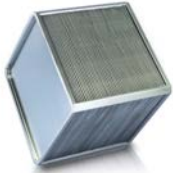
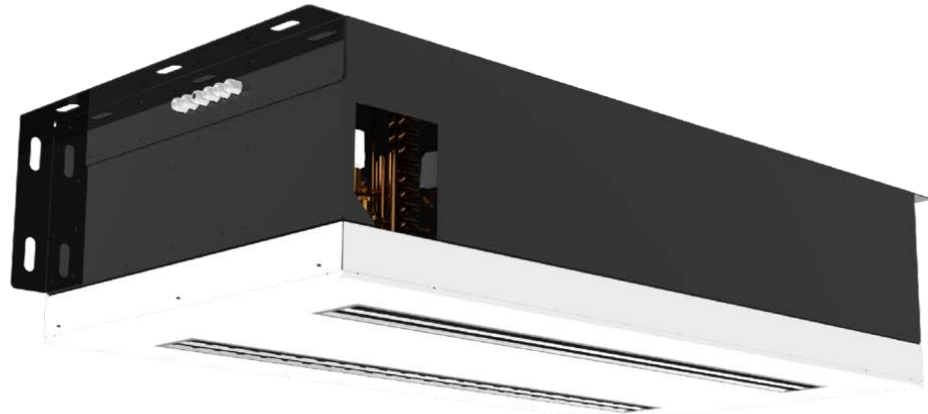




Tested to VDI 6022

# Decentralised ventilation

## SCHOOLAIR-D



Cross flow heat recovery unit



Water connections

### Supply and extract air unit with switchover option for secondary air operation, including cross flow heat recovery unit and heat exchanger for installation under the ceiling



Control equipment box

Ready-to-operate decentralised ventilation unit that provides good comfort levels and is used for the ventilation of internal spaces such as classrooms, conference rooms and day nurseries

- Flush ceiling installation
- Acoustically optimised EC fans with low specific fan power, SFP = 0 to EN 16798-3
- Cross flow heat recovery unit (heat recovery efficiency 54 %)
- Highly efficient heat exchanger for heating and cooling
- Heat exchanger connections are on the left when seen from the room
- Reduction of fine dust and pollen contamination due to integral filters according to VDI 6022 – outdoor air filter ISO ePM1 65%
- Easy filter change, no tools required
- Motorised shut-off dampers, normally closed (NC)
- Installation without interruption of school operations

Optional equipment and accessories

- Modular control system FSL-CONTROL III, specially for decentralised ventilation systems



