Topvex SX/C, Topvex TX/C
Air Handling Unit

Installation instructions

GB

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systemair

Contents

1 EU Declaration of Conformity

Manufacturer

Systemair Sverige AB
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hereby confirms that the following products:

Air handling units Topvex SX/C and Topvex TX/C

EL	None	HWL	HWH
Topvex SX/C03-06	Topvex SX/C03-06	Topvex SX/C03-06	Topvex SX/C03-06
Topvex SX/C03-06 M0	Topvex SX/C03-06 M0	–	Topvex SX/C03-06 M0
Topvex TX/C03-06	Topvex TX/C03-06	Topvex TX/C03-06	Topvex TX/C03-06
Topvex TX/C03-06 M0	Topvex TX/C03-06 M0	–	Topvex TX/C03-06 M0

(The declaration applies only to product in the condition it was delivered in and installed in the facility in accordance with the included installation instructions. The insurance does not cover components that are added or actions carried out subsequently on the product)

Comply with all applicable requirements in the following directives and regulations

Machinery Directive 2006/42/EC

Low Voltage Directive 2014/35/EU

EMC Directive 2014/30/EU

Ecodesign Directive 2009/125/EC
327/2011 Requirements for fans
1253/2014 Requirements for ventilation units

The following harmonized standards are applied in applicable parts:

EN ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 13857	Safety of machinery – Safety distances to prevent hazard zones being reached by upper or lower limbs
EN 60204-1	Safety of machinery – Electrical equipment of machines – Part 1: General requirements
EN 60335-1	Household and similar electrical appliances – Safety Part 1: General requirements
EN 60335-2-40	Safety of household and similar electrical appliances - Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers
EN 50106:2007	Safety of household and similar appliances – Particular rules for routine tests referring to appliances under the scope of EN 60 335-1 and EN 60967
EN 60529	Degrees of protection provided by enclosures (IP Code)
EN 62233	Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure
EN 61000-6-2	Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standards for residential, commercial and light-industrial environments

The complete technical documentation is available.

Skinnskatteberg, 14–05–2018

Mats Sándor
Technical Director

2 Warnings

The following admonitions will be presented in the different sections of the document:

Danger

- Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

Warning

- Indicates a potentially hazardous situation that may result in minor or moderate injuries.

Caution

- Indicates a risk of damaging the product or prevent optimal operation.

Important

- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

3 Product information

3.1 General

This installation manual concerns air handling unit type Topvex SX/C, TX/C manufactured by Systemair Sverige AB. The units include the following model options:

