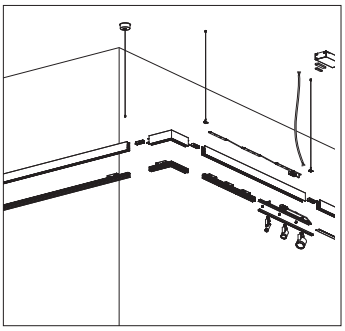
ERCO

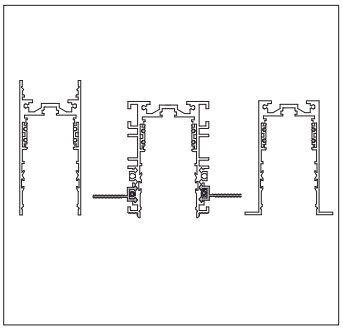
ERCO Invia 48V Planning Aid

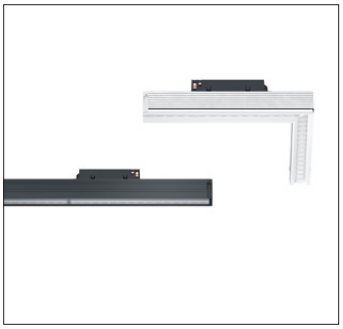
Modular light structure for all applications

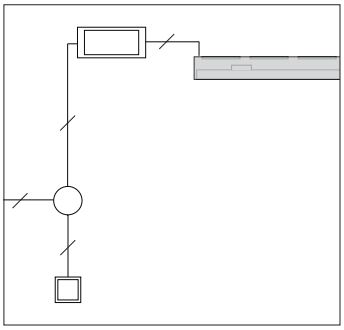
A guide for all lighting designers and technicians for discovering the extensive possibilities of the ERCO Invia 48V modular light structure.
This document shows cross-product planning approaches and provides advice for installing the Invia 48V system. It does not claim to replace data sheets, mounting instructions and other product documentation. Also see the Invia configurator at www.erco.co m/invia-configurator

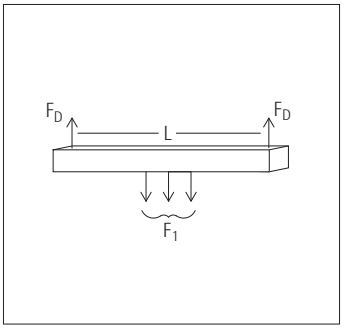
ERCO Invia 48V Planning Aid









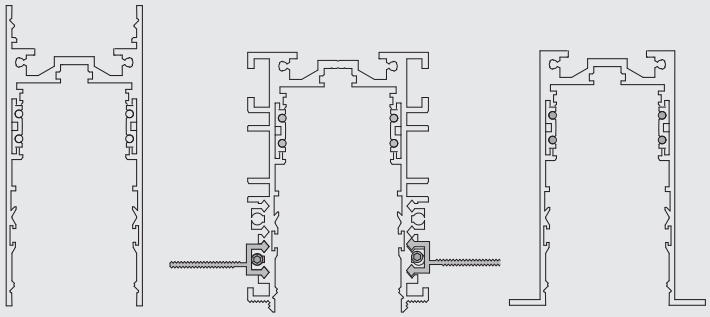


 Always find the latest information at www.erco.com

ERCO Invia 48V Planning Aid

The line follows the architecture.
The light follows the application.

Invia profiles
Surface-mounted profiles and 2 recessed profiles for flush and covered installation enable adapting of the Invia system to the architecture.
Corner profiles enable Invia corner luminaires to be mounted.
You can also suspend surface-mounted profiles.



Invia surface-mounted profile

Invia flush recessed profile

Invia covered recessed profile

Power supply units, DALI connectors and gateways
The accessories enable reliable power supply of the system as well as wireless control. Mounting on or in the ceiling.

Invia uplights
Uplights highlight the ceiling and reduce contrasts in the room

Invia luminaires
The Invia 48V sytem also includes downlights with different distributions, wallwashers and uplights that are simply plugged into the Invia profiles.
Corner luminaires enable seamless continuous lines and wallwashing across corners.

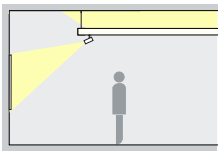
Mounting kit for Minirail 48V
Use the accessories to integrate Minirail 48V spotlights into your Invia light structure. As with Invia 48V luminaires, the mounting kit is simply plugged into the Invia profile.

ERCO Invia 48V Planning Aid

Advantages for investment, planning and installation

Benefit from a long-term investment

Sustainability
Carefully selected LEDs and very precise light control reduce the power consumption of Invia luminaires and increase illuminance on the target surface.



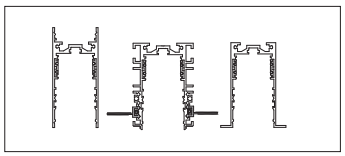
Different types of lighting from a single system
General lighting, task lighting, circulation route lighting, wallwashing and accenting – Invia 48V offers luminaires for the most diverse types of lighting.

Extremely stable and durable
ERCO Invia 48V profiles are manufactured from high quality aluminium in the ERCO light factory. The luminaire adapters are similarly robust: designed for continuous use, they are not damaged by frequent insertion and removal.

Gain planning security

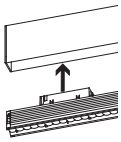
Smart connectivity
Invia profiles contain conductors for DC power supply and control signals. A DALI connector supplies the control lines with a SELV DALI signal. Control with Casambi Bluetooth is also possible via an additional gateway.

Even more possibilities with Minirail 48V spotlights
The mounting kit allows you to easily integrate Minirail 48V track and thus also the Minirail 48V luminaires.

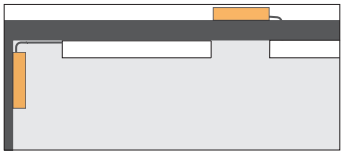


The right light structur system for all ceiling types
Whether surface-mounted, flush or covered recessing or suspended, Invia profiles provide solutions for common ceiling types ranging from concrete ceilings and drywall ceilings to acoustic ceilings.

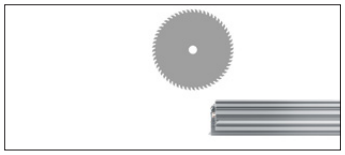
Save time and effort through simple mounting



Simple mounting
Invia luminaires, adapters and electrical connectors are simply plugged into the profile without tools.



Flexible positioning of the power supply units
Invia 48V is a DC system with external power supply. ERCO power supply units can be installed flexibly on the ceiling and also in the ceiling.

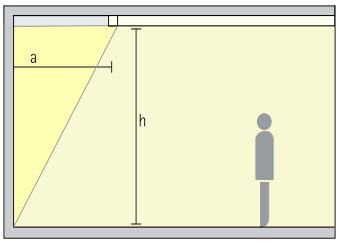


Simply cut to size on site and install
If necessary, you can easily cut ERCO Invia profiles and covers on-site to millimetre precision using a miter saw.

ERCO Invia 48V Planning Aid

Seven steps to your Invia project

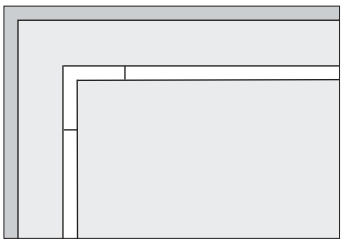
Step 1: The right arrangement



These rules of thumb will help your draft planning of Invia continuous lines:
General lighting: for parallel Invia profiles, assume a spacing of approximately 1.5 times the room height.
Task lighting: in offices, the profile often runs parallel to the alignment of the desks.
Wallwashing: for uniform wall washing, install Invia parallel to the wall. Use approximately 0.4 times of the wall height as the distance to the wall.

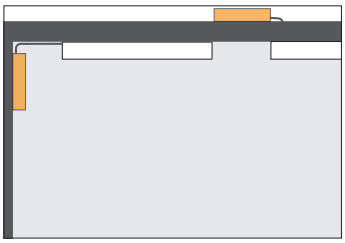
Accent lighting: for accent lighting with spotlights, stick to the "museum angle". The incident angle of the light should be approximately 30°.

Step 2: Plan the layout



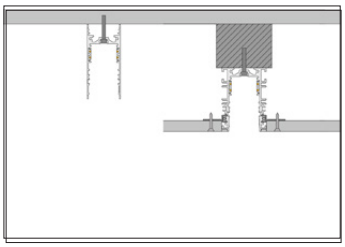
Draw the layout of your Invia system in the ceiling plan of the room. Take into account that you can shorten profiles if necessary, but that Invia luminaires have fixed lengths of 300mm (11 13/16") and 1800mm (70 7/8") (linear luminaires) or 300 x 300mm (11 13/16" x 11 13/16") (corner luminaires) .

Step 3: Plan the power supply units



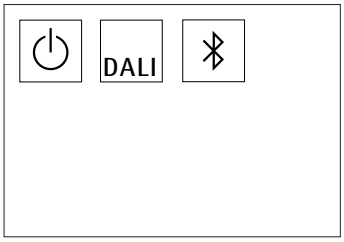
Determine the size and number of power supply units needed. Determine the positioning of the power supply units. A power supply unit can be mounted on the ceiling or also in the ceiling.

Step 4: Define the mounting type



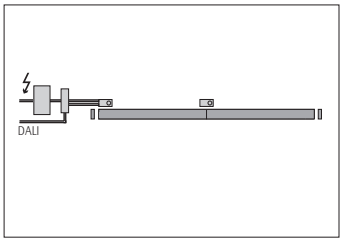
Determine whether your Invia system is to be surface-mounted, suspended or recessed into the ceiling. A further option is mounting in a system ceiling. For surface mounting and suspended mounting you need the surface-mounted profile, and for recessed mounting you need either the flush or covered recessed profile. The flush recessed profile is also suitable for mounting in system ceilings. The date sheets of the profile list the appropriate mounting accessories.

Step 5: Determine the control



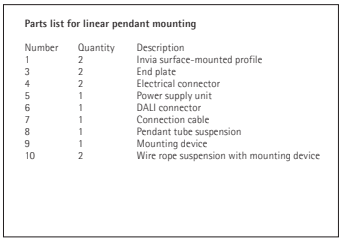
With the type of control (switchable, DALI or Casambi Bluetooth) you define the necessary number of cores for the electrical connection lines as well as the other required electrical accessory parts.

Step 6: Plan the live ends and connectors



Invia distinguishes between mechanical connectors and purely electrical connectors. Each profile comes with a mechanical connector – electrical connectors must be ordered separately. The number of electrical connectors depends on the number of joints. For more complex systems or closed shapes such as square or rectangular, please see from page 44. The possible length of the system depends on the power supply units selected and the planned luminaire configurations.

Step 7: Specify the products and accessories



Parts list for linear pendant mounting

Number	Quantity	Description
1	2	Invia surface-mounted profile
3	2	End plate
4	2	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	1	Pendant tube suspension
9	1	Mounting device
10	2	Wire rope suspension with mounting device

Enter the selected parts into a parts list. Accessories matching your Invia profile are listed on the profile's data sheet. The parts list and the planned Invia layout form an important basis for the later installation and possible extensions to your Invia system.
In this context, also determine on-site fixing materials (these must comply with building legislation requirements).

For easy planning, we recommend the Invia Configurator. www.erco.com/invia-configurator.

ERCO Invia 48V Planning Aid

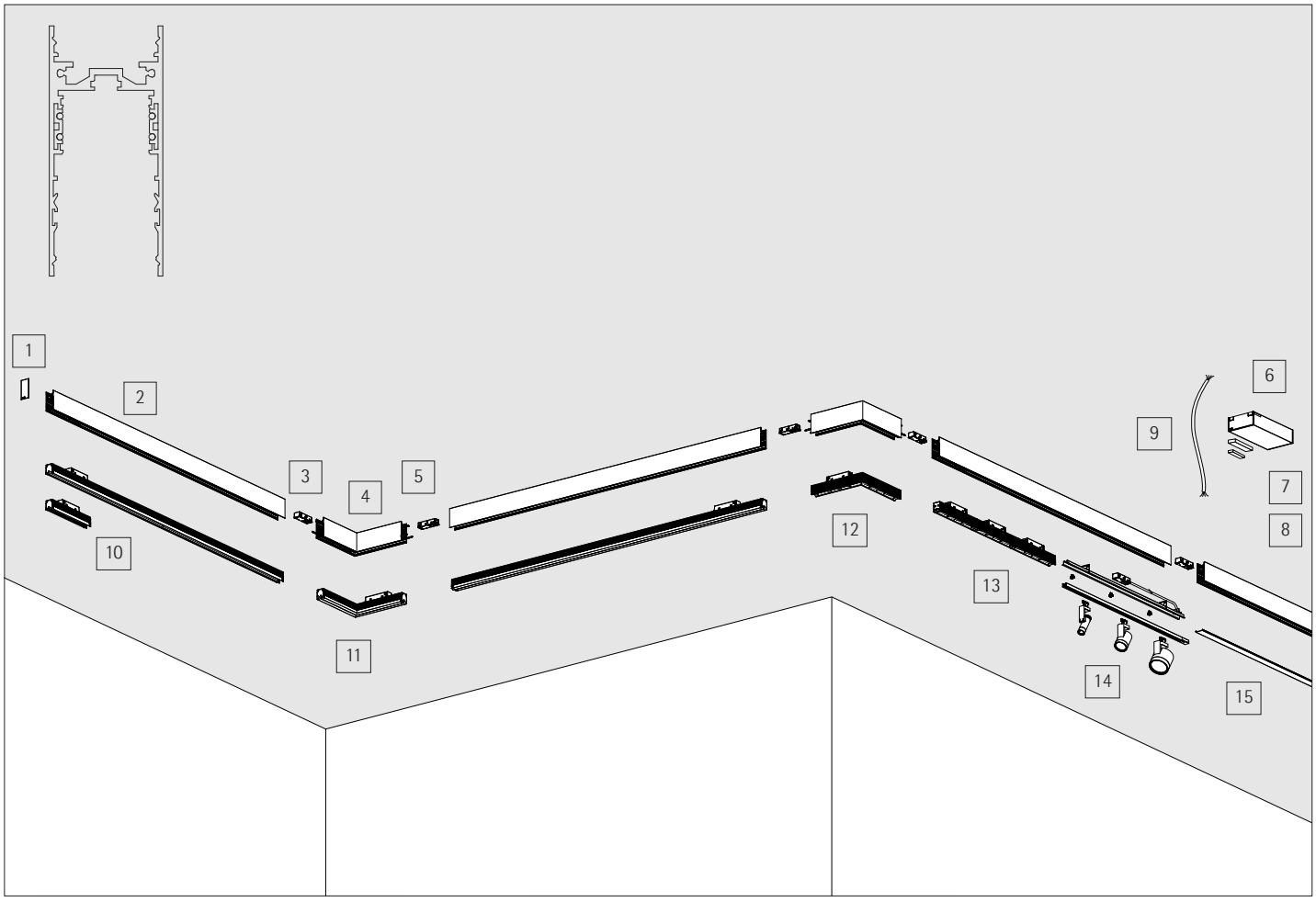
Surface mounting

ERCO Invia 48V Planning Aid

System overview: surface mounting

The Invia continuous line is designed for various types of mounting.
Below is an overview of the components available for surface mounting.
Information on suitable luminaires can be found from p. 36

Overview of available components for surface mounting



1	End plate	7	DALI connector	13	Electrical adapter and mounting kit for Minirail 48V
2	Invia profile	8	Casambi-DALI gateway	14	Minirail 48V track, live end and 48V spotlight
3	Mechanical connector*	9	4-core connection cable	15	Cover
4	Invia corner profile	10	Invia 48V luminaire downlight, wall washer		
5	Electrical connector	11	Invia 48V luminaire downlight, wall washer for corner		
6	Power supply unit	12	Invia 48V luminaire downlight, for corner		

*in scope of delivery of profile

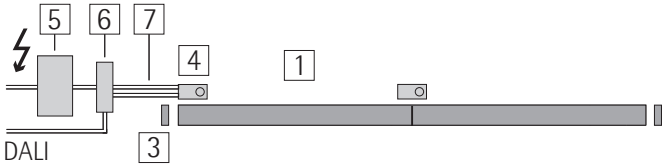
ERCO Invia 48V Planning Aid

Sample installations: surface-mounting

Sample installations
As examples, we have put together three common installations for you. The number of fixing points depends on the specific size and load of the system. If the continuous line is only equipped with Invia luminaires, fixing at the ends of a profile is sufficient.
The specifications below show minimum configurations for DALI controllable systems.
The drawings are schematic representations.

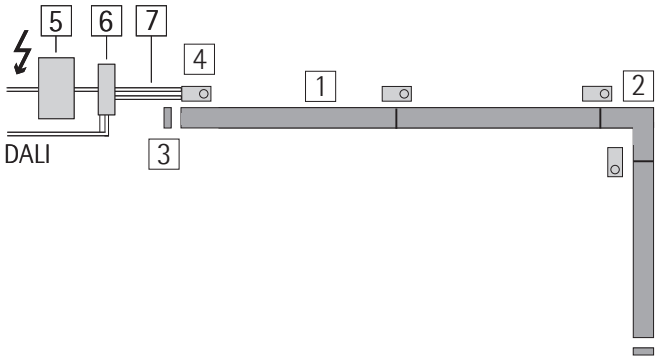
Parts list for linear surface-mounting

Number	Quantity	Description
1	2	Invia surface-mounted profile
3	2	End plate
4	2	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable



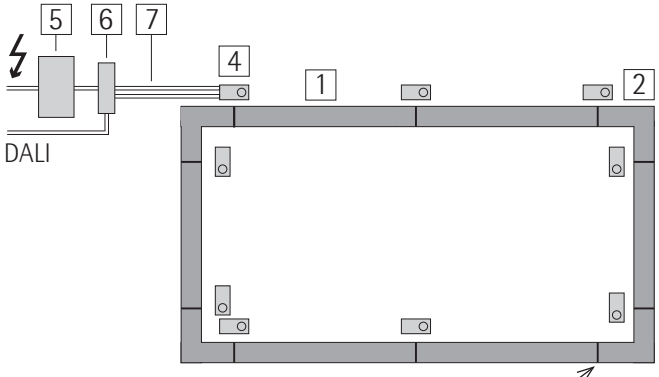
Parts list for L-shaped surface-mounting

Number	Quantity	Description
1	3	Invia surface-mounted profile
2	1	Invia surface-mounted corner profile
3	2	End plate
4	4	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable



Parts list for rectangular surface-mounting*

Number	Quantity	Description
1	6	Invia surface-mounted profile
2	4	Invia surface-mounted corner profile
4	9	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable

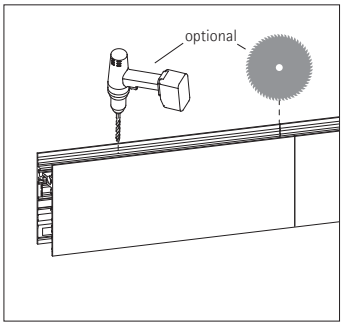


No electrical connector here so that there is no closed ring of DALI control lines.

