

SPECTRA M-C

Radiant metal ceiling with magnetic technology



QUICK FACTS

- Thermal comfort according to EN ISO 7730, SIA 382/1
- Building material class B-s2, d0 according to EN 13501-1
- Environmental Product Declaration (EPD) available
- High heating and cooling capacity
- Advanced sound absorption values (class B)
- Ceiling panels and activation registers connected using magnetic technology
- Tool-free installation and removal of the registers
- Product components can be separated by material type
- Existing metal ceilings can be retrofitted with the SPECTRA M magnetic system
- Can be combined with AQUILO and VENTAMIC
- Integration of various components
 - Different lighting designs
 - Sprinklers
 - Smoke detectors
 - Supply / extract air elements

Output (water)	
Cooling	Heating
Up to 90 W/m ² (8 K), EN 14240:2004	Up to 98 W/m ² (15 K), EN 14037:2016
Acoustics	
α _w : up to 0,85	



Technical description

General

The SPECTRA M-C radiant heating and cooling ceiling is a water-based climate ceiling system with high thermal capacity and advanced acoustic effectiveness. The magnetic connection between the activation register and the ceiling panel enables the two components to be prefabricated and delivered separately. The registers and ceiling panels are assembled on the construction site. This allows installation processes to be coordinated flexibly.

The SPECTRA M register is also suitable for retrofitting existing metal ceilings that are to be thermally activated later. The registers can be fixed and hydraulically connected independently of the ceiling panels. This means that the heating and cooling technology can be installed and commissioned before the ceiling surface is completed. With appropriate design, the registers can also be used in advance for temporary construction heating.

For areas with higher acoustic requirements, additional insulation strips can be inserted. Full-surface insulation can also be provided. The respective design is configured according to the thermal and acoustic requirements of the project.

The design of the SPECTRA M register enables the individual components to be separated by material type. At the end of their service life, the materials can therefore be separated and, depending on the available recycling options, directed to the appropriate recovery routes.

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.

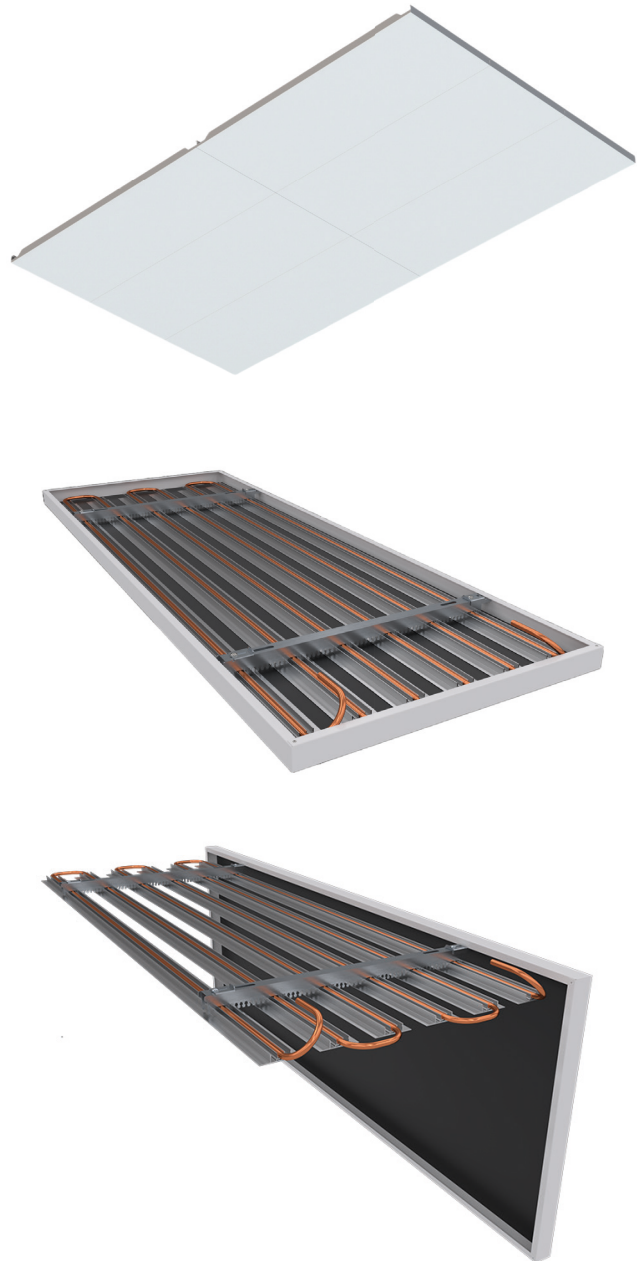
The activation of the SPECTRA M-C radiant metal ceiling system consists of meandering copper pipes (outside diameter 12 mm), which are pressed into aluminum heat-conducting profiles. The connection between the activation register and the ceiling panel is made with magnet technology.

Functions

The radiant metal ceiling Spectra M is multifunctional. In addition to the thermal functions of cooling/heating, there is the possibility of further integration: acoustically effective inserts, use of the special supply air box Quello, various built-in components (e.g. smoke detectors, lighting).

