

# A11-S

Radiant metal ceiling sail



## QUICK FACTS

- Thermal comfort according to EN ISO 7730
- With EPD certification
- Very high heating & cooling capacity
- Active area ratio: 85 %
- Superior sound absorption values (class A)
- Easy installation
- Low system weight
- Variable coil design
- Can be combined with:  
ARCHISONIC®, AQUILO, CAURUS, FAVO
- Integration of various components
  - Different lighting designs
  - Sprinklers
  - Smoke detectors
  - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 105 W/m <sup>2</sup> (8 K), EN 14240:2004	Up to 117 W/m <sup>2</sup> (15 K), EN 14037:2016
Acoustics	
$\alpha_w$ : up to 1,00	



# Technical description

## General

The A11-S radiant ceiling sail is a highly efficient radiant ceiling system that receives a flow of room air on all sides. If a full-surface insulation insert is not installed, the back of the sail can also actively contribute to room cooling.

The innovative A11 activation system has a special structure. The copper pipe and aluminium heat conducting rails are welded together using laser technology. The coils are permanently bonded to the metal plates using a special adhesive and high pressure, thereby ensuring optimum thermal transfer. Aluminium panels can also be activated using the adhesive technology, which results in further improvements in performance.

In order to satisfy the acoustic requirements, acoustic fleece is bonded in the back of the ceiling panels. In particularly sensitive areas, additional insulation strips can be inserted at the side of the coil to increase sound absorption without reducing the cooling capacity.

## Activation

**Water system:** The radiant ceiling is a passive system that in the case of cooling absorbs heat from the room via the ceiling surface, transfers it to the water, which is conducted in activation registers, and dissipates it, respectively emits heat in the case of heating.

The activation of the A11-S radiant metal ceiling system consists of meandering copper pipes (outside diameter 12 mm) and aluminum heat-conducting rails (width 80 mm), which are connected by laser spot welding and glued into the ceiling panels.

## Optional performance plus: Convector Wings

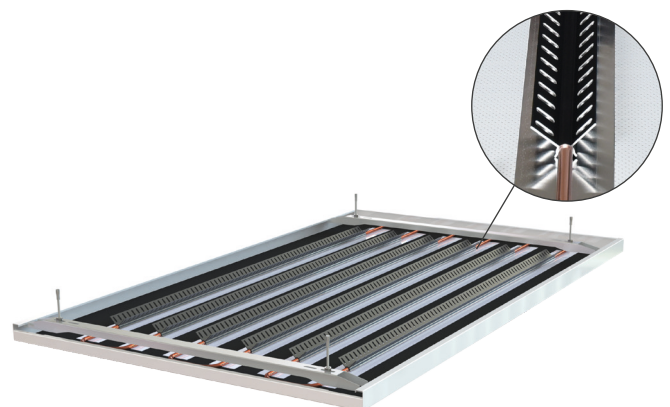
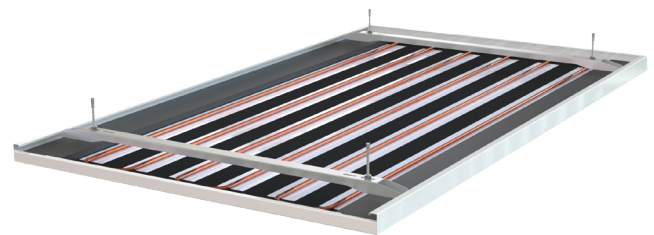
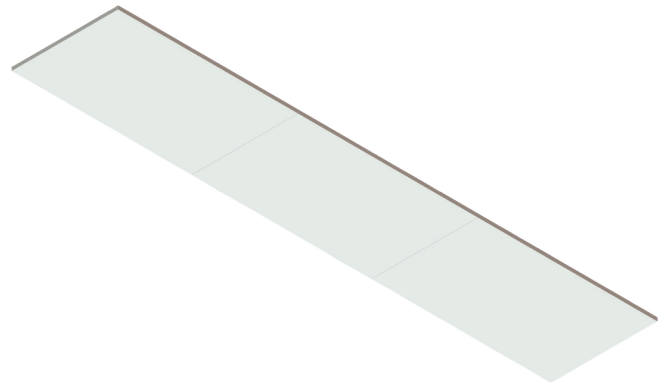
Convector Wings are matt black anodized aluminum profiles with slotted «wings» on both sides. With the profile that opens downwards, the Convector Wings can be attached to the straight sections of a pipe meander. This multiplies the heat exchange surface of the radiant ceiling sail, which leads to an increase in water capacity.

