

# Planning aid Axis showcase lighting



A guide for planners in showcase construction, museum technology, and lighting design

National Museum of Korea, Seoul / South-Corea  
Photography: Lacquerware of East Asia (Korea, Japan and China) Jul-10-2024 ~ Sep-22-2024  
Raphael Olivier

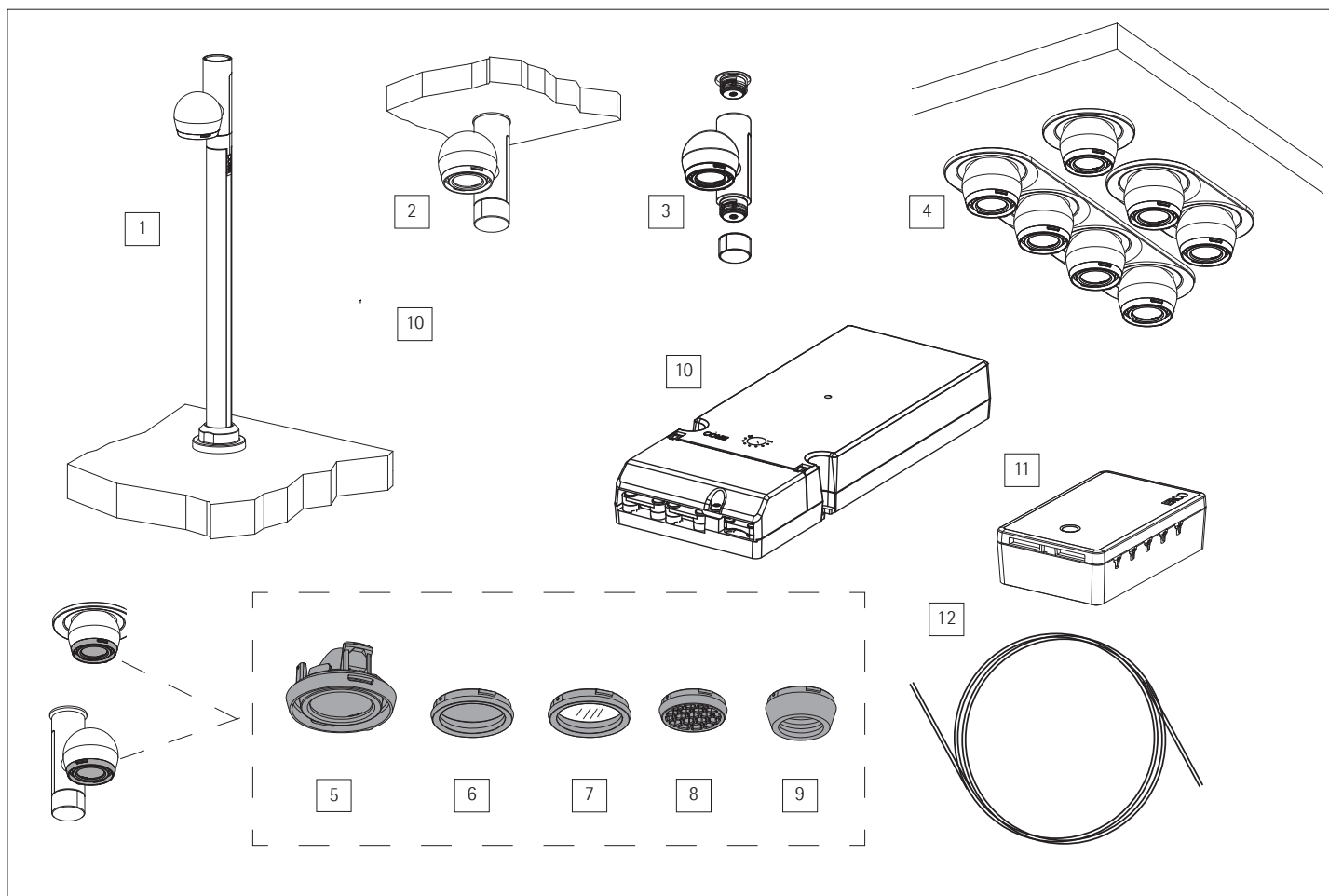


## System overview

Axis is a comprehensive system for effective and efficient lighting of objects in a showcase. Even with small distances between luminaire and object, the requirements to conservation are met. Sophisticated accessories allow easy adaptation to changing requirements. The following overview shows the components of the Axis system.

