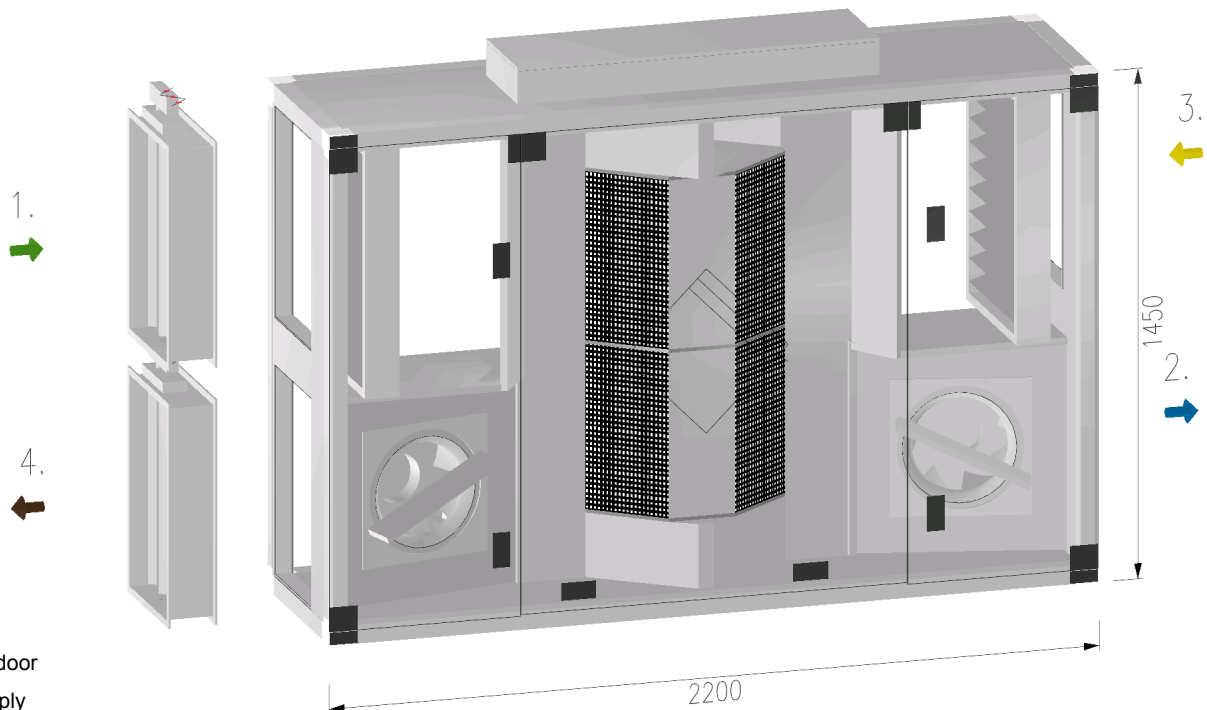


Topvex FC25-R (447777)

Width: 598 mm
 Duct connection: 600x350 mm
 Total weight: 239 kg



1. Outdoor
2. Supply
3. Extract
4. Exhaust

	Supply air	Extract air	Units
Airflow (1.205 kg/m³)	650	650	l/s
Face velocity (unit)	1.91	1.91	m/s
External pressure	300	300	Pa
Fan speed	2,895	2,886	rpm
Filter	ePM1 60% (F7)	ePM10 60% (M5)	
Sound pressure at 3m	45 dB (A)		
Design outdoor temperature	-20.0 °C		
Main power supply	1x230V + PE, 50/60 Hz, 1x16A, 1.764 kW		
Energy			
Temperature efficiency (wet/EN 308)	89.7 / 83.8		%
SFPv, clean filter pressure drop	2.00		kW/(m³/s)
SFPe with dimensional filter pressure drop	2.18		kW/(m³/s)
Ecodesign 2018 approved	Yes		

