Systemair KA
Modular air handling units
Systemair across the world

Skinnskatteberg, Sweden
The Group headquarters, distribution center and largest production site. Production of compact air handling units and a wide range of fans and accessories. Production of air curtains and fan heaters for Frico, a company within the Systemair Group.

Hässleholm, Sweden
Production of heating products for air handling units, mobile and fixed fan heaters, plus dehumidifiers.

Windischbuch, Germany
Production facility and distribution center, specialising in engineered products.

Langenfeld, Germany
Production of air curtains.

Mühlheim an der Ruhr, Germany
Production of air handling units for swimming pool halls and comfort ventilation with extra high efficiency.

Ukmergé, Lithuania
Production of residential units and large air handling units.

Maribor, Slovenia
Production of high-temperature fans for smoke extract ventilation.

Aarhus, Denmark
Production of large air handling units – “central units”.

Bratislava, Slovakia
Production of air distribution products; fire dampers.

Hyderabad, India
Production of air distribution products.
Save Energy, lower running cost!
Our label “Green Ventilation” features products with a high energy saving potential. All products labelled with “Green Ventilation” combine energy economy with energy efficiency.

Greater Noida, New Delhi, India
Production of duct, axial and box fans, air handling units and air distribution products.

Kuala Lumpur, Malaysia
Production of duct and axial fans.

Johannesburg, South Africa
Production of axial fans.

Lenexa, USA
Production of duct, axial and roof fans chiefly for the North American market. Distribution centre for the USA market.

Milan, Italy
Production of a wide range of liquid- and air-cooled chillers and heat pumps for comfort cooling.

Tillières, France
Production of air conditioning products for the commercial market.

Madrid, Spain
Production of large air handling units and box fans for markets in southern Europe, the Middle East and North Africa.

Bouctouche, Canada
Production of air handling units for residential use in North America, plus dehumidifiers.

Tilsonburg, Canada
Production of air handling units for classroom ventilation in the North American market.

Eidsvoll, Norway
Production of air handling units.

Istanbul, Turkey
Production of a wide range of air handling units and fan coils.

Waalwijk, The Netherlands
Production of air handling units.
Systemair KA

Modular air handling units

Systemair KA modular air handling units consist of one or more modules. The design allows for any unit configuration, with numerous options and solutions which, without a doubt, represent one of the main advantages compared to compact units. Quality, technological excellence and efficient operation of the optimized modules (heat exchangers, fans, filters, heaters, coolers etc.) ensure a high coefficient of performance together with a low pressure loss which is crucial for the safe and efficient operation of the units. The Systemair KA units are available in different versions and meet normal as well as the most demanding ventilation requirements. The Hygienic version units are TÜV NORD certified.
Highest flexibility for infinite solutions

Systemair KA

KA HSI-5/3-D-L-50 Ex

- **Ex**: Explosion proof
- **50**: Insulation (mm)
- **Service side**
  - **L**: Left
  - **R**: Right
- **Design**
  - **S**: Supply
  - **E**: Extract
  - **I**: In-line
  - **D**: Double stage
  - **P**: Parallel
- **Size**
  - **Width/Hight**
- **Installation**
  - **I**: Indoor
  - **O**: Outdoor
- **Execution**
  - **S**: Standard
  - **H**: Hygienic

Product name
Systemair KA - Modular air handling units

Cross section dimensions

N: module configuration (1, 2, 3,...,12)

Example:
Unit: KA HSI-3/2-D-L
Width: \((3 \times 305) + 40 + 50 + 50 = 1055\) mm
Height: \((2 \times 305) + 40 + 50 + 50 = 750\) mm
Nominal air flow: \(5587\) m\(^3\)/h

Nominal air flow (m\(^3\)/h)
(Air velocity: 2,5 m/s)

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Air flow capacities

Available in 95 sizes, suitable for almost any application.

Air velocity:
- 1.0 - 2.5 m/s
- 2.5 - 3.5 m/s
Casing

Modular design makes the possibility to configure a completely customized unit for almost any application.

Mechanical properties of the casing (acc. to EN 1886).

- **T2** Thermal transmittance
- **TB2** Thermal bridging
- **L1** Air leakage of casing
- **F9** Filter bypass leakage
- **D1** Mechanical strength

Casing
The casing consists of a mounting frame, panels and a base frame. The height and width values are multiples of the value 305 mm, and the length depends on the: built-in functional elements, purpose of use, point of installation, position of the intake and exhaust section of the unit, and any special customer requirements.
The casing interior is smooth, without half-open hollow sections or protruding sharp screw points. All exposed interior integrated elements have their edges smoothly cut, and have chamfered or rounded edges.