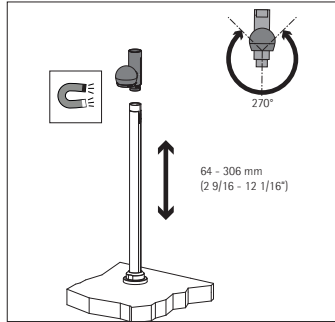


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- |   |   |    |   |
|---|---|----|---|
| 1 | Stem-mounted luminaire  | 7  | Sculpture lens / Softening lens             |
| 2 | Ceiling mounted luminaire   | 8  | Honeycomb louver (including Softening lens) |
| 3 | Extension light head for stem-mounted and surface-mounted luminaires    | 9  | Snoot                                       |
| 4 | Semi-recessed luminaire with 1-fold, 2-fold, 4-fold frame (accessories) | 10 | Control gear units                          |
| 5 | Lens unit   | 11 | Distributor                                 |
| 6 | ND / Blue light filter  | 12 | 32ft (10.0m) cable extension                |

### Axis luminaires

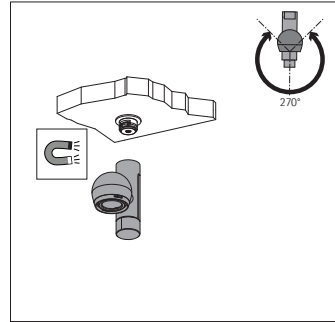


#### Stem luminaire

The stem-mounted luminaire consists of the stem and at least one light head. The light is suitable for mounting on a showcase floor, ceiling, or wall. The stem is height-adjustable. The light head is attached by magnets at the end of the stem and at the light head. You can mount the light head in one direction only because of the polarity of the magnets.

The light head has a swivel angle of 270° directed towards the mounting plane and can be rotated 360°. A maximum of two extension light heads is permitted for base mounting. A maximum of one extension light head is permitted for ceiling or wall mounting. The light head that comes with the luminaire is a termination light head. The light head itself cannot itself accommodate any other light heads or be attached to the surface-mounted luminaire.

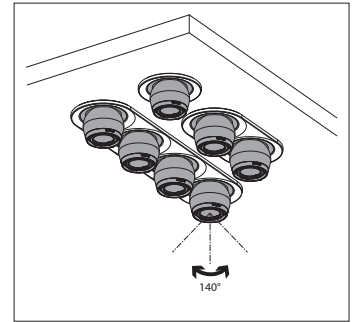
Note:



#### Surface-mounted luminaire

The surface-mounted luminaire consists of a fitting and the light head. The luminaire is suitable for mounting on a showcase floor, ceiling, or wall. The light head is attached by magnets at the end of the stem and at the light head. You can mount the light head in one direction only because of the polarity of the magnets.

The light head can be rotated 360° and has a swivel angle of 270° directed against the mounting plane. A maximum of two extension light heads is permitted for base mounting. A maximum of one extension light head is permitted for ceiling or wall mounting. The light head that comes with the luminaire is a termination light head. The light head itself cannot accommodate any other light heads or be attached to the stem-mounted luminaire.



#### Semi-recessed luminaire

For the semi-recessed luminaire, a 1-fold, 2-fold or 4-fold mounting frame must be ordered in addition to the light head(s). The light heads are identical in terms of lighting technology to those of the stem-mounted or surface-mounted luminaires. The light heads can be rotated max. 360°; the swivel angle is 70° to each side.

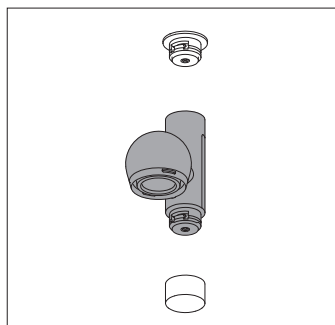
The luminaire is suitable for mounting on a showcase floor, ceiling, or wall. The luminaire is attached to the installation frame using the spring clips. The luminaire must not be covered with insulating materials.

#### Tips:

Please note that a maximum of 12 light heads may be connected to one control gear. For example, a stem-mounted luminaire with two extension light heads uses a total of three light heads. The heat input of a light head is approx. 0.6W. Please note that Axis is only approved for use in cabinets or showcases.

