zehnder
always the best climate

**Always the best climate for**

# PLASTERBOARD MODULES

Heating and cooling ceiling systems from Zehnder for suspended ceilings and ceiling sails

## ALWAYS THE BEST CLIMATE

**“We strive to improve the quality of life by providing the finest indoor climate solutions.”**

**Excellent team**
Every day we combine passion, expert knowledge and commitment to give you the best results.

**Great solutions, products and services**
Great products and unique service for an energy-efficient, healthy and comfortable indoor climate.

**First choice for customers**
Always close to the needs of our customers, to grow with you and overcome all challenges together.

## WE ARE THE SPECIALISTS FOR A HEALTHY, COMFORTABLE AND ENERGY-EFFICIENT INDOOR CLIMATE

The broad and clearly structured portfolio from the Zehnder Group is split into four product lines. Consequently, we can provide our customers with the right product, perfect system and matching service for all types of projects – from new build to renovations, single or multi-occupancy homes, as well as commercial projects. This variety ensures that our wealth of experience is continuously expanding, providing tangible added value to our customers on a daily basis.

**Decorative radiators**
Our individual decorative radiators for living and bathrooms make a home not only warmer but also more attractive. Created by renowned designers, they impress with excellent functionality.

**Comfortable indoor ventilation**
Our comfortable indoor ventilation is energy-efficient and provides a healthy indoor climate. It promotes the wellbeing of the occupants and increases the value of the property.

**Heating and cooling ceiling systems**
Zehnder ceiling systems are convenient and energy-efficient for heating and cooling. They are perfectly attuned to the relevant environment.

**Clean air solutions**
Clean air systems from Zehnder reduce the level of dust in the air, create a healthier working environment and reduce the amount of cleaning required.

## OUR BRANDS REPRESENT INNOVATION, QUALITY AND DESIGN

zehnder

The Zehnder brand offers excellent indoor climate solutions within the product lines of decorative radiators, comfortable indoor ventilation, heating and cooling ceiling systems and clean air solutions.

runtal

LUFITAT

The Runtal brand develops and manufactures exclusive radiators combining innovative technologies with unique designs.

# Heating and cooling ceiling systems: the comprehensive carefree package

Compromises are often needed when a building needs to be heated or cooled: as energy costs rise, so do requirements for an optimum indoor climate. The heating and cooling ceiling systems from Zehnder offer a comfortable and energy-efficient solution. In addition to their aesthetically pleasing appearance and perfect fit, they impress with the following advantages:

- Very high heating and cooling performance
- Perforated version delivers acoustic insulation as well as acoustic absorption
- Comfortable indoor climate due to high proportion of radiation
- Short reaction time to temperature changes in the room
- Tailored ceiling system – maximum freedom of design
- Quick access to ceiling void
- Integration of functional elements (lights, smoke detectors, air outlets, etc.)

The heating and cooling ceiling systems from Zehnder offer maximum convenience and a highly energy-efficient solution for use in office buildings, schools, hospitals, public buildings and showrooms.

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# References that demonstrate our versatility

With over 60 years of experience, Zehnder is currently the largest manufacturer of heating and cooling ceiling systems in Europe. Tens of thousands of satisfied customers all over the world validate the quality of the systems built by Zehnder.

## 01 UNIVERSITY

TOWN/CITY Wuppertal, Germany
PROJECT TYPE University of Wuppertal

### REFERENCE DATA

**Requirement**

- Optimum building climate all year round
- Quiet lecture halls in which the walls have a low reverberation time

**Solution**

Heating and cooling ceilings with graphite activation were installed in order to retain the open room concept. The ceiling's perforated surface ensures a reduction of the noise level and reverberation time.

**Facts at a glance**

| | |
|---|---|
| Product: | Zehnder heating and cooling ceiling with graphite activation |
| Special features of design: | Perforated surface of the ceiling elements for sound absorption |
| Building footprint: | 5900 $m^2$ |
| Ceiling surface: | 1418 $m^2$ (rooms with heating and cooling ceiling systems) |
| Entire surface area of the products: | 380 $m^2$ |
| Thermal output of the entire object: | 59.6 kW |
| Cooling capacity of the entire object: | 31.9 kW |

You will find more references at:
**www.zehnder-systems.com**

Website / language

## 02 OFFICE BUILDING

TOWN/CITY Cologne, Germany
PROJECT TYPE Repucom, office building

### REFERENCE DATA

**Requirement**

- High system cooling capacity – without draught
- Energy-efficient
- Effective sound insulation
- Lighting options
- Individual adjustment of the ceiling to the uneven building structure

**Solution**

Flexible adjustment of the Zehnder plasterboard ceiling enabled optimum implementation of the requirements. Dimensioning work carried out by Zehnder on site also meant the system could be installed quickly and easily.