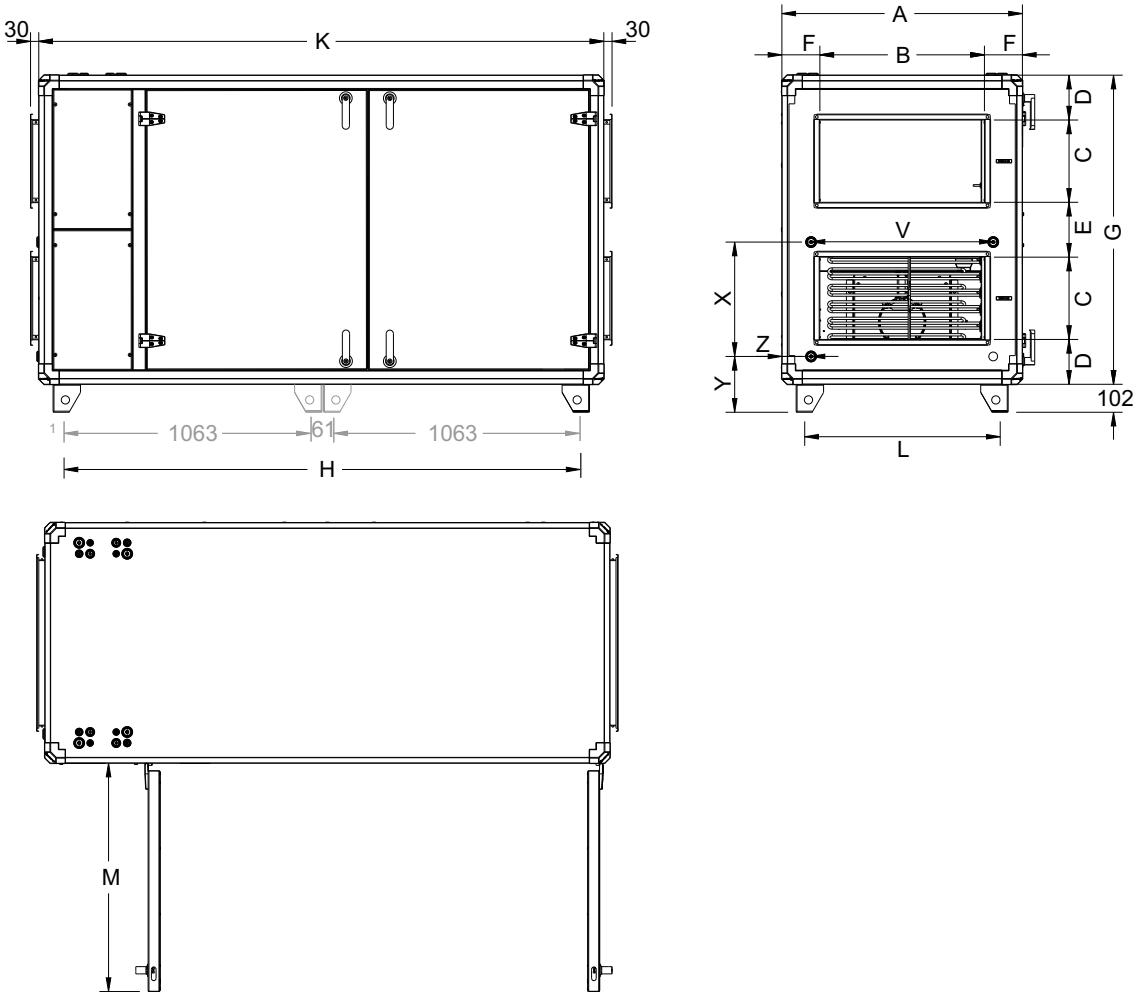
- **Model:** Topvex SX/C03, Topvex SX/C04, Topvex SX/C06, Topvex TX/C03, Topvex TX/C04 and Topvex TX/C06.
- **Heating coil: EL** (Electric), **HWL** (Water coil, low power), **HWH** (Water coil, high power) or **None**.
- **Right or left models: R** (Right) **L** (Left). The side where the supply air is located when viewed from the access side.
- **Airflow control: CAV** (Constant Air Volume). VAV, Variable Air Volume (constant duct pressure control) is available as an accessory.
- **M0:** Aluminium fan impeller

This manual consists of basic information and recommendations concerning the design, installation, start-up and operation, to ensure a proper fail-free operation of the unit.

The key to proper and safe operating of the unit is to read this manual thoroughly, use the unit according to given guidelines and follow all safety requirements.

3.2 Technical data

3.2.1 Dimensions and weight Topvex SX/C



Model	A	B	C	D	E	F	G	H	K
Topvex SX/C03	877	500	250	170	200	188	1041	1772	1926
Topvex SX/C04	877	600	300	163	200	138	1127	1905	2060
Topvex SX/C06	877	600	300	235	342	138	1412	2187[1]	2344

1 *SX/C06 has 4 extra feet*

Model	L	M	V	X	Y	Z	Weight, kg
Topvex SX/C03	720	765	664	335	213	87	272
Topvex SX/C04	720	833	664	417	203	106	283
Topvex SX/C06	720	1120	664	560	203	106	395