#### Tip:

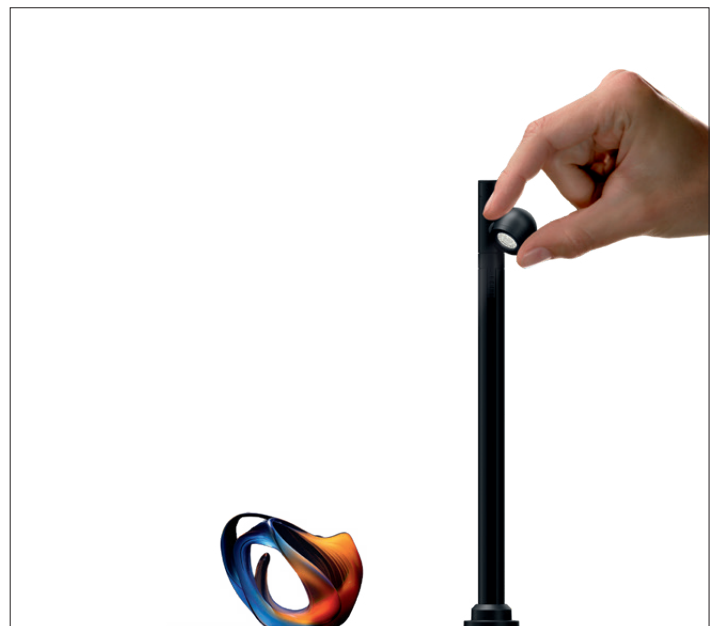
An extension lighting head is suitable for both stem-mounted and surface-mounted luminaires.



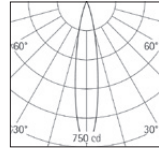
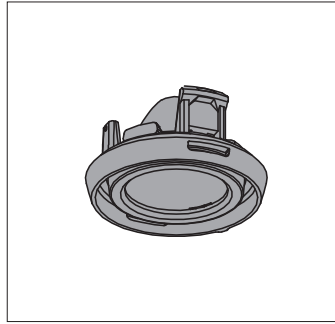
#### Extension light head

You can supplement your stem-mounted luminaire or surface-mounted luminaire with the extension light head. For ceiling or wall mounting, one extension light head is allowed. For floor mounted luminaires, you may use two extension light heads between the supplied light head and the stem or fitting.

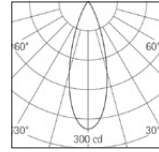
If it is necessary to use the extension luminaire as a terminating luminaire, it is imperative to use an end cap to close the circuit of the Axis luminaires. When ordering, please note that the caps for use on the stem-mounted luminaire and the surface-mounted light are different!



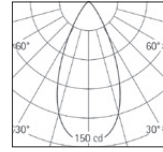
### Axis accessories Lens units



Spot (17°)



Flood (32°)



Wide flood (45°)

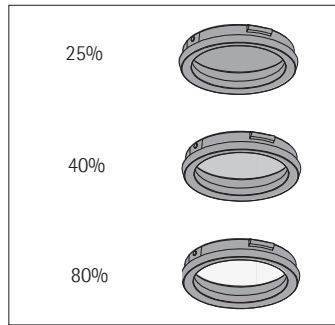
### Lens units

Lens units can be changed without tools; the light distributions spot, flood and wide flood are available. The lens units are identical for all Axis luminaires and light heads.

### Tip:

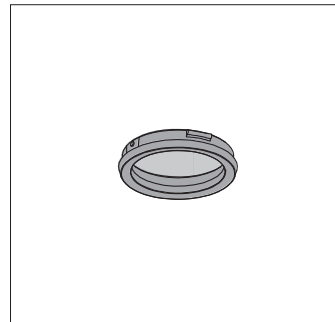
Filters and lenses are attached to the lens unit with the supplied adapter ring. Instead of the adapter ring, you may also use the snoot or the honeycomb louver.

You can push the ERCO filter foils out of the adapter ring and replace them with your own foils. These foils must have a diameter of 1 1/16" (17mm), the material thickness should be between 0.001" (0.03mm) and 0.010" (0.25mm).