Project name Project

Project number

Model name Topvex FC25-R - 447777

Unit no. 1

07/08/2023

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Unit data	
Item number	447777
Unit name (optional)	
Airflow range	167 - 874 l/s
Notes	

Ecodesign	
Trade name	Systemair
Product name	Topvex FC25
Fulfills Ecodesign 2018	Yes
Unit category	NRVU
Unit type	BVU
Drive	Integrated VSD
Heat recovery type	Recuperative
Temperature ratio	84.6 %
Nominal airflow	556 l/s
P nom	0.724 kW
SFP int	848 W/(m³/s)
Face velocity	1.63 m/s
Nominal pressure	150 Pa
Ps int. Supply	304 Pa
Ps int. Extract	263 Pa
Supply fan efficiency	67.6 %
Extract Fan efficiency	65.9 %
External leakage	2 %
Internal leakage	1 %
Sound power level (LwA)	62 dB (A)

Project name Project

Project number

Model name Topvex FC25-R - 447777

Unit no. 1

07/08/2023

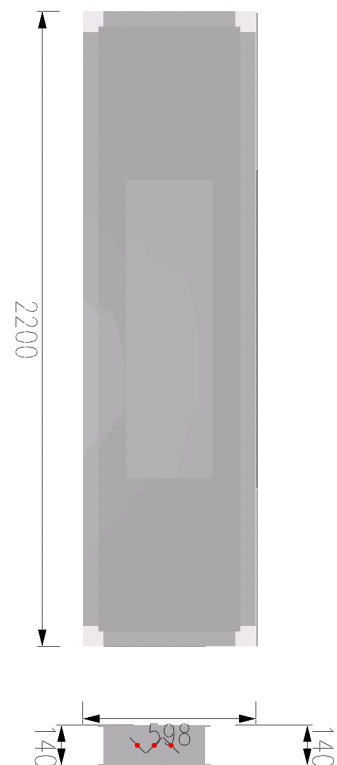
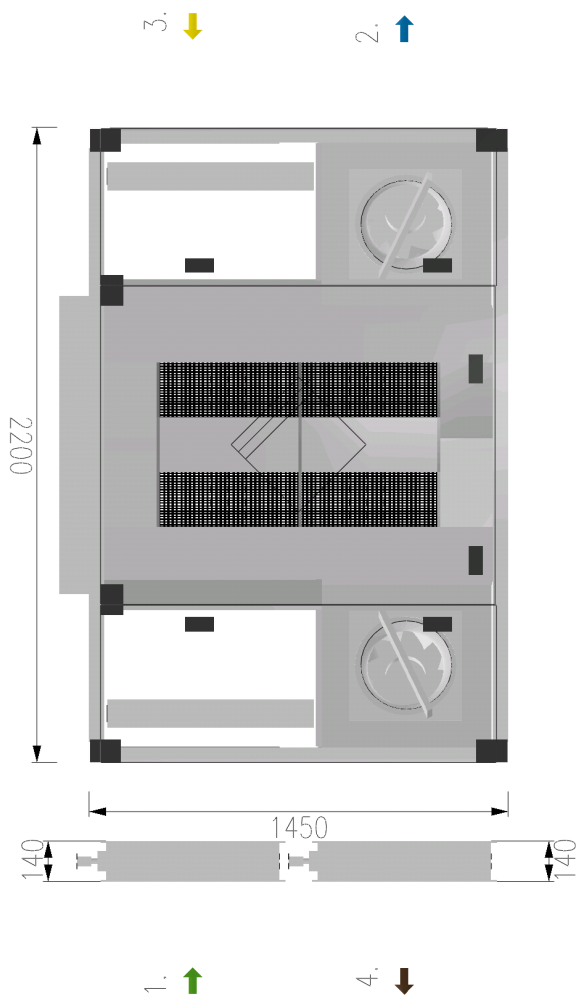
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System overview including accessories

