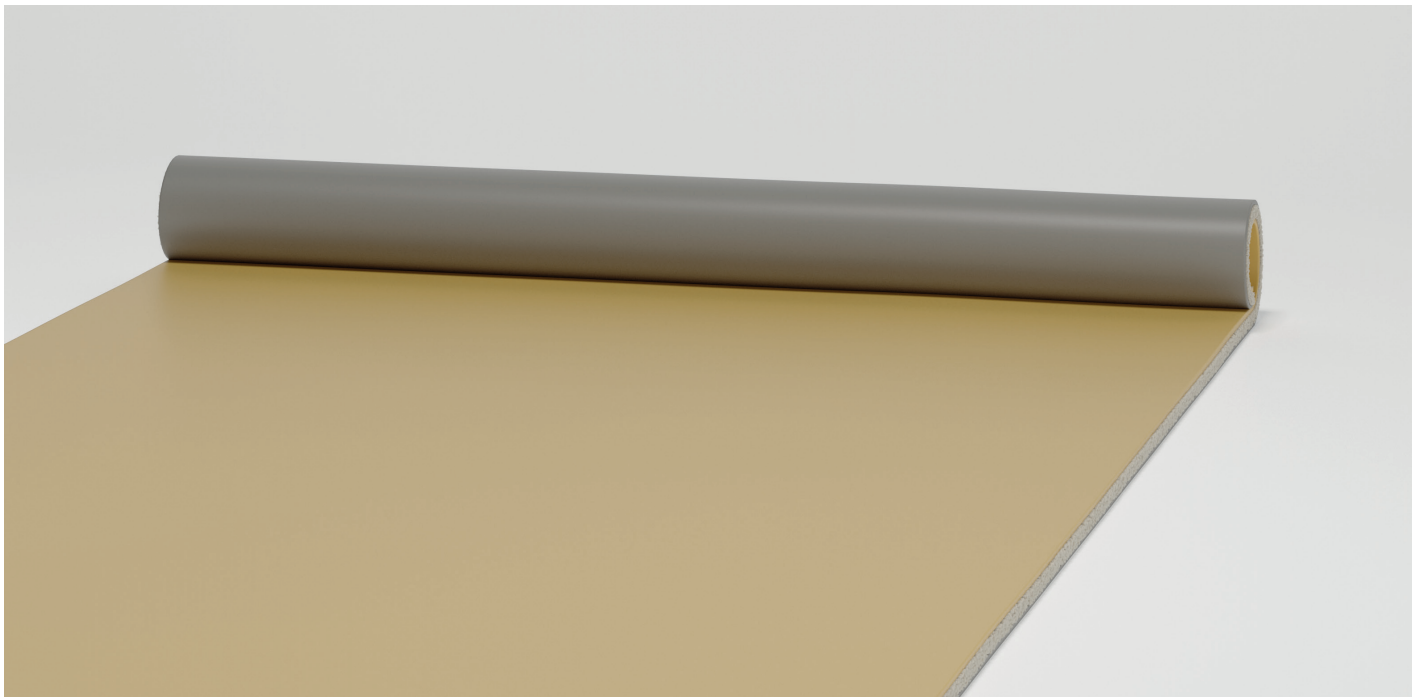
Materials

Soundproofing Membrane

Characteristics	Testing method	Tecsoundsy	Units
Density	-	2.010	kg/m³
Tensile strength	NT-67	>30	N/50mm
Elongation	NT-67	>500	%
Fold	EN 1109	-20	ºC
Fire classification	UNE-EN 13501-1	Bs2d0	-
Resistance factor to water steam	UNE-EN 1931 met B	μ>1806	-
Water absorption (24h at 23ºC)	1S062 met 1 NT74	0,003	%
Shore A hardness	NT74	30±10	

Regulation or protocol	Conclusion	Version of regulation of protocol
French VOC Regulation		Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)
French CMR components	Pass	Regulation of March and April 2011 (DEVL1101903D and DEVL1104875A)
AgBB/ABG	Pass	Anforderungen an bauliche Anlagen bezüglich des Gesundheitsschutzes (ABG), Entwurf 31.08.2017
Belgian Regulation	Pass	Royal decree of May 2015 (C-2014/24239)
Indoor Air Comfort®	Pass	Indoor Air Comfort 6.0 of February 2017
Indoor Air Comfort GOLD®	Pass	Indoor Air Comfort GOLD 6.0 of February 2017
Blue Angel (RAL UZ 132)	Fail	Low-Emission Thermal Insulation Material and Suspended Ceilings for Use in Buildings, October 2010
BREEAM International	Compliant	GN22 v2.2 (August 2017): BREEAM Recognised Schemes for VOC Emissions from Building Products
LEED v4 (outside U.S.)	Compliant	LEED v4 for Building Design and Construction (April 2015)

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Materials

Foam

Innovative thermal and acoustic insulation.

Foams are widely used as sound absorbing materials in noise control engineering.

A foam material is a solid that contains cavities, channels or interstices so that the sound waves are able to enter through them.