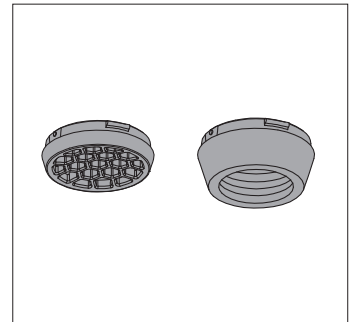
### ND Filter

ND Filter (Neutral Density): With 3 different ND filters (25%, 40%, 80%) the light intensity of individual light heads can be reduced, which reduces the illuminance on the exhibit while leaving the spectrum unchanged.



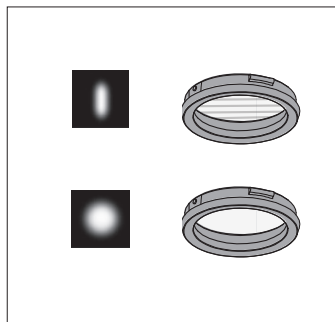
### Blue Light Filter

The filter effect starts in the blue range at approx. 440nm. Short-wave radiation <380nm is entirely removed. Particularly sensitive objects are thus excellently protected.



### Honeycomb louver, Snoot

The honeycomb louver or snoot is available for increased glare control. Always use the honeycomb louver with the softening lens provided.



### Lenses

The sculpture lens brings the light cone into an oval shape with an aspect ratio of approx. 1:3.

The light cone is aligned at 90° to the visible surface structure of the lenses. The softening lens softens hard contours of the light cone.

## Electrical accessories: Control gear units

2 different control gear units with 2 control types, are available for the Axis luminaires.  
The AC012001/AC012002 devices are hot-pluggable and therefore suitable for all Axis luminaires.

**Tip:**

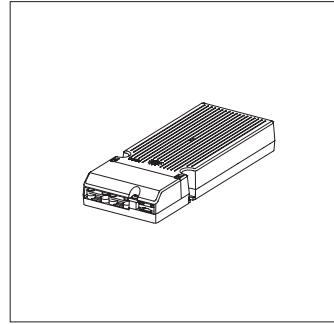
Only use ERCO Axis control gear units since they are optimized for the respective Axis luminaires.

**Hot-pluggable**

If a control gear unit is hot-pluggable, you can also connect the luminaire on the secondary side when it is switched on. In case of stem luminaires and surface-mounted luminaires, you can add, remove, move, or adjust light heads even when the lights are switched on without damaging the control gear unit.

**Series connection**

The luminaires/light heads must be connected in series. The optional Axis distributor reduces the wiring effort.



12 light heads  
AC012001 (On-board Dim)  
AC012002 (Casambi Bluetooth)

### Control gear 1-12 light heads

**Tip:**

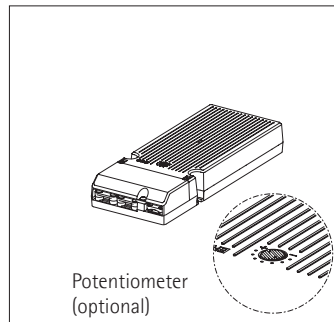
If you want to control the luminaires via DALI, use the ERCO DALI Casambi Gateway.

This control gear unit can supply up to 12 light heads with constant power. The control gear is hot-pluggable and is therefore also suitable for use with stem luminaires and surface-mounted luminaires.

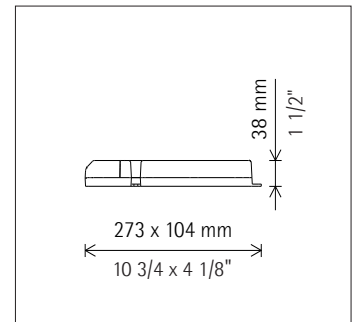
A switchable version with a potentiometer on the housing and a version with Casambi Bluetooth are available as control options. Please note that this will dim all luminaires simultaneously. Dimming of a single light head is not possible. If necessary, use ND filters!

The control gear is designed for through-wiring on the primary side, which reduces the installation effort if, for example, several showcases are controlled via one supply line.