1. Outdoor 2. Supply 3. Extract 4. Exhaust

Inspection Side

Control cabinet side



Project name Project

Project number

Model name Topvex FC25-R - 447777

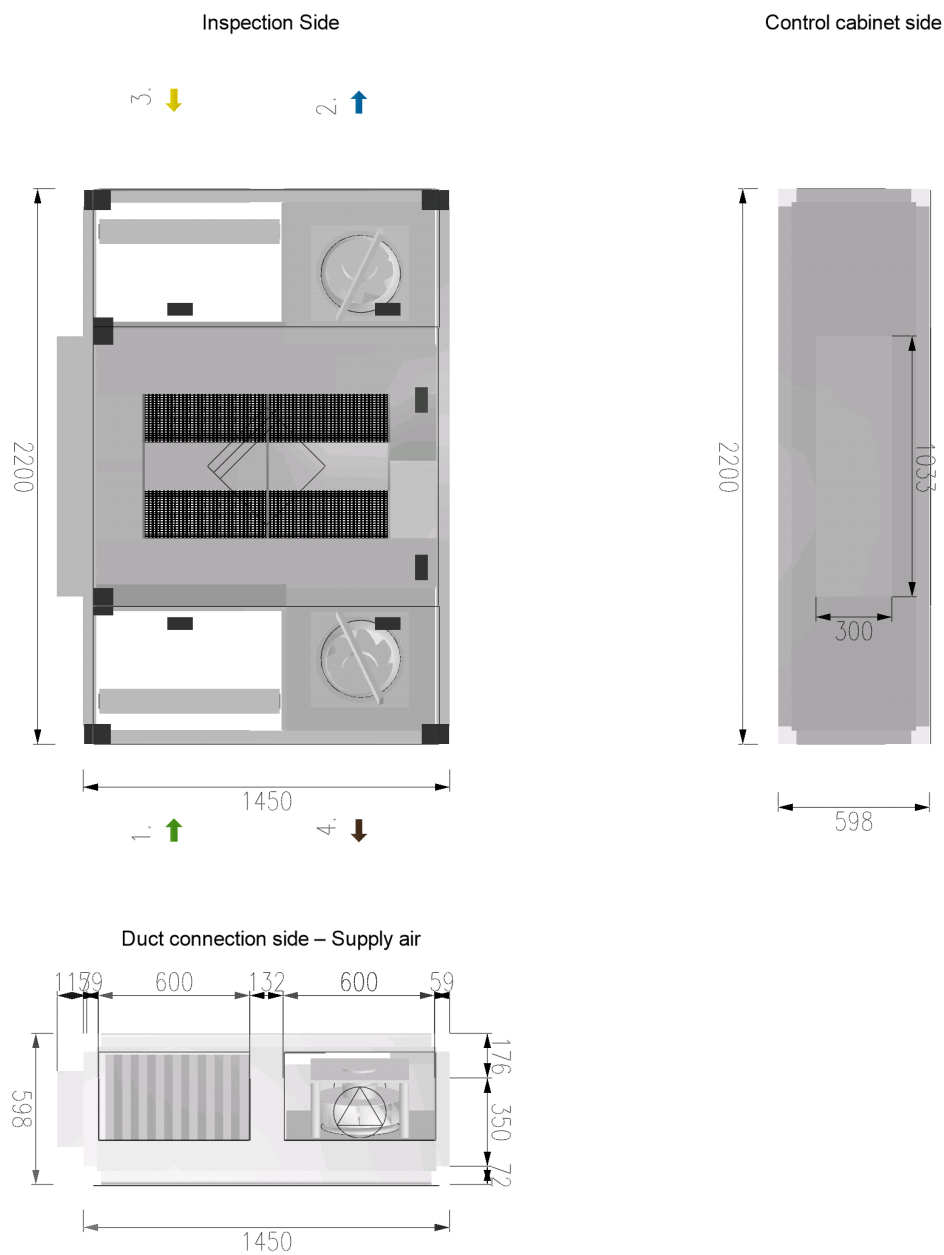
Unit no. 1

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Detailed drawings AHU

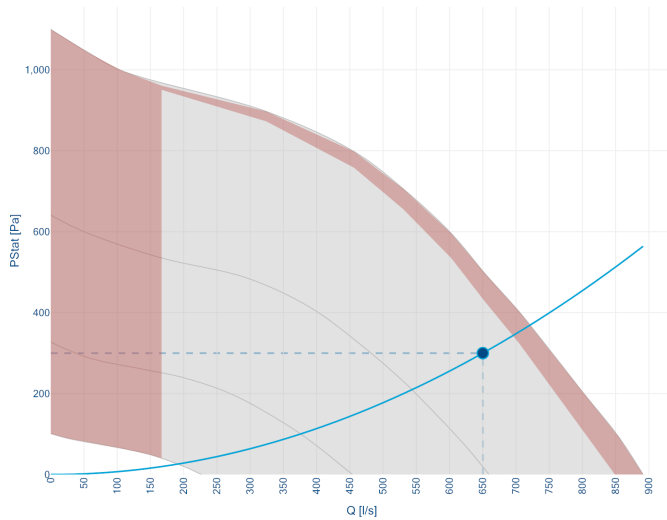
1. Outdoor 2. Supply 3. Extract 4. Exhaust



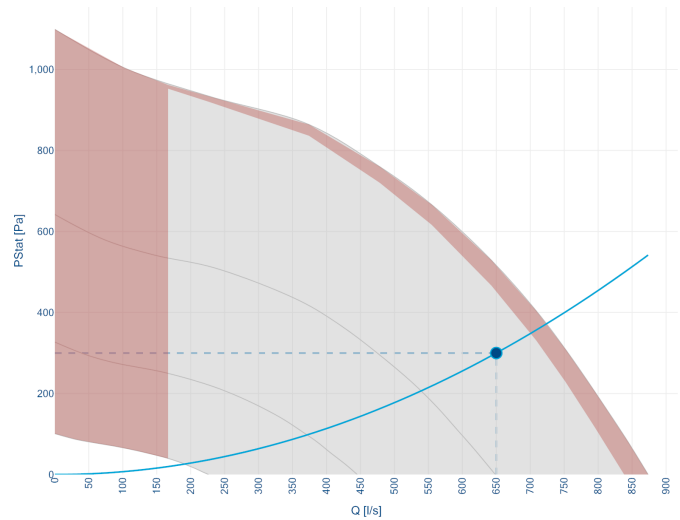
Air and sound

Winter & Summer

Supply



Extract



Sound power level	Octave bands [Hz]								Total dB [dB(A)]
	63 [dB]	125 [dB]	250 [dB]	500 [dB]	1k [dB]	2k [dB]	4k [dB]	8k [dB]	
Supply	98	86	89	82	80	76	70	63	86
Outdoor	93	81	73	65	63	54	49	47	71
Extract	90	77	73	63	60	51	42	33	69
Exhaust	92	87	90	81	77	73	63	48	85
Surrounding	85	72	72	60	52	45	40	35	66
Sound pressure at 3m									45

Sound results according to EN 13053.

Project name Project

Project number

Model name Topvex FC25-R - 447777

Unit no. 1

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Operating modes summary	Winter	Summer	
Supply airflow	650	650	l/s
Extract airflow	650	650	l/s
External pressure	300	300	Pa
External pressure	300	300	Pa
Fans			
SFPv, clean filter pressure drop	2.00	2.00	kW/(m³/s)
SFPe with dimensional filter pressure drop	2.18	2.18	kW/(m³/s)
Heat exchanger			
Dry efficiency	83.8	83.7	%
Total duty	29.56	3.44	kW
Temperature efficiency (EN 308)	83.8	83.8	%
Sound			
Supply	86	86	dB
Outdoor	71	71	dB
Exhaust	85	85	dB
Extract	69	69	dB
Surrounding	66	66	dB