## Functions

The A11-S radiant metal ceiling sail is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts or baffles (ARCHISONIC®), special supply air solutions (AQUILO, CAURUS, FAVO), various built-in components (e.g. smoke detectors, lighting).

## Combinations

- A11-S radiant metal ceiling sail + ARCHISONIC®
- A11-S radiant metal ceiling sail + AQUILO
- A11-S radiant metal ceiling sail + CAURUS
- A11-S radiant metal ceiling sail + FAVO



Optional performance plus: Convector Wings

# Technical data

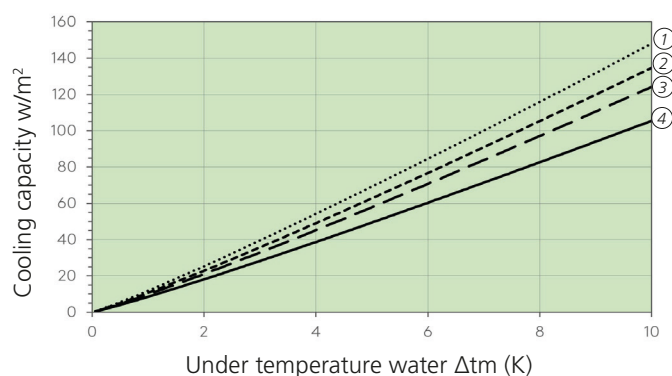
## Capacity

Initial data is presented below.

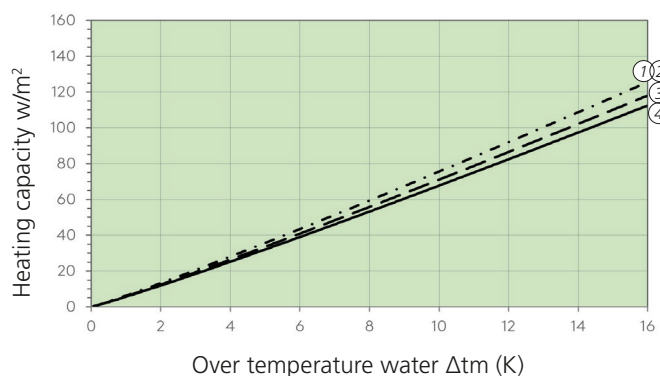
Material ceiling panel	Aluminum	Steel
Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	100 mm --- ② 150 mm — ③	100 mm + Convector Wings ..... ① 150 mm — ④
Activation method	on fleece	on fleece

(Capacity information without project-specific performance-influencing factors.)

EN 14240:2004



EN 14037:2016



Version	Cooling 8 K	Cooling 10 K	Heating 15 K
① Steel 100 mm + Convector Wings	up to 122 w/m <sup>2</sup>	up to 148 w/m <sup>2</sup>	up to 117 w/m <sup>2</sup> (---·---)
② Aluminum 100 mm	up to 105 w/m <sup>2</sup>	up to 135 w/m <sup>2</sup>	up to 117 w/m <sup>2</sup> (---·---)
③ Aluminum 150 mm	up to 97 w/m <sup>2</sup>	up to 124 w/m <sup>2</sup>	up to 110 w/m <sup>2</sup>
④ Steel 150 mm	up to 83 w/m <sup>2</sup>	up to 106 w/m <sup>2</sup>	up to 105 w/m <sup>2</sup>

### Notice

- SN EN 14240: The cooling capacity is related to the active area according to SN EN 14240:2004. The active area is calculated according to SN EN 14240 from the number of heat-conducting rails x length of heat conducting rail x distance between heat conducting rails.
- SN EN 14037: The heating capacity is related to the active area according to SN EN 14037:2016. The active area is calculated according to SN EN 14037 from the length of the ceiling panel x the width of the ceiling panel.

