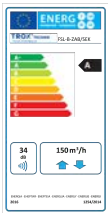




Cross flow heat recovery unit



Energy label



Tested to VDI 6022

## Supply and extract air unit with heat exchanger and heat recovery unit, secondary air option, for installation under the sill

Ready-to-operate decentralised ventilation unit that provides good comfort levels, used for the ventilation of internal spaces

- Acoustically optimised EC fans with low specific fan power, SFP = 0 to EN 16798-3
- Cross flow heat recovery unit (heat recovery efficiency 60 %)
- Highly efficient heat exchanger for heating and cooling as 2-pipe or 4-pipe system
- Heat exchanger connection is on the right when seen from the room
- Condensate drip tray with condensate drain (on the right when seen from the room)
- Heat recovery all year round (condensate drainage by others)
- Reduced fine dust and pollen contamination due to integral filters that conform to VDI 6022 – filter class ISO ePM1 65% / ISO coarse 55%
- Inspection access panel simplifies filter change and cleaning of the heat exchanger
- Motorised shut-off dampers, normally closed (NC)
- Automatic switching to secondary air mode (based on air quality)

Optional equipment and accessories

- Modular control system FSL-CONTROL III, specially for decentralised ventilation systems
- Various fixing systems to fix the unit to the floor or wall
- Wood panelling as outer casing in various colours, with TROX ventilation grilles for supply air and extract air (assembly kit)



Inspection access panel for filter and heat recovery unit



Water connection

Function	2	Specification text	8
Function	3	Order code	13
Technical data	5	Dimensions	15
Quick sizing	6	Product details	16

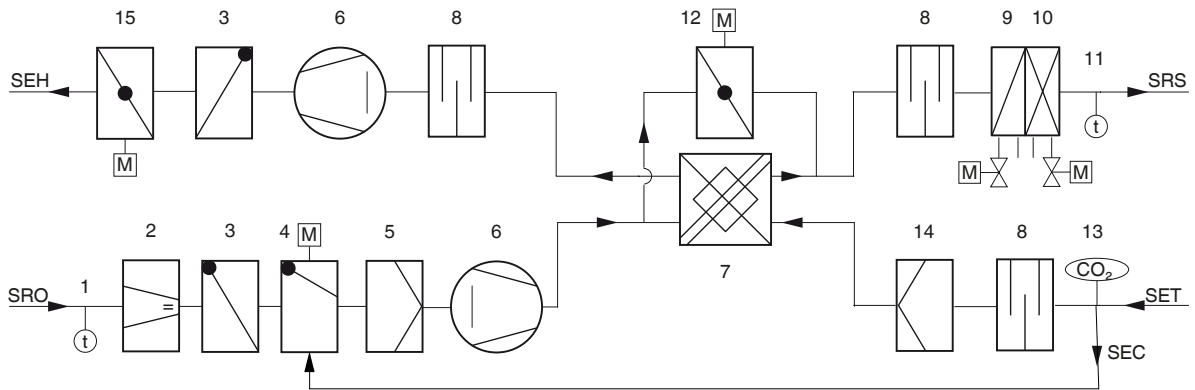
## Function

### Functional description

Decentralised supply and extract air units ensure room ventilation. They dissipate the cooling loads and heat loads in accordance with the technical data. An EC centrifugal fan takes in the outdoor air and this then flows through the maintenance-free and mechanical self-powered type VFL volume flow limiter, which is pre-set at the factory to the maximum volume flow rate. This ensures maximum limitation of the outdoor air flow rate to a pre-set value for all façade positive pressure situations without an electrical external power supply. The air then flows through the motorised shut-off damper, the self-powered non-return damper and the outdoor air filter. The self-powered non-return dampers in the outdoor air intake and exhaust air outlet prevent the return flow of the conditioned air or undesired airflow directions. Once the outdoor air has passed the fan, it flows through the heat recovery unit; it is possible to bypass the heat exchanger in order to protect it, or when it is sensible with regard to energy efficiency. If necessary, the air is heated or cooled by the heat exchanger before it is discharged to the room as a displacement flow. The extract air first passes through the