3.2.2 Dimensions and weight Topvex TX/C

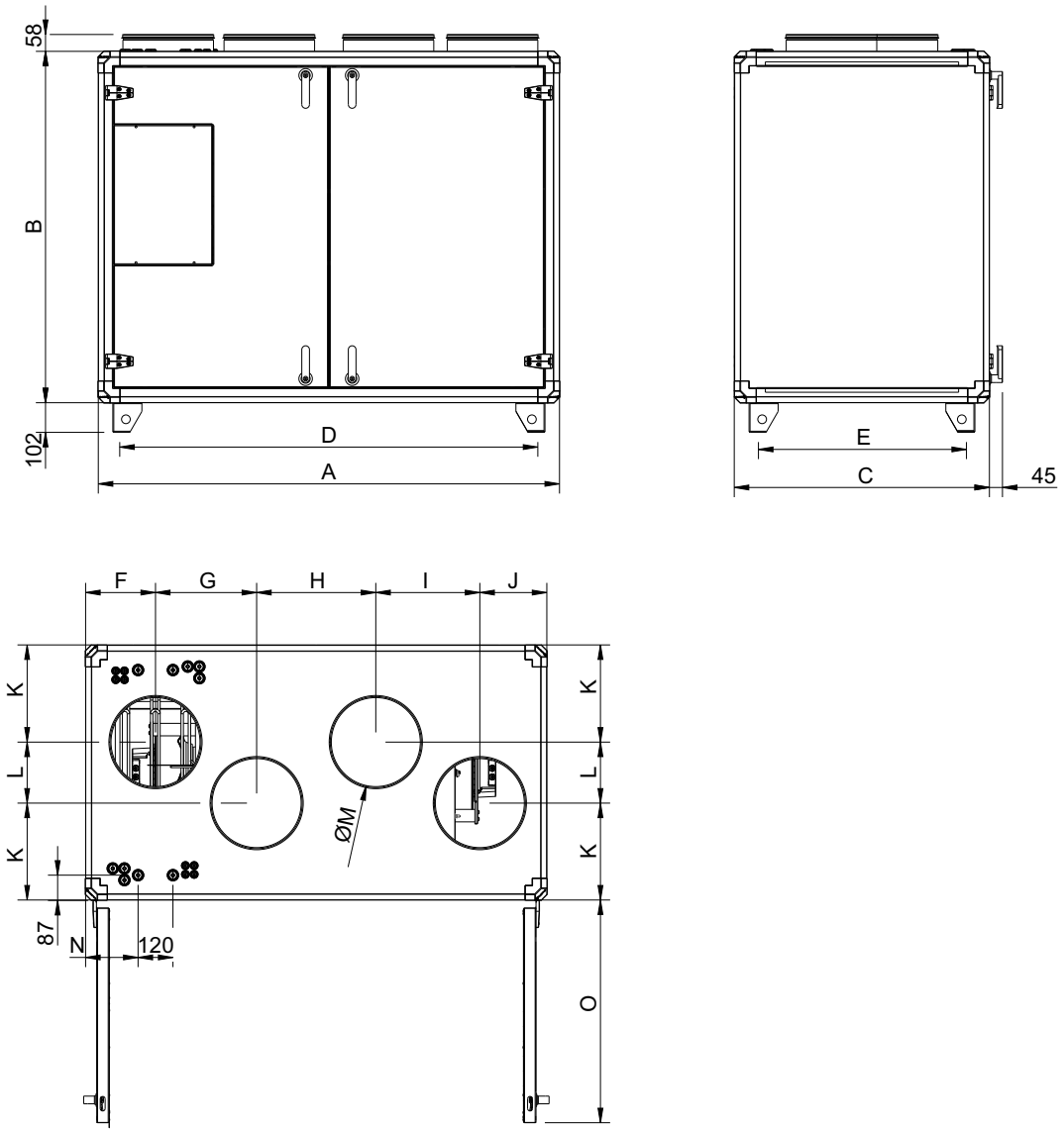


Fig. 1 Dimensions (mm) Topvex SX/C03 (drawn as left hand unit)