## Recommendations for operation

### Water

- Temperature
  - Cooling 16 – 18 °C
  - Heating 28 – 37 °C
- Temperature distance  $\Delta t$  (VL-RL): 2 – 3 K
- Pressure drop: 20 – 25 kPa
- Water flow: 80 – 150 l/h
- Max. operating pressure up to 9 bar
- Water quality according to: SWKI BT 102-01, BTGA 3.003, VDI 2035

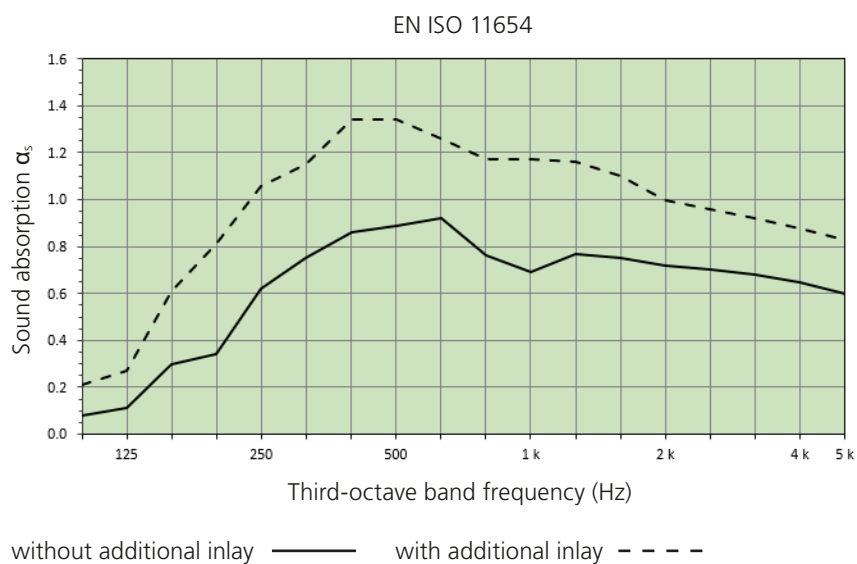
### Surrounding

- Ambient temperatures: +5 – 50 °C
- Humidity: up to 90 % relative humidity

## Acoustics

Initial data is presented below.

Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	150 mm	150 mm
Installation height	200 mm	200 mm
Acoustic inlay	Fleece	Fleece
Additional inlay (mineral wool)	without ———	with - - - -
Sound absorption $\alpha_p$	250: 0,55 500: 0,90 1k: 0,75 2k: 0,75 4k: 0,65	250: 1,00 500: 1,00 1k: 1,00 2k: 1,00 4k: 0,90
Sound absorption $\alpha_w$	$\alpha_w$ : 0,75	$\alpha_w$ : 1,00
Sound absorption class (EN ISO 11654)	C	A



# System

## Ceiling system

- Sail
  - Square and rectangular panels
  - Special solutions on request

## Installation systems

- Installation high: min. 80 mm
  - Hook-on system
  - Threaded rods or ropes

# Materials, weight and dimensions

## Materials and weight

Material	Weight (incl. activation, water)
Aluminum 1,00 mm	3,5 – 6,0 kg/m <sup>2</sup>
Steel 0,70 mm	6,26 – 8,58 kg/m <sup>2</sup>

Building material class: A2-s1, d0, EN 13501-1 (depending on the acoustic solution).

## Dimensions

Panel length	Panel width	Panel height
min. 800 mm	min. 400 mm	min. 30 mm
max. 3000 mm	max. 1200 mm	max. 50 mm

Special dimensions on request.