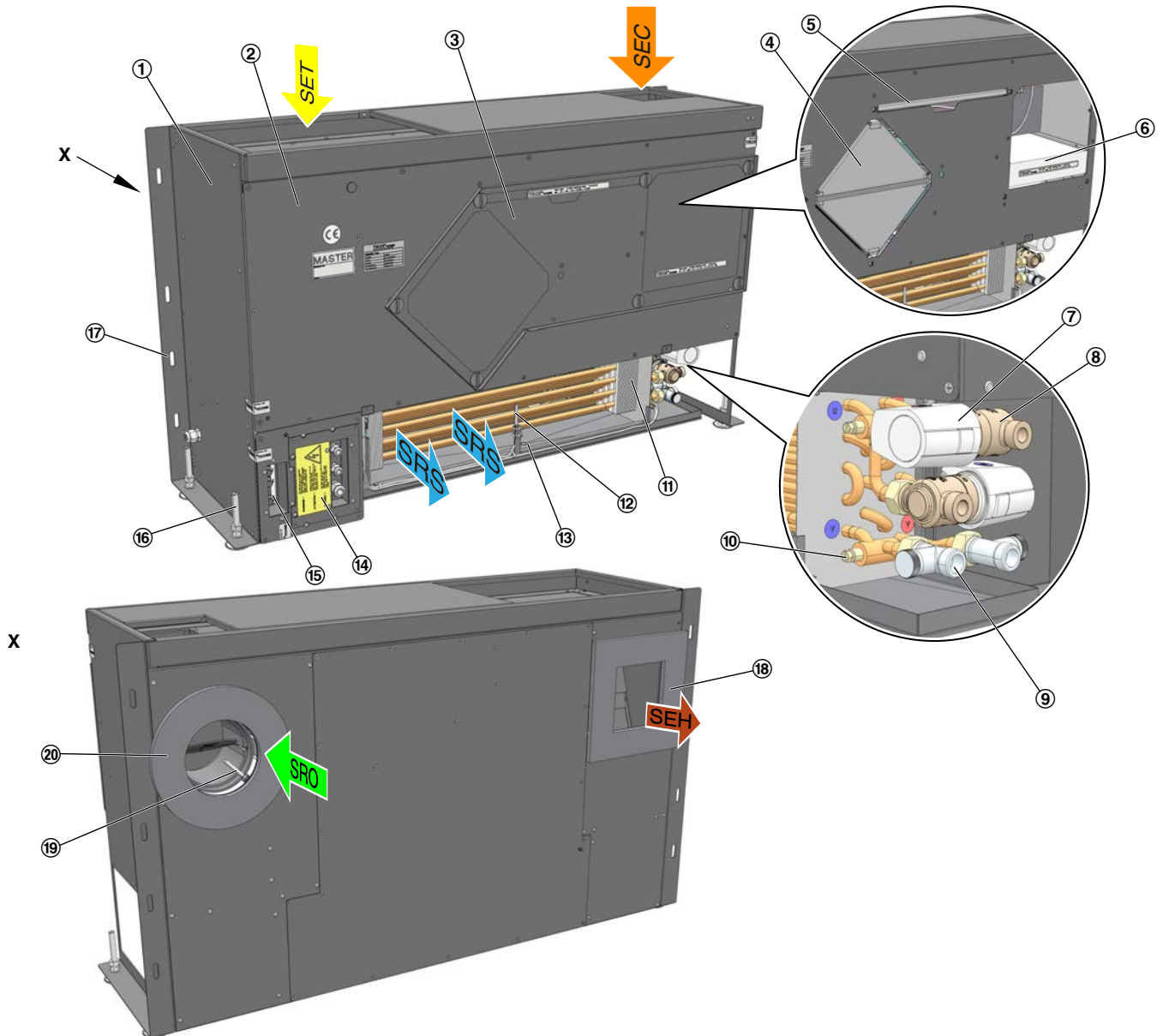
outdoor air filter, then flows through the heat recovery unit, the extract air fan, the non-return damper and the motorised shut-off damper before it is discharged to the outside as exhaust air. If the room air quality is sufficient, FSL-CONTROL III closes the outdoor air dampers and changes to secondary air operation, which is more energy efficient in any case. The control system compares the room air quality setpoint value to the actual value measured by the CO<sub>2</sub> sensor and switches automatically between outdoor air and secondary air operation. If the power fails, the outdoor air and exhaust air dampers are closed to ensure fire protection and frost protection and to avoid draughts. This is ensured by a capacitor in each actuator. The supply air is discharged near the external wall and with a medium velocity between 1.0 and 1.5 m/s. Due to the induction effect, the supply air velocity is rapidly reduced so that, in cooling mode, the supply air displaces the room air over the entire floor area. The convection from people and other heat sources causes the outdoor air to rise and create comfortable conditions in the occupied zone.

## Function



SEH Single room exhaust air  
 SRO Single room fresh air  
 SRS Single room supply air  
 SET Single room extract air  
 SEC Secondary air individual room

- 1 Fresh air temperature sensor (optional)
- 2 Volume flow limiter
- 3 Non-return damper
- 4 Shut-off damper with actuator (outdoor air)
- 5 Fine dust filter ePM1 65 %
- 6 EC fan (supply air and extract air)
- 7 Recuperator
- 8 Sound attenuator
- 9 Heating coil
- 10 Cooling coil
- 11 Supply air temperature sensor (optional)
- 12 Bypass damper with actuator (modulating)
- 13 CO<sub>2</sub> sensor (optional)
- 14 Extract air filter ISO coarse 55 %
- 15 Shut-off damper with actuator (exhaust air)



SEH Single room exhaust air  
 SET Single room extract air  
 SRO Single room fresh air  
 SRS Single room supply air  
 SEC Secondary air

1 Casing  
 2 Cover plate  
 3 Inspection access panel  
 4 Cross flow heat recovery unit  
 5 Extract air filter ISO coarse 55 %  
 6 Fresh air filter ISO ePM1 65 %  
 7 Valve actuators  
 8 Valves

