



Lindab **Indoor Climate Solutions**

Product overview Waterborne Solutions





We simplify construction

At Lindab we are driven by a strong desire to continuously generate improvements and to simplify construction. We do that by developing products and systems that are easy to use and energy efficient, together with industry-leading knowledge, support, logistics and efficient availability.

We want to simplify everything – from designing, ordering, delivery, goal achievement and installation to the entire way of doing business with us. By simplifying in every stage of the construction process, we also contribute to energy-efficiency.

A good thinking company

Good thinking is a deeply rooted philosophy that guides us in everything we do. We firmly believe that good thinking makes good solutions to the challenges we all face. Taking responsibility for what we do and how we do things is therefore important to us. Because good thinking is not only about making life easier and more comfortable for our customers and end users. It is also a matter of thinking in a global perspective, all the time. Knowing that we at Lindab are helping to make the world a better place.

Waterborne climate systems which exceed expectations

A waterborne climate system gives you clear benefits. The products use water to effectively regulate room temperatures with a high level of precision, and create a perfect indoor climate with fresh air, low sound levels and optimum comfort. Our range is extensive and the waterborne solutions include everything from active chilled beams, radiant panels and facade appliances to condensation protection, control equipment and even illuminated beams. Furthermore, all our waterborne products are extremely installation-friendly and certified according to Eurovent.

Quality, service and knowledge have always been crucial factors for the customers that have chosen us as a partner. So, behind each solution lies industry-leading expertise, extensive research, evaluation and full documentation. If you have specific requirements or wishes, we can quickly develop or customise a solution to comply with your particular project.



Waterborne climate systems which exceed expectations

High quality

Good service and extensive knowledge in ventilation have always been crucial factors for both Lindab and for our customers who have chosen us as a partner. Behind each solution lies industry leading expertise, extensive research, evaluation and full documentation. All our beams are “Made in Sweden” with more than 30 years of experience.

Wide product range

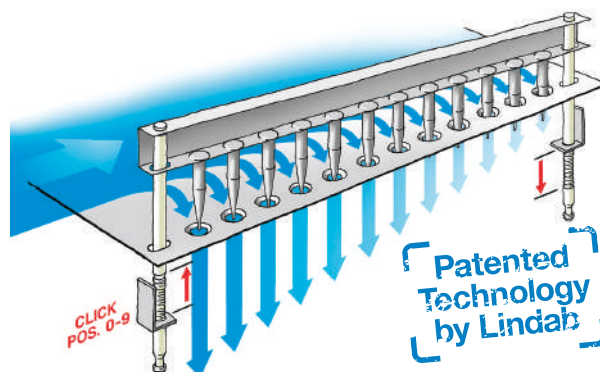
Lindab has a wide product range and the waterborne solutions include active chilled beams (ACB; supply air beams), passive (-radiant) chilled beams (PCB), radiant cooling/heating panels, facade units, multi service chilled beams appliances to condensation protection and control equipment.

We offer exposed, wall and recessed solutions with ceiling adaption for the most common ceiling systems. Our passive chilled beams and our Celo solution (active chilled beam) can also be installed behind a false ceiling system. Furthermore, all our waterborne products are extremely installation friendly, have a low weight and compact design and are made out of recycable material.

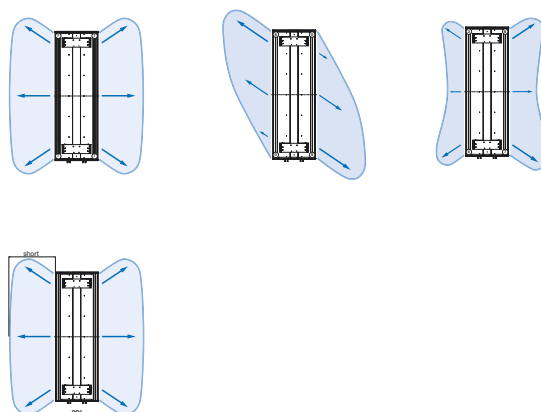
Active chilled beams - excellent flexibility

Chilled beams operate with dry cooling. The typical inlet water temperature is 14°C, and the return temperature is about 17°C. By working with dry cooling, you do not waste energy on the condensation process and can maximise use of free-cooling during the year. We offer highest degree of flexibility with our active chilled beam solutions.