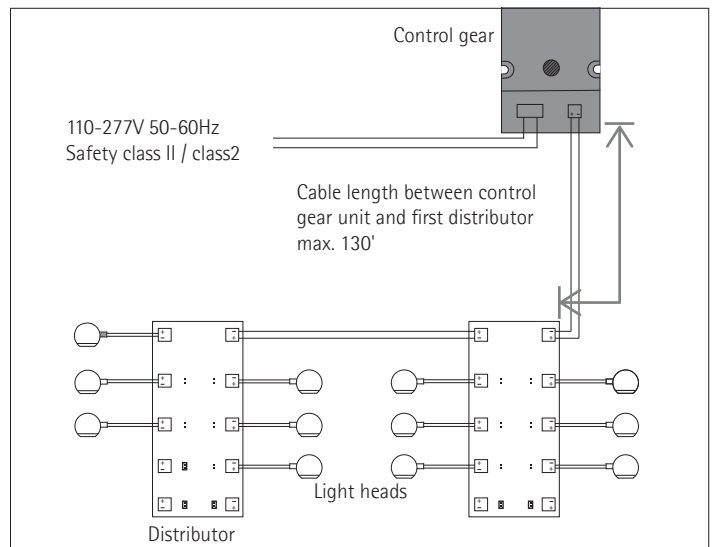
Only use a maximum of one control gear unit per luminaire circuit. If you use more than one control gear unit in larger systems, the luminaire circuits must be galvanically isolated.



AC012001 (On-board Dim)  
AC012002 (Casambi Bluetooth)



Dimensions



Connection example

## Cable lengths

### Tip:

To minimize cable lengths, luminaires may be grouped and several distributors used.

Very long connecting cables between control gear and lighting heads cause voltage drop, which may lead to malfunctions under specific circumstances. Therefore, observe the maximum cable length of the entire system specified in the connection diagram.

The value applies to the maximum number of connected light heads with a cable length of 3ft (1.0m) each.

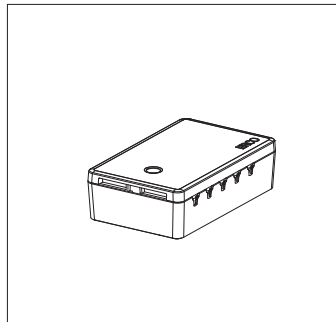
If you extend the cables of individual lighting heads, the maximum possible cable length will be reduced accordingly. When connecting fewer light heads than possible, cable length increases by 3ft (1.0m) for each light head that is not connected.

#### Example:

You extend the cables of two luminaires by 3ft (1.0m) each.

Accordingly, you must reduce the distance between the luminaire and the last distributor by 2.0m.

## Axis accessories Electrical

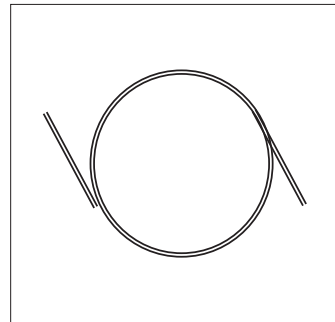


### Distributor

The Axis distributor facilitates wiring. You may connect up to 9 luminaires/light heads and additional distributors. Always observe the specifications for the control gear regarding the number of light heads that may be connected. Due to the necessary series connection of the luminaires, all connections are bridged except for the out terminal when delivered. When connecting a luminaire, remove the jumper and place it in the storage in the distribution board.

The out terminal must always be occupied, either with a luminaire or another distributor.

A distributor may only be connected to one operating device!



### Connection cable

If the connecting cables of the luminaires are not sufficient, an additional extension cable of 32ft (10.0m) length is available as an accessory. This extends the connecting cables of the luminaires; also use the cable to connect the control gear and the distribution board.

When extending the luminaire cables, note the possible total length of the connecting cables between control gear and distributors.