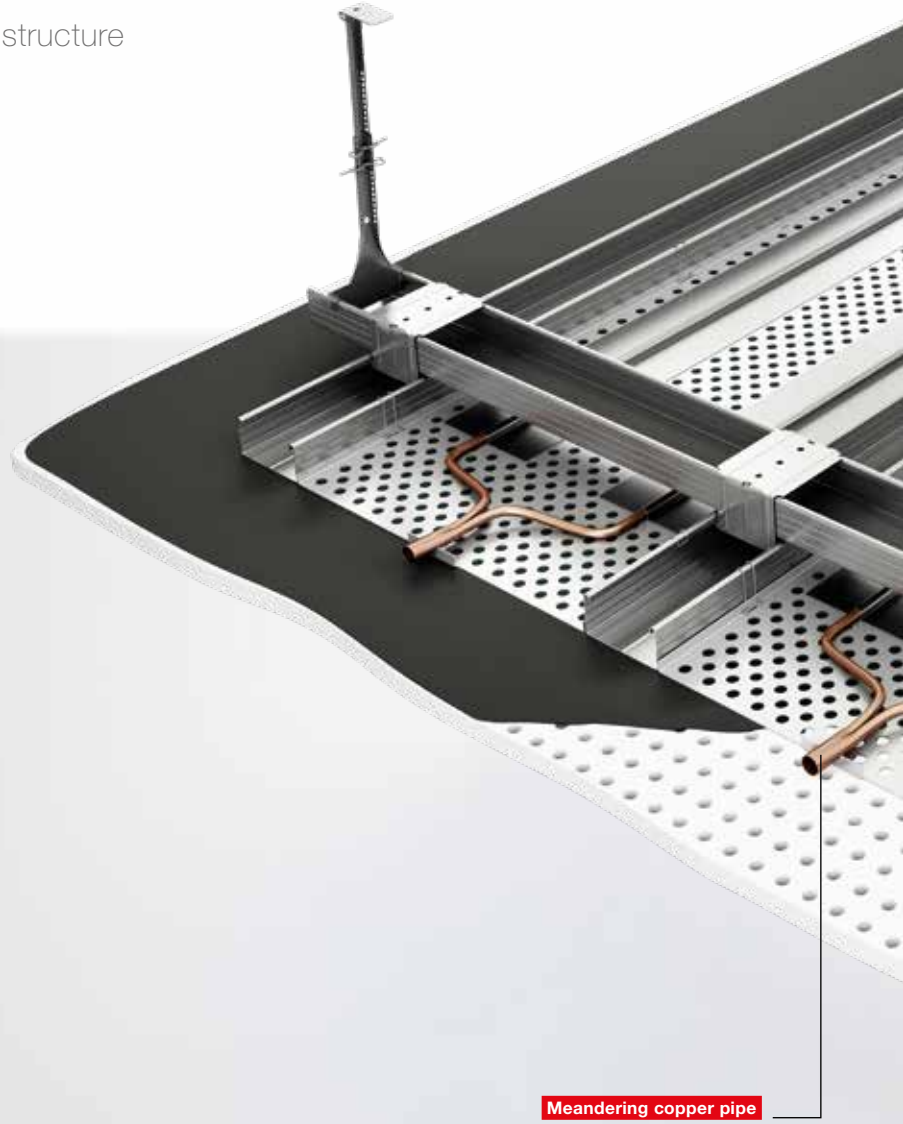
**Facts at a glance**

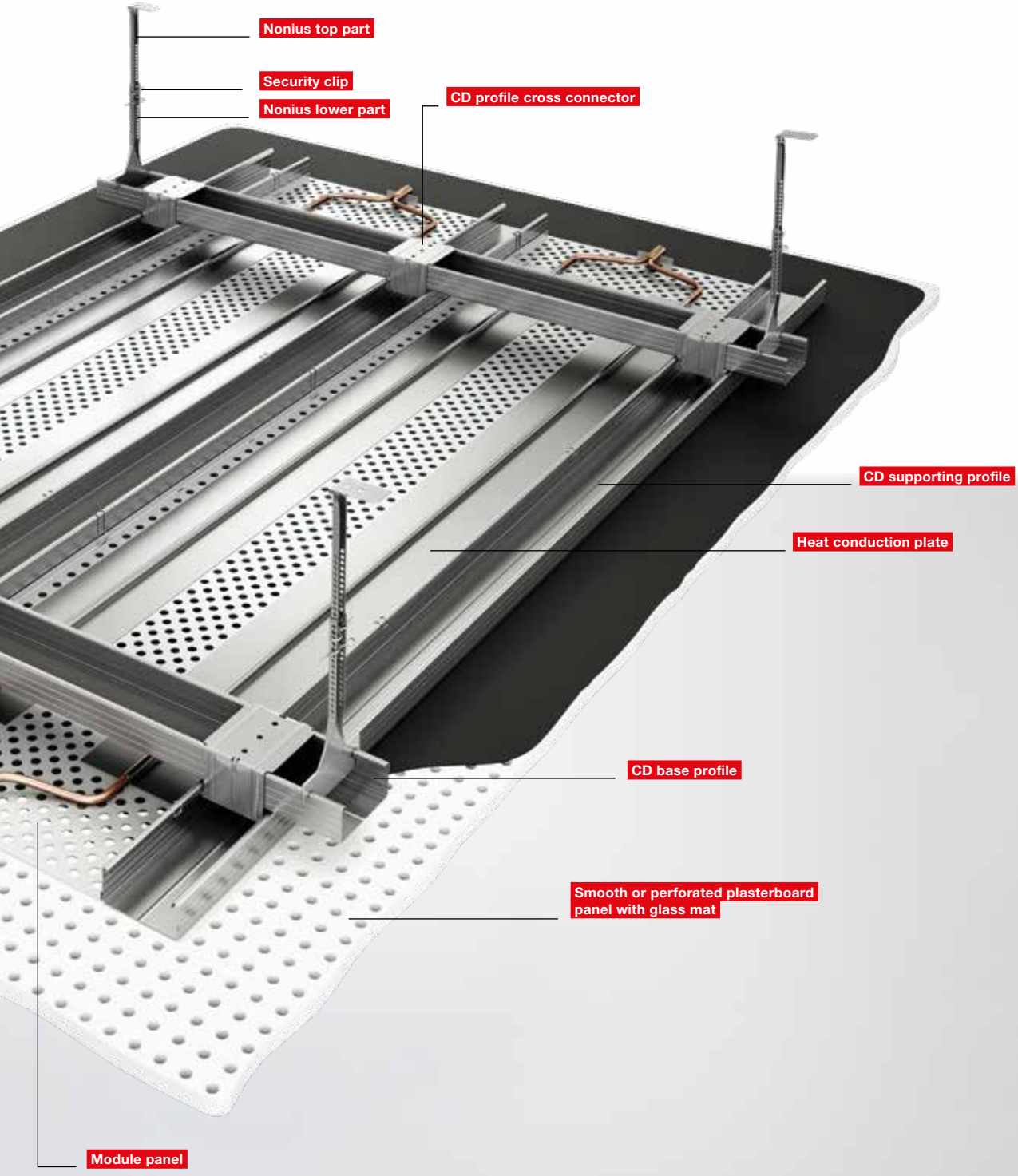
| | |
|---|---|
| Product: | Zehnder plasterboard ceiling |
| Design: | Closed ceiling and ceiling sail with aluminium activation |
| Special features of design: | Perforated surface of the ceiling elements for sound absorption and integration of LED strip lights |
| Building footprint: | 980 $m^2$ |
| Repucom office surface area: | 2380 $m^2$ across three floors |
| Entire surface area of the products: | 1055 $m^2$ |
| Performance of radiant ceiling panels: | 22.9 kW cooling |
| Installation height: | 3 m |

# 1 Design freedom and optimum adaptability to room requirements

Plasterboard ceiling

- Greatest possible design freedom
- The ceiling is tailored according to requirements and flexibly adapted during installation
- Optimum adaptability to room requirements
- Invisible heating elements and support structure