Model	A	B	C	D	E	F	G	H
Topvex TX/C03	1587	1210	880	1435	725	240	348	410

Model	I	J	K	L	ØM	N	O	Weight, kg
Topvex TX/C03	358	230	335	210	315	181	785	286

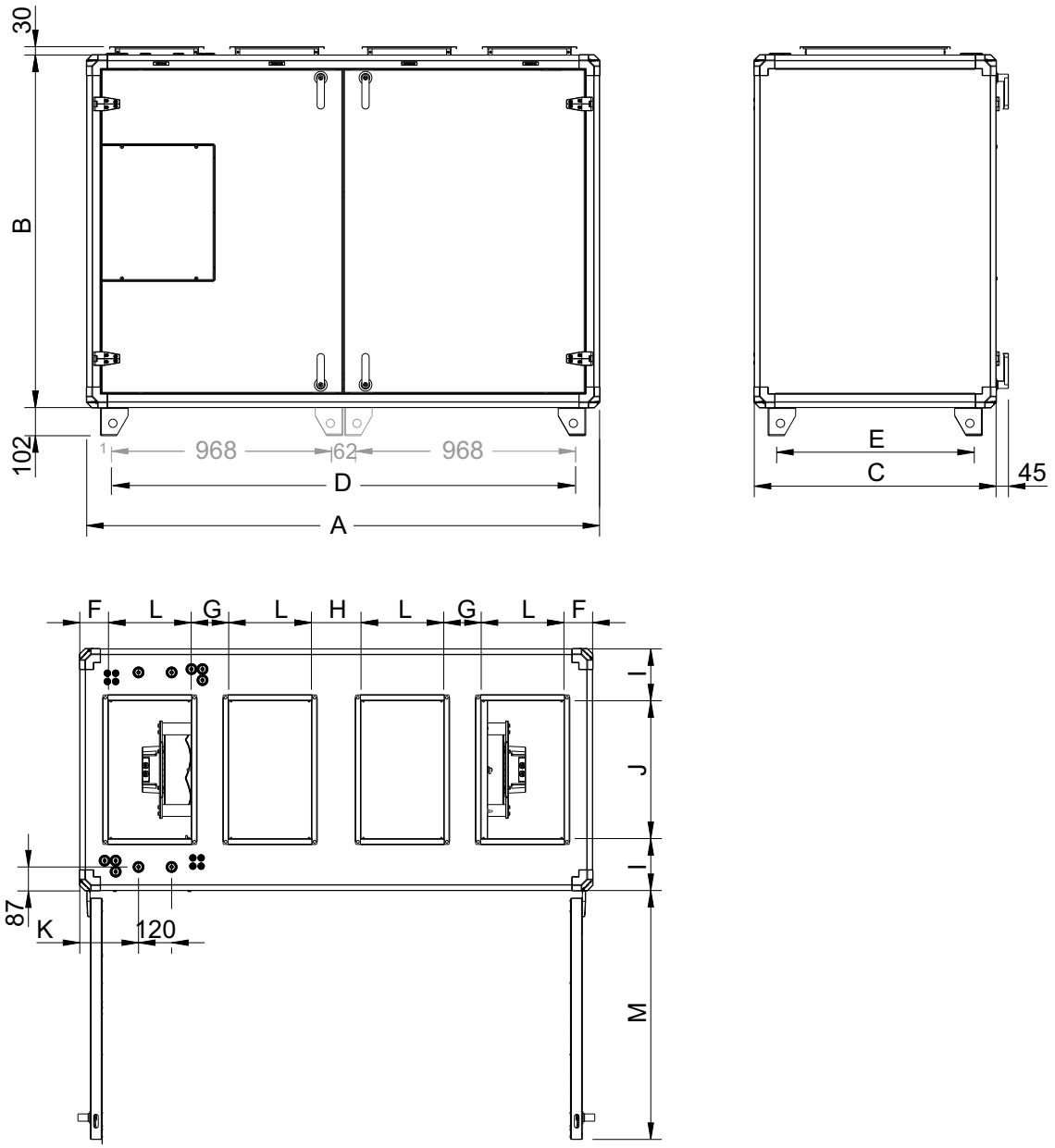


Fig. 2 Dimensions (mm) Topvex TX/C04-06 drawn as left hand unit

Model	A	B	C	D	E	F	G
Topvex TX/C04	1860	1279	880	1708	725	104	136
Topvex TX/C06	2150	1630	880	1998 [1]	725	116	196

1 *TX/C has 4 extra feet*

Model	H	I	J	K	L	M	Weight, kg
Topvex TX/C04	180	190	500	195	300	920	296
Topvex TX/C06	324	140	600	197	300	1065	405

3.2.3 Electrical data

Model	Fans (W tot.) 230V 1~ and 400 V 3N~	El Heating battery (kW tot.)	Fuse (mains) (A) for 230 V 1~ and 400 V 3~
Topvex SX/C03 EL	1480	8	3x25
Topvex SX/C03 None, HWL, HWH	1480	-	10
Topvex SX/C03 EL M0	1088	8	3x25
Topvex SX/C03 None, HWL, HWH M0	1088	-	10
Topvex SX/C04 EL	1478	12	3x32
Topvex SX/C04 None, HWL, HWH	1478	-	10
Topvex SX/C04 EL M0	1530	12	3x32
Topvex SX/C04 None, HWL, HWH M0	1530	-	10
Topvex SX/C06 EL	1780	16	3x32
Topvex SX/C06 None, HWL, HWH	1780	-	3x10
Topvex SX/C06 EL M0	2124	16	3x32
Topvex SX/C06 None, HWL, HWH M0	2124	–	3x10