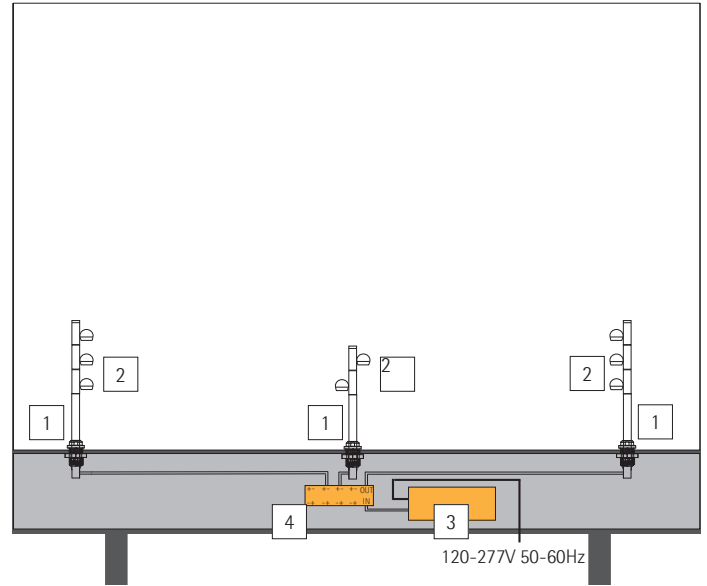
Attention! This connection cable is not suitable for mains connection. Only use it on the output side of the control gear!

## Sample installations

### Stem luminaires

In frameless glass showcases or table-top showcases, stem-mounted luminaires are suitable for illuminating exhibits from above. Each Axis stem-mounted luminaire can be extended with up to two light heads for this purpose.

As a rule, the space under the showcase can be used to install the control gear and distributor. To reduce the heat input from the lighting, it is advisable not to mount the control gear in the showcase or directly on the showcase floor. Adequate ventilation is necessary for enclosed areas. No heat is generated in the manifold - so heat input does not have to be taken into account for the distributor.



### Material requirements

For this sample installation with a total of eight light heads you need:

Number	Quantity	Description
1	3	stem-mounted luminaire (one light head per luminaire included)
2	5	extension light head
3	1	ERCO Axis control gear AC012001
4	1	ERCO Axis distributor



## Sample installations

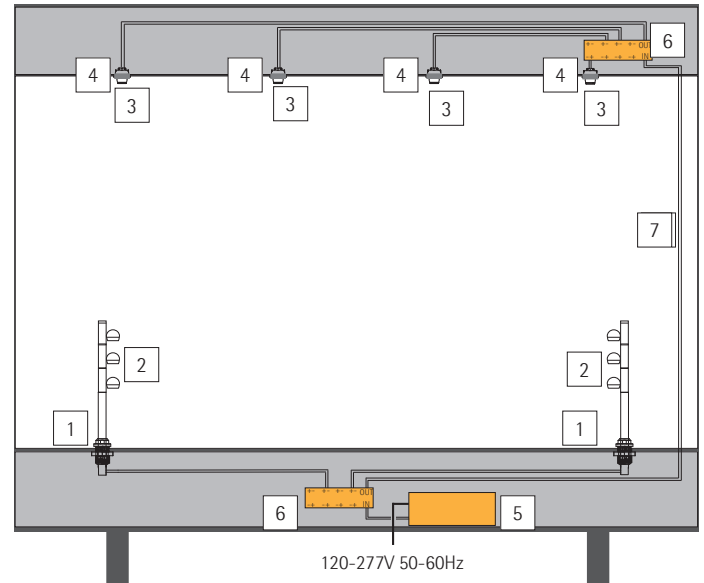
### Stem-mounted luminaires and semi-recessed luminaires

The sample showcase has a space at the top and bottom that can be used for installation.

The upper room is connected via a 2-wire line and another distributor.

The electrical connection is made in the lower compartment of the showcase. You may also mount the control gear elsewhere.

Because of the heat input, it is not recommended to install the control gear in the showcase or directly on the showcase floor. Adequate ventilation is necessary for enclosed areas. No heat is generated in the manifold - so heat input does not have to be taken into account for the distributor.



## Material requirements

For this sample installation with a total of 10 light heads you will need:

Number	Quantity	Description
1	2	stem-mounted luminaire (one light head per luminaire included)
2	4	extension light head
3	4	semi-recessed luminaire
4	4	mounting frame
5	1	ERCO Axis control gear AC012001
6	2	ERCO Axis distributor
7	1	32ft (10.0m) wire extension