Combination

- SPECTRA M-C radiant Metal Ceiling + AQUILO
- SPECTRA M-C radiant Metal Ceiling + VENTAMIC



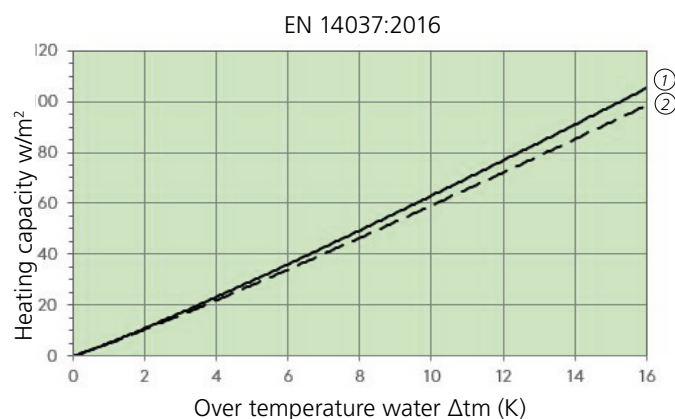
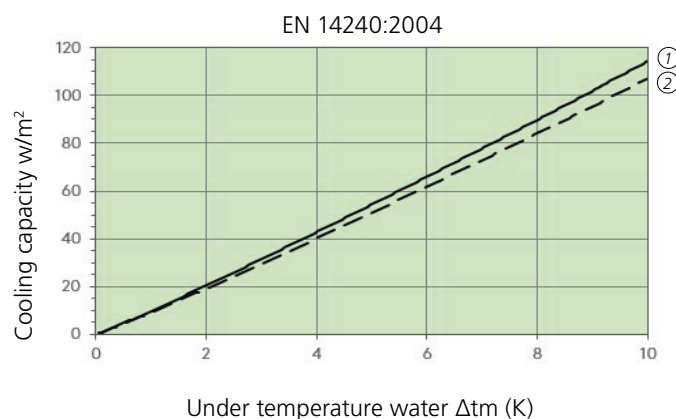
Technical data

Capacity

Initial data is presented below.

Material ceiling panel	Steel	Steel
Perforation	Rg 1,5 – 11 %	Rg 1,5 – 11 %
Distance heat conducting rails (hcr)	100 mm — ①	120 mm — ②
Acoustic inlay	Fleece	Fleece
Activation method	magnetic	magnetic

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



Version	Cooling 8 K	Cooling 10 K	Heating 15 K
① Steel 100 mm	up to 90 w/m^2	up to 114 w/m^2	up to 98 w/m^2
② Steel 120 mm	up to 84 w/m^2	up to 107 w/m^2	up to 92 w/m^2

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 Δt (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

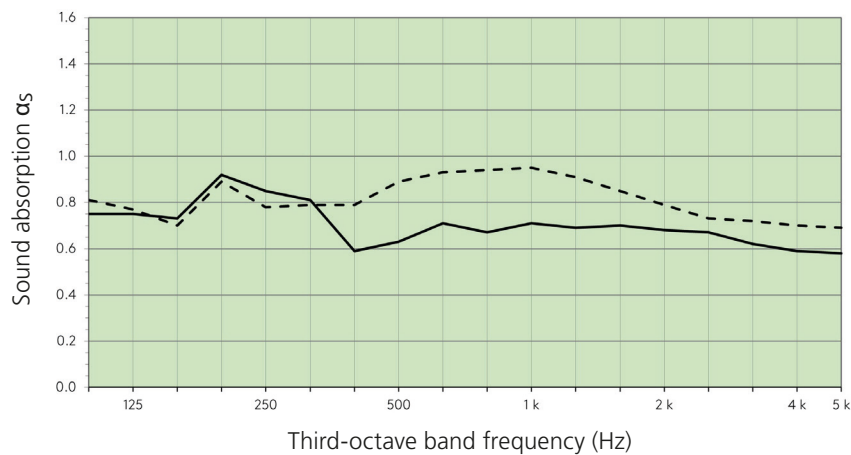
- Ambient temperatures: +5 – 50 °C
- Humidity: up to 90 % relative humidity

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 α_p	250: 0,85 500: 0,65 1k: 0,70 2k: 0,70 4k: 0,60	250: 0,80 500: 0,85 1k: 0,95 2k: 0,80 4k: 0,70
Sound absorption α_w	α_w : 0,70 (L)	α_w : 0,85
Sound absorption class (EN ISO 11654)	C	B

EN ISO 11654



without additional inlay ——— with additional inlay - - - -

System

Ceiling system

- Closed ceiling
 - Rectangular panels

Installation systems

- Installation height: min. 100 mm
 - Lay-in system
 - Hook-on system
 - Clip-in system
 - C-channel systems

Materials, weight and dimensions

Materials and weight

Material	Weight (incl. activation, water)
Steel 0,70 mm	10,0 – 13,3 kg/m ²

Building material class: B-s2, d0, EN 13501-1 (depending on the acoustic solution).