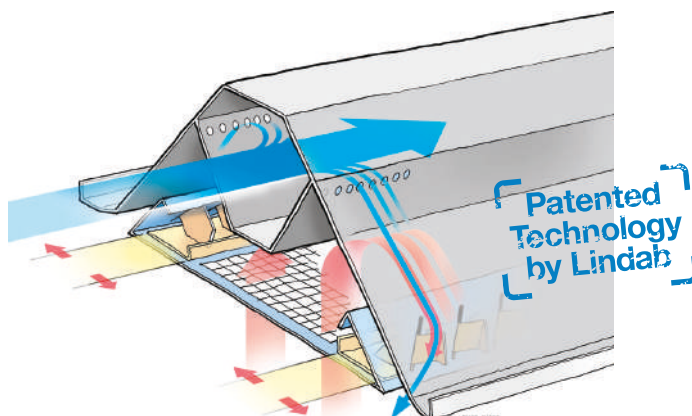
JetCone: unique, linear regulation to adjust airflow, static pressure and air distribution. Eliminates the need for a damper.



Angled Nozzles: Offers a pre-set air pattern combined with JetCone air volume adjustment and distribution profile.



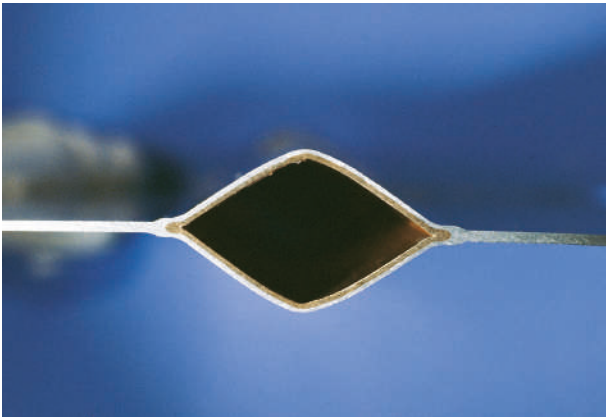
AirGuide (optional): flexible and precise distribution pattern control. Reduces draught risk with tool-free adjustment.



Passive radiant chilled beams

We offer a unique developed passive radiant chilled beam technology.

Our **Carat** is based on a method that is unique in the world: in a cold-rolling process, the copper pipe is connected by metallurgical bonding to a gilled aluminium sheet thereby providing a more efficient energy transfer between the cooling surface and the water. The result is in a high cooling effect per surface/unit. The technology for the metallurgical bonding of copper and aluminium renders galvanic corrosion impossible. The radiation quotient for Carat is approx. 35% of the total emitted cooling effect. This is a high quotient, compared to conventional finned battery beams, which have a radiation quotient of approx. 5%.



Cross-section of Lindab's unique strips. The rhomboid shape provides an efficient heat transfer surface.

Radiant panels

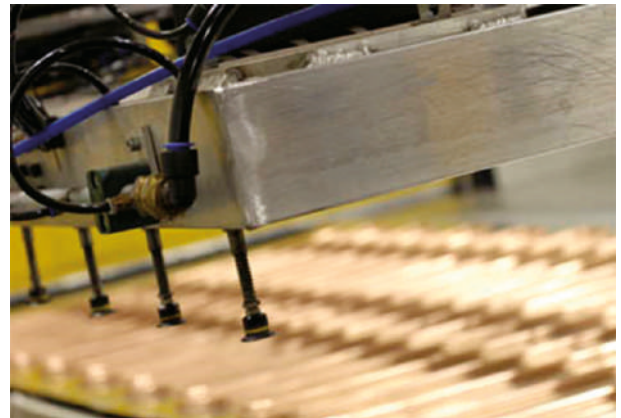
Radiant heating panels and cooling panels are another waterborne solution. Radiant panels are constructed to gain a maximum of heat exchange by radiation. The radiation output is about 50-60% (heating is 60% and cooling is 50%).