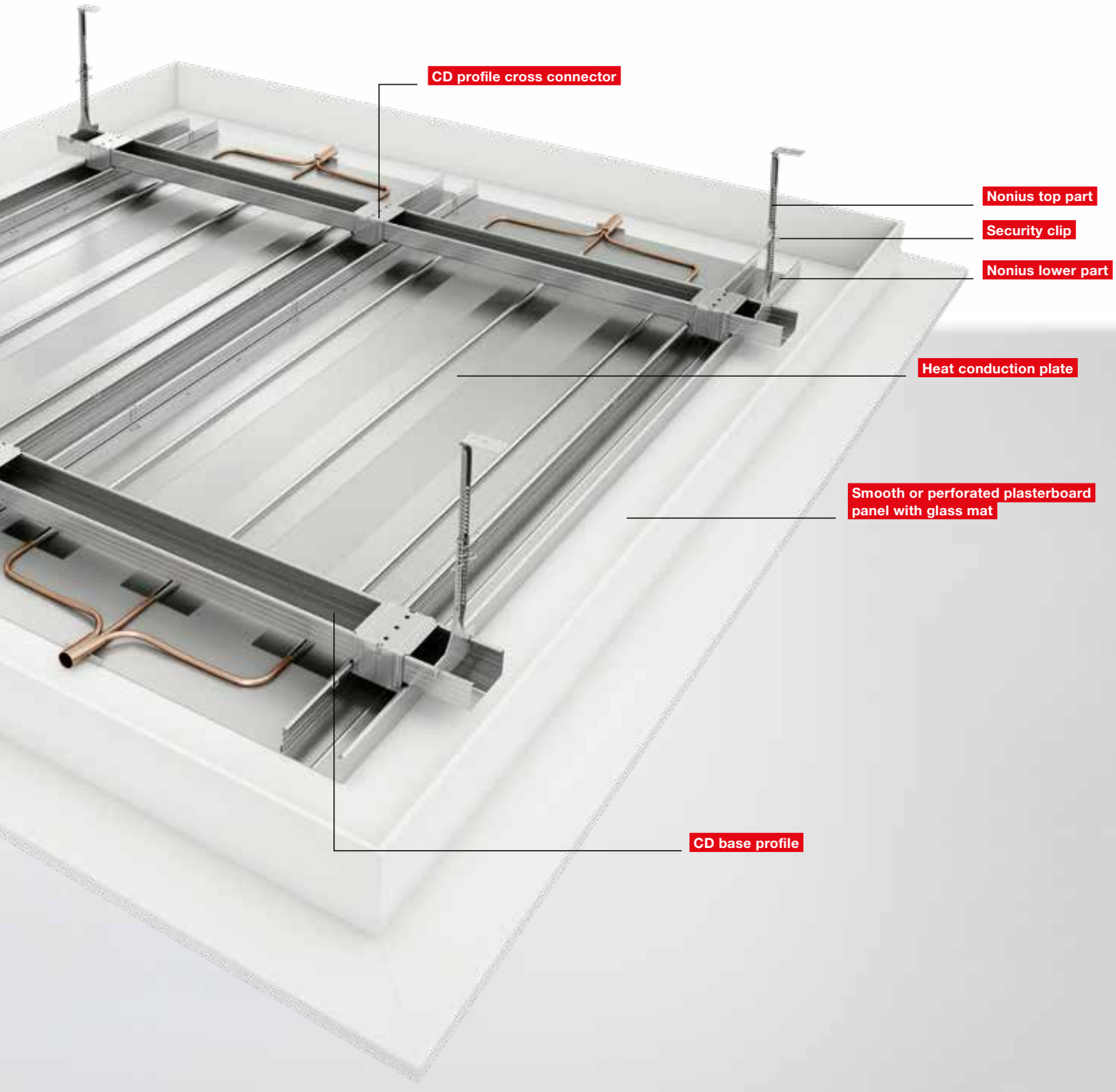



Nonius top part
Security clip
Nonius lower part
CD profile cross connector
CD supporting profile
Heat conduction plate
CD base profile
Smooth or perforated plasterboard panel with glass mat
Module panel

# 2 Easy integration and optimum adaptability

Plasterboard ceiling sail

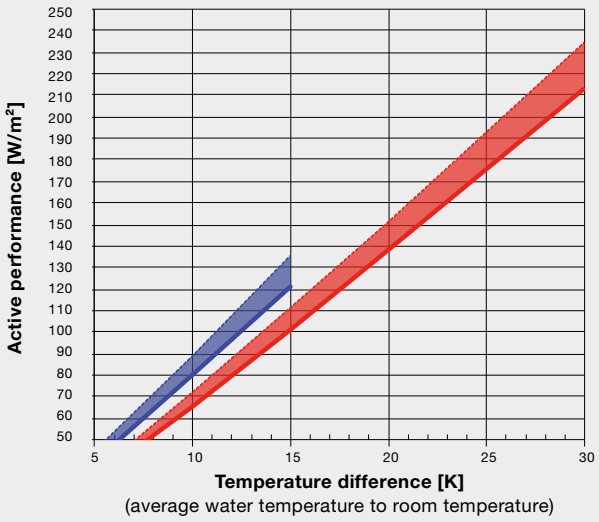
- Greatest possible design freedom
- The sail can be tailored according to requirements and flexibly adapted during installation.
- The suspension of a ceiling sail is adjusted to suit the conditions of the particular building


CD profile cross connector
Nonius top part
Security clip
Nonius lower part
Heat conduction plate
Smooth or perforated plasterboard panel with glass mat
CD base profile

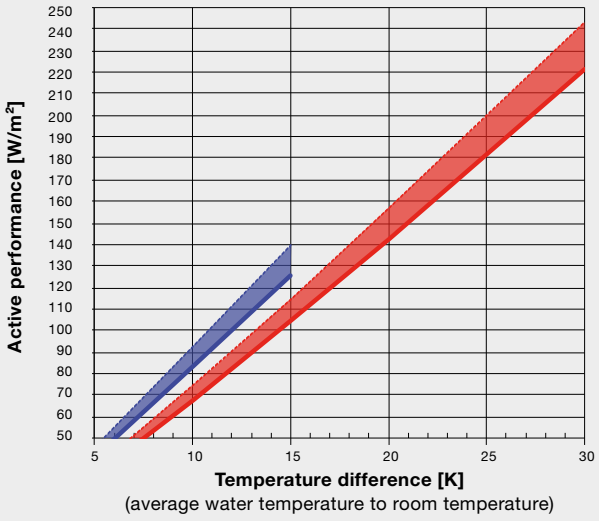
# Activation by aluminium for plasterboard ceilings