Model	Fans (W tot.) 230V 1~ and 400 V 3N~	El Heating battery (kW tot.)	Fuse (mains) (A) for 230 V 1~ and 400 V 3~
Topvex TX/C03 EL	1474	8	3x25
Topvex TX/C03 None, HWL, HWH	1474	-	10
Topvex TX/C03 EL M0	1068	8	3x20
Topvex TX/C03 None, HWL, HWH M0	1068	-	10
Topvex TX/C04 EL	1480	12	3x32
Topvex TX/C04 None, HWL, HWH	1480	-	10
Topvex TX/C04 EL M0	1652	12	3x32
Topvex TX/C04 None, HWL, HWH M0	1652	-	10
Topvex TX/C06 EL	1790	16	3x32
Topvex TX/C06 None, HWL, HWH	1790	-	3x10
Topvex TX/C06 EL M0	2146	16	3x32
Topvex TX/C06 None, HWL, HWH M0	2146	-	3x10

3.3 Transport and storage

The unit is delivered in one piece standing on a pallet for easy transportation using a forklift. The unit should be stored and transported in such a way that it is protected against physical damage that can harm panels, handles, display etc. It should be covered so that dust, rain and snow cannot enter and damage the unit and its components. The appliance is delivered complete with all necessary components, wrapped in plastic on a pallet for easy transportation.

When transporting the Topvex SX/C, TX/C units use a forklift placed on the gable of the unit.

Note:

Necessary parts like control panel, supply air sensor, mounting feet, drainage pipe with drain trap are enclosed at delivery.

Warning

- The unit is heavy. Be careful during transport and installation. Risk of injury through pinching. Use protective clothing.
- The unit must not be put into operation before the enclosed parts are removed and installed properly.

4 Installation

4.1 Unpacking

Verify that all ordered equipment are delivered before starting the installation. Any deviation from the ordered equipment must be reported to the supplier of Systemair products.

4.2 Where/how to install

The unit is meant for indoor installation. The electronic components should not be exposed to lower temperature than 0° C and higher than +50° C.

If the unit is installed in a cold place it is important that the unit is not shut-off by the main switch. As long as the main voltage is on the electrical cabinet will be kept warm also in cold climates.

When choosing the location it should be kept in mind that the unit requires maintenance regularly and that the inspection doors should be easily accessible. Leave free space for opening the doors and for taking out the main components (chapter 3.2.1.)

The outdoor air intake of the building should if possible be put in the northern or eastern side of the building and away from other exhaust outlets like kitchen fan outcasts or laundry room outlets.

Warning

- The unit should only be put into operation with the doors closed.
- The unit must be duct connected or in some other way provided with protection so that it is not possible to come in contact with the fans through the duct connections.

4.3 Condensation drain

The unit must be connected to the condensation drain, which is enclosed upon delivery. The drainage needs to be connected on the exhaust air side of the heat exchanger at the bottom of the unit, figure 3. If the unit is to be used for cool recovery the normally plugged drainage outlet needs to be connected as well to a separate tube and water lock (accessories).

Use the enclosed connection tube, which needs to be cut down to the appropriate height. See table 1 how the height "H" corresponds to different maximum negative pressures. See figure 4 for dimensions and assembly.

Note:

When installed in a non heated place the drain pipe and trap needs to be insulated well to prevent the water from freezing.