9 Lockshields  
 10 Bleed screw  
 11 Heat exchanger  
 12 Supply air temperature sensor (optional)  
 13 Condensate drip tray with drain  
 14 Controls access panel  
 15 Network connections  
 16 Levelling feet  
 17 Fixing brackets  
 18 Exhaust air opening including seal  
 19 Fresh air temperature sensor (optional)  
 20 Fresh air opening including seal

**Technical data**

Width	1085 mm
Height	630 mm
Depth	320 mm
Outdoor air flow rate	80 – 150 m <sup>3</sup> /h
Nominal volume flow rate	120 m <sup>3</sup> /h
Sound power level	30 – 43 dB(A)
Heat recovery efficiency	60 %
Max. operating pressure, water side	6 bar
Max. operating temperature	75 °C
Supply voltage	230 V AC ±10 %, 50/60 Hz
Power rating	234 VA
Weight	65 kg

## Quick sizing

## Sizing example 1

Supply air flow rate	m <sup>3</sup> /h	80	100	120	150
Total cooling capacity	W	370	460	550	670
Room cooling capacity	W	214	267	321	386
Air temperature inside the unit	°C	32.0	32.0	32.0	32.0
Relative humidity	%	40	40	40	40
Water content of the dry air	g/kg	11.9	11.9	11.9	11.9
Supply air temperature	°C	18.0	18.0	18.0	18.3
Condensate	g/h	0	0	0	0
Chilled water flow rate	l/h	90	115	160	200
Water temperature, inlet	°C	16	16	16	16
Water temperature, outlet	°C	19.5	19.4	19.0	18.9
Water side pressure drop	kPa	3.0	4.0	7.5	11.0
Total heating capacity	W	1370	1720	2060	2440
Room heating capacity	W	326	421	501	506
Air temperature inside the unit	°C	-12.0	-12.0	-12.0	-12.0
Supply air temperature	°C	33.2	33.6	33.5	31.1
Hot water flow rate	l/h	50	80	120	145
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	36.2	41.2	45.0	45.3
Water side pressure drop	kPa	2.5	5.5	11.0	15.0
Sound power level L <sub>WA</sub>	dB(A)	30	34	38	43
Sound pressure level with 8 dB system attenuation	dB(A)	22	26	30	35
Active power P <sub>el</sub>	W	19	23	24	34

## Sizing example 2

Supply air flow rate	m <sup>3</sup> /h	80	100	120	150
Total cooling capacity	W	420	520	640	800
Room cooling capacity	W	216	267	321	406
Heat recovery efficiency	%	63	61	60	56
Air temperature after heat recovery	°C	29.4	29.5	29.6	29.7
Relative humidity	%	46.3	46.0	46.0	45.6
Water content of the dry air	g/kg	11.9	11.9	11.9	11.9
Supply air temperature	°C	17.9	18.0	18.0	17.9
Condensate	g/h	177	207	266	324
Chilled water flow rate	l/h	50	68	80	105
Water temperature, inlet	°C	8	8	8	8
Water temperature, outlet	°C	15.2	14.6	14.8	14.5
Water side pressure drop	kPa	1.5	2.0	2.7	4.5
Total heating capacity	W	770	960	1200	1560
Room heating capacity	W	329	404	481	571
Thermal efficiency	%	61	60	57	54



Air temperature after heat recovery	°C	6.1	5.9	4.8	3.3
Supply air temperature	°C	33.3	33.1	33.0	32.4
Condensate	g/h	200	200	200	200
Hot water flow rate	l/h	55	75	110	180
Water temperature, inlet	°C	50	50	50	50
Water temperature, outlet	°C	37.8	38.9	40.5	42.5
Water side pressure drop	kPa	0.5	1	1.5	3.3
Sound power level $L_{WA}$	dB(A)	30	34	38	43
Sound pressure level with 8 dB system attenuation	dB(A)	22	26	30	35
Active power $P_{el}$	W	19	23	24	34

## Specification text

This specification text describes the general characteristics of the product. Texts for variants can be generated with our Easy Product Finder design program.

### FSL-B-ZAB/SEK-4-KM/1085x630x320/C3

Under sill units for installation horizontally on the façade

Please note: The described under sill ventilation unit variant is equipped with a single room control system arranged in the unit for autonomous room operation.

The supplied controllers contain the standard control parameters for operation according to our control system description.

FSL-B-ZAB/SEK with self-powered secondary air switchover function - MASTER UNIT Under sill ventilation unit TROX FSL-B-ZAB/SEK with supply and extract air function and switchover option to secondary air operation (air quality dependent), heat recovery, and heating and cooling function for installation on an external wall below the window sill