**Closed ceilings without insulation**
Thermal output in acc. with DIN EN 14037-5*
Cooling capacity in acc. with DIN EN 14240

**Smooth version**

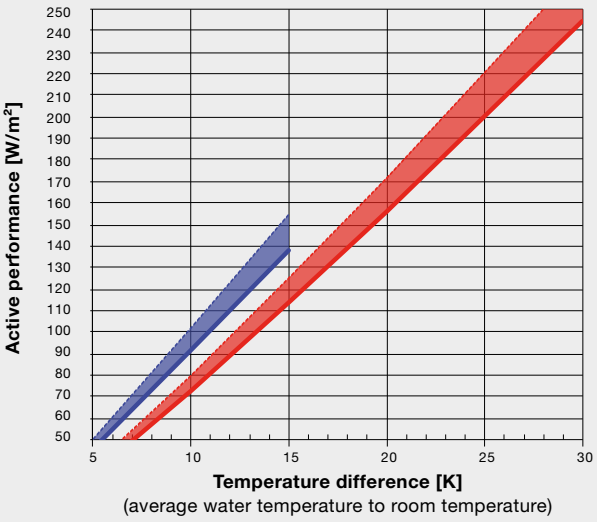



**Perforated version**

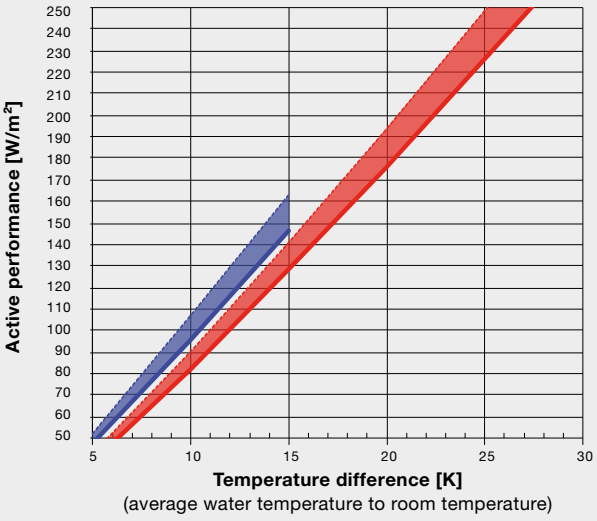



**Ceiling sail without insulation**
Thermal output in acc. with DIN EN 14037-5*
Cooling capacity in acc. with DIN EN 14240

**Smooth version**




**Perforated version**




Nominal cooling capacity
Application-oriented cooling capacity
Nominal thermal output
Application-oriented thermal output

Increase in performance under actual installation conditions:

Increase in performance in application, approx. 11.5%
Environmental parameters for cooling: warm façade; air movement through ventilation system; influence of glazed areas

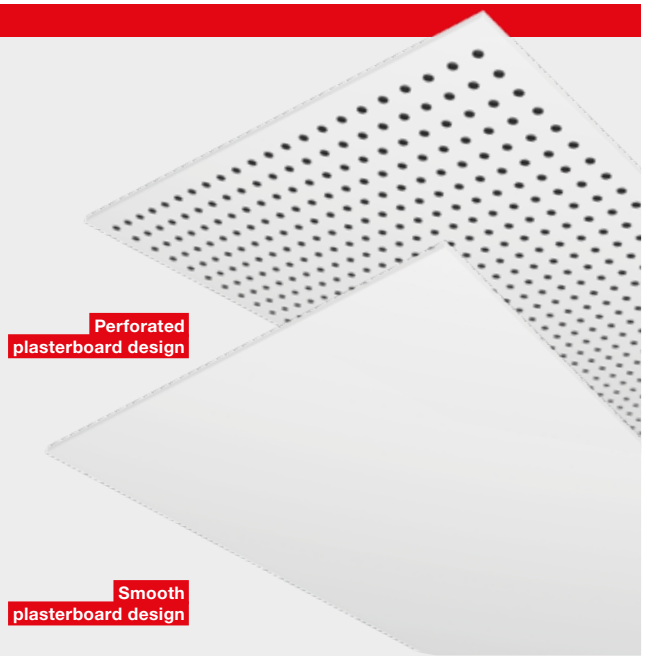
Increase in performance in application, approx. 10%
Environmental parameters for heating: air movement through ventilation system

This output data is based on a closed plasterboard ceiling / plasterboard ceiling sail with a thermal conductivity of the plasterboard panel of 0.45 W/(m*k)
* Based on the active surface in acc. with EN 14240

# Sound absorption and surfaces

## PLASTERBOARD CEILING SURFACES AND COLOURS

In addition to either a smooth or perforated design, plasterboard ceiling systems also offer the option of plasterboard panels that are filled ready for painting or that have been provided with a textured plaster layer. Subsequent modification to the surface structure and colour is possible at any time.