Mounting frame
The mounting frame is made from hollow aluminium sections in EN AW-60-60 (AlMgSi) quality and corner pieces made of nylon in PA6+20% GF quality.
- Possible versions of aluminium sections:
  - without an interrupted thermal bridge;
  - with an interrupted thermal bridge;
- painted aluminium RAL9006;
- anodized aluminium.

Panels
The panels are twin-layer, with an interrupted thermal bridge, with an internal and external sheet metal jacket, with sandwiched thermal and sound insulation which with its rectangularly oriented strands is partially or fully glued onto the internal and external sheet metal. Panels of larger dimensions with partially glued insulation have internal reinforcing elements made of PIR material.
The panels are bolted onto the frame from the outside.
For accessing the interior of the air handling unit there are two door versions available:
- A removable door or panel, fixed to the frame via clamping elements – blockers,
- A rotary door or panel, fixed to the frame via hinges, with door handles.
The rotary door - which is built-in in the over-pressure segment of the unit - have attached on their rim additional (over-pressure) connecting elements – blockers. At least one connecting element – blocker – also protects the under-pressure rotary door of the fan sections or rotary door of the sections which enable access to the moving parts of the fan against unauthorized access.

**Insulation data:**
- material type: rockwool
- insulation thickness: 50 mm,
- insulation density: 100 kg/m³
- fire rating: A according to DIN 4102

Possible materials for the internal and external panel jacket, and for internal built-in elements:
- galvanized sheet steel
- galvanized painted sheet steel RAL9006
- stainless sheet steel AISI 304 (material No. 1.4301)
- stainless sheet steel AISI 316Ti (material No 1.4571)
- steel sheet protected by an aluminium-zinc alloy AZ185

**Sealing tapes and sealing compounds**
Joint sealing between the fixed non-removable panels and the frame is achieved by using self-adhesive sealing tape. Sealing the joints between the removable panels or door and the frame is, depending on the purpose of use and client requirements, achieved by using self-adhesive sealing tape, with inserted sealing tape or poured PU sealing compound.

All sealing tapes and the poured PU sealing compound have a closed-cell structure, and are resistant to mould attack and other microorganisms.

The level-off sealing of internal indentations, gaps between the frame and the panels, gaps between internal built-in elements and the casing, and additional sealing of the installed filters and other functional elements is, depending on the purpose of use and client requirements, achieved by using a silicone-based or a non-silicone-based sealing compound resistant to mould attack and other microorganisms.

Depending on the purpose of use and the requirements of the client, the following versions are possible:
- without a level-off sealing of internal indentations and gaps,
- with a level-off sealing of internal indentations and gaps of the entire casing,
- with a level-off sealing of internal indentations and gaps of only a part of the casing (e.g. bottom of the unit),

**Mechanical properties according to EN 1886 fully glued insulation:**
- mechanical stability: D1 (M)
- casing tightness: L2 or L1
- tightness of the built-in filters: F9
- thermal conductivity: T2
- thermal bridge factor: TB2
- acoustic insulation:

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**Base frame**
The base frame protects the lower section of the air handling unit against corrosion and damage, ensures structural strength and rigidity, and enables the unit transport and assembly on the building. Depending on the size of the casing, the purpose of use and the point of installation, the following dimensions and materials are possible:
- height: 100 mm; material: aluminium
- height: 125 mm; material: galvanized sheet steel

The base frame with the height of 125 mm can be equipped with levelling feet with an adjusting bolt, the feet are made of galvanized sheet metal. In this case, the total adjustable height of the base frame is 350 to 380 mm.

All the units containing a trough for collecting and drainage of condensate, with the trough being integrated in the bottom of the unit, require a base height of 125 mm min.
Executions

Infinite configurations in standard or hygienic execution.

**Standard**

The standard version air handling units are made in accordance with the general technical, safety, hygienic and medical requirements which are laid down by the EU and domestic rules and regulations, and the EU, Slovenian and other standards, and are aligned with the special requirements on the part of the clients. Regardless of all the given requirements, they are always produced according to the Machinery Directive, Low Voltage Directive, EMC Directive and other Directives which pertain to the contained functional elements and the Ecodesign Directive. Essential requirements have been observed - these are stated in the standards EN 1886, EN 13053, EN 13779 and VDI 6022. Adjustments in order to meet the requirements of other standards are also possible.

Among other things, these units are also designed for ventilating of: residential buildings, business premises, shopping centres, schools, kindergartens, industrial facilities etc.