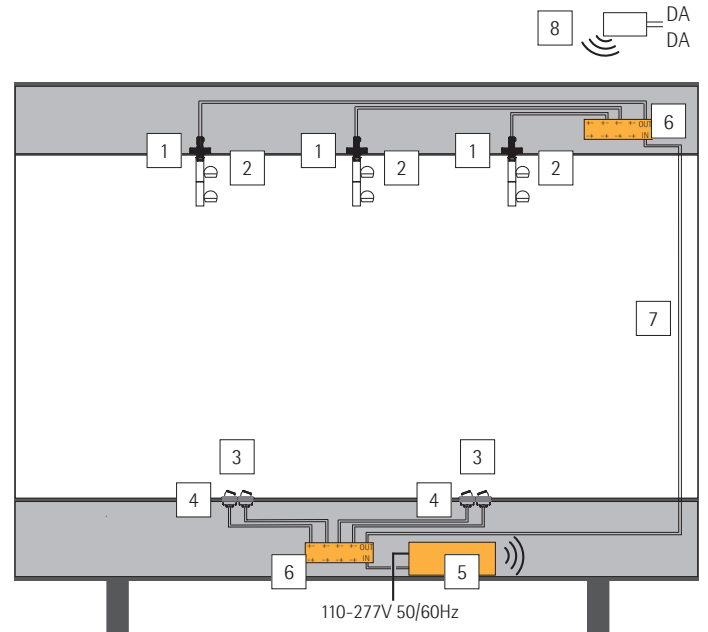
## Sample installations

### Surface-mounted and semi-recessed luminaires

The showcase has an installation space in the upper and lower areas.

The upper installation space is accessed via a 2-conductor cable and another distributor and accommodates the 3 surface-mounted luminaires. Control is via an on-site DALI system, the control signals are transmitted to the control gear via the ERCO DALI-Casambi gateway.

To reduce heat input, it is recommended not to fix the operating unit in the showcase or directly on the showcase floor. Adequate ventilation is necessary for enclosed areas. No heat is generated in the manifold - so heat input does not have to be taken into account for the distributor.



### Material requirements

For this installation you will need:

Number	Quantity	Description
1	3	surface-mounted luminaire (1 light head per luminaire included in delivery)
2	3	extension light head
3	4	semi-recessed luminaire
4	2	2-fold frame
5	1	ERCO Axis control gear AC012002
6	2	ERCO Axis distributor
7	1	32ft (10.0m) wire extension
8	1	ERCO DALI-Casambi Gateway

## Sample installations

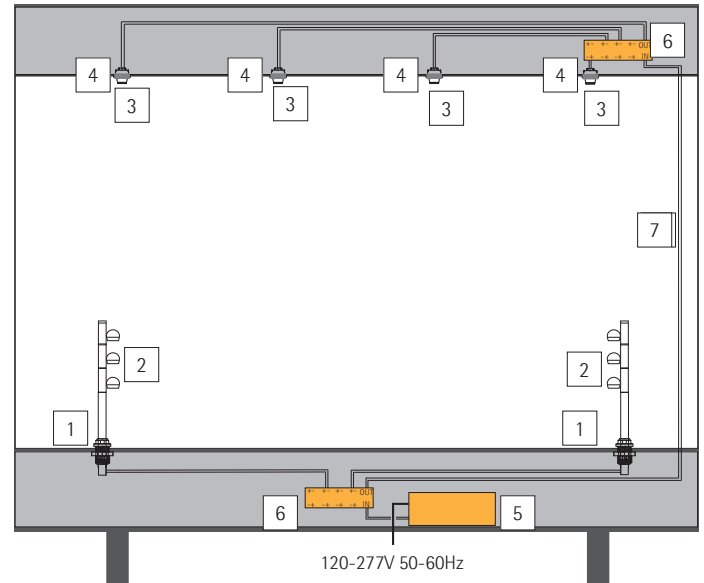
### Stem-mounted luminaires and semi-recessed luminaires

The sample showcase has a space at the top and bottom that can be used for installation.

The upper room is connected via a 2-wire line and another distributor.

The electrical connection is made in the lower compartment of the showcase. You may also mount the control gear elsewhere.

Because of the heat input, it is not recommended to install the control gear in the showcase or directly on the showcase floor. Adequate ventilation is necessary for enclosed areas. No heat is generated in the manifold - so heat input does not have to be taken into account for the distributor.