ERCO Invia 48V Planning Aid

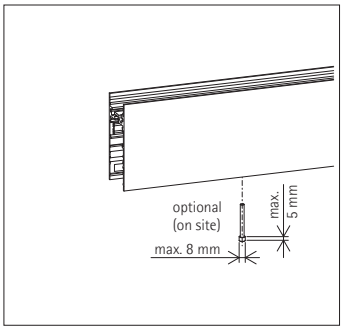
Typical sequence of an Invia surface-mounted installation

Step 1:
Make fixing holes in the profile



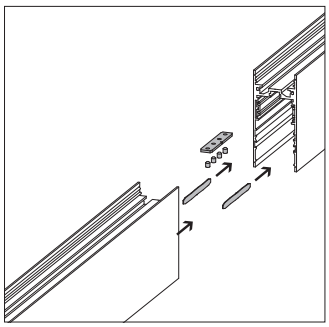
- Shorten the profile (optional)
- When fastening on a substructure or on the ceiling, drill the fixing holes in the profile
- The centre of the profile is marked by a groove

Step 2:
Fix the profile



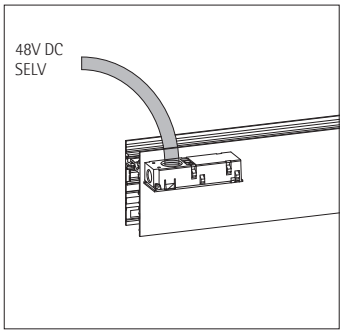
- Insert the power cable
- Optional: drill fixing holes in the ceiling
- Fix the profile to the ceiling or substructure. Keep the fixing screws slightly loose.

Step 3:
Attach more profiles



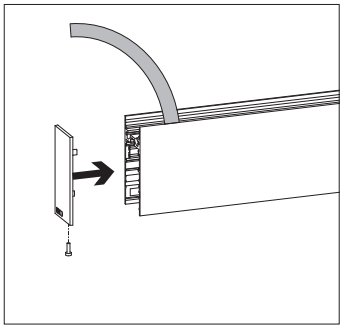
- Attach the mechanical connector (included in delivery) to the mounted profile and plug on another profile
- Mount the end plates
- Tighten the fixing screws

Step 4:
Establish the electrical connection



- Connect the electrical connector (accessory) and plug it into the profile.

Step 5:
Insert electrical connectors and mount the end plates



- Insert an electrical connector at each joint that is to be electrically through-connected.
- Mount the end plates

- Finished! You can now insert the luminaires or the mounting kit for Minirail 48V. (see from page 36)
- After installing the luminaires, close any open areas with the cover.

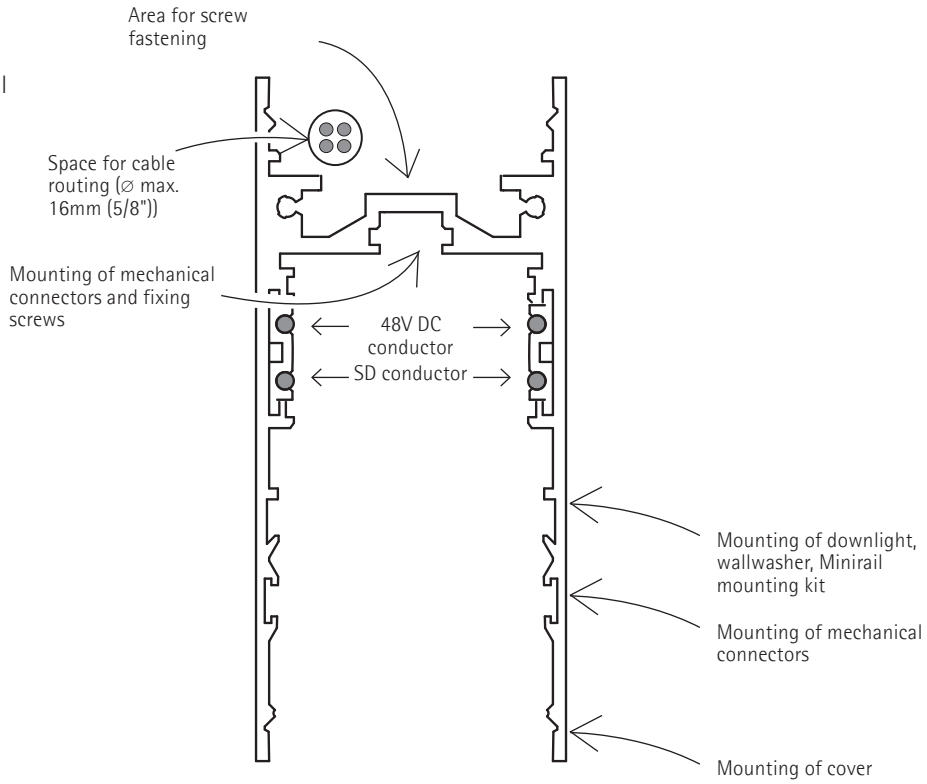
ERCO Invia 48V Planning Aid

Surface mounting

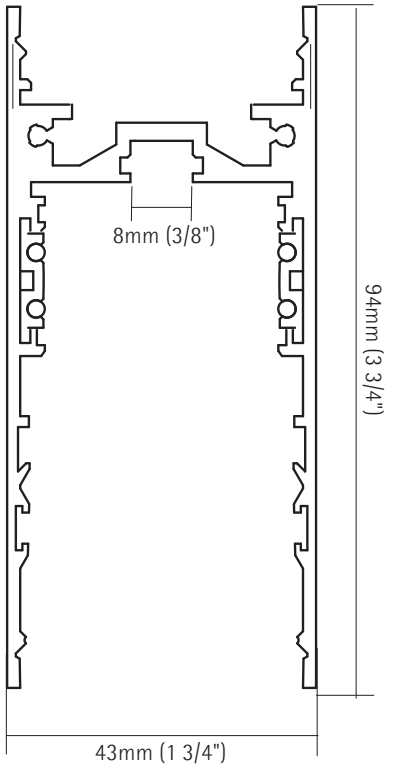
You can mount the Invia surface-mounted profile indoors on any load-bearing ceiling. Installing in ceiling channels or corresponding ceiling openings is also possible in principle. With accessories, you can also use the surface-mounted profile for pendant mounting.

Overview of surface-mounted profile

For information on configuring the Invia profiles, see the "Invia luminaires" section from p. 36. For information on the electrical connection, see the "Electrical installation" section from p. 44.



Dimensions



ERCO Invia 48V Planning Aid

Surface mounting

Product variants

1800mm (70 7/8")

300 x 300mm (11 13/16" x 11 13/16")

1800mm (70 7/8")

300 x 300mm (11 13/16" x 11 13/16")

1800mm (70 7/8")

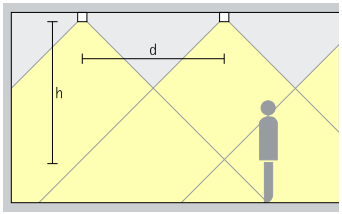
300 x 300mm (11 13/16" x 11 13/16")

ERCO Invia 48V Planning Aid

Surface mounting

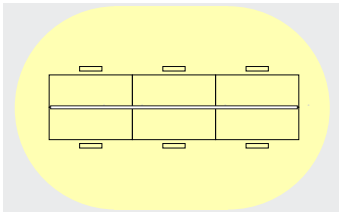
You can mount the Invia luminaires as a seamless light line without spacing.

Mounting position

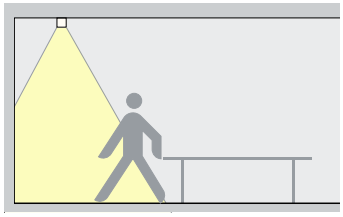


Downlight
For uniform general lighting, the approximate luminaire spacing (d) between two Invia light structures may be up to 1.5 times the height (h) of the luminaire above the working plane.

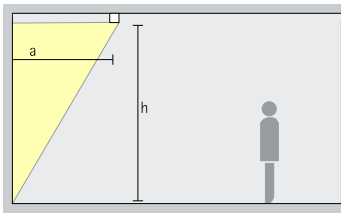
The recommended offset from the wall is half the luminaire spacing.



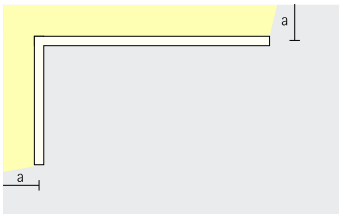
Downlight
For optimum illumination of office workstations, it is recommended to position the Invia 48V profiles centred on the longitudinal axis of the desks.



Light line
Position the luminaires with diffuse distribution centrally above circulation routes or other linear structures you wish to highlight.



Positioning
The distance between Invia wallwashers and the wall should be approximately 0.4 times the room height. Plan the luminaires as a continuous line without gaps.
It is advisable to plan the luminaires with suitable lighting design software. When planning, take into account that the luminaires cannot be shortened. They are only available in lengths of 300mm (11 13/16") and 1800mm (70 7/8") (linear) and 300x300mm (11 13/16" x 11 13/16") (corner).



Corner wallwasher
Corner wallwashers are designed only for inside corners.
For good uniformity, it is particularly important that the distances to the wall are always identical and that the wall distance is within the specified range. With a room height of 3.00m (10ft), a wall distance of approx. 1.20m (4ft) is recommended.

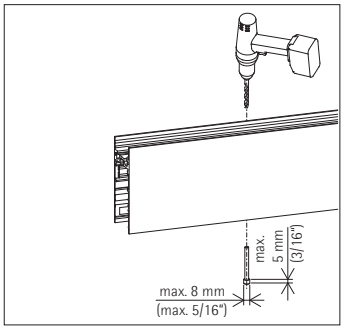
ERCO Invia 48V Planning Aid

Surface mounting

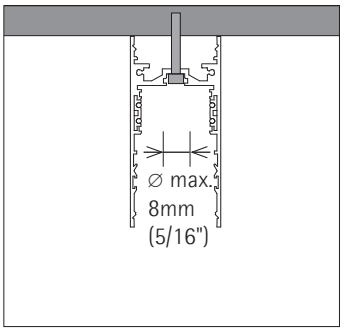
Tips for planning and installation

Always observe the installation instructions enclosed with the product!

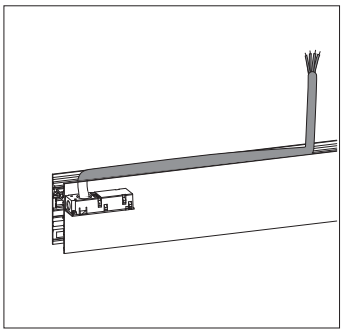
Installation planning for direct mounting



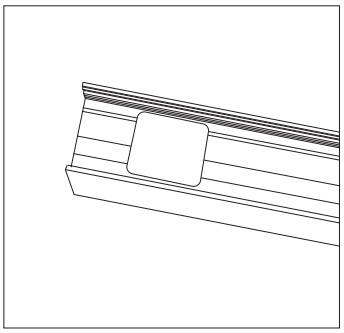
Surface mounting
At least 2 fixing points are needed per profile of 1800mm (70 7/8"). If the mounting kit for Minirail 48V is to be installed, additional fixing points are necessary depending on the planned luminaire configuration. Only attach corner profiles directly if they are to be installed at the end of the system; otherwise the mechanical connector is sufficient.



Fixing
Drill the fixing holes in the centre part on-site.
The diameter of the screw head must not exceed 8mm (5/16") to ensure that the fixing screw is concealed completely in the profile.



Cable routing in the profile
Invia surface-mounted profiles allow the connection cable to be laid in the upper part of the profile.
If the connection cable does not come out of the ceiling at the end of the profile, you can feed it through the upper part of the profile to the desired connection point.



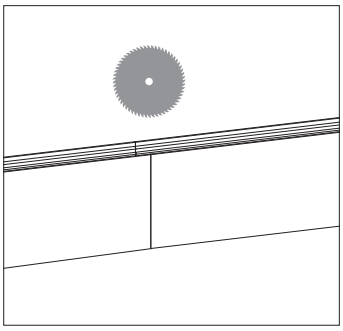
Insert the connection cables into the profile
The linear Invia profiles for ceiling surface-mounting have a large opening of approx. 30x41mm (1 3/16" x 1 10/16") at one end. If the position of the opening does not fit, you can drill an additional hole for the cable entry anywhere on the profile.

ERCO Invia 48V Planning Aid

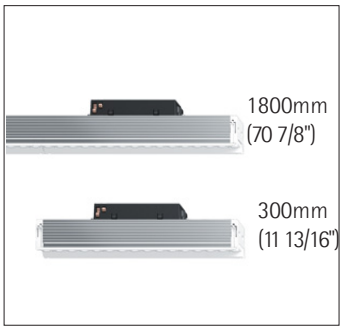
Surface mounting

Tips for planning and installation

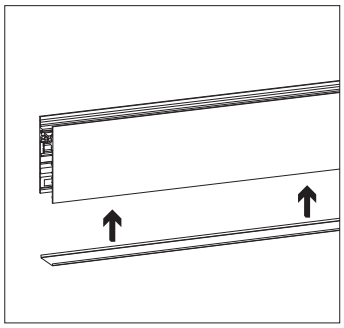
General planning and installation information



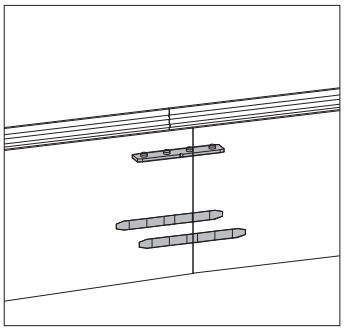
Shortening Invia profiles
You can order Invia 48V profiles as custom products cut to size. In many cases however it is advisable to shorten standard lengths directly on site, e.g. with a mitre saw. Make the cut square and clean so that there are no unsightly gaps at the joints.



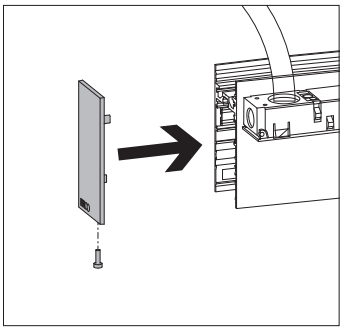
Please note that luminaires are only available in 300mm (11 13/16") and 1800mm (70 7/8") lengths. If you want a seamless light line up to the end of the profile, keep to the 300mm (11 13/16") grid when shortening the profile.



Fitting covers
Parts of the profile not fitted with luminaires can be closed with the cover. The covers can be cut to size on site with a saw suitable for plastic.



Connecting Invia profiles
For secure connecting of two profiles, the 3-part mechanical connector is available (included in the scope of delivery of the profile). The center piece ensures a firm and loadable connection of the profiles with 4 screws and the two side pieces ensure that the flanges of the profile are always aligned..



Using end plates
Always fit end plates to the open ends of Invia profiles for safety reasons and also for visual reasons.
This also prevents filler or paint from penetrating the profile from the side.

ERCO Invia 48V Planning Aid

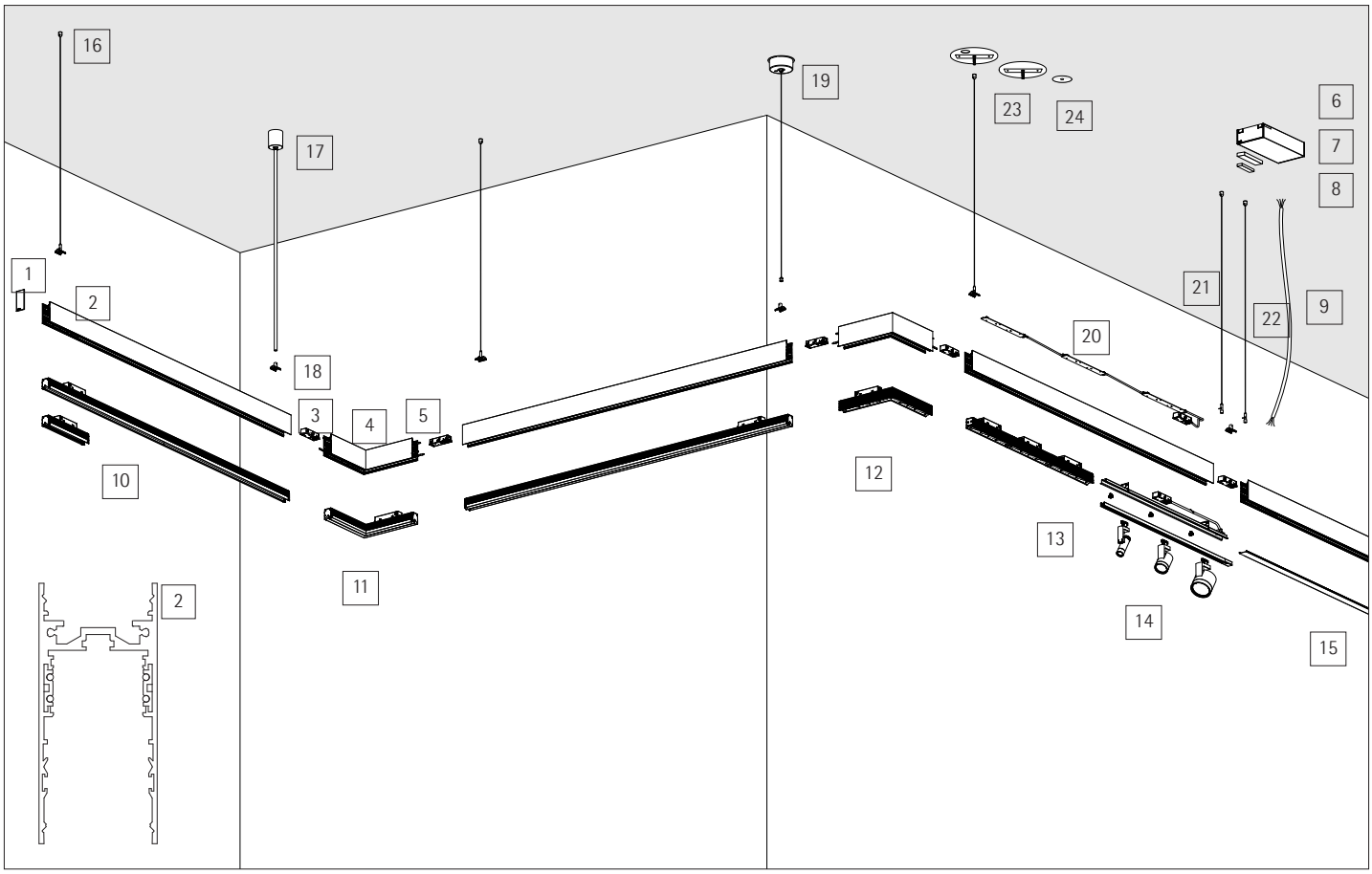
Pendant mounting

ERCO Invia 48V Planning Aid

System overview: pendant mounting

The Invia system is designed for all types of mounting.
Below is an overview of the components available for pendant mounting.
The profile used here is the surface-mounted profile. The pendant suspensions and mounting devices are identical to the corresponding ERCO track accessories.
See from p. 36 for available luminaires.

Overview of available components for pendant mounting



1	End plate	7	DALI connector	13	Electrical adapter and mounting kit for Minirail 48V	19	Canopy wire rope suspension
2	Invia profile	8	Casambi DALI gateway	14	Minirail 48V track, live end and 48V spotlight	20	Invia 48V uplight
3	Mechanical connector*	9	4-core connection cable	15	Cover	21	Wire rope suspension
4	Invia corner profile	10	Invia 48V luminaire downlight, wallwasher	16	Wire rope suspension	22	Wire rope suspension with cable gland
5	Electrical connector	11	Invia 48V luminaire downlight, wallwasher for corner	17	Pendant tube suspension	23	Canopy (cover) 5" for junction boxes with/without cable entry
6	Power supply unit	12	Invia 48V luminaire downlight, for corner	18	Mounting piece	24	Canopy (cover) 2" for wire rope suspensions

*in scope of delivery of profile

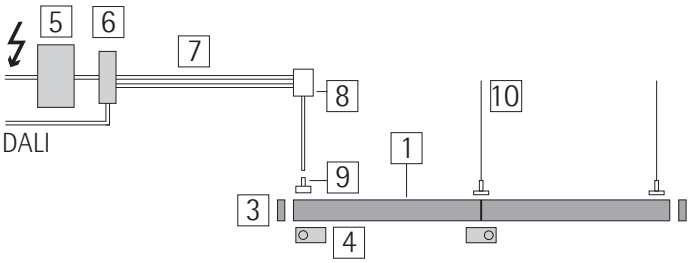
ERCO Invia 48V Planning Aid

Pendant mounting

Sample installations
As examples, we have put together three common sample installations for you.
The number of fixing points depends on the specific size and load of the system.
The specifications below show minimum configurations for DALI controllable systems.
The drawings are schematic representations.