Detail of supply air slot

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## Function

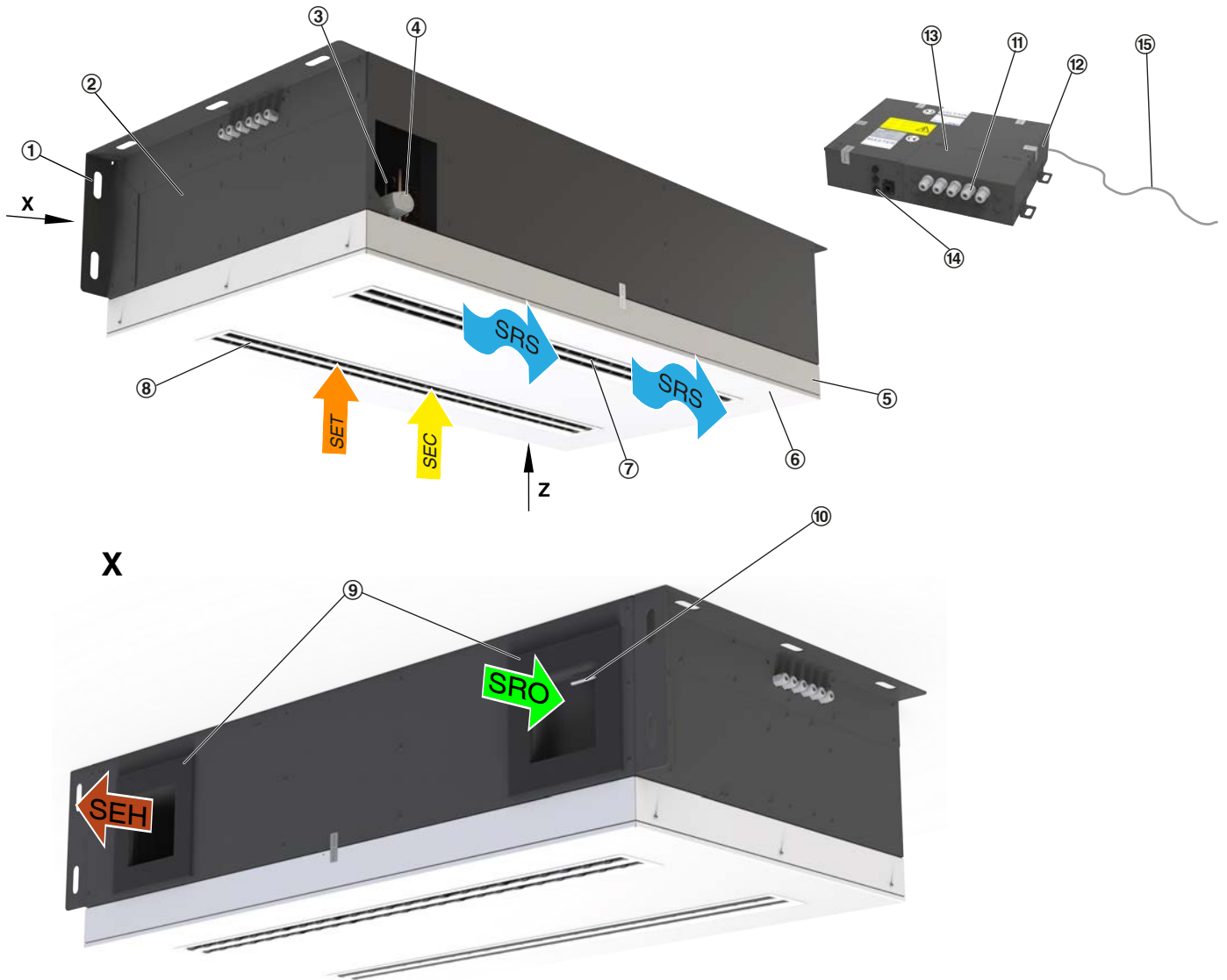
### Functional description

Decentralised supply and extract air units ventilate the room and cover the cooling and heating load according to the technical data. An EC centrifugal fan takes in the fresh air, which then flows through the motorised shut-off damper and the fresh air filter. The fresh air then flows through the cross flow heat recovery unit and it can be switched off when it is sensible with regard to energy efficiency. If necessary, the supply air is heated or cooled near the ceiling by the heat exchanger before it is discharged to the room as a displacement flow (optional in the case of 4-pipe systems). The extract air first passes through the extract air filter, then flows through the heat recovery unit, the extract air fan and the motorised shut-off damper before it is discharged to the outside as exhaust air.

If the indoor 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. Here, the control system compares the setpoint values of the indoor air quality with the actual values measured at the CO<sub>2</sub> sensor and switches automatically between fresh 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 ceiling with a medium velocity. The Coanda effect deflects the air jet upwards, where it remains attached to the underside of the ceiling, thereby increasing the throw distance. Once it has reached the wall, which is located opposite the air outlet, an air curtain is created. The supply air reaching the occupied zone has a very low airflow velocity and flows strongly at heat sources (e.g. people and devices), thus giving rise to natural convection. As a result, the air is primarily exchanged in these areas. The consumed air rises before it is extracted into the device directly under the ceiling and then released outside.