- Casing made of galvanised sheet steel, cover and sheet metal connections via deep-drawn threads and stainless steel cross-head screws, all necessary internal air ducts sealed and lined, internal electrical cable penetrations sealed, exposed surfaces powder-coated (RAL 9005, jet black)
- Intake for extract and secondary air on the top, sheet metal edges of the intake openings are formed accordingly (without sealing tape) and can be used as an additional support for the under sill trim (trim provided by others); closed cell sealing tape is required between the unit and the trim so as to avoid any mixing of airflows (short circuit); (sealing tape not included in the TROX supply package)
- Sound- and heat-insulating lining on intake and discharge side made of mineral wool faced with glass fibre scrim (material classification A, non-combustible according to DIN 4102, T1), erosion resistant up to air velocities of 20 m/s, or closed cell insulation material
- The device meets the hygiene requirements of VDI 6022
- Levelling feet, + 40 mm
- Connection to the outdoor air and exhaust air openings (provided by others) of the façade by means of perimeter closed cell sealing tape on the rear side of the unit,  $b \times d = 50 \times 10$  mm, the intake and discharge resistance of the construction provided by others should not exceed 20 Pa at a nominal volume flow rate
- Use of 2 energy-saving EC centrifugal fans, supply and extract air fans classified in category SFP 1 ( $< 500$  W/(m<sup>3</sup>/s)) according to EN 16798-3:2017-11, electrical power consumption of the entire unit at a nominal volume flow rate of 120 m<sup>3</sup>/h  $< 24$  W, for the connecting cable a power rating of 195 VA has to be considered
- Suitable for up to 5 speed levels (80 to 150 m<sup>3</sup>/h), signalling via device-internal single room control system, volume flow rate level correction by adjusting the control voltage subsequently is possible
- Meets the requirements of EU directive 1253/2014 (Erp)
- Sound power level in supply-extract air operation at 80/100/120m<sup>3</sup>/h = 30/34/38 dB(A) (corresponds to a sound pressure level of = 22/26/30 dB(A) at a system attenuation of 8 dB). The measurement data refer to sound power measurements of a single unit in a reverberation chamber according to accuracy class 1. Depending on the installation situation, deviations are possible
- Integral recuperative cross flow heat exchanger for heat recovery in a salt water resistant aluminium design, with high efficiency due to special plate structure, plate spacing and package length, including condensate drip tray. A separate service opening allows for maintenance without removing the top of the unit casing
- With electromotive bypass which allows the volume flow to bypass the heat recovery, actuator 24 V (modulating), 100 % open – closed, signalling via device-internal single room control system FSL-CONTROL III
- Self-powered non-return dampers in the outdoor/exhaust air area that are integrated into the locking devices for outdoor air and exhaust air can be hinged down, and these prevent a return flow of conditioned air or undesired airflow directions when the shutoff damper device is opened and closed
- Motorised shut-off dampers in the outdoor/exhaust air area, normally closed when there is no power by means of energy storage, actuator 230 V, open/closed, signalling via device-internal single room control system
- Integral mechanical self-powered volume flow limiter type VFL, maintenance-free, pre-set to a maximum volume flow rate, without electrical external power supply for maximum limiting of the fresh air flow rate to a pre-set value for all façade positive pressure situations. The VFL consists of the control component with setpoint value adjustment and control mechanics. Control by mechanical self-powered damper blade. Control spring and low-friction, silicone-free cushioning element, any installation orientation and maintenance-free, high control accuracy of  $\pm 10$  %, referring to the maximum in the pressure range of between 30 and 300 Pa
- Automatic switching to secondary air mode (only with an air quality sensor) if the indoor air quality (measured, for example, with the integral CO<sub>2</sub> sensor) is within the limits defined beforehand. The fresh air damper closes, the self-powered secondary air damper opens and the extract air fan is switched off.