## Material requirements

For this sample installation with a total of 10 light heads you will need:

Number	Quantity	Description
1	2	stem-mounted luminaire (one light head per luminaire included)
2	4	extension light head
3	4	semi-recessed luminaire
4	4	mounting frame
5	1	ERCO Axis control gear AC012001
6	2	ERCO Axis distributor
7	1	32ft (10.0m) wire extension

	Stem luminaire	Surface-mounted luminaire	Extension light head	Semi-recessed luminaire
<b>Light distribution</b>	Spot, Flood, Wide flood	Spot, Flood, Wide flood	Spot, Flood, Wide flood	Spot, Flood, Wide flood
<b>Installation</b>	Floor mounting, wall mounting, ceiling mounting	Floor mounting, wall mounting, ceiling mounting	on stem-mounted or surface-mounted luminaire	Floor mounting, wall mounting, ceiling mounting
<b>Wire length</b>	11 13/16" (1.0m)	11 13/16" (1.0m)	-	11 13/16" (1.0m)
<b>Light control</b>	via control gear (accessories) Switchable with potentiometer Casambi Bluetooth	via control gear (accessories) Switchable with potentiometer Casambi Bluetooth	via luminaire	via control gear (accessories) Switchable with potentiometer Casambi Bluetooth
<b>Installed height</b>	2 1/2"-12 3/64" + 1 27/32" (64-306mm + 47mm) (light head)	11 13/16" (47mm)	11 13/16" (47mm)	11 13/16" (17mm)
<b>Recess depth</b>	min. 2 11/64" (55mm)	11 13/16" (46mm)	-	11 13/16" (28mm)
<b>Mounting hole</b>	11 13/16" (25mm)	11 13/16" (12mm)	-	11 13/16" (35mm)
<b>Material thickness floor / ceiling</b>	3/64"-1" (1-25mm)	3/64"-1" (1-25mm)		3/64"-1" (1-25mm)
<b>Necessary accessories</b>	Axis control gear only AC012001 AC012002	Axis control gear only AC012001 AC012002	For stem luminaire and surface-mounted luminaire only	- Axis control gear - 1/2/4-fold frame
<b>Accessories</b>	- Distributor - Lens units, sculpture lens, softening lens - ND filter, Blue light filter - Snoot, honeycomb louver - 32ft (10.0m) wire extension	- Distributor - Lens units, sculpture lens, softening lens - ND filter, Blue light filter - Snoot, honeycomb louver - 32ft (10.0m) wire extension	- Lens units, sculpture lens, softening lens - ND filter, Blue light filter - Snoot, honeycomb louver - Top/bottom end cap (only if the extension light head is used as an end light head)	- Distributor - Lens units, sculpture lens, softening lens - ND filter, Blue light filter - Snoot, honeycomb louver - 32ft (10.0m) wire extension

Electrical accessories	Control gear AC012001 / AC012002	Control gear AC012003 - AC012006	Distributor	Wire extension
<b>Connections</b>	Primary: AC 120-277V, 50-60Hz; max. 0.15A Secondary: 350mA, SELV LED max. 15W (max. 12 Axis light heads)	Primary: AC 120-277V, 50-60Hz; max. 0.15A Secondary: SELV, number of Axis light heads 1-2 / 3-7	In: Axis control gear (SKII) Out: 9 Axis light heads (or 1 Axis distributor and 8 light heads)	Only approved for connection between luminaire and distributor or control gear. Not suitable for mains voltage!
<b>Safety class</b>	II	II	III	
<b>Connection cross-section</b>	Primary max. XX (2.5mm <sup>2</sup> ) Secondary max. XX (1.5mm <sup>2</sup> )	Primary max. 1 in <sup>2</sup> (2.5mm <sup>2</sup> ) Secondary max. 19/32in <sup>2</sup> (1.5mm <sup>2</sup> )	XX-XX (0.2-0.35 mm <sup>2</sup> ) ∅ 5/32" (4mm)	2 x XX (0.35mm <sup>2</sup> )
<b>Operating devices per circuit breaker B16</b>		380		
<b>Light control</b>	Potentiometer Casambi Bluetooth	DALI Casambi Bluetooth		
<b>Dimensions (L x W x H)</b>	10-3/4" x 2-1/4" x 1-1/2" (273 x 104 x 38mm)	5-1/2" x 1-1/2" x 1-1/3" (142 x 40 x 35mm)	3-7/8" x 2-1/4" x 1" (90 x 56 x 26mm)	32ft (10.0m)