## Function



- 1 Fixing bracket for fixing the unit to the ceiling and wall
- 2 Equipment casing
- 3 Water connections
- 4 2-pipe or 4-pipe heat exchanger (optional)
- 5 Height-adjustable frame
- 6 Ceiling plate
- 7 Supply air slot diffuser
- 8 Extract air slot diffuser
- 9 Seal
- 10 Fresh air temperature sensor (optional)
- 11 Cable glands (master unit only; for wiring by others)
- 12 External control equipment box
- 13 Controls, inspection access panel
- 14 Network connections
- 15 Supply voltage connecting cable
- SEH Single room exhaust air
- SET Single room extract air
- SRO Single room outdoor air
- SRS Single room supply air
- SEC secondary air (optional)

### Technical data

Width	1640 mm
Height	400 mm
Depth	800 mm
Volume flow rate	150, 200, 250 m <sup>3</sup> /h (boost 300 m <sup>3</sup> /h)
Nominal volume flow rate	250 m <sup>3</sup> /h
Sound power level	32 – 47 dB(A)
Heat recovery efficiency	54 %
Maximum operating pressure, water side	6 bar
Maximum operating temperature	75 °C
Supply voltage	230 V AC ±10 %, 50/60 Hz
Power rating	197 VA
Weight	100 kg

### Quick sizing

#### SCHOOLAIR-D (example of 2-pipe construction – active heating)

		150	200	250	300
Supply air flow rate	m <sup>3</sup> /h	150	200	250	300
Total heating capacity	W	2880	3720	4440	5080
Room heating capacity	W	892	1089	1169	1182
Air temperature inside the unit	°C	-12	-12	-12	-12
Supply air temperature	°C	38.8	37.3	35	32.8
Hot water flow rate	l/h	100	150	180	200
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	34.9	38.4	38.5	37.9
Water side pressure drop	kPa	4.5	9.2	12.5	15.1
Sound power level L <sub>WA</sub>	dB(A)	32	38	43	47
Sound pressure level with 8 dB system attenuation	dB(A)	24	30	35	39
Active power P <sub>el</sub>	W	26	36	53	72

#### SCHOOLAIR-D (example 2-pipe construction – isothermal supply air)

		150	200	250	300
Supply air flow rate	m <sup>3</sup> /h	150	200	250	300
Total heating capacity	W	2000	2680	3360	4050
Room heating capacity	W	115	160	217	271
Air temperature inside the unit	°C	-12	-12	-12	-12
Supply air temperature	°C	23.3	23.4	23.6	23.7
Hot water flow rate	l/h	55	85	130	200
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	28.4	32.7	37.5	42.4
Water side pressure drop	kPa	1	2	4	7.5
Sound power level L <sub>WA</sub>	dB(A)	32	38	43	47
Sound pressure level with 8 dB system attenuation	dB(A)	24	30	35	39
Active power P <sub>el</sub>	W	26	36	53	72

**SCHOOLAIR-D (example of 4-pipe construction)**

Supply air flow rate	m <sup>3</sup> /h	150	200	250	300
Total cooling capacity	W	680	910	1070	1290
Room cooling capacity	W	391	528	593	721
Air temperature inside the unit	°C	32	32	32	32
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	18.2	18.1	18.9	18.8
Condensation	g/h	0	0	0	0
Chilled water flow rate	l/h	110	150	150	200
Water temperature, inlet	°C	16	16	16	16
Water temperature, outlet	°C	21.3	21.2	22.1	21.6
Water side pressure drop	kPa	1.9	3.2	3.2	5.3
Total heating capacity	W	2880	3720	4440	5080
Room heating capacity	W	892	1089	1169	1182
Air temperature inside the unit	°C	-12	-12	-12	-12
Supply air temperature	°C	38.8	37.3	35	32.8
Hot water flow rate	l/h	100	150	180	200
Water temperature, inlet	°C	60	60	60	60
Water temperature, outlet	°C	34.9	38.4	38.5	37.9
Water side pressure drop	kPa	4.5	9.2	12.5	15.1
Sound power level L <sub>WA</sub>	dB(A)	32	38	43	47
Sound pressure level with 8 dB system attenuation	dB(A)	24	30	35	39
Active power P <sub>el</sub>	W	26	36	53	72

## Specification text

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

### SCHOOLAIR-D-0-2/1690×400×800/C3

Ventilation units for assembly on the façade in the ceiling area

Under sill units for vertical assembly on the façade

Please note: The ceiling ventilation unit variant described is equipped with single room control system for self-sufficient classroom operation.