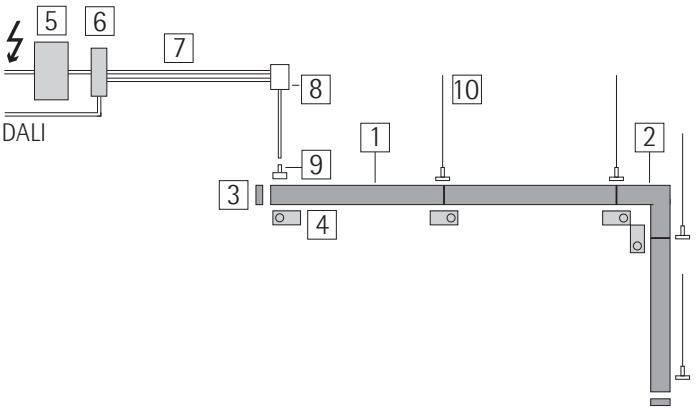
Parts list for linear pendant mounting

Number	Quantity	Description
1	2	Invia surface-mounted profile
3	2	End plate
4	2	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	1	Pendant tube suspension
9	1	Mounting device
10	2	Wire rope suspension with mounting device



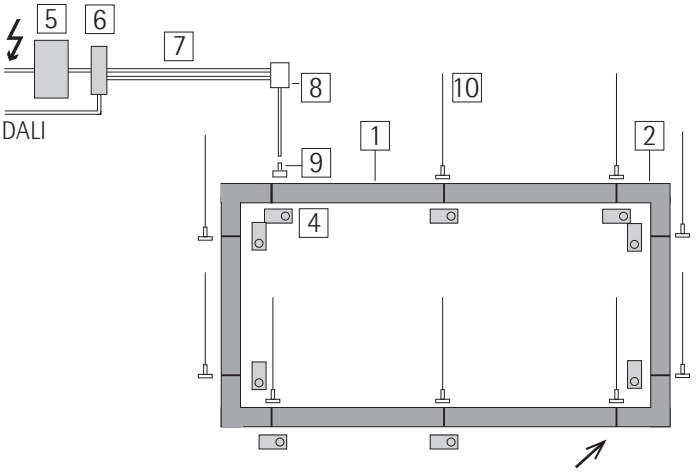
Parts list for L-shaped pendant mounting

Number	Quantity	Description
1	3	Invia surface-mounted profile
2	1	Invia surface-mounted corner profile
3	2	End plate
4	4	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	1	Pendant tube suspension
9	1	Mounting device
10	4	Wire rope suspension with mounting device



Parts list for rectangular pendant mounting

Number	Quantity	Description
1	6	Invia surface-mounted profile
2	4	Invia surface-mounted corner profile
4	9	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	1	Pendant tube suspension
9	1	Mounting device
10	9	Wire rope suspension with mounting device

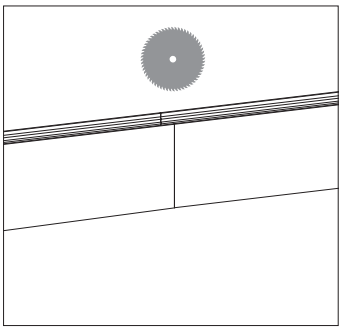


No electrical connector here, so that no closed ring of DALI control lines is created.

ERCO Invia 48V Planning Aid

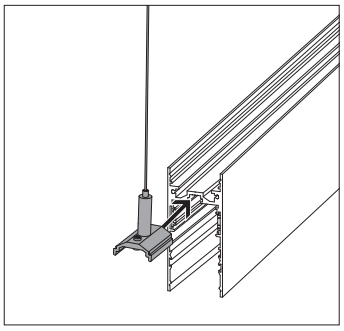
Typical sequence of an Invia pendant installation

Step 1:
Prepare the profile



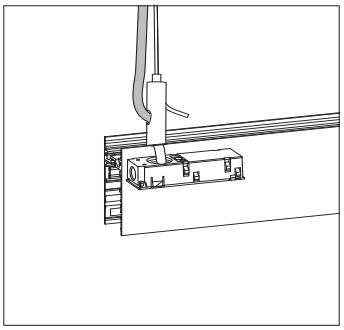
- Shorten the profile (optional)
- Drill a hole for the insertion of the connection line
- Insert 2 mounting devices into the profile for accommodating wire rope suspensions or pendant tubes

Step 2:
Fasten the profile
Mount the uplight



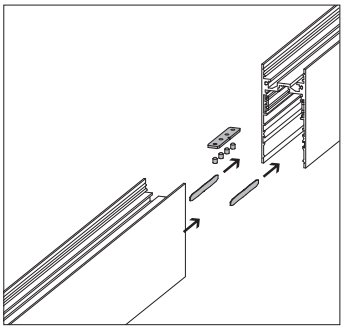
- Attach the wire rope or pendant tube suspension to the ceiling
- Insert optional uplight on the top of the profile
- Fix the profile to the suspensions.

Step 3:
Establish the electrical connection



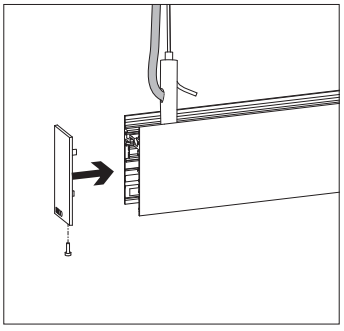
- Install the power supply unit and (if required) DALI connector
- Guide the power cable through the profile and connect it to the electrical connector
- Insert the electrical connector into the profile

Step 4:
Attach more profiles



- Mount the mechanical connector
- Attach another profile or corner profile
- Mount further profiles as described above

Step 5:
Insert electrical connectors and mount the end plates



- Insert an electrical connector at each joint that is to be electrically connected.
- Mount the end plates

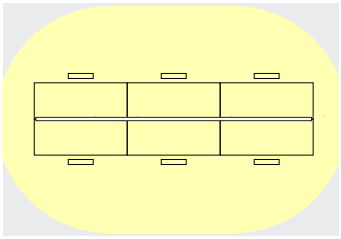
- Finished! You can now insert the luminaires or the mounting kit for Minirail 48V. (see from page 36)
- After installing the luminaires, close any open areas with the cover.

ERCO Invia 48V Planning Aid

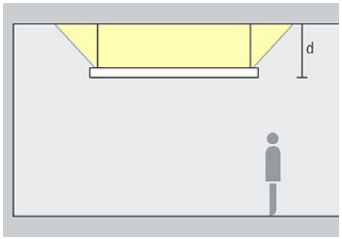
Pendant mounting

You can mount the Invia luminaires as a continuous line almost seamlessly.

Mounting position

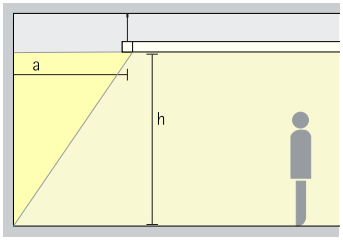


Downlight
For optimum illumination of office workstations, it is recommended to position the Invia 48V profiles centered on the longitudinal axis of the desks.

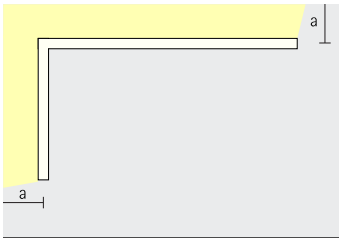


Uplight
The indirect distribution uplight can be used to illuminate ceilings for emphasising the dimensions of high rooms or for lowering the contrasts in the room. The ideal distance (d) of the light structure to the ceiling is 0.5 metres.

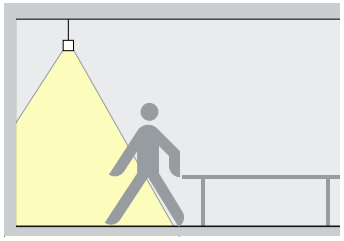
An Invia uplight consists of three permanently connected individual luminaires. The luminaires cannot be separated on site. The entire uplight is optimized for an 1800mm profile.



Positioning
The distance between Invia wallwashers and the wall should be approximately 0.4 times the room height. Plan the luminaires as a continuous line without gaps.
It is advisable to plan the luminaires with suitable lighting design software. When planning, take into account that the luminaires cannot be shortened. They are only available in lengths of 300mm and 1800mm (linear) and 300x300mm (corner).



Corner wallwasher
Corner wallwashers are designed only for inside corners.
For good uniformity, it is particularly important that the distances to the wall are always identical and that the wall distance is within the specified range. With a room height of 3.00m (10ft), a wall distance of approx. 1.20m (4ft) is recommended.



Light line
Position the luminaires with diffuse distribution centrally above circulation routes or other linear structures you wish to highlight.

ERCO Invia 48V Planning Aid

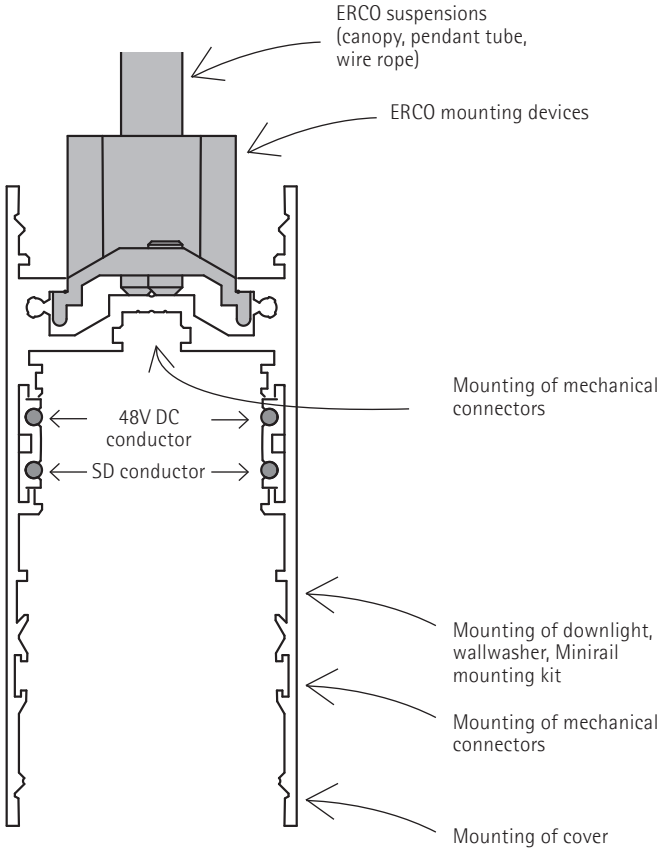
Pendant mounting

Tips for planning and installation

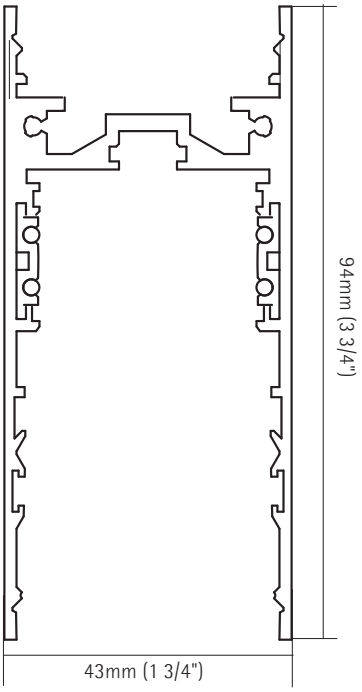
Always observe the installation instructions enclosed with the product!

Overview of surface-mounted profile with pendant mounting

Information on configuring the Invia profiles can be found in the "Invia luminaires" section from p. 36. For information on the electrical connection, see the "Electrical installation" section from p. 44.



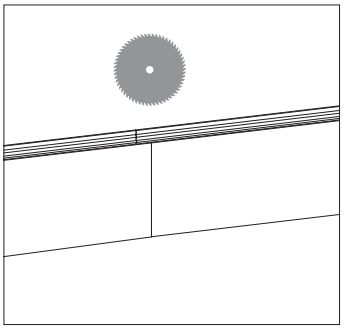
Dimensions



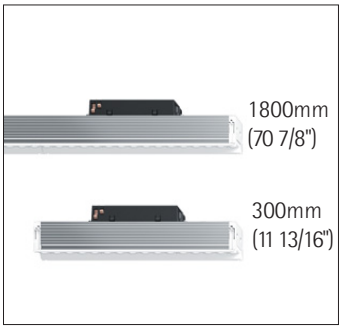
ERCO Invia 48V Planning Aid

Pendant mounting

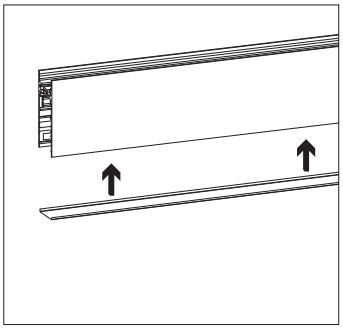
General planning and installation information



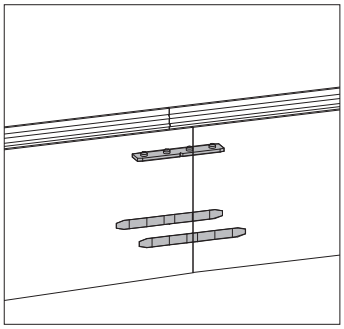
Shortening Invia profiles
You can order Invia 48V profiles cut to size. In many cases however it is advisable to shorten standard lengths directly on site, e.g. with a mitre saw. Make the cut square and clean so that there are no unsightly gaps at the joints.



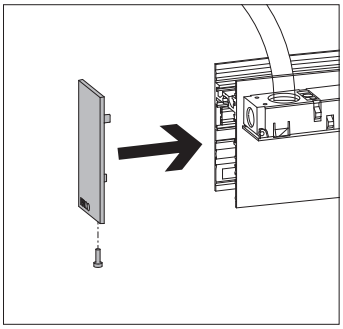
Please note that luminaires are only available in 300mm (11 13/16") and 1800mm (70 7/8") lengths. If you want a seamless light line up to the end of the profile, keep to the 300mm (11 13/16") grid when shortening the profile.



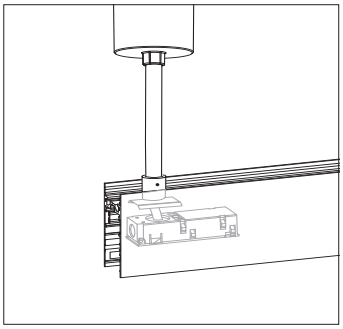
Fitting covers
Parts of the profiles not equipped with luminaires can be closed with the cover. Covers can be cut to size on site with a saw suitable for plastic.



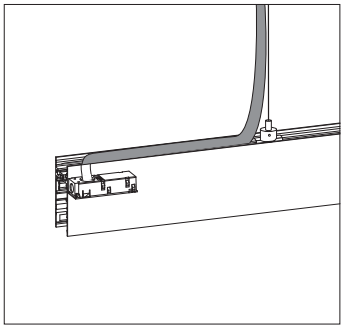
Connecting Invia 48V profiles
For secure connecting of two profiles, the 3-part mechanical connector is available (included in the scope of delivery of the profile). The centre piece ensures a firm and loadable connection of the profiles with 4 screws and the two side pieces ensure that the flanges of the profile are always aligned.



Using end plates
Always fit end plates to the open ends of Invia profiles for safety reasons and also for visual reasons.



Insert the connection cables into the profile
Use the pendant tube suspension or the wire rope suspension with insertion in conjunction with the mounting device.



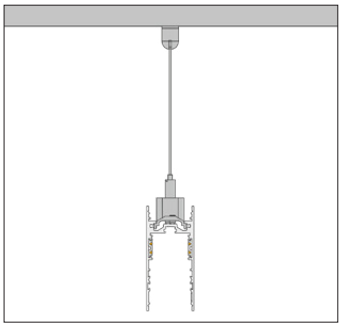
Cable routing in the profile
Invia surface-mounted profiles allow connection cables to be laid in the upper part of the profile.
If the connection cable does not come out of the ceiling at the end of the profile, you can lead it through the upper part of the profile to the desired feed point.

ERCO Invia 48V Planning Aid

Pendant mounting suspensions

Installation planning for pendant mounting

For pendant mounting, you need mounting accessories in addition to the surface-mounted profile. The accessories for suspension can be found on the data sheets of the Invia profiles for surface mounting; they are identical to the accessories for the ERCO track. See the following sections for further details.



Pendant tube suspensions

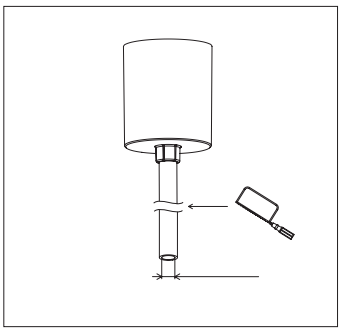
Concealed cable routing and high stability

Concealed cable routing
Pendant tube suspensions enable discreet power supply to your system. The tube can accommodate the 4-core Invia 48V connection cable (accessory). Versions with mounting plate available.

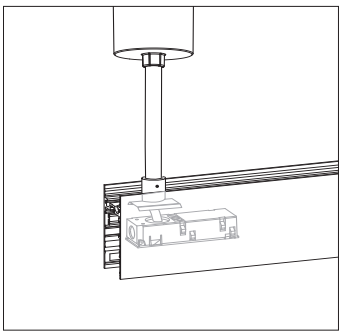
Stable mounting
With suspended installations, a dynamic load must be taken into account in addition to the static load. A draft for example can move the system. Asymmetric loads, e.g. caused by spotlights aligned to one side, can cause the profile to tilt slightly, especially with linear systems. With a pendant tube suspension you strengthen the system and prevent such effects.

Pendant tube suspensions

Mounting tips



Shortening the pendant tube
- Determine the necessary length, e.g. using a laser measuring system.
- Shorten the tube to the necessary length.
- Pendant tubes longer than 1.50m are also available on request.



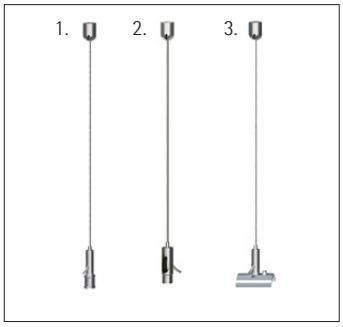
Position the pendant tube
- It is not possible to mount the suspension directly above the large opening of the surface mounted profile.
- If you want to feed in via the mounting device, first create a hole at the desired position in the profile and mount the mounting part over the hole.
- First fix the base plate of the canopy to the ceiling and the mounting device to the profile. With the help of a 2nd person, attach the profile with the mounting devices to the suspensions.

ERCO Invia 48V Planning Aid

Pendant mounting suspensions

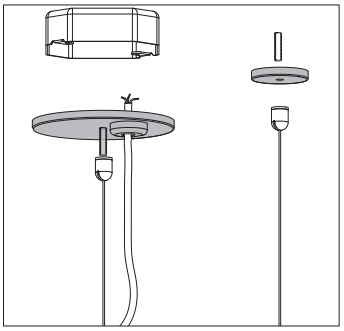
Wire rope suspensions

Elegant appearance and flexible use

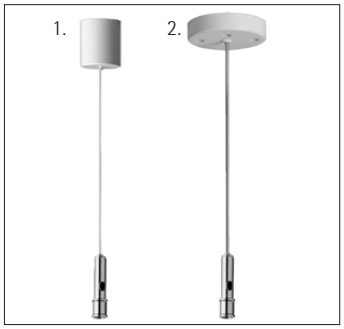


Wire rope suspensions with single point fixing
Wire ropes are hardly noticeable from a distance and give the light structure a "floating" appearance. The following versions are available:
1. Wire rope suspension.
2. Wire rope suspension with cable gland for cables up to up to 9mm (3/8") in diameter.
3. Wire rope suspension with single point fixing and pre-assembled mounting devices for direct mounting.