100% Recyclable   Local supplier   CE
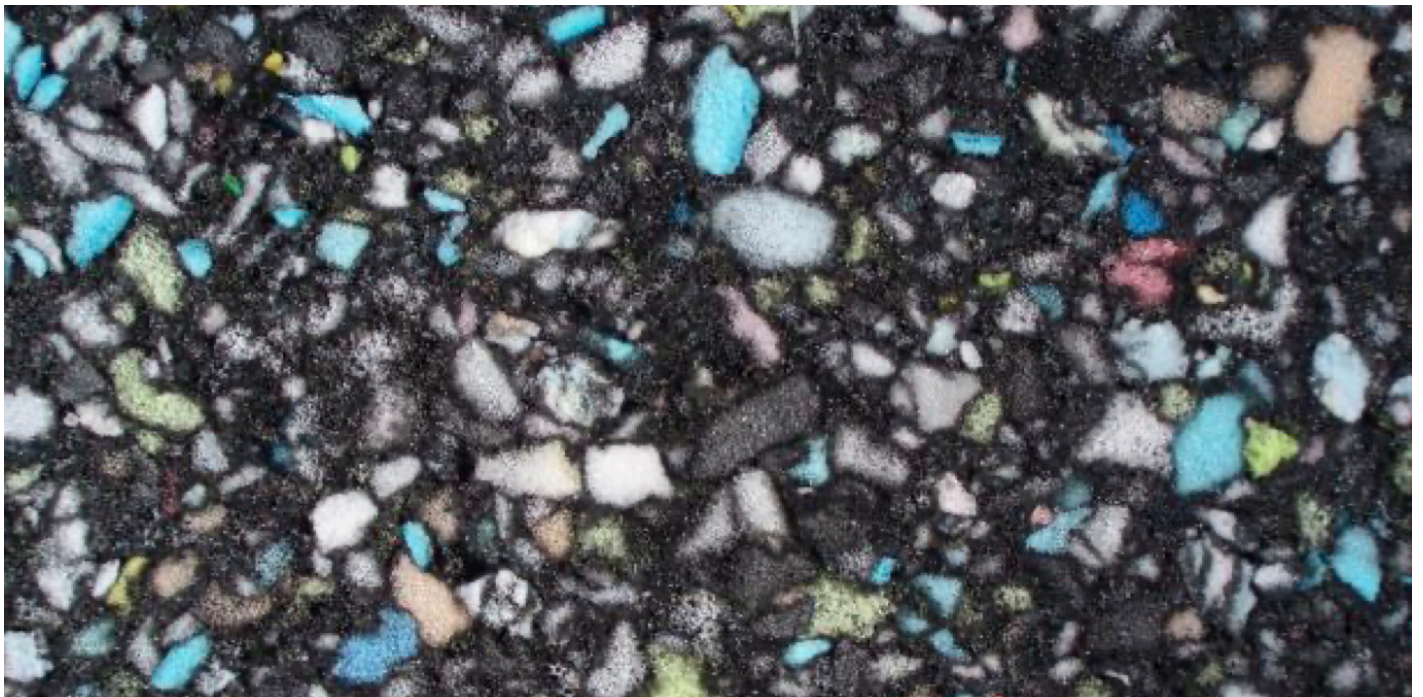
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Annexes
ROS/BOS

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ROS Hub

ROS Wireless Hub

The ROS Hub offered by Kettal and its selected Technology partners provides a connection point for ROS devices such as PowPak wireless dimming and switching modules, Pico remote controls, Radio Powr Savr occupancy sensors, and daylight sensors. For a complete list of compatible devices, see the last page of this document.

For more information on the ROS hub, including training materials, design information and software updates.

• Can be easily programmed with any Wi-Fi enabled iOS® or Android® compatible device using the free app (available for download from the App Store or Google Play®) or by using web-based software.

• iOS® and Android® Apps – Helper apps act as an intermediary between ROS systems and the Cloud without the need of a permanent internet connection. It connects to hubs when on-site and passes data back and forth when the smart device reconnects to the Internet. / ROSPrivacyNotice for more about this data.

– Registration of jobs / users for extended warranty.
– Manage multiple jobs with contacts and job info.
– Invite facility users to have access to hubs / job.
– Automatically send hand-off documentation personalized to your firm to facility management team. Including programming user guide, online "How-to" videos, and support number.
– Connection to hub browser user interface for setup. Normal web browser still works and the app is not required.
– Connection to hub browser dashboard for control and monitor. Normal web browser still works and the app is not required.
– Backup the database to the Cloud for hub replacement.
– Download reports that list the inventory of hubs and devices commissioned in your job.

• Communicates with controls on a floor using wireless Clear Connect technology.

• Distributed system architecture.

– Wireless sensors and controls must be located within 9 m of the associated device.

Hub
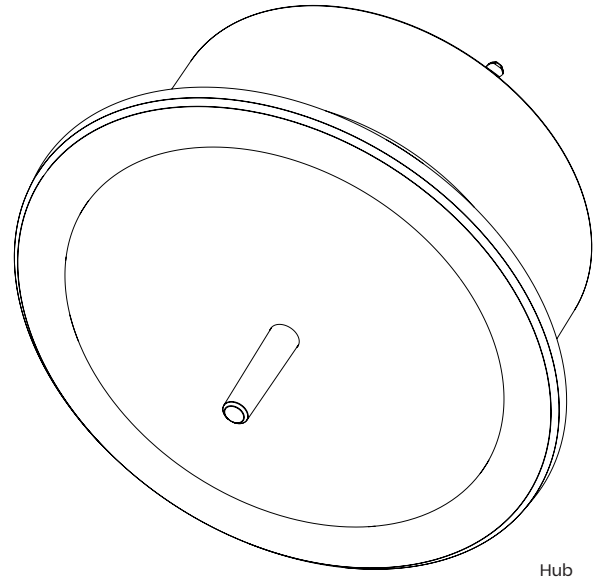
• Supports timeclock events based on both sunrise and sunset or fixed time-of-day.

• Timeclock events can control individual devices, areas, or groups of areas.

* Note: This feature is not available once a hub is paired with a ROS Vue server.

• Uses RF signal strength measurements to find devices nearby for quick association and programming without having to climb ladders.

• Dashboard of current status for control and monitoring of the system. Also shows current energy usage.

• Integrated multi-color LED provides feedback on what mode the hub is in.

• Connects directly to any smartphone, tablet or computer using built in Wi-Fi. 2.4 GHz 802.11b / g using WPA2 Security.