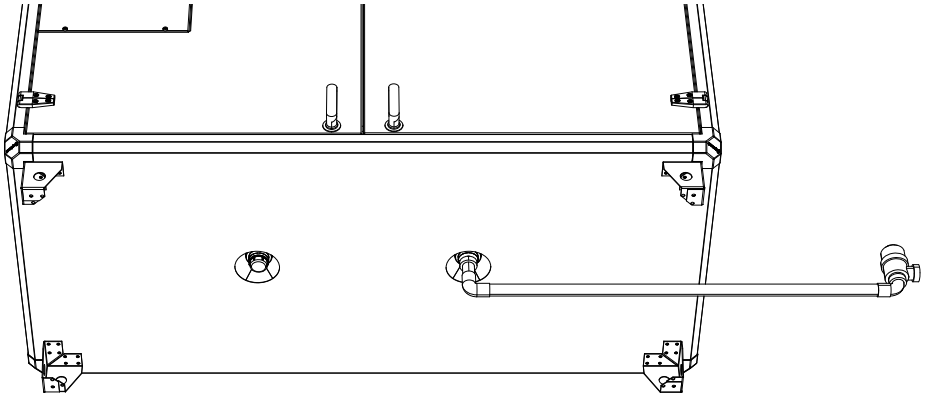


Fig. 3 Drainage connection

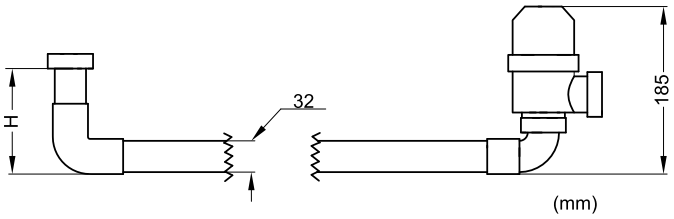


Fig. 4 Dimension and assembly

Table 1

H (mm)	Max. Negative pressure (Pa)
65	300
95 [1]	600
135	1000

1 *Normal conditions*

4.4 Installing the unit

The unit is designed for floor installation. Left and right connections are possible. The unit can be installed in the following positions.

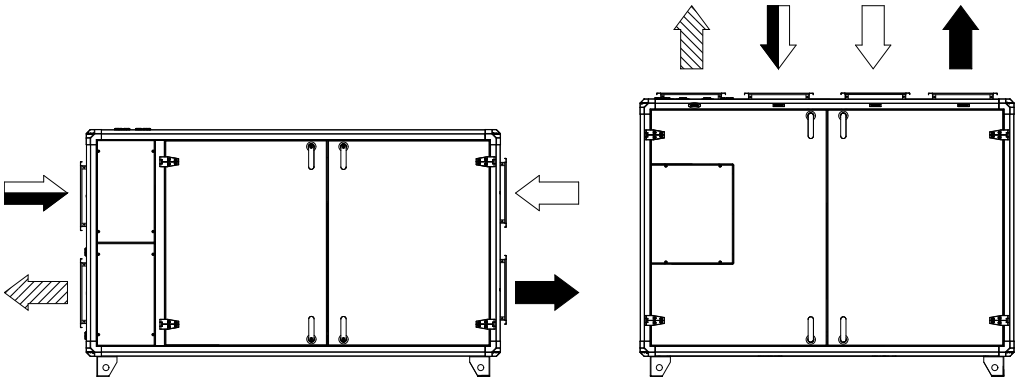


Fig. 5 Installing position (left hand units)

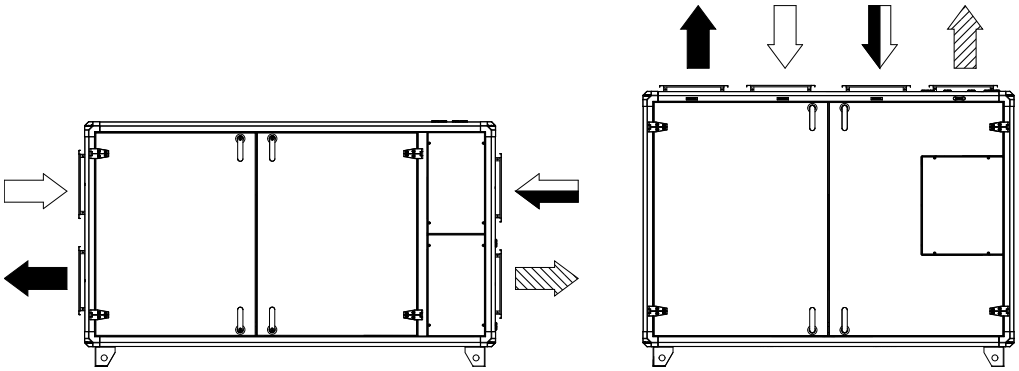


Fig. 6 Installing position (right hand units)

Table 2 Symbol description

Symbol	Description
	Supply air
	Exhaust air
	Outdoor air
	Extract air

4.4.1 Installation procedure

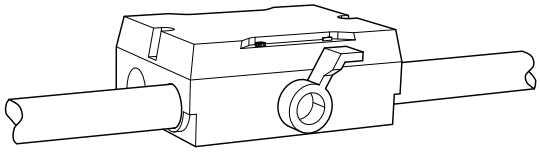
Warning

Beware of sharp edges during mounting and maintenance. Make sure that a proper lifting device is used. Use protective clothing.