The length of the wire rope is 2500mm (98 7/16"mm). Longer lengths are available on request.
For variants 1 and 2 you need a mounting device to be ordered separately for fixing to the Invia profile.

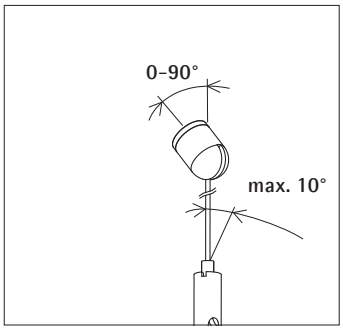


Mounting on junction boxes
With the appropriate accessories, the wire suspensions can also be mounted on a junction box. Depending on the design, the 5" accessories are suitable for feeding. The cable cross section must be between 9.5 and 11mm (0.370" and 0.430"). The small 2" canopy can be used for covering the fixation point of the wire rope suspensions.



Wire rope suspensions with canopy and 2-point fixing
The following versions are available:
1. Wire rope suspension with canopy and electrical feed option.
   Version with mounting plate available.
2. Wire rope suspension with canopy and electrical feed option, flat design.

The canopies are available in black or white. The length of the wire rope is 2500mm (98 7/16"mm). Longer lengths are available on request.
The use of these suspensions is recommended if the Invia light structure is to be connected to the ceiling or if the ceiling material requires a 2-point fixing.
For mounting on the profile, you require a mounting device to be ordered separately.



Flexible use
Single-point suspensions are suitable for sloping ceilings up to 10°.
Rapid connectors ensure tool-free and particularly simple height adjustment.

Mounting devices

Mounting devices
For pendant tube suspensions and some wire rope suspensions, you need a separate mounting device. This is inserted into the upper part of the profile and fixed in place. The suspensions are fastened to the mounting device with an Allen key. Suitable for mounting over a joint.

Joint connectors
The joint connectors enable your Invia light structure to be fixed to existing system suspensions in your ceiling. The joint connector is inserted into the upper part of the profile when installing the system.

Suspensions
The suspensions enable your Invia system to be fixed to existing system suspensions in your ceiling. The raised flanges of the Invia profile conceal the suspensions when viewed from below. The suspensions can also be retrofitted.

ERCO Invia 48V Planning Aid

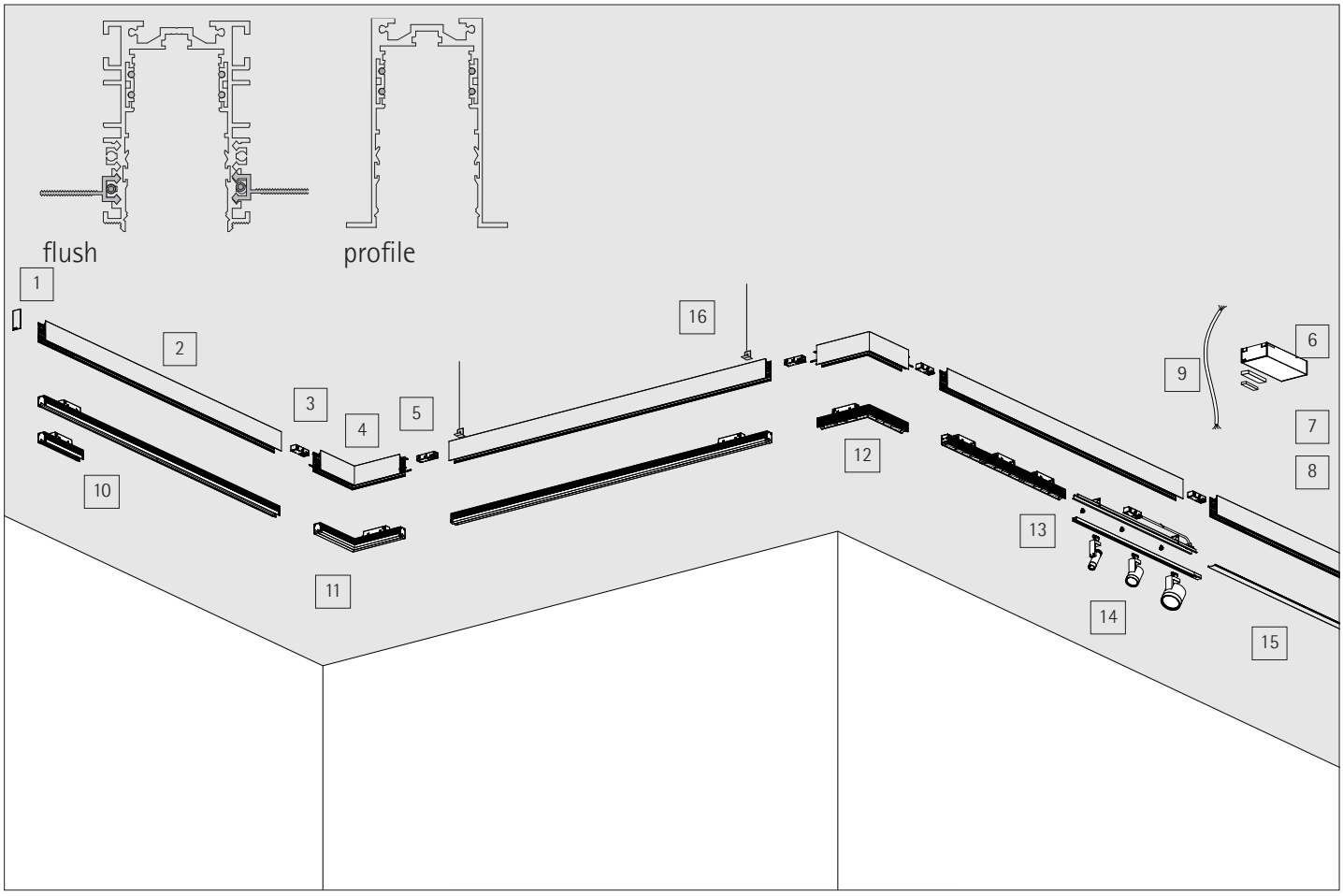
Recessed mounting

ERCO Invia 48V Planning Aid

Recessed mounting, flush/covered

The Invia system is designed for all types of mounting.
Below is an overview of the components available for recessed mounting. The flush Invia profiles are mounted directly into the drywall ceiling; separate plaster trim profiles for ceiling recessing are not necessary.
See from p. 36 for available luminaires.

Overview of available components for recessed mounting



1	End plate	7	DALI connector	13	Electrical adapter and mounting kit for Minirail 48V	*The figure shows the surface-mounted profile
2	Invia profile	8	Casambi DALI gateway	14	Minirail 48V track, live end and 48V spotlight	
3	Mechanical connector*	9	4-core connection cable	15	Cover	
4	Invia corner profile	10	Invia 48V luminaire downlight, wallwasher	16	Mounting device for on-site suspension	
5	Electrical connector	11	Invia 48V luminaire downlight, wallwasher for corner			
6	Power supply unit	12	Invia 48V luminaire downlight, for corner			

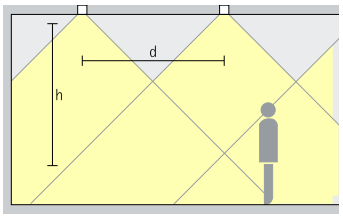
*in scope of delivery of profile

ERCO Invia 48V Planning Aid

Recessed mounting, flush/covered

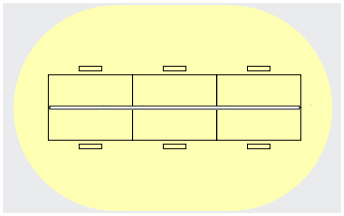
You can mount the Invia luminaires as a seamless light line without spacing.

Mounting position

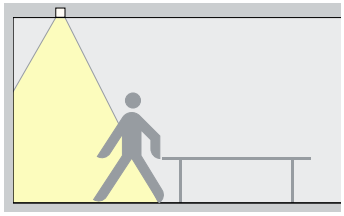


Downlight
For uniform general lighting, the approximate luminaire spacing (d) between two Invia structures may be up to 1.5 times the height (h) of the luminaire above the working plane.

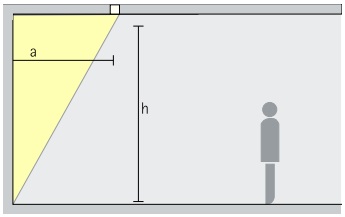
The recommended offset from the wall is half the luminaire spacing.



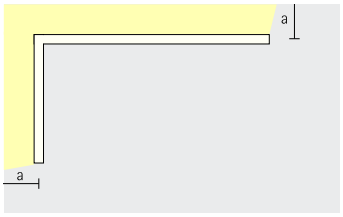
Downlight
For optimum illumination of office workstations, it is recommended to position the Invia 48V profiles centered on the longitudinal axis of the desks.



Light line
Position the luminaires with diffuse distribution centrally above circulation routes or other linear structures you wish to highlight.



Positioning
The distance between Invia wallwashers and the wall should be approximately 0.4 times the room height. Plan the luminaires as a continuous line without gaps.
It is advisable to plan the luminaires with suitable lighting design software. When planning, take into account that the luminaires cannot be shortened. They are only available in lengths of 300mm and 1800mm (linear) and 300x300mm (corner).



Corner wallwasher
Corner wallwashers are designed only for inside corners.
For good uniformity, it is particularly important that the distances to the wall are always identical and that the wall distance is within the specified range. With a room height of 3.00m (10ft), a wall distance of approx. 1.20m (4ft) is recommended.

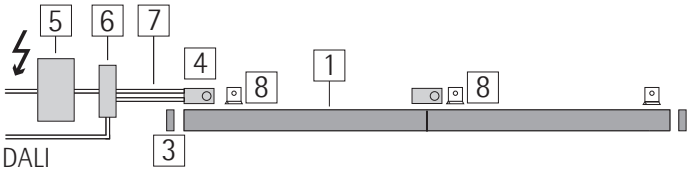
ERCO Invia 48V Planning Aid

Recessed mounting, flush/covered

Sample installations
As examples, we have put together three common sample installations for you. These refer to the flush and the covered variant of the Invia profile.
The number of fixing points depends on the specific size and load of the system.
The specifications below show minimum configurations for DALI controllable systems.
The drawings are schematic representations.

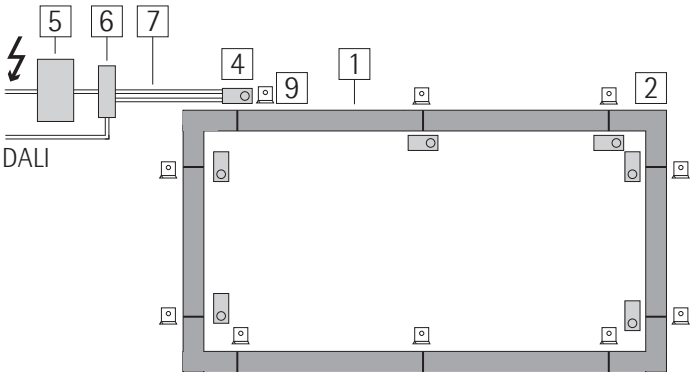
Parts list for linear recessed mounting

Number	Quantity	Description
1	2	Invia surface-mounted profile
3	2	End plate
4	2	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	3	Mounting device for on-site suspension



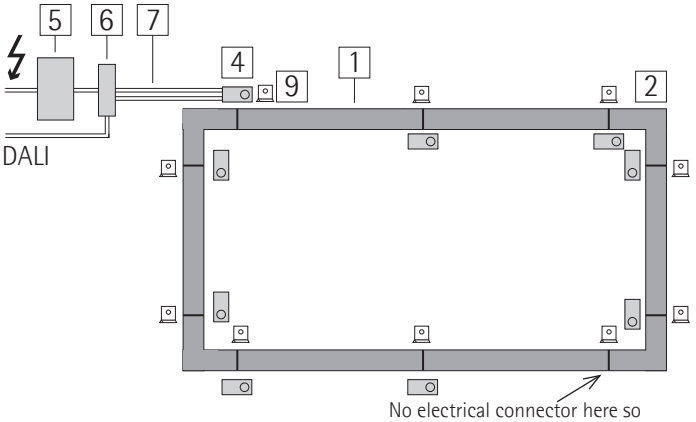
Parts list for L-shaped recessed mounting

Number	Quantity	Description
1	3	Invia surface-mounted profile
2	1	Invia surface-mounted corner profile
3	2	End plate
4	4	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	5	Mounting device for on-site suspension



Parts list for rectangular recessed mounting*

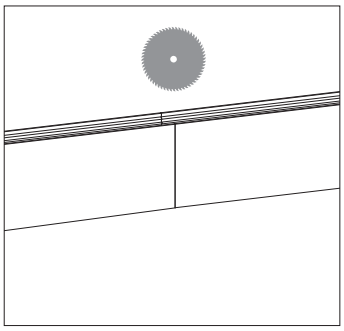
Number	Quantity	Description
1	6	Invia surface-mounted profile
2	4	Invia surface-mounted corner profile
4	9	Electrical connector
5	1	Power supply unit
6	1	DALI connector
7	1	Connection cable
8	10	Mounting device for on-site suspension



ERCO Invia 48V Planning Aid

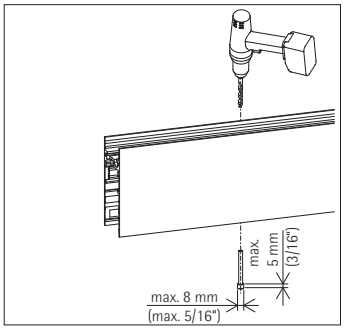
Typical sequence of an Invia 48V recessed installation

Step 1:
Prepare the profile



- Shorten the profile (optional)
- When fastening on a substructure or on the ceiling, drill the fixing holes in the profile
- For suspended mounting, mount the suspensions on the profile
- Insert and secure the support surfaces according to the material thickness of the drywall panels

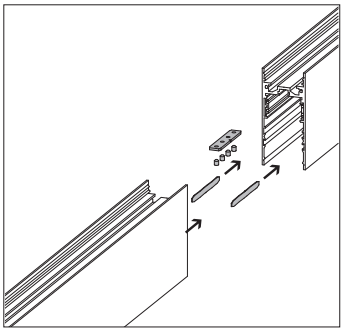
Step 2:
Fasten the profile



Direct mounting:
(also see the "Surface-mounting" section from p. 7)
- **Create fixing holes as required**
- Push back the cover plate in the profile and insert the power cable
- Fix the recessed profile flush to the substructure Keep the screws slightly loose.

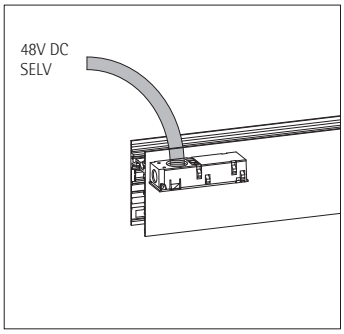
Suspended mounting:
(also see the "Pendant mounting" section from p. 15)
- Fix the on-site suspensions to the ceiling
- Fix the profile to the on-site suspensions

Step 3:
Expand the system and complete mechanically



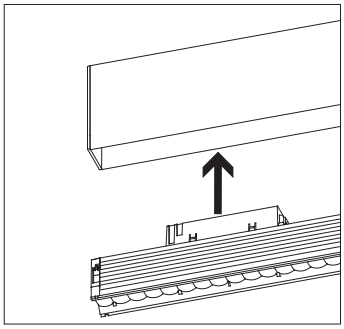
- Mount the mechanical connector (included in delivery) and fix a further profile or corner profile to the ceiling
- Mount the end plates.
- If mounting on a substructure, now tighten the screws.
- Screw the profile to the drywall panels.
- Fill and seal the joint between the profile and drywall panels.

Step 4:
Establish the electrical connection



- Install and wire the power supply unit and other electrical components in a suitable place
- Connect the electrical connector (accessory) and plug it into the profile. Use conduits when required.
- Insert an electrical connector at each joint that is to be electrically through-connected.

Step 5:
Mount luminaires or mounting kit for Minirail 48V



- You can now insert the luminaires or the mounting kit for Minirail 48V.
- After installing the luminaires, close any open areas with the cover.

*The figure shows the surface-mounted profile

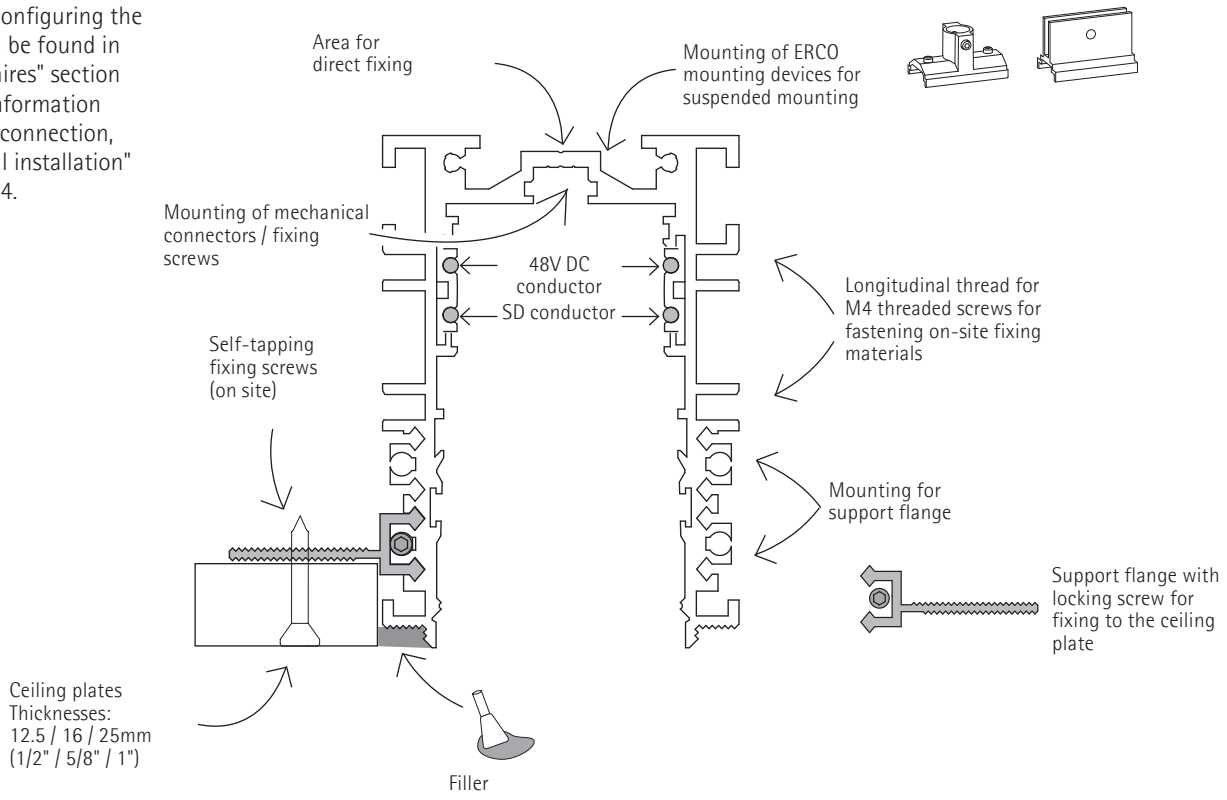
ERCO Invia 48V Planning Aid

Flush recessed mounting

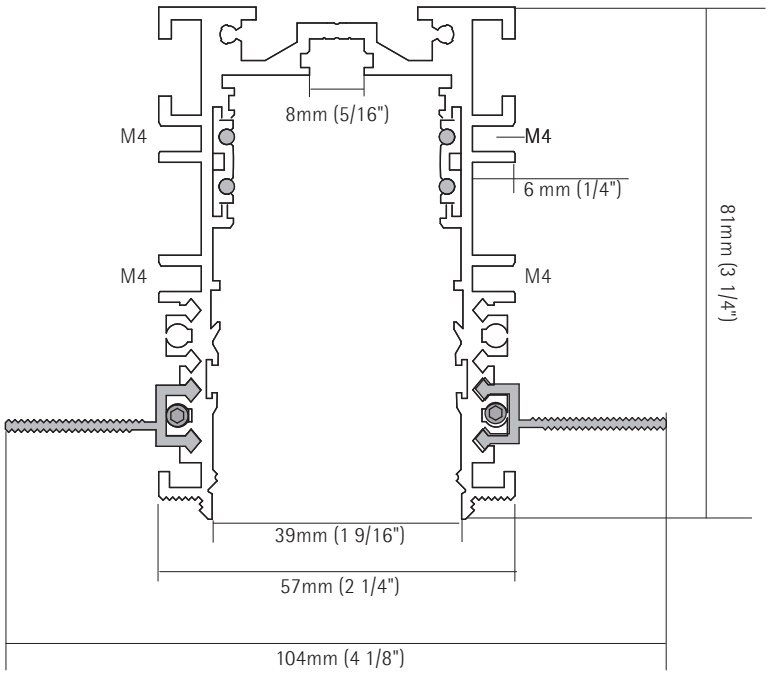
The Invia flush recessed profile is particularly suitable for mounting in drywall ceilings. It is also possible to install the surface-mounted profile in recesses of exposed concrete ceilings or in other ceiling types.