This energy exchange directly influences the surface temperatures in the surrounding environment, which are visible from the panel surface point of view. Energy exchange by radiation will not directly influence air velocities. Depending on this matter there will be no draught risk caused by the panel.

Our **Atrium and Loggia** offer the same technology as our Carat (see above).

The **Atrium Plana** design is based on a unique manufacturing process. Optimal energy transfer is secured by a high precision laser welding and offers near-to-lossless transfer of heat energy between the copper piping and the aluminium distribution plate.

Lindab delivers the lightest and most effective radiant panel on the market.



Why choose a Lindab waterborne climate system?

VAV/DCV solutions - Pascal Water

Lindab's chilled beam and panels can be easily integrated and used in a Pascal water system to enable VAV/DCV.

By combining the active chilled beam with a VAV (Variable Air Volume) or DCV (Demand Controlled Ventilation) technique, the Pascal solution will optimise the ventilation, cooling, heating and even lighting for a perfect indoor climate at the lowest running cost.

In-house product development and testing

Lindab's water climate solution are all developed and tested in our laboratory in Farum, Denmark.

The active and passive chilled beams are tested according to EN-15116 and are Eurovent certified.



The radiant panels are also independently tested (according to EN-14037/EN-14240) at WSPlab, test laboratory in Stuttgart, Germany and are CE-marked.

Every single active chilled beam is adjusted according to the customer requirements for: air amount, static pressure (f. E. JetCone settings) and distribution profile (optional AirGuide function). The settings are tested and protocolled on a label on every beam.

Every single water product is pressure-tested in our factory before delivering the products to the building site.



www.lindQST.com

Our documentation is the best on the market and we offer you many web tools for easily looking up information on our products.

With lindQST all latest documentation is made available directly on the web. The Lindab Quick Selection Tool is an advanced web tool that makes the selection of our waterborne solutions quick and simple. With LindQST you can simulate your room in the Indoor Climate Designer, keep track of your projects and share it with your business partners etc.. All information is just a mouse-click away. Visit **www.lindQST.com**



Product overview Waterborne Solutions

Active chilled beams

– Cooling, heating and ventilation

Munio

The bulkhead integrated beam

Installation: integrated into a bulkhead with telescopic connection for outlet front grille

Size: 800, 1000, 1200 and 1400

Capacity: Cooling capacity up to 1000 W/m, heating up to 1170 W/m, air volume up to 50 l/s

Important features: Architectural design for bulkhead installation combined with jet cone technology and easy maintenance makes Munio the perfect choice.

Use: Hotels, hospitals, retirement- and nursing homes, offices and any other room with bulkhead



Professor/ Professor Plus

The faithful servant

Use: Single and open offices, conference rooms, restaurants, stores, supermarkets, etc.
Installation: Recessed in different suspended ceilings, or exposed.

Capacity: Cooling 450 W/m, Heating 1075 W/m.

Important features: A cornerstone in chilled beam history, still going strong!



Plexus

Strong, compact comfort unit

Use: Single and open offices, conference rooms, restaurants, stores, supermarkets, etc.

Installation: Recessed in different suspended ceilings, or exposed.

Cooling: Cooling 1400 W, Heating 650 W.

Important features: JetCone adjustment, angled nozzles 360° spread pattern, shorter throwlength, ceiling adaptations



Premum

Outstanding flexibility

Use: Single and open offices, conference rooms, institutions, stores, supermarkets, etc. in combination with Premax.

Installation: Recessed in different suspended ceilings.

Capacity: Cooling 600 W/m, Heating 700 W/m.

Important features: The Lindab JetCone and AirGuide technologies delivers outstanding flexibility.



Solus

Chilled beam revolution

Use: In any project where sustainable energy sources and energy savings are a natural priority.

Installation: Recessed in different suspended ceilings.

Capacity: Cooling 230 W/m, Heating 130 W/m.

Important features: Worlds first combined High Temperature Cooling and Low Temperature Heating chilled beam. No valves or other accessories needed. Perfect indoor climate and large savings.



Premax

Outstanding flexibility meets cooling performance

Use: Single and open offices, conference rooms, institutions, stores, supermarkets, etc. in combination with Premum.