ROS Hub

Features (continued)

• Ethernet 10 / 100 Mbps connection for:

 – Native BACnet® / IP (see P/N 369996 at
   www..com for PIC Statement) integration
   into Building Management Systems (HKS-2-
   XX only). The ROS Hub has been tested by
   BACnet® Testing Laboratories (BTL) and
   is certified to comply with all necessary
   interoperability requirements.
 – Network multiple ROS hubs together as an
   independent system or as part of an existing
   building network.
 – Native OpenADR® support, to manage
   Automatic Demand Response / Load Shed
   events dictated by a utility company.
 – Each ROS hub hosts a unique virtual BACnet®
   network. As such, each ROS hub requires a
   unique BACnet® network number.

• Firmware upgradable for future features and
  security patches.
• Password protected access.
• Flush-mount or surface-mount options available.
• Supported on most devices that use an HTML5
  compliant browser (iOS®, Android®, Windows®,
  Mac®).
• Required browsers are Google® Chrome® and
  Safari®.
• Supports HTTPS.
• Recommended configurations for smart devices:

Device	OS Version
iPhone 6, iPhone 6 plus or newer	iOS® 11 or later
Supported on most Android® devices running Android® 6.0 or later.	Android® 6.0 or later

• Daylighting Setpoint Tweaking – If the lights are too bright or too
  dim while using daylighting, adjust the settings in real time from a
  smart device to alter the setpoint for the light level that is
  maintained between natural and electric light. Older devices
  (released prior to September 2017) can be adjusted but may take a
  minute to reach the desired level because of a of slow fade. New
  devices will respond immediately.

• Daylighting-to-Low-End or Daylighting-to-Off - The ROS system will
  allow the user to select either daylighting-to-low-end or daylight-to-
  off on an area by area basis.
   * Requires ROS hub software 01.08 or higher.

• Customer Supplied Security Certificates

 – Provides customers the abiltiy to load their own authentication
   certificates for their specific domain.
 – Provides customers using the ROS hub application to use secure
   browser communications without receiving any authentication
   warnings due to the self-signed certificates that are shipped with
   the hubs.
 – Requires ROS hub software 01.08 or higher.

• Timeclock Occupancy Sensor Settings Changes

 – Requires devices shipped after September 2017. Devices shipped
   prior to that date will be displayed as "unsupported" in the
   software UI. Allows timeclock events to change the behavior of
   occupancy settings based on time of day.
   For example, change the unoccupied level of corridors / hallways
   from 25% during the day, and off at night. The following settings
   can be changed:
 – Occupied Level – The level the lights go to when occupied.
   Changes are not applied immediately to currently occupied
   spaces, but will change the next time the space goes occupied to
   minimize distraction.
 – Unoccupied Level – The level the lights go to when unoccupied.
   Changes are applied immediately to spaces not currently
   occupied.
 – Enable / Disable Occupancy – Change whether devices will
   respond to the occupancy sensor.
 – Timeout of the sensors (requires FC-VSENSOR). LRF2 sensors still
   require this setting to be set on the sensor.

• 365-day schedulable timeclock with exceptions
   for holidays.

 – Allows scheduling events 10 years in advance.
 – Set recurring events with exceptions on holidays.
 – Allows scheduling events on specific day of the year.

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ROS
Hub

Features (continued)

• Provides calculated energy data for PowPak modules.

• Create and edit areas.

• Tune area light levels by trimming the high-end and low-end output.

• Adjust occupancy settings. Create occupancy groups.

• User can choose to extend the RF range of up to 15 of the total Pico remote controls per ROS hub. These remotes will be able to control any devices within the 22 m range.

• RF range of occupancy sensors can be extended for up to 14 areas per ROS hub. In a range-extended area, an occupancy sensor can control any device in that area, regardless of distance between sensor and device. Requires ROS hub software 01.09 or higher.

• Configurable Fade Time

  – Up to 90 minutes for timeclock events and scenes.

  – Up to 90 seconds for Pico remote control pro-gramming.

     o Fade time may differ between buttons on the same Pico remote control.

     o Single fade time applies to all programming for a button.

• Automatic Demand Response / Load Shed

  – Load Shedding will physically dim the lights to a programmable level.

  – OpenADRR 2.0b compliant (requires ROS hub software 01.09 or higher).

  – May be enabled (or disabled) via any of the following methods:

          o The first contact closure input (CCI 1)
          o BACnet R integration
          o OpenADR R integration

  – OpenADRR requires access to utility companies over the Internet, so the hub must be connected via Ethernet to use OpenADRR.

• Alerts
  – View run-time issues which may prevent devices from operating as expected, such as low batteries or missing devices.

• API Integration
  – To integrate with third-party devices, systems, and software, RESTful APIs are available over the Ethernet.

• Scenes
  – Scenes can control individual devices, areas, or groups of areas on demand.
  – May be activated via any of the following methods:
     o The second contact closure input (CCI 2)
     o API integration
     o Manual activation in the app
  – Maximum of 50 scenes are supported.
  – Requires ROS hub software 01.13 or higher.

• Programmable CCI
  – The second contact closure input (CCI 2) can be programmed to activate a scene.
  – Scene activation
          o Set a scene to activate using second contact closure input (CCI 2) on the ROS hub.
  – Requires ROS hub software 01.13 or higher

• Occupancy Dependency
  – Occupancy sensors in one room/area can control devices in other rooms/areas.
  – Radio Powr Savr occupancy sensors and Maestro Wireless 0–10 V-dimmers and switches with sensor only.
  – Requires ROS hub software 01.14 or higher.