Project name Project
Project number
Model name Topvex FC25-R - 447777

Unit no. 1
07/08/2023
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Shipping information

Weight	Weight incl. packaging	Dimension incl. packaging
239 kg	311 kg	1715/851/2455 mm

Project name Project

Project number

Model name Topvex FC25-R - 447777

Unit no. 1

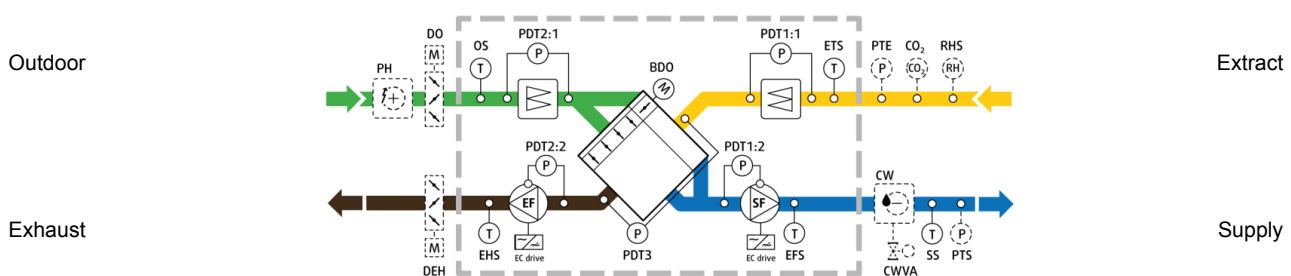
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Integrated control system, Systemair Access

The air handling unit is built with a complete and fully integrated control system – Systemair Access. The air handling unit can either run stand alone or handled from a building management system. Before shipment the unit has been assembled and has passed a final functional test and inspection. Set-up and parameters are stored in the control unit during this process.

Flow chart



BDO	Bypass damper outdoor air	CO2	CO2 sensor	CW	Cold Water cooler
CWVA	Cooler water valve	DEH	Damper Exhaust air	DO	Damper Outdoor air
EF	Extract Fan	EFS	Efficiency sensor	EHS	Exhaust air temp. Sensor
ETS	Extract air temp. Sensor	OS	Outdoor air temp. Sensor	PDT1:1	Extract air filter pressure
PDT1:2	Supply air fan pressure	PDT2:1	Supply air filter pressure	PDT2:2	Extract air fan pressure
PDT3	Heat exchanger pressure, extract air	PH	Preheater, electric	PTE	Pressure Transmitter Extract air fan
PTS	Pressure Transmitter Supply air fan	RHS	Relative Humidity Sensor	SF	Supply Fan
SS	Supply air temp. Sensor				

* Functions within dashed lines are available as accessories

Control cabinet and mains supply

The cabinet holds necessary components including terminal blocks, fuses, 24VDC power supply and the Access control unit. On site mains power supply must be connected to the cabinet. The installer on site has full responsibility to ensure that any unit/installation which requires additional protection of the mains power supply is all carried out according to local statutory requirements. The supply disconnecting safety switch for the unit is not included.

Access Control Unit

The CU27-C2 WiFi control unit is optimized for compact air handling units and provides 27 physical I/Os, have integrated wireless communication (WiFi and Bluetooth), support for BMS and SCADA and support Modbus and BACnet communication. All connectors for external components are clearly marked and grouped together for easy connection of external components and accessories

User Interface

The air handling unit can be accessed via the optional NaviPad control panel or by using the Access Connect (App) available for Android and IOS on smartphones and tablets in combination with the inbuilt wireless communication. It is also possible to use a web browser on a computer or mobile device. For the best experience the recommended minimal screen size is at least 7".