Overview of covered recessed

Information on configuring the Invia profiles can be found in the "Invia luminaires" section from p. 36. For information on the electrical connection, see the "Electrical installation" section from p. 44.



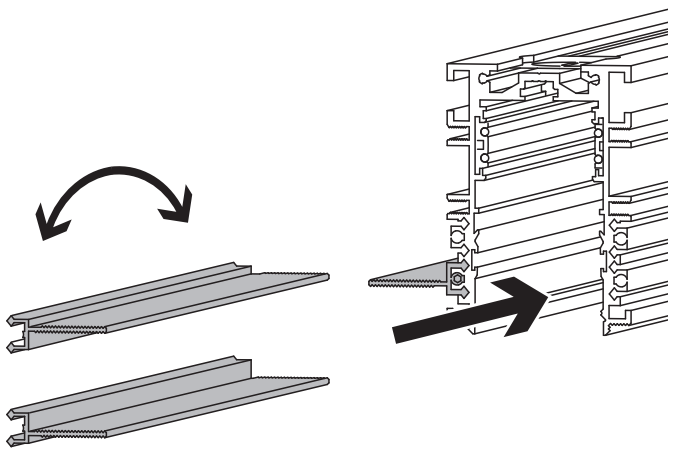
Dimensions



ERCO Invia 48V Planning Aid

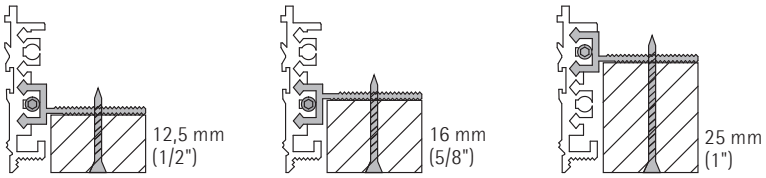
Flush recessed mounting

Setting up the recessed profile for the material thickness of the ceiling plate

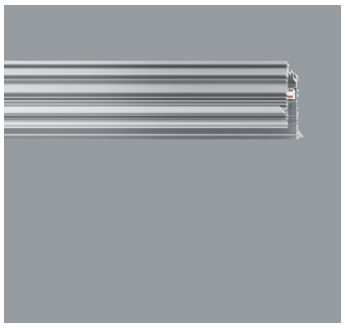


Adapt the profile to the material thickness

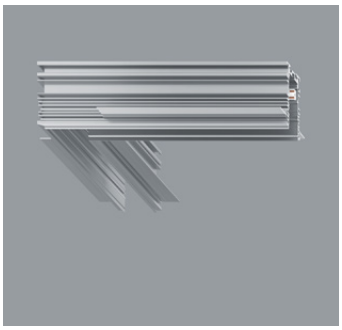
- Pull the support flange out of the Invia profile.
- Turn the support flanges and/or insert them into the profile at a different position. This changes the distance between the support flange and the lower edge of the profile.
- By screwing the support flanges to the ceiling plates, e.g. plasterboard, you ensure that no cracks occur between the profile and the ceiling plate.
- It is recommended to provide a screw connection with self-tapping screws every 300mm.



Product variants



300mm (11 13/16")
1800mm (70 7/8")



300 x 300mm (11 13/16" x 11 13/16")

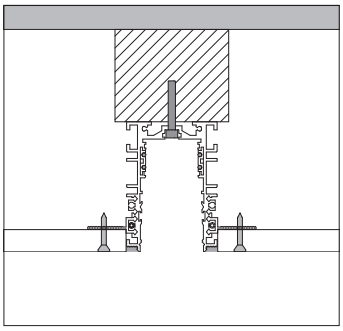
ERCO Invia 48V Planning Aid

Flush recessed mounting

Fixing options for linear profiles in a drywall ceiling

Corner profiles generally do not require their own fixing and are supported via the mechanical connectors supplied. When selecting materials, always consider the load-bearing capacity of the materials planned. Be sure to mount the profiles before mounting the ceiling plates! A 2nd person is helpful for mounting the profiles!

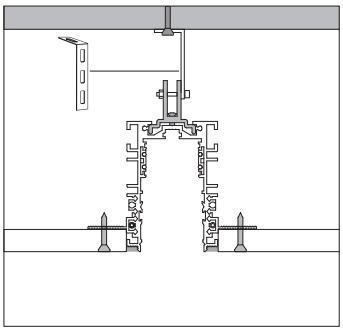
Direct mounting in a drywall ceiling



Direct fixing is done on a substructure or on other load-bearing substrate, e.g. a concrete ceiling.
Drill the necessary holes in the centre part on site.

Required material:
- Suitable fixing screws (optional: dowels), head diameter max. 8mm.
- Self-tapping screws for fixing support flanges and ceiling plates.

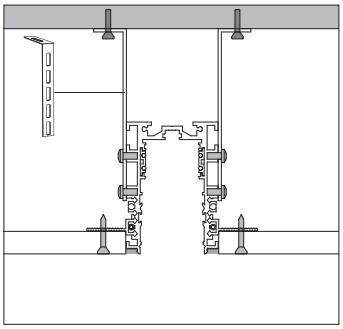
Suspended mounting in drywall ceilings



For suspended mounting, you can use on-site suspensions and conveniently fix these to the Invia profile using suspensions from the ERCO accessories.

Required material:
- On-site suspension (e.g. the slotted bracket shown)
- ERCO joint connector or suspension
- Self-tapping screws for fixing support flanges and ceiling plates.

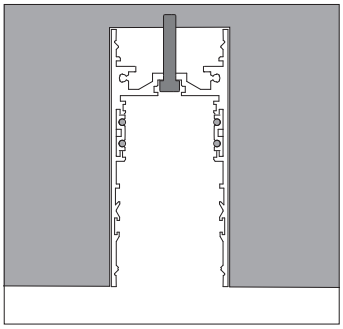
Suspended installation in drywall ceilings on difficult surfaces



With this type of fixing you use the advantages of the lateral longitudinal threads. This type of fixing is particularly suitable for very uneven ceilings or ceilings that need several fixing points due to their load bearing capacity.

Required material:
- On-site suspension (e.g. the slotted bracket shown)
- M4 screws; thread length max 6.5mm + material thickness of the on-site suspension
- Self-tapping screws for fixing support flanges and ceiling plates.

Installation in retroactively created ceiling opening or concrete ceiling



A ceiling opening created with even edges also allows a surface-mounted profile to be installed in a ceiling.
For concrete ceilings, pouring in a dimensionally stable material is also an option.
If the ceiling opening has uneven edges, using the covered recessed profile is recommended (see p. 32)

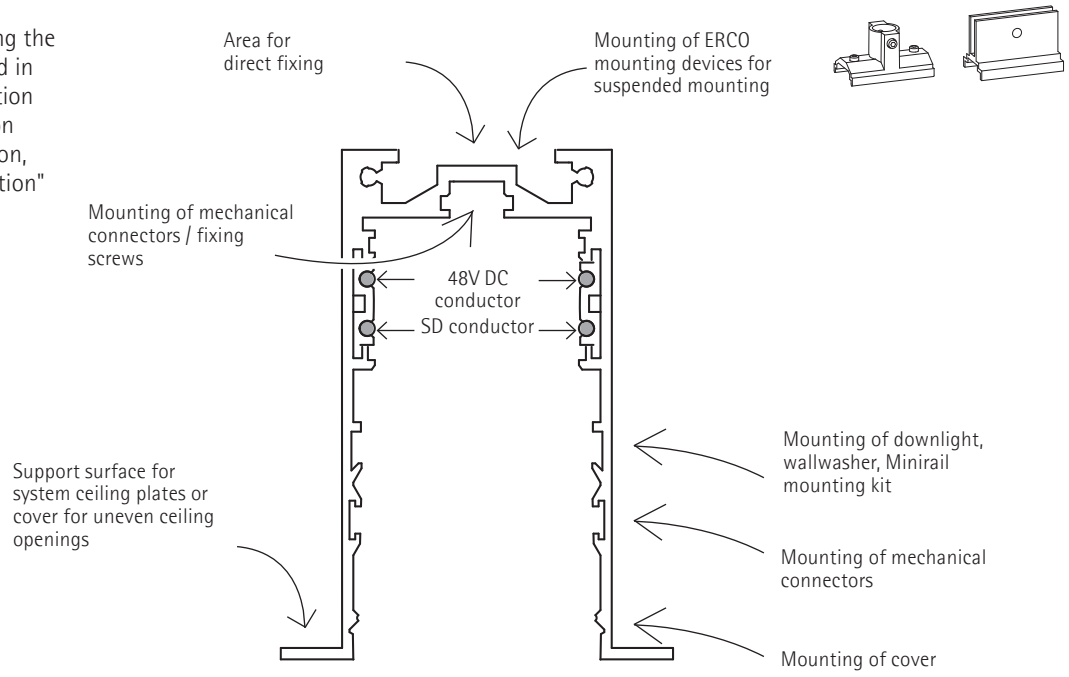
ERCO Invia 48V Planning Aid

Covered recessed mounting

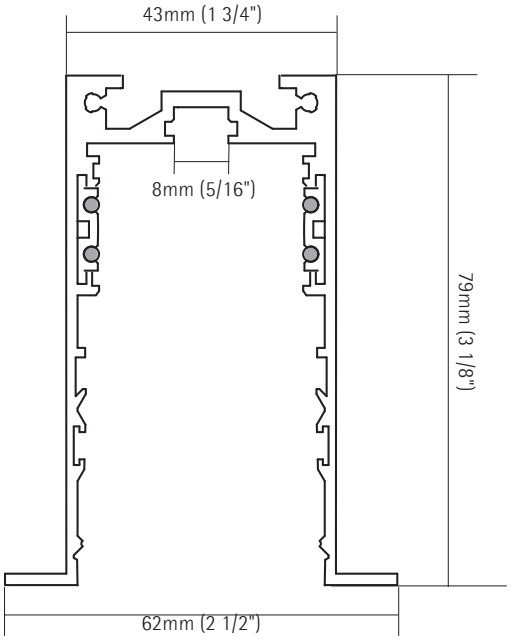
The Invia covered recessed profile is particularly suitable for mounting in system ceilings. Mounting is also possible in recesses of exposed concrete ceilings, or in retroactively created ceiling openings in different ceiling types. Uneven edges of ceiling openings are covered by the flanges.

Overview of covered recessed profile

Information on configuring the Invia profiles can be found in the "Invia luminaires" section from p. 36. For information on the electrical connection, see the "Electrical installation" section from p. 44.



Dimensions

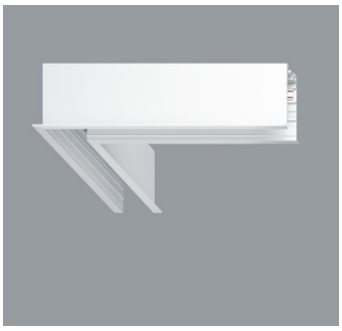


ERCO Invia 48V Planning Aid

Covered recessed mounting

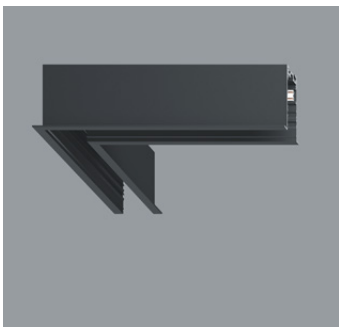
Product variants

300mm
1800mm



300 x 300mm

300mm
1800mm



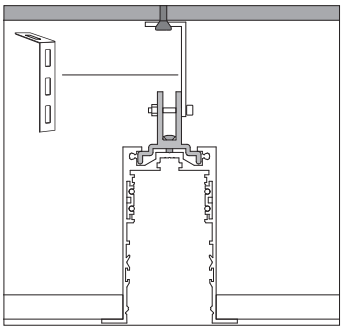
300 x 300mm

ERCO Invia 48V Planning Aid

Covered recessed mounting

What should be considered during planning and installation

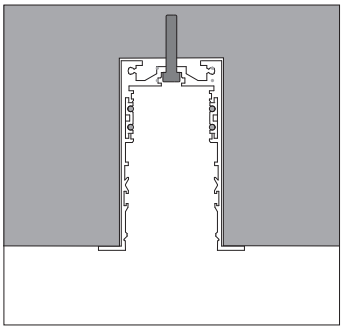
Suspended mounting in grid ceilings or system ceilings



For suspended mounting, you can use on-site suspensions, such as the slotted bracket shown, and conveniently fix these to the Invia profile using suspensions from the ERCO accessories. It is important here that the connection is as rigid as possible so that the system does not move when you install luminaires or the mounting kit for Minirail 48V.
In principle, you can also use wire rope suspensions – but it must hold the profile in place with a raised ceiling panel.

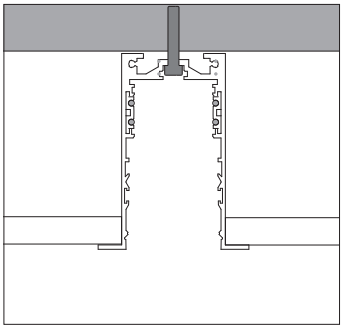
You can place the ceiling panel on the support provided for this purpose – the cut edges of the ceiling panels are not visible.
Required material:
- On-site suspension (e.g. the slotted bracket shown)
- ERCO joint connector or suspension

Direct mounting in exposed concrete ceilings



Attach a suitable square profile made of dimensionally stable and pressure-resistant material to the formwork. It is recommended to provide a small joint between the profile and the ceiling opening.
Be sure to coordinate with the concrete construction.
After removing the formwork and after finishing, you can mount the profile directly in the ceiling opening.

Mounting in ceilings made of other materials or retroactively created ceiling openings

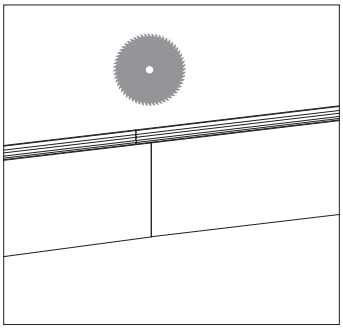


The Invia covered recessed installation profile is also suitable for retroactively created ceiling openings. The flanges reliably cover irregularities of up to 9mm at the edges of the ceiling openings. The exact procedure depends on the material and type of ceiling.

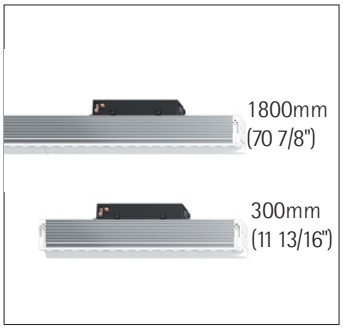
ERCO Invia 48V Planning Aid

Recessed mounting

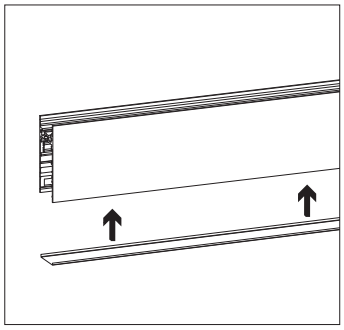
General planning and installation information



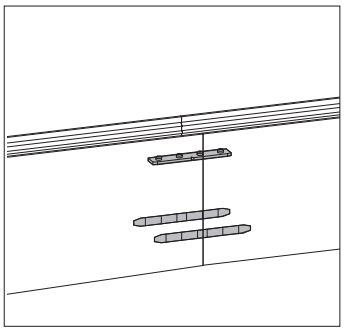
Shortening Invia profiles
You can order Invia 48V profiles cut to size. In many cases however it is advisable to shorten standard lengths directly on site, e.g. with a mitre saw. Make the cut square and clean so that there are no unsightly gaps at the joints.



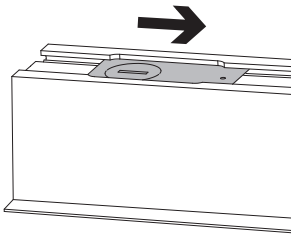
Please note that luminaires are only available in 300mm (11 13/16") and 1800mm (70 7/8") lengths. If you want a seamless light line up to the end of the profile, keep to the 300mm (11 13/16") grid when shortening the profile.



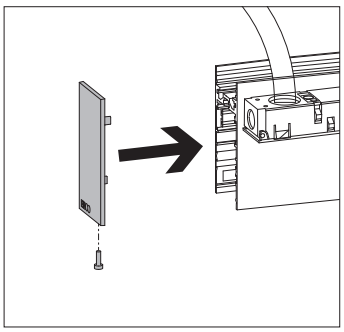
Fitting covers
Parts of the profiles not equipped with luminaires can be closed with the cover. Covers can be cut to size on site with a saw suitable for plastic.



Connecting Invia 48V profiles
For secure connecting of two profiles, the 3-part mechanical connector is available (included in the scope of delivery of the profile). The centre piece ensures a firm and loadable connection of the profiles with 4 screws and the two side pieces ensure that the flanges of the profile are always aligned.