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ROS Hub

Specifications

Regulatory Approvals
• CE (European Union)

Power / Performance
• Input to power supply:
  220 – 240 V~ 50 / 60 Hz 0.6 A
• Input to ROS hub:
  24 V- 350 mA

System Limits

• HKS-1, HKS-2 support up to 700 Wireless devices.
  HKS-0 supports 75 Wireless devices.
• Any given load device can be controlled by 10
  occupancy sensors, 10 Pico remote controls and 1
  daylight sensor (Pico remote controls and sensors
  must be located within 9 m of the load device
  they are controlling).

Metal Ceiling Mounting

• Metal ceiling grids must have a ≥ 3 mm gap of
  non-metal material which extends the entire
  length of the tile on at least one edge. This is
  often achieved by foam spacers that are used to
  prevent tile-to-tile rattling.
• Metal ceiling grids which are continuous (with no
  gap) or those that are interlocked, must have a
  total surface area that is less than 81 m2 for
  each section. The overall space can be larger as
  long as there are non-metal sections bordering or
  intersecting the metal sections.
• Do not install the ROS hub above metal ceilings or
  tiles with a metal backing.

Mounting

• Use surface-mount version for mounting to a
  hard or cement ceiling.
• Power supply mounts to a -supplied US-style
  101.6 mm x 101.6 mm (4 in x 4 in) junction box.
• Power supply must be mounted within 30 m of the
  ROS hub. Wiring should be 0.2 mm2 to 2.5 mm2
  (24 AWG to 12 AWG).

Environment
• For indoor use only.
• 0 °C to 40 °C.
• Relative humidity less than 90% non-condensing.

Contact Closure Input Terminals

• First contact closure input (CCI 1) is to be used for initiating load
  shed only.
• The second contact closure input (CCI 2) may be programmed to
  activate a scene.
  If activating a scene, a "deactivation" behavior may be set in the
  scene in order to set two behaviors for the one input.
• Accepts only maintained inputs.
• Off-state leakage current must be less than 100 µA.
• Open circuit voltage: 24 V- maximum.
• Input wiring: 0.2 mm2 to 2.5 mm2 (24 AWG to 12 AWG). • Contact Clo
  sure Inputs on multiple hubs can be wired in parallel. DO NOT wire
  inputs in parallel with other equipment as it can cause the inputs on
  either of the devices to falsely trigger.
• Up to 4 hubs in parallel.
• To ensure proper operation of Contact Closure Inputs, a PS-K-
  20W-240 power supply may not be used to provide power to more
  than one hub.
• Inputs must be dry contact closure, solid state, open collector, or
  active-low (NPN) / active high (PNP) output.
  – Open collector NPN or active-low on-state voltage must be less
     than 2 V and sink 3.0 mA.
  – Open collector PNP or active-high on-state voltage must be
     greater than 12 V and source 3.0 mA.

Programming

The ROS Hub is meant to be permanently installed. It is not intended
to be used as a programming tool that can be removed from
the site after commissioning. Various ROS system features are
dependent on the hub for proper functionality. In addition, users and
other maintainers will be forced to recommission the entire system
in order to make simple changes or additions if the hub is not
installed on-site as part of the commissioned system.

Warranty

• 2 year limited warranty. The customer can register the product to
  increase the warranty period from 2 year to 5 years.

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ROS Hub

Range Diagrams

All wireless devices to be associated to the ROS hub must be within 22 m of the ROS hub and must be on the same floor as the ROS hub.
Note: ROS hubs should be mounted greater than 3 m apart on the same floor.
Note: requires that the ROS hub not be installed above metal ceilings or tiles with a metal backing.

Note: A corporate Wi-Fi network can interfere with the Wi-Fi on the ROS hub. Where a corporate Wi-Fi network exists, it is recommended to do the following:

· Connect the ROS hub to the corporate network using the Ethernet connection on the hub and disable Wi-Fi on the hub.
Note: ROS hubs should be mounted greater than 3 m from a Wi-Fi router or access point.

ROS Hub RF coverage

Private Office
PowPak Dimming
Module

Conference Room
PowPak Dimming Module

9 m Maximum

9 m Maximum

22 m Maximum

9 m Maximum

9 m Maximum

Setup, Monitor
and Control
ROS Hub

Personal Control Pico
Remote Control
Sensors

Radio Powr Savr
Occupancy Sensor

Open Office PowPak
Relay Module

NOTE: Wireless sensors and controls must be located within 9m of the associated control module.

Range with multiple ROS hubs
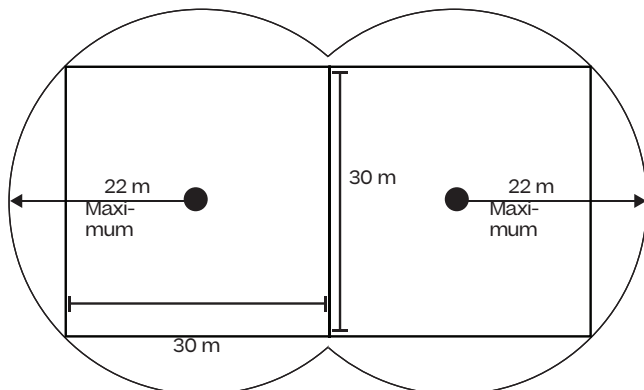
22 m Maxi-mum

30 m

22 m Maxi-mum

30 m

· Metal ceiling grids must have a > 3 mm gap of non-metal material which extends the entire length of the tile on at least one edge. This is often achieved by foam spacers that are used to prevent tile-to-tile rattling.

· Metal ceiling grids which are continuous (with no gap) or those that are interlocked, must have a total surface area that is less than 81 m² for each section. The overall space can be larger as long as there are non-metal sections bordering or intersecting the metal sections.