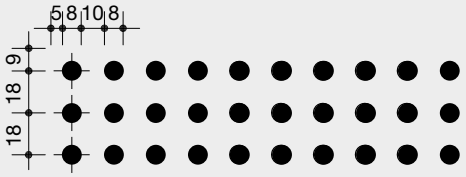

## PLASTERBOARD CEILING PERFORATION

Two round or two square perforations are available as standard.

Additional perforation variations are available on request.

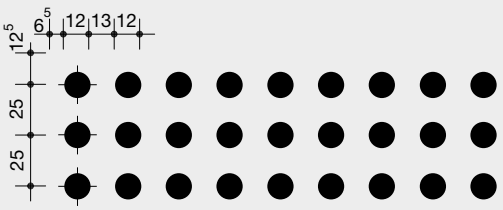
### Round perforations

**Straight round perforations 8/18 R**




| | |
|---|---|
| Hole diameter | 8.0 mm |
| Open cross section | 15.5% |

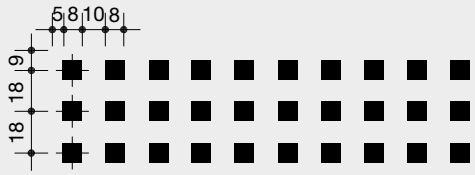
**Straight round perforations 12/25 R**




| | |
|---|---|
| Hole diameter | 12.0 mm |
| Open cross section | 18.1% |

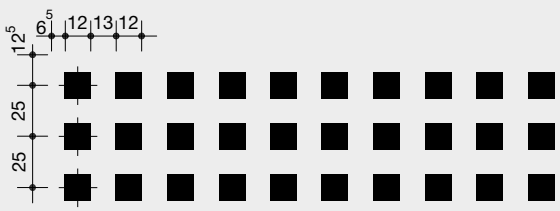
### Square perforations

**Straight square perforations 8/18 Q**




| | |
|---|---|
| Hole size | 8.0 x 8.0 mm |
| Open cross section | 19.8% |

**Straight square perforations 12/25 Q**

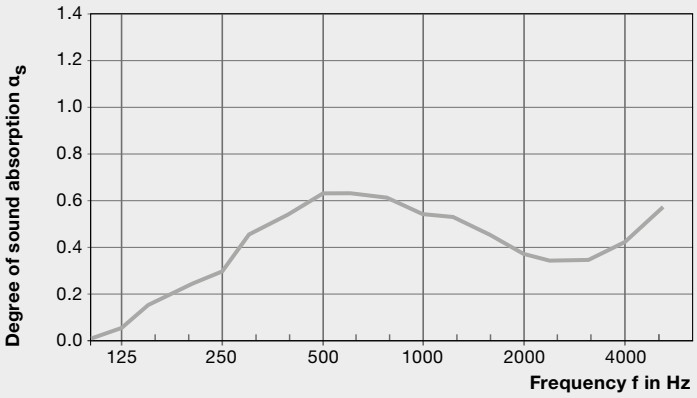



| | |
|---|---|
| Hole size | 12.0 x 12.0 mm |
| Open cross section | 23% |

# Sound absorption for metal and plasterboard ceilings

Zehnder heating and cooling ceiling systems can be used for sound absorption: The sound waves are absorbed by the fleece at the back and by the inserted insulation material. This results in a significant reduction of the noise level and a reduction in the reverberation time (e.g. in open-plan offices, call centres and schools). Please contact us if you require detailed information on calculating the acoustics.

## Plasterboard ceiling active

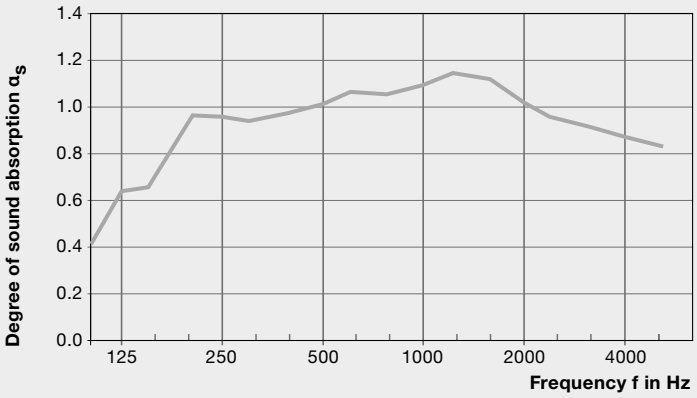



| | |
|---|---|
| **Description:** | Closed plasterboard ceiling |
| **Perforation:** | 8/18 Q |
| **Hole diameter:** | 8 x 8 mm |
| **Open cross section:** | 19.8% |
| **Non-perforated edge:** | Approx. 5 mm |
| **Insulation:** | No insulation |

**Rated level of sound absorption in acc. with DIN EN ISO 11654**

**$\alpha_w$ = 0.5**

## Plasterboard ceiling sail




| | |
|---|---|
| **Description:** | Plasterboard ceiling sail |
| **Perforation:** | 12/25 Q |
| **Hole diameter:** | 12 x 12 mm |
| **Open cross section:** | 23% |
| **Non-perforated edge:** | Approx. 6 mm |
| **Insulation:** | Mineral wool in LDPE foil |