- Electrical components contained in the unit are completely wired with FSL-CONTROL III. Cable for connection (connection is not part of the supply package) of the power supply (L, N, PE) with wire end ferrules led approx. 1 m out of the unit: As a transfer point to the electrical installation provided by others:
    - Supply voltage (230 V): 3 wires, 3 x 1.5 mm<sup>2</sup> (L, N, PE)
  - Connection possibility for bus communication (optional), connection of control panel, etc. after opening the customer area of the controls. As a transfer point to the controls provided by others:
    - Rail mount terminals type Wago 260 for the connection (provided by others) of
      - Digital inputs DI
      - Digital outputs DO
      - Master-slave connection RS485
      - BMS connection (optional) RS485
      - Control panel
      - RJ45 socket as service access to the user interface
  - The following sensors are arranged in the unit to control the single room control system (the actual room temperature is recorded at the control panel):
    - Indoor air quality sensor CO<sub>2</sub>
    - Supply air temperature measurement downstream of the heat exchanger
    - Outdoor air temperature measurement in the outdoor air intake
  - 4-pipe aluminium cooper tube heat exchanger for air heating or air cooling, matched to project-specific data, easily removable for cleaning (depends on the connection to the main pipe - by others, not included in the TROX supply package), drainage and venting option per heating/cooling circuit, on the right when seen from the room. We recommend a connection to the pipe network (provided by others) with flexible hoses (not included in the TROX supply package) so that the heat exchanger can be easily removed for cleaning
  - Transfer points are the manually preassembled control components:
    - Valves in the return: transfer with G ½" external thread, flat seal
    - Lockshields in the flow: transfer with G ½" external thread, flat seal
  - Easy-to-clean condensate drip tray made from galvanised sheet steel, powder-coated RAL 9005, with condensate drain Ø 12 x 1 [mm]
  - Outdoor air filter as Mini Pleat filter, class ePM1 (fine dust filter):
    - Filter class to ISO16890: ISO ePM1 65 %
    - Eurovent-certified
    - ePM1 filter media made from high-quality, wet-strengthened glass fibre paper are pleated, the spacers are made from thermoplastic hot-melt adhesive and ensure uniform spacing (4 mm) between the pleats
    - The frame is made of moisture-resistant non-woven fibre, with lugs (for pulling it out) and must not reduce the flow cross section (filter size = flow cross section).
    - Filter area >= 1.6 m<sup>2</sup>
  - Extract air filter (coarse dust filter) as flat filter medium, filter class according to ISO16890: ISO Coarse 55 %
  - Quick change of the filters is possible, since the filter insert can be opened without tools after opening the casing that is provided by others via user-friendly quarter-turn fasteners (accessibility must not be restricted by the under sill trim that is provided by others)
  - Possibility of supporting a window sill provided by the customer, intake of the extract air below the window sill is on the top of the unit
  - Closed cell sealing tapes for sealing and adaptation to the outer casing (by others) are not included in the TROX supply package
  - The under sill trim provided by others (supply package by TROX possible on request) is to be perforated in areas of the radiator to be specified for the introduction of supply air into the room and must not restrict maintenance work and unit assembly/disassembly on the front of the unit. On the top of the casing, there is also a perforation in areas to be specified for extract air suction
  - Clear distance between the front edge of the unit and the inner edge of the under sill trim approx. 30 mm
  - The front of the device must be completely accessible after disassembly of the outer casing
- Units, dimensions and weight:
- Width: approx. 1085 mm (including fixing brackets)
  - Height: approx. 630 mm (without seal for window sill, without condensate drain, without levelling feet)
  - Depth: approx. 320 mm (without compressible façade seal on the back of the unit)
  - Weight: approx. 65 kg
- Including control system FSL-CONTROL III, as described below: FSL-CONTROL III is described as stand-alone single room control equipment with a simple timer. Optional expansions, such as connection to the central BMS provided by others via Modbus TCP / Modbus RTU, BACnet MS/TP or BACnet IP, humidity sensors, return flow temperature sensors, electromotive valve actuators or pressure-independent control valves are included in the product range, but must be replaced with the standard components in the following description. A room temperature signal is also required. Various room control panels and sensors are available for this purpose. The corresponding optional equipment text modules can be found in the appendix of the following standard equipment for room-autonomous operation. We recommend commissioning by our technical service. You will find related text modules below.
- TROX control module FSL-CONTROL III (order code ...-C3-MA ...):
- Single room controller for mounting on DIN mounting rail in the unit or in a separate control casing
  - 42 digital or analogue inputs and outputs
  - MicroSD card (at least 2 GB) as integral flash memory. The trend data is stored here and can be accessed via the RJ45 service socket.
  - Equipped at the factory with a software package for master units specially developed for decentralised ventilation units. The software enables simple master-slave communication via Modbus RTU
  - Up to 10 slave devices can be connected to one master device

- The software provides 3 types of operation (Off, Automatic and Manual), 3 operating modes (Occupied, Unoccupied and Standby) and 4 operating mode overrides (Boost, Class, Night Ventilation and Fan Forced Circuit)
- Basic distinction between room temperature control by controlling heating and cooling valves or modulating bypass damper or supply air temperature control for isothermal ventilation
- CO<sub>2</sub>-guided air quality control
- Year-round heat recovery use
- Filter monitoring
- Configurable DI, e.g. for connection (by others) of PIR sensors, window contacts, holiday switching, etc.
- Alarm signals type A (= switch-offs) and type B (= notifications)

#### Real Time Clock (RTC/real time clock) (order code ...-T/...):

- Component of the Master Software Package
- Enables a simple timer
  - 7 days with 10 switching points each
  - Automatic summer / winter time changeover
  - Temporal activation of night purge

#### CO<sub>2</sub> sensor (order code.../C/...):

- Sensor arranged in the extract air intake of the master unit for recording the indoor air quality and corresponding control of the outdoor air flow rate
- Measurement via an NDIR sensor, which works on an infrared basis and compensates for any contamination by its 2-beam measurement principle
- Measuring range 0 – 2000 ppm

#### Supply air temperature sensor (order code .../Z/...):

- Supply air temperature sensor with NTC thermistor as sensing element, resistance 10 kΩ at 25 °C, measuring range 0 – 50 °C
- Especially fast response time due to perforated measuring tip

#### Outdoor air temperature sensor (order code .../A/...):

- Outdoor air temperature sensor with NTC thermistor as sensing element, resistance 10 kΩ at 25 °C, measuring range -30 – 50 °C

#### Water-side components (order code.../HV-R-.../KV-R-...):

- Valve actuators: 2 x thermoelectric actuators for opening and closing valves, with position indicator, including pluggable power rating, supply voltage 24V DC, control voltage 0-10V DC, power consumption 1 W, protection level: IP 54
- Straight-way valves: 2 x straight-way valves ½" standard, manually preassembled, PN 16, DN 10, kvs 0.4 (alternatively 0.25, 0.63 or 1.0 m<sup>3</sup>/h - please state the required kvs value), threaded connection G 1/2B, operating fluid temperature 1 to 110 °C
- Lockshields: 2 x lockshields on both sides ½", manually preassembled, nominal width DN 15; ½ inch, valve casing straight through with male thread on both sides, flat seal, for flow restriction and shut-off, operating temperature max. 120 °C

Optional equipment to increase the comfort of the FSL-CONTROL III:

#### TROX control panels for FSL-CONTROL III:

At least one room temperature signal is required per room. There are different variants of TROX control panels available, optionally with or without step switching. Additionally we offer a room temperature sensor RTF without control elements. Alternative control panels provided by the customer must be connected via bus communication.