Dimensions

Lenght	Width	Height
min. 600 mm	min. 400 mm	min. 30 mm
max. 3000 mm	max. 1200 mm	max. 40 mm

Surface

Versions

- Powder coating
- Digital printing on request

Colors

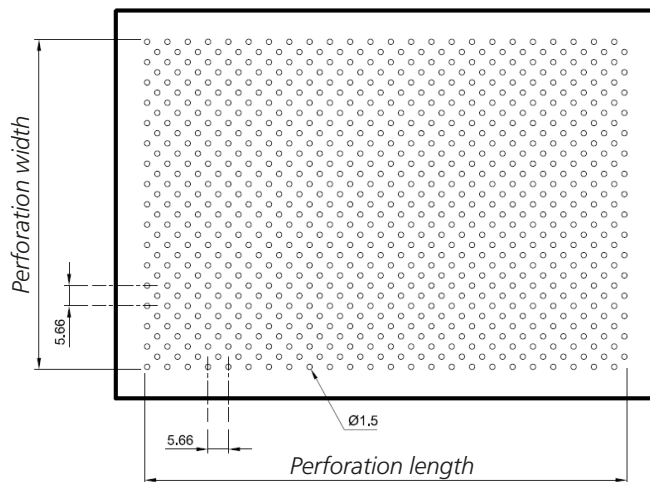
- Standard RAL 9010
- Other RAL / NCS colors on request

Perforations

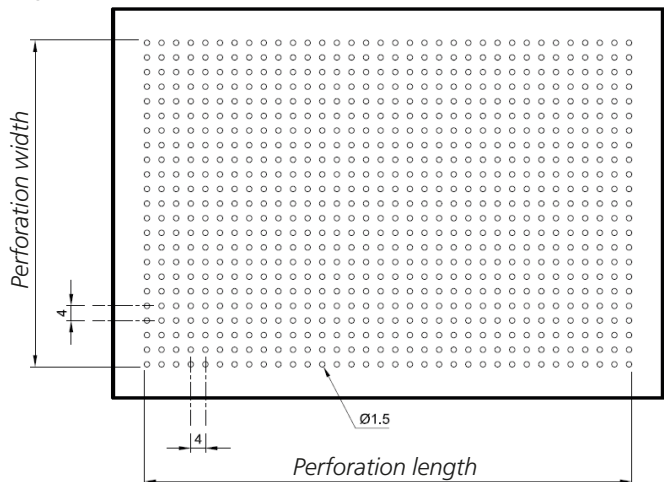
- Standard perforations
- Other perforations on request

Standard perforations:

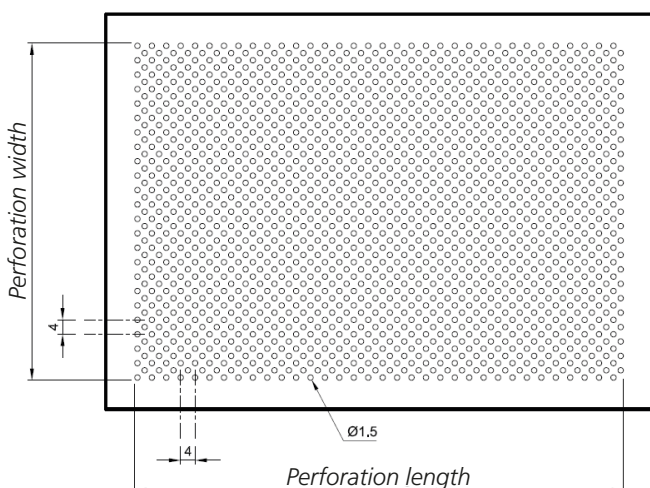
Rd 1,5 – 11 %



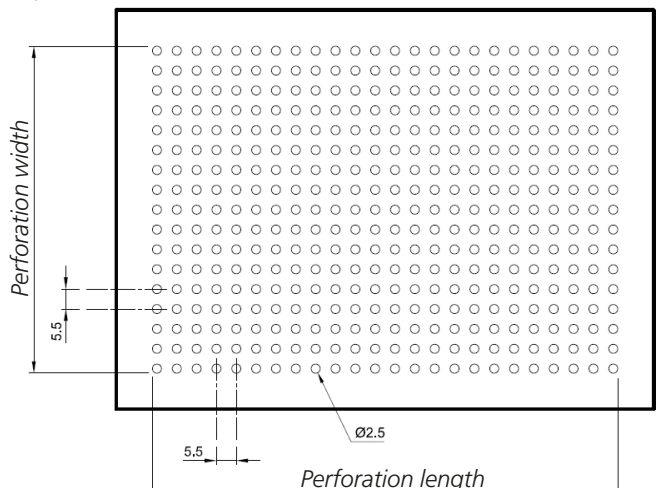
Rg 1,5 – 11 %



Rd 1,5 – 22 %



Rg 2,5 – 16 %



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