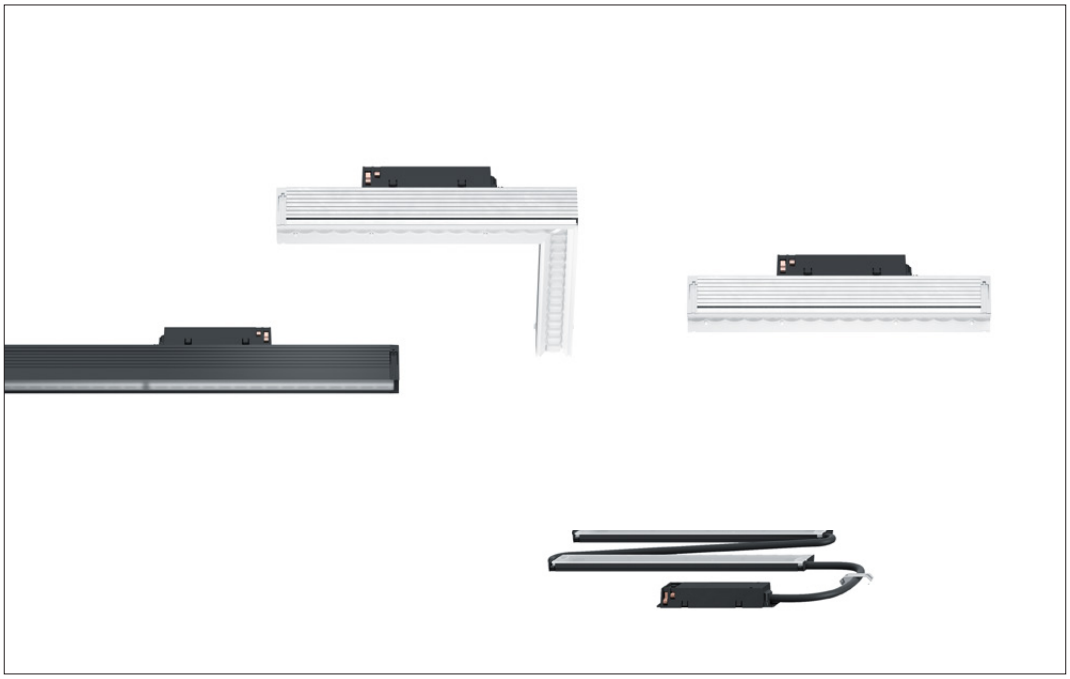
Insert the connection cables into the profile
The linear Invia profiles for ceiling surface-mounting have a large opening of approx. 30x41mm (1 3/16" x 1 10/16") that can be closed with a sliding cover. The cover contains a pre-cut opening, which can be broken out with a screwdriver if necessary. Here you can mount a conduit.
If the position of the opening does not fit, you can drill an additional hole for the cable entry anywhere on the profile..



Using end plates
Always fit end plates to the open ends of Invia profiles for safety reasons and also for visual reasons.
This also prevents filler or paint from penetrating the profile from the side.

ERCO Invia 48V Planning Aid

Invia 48V luminaires



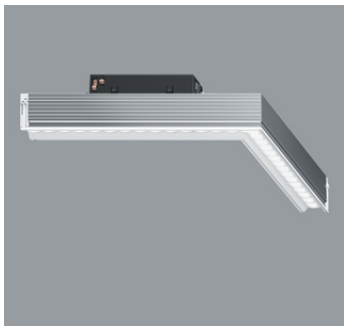
ERCO Invia 48V Planning Aid

Luminaires for Invia (overview)

Invia 48V downlights

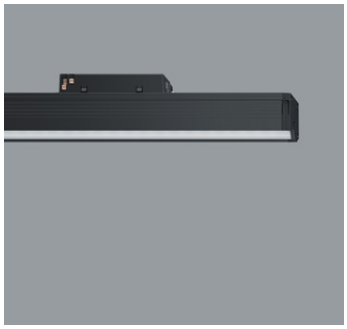
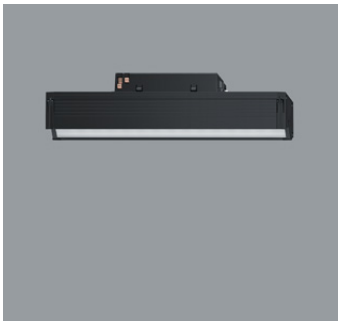
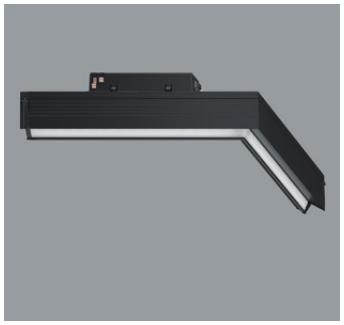
The downlights are suitable for general lighting, illuminating office workstations and circulation routes. You can choose between distributions with approx. 70° and 90° beam angles as well as UGR<19 variants. Diffuse distribution is also available.
Sizes: linear luminaire with 1800mm (70 7/8") or 300mm (11 13/16"); corner luminaire with 300 x 300mm (11 13/16" x 11 13/16")





Invia 48V wallwashers

Wallwashers are luminaires with specific wallwash distribution for uniform illumination of vertical surfaces. Invia 48V wallwashers feature particularly uniform lighting, making them ideal for Human Centric Lighting (HCL) concepts.
Sizes: linear luminaire with 1800mm (70 7/8") or 300mm (11 13/16"); corner luminaire with 300 x 300mm (11 13/16" x 11 13/16")

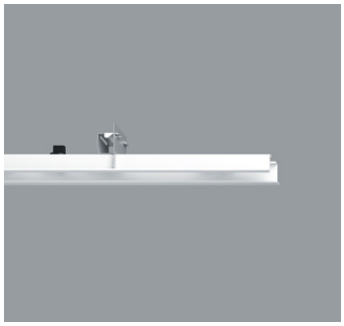
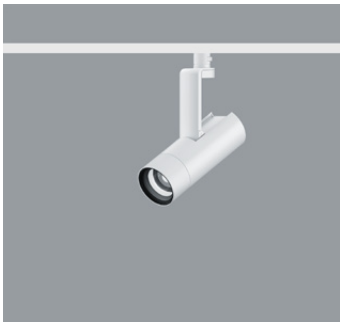




Invia 48V uplights

The uplights with diffuse distribution towards the ceiling reduce contrasts in the room and are therefore suitable for e.g. museums and offices.
Furthermore, specially designed ceilings, vaulted ceilings or ceiling paintings can also be illuminated in this way.
Sizes: 3-part luminaire for 1800mm (70 7/8") profile

Minirail 48V luminaires

The mounting kit for Minirail 48V track also allows you to install 48V spotlights in your Invia system.
Size: 900mm (35 7/16")

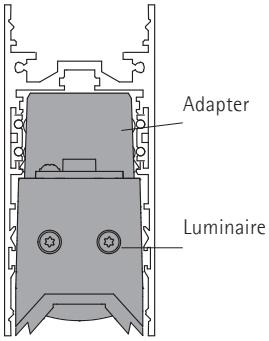



Example Uniscan

ERCO Invia 48V Planning Aid

Downlight 70° / 90° / diffuse

Overview



Available lengths

linear 1800mm (70 7/8")

linear 300mm (11 13/16")

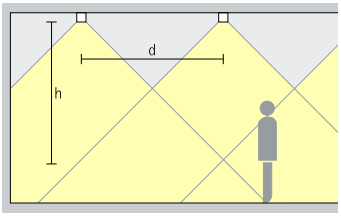
Corner 300x300mm (11 13/16" x 11 13/16")

Variants
All luminaires are available with wide flood 70°, extra wide flood 90° and diffuse distributions. Luminaires with wide flood 70° are also available as a variant with UGR<19.

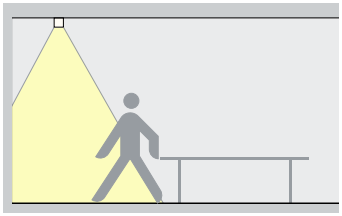
Light colours
All Invia luminaires are available with light colours 2700K, 3000K, 3500K and 4000K. Variants with tunable white from 2700-6500K complement the monochromatic luminaires.

Mounting
You insert Invia 48V luminaires into the profile without tools. You can remove the luminaires from the profile in no time at all using the disassembly lever (supplied) to simply mount them at another fixing location.

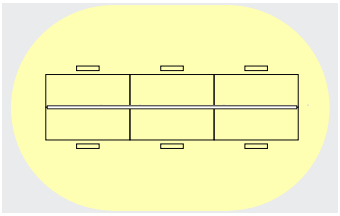
Notes on planning



General lighting
For the most uniform lighting possible, ideally perform a calculation using lighting design software.
The luminaires with wide flood (approx. 70°) distribution in high-output versions are particularly suited for higher ceilings, whereas extra wide flood (approx. 90°) distributions are well suited for lower ceilings.



Circulation routes / alignment in the room
Select diffuse distribution here and position the luminaire centrally above the circulation routes.

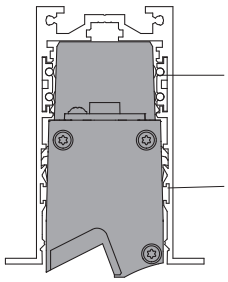


Office workstations
The luminaires with a beam angle of approx. 70° and UGR<19 in combination with the Invia uplight are particularly suitable here.
For optimum illumination of office workstations, it is recommended to position the Invia profiles centred on the longitudinal axis of the desks.

ERCO Invia 48V Planning Aid

Wallwasher

Overview



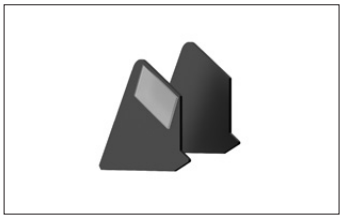
Light colours
All Invia luminaires are available with light colours 2700K, 3000K, 3500K and 4000K. Variants with tunable white from 2700-6500K complement the monochromatic luminaires.

Versions

linear 1800mm
(70 7/8")

linear 300mm
(11 13/16")

Corner
300x300mm
(11 13/16" x 11 13/16")
(only for inside corners)

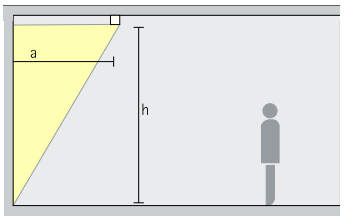


Shields
Depending on the material and surface of the ceiling, recessed profiles may cause streaks on the ceiling in unfavourable cases. To prevent this, you can attach the separately available shields to the outer ends of the luminaire or continuous line.

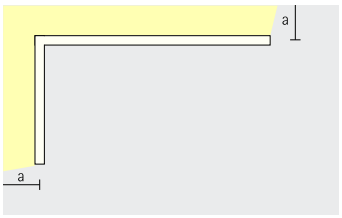
ERCO Invia 48V Planning Aid

Wallwasher

Notes on planning



Positioning
The distance between Invia wallwashers and the wall should be approximately 0.4 times the room height. Plan the luminaires as a continuous line without gaps.
It is advisable to plan the luminaires with suitable lighting design software. When planning, take into account that the luminaires cannot be shortened. They are only available in lengths of 300mm (11 13/16") and 1800mm (70 7/8") (linear) and 300x300mm (11 13/16" x 11 13/16") (corner).



Corner wallwasher
Corner wallwashers are designed only for inside corners.
For good uniformity, it is particularly important that the distances to the wall are always identical and that the wall distance is within the specified range. With a room height of 3.00m (10ft), a wall distance of approx. 1.20m (4ft) is recommended.

Illuminance

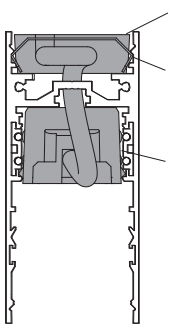
Invia 48V wallwasher
Example: system length 29.5ft (5 luminaires)

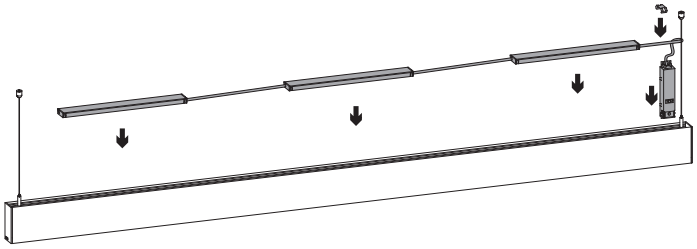
Wall height (ft)	**10.0**	**13.0**	**20.0**
Offset from wall (ft)	4.0	5.2	8
Mean illuminance (ftcd)	34	29	17
18.0	-	-	13
16.0	-	-	21
14.0	-	-	24
12.0	-	17	23
10.0	-	37	19
8.0	48	38	15
6.0	52	30	12
4.0	34	20	8
2.0	21	14	6

ERCO Invia 48V Planning Aid

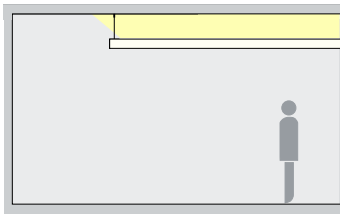
Uplight

Overview

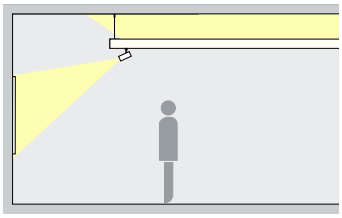




Notes on planning



Positioning
You can only mount the luminaire in the suspended 1800mm long Invia 48V surface-mounted profile. Reducing the number of connected luminaires is not possible on site. The luminaire consists of 3 interconnected single luminaires that you insert evenly distributed into the profile.
For optimal light distribution, the distance to the ceiling should be around 500mm (20"). Smaller distances are detrimental to the uniformity and larger distances lead to lower illuminances.



Exhibitions and galleries
Supplement your Invia continuous line system with uplights and Minirail 48V spotlights.
Uplights lower the room contrasts and brighten the ceiling, and Minirail 48V spotlights ideally illuminate objects.

.

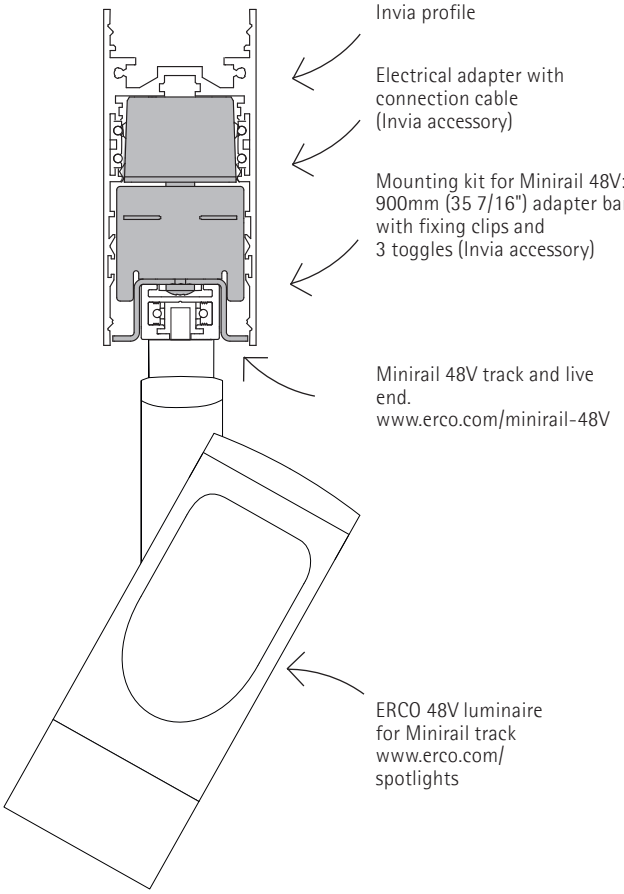
Light colours
All Invia luminaires are available with light colours 2700K, 3000K, 3500K and 4000K. Variants with tunable white from 2700-6500K complement the monochromatic luminaires.

ERCO Invia 48V Planning Aid

Minirail 48V luminaires

Overview

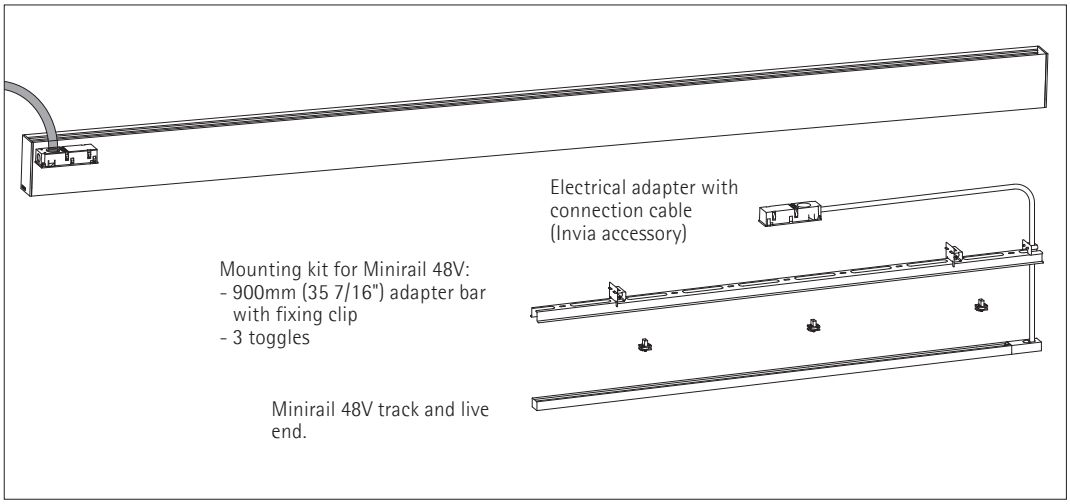
The mounting kit for Minirail 48V enables you to integrate Minirail 48V luminaires into your Invia system.
The mounting kit fits all Invia profiles.



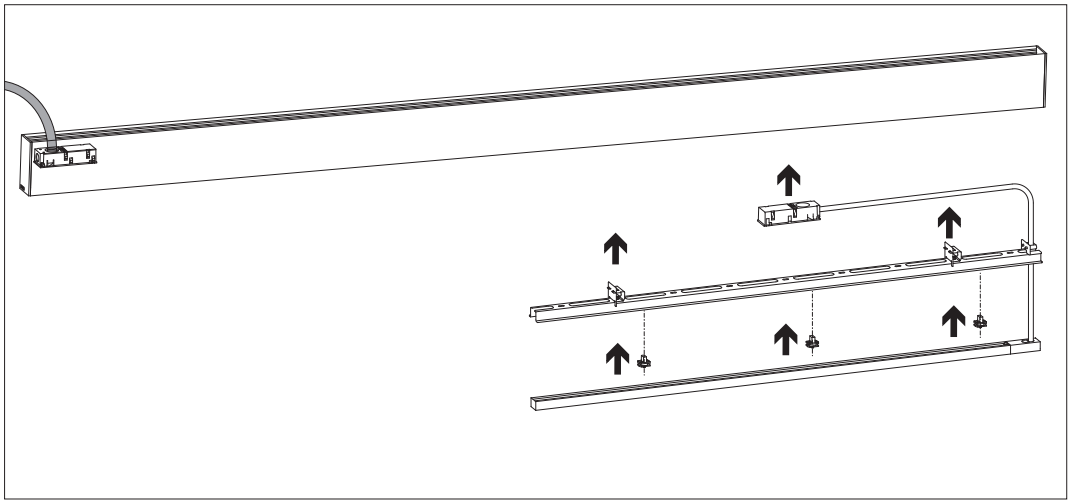
ERCO Invia 48V Planning Aid

Minirail 48V luminaires

Minirail 48V mounting kit
Components



Notes on installation



Which components are needed for installing a Minirail track in the Invia profile?
1x Minirail 48V mounting kit
1x electrical adapter with connection cable
1x Minirail 48V track (specify separately at erco.com/minirail-48V)
1x Minirail 48V live end (accessory for Minirail 48V track; see datasheet for Minirail 48V track)

Installation steps
Shorten the Minirail 48V track, taking into account the necessary live end. These are the steps*:
1. Drill 5mm holes in the Minirail 48V track (3/m).
2. Connect the lead of the electrical adapter to the Minirail 48V live end.
3. Click the adapter into the Invia profile at the desired position.
4. Click the adapter bar into the Invia profile at the desired position.
5. Fix the live end to the Minirail track.
6. Fix the track to the adapter bar with the toggles.
7. Insert ERCO 48V spotlights.