#### Control panels with selector switch for surface mounting

Control panel with selector switch, for surface mounting, type Honeywell

Supplied loose as accessory, with room temperature sensor, setpoint adjuster (blue or white), override button, LED and 3-step switch as well as off and automatic, assembly on 60 mm flush box or directly on the wall, NTC thermistor as sensor element, resistance 20 kΩ at 25 °C, dimensions (B x H x T): 99 x 104 x 30 mm, operating temperature: 6 to 40 °C

Control panel with selector switch, for surface mounting, type Thermokon

Supplied loose as an accessory, with room temperature sensor, setpoint adjuster (blue or white), override button, LED and 3-step switch as well as off and automatic, casing made from pure white PVC0 (RAL 9010) assembly on 60 mm flush box or directly on the wall, NTC thermistor as sensor element, resistance 20 kΩ at 25 °C, dimensions (B x H x T): 84.5 x 84.5 x 25 mm, operating temperature: -35 to 70 °C

Control panels without selector switch for surface mounting

Control panel without selector switch, for surface mounting, type Schneider

Supplied loose as additional part, with mode display, push button and setpoint adjustment, sensor NTC 10 kΩ, protection level: IP 20, wall mounting or on 70 mm flush-mounted box, dimensions (B x H x T) 84 x 116 x 24 mm, colour light grey/white

Control panel without selector switch, for surface mounting, type Thermokon

Supplied loose as additional part, with mode display, push button and setpoint adjustment, sensor NTC 20 kΩ, protection level: IP 20, dimensions (B x H x T) 84.5 x 84.5 x 25 mm

Room temperature sensor for surface mounting

Room temperature sensor TROX RTF, surface mounting

Supplied loose as additional part, room sensor without control elements, measuring range: -35...+70°C, sensor NTC 10 kΩ, terminal screw terminal, d=1.5 mm, protection level IP 20, assembly wall mounted or on 70 mm flush-mounted box, dimensions (B x H x T) 85 x 85 x 30 mm, casing ABS in RAL 9010

Control panels without selector switch for surface mounting

For manual operation of the ventilation units with a high-quality look and the matching design frame from a wide range of switch programmes, the unit is suitable for particularly design-oriented facilities.

Control panel without selector switch, for flush mounting, type Thermokon, switch from Berker S.1 range, polar white

Supplied loose as additional part, with mode display, push button and setpoint adjustment, sensor NTC 20 kΩ, protection level: IP 20

Control panel without selector switch, for flush mounting, type Thermokon, switch from Berker Q.3 range, white

Supplied loose as additional part, with mode display, push button and setpoint adjustment, sensor NTC 20 k $\Omega$ , protection level: IP 20

Control panel without selector switch, for flush mounting, type Thermokon, switch from Busch Jäger future linear range, white  
Supplied loose as additional part, with mode display, push button and setpoint adjustment, sensor NTC 20 k $\Omega$ , protection level: IP 20

Further switch programmes on request!

Control panels without selector switch and without setpoint value adjuster for flush mounting

Control panel without selector switch and without setpoint value adjuster, for flush mounting, type Thermokon, switch from Gira E2 range

Supplied loose as additional part, with mode display and button, sensor NTC 20 k $\Omega$ , protection level: IP 20

Further switch programmes on request!

Electromotive valve actuator:

As an alternative to the standard installed thermoelectric actuator:

- 2 x electromotive actuators for opening and closing valves, supply voltage AC/DC 24 V, maximum power consumption 2.5 VA, signalling of control signal 3-point DC 0 – 10 V, permitted fluid temperature 1 – 110 °C

Pressure-independent control valve:As an alternative to the standard installed straight-way small valve:

- 2 x pressure-independent control valves, manually pre-assembled with modulating open and close control in combination with an externally adjustable dynamic volume flow controller, with full valve authority, nominal width DN 10, ½ inch, valve casing straight through with male thread on both ends, flat seal, fluid temperature 0 - 120 °C

Interface for connection to central building management system (BMS) provided by others:

Modbus TCP interface including web server (order code .../MT/...)To increase comfort, we recommend integration into a central building management system provided by others. FSL-CONTROL III offers the possibility to be connected to a central BMS provided by others using Modbus TCP protocol. Additionally incl. web server for simplified configuration, commissioning and remote monitoring of the device. The central BMS is not included in the supply package from TROX, only the interfaces listed above are available here.

- Modbus TCP interface (Ethernet)

BACnet IP interface including web server (order code .../BI/...)To increase comfort, we recommend integration into a central building management system provided by others. FSL-CONTROL III offers the possibility to be connected to a central BMS provided by others using BACnet IP protocol. Additionally incl. web server for simplified configuration, commissioning and remote monitoring of the device. The central BMS is not included in the supply package from TROX, only the interfaces listed above are available here.