ROS
Hub

Wiring and Mounting

Product Overview
(Flush-mount adapter)

Supplied US-style junction box

24 V
220 – 240 V~

Flush-mount
adapter

Ceiling tile

Power supply
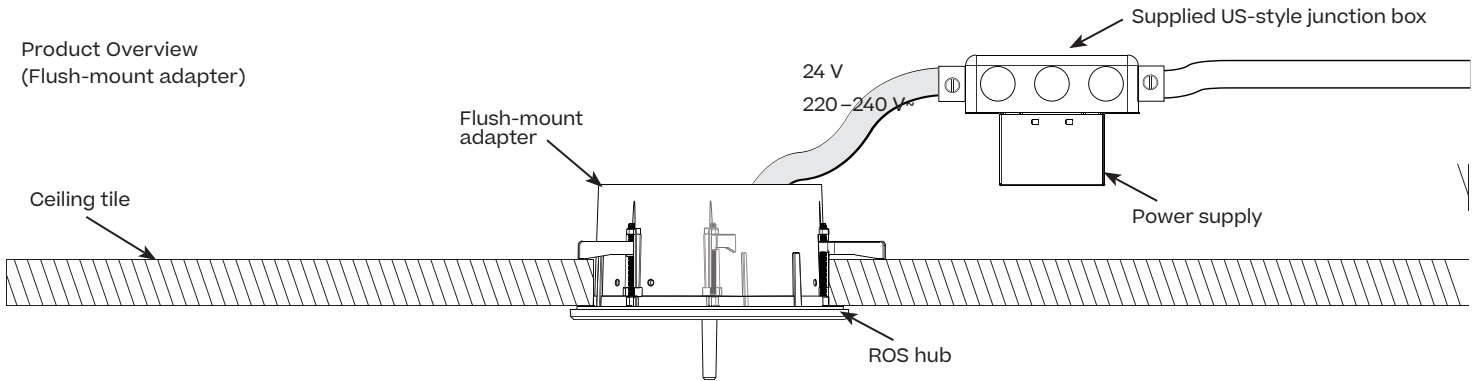
ROS hub

Product Overview
(Surface-mount adapter)

Supplied US-style junction box

Ceiling

Surface-mount
adapter

24 V
220 – 240 V~

Power supply

ROS
hub

ROS Hub

Ethernet
10/100
LAN

Ethernet Connection

CCI1

CCI2

Optional: Only used for automatic demand response /
load shed via first contact closure input (CCI 1)

Optional: Scene via second contact closure input (CCI 2)

Red Blue

To Power Supply

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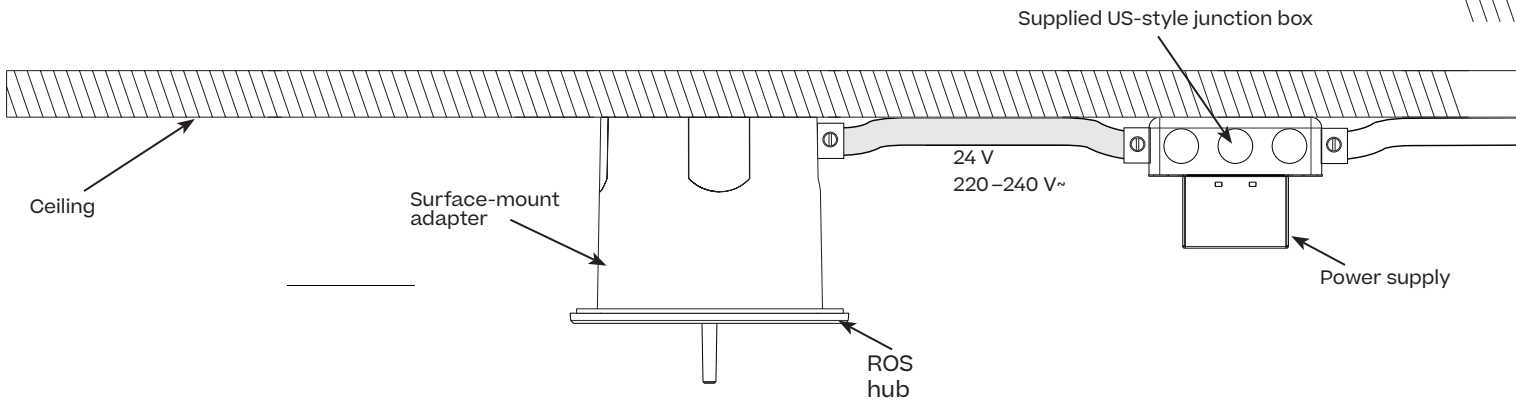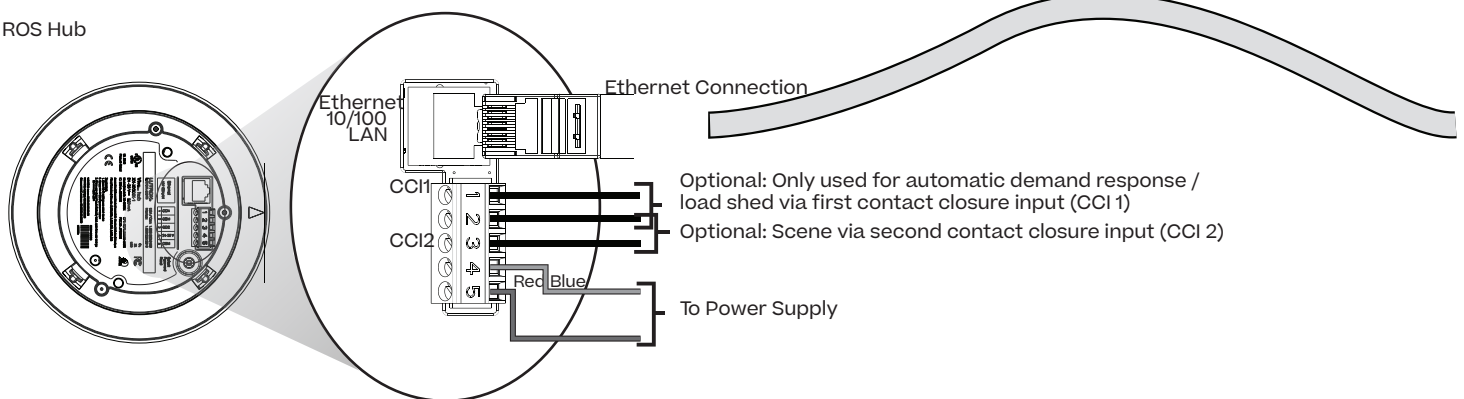
ROS Hub