Installation: Recessed in different suspended ceilings.

Capacity: Cooling 850 W/m, Heating 900 W/m.

Important features: The ultimate chilled beam. Full flexibility and market leading cooling capacities.



Architect

Various casings and frontplates for easy adaption to room design

Use: Architectural integrity is a top priority.

Installation: Exposed, sealed to the ceiling or free hanging. Wall mounted.

Capacity: Cooling 400 W/m, Heating 1000 W/m.

Important features: JetCone adjustment, adjustable air deflectors. With the freedom to design your own faceplate, there is no limit to the esthetic possibilities.



Plafond

The corner solution

Use: For a discrete and space saving wall installation.

Installation: Anywhere on the wall.

Capacity: Cooling 450 W/m, Heating 1075 W/m.

Important features: For visible installation anywhere on the wall surface.



Podium

Simple ventilation and cooling

Use: For a simple, active cooling application in offices, entrance halls, workspaces, laboratories, institutions, stores, supermarkets etc.

Installation: Recessed or exposed, sealed to the ceiling or free hanging.

Capacity: Cooling 300 W/m.

Important features: Simple active cooling solution.



Product overview Waterborne Solutions

Passive chilled beams

– Cooling without ventilation

Carat

High performing radiant passive chilled beam

Use: Industrial places, working spaces exhibition centers, offices, institutions, stores, supermarkets etc. with need for a cooling boost.

Installation: Exposed, sealed to the ceiling or free hanging, above the ceiling.

Capacity: Cooling 320 W/m.

Important features: Optimized passive strip, delivering a high cooling performance with 30 % radiation.



Capella

The visible radiant beam

Use: For simple, passive cooling application in offices, entrance halls, workspaces, laboratories, institutions, stores, supermarkets etc.

Installation: Recessed or exposed, sealed to the ceiling or free hanging.

Capacity: Cooling 200 W/m.

Important features: Simple cooling strip solution.



Cabinett

Cooling curtain

Use: As a cooling supplement to ventilation, in non-deskwork zones in workspaces, laboratories, institutions, stores, supermarkets etc.

Installation: Recessed or exposed, sealed to the ceiling or free hanging

Capacity: Cooling 200 W/m.

Important features: Simple cooling strip solution.



Radiant panels

– Cooling and heating without air movement

Atrium Plana

The seamless, esthetical radiant solution

Use: Specially designed for office use, but applicable anywhere.

Installation: Integrated in any common ceiling, directly on ceiling or exposed.

Capacity: Cooling 150 W/m² panel, Heating 620 W/m² panel.

Important features: The lightest panel on the market delivering the best efficiency coefficient ever.



Atrium C/H & Loggia

Easy, comfortable and energy-efficient

Use: Where large ceiling heights complicates normal heating and cooling.

Installation: Integrated in any common ceiling, directly on ceiling or exposed.

Capacity: Cooling 150 W/m² panel, Heating 620 W/m² panel.

Important features: Next-lightest panel on the market delivering the next-best efficiency coefficient ever.



Product overview Waterborne Solutions

Facade systems

– Ventilation, cooling and heating

Fasadium

Maximize ceiling space

Use: Offices and hotels where a window-based solution is desired.

Especially a good choice for renovation projects with limited space for ceiling installations.

Installation: Beneath the window sill.

Capacity: Cooling 1500 W, Heating 2400 W.

Important features: For hidden or invisible installation anywhere on the wall surface. Behind facade covering (onside installed).



Accessories

– Unique Lindab options

The Regula family

Specially designed accessories for waterborne solutions

Regula Combi and Duo will effectively control the indoor thermal climate. In addition to normal regulation, Regula Combi also offers the possibility of using a wide range of sensors, and extra equipment.

Regula Connect Basic, Multi and Pascal cards allow for a fast and easy installation of the build-in or post-mounted electronic equipment. Regula Secura works as a safety-switch to prevent condensation inside the chilled beam.

For more details we refer to our "Accessories" brochure.



Pascal

Simplified VAV solution

Lindab Pascal is a known solution that makes it more simple to fulfill the needs for a well functioning VAV system.