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

School ventilation unit – ceiling slab installation – master unit

Ventilation unit for ceiling installation TROX SCHOOLAIR-D with supply and extract air function and switchover option to secondary air operation (air quality dependent), heat recovery and heating function for installation in the ceiling slab:

- Device 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)
- Sound- and heat-insulating lining on suction 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
- Brackets on both sides with slotted hole lugs (60 × 20 mm) for fixing in the ceiling slab
- Connection to the fresh air and exhaust air openings (provided by others) to the existing façade with circumferential closed cell sealing tape on the rear side of the unit, d=10 mm, the suction 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 blowers, supply and extract air fan classified in category SFP 1 (< 500 W/(m³/s)) according to EN 16798-3:2017-11, electrical power consumption of the entire unit at a nominal volume flow rate of 250 m³/h < 53 W, for rating of the connecting cable a power rating of 197 VA has to be considered
- Suitable for 3 speed levels (150, 200 and 250 m³/h as well as boost level with 300 m³/h), signalling via device-internal single room control system, volume flow rate level correction by adjusting the control voltage subsequently possible
- The technical requirements of EU directive 1253/2014 for non-residential ventilation systems are fulfilled and documented in accordance with the directive
- Blow-out and intake of the room supply/exhaust air on the underside of the device through slot diffusers VSD50-2 (bare aluminium with anodised finish), including specially adapted magnetic cover (RAL 9010) secured by invisible screw fixing. The lid is secured against uncontrolled falling by safety cables. The area around the device must be designed so that it can be inspected for maintenance purposes and for possible dismantling in the ceiling slab.
- Integral recuperative project-specific heat exchanger (heat recovery) 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 take-up and discharge into the condensate drip tray of the heat exchanger.
- With electromotive bypass which allows a large partial air volume flow to bypass the heat recovery, actuator 24 V (modulating), signalling via internal single room control system
- 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
- Automatic switching to secondary air mode (only with an air quality sensor) if the indoor air quality (measured, for example, at the integrated CO<sub>2</sub> sensor) 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. The unit always starts secondary air mode, which is more energy efficient. 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 device completely wired with FSL-CONTROL III, arrangement of control components in a control box that is to be mounted separately, connection cable approx. 5 m long. Cable for connection (connection not in the TROX 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 × 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
    - Central 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 after the heat exchanger

- Outdoor air temperature measurement in the outdoor air intake
- 2-pipe heat exchanger for air heating and cooling, removable for cleaning, can be emptied and ventilated in heating circuits. 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
- The transfer point of the heat exchanger are the union nuts on which the control components (valve including actuator in the flow line, lockshield in the return line) are manually preassembled
- Easy-to-clean condensate drip tray made from galvanised sheet steel, powder-coated RAL 9005, without condensate drain
- Outdoor air filter as Mini Pleat filter, class ePM1 (fine dust filter):
  - Filter class to ISO 16890: 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 from moisture-resistant non-woven fibre with brackets (for pulling it out) and must not reduce the flow cross-section (filter size = flow cross-section)
    - Filter area  $\geq 2.2 \text{ m}^2$
- Filter medium in the extract air for additional protection of the components
- Access to the inserted components after removal of the separate maintenance cover including the slot diffusers (screwed, additionally magnetic and secured with safety cables). The device must be freely accessible from below.
- Integrated slot diffusers are used for supply air discharge and extract air removal

Units – dimensions and weight:

- Width: approx. 1640 mm (without fixing straps)
- Height: min. 400 mm (with additional adjustment of approx. +29 mm)
- Depth: approx. 800 mm (without façade seal)
- Weight: approx. 100 kg

### FSL-CONTROL III Regler

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 (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