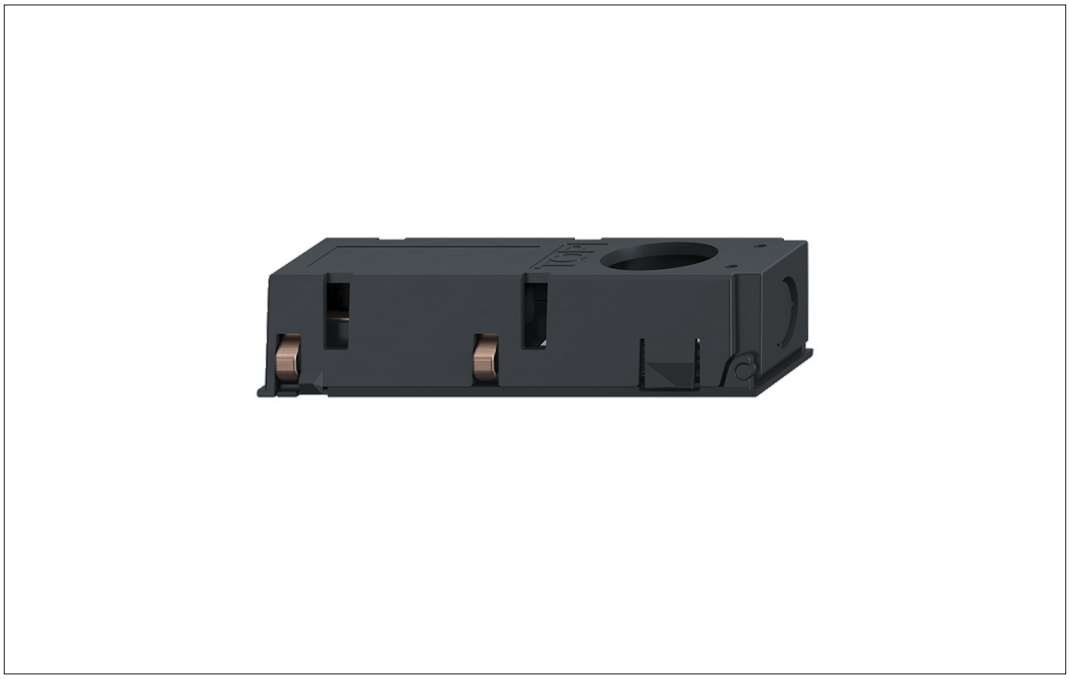
* Observe the installation instructions of the components used.

Mounting planning
You can also retroactively install the mounting kit for Minirail 48V in an Invia system.
The mounting kit for Minirail 48V consists of the adapter bar (length 900mm/35 7/16") and 3 toggles for fixing the Minirail 48V track.
If you require a longer length, order a further mounting kit and run the Minirail 48V track over both adapter bars without interruption.

Electrical control
You can switch the installed luminaires via the Invia continuous line or, if the luminaires support it, control them via Casambi Bluetooth. The DALI signal cannot be used for Minirail 48V.

ERCO Invia 48V Planning Aid

Electrical installation



ERCO Invia 48V Planning Aid

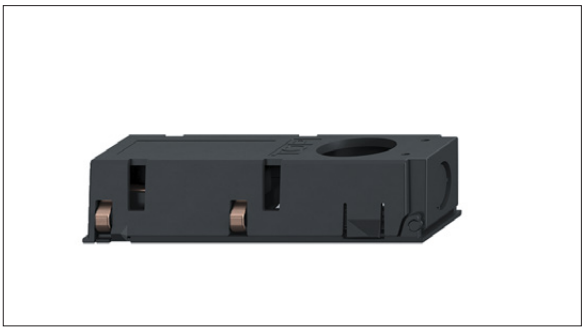
Electrical installation

This section provides information on the following points:

Electrical accessories
- Electrical connectors
- Power supply units
- ERCO DALI connector
- Casambi-DALI gateway

Integration of Casambi Bluetooth-controllable 48V spotlights
- DALI-Casambi gateway

Planning and installation
- Switchable system
- DALI controllable system
- Casambi Bluetooth-controllable system



Control	Circuits
Switchable	1
DALI	64 addresses (analogue to the DALI bus)
Casambi Bluetooth via Casambi DALI gateway	4 addresses (analogue to the DALI bus)

ERCO Invia 48V Planning Aid

Electrical installation – accessories

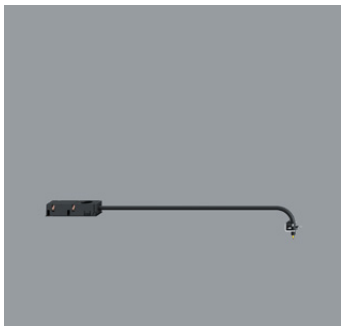
Electrical connectors
Suspension
Power supply units

Electrical connector
The electrical connector is a universally applicable accessory. Use it for power-feeding your Invia system or for the simple and tool-free electrical connection of two profiles.

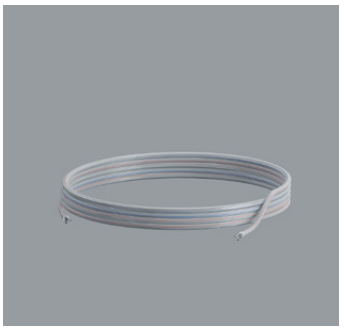
Pendant tube suspensions and wire rope suspensions with canopy
Suspensions with canopies allow easy connection of a suspended Invia system. Suspensions with canopies are available with mounting plate.

Power supply units
Invia 48V uses the same power supply units as Minirail 48V.

Electrical adapters
Connection cable



Electrical adapter for Minirail 48V
This accessory enables the easy connection of an optional Invia mountable Minirail 48V track.



Connection cable
For pendant suspension, we recommend the 4x16AWG connecting cable (L=2500mm - 98 7/16") with a diameter of only 7.6mm - 5/16"

ERCO Invia 48V Planning Aid

Electrical installation – accessories

ERCO DALI connector, Casambi DALI gateway

ERCO DALI connector
The Invia light structure is a safety class III system. For this reason, Invia may only be operated with safety extra-low voltage.
DALI control lines do not carry safety extra-low voltage and must therefore be treated and installed like mains voltage cables. They must therefore never be connected directly to the Invia system!
In order to still control an Invia light structure via DALI, the DA control lines must be routed via the "ERCO DALI connector" accessory. This prevents dangerous voltages from entering the system.
The incoming contacts of the DALI connector are marked "DA" as usual. The outgoing contacts and the corresponding contacts of the electrical connector are marked "SD". The ERCO DALI connector is supplied with voltage via the 48V DC supply of the power supply unit. The connection is ideally made in or on the 48V power supply unit so that the 48V operating voltage as well as the "SD" conductors can be brought to the Invia system via the 4-core termination cable (accessory).

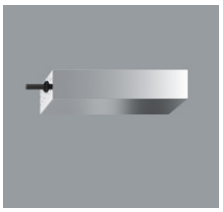
Casambi DALI gateway
The Invia system can also be controlled wirelessly via the Casambi DALI gateway. The gateway requires its own mains connection for supply voltage of the DALI bus.
Please note that the "ERCO DALI connector" accessory must also be connected here between the gateway and the Invia system.
The gateway has 4 channels that can be used differently depending on the type of luminaire.

Monochrome luminaires
The Casambi DALI gateway supports up to 4 separate DALI groups. A broadcast is also possible. If necessary, group your luminaires.

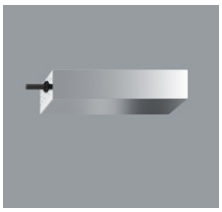
Tunable White
For luminaires with tunable white, one channel is used for the colour setting of all luminaires. With the remaining addresses, you can dim up to 3 separate DALI groups separately.

ERCO Invia 48V Planning Aid

Specifying a suitable power supply unit



96W 13975.023



96W (13976.024)

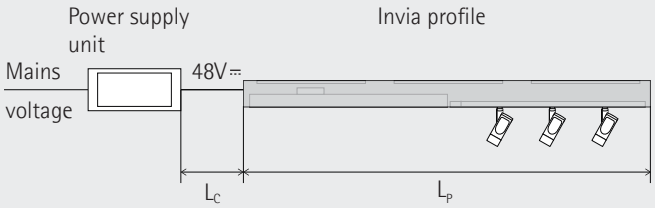
96W (13966.023 white)
96W (13967.023 black)

Depending on the installation situation and supply voltage, different Class 2 power supply units are available. The recessed versions have a temperature sensor and are suitable for 120V or 277V depending on the version.
The surface-mount version can be connected to 120V and 277V networks. For fire protection reasons the surface-mount version is not permitted to be installed e.g. in the ceiling. Always observe local regulations and the installation instructions of the power supply units.

Features of the available power supply units

Power Art. No.	120V/277V	Through-wiring	Short circuit proof	Thermal protection	Recessed mounting	Surface mounting
96W 13975.023	●/-	●	●	●	●	-
96W 13976.024	-/ ●	●	●	●	●	-
96W 13966.023 13967.023	●/●	●	●	-	-	●

Installation



The maximum length of the connection cable from the power supply unit to the Invia profile depends on:
- the power supply unit
- the cross section of the connection cable L_C
- the length of the track L_P

See the table for specific values for your application. The cross-sections should not be fallen below, otherwise the voltage drop may be so great that the connected luminaires will not function properly.

Maximum lengths of supply cable and Invia profiles

ERCO Power supply unit 96W	Length of profiles L_P (max.)	Maximum length of supply cable L_C for cable cross section AWG 14 / 2.5mm²	AWG 16 / 1.5mm²	AWG 18 / 1.0mm²
13975.023 13976.024 13966.023 13967.023	70ft / 20m	200ft / 60m	100ft / 30m	65ft / 20m

Depending on the arrangement of power supply units, length of the Invia profile L_P and the cross section of the supply cores, the maximum length of the supply cable L_C to the Invia profile will change. This table helps with initial planning – a professional check during the project is mandatory.

ERCO Invia 48V Planning Aid

Electrical installation – planning power supply units

Checking the amount of luminaires per power supply unit

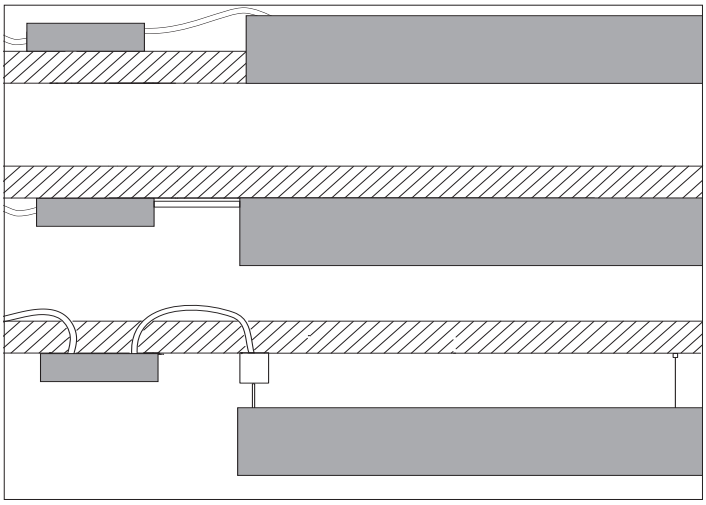
To gain an overview of how many luminaires can be operated on one 96W power supply unit, please refer to the adjacent table

Light distribution (power consumption)	Luminaires (quantity)	Length of light structure
Wide flood (UGR<19) (17.3W)	5	9m (17ft 9")
Wide flood Extra wide flood (26.7W)	3	5.4m (11ft 10")
Diffus (8.5W)	10	14.4m (47ft 3")
Wallwash (30W)	2	3.6m (11ft 10")

The connected load refers to luminaires of 1800mm (70 7/8") length and a light colour of 4000K / CRI 82 / switchable. The specified maximum number of luminaires already includes the tolerance of 10%.

Example calculation for diffuse distribution luminaires each with length 1800mm (70 7/8"):
1. 8.5W +10% = 9.4W
2. 96W: 9.4W = 10.21 luminaires
3. 10 pcs. x 1800mm (70 7/8") = 14.4m (47ft 3") continuous line length
You can connect 10 diffuse distribution luminaires of 1800mm (70 7/8") to a 96W power supply unit and thus achieve a system length of 14.4m (47ft 3").

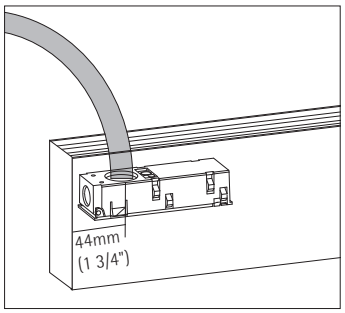
Installation location for power supply unit

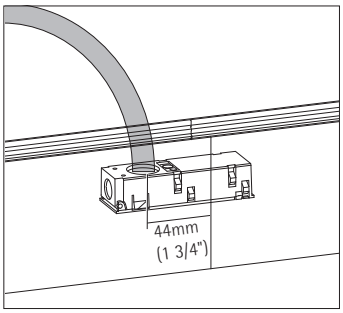


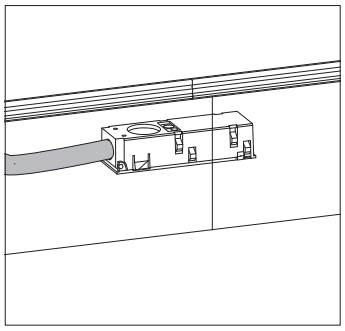
The installation location for the ERCO power supply unit must be complied with the following points:
- The location must be dry and the power supply unit should not be exposed to direct heat radiation, e.g., a heat source or the sun.
- Observe the maximum distances and cable cross sections between the power supply unit and the Minirail 48V track specified in the Installation section.
- Power supply units without thermal protection are not suitable for mounting in ceilings or closed display cases.
- Power supply units with thermal protection are suitable for operation in ceilings only.
- All power supply units must not be installed in a vertical orientation e.g., on a wall.

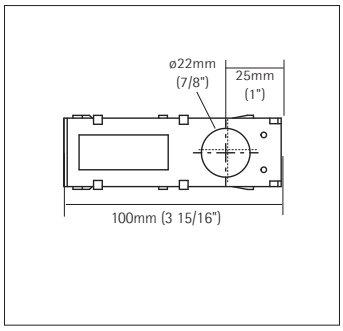
ERCO Invia 48V Planning Aid

Electrical installation – electrical connector



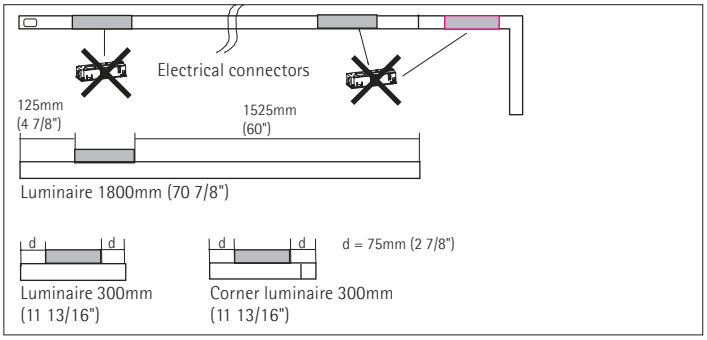


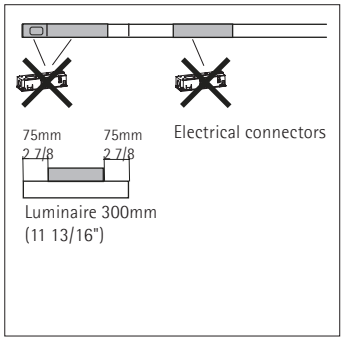




- Power feed is made via the "Electrical connector" accessory and can be made from above or on the front side.
- You can run the cable over the upper part of the profile when using the surface-mounted profile.
- If you are using a pendant tube suspension or a wire suspension with cable gland, the hole for the connection cable must be directly below the suspension. This will prevent the cable from kinking.
- Use the electrical connector also as a coupling for extending profiles or mounting corner profiles.
- Profiles for recessed mounting allow the insertion of a conduit.

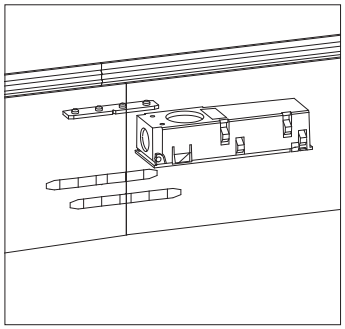
Mounting position

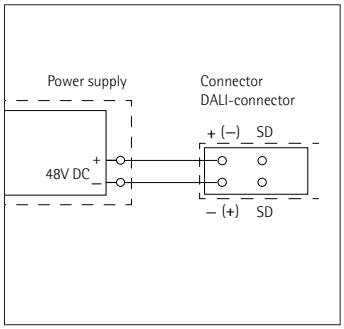


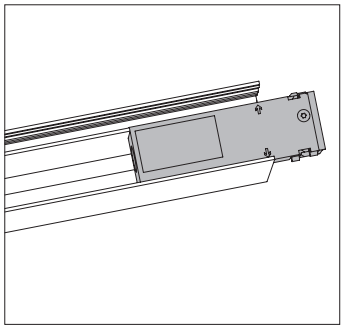


Mounting position
In principle, the electrical connectors and adapters can be plugged into the profile at any position. If luminaires are to be installed, the areas marked in grey must remain free, otherwise the luminaires cannot be mounted in the desired position.

The 300mm luminaire and the electrical connector cannot be plugged into the same end of an Invia system.







Galvanic isolation
If you want to use several power supply units or avoid ring topologies in DALI systems, you must galvanically isolate the system at a junction. To do this, leave out the electrical connector at a joint, and if necessary, feed in again behind the joint.

Polarity
Although it is a DC system, there is no polarity to be observed with electrical connectors. Invia 48V luminaires automatically adjust to the polarity applied.

Exceptions
- Observe the polarity of the DALI connector.

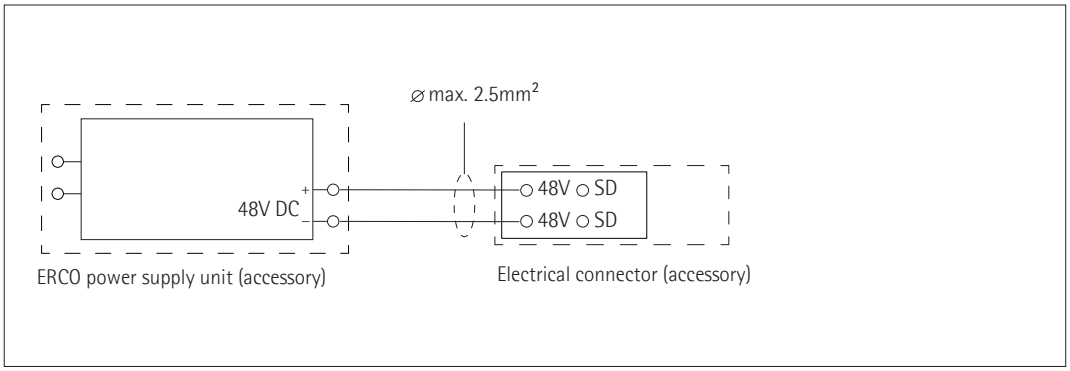
Joint
Insert the electrical connector into the profile at the joint, observing the arrow marking on the cover.