The solution is basically based on volume flow regulation which makes it a variable pressure system and therefore it is possible to obtain correct airflows in all parts of the system in all operating conditions. With a Pascal solution, in combination with an active chilled beam, it is possible to lower the energy consumption even more.

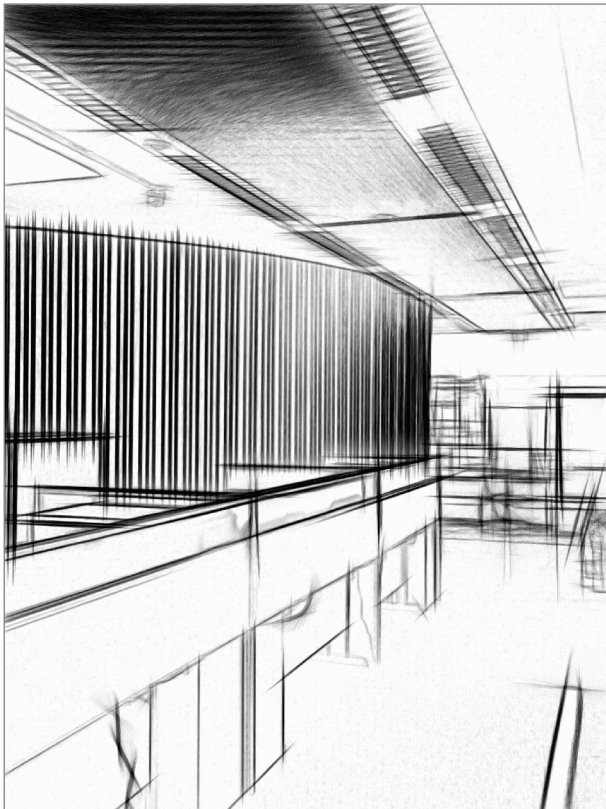


Customised and Multi Service Chilled Beam Solutions

Lindab has many years of experience to draw upon when it comes to chilled beam system design. This extensive knowledge base is supported by our very own test laboratory where full-scale room mockups can be created. This allows feasibility and design studies to be carried out to confirm that theory is translated to fact, giving the assurance that the system will perform as expected when installed under the required conditions. Lindab therefore can offer you unique guidance and support through the whole process from the planning

and design phase through installation to commissioning and handover to the building owner. In our MSCB (Multi Service Chilled Beam) solutions, several features could be added to the basic ventilation functions, cooling and heating, f. E. lighting, sprinkler, loudspeakers, smoke sensors u. o.

Choosing a Lindab waterborne solution will provide you with an energy optimised, high quality solution and will give you full security during all phases of the project.



The neat solution

Lindab's multi service chilled beams provide a plug-and-play prefabricated solution to a building's demands for heating and cooling whilst simultaneously accommodating other services such as lighting, cabling etc.



From concept, through feasibility studies and full-size mock-up testing to final design and installation, Lindab is with you every step of the way.