- BACnet IP interface (Ethernet)

Modbus RTU (order code .../MR/...)To increase comfort, we recommend integration into a central building management system provided by others. FSL-CONTROL III offers the possibility to be connected to a central BMS provided by others using Modbus RTU protocol. The central BMS is not included in

the supply package from TROX, only the interfaces listed above are available here.

- Modbus RTU interface (RS485)

BACnet MS/TP (order code .../BM/...):To increase comfort, we recommend integration into a central building management system provided by others. FSL-CONTROL III offers the possibility to be connected to a central BMS provided by others using BACnet MS/TP. The central BMS is not included in the supply package from TROX, only the interfaces listed above are available here.

- BACnet MS/TP interface (RS485)

Commissioning / parameter setting of decentralised ventilation units without connection to the central building management system

- Visual inspection of the unit connections carried out by others for compliance with the respective installation specifications from the installation and configuration instructions: air connections, heating/cooling connection, electrical connections, integration into the installed outer casing, connections of external components
- Checking and, if necessary, adapting the project parameters pre-set in the factory with regard to customer-specific adaptations
- Functional test of the individual components (control elements, fans, valves, dampers, sensors)
- Checking the project-specific control functions including any special functions such as volt-free switch contacts
- Documentation of the device settings as well as their use in a service report. The service report must be signed by your company as the customer or your representative
- The invoice is made as a flat rate, derived from the number of devices and distance

Commissioning / parameter setting of decentralised ventilation units with connection to the central building management system

- Visual inspection of the unit connections carried out by others for compliance with the respective installation specifications from the installation and configuration instructions: air connections, heating/cooling connection, electrical connections, integration into the installed outer casing, connections of external components, central building management system connections
- Checking and, if necessary, adapting the project parameters pre-set in the factory with regard to customer-specific adaptations
- Functional test of the individual components (control elements, fans, valves, dampers, sensors)
- Checking the project-specific control functions including any special functions such as volt-free switch contacts
- Function test of the communication to the central BMS in cooperation with the ordered controls company:
  - Checking that the settings that are provided by others comply with the specifications in the installation and configuration instructions
  - Input test of the data points sent by the customer
  - Output test of the output data points
  - Trial operation of the operating conditions switchable by the central BMS

- Documentation of the device settings as well as their use in a service report. The service report must be signed by your company as the customer or your representative
- The invoice is made as a flat rate, derived from the number of devices and distance
- Description of the room control panel and the room conditions that can be influenced by it
- Description of maintenance work
- The invoice is a flat rate and is carried out by the responsible sales representative

#### Instruction in operation and maintenance

- One-off instruction for the operation of the decentralised ventilation units consisting of:
  - Description of the equipment functions on the unit that has already been put into operation



**Order example: FSL-B-ZAB/SEK-4-KM/1085x630x320/C3-MA-T/C/Z/A/HV-R-0.40/KV-R-0.25**

FSL-B-ZAB/SEK	Horizontal under sill unit
4	With 4-pipe heat exchanger
KM	With condensate drain
C3	With FSL-CONTROL III
MA	Master construction
T	With real time clock
C	With CO <sub>2</sub> sensor
Z	With supply air temperature sensor
A	With outdoor air temperature sensor
HV-R-0.40	With straight-way valve (heating circuit) kvs 0.40 and lockshield
KV-R-0.25	With straight-way valve (cooling circuit) kvs 0.25 and lockshield