**Rated level of sound absorption in acc. with DIN EN ISO 11654**

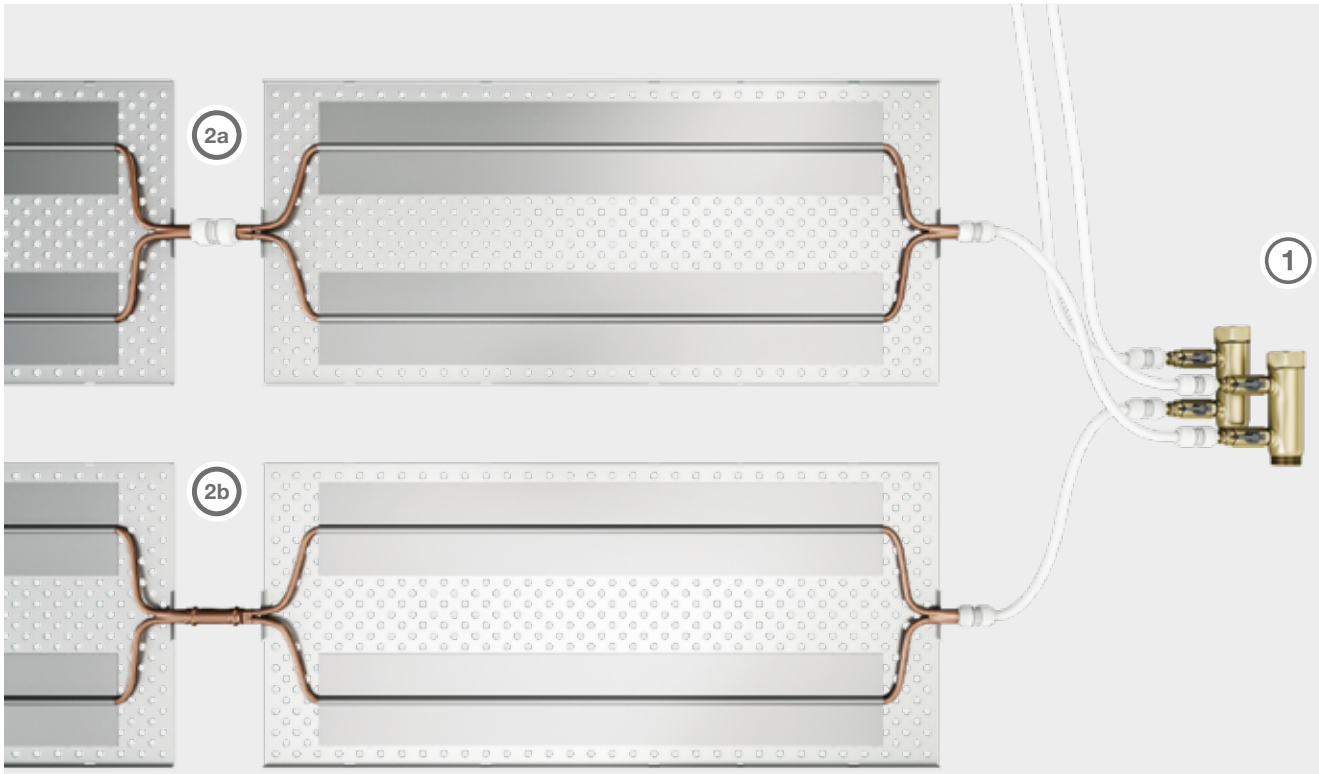
**$\alpha_w$ = 1.05**

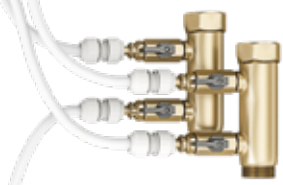
Measurement curve

Shifted reference curve

Additional activation options are available on request.

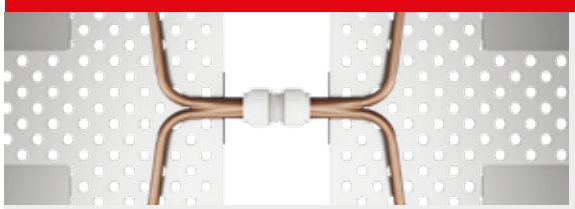
# Connection option and connector technology



Ceatus di officiis is simo iditaturesti nos aborum des idit quasper natiunto et magnati aection esediasimi, nihictior molupta temporuptius quos ut re illuptatest quuntur aspicabo. Luptur moditet arum quam as et ommos ducienihicae volupta quiatecatur?

1



Ceatus di officiis is simo iditaturesti nos aborum des idit quasper natiunto et magnati aection esediasimi, nihictior molupta temporuptius quos ut re illuptatest quuntur aspicabo. Luptur moditet arum quam as et ommos ducienihicae volupta quiatecatur?