ROS Security Statement takes the security of the ROS Lighting Control System very seriously. The ROS Lighting Control System has been designed and engineered with attention to security since its inception. has engaged security experts and independent testing firms throughout the entire development of the ROS Lighting Control System. is committed to security and continuous improvement throughout the ROS product lifecycle. The ROS Lighting Control System uses a multi-tiered approach to security.

They include:

1. An architecture that isolates the wired Ethernet network from the wireless network, which strictly limits the possibility of the ROS Wi-Fi being used to access the corporate network and gain confidential information

2. A distributed security architecture with each hub having its own unique keys that would limit any potential breach to only a small area of the system

3. Multiple levels of password protection (Wi-Fi network and the hubs themselves), with built-in rules that force the user to enter a strong password

4. ISO-recommended best practices including salting and SCrypt for securely storing usernames and passwords

5. AES 128-bit encryption for network communications

6. HTTPS (TLS 1.2) protocol for securing connections to the hub over the wired network

7. WPA2 technology for securing connections to the hub over the Wi-Fi network

8. Azure provided encryption-at-rest technologies

The ROS hub can be deployed in one of two ways:

Dedicated Network

Connected to the corporate IT network via Ethernet. The ROS hub must be connected via Ethernet to access certain features such as BACnet® for BMS integration or OpenADRR integration. advises following best practices in this instance, including separating the business information network and the building infrastructure network. Use of a VLAN or physically separated networks is recommended for secure deployment.

Dedicated Network Deployment

The ROS hub is not connected to the building network. Wi-Fi is used to connect to a smart device such as a phone, tablet, or PC for commissioning and configuration only. The ROS hub serves web pages for setup and maintenance via a password-protected connection. The Wi-Fi SSID can be set to not broadcast. The ROS hub Wi-Fi may be disabled if desired.

Corporate IT Network Deployment

The ROS hub may be deployed with a fixed Ethernet IP address or served over DHCP. Once the IT network is operational, the ROS hub will serve password-protected web pages for access and maintenance. The ROS hub Wi-Fi may be disabled if desired. The ROS hub reserves the IP subnet 192.168.3.0/24 for its Wi-Fi, so the hub cannot be assigned an Ethernet IP address in that range.

The ROS hub acts as a Wi-Fi access point purely for the configuration and commissioning of the ROS system. It is not a substitute for your building's normal Wi-Fi access point. The ROS hub does not act as a bridge between wireless and wired networks.

It is strongly recommended that local IT security professionals be involved with the network configuration and set-up to ensure the installation meets their security needs.

ROS
Hub

Security 1

Dedicated Network
Wi-Fi Only

ROS Hub

Ports used

• No IT configuration needed
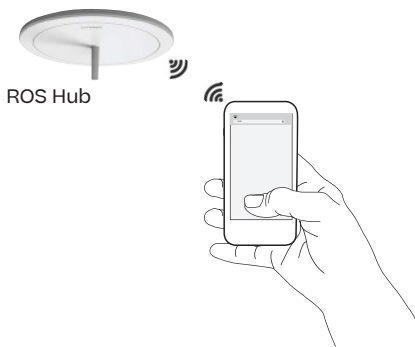
Corporate Network
Single Hub

Link segment 100 m

Building Management System

Corporate Wi-Fi Router

ROS Hub

Ports Used

Traffic	Port	Type	Connection	Description
Outbound	47808 (configurable)	UDP	Ethernet	Used for BACnet® integration into Building Management Systems
	80	TCP		Used to discover the ROS hub when mDNS is not available
	5353	UDP	Ethernet	Used to discover the ROS hub via mDNS
	Configurable	TCP	Ethernet	Used for OpenADRR. Specified by utility company
Inbound	443	TCP	Both Ethernet and Wi-Fi	Used to serve user interface to smart device
	80	TCP		Used by other ROS hubs to proxy
	8081	TCP	Ethernet	Used for local LEAP connections to integrations and ROS Vue
	8083	TCP	Ethernet	Used for local LAP connections to integrations and ROS Vue
	8444	TCP	Ethernet	Used to communicate with the ROS Vue server
	47808 (configurable)	UDP	Ethernet	Used for BACnet® integration into Building Management Systems
	5353	UDP	Ethernet	Used to discover the ROS hub via mDNS

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ROS
Hub

Security 1 (continued)

Corporate Network
Multiple Hubs

Ports Used

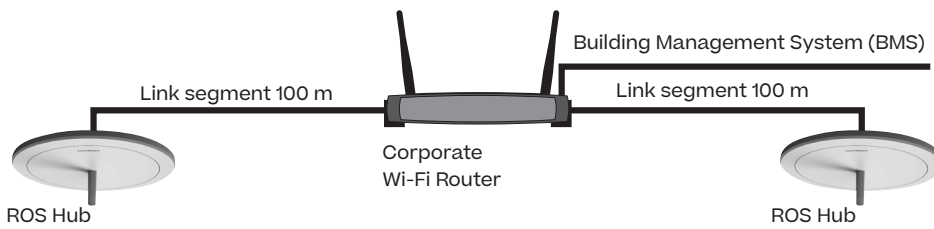| Traffic	Port	Type	Connection	Description
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Inter-Hub Link Wiring

• The inter-hub wiring is rated IEC PELV.
• Wiring distance for any single link segment is 100 m max; use third-party Ethernet switches for longer distances.
• Up to 64 hubs can be networked together.
• Up to 100 hubs can be networked together when ROS Vue is used.
• Hubs communicate over the inter-hub link using multicast UDP or TCP; a dedicated network is recommended but not required.
• The Wi-Fi access port cannot be used to create an ad hoc network for use as the inter-hub communication link.