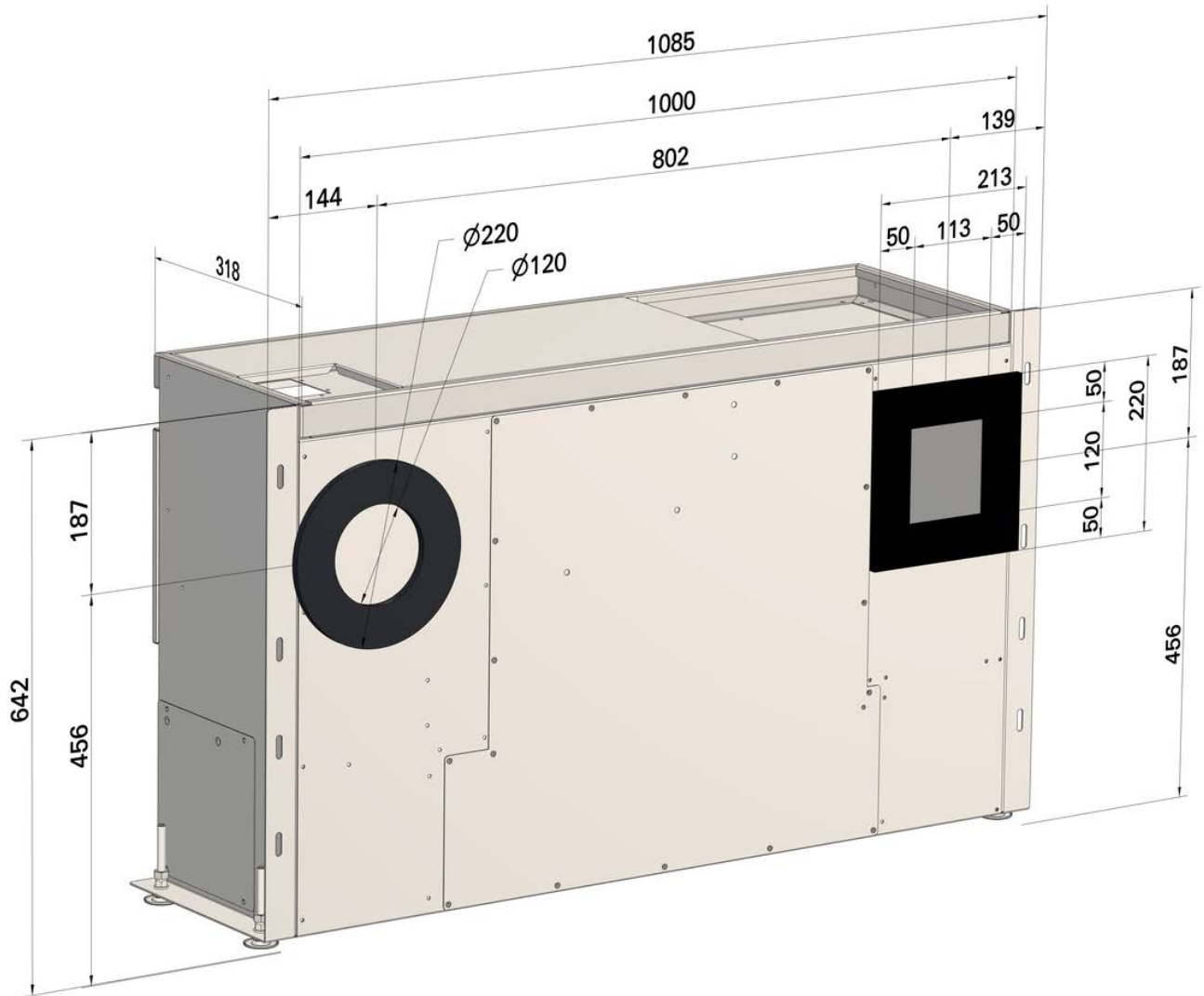
**Order example: FSL-B-ZAB/SEK-4-KM/1085x630x320/C3-SL-Z/HV-R-0.40/KV-R-0.25**

FSL-B-ZAB/SEK	Horizontal under sill unit
4	With 4-pipe heat exchanger
KM	With condensate drain
C3	With FSL-CONTROL III
SL	Slave construction
Z	With supply air temperature sensor
HV-R-0.40	With straight-way valve (heating circuit) kvs 0.40 and lockshield
KV-R-0.25	With straight-way valve (cooling circuit) kvs 0.25 and lockshield

**Order example: FSL-B-ZAB/SEK-4-KM/1085x630x320/C3-MA-BI/C/Z/HV-R-F0.50/KV-R-F0.50**

FSL-B-ZAB/SEK	Horizontal under sill unit
4	With 4-pipe heat exchanger
KM	With condensate drain
C3	With FSL-CONTROL III
MA	Master construction
BI	With BACnet-IP interface
C	With CO <sub>2</sub> sensor
Z	With supply air temperature sensor
HV-R-F0.50	With pressure-independent control valve (heating circuit) and lockshield
KV-R-F0.50	With pressure-independent control valve (cooling circuit) and lockshield

## Dimensions

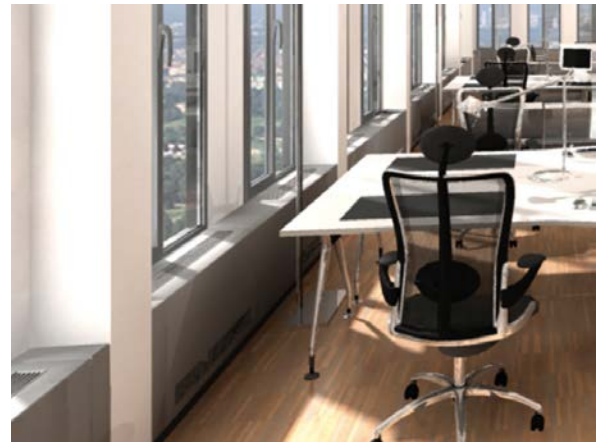


## Product details

### Installation example



### Installation example



### Installation example



- Under sill installation either standing on the floor or hanging on an external wall
- Level adjustment using the 4 levelling feet (+40 mm)
- The outdoor air connection is provided by two ventilation openings in the façade system or external wall (to be provided by others)
- Weather protection for the outdoor air and exhaust air openings to be provided by others
- Installation and connections to be performed by others; fixing, connection and sealing material to be provided by others
- The water flow and return connections are on the right-hand side of the unit when seen from the room
- Vents and drainage by others
- We recommend using flexible hoses to connect the unit to the pipework as they facilitate removing the heat exchanger for cleaning
- The under sill trim provided by others must not obstruct installation or deinstallation of the unit or maintenance access on the front of the unit