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

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

### Fresh air temperature sensor

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

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

- Valve actuator: 1 × thermoelectric actuator for opening and closing valves, with position indicator, including pluggable connecting cable, supply voltage 24 V DC, control voltage 0 – 10 V DC, power consumption 1 W, degree of protection: IP 54
- Straight-way valve: 1 × straight-way valve ½", mounted (finger-tight), PN 16, DN10,  $K_{vs}$  0.4 (alternatively: 0.25, 0.63 or 1.0 m<sup>3</sup>/h – please specify the required  $K_{vs}$  value), threaded connection G 1/2B, fluid temperature 1 to 110 °C
- Lockshield: 1x lockshield on both sides ½", mounted (finger-tight), nominal width DN 15; ½", straight through valve with male thread on both sides, flat sealing, for control and shut-off, operating temperature 120 °C max.

### Optional control accessories

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 several 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:

Digital control panels for surface mounting

For the operation and adjustment of the ventilation units.

- Supplied loose as an accessory. Connection to master unit via Modbus serial line. Project-specific software including setpoint value adjuster, various status displays, selector switch, CO<sub>2</sub> traffic light. Touch-sensitive colour display 3.5" 320 × 240 pixels. Sensor: NTC 10 kΩ. Degree of protection: IP 20. Type: Schneider TM172DCLWT. Dimensions (H × B × T): 120 × 86 × 25 mm, weight: 340 g, colour: white. Installation: wall mounting or on standard flush box. Supply: 24 V DC. Power consumption: 3.2 VA/1.3 W. Optional further design frames available for a surcharge on request.

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 × H × T): 99 × 104 × 30 mm, operating temperature: 6 - 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 × H × T): 84.5 × 84.5 × 25 mm, operating temperature: -35 – 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 × H × T) 84 × 116 × 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 × H × T) 84.5 × 84.5 × 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, screw terminal, d=1.5 mm, protection level IP 20, assembly wall mounted or on 70 mm flush-mounted box, dimensions (B × H × T) 85 × 85 × 30 mm, casing ABS in RAL 9010

Control panels without selector switch for flush 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 kΩ, protection level: IP 20

Control panel without selector switch, for flush mounting, type Thermokon, switch from Busch-Jäger future range® linear, white

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

Further switch programmes on request

Electromotive valve actuator:



As an alternative to the standard installed thermoelectric actuator

- 1 x electromotive actuator 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, permissible operating fluid temperature 1...110 °C

Pressure-independent control valve:

As an alternative to the standard installed straight-way small valve

- 1 × pressure-independent control valve, 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", 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 of the decentralised ventilation units

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

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
  - 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

## Order code

SCHOOLAIR-D – 0 – 0 – 4 – 0 / 1640 × 400 × 800 / 0 / C3 / MA – T / MR / C / Z / A / HV – R – 0,4 / KV – R – 0.4  
 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20

**1 Type**

**SCHOOLAIR-D** Ventilation unit for ceiling installation

**2 Variant**

No entry required: Standard

**HV** High volume flow rate and rotary heat recovery unit

**3 Installation situation**

**0** Installation integrated in suspended ceiling

**F** freely suspended installation (SCHOOLAIR-D-HV only)

**T** partially integrated in suspended ceiling (SCHOOLAIR-D-HV only)

**Z** Installation in a pre-assembled frame (SCHOOLAIR-D-HV only)

**4 Heat exchanger**

**2** 2-pipe

**4** 4-pipe (only SCHOOLAIR-D-0)

**EH** with electric air heater (SCHOOLAIR-D-HV only)

**5 Construction (SCHOOLAIR-D-HV only)**

**0** without duct connection

**B** with 2 × raised edges on the back of the unit (DN 315)

**KL** With duct connection on the left when seen from the room (270 × 270 mm) and raised edges rear (DN 315)

**KR** With duct connection on the right when seen from the room (270 × 270 mm) and raised edges rear (DN 315)

**KLR** With duct connection on the left when seen from the room (270 × 270 mm) and on the right when seen from the room (270 × 270 mm)