## Surface

### Versions

- Powder coating
- Digital printing on request

### Colors

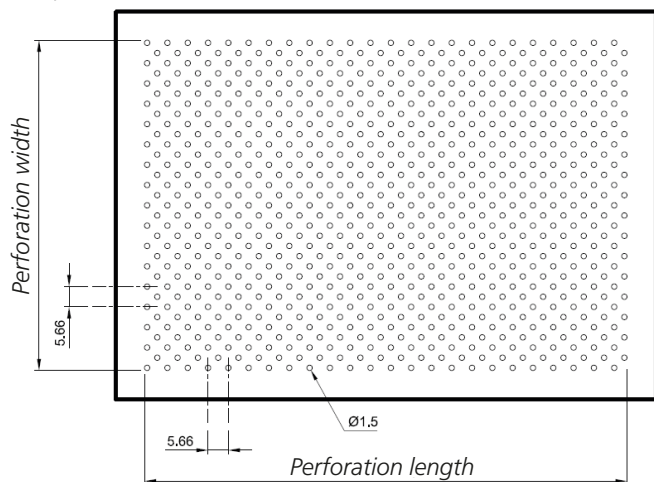
- Standard RAL 9010
- Other RAL / NCS colors on request

### Perforations

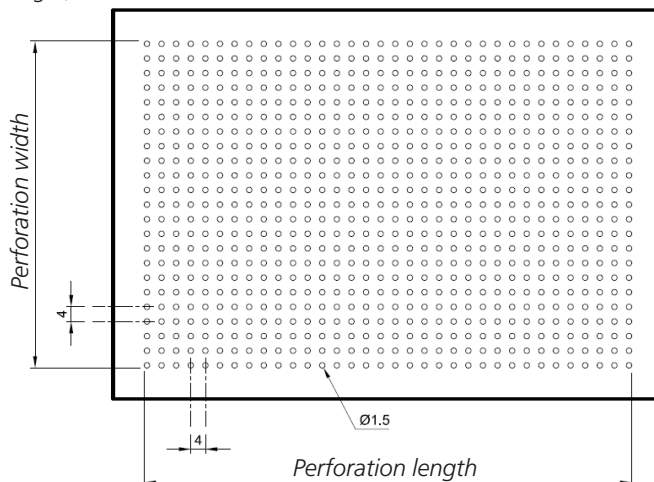
- Standard perforations
- Other perforations on request

Standard perforations:

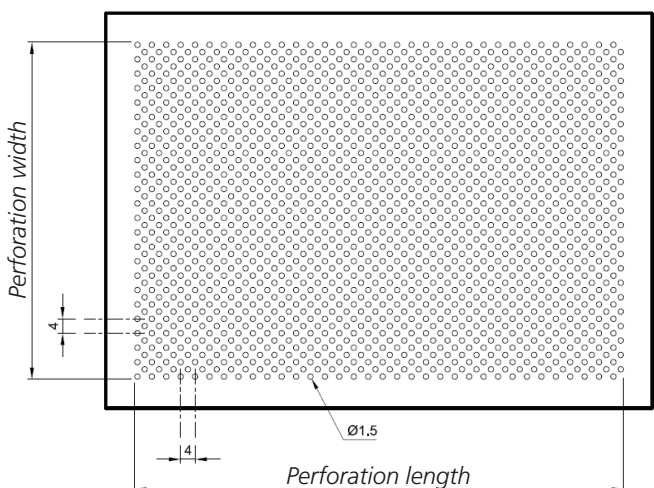
Rd 1,5 – 11 %



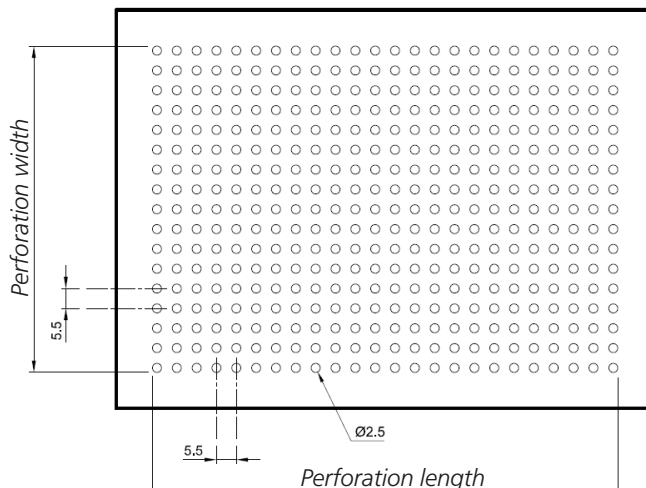
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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