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ROS
RF

Rather than cast our network decision as a binary choice, we built Clear Connect Type X to be a complementary solution to our 434 MHz 15.231-based platform, now designated Clear Connect Type A.

Clear Connect is our partner overall standard for ultra-reliable wireless devices, with different sub types, Type A and Type X, for different application specific implementations. To meet the Clear Connect standard our products go through rigorous testing and certification. Our Clear Connect Type A (434 MHz, FCC 15.231-based) solution will remain an excellent solution for low-density, non-uniform networks with both powered and battery-operated devices. Complementing this is our Clear Connect Type X (2.4 GHz, IEEE 802.15.4-based) solution, designed for dense deployments of small form factor, high performance lighting with more sophisticated features.

FCC 15.231: An overview

· Devices are relatively low power
   (fractions of a watt). This reduces the possibility of interference between adjacent systems and eases a product's power supply requirements.

· Devices may not transmit continuously.
   Generally speaking, all activity is driven by user action (like pressing a button), which further reduces vthe likelihood of interference.

· Devices may not poll or generate
   periodic transmissions. There is a 5-second maximum event time after pressing a button.

· Devices in this band include garage
   door openers, security sensors, and car key fobs.

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ROS
RF

868MHz band in Europe and UK

The leader in light control
- In business over 55 years
- Global organization
- 24/7 technical support
- Focus on light, shade, temperature and energy control
- Industry leader expanding the market with trade and consumer campaigns
- Industry leader who is providing programs to develop your business

RF Experience
- Pioneered RF automation category
- Millions of wireless devices sold
- More than two decades of industry-leading wireless design, production, sales, and installation
- Many diverse product lines across residential, commercial, North American, and international markets

RF Technology
- Numerous RF-specific patents
- Fast group or preset commands
- Unique identifiers allow multiple devices and multiple systems to be used within proximity to one another without interference.

Depth
- Load types: LED, ELV, MLV, FL, halogen, incandescent
- World's most advanced shading and temperature solutions
- Works in installations with and without neutral wires in the backbox
- Dimming and switching
- Wall-mounted and tabletop dimmers and keypads
- Numerous choices for aesthetic styles, colors, and finishes
- Easy and reliable integration (mobile apps, Ethernet, cloud services, RS232, IR, CCI's, CCO's)

Quality
- Recognized industry leader
- ISO 9001:2015 certified
- 100% end-of-line testing
- 24/7 global tech support

BOS

Product Description

BACnet IP is embedded in the ROS hub. There are two types of BACnet devices available in ROS:

ROS hubs and area devices. The ROS hubs are main BACnet devices; typically, one to two ROS hubs per floor of the building. The area devices are virtual BACnet devices of the ROS hub, typically one per room of the building. It is normal to have multiple ROS hubs and area virtual devices in a project.

BACnet Interoperability Building Blocks Supported (Annex K):

K.1.2 BIBB	Data Sharing	ReadProperty-B (DS-RP-B)
K.1.4 BIBB	Data Sharing	ReadPropertyMultiple-B (DS-RPM-B)
K.1.8 BIBB	Data Sharing	WriteProperty-B (DS-WP-B)
K.1.10 BIBB	Data Sharing	WritePropertyMultiple-B (DS-WPM-B)
K.1.12 BIBB	Data Sharing	COV-B (DS-COV-B)
K.5.2 BIBB	Device Management	DynamicDeviceBinding-B (DM-DDB-B)
K.5.4 BIBB	Device Management	DynamicObjectBinding-B (DM-DOB-B)
K.5.6 BIBB	Device Management	DeviceCommunicationControl-B (DM-DCC-B)

BACnet Standardized Device Profile (Annex L):
BACnet Application Specific Controller (B-ASC)

Segmentation Capability:
Segmented requests supported? No.   Window Size: n/a
Segmented responses supported? No. Window Size: n/a

Non-Standard Application Services:
Non-standard application services are not supported.

BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet International (BI). BTL is a registered trademark of BI.

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BOS

Standard Object Types Supported:

Device
1. Dynamically creatable using BACnet CreateObject service? No.
2. Dynamically deletable using BACnet DeleteObject service? No.
3. List of optional properties supported: Active_COV_Subscriptions, Description, Location, Profile_Name.
4. List of all properties that are writable where not otherwise required by this standard: None.
5. List of proprietary properties: None.
6. List of any property value range restrictions: None.

Analog Value
1. Dynamically creatable using the BACnet CreateObject service? No.
2. Dynamically deletable using BACnet DeleteObject service? No.
3. List of optional properties supported: COV_Increment (See Table for objects that support this property).
4. List of all properties that are writable where not otherwise required by this standard: None.
5. List of proprietary properties: None.
6. List of any property value range restrictions: See Table.

Binary Value
1. Dynamically creatable using BACnet CreateObject service? No.
2. Dynamically deletable using BACnet DeleteObject service? No.
3. List of optional properties supported: Active_Text, Inactive_Text.
4. List of all properties that are writable where not otherwise required by this standard: None.
5. List of proprietary properties: None.
6. List of any property value range restrictions: See Table.

Multi-State Value
1. Dynamically creatable using BACnet CreateObject service? No.
2. Dynamically deletable using BACnet DeleteObject service? No.
3. List of optional properties supported: State_Text.
4. List of all properties that are writable where not otherwise required by this standard: None.
5. List of proprietary properties: None.
6. List of any property value range restrictions: See Table.