NaviPad is available as an option. The NaviPad has a 7" IPS touch panel. The protection class of the NaviPad is IP 54, but not for outdoor mounting. The communication between NaviPad and the control unit in the cabinet is possible with up to 100 meters of cable. The installer must use standard Ethernet (CAT5/6) LAN network cable for extension. NaviPad comes with an included 3m connection cable as standard.

The graphical user interface in NaviPad and Access Connect (App) provides a full range of overview, commissioning and configuration capabilities to the user. The end user can start/stop the unit, adjust temperature, check operation data and view flowchart. The Access system is prepared for Systemair Connect, an easy-to-use cloud service providing complete overview and accessibility of customers' air handling units. The service subscription enables global access for monitoring of the system. It also allows aggregation of several control systems under one account and serve as a replacement for the very basic BMS system.

Access rights passwords

There are 3 different log-on levels:

- End user – (no password) – access to read values and to change end-user relevant settings displayed on homepage.
- Operator level – (password) – access to read values and to change user relevant settings concerning schedules, temperature, airflow and to acknowledge alarms.
- Service level (password) – access to change configuration values, access to activate new functions, or restore factory settings.

Alarms and safety functions

If an alarm condition occurs, a circular light appear at the home button on the NaviPad.

- Fixed green — Status ok (no active alarms).
- Flashing red — Active/returned alarms in one or many control units.
- Fixed red — Acknowledged alarms in one or many control units, alarms not reset

Alarms are logged in an alarm list. The list shows the type of alarm, date and time for the alarm and alarm class:

Class A alarm

Needs to be acknowledged

Class B alarm

Needs to be acknowledged

Class C alarm

Returns when the cause of the alarm disappear

Flexible System

A technician will be able to adapt the regulation further to the requirements of the users;

- The airflow regulation can be changed between several methods that are constant air volume through the fans, constant pressure in the ducts, CO2 dependant control or humidity dependant control.
- The temperature control mode can be changed between room temperature control, supply air temperature control and outdoor compensation of the selected temperature etc.
- In addition to the fixed schedule, an external start signal for extended operation is available, 3 levels
- In addition or as an alternative to the fixed schedule, an external stop input signal is available.
- A large number of other alternative functions are also optional.

Communication options

The control unit includes hardware and ports that can later be programmed by a technician according to demands from the user for two alternative methods that are;

- Communication to BMS via MODBUS RTU, TCP/IP or RS485
- Communication to BMS via BACnet IP

Heat exchanger

The capacity of the heat exchanger is stepless via modulating control.

Supply fan with EC motor

The supply air fan is driven by an EC motor with the impeller mounted directly on the motor shaft. All parameters have been configured and tested from factory.

Extract fan with EC motor

The extract air fan is driven by an EC motor with the impeller mounted directly on the motor shaft. All parameters have been configured and tested from factory.

Electric heater

Modulated time proportional control of the electric heater is placed in the cabinet next to the heater, in the same section as the heater. The control unit in the cabinet delivers a 0-10 V DC signal for control signal for the heater capacity.

Prepared for control of heating coil

The unit is delivered with heating battery, and without valve and modulating valve motor.

The control unit is prepared for control of valve motor, and signal as well as power for valve motor is available from terminals in the switchboard, a 0-10 V DC signal and power 24VDC.

Terminals for 230 VAC circulation pump are available in the control cabinet. The pump for the heating circuit will always run when the outdoor temperature is lower than a settable value (+10 °C). At higher outdoor temperatures the pump will run when the heating output is larger than 0 %. The pump has a settable, shortest running time and the pump will use a pump-kick once daily at 3 p.m.

Pump is not included in the delivery.

Freeze protection of the heating coil water temperature sensor

For freeze protection, the water temperature in the coil is transmitted to the control unit by a temperature sensor in a water return circuit of the coil. The control unit always generates a signal to the valve motor that keeps a sufficient flow of hot water to protect the coil against frost. This freeze protection is also activated when the running mode is "off".