If there are no additional requirements, the basic standard version encompasses the following components/materials:

- casing frame: aluminium section in EN AW-60-60 (AlMgSi) quality without interrupted thermal bridge, and corner pieces made of nylon in PA6+20 % GF quality,
- internal and external casing walls: galvanized sheet steel,
- built-in elements: galvanized sheet steel,
- internal partition walls: galvanized sheet steel,
- heat exchangers: frame - galvanized sheet steel, lamella package – CuAl, collecting steel pipes,
- droplet separator: frame – aluminium EN AW-6060 (AlMgSi), lamellas – polypropylene, spacer sections – nylon,
- troughs for collecting and drainage of condensate: stainless sheet steel AISI 304 (1.4301),
- louvres: tightness class 2 in accordance with EN 1751, frame and dampers – aluminium EN AW-6060 (AlMgSi), gear – polypropylene PA6+GF30 %, damper gaskets - EPDM,
- flexible connections: frame – galvanized sheet steel, non-hygroscopic canvas with an operating temperature range of -10 to +80°C,
- screws and fastening elements: galvanized steel.
Hygienic

Among other things, these units are also designed for ventilating: medical facilities, hospitals, pharmaceutical and food industry facilities, electronics industrial plants etc.

If there are no additional requirements, the basic hygienic version encompasses the following components:
- casing frame: aluminium sections in EN AW-60-60 (AlMgSi) quality with interrupted thermal bridge, and corner pieces made of nylon in PA6+20 % GF quality,
- internal walls and ceiling casing: galvanized painted sheet steel RAL9006,
- bottom casing: stainless sheet steel AISI 304 (1.4301),
- external casing walls: galvanized sheet steel,
- assembly elements - guides, filter frames: stainless sheet steel AISI 304 (1.4301),
- internal partition walls: galvanized sheet steel,
- heat exchangers: heater frame - galvanized sheet steel, cooler frame - stainless sheet steel AISI 304 (1.4301), lamella package – copper/aluminium, collector pipes – copper,
- droplet separator: frame – aluminium EN AW-6060 (AlMgSi), lamellas – polypropylene, spacer sections – nylon,
- troughs for collecting and drainage of condensate: stainless sheet steel AISI 304 (1.4301),
- louvres for fresh and exhaust air: tightness class 2 in accordance with EN 1751, frame and dampers – aluminium EN AW-6060 (AlMgSi), gear – polypropylene PA6+GF30 %, damper gaskets EPDM,
- flexible connections: frame – painted galvanized sheet steel, non-hygrosopic canvas with an operating temperature range of -10 to +80 °C
- screws and fastening elements: stainless steel,
- Functional elements: in accordance with the requirements of the standards stated in the certificate.

Explosion proof
In addition to the requirements for the standard, hygienic, indoor and outdoor version, the solutions are included and the materials are used which enable installation, transport and air conditioning in explosive environments.

An ex-version of either a part of or the entire unit for the zone 1 and 2, equipment group II, equipment category 2, explosive atmosphere caused by gases, vapours or mist G, and for the temperature class T3 and/or T4 is also possible.
Installation

Indoor & Outdoor

Indoor installation
The air handling units made in accordance with the provisions stated in the chapters - standard, hygienic or explosion proof version - are only suitable for indoor installation as they need to be protected against atmospheric effects.

Outdoor installation
The air handling units are designed to be installed outdoors. In addition to the provisions stated in the chapters: standard, hygienic or explosion proof version have the following additional solutions:

• waterproof roof above the unit ceiling, made of galvanized painted sheet steel RAL9006,
• external casing walls made of galvanized sheet steel RAL9006,
• opening for fresh and exhaust air, rain-protected via a rain cover, or a protective grill and with a protective steel mesh of max. 20 x 20 mm,
• the opening for the fresh air intake contains a trough for collecting and drainage of condensate,
• louvres are placed inside the casing and are prepared for the installation of an actuator inside the casing,
• the collecting pipes of the water heater are placed inside the casing and positioned in the direction of the air flow,
• the water cooler collecting pipes are placed inside the casing and positioned opposite the direction of the air flow,
• empty chambers with a door for installation of the elements of the hydraulic circuit of the water heater and cooler.
Design & Modul combination
Modified to fit into almost any working space

The single module design is intended for supply or exhaust air handling units, and also for the combined air handling units.

The double stage module design is intended for bi-directional air handling units. The supply and the exhaust part of the air handling unit are positioned one above the other.

The parallel module design is intended for bi-directional air handling units. The supply and the exhaust part of the air handling unit are positioned one beside the other.

The in-line module design is intended for bi-directional air handling units which are installed in-line.
The airCalc++ provides fast selection and thermodynamic calculation of the air handling unit which shall then meet the requirements of the project, or the client. By using this application and with regard to the design and the project requirements, we can make a selection as regards the:

- unit type
- unit size
- unit structure with regard to the required functions.

In this way, we acquire a large amount of useful information about the unit – from the technical features of a unit (wattage of components, coefficient of performance, noise, installation dimensions, weight, etc.) to the drawings with all the dimensions in different views.