Waterborne product range selection table

Product type	Active beams							
Product name	Munio	Plexus	Premum/ Premax	Solus	Professor/ Professor Plus	Architect	Plafond	Podium
Recessed type	I-	I- X-, Y-, Z-	I-, X- Y- Z-	I-	I-			Yes (standard)
Exposed type		F-			F-	Circum, Luna, Prisma	B, C, D	Yes (standard)
Feature								
Air Flow adjustment	JetCone/ angled nozzles	JetCone/ angled nozzles	JetCone/ angled nozzles	Plugs	Plugs	JetCone	Plugs	Plugs
Pressure adjustment	JetCone	JetCone	JetCone	Plugs	Plugs	JetCone	Plugs	Plugs
Factory settings (airflow, pressure)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	
Distribution pattern adjustable	grille deflectors	JetCone	AirGuide (optional)	Fixed	Fixed	Air deflectors	Fixed	
Divergant nozzles (0°, 16°, 30°)	No (angled nozzles)	No (angled nozzles)	No (angled nozzles)	Yes	Yes		Yes	
Cooling/ 2-pipe	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)
Cooling + Heating / 4-pipe	Yes (standard)	Yes (option)	Yes (option)		Yes (option)	Yes (option)	Yes (option)	
VAV/DCV with Lindab Pascal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Colour, standard		RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010
Dimension								
Water connection	12 mm	12 mm	12, 15 mm (Premax)	12 mm	12, 15 mm (Professor Plus)	12 mm	12 mm	10, 12, 15, 22 mm
Air connection	125 mm	125, 160 mm (vert.)	125, 2x125 mm	125, 2x125 mm	100, 2x100 mm	125, 2x125 mm	100, 2x100 mm	100 mm
Length	800, 1000, 1200, 1400 mm	600 mm	1.2 to 3.6 m	1.2 to 3.6 m	1.2 to 3.6 m	1.2 to 3.0 m	1.2 to 3.6 m	1.2 to 6.0 m
Width	550 mm	600, 1200 mm	600 mm	600 mm	450, 600 mm	497...523 mm	230...301 mm	170, 350, 530 mm
Height	190 mm (with faceplate)	220 mm	200 mm	200 mm	120, 144 mm	170 mm	240...357 mm	130 mm
Weight	12.1 to 19.9 kg	11.6 to 30.3 kg	15-18 kg/m	11.5 kg/m	11.5-13.5 kg/m	11 kg/m	11.5 kg/m	1.6 to 4.8 kg/m
Water content cooling	1.63-2.85 l	1-1.3 l	Premum: 0.75 l/m Premax 0.6 l/m	0.9 l/m	0.65-1.2 l/m	0.5 l/m	0.65 l/m	0.25 to 0.75 l/m
Water content heating	0.18-0.32 l	0.2-0.4 l	0.25 l	0.9 l/m	0.33-0.12 l/m	0.25 l/m	0.33 l/m	----
Capacities								
Air volume	6-50 l/s	12-63 l/s	6-65 l/s	8-53 l/s	4-80 l/s	6-65 l/s	4-77 l/s	0-40 l/s
Cooling capacity, nominal, max.*	1150 W/m	1350 W/m	600 W/m	850 W/m	750 W/m	550 W/m	550 W/m	350 W/m
Heating capacity, nominal, max.*	1100 W/m	1950 W/m	750 W/m	850 W/m	800 W/m	750 W/m	750 W/m	----
Plus features (integrated)								
Heating	No (standard)	Yes	Yes	No (standard)	Yes	Yes	Yes	
Integrated valve and actuator	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Integrated condensation guard	Regula Secura	Regula Secura	Regula Secura	Regula Secura	Regula Secura	Regula Secura	Regula Secura	
Integrated connection card	Regula Connect	Regula Connect	Regula Connect	Regula Connect	Regula Connect	Regula Connect	Regula Connect	
Integrated room controller	Regula Combi	Regula Combi	Regula Combi	Regula Combi	Regula Combi			
Ceiling adaption, various		Yes	Yes	Yes (special)	Yes			
Exhaust air			Yes		Yes		Yes	
Hygienic design, special		downfoldable battery					Yes	Yes
Perforation, various	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Sound absorbing minearal wool								
Lighting			Yes (special)	Yes (special)	Yes (special)	Yes (special)	Yes (special)	
Accessories								
Connection cover					Yes	Yes	Yes	Yes
Hangers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specials (see catalogue details)	Yes						Yes	
Other information								
Test according to	EN 15116	EN 15116	EN 15116	EN 15116	EN 15116	EN 15116	EN 15116	EN 15116
Eurovent certified	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CE-marked								

* LpA max = 40 dB(A) with room attenuation Dr=4 dB

For more details, please check the actual "Catalogue page" for each product on www.lindQST.com