2

Exemplary illustrations on page 40 – 41. Additional connection options are available on request.

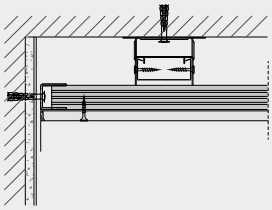
## PLASTERBOARD CEILING WALL CONNECTIONS

In order to bolt together the plasterboard ceiling with the wall, it is mounted using a perimeter DU profile (Fig. 1 & 2).

For a sliding wall edge, the version in Figure 3 is ideal.

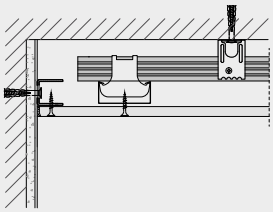
Additional connection options are available on request.

**Fig. 1**



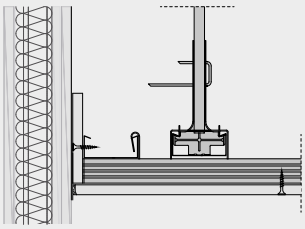
Wall connection with surrounding UD profile and CD profile

**Fig. 2**



Wall connection with UD profile and parallel-fitted CD profile

**Fig. 3**



Wall connection with sliding transition

## PLASTERBOARD CEILING SAIL EDGE

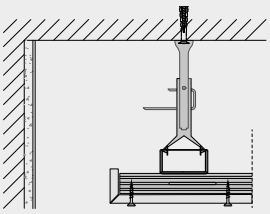
By using V-recesses, the edge can, for example, be folded upwards at a 90° chamfered edge (Fig. 1) or with a 180° milled chamfered edge (Fig. 2).

Downstream chamfered edges can also be used (Fig. 3).

Depending on the construction, indirect lighting can be integrated.

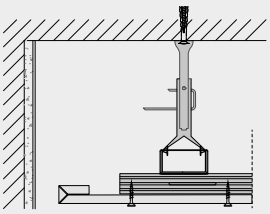
Additional edge options are available on request.

**Fig. 1**



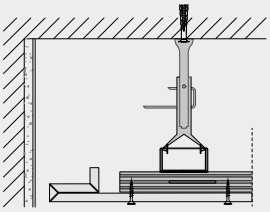
Sail edge with 90° chamfered edge

**Fig. 2**

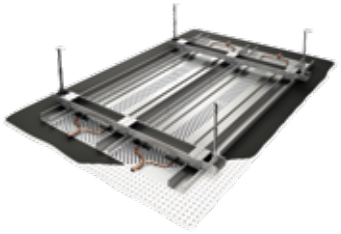


Sail edge with 180° milled chamfered edge

**Fig. 3**



Sail edge with 180° chamfered edge and downstream 90° chamfered edge

| | Closed ceilings | Ceiling sails |
|---|---|---|
| |  | |
| | **Plasterboard** | **Plasterboard** |
| **Feature** | **Unit of measurement** | |
| Max. recommended panel length[1)] | mm | <=4000 | <=4000 |
| Max. recommended panel width[1)] | mm | 263 / 423 | 263 / 423 |
| Max. recommended surface area / panel | $m^2$ | Depending on version, on request | Depending on version, on request |
| Panel material | - | Aluminium | Aluminium |
| Number of suspension points per module | piece(s) | 4-6 | Depending on version, on request |
| Pipe material / dimension | - / mm | Copper pipe / 8 mm | Copper pipe / 8 mm |
| Pipe spacing | mm | 140 / 143 | 140 / 143 |
| Empty weight without water, with insulation | $kg/m^2$ | Depending on version, on request | Depending on version, on request |
| Operating weight (incl. substructure and water content) | $kg/m^2$ | ~17, dependent on version | ~17, dependent on version |
| Max. operating temperature for activation with graphite[3)] | °C | - | - |
| Max. operating temperature for activation with aluminium[3)] | °C | 50 | 50 |
| Max. operating temperature[3)] | °C | 50 | 50 |
| Max. operating pressure[4)] | bar | 6 | 6 |
| Locking mechanism | - | - | - |
| Inspection / modification possible | - | - | - |
| Hinges down | - | - | - |
| Suitable for subsequent modifications to room geometry | - | ■ | ■ |
| Sound-absorbing design (perforated) | - | ■ | ■ |
| Allows installation of other features (lights, ventilation, etc.) | - | ■ | ■ |
| Special colours | - | - | ■ |

[1)] Special lengths available on request.
[2)] The pipe dimension is 10 mm for the version with graphite.
[3)] Higher operating temperature on request.
[4)] Higher operating pressure on request.

Z-MASTER-V1119-RHC-PBR-PAM, en, subject to change without notice

LUFITAT CENTRAL VENTILATORS & AIR-FILTERS TRADING CO. LLC.

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