Data Link Layer Options:

Other: These devices are virtual devices and are represented by a six octet address equal to the 48-bit device instance of the virtual device.

Device Address Binding:
Is static device binding supported? No.

Networking Options:

BACnet / IP Annex J — non-BBMD functionality; the ROS is able to register as a foreign device. The ROS hub is able to initiate original-broadcast-NPDU.

Character Sets Supported:
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

• UTF-8

BACnet Routing:
The ROS hub is a BACnet virtual router. All of the virtual area devices are routed through the main ROS hub.

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BOS

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
{SystemName} {Instance}	DEVICE	22 bit GUID	X	—	—	—	—	—	—	—	—	The System Name is the logical name of one of the ROS hubs that typically corresponds to a physical portion of the building such as a floor. The Instance is the same as the unique Device ID assigned to each ROS hub.
Master Load shed Enabled	BV	2	X	X	X	—	0	1	Disabled	Enabled	—	This value determines whether all of the areas in the ROS sub-system are being controlled via load shedding. When this value is set to Enabled, for all areas in the hub that have load shed allowed, any dimmable lights in each area that are turned on will have their light level reduced by the percentage specified in the Load shed Goal value. The specified switched loads will turn off. When Disabled, the lights will return to their previous level and the specified switched loads will return to their previous state.

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
{AreaName} {Instance}	DEVICE	22 bit GUID	X	—	—	—	—	—	—	—	—	The Area Name is the logical name of of of the ROS hub that typically corresponds to a physical location in a building. The Instance is the same as the unique Device ID assigned to each area.
Lighting Level	AV	2	X	X	X	%	0	100	—	—	—	The intensity level of all lighting fixtures in the area. The light level will be an analog value between 0% and 100%. If the lighting fixtures in the area are at different light levels, this value will be set to the level of the highest intensity in that area. This will apply to both switched and dimmed lighting fixtures. If a non-zero level is written switched lighting fixtures will turn on and dimmed lighting fixtures will go to that level.
Lighting State if any	BV	3	X	X	X	—	0	1	Off	On	—	The Lighting State will be On of the lighting fixtures in the area are in the on state; if all lighting fixtures are off, the Lighting State will be set to Off. When written with On, it will turn all dimmable lighting loads to 100% and turn all switched lighting loads on. When written with Off, it will turn all lighting loads off.

AV = Analog-Value, BV = Binary-Value, MSV = Multi-State-Value
{Area Name}/{SystemName} is a text string defined in the ROS system configuration software
{Instance} is a number defined in the ROS system configuration software that is equal to the {Base} number + unique Device ID assigned to each area. PV = Present-Value

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BOS

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
Disable Occupancy	BV	7	X	X	X	—	0	1	False	True	—	When set to True, occupancy sensors will not affect the lights in the area. When set to False, occupancy sensors will affect the lights in the area as programmed.
Occupancy State	MSV	8	X	—	X	—	1	4	—	—	1=Unoccupied 2=Occupied 4=Unknown	A read-only property indicates the occupancy of the entire area. Occupied means that at least one sensor in the area is indicating occupancy. Unoccupied means that all of the sensors in the area are indicating unoccupied. Unknown indicates that not all of the sensors in the area have reported their status.
Unoccupied Level	AV	9	X	X	X	%	0	100	—	—	—	The light level to which the dimmed lights in the area will be set when an area transitions to unoccupied.
Occupied Level	AV	10	X	X	X	%	0	100	—	—	—	The light level to which the dimmed lights in the area will be set when an area transitions to occupied.
Load shed Allowed	BV	12	X	X	X	—	0	1	No	Yes	—	When Load shed Allowed is set to YES, this area will be affected when Load shed is Enabled. When set to NO, this area will not be affected when Load shed is Enabled.
Load shed Goal	AV	13	X	X	X	%	0	90	—	—	—	When Load shed is enabled and Load shed Allowed is set to YES, the light level will be reduced by the percentage specified. Range: 0% to 90%

AV = Analog-Value
BV = Binary-Value
MSV = Multi-State-Value
PV = Present-Value

BOS

Object Name	Type	Instance	Read	Write	COV	Units	Min PV	Max PV	Inactive Text (0)	Active Text (1)	State Text (Multi-State)	Notes
Occupancy Mode	MSV	14	X	X	X	N/A	2	5	—	—	2 = Automatic ON, Automatic OFF (Read-Write) 3 = Manual ON, Automatic OFF (Read-Write) 4 = Not Applicable (Read-Only) 5 = Mixed (Read-Only)	Determines the way that the occupancy sensors control the lights. When set to Automatic ON and Automatic OFF, the sensors will set lights to their occupied level when occupied and to their unoccupied level when unoccupied. When set to Manual ON and Automatic OFF, the sensors will set lights to the unoccupied level only when an area changes to unoccupied. Not Applicable means that the area is not controlled by occupancy. Mixed means that the zones in the area have been configured as a combination of "Automatic ON and Automatic OFF" and "Manual ON and Automatic OFF" modes. NOTES: 1. States Not Applicable and Mixed are read-only states. Writes with those states will return a value out of range error. 2. State value 1 is not used and reserved. Writing 1 results in a value out of range error.
Total Power	AV	18	X	—	X	watts	0	none	—	—	—	A calculated / measured value that indicates the total instantaneous power consumption for all of the lighting loads in the area.
Maximum Power	AV	19	X	—	X	watts	0	none	—	—	—	The maximum connected lighting load of the area. This value is the maximum value that Total Power can achieve. Maximum Power minus Total Power equals the power being saved. This value typically does not change.

AV = Analog-Value, BV = Binary-Value
MSV = Multi-State-Value
PV = Present-Value

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