Product type	Passive beams			Facade system	Cooling Heating Panels		
Product name	Carat	Capella	Cabinett	Fasadium	Atrium	Loggia	Atrium Plana
Recessed type		Yes (standard)	A-42, F-42, K-60		C-, H-		C-, H-, HC-
Exposed type	Yes (standard)	Yes (standard)	A-42, F-42, K-60		C-, H-	Yes	C-, H-, HC-
Feature							
Air Flow adjustment				Plugs			
Pressure adjustment				Plugs			
Factory settings (airflow, pressure)				Yes (standard)			
Distribution pattern adjustable							
Divergant nozzles (0°, 16°, 30°)							
Cooling/ 2-pipe	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard)	Yes (standard C-)
Cooling + Heating / 4-pipe				Yes (option)			Yes (standard HC-)
VAV/DCV with Lindab Pascal	Yes (+diffusers)	Yes (+diffusers)	Yes (+diffusers)		Yes (+diffusers)	Yes (+diffusers)	Yes (+diffusers)
Colour, standard	RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010		RAL 9003, 9010	RAL 9003, 9010	RAL 9003, 9010
Dimension							
Water connection	10, 12, 15, 22, 28 mm	10, 12, 15, 22 mm	12 mm	10, 12 mm	10, 12, 15, 22 mm	10, 12, 15, 22 mm	10 mm
Air connection				100, 160, 200 mm			
Length	1.2 to 6.0 m	1.2 to 6.0 m	1.2 to 3.6 m	600, 700, 800, 1000, 1200, 1500 mm	1.2 to 6.0 m	1.2 to 6.0 m	0.6 to 3.6 m
Width	310, 440, 580, 710, 840 mm	170, 350, 530 mm	420, 600 mm	240 mm	330, 600, 870 mm	330, 600, 870 mm	400, 600, 900, 1200 mm
Height	147 mm	130 mm	150, 232, 300 mm	400...640 mm	60 mm	60 mm	35 mm
Weight	1.7 to 5.0 kg/m	1.6 to 4.8 kg/m	7 to 9 kg/m	14 to 16 kg/m	1.3 to 3.1 kg/m	1.3 to 3.1 kg/m	2.1 to 7.5 kg/m
Water content cooling	0.4-1.06 l/m	0.25-0.75 l/m	1.3 l/m	0.73-2.05 l/m	0.18-0.53 l/m	0.18-0.53 l/m	0.4-1.6 l/m
Water content heating	----	----	----	----	----	----	----
Capacities							
Air volume				12-63 l/s			
Cooling capacity, nominal, max.*	320 W/m	200 W/m	200 W/m	1500 W			188 W/m (10 K)
Heating capacity, nominal, max.*	----	----	----	2400 W			470 W/m (EN, 35 K)
Plus features (integrated)							
Heating			Yes	Yes	Standard	Standard	Standard
Integrated valve and actuator			Yes	Yes			
Integrated condensation guard			Yes	Yes			
Integrated connection card			Yes	Yes			
Integrated room controller							
Ceiling adaption, various							
Exhaust air		Yes (Accessory)			Yes		Yes (special)
Hygienic design, special			Yes (not F-42)		Yes	Yes	Yes
Perforation, various					Yes	Yes	Yes
Sound absorbing mineral wool							Yes (special)
Lighting			Yes (special)	Yes (special)	Yes (special)	Yes (special)	Yes (special)
Accessories							
Connection cover		Yes			Yes	Yes	
Hangers	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specials (see catalogue details)		Yes		Yes			
Other information							
Test according to	EN 14518	EN 14518	EN 14518	EN 14518	EN 14037/ EN-14240	EN 14037/ EN-14240	EN 14037/ EN-14240
Eurovent certified	Yes	Yes	Yes	Yes			
CE-marked					Yes	Yes	Yes
* LpA max = 40 dB(A) with room attenuation Dr=4 dB							

For more details, please check the actual "Catalogue page" for each product on www.lindQST.com



Good Thinking

At Lindab, good thinking is a philosophy that guides us in everything we do. We have made it our mission to create a healthy indoor climate – and to simplify the construction of sustainable buildings. We do that by designing innovative products and solutions that are easy to use, as well as offering efficient availability and logistics. We are also working on ways to reduce our impact on our environment and climate. We do that by developing methods to produce our solutions using a minimum of energy and natural resources, and by reducing negative effects on the environment. We use steel in our products. It's one of few materials that can be recycled an infinite number of times without losing any of its properties. That means less carbon emissions in nature and less energy wasted.

We simplify construction

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