**6 Dimensions [mm]**

B × H × T

**1640 × 400 × 800** (2-pipe)

**1640 × 400 × 800** (4-pipe)

**3363 × 410 × 1030** (HV version integrated into the ceiling)

**3555 × 410 × 1030** (HV version freely suspended)

**3905 × 410 × 1030** (HV version partially integrated in suspended ceiling or construction with duct connection for freely suspended installation)

**3900 × 440 × 1099** (HV version frame assembly)

**7 Exposed surface**

**0** RAL 9010 (GU30)

**P1** RAL 7012 (GU 30), alternatively any other RAL CLASSIC colour (GU 30)

**8 Control**

**OR** Without control

**C3** With FSL-CONTROL III

**9 Control function**

**MA** Master

**SL** Slave

**10 Real-time clock, only master**

No entry: None

**T** With

**11 Interface**

No entry: None

**MT** With Modbus TCP

**MR** With Modbus RTU

**BI** With BACnet IP

**BM** With BACnet MS/TP

**12 Air quality sensor, only master**

No entry: None

**C** With CO<sub>2</sub> sensor

**V** With VOC sensor

**13 Supply air temperature sensor**

**Z** With

**14 Outdoor air temperature sensor, only master**

No entry: None

**A** With

**15 Heating valve**

**HV** With

**16 Lockshield heating circuit**

**R** With

**17 K<sub>vs</sub> value – heating valve**

**0.25** Straight-way valve

**0.40** Straight-way valve

**0.63** Straight-way valve

**1.00** Straight-way valve

**F0.50** Pressure-independent control valve

**18 Cooling valve (only SCHOOLAIR-D-0)**

Only 4-pipe systems

**KV** With

**19 Lockshield cooling circuit (only SCHOOLAIR-D-0)**

**R** With

**20 K<sub>vs</sub> value – cooling valve (only SCHOOLAIR-D-0)**

**0.25** Straight-way valve

**0.40** Straight-way valve

**0.63** Straight-way valve

**1.00** Straight-way valve

**F0.50** Pressure-independent control valve

**Order example: SCHOOLAIR-D-0-2/1640×400×800/0/C3-MA-T/C/Z/A/HV-R-0.40**

SCHOOLAIR-D	Ventilation unit for ceiling installation
0	Installation integrated in suspended ceiling
2	With 2-pipe heat exchanger
0	RAL 9010 (GU 30)
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) $k_{vS}$ 0.40 and lockshield

**Order example: SCHOOLAIR-D-0-2/1640×400×800/0/C3-SL-Z/HV-R-0.40**

SCHOOLAIR-D	Ventilation unit for ceiling installation
0	Installation integrated in suspended ceiling
2	With 2-pipe heat exchanger
0	RAL 9010 (GU 30)
C3	With FSL-CONTROL III
SL	Slave construction
Z	With supply air temperature sensor
HV-R-0.40	With straight-way valve (heating circuit) $k_{vS}$ 0.40 and lockshield

**Order example: SCHOOLAIR-D-0-4/1640×400×800/0/C3-MA-MT/C/Z/HV-R-F0.50/KV-R-F0.50**

SCHOOLAIR-D	Ventilation unit for ceiling installation
0	Installation in suspended ceiling
4	With 4-pipe heat exchanger
0	RAL 9010 (GU 30 %)
C3	With FSL-CONTROL III
MA	Master construction
MT	With Modbus TCP 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



## Product details



- Installation below the ceiling slab and near an external wall
- The ventilation unit is fitted with two hanging brackets to screw-fix it to the façade system or an external wall
- Weather protection for the fresh air and exhaust air openings to be provided by others
- The fresh air connection is provided by two ventilation openings in the façade system or external wall (to be provided by others), the openings should preferably be sloping towards the outside
- Free area of outdoor air openings: min. 0.031 m<sup>2</sup> for each opening
- 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 left-hand side of the unit when seen from the room
- Vents and drainage by others
- The electrical connection is on the left-hand side of the unit when seen from the room
- The single room control system FSL-CONTROL III (optional) is supplied in a separately mounted control box, which should be mounted so that it is easily accessible for inspection purposes.