ERCO Invia 48V Planning Aid

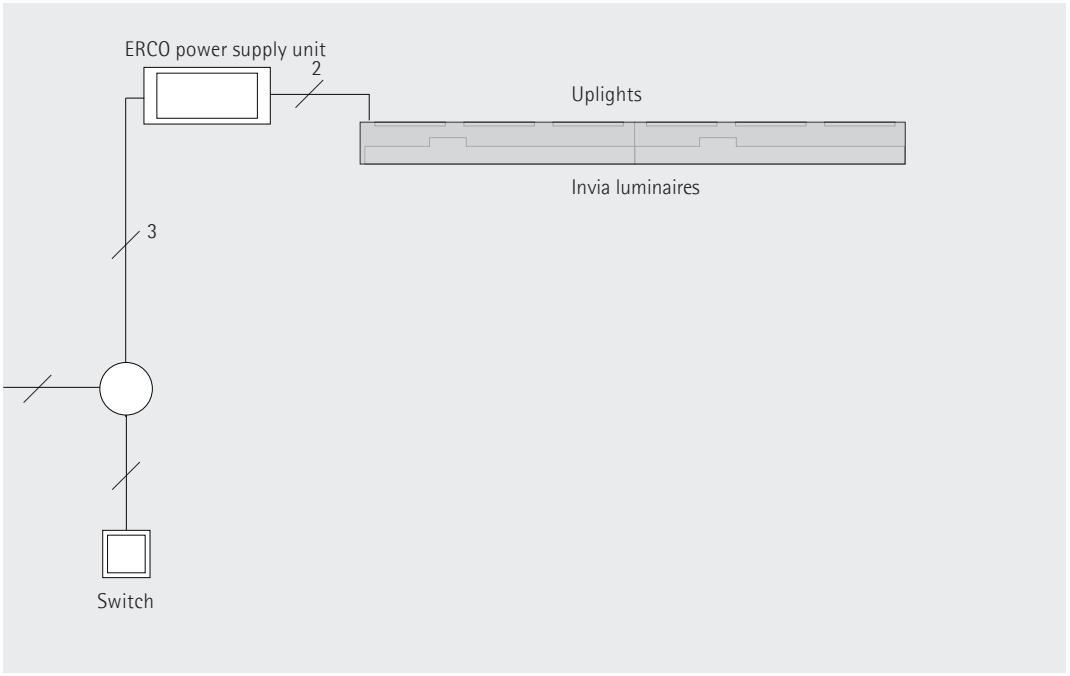
Electrical installation – planning the system

Switchable Invia systems
This section provides basic information on the electrical connection of a switchable Invia system.

Wiring diagram



Installation



Notes on installation:
- Take into account the maximum wattage of the power supply unit and luminaires operated in the Invia profile.
- Please note that only one common circuit is possible with this type of installation. Dimmers cannot be used.
- Document the system carefully to help with subsequent extensions or changes in the luminaire configuration.
- The wiring shown above is only intended as an example.

ERCO Invia 48V Planning Aid

Electrical installation – planning the system

DALI switchable Invia systems
This section provides basic information on the electrical connection of a DALI controllable system

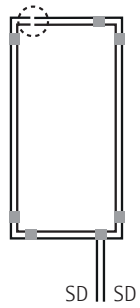
DALI

Which DALI system is suitable?

In principle, you can use any DALI system. Make sure that the DALI system used must provide a supply voltage for the DALI bus.

What should be considered?

Similar to the "DA" conductors in DALI control systems, the "SD" conductors in Invia 48V systems must not form electrically closed circuits, otherwise operating faults may occur. For this reason, disconnect a closed SD circuit at a connection point, e.g. by omitting the electrical connector at a joint (as shown on right).



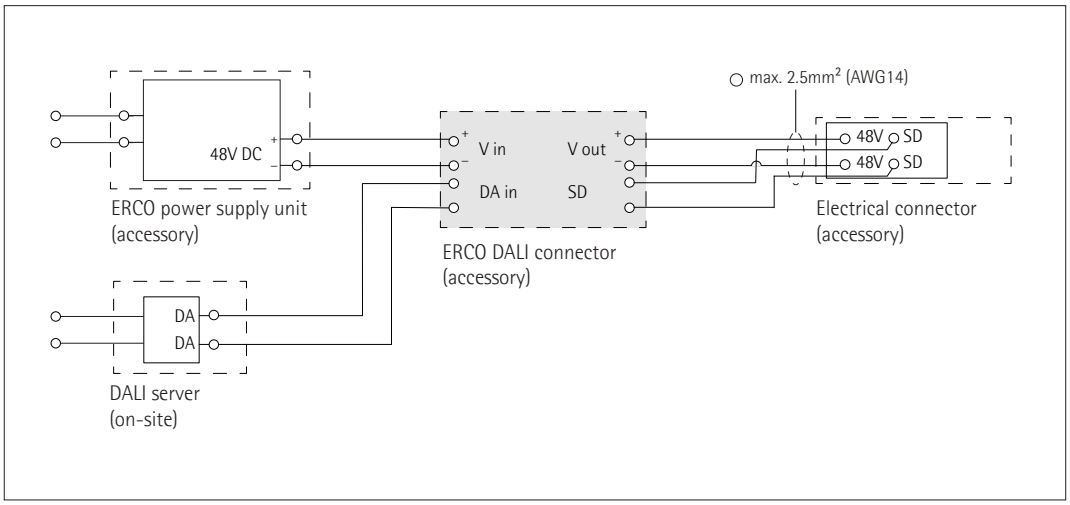
ERCO Invia 48V Planning Aid

Electrical installation – planning the system

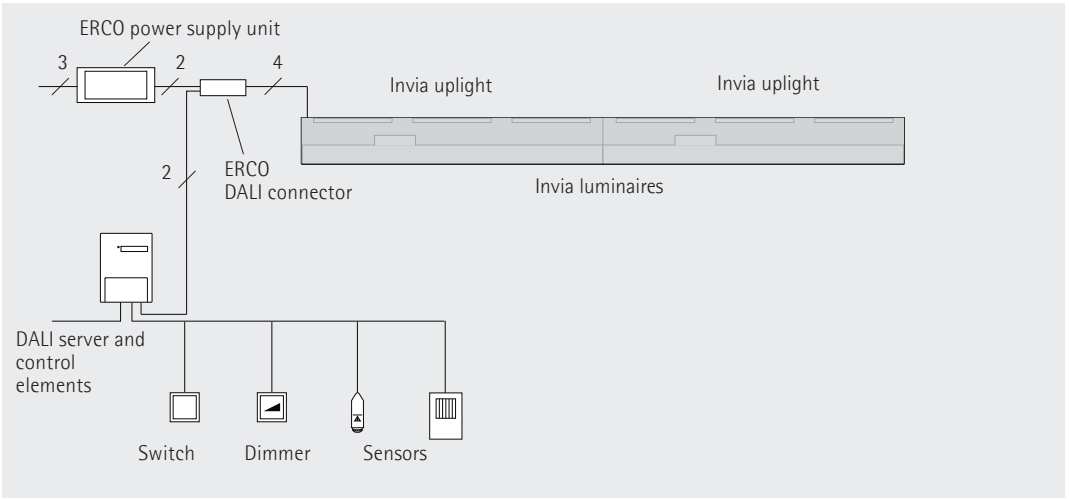
DALI controllable Invia systems

DALI

Wiring diagram



Installation



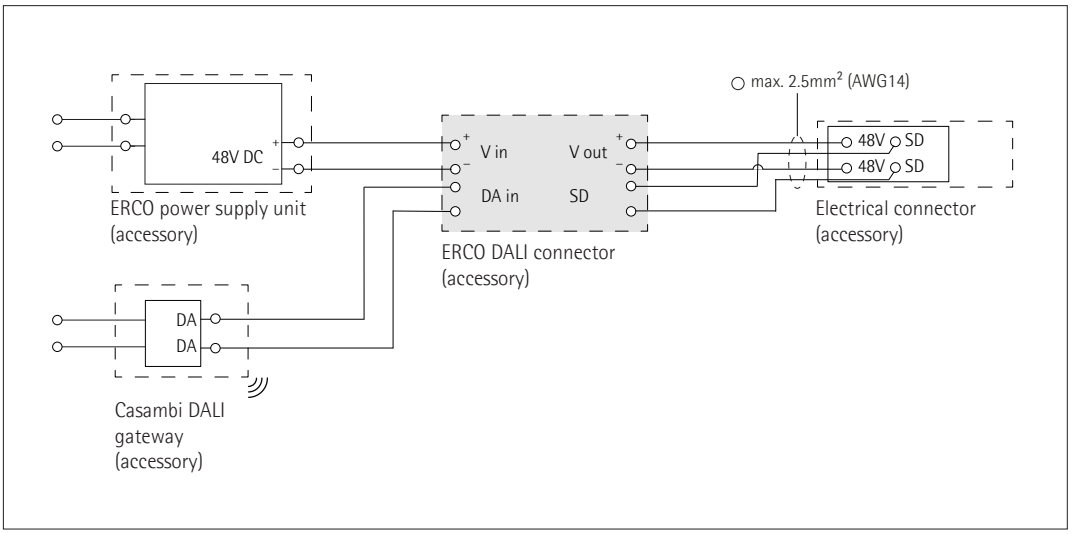
Notes on installation:
- Take into account the maximum wattage of the power supply unit and luminaires operated in the Invia profile.
- The cables to the power supply unit and to the ERCO DALI connector must be suitable for mains voltage.
- Document the system carefully to help with subsequent extensions or changes in the luminaire configuration.
- The drawing is only intended as an example. You can control Invia via all common DALI systems with bus supply in the electrical installation as long as you connect the DALI connector between your DALI system and Invia.

ERCO Invia 48V Planning Aid

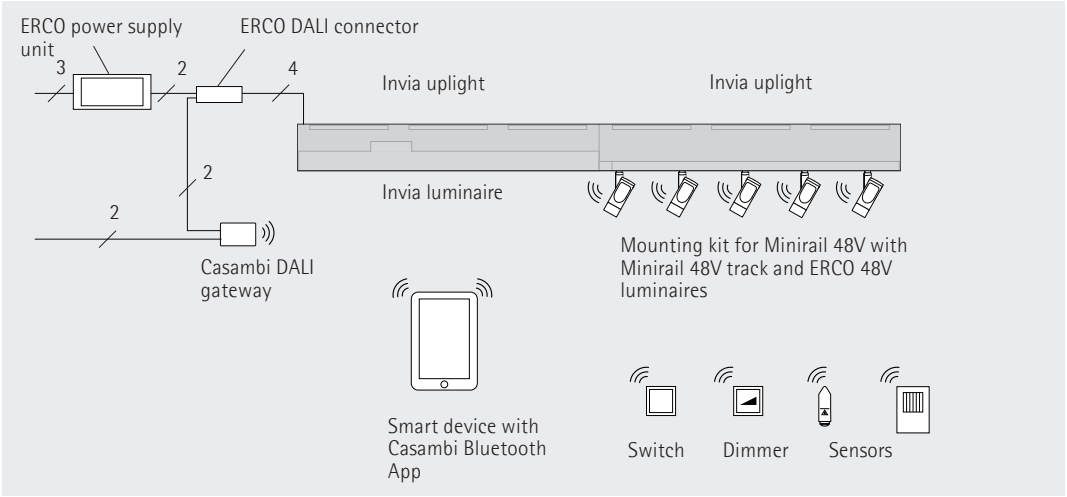
Electrical installation – planning the system

Casambi Bluetooth controllable Invia systems

Wiring diagram



Installation



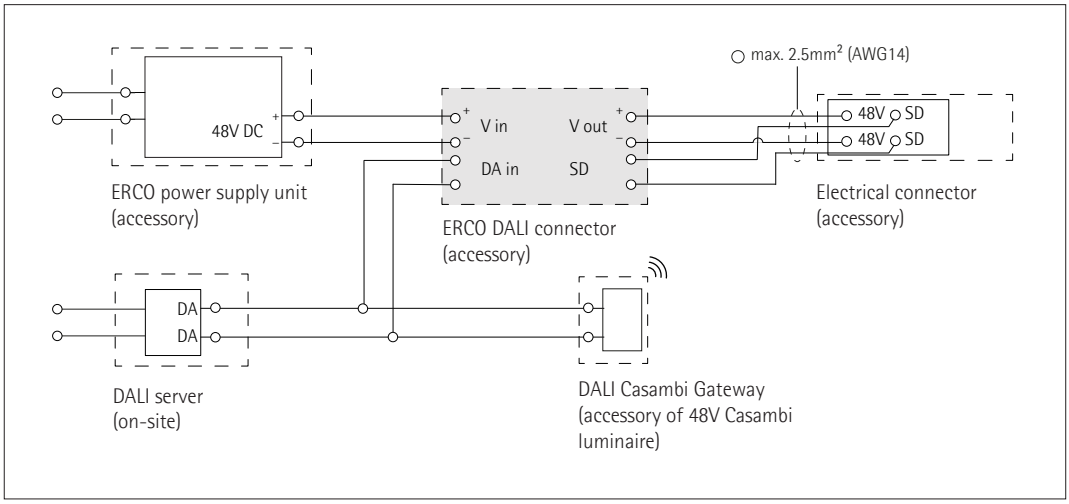
Notes on installation:

- Take into account the maximum wattage of the power supply unit and the maximum load of the Invia profile.
- The cables to the power supply unit and to the ERCO DALI connector must be suitable for mains voltage.
- The Casambi DALI gateway is necessary if you only want to control the complete system by radio signal. The gateway functions here like a DALI system and must also be connected to the mains voltage.
- Document the system carefully to help with subsequent extensions or changes in the luminaire configuration.
- The drawing is only intended as an example.

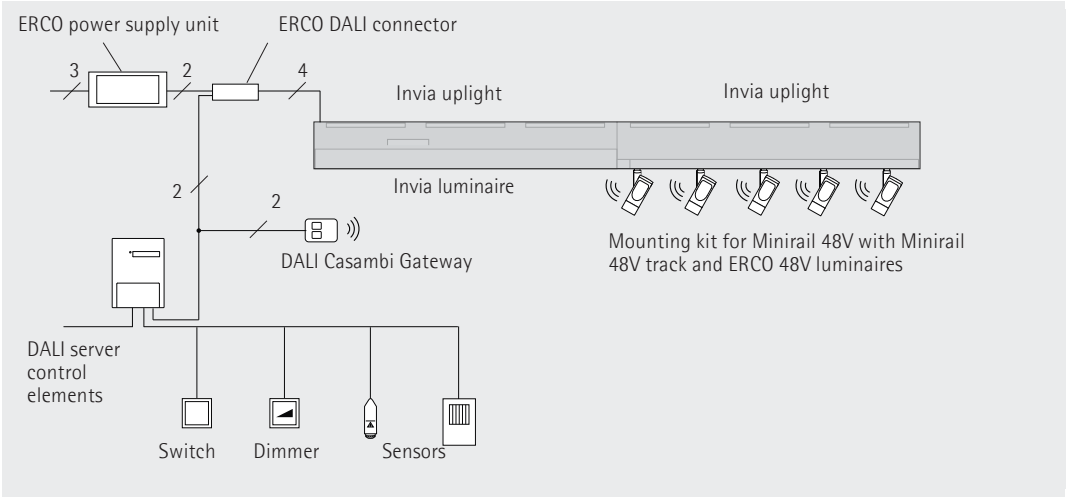
ERCO Invia 48V Planning Aid

**DALI controllable Invia systems
with integration of Minirail 48V with Casambi Bluetooth
controllable luminaires**

Wiring diagram



Installation

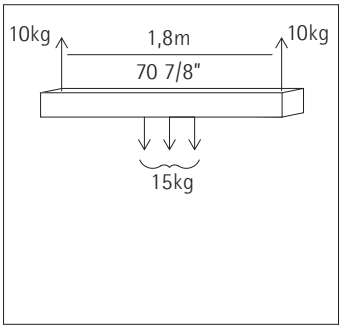


Notes on installation:
- Take into account the maximum wattage of the power supply unit and luminaires operated in the Invia profile.
- The cables to the power supply unit and to the ERCO DALI connector must be suitable for mains voltage.
- Document the system carefully to help with subsequent extensions or changes in the luminaire configuration.
- The drawing is only intended as an example. You can control Invia via all common DALI systems with bus supply in the electrical installation as long as you connect the DALI connector between your DALI system and Invia.
- For integrating Casambi luminaires, in addition to the Minirail mounting kit and electrical adapter you also need the DALI Casambi gateway from the accessories range of the 48V luminaires with Casambi Bluetooth.

ERCO Invia 48V Planning Aid

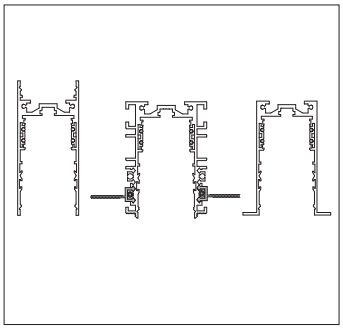
Static load

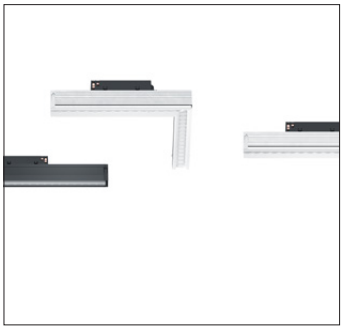
When planning an Invia 48V system, the static load of the system must also be considered. As long as only Invia luminaires are used, 2 fixings per 1800mm (70 7/8") of profile are sufficient. Corner profiles are connected to the linear profiles via mechanical connectors and only require their own fixing if they form the end of the system.
If you plan to use Minirail 48V spotlights, it makes sense to check the static situation and possibly fix at additional points.



ERCO Invia 48V Planning Aid

Appendix: the ERCO Invia system





Profiles for ceiling recessing, surface-mounting and suspending

Profiles for different mounting types
The Invia 48V surface-mounted profile can be mounted directly on ceilings or grids. With the appropriate accessories, the surface-mounted profile is also suitable for suspended mounting.
The covered recessed profile with flanges for acoustic panels and ceiling tiles is ideal for mounting in suspended ceilings. The flush recessed profile is particularly suitable for drywall ceilings.

Luminaires for different applications

General lighting, wallwashing and task lighting with high visual comfort
Integrate luminaires into the architecture to perfection with Invia 48V. Luminaires that blend completely into the profile create a continuous band of light, following the lines of the architecture.

Accessories for installation and extension of the system

For simple installation, light control and mounting of Minirail 48V luminaires
Extensive electrical and mechanical accessories enable the system to be adapted to all mounting situations and lighting controls.

Profiles		Luminaires		Accessories
Versions each as linear profile and as corner profile Surface-mounted profile Covered recessed profile Flush recessed profile		**Components** Downlight diffuse Downlight wide flood Downlight extra wide flood	Wallwasher Uplight Spotlight for Minirail 48V (with accessories)	**Electrical** Power supply units 96W for recessed and for surface 120 / 277V Electrical connector Connection cable 4x2.5mm² (4 x 14 AWG) DALI connector Casambi DALI gateway
Types of mounting Recessed Recessing in system ceiling Surface-mounted Pendant		**Light colours** 2700K CRI 92 3000K CRI 82 3000K CRI 92 3500K CRI 92	4000K CRI 82 4000K CRI 92 Tunable white with 2700-6500K	**Hardware** Suspension accessories (pendant tube, wire rope suspensions with / without canopy) End plates Cover
Dimensions (cross section) Profile Covered recessed profile Flush recessed profile (= recess depth)	43 x 94mm (1 11/16" x 3 11/16") 62 x 79mm (2 7/16" x 3 1/8") 56 x 81mm (2 3/16" x 3 3/16")			**Minirail 48V** Mounting kit for Minirail 48V track Electrical adapter for Minirail 48V
Dimensions (length) Linear profile Corner profile	1800mm (70 7/8") (can be shortened) 300 x 300mm (11 13/16" x 11 13/16")	**Length** **Downlights, wall washers** 1800mm (70 7/8") 300 x 300mm (11 13/16" x 11 13/16") **Uplight** 3 x 330mm (13") module for 1800mm (70 7/8") profile		**Length** **Connection cable** 2500mm (98 7/16") **Mounting kit for Minirail 48V** 900mm (35 7/16")
Control options Switchable DALI Casambi Bluetooth (via gateway)		**Control options** Switchable DALI Casambi Bluetooth (via gateway)		
Colours White Black Silver		**Colour of anti-glare element** White Black		**Colour** **Connection cable** transparent **Mounting kit for Minirail 48V** Black **Mounting accessories** White Black Silver

ERCO Invia 48V Planning Aid

Appendix: the ERCO Invia system - Accessories

Check the possible combinations of the Invia accessories in the adjacent diagram.