If the water temperature falls below the set point temperature the fans stop, the dampers close, and an alarm is activated.

Filter monitoring

Filter monitoring over bag filters are modulated. Pressure limit is depending on the flow. Low flow = low pressure limit, high flow = high limit. Transmitters are connected to the control unit. From the display you can see actual pressure and set limits for alarm. Transmitters placed as indicated in flow chart.

Cooling recovery

If the extract air temperature is lower than the outdoor air temperature, and there is a cooling demand in the rooms, the cooling recovery will be activated. The heat exchanger signal is reversed to give increasing cooling recovery on increasing cooling demand.

Constant supply air

• The control of the supply air temperature is based on the value from the sensor mounted in the supply air duct.

The supply air temperature is controlled by a PID-regulator (PID control loop). The set-point for the supply temperature can be adjusted from the control panel. The supply air temperature is kept at the set-point value by control of the heat exchanger, heating coil and cooling coil demand. The control of all capacities is fully modulating.

Outdoor compensated supply air

Control of the supply air temperature is based on the values from 2 temperature sensors:

- A sensor inside the unit at air intake, giving the outdoor temperature. Optional an outdoor wall mounted sensor can be selected.
- A sensor mounted in the supply air duct.

The supply air temperature is controlled by a PID-regulator and the set-point is outdoor air temperature compensated using a control curve with 4 points. The 4 curve points can be adjusted from the control panel. The supply air temperature is kept at the setpoint value by controlling the capacity of the heat exchanger, heating coil and cooling coil. The control of all capacities is fully modulating.

Outdoor dependent supply or room temp

When the outdoor temperature is lower than a settable value (winter) outdoor compensated supply air temperature control will be active, otherwise when the outdoor temperature is above this settable value (summer), cascaded room temperature control will be active.

Cascaded room temperature control

The control of the supply air temperature is based on the values from 2 temperature sensors:

- A sensor in the room, optional up to 4
- A sensor in the supply air duct.

The supply air temperature is controlled by a cascaded room temperature regulator to achieve a constant, settable room temperature. The set points for the room temperature as well as the temperature limits for the supply air temperature can be adjusted from the control panel. The output from the room temperature PID-loop controls the supply air temperature. The set-point value is achieved by controlling the capacity of the heat exchanger, heating coil and cooling coil. The control of all capacities is fully modulating.

Cascaded extract temperature control

The control of the supply air temperature is based on the values from 2 temperature sensors:

- A sensor inside the extract section giving the mixed average temperature from the rooms
- A sensor installed by the installer in the supply air duct.

The supply air temperature is controlled by a cascaded room temperature regulator to achieve a constant, settable extract temperature. The set points for the extract temperature as well as the temperature limits for the supply air temperature can be adjusted from the control panel. The output from the room temperature PID-loop controls the supply air temperature. The set-point value is achieved by controlling the capacity of the heat exchanger, heating coil and cooling coil (if installed). The control of all capacities is fully modulating.

Airflow control

The airflow rates of supply and extract air are controlled separately. The supply and extract air at Normal, low and high airflow in m³/h are set separately on the control panel.

On each fan a pressure transducer measures the difference between the pressure before the fan and the pressure at the measuring probe in the inlet cone. Through a formula with a factor for each fan size, the output signal from the pressure transducer is used to calculate the actual airflow in m³/h. Optional other units can be selected as well.

A PID-regulator maintains the set point value by controlling the speed of the fans.

Constant duct pressure

The air pressure of supply and extract air are controlled separately. The supply and extract air at Normal, low and high air pressure in Pa are set separately on the control panel. The air pressures are measured by pressure transducers in supply and exhaust air duct.

A PID-regulator maintains the set value by controlling the speed of the fans.

The actual supply and extract airflows are available for read out.

External pressure transmitters are not included in the delivery.