1 Prepare the surface where the unit is to be mounted. Make sure that the surface is flat, levelled and that it carries the weight of the unit. Perform the installation in accordance with local rules and regulations.

2 Lift the unit in place.

3 Connect the unit electrically to the mains power supply through the all pole circuit breaker, safety switch (accessory). The wiring is led directly to the electrical connection box.
See enclosed wiring diagram, and chapter 4.6.5 for more information.



Warning

The units electrical connection to the mains power supply must be preceded by an all pole circuit breaker with a minimum 3 mm gap.

Danger

- Make sure that the mains power supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

4.5 Supply air sensor

The supply air sensor is enclosed in the unit package on delivery. Mount the supply air sensor in the supply air duct after the air handling unit (figure 7). See chapter 4.6.5 to which terminals the sensor needs to be connected in the electrical connection box. All other temperature sensors are built in to the unit from factory.

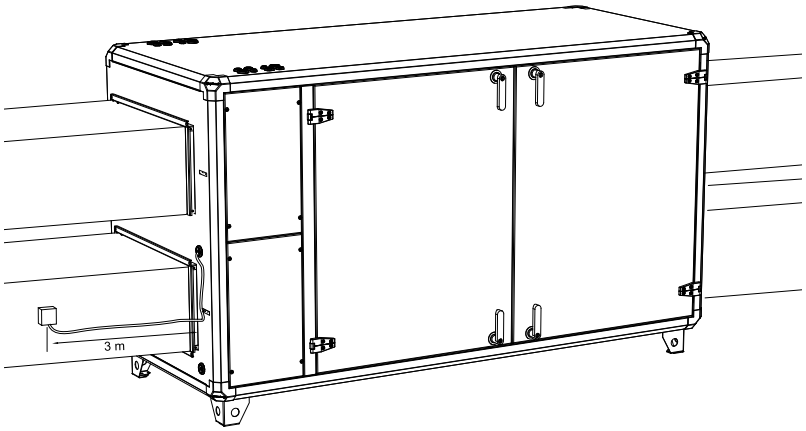
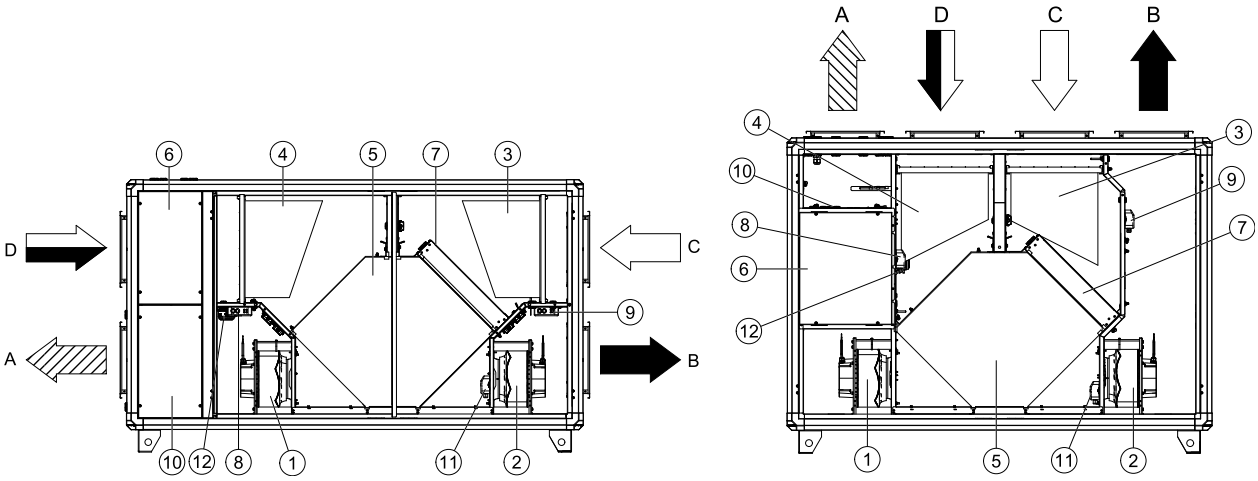


Fig. 7 Installed supply air sensor, Topvex SX/C, left hand unit

4.6 Connections

4.6.1 Ducting



Position	Description	Symbol
A	Connection supply air	
B	Connection exhaust air	
C	Connection outdoor air	
D	Connection extract air	
1	Fan supply air	
2	Fan extract air	
3	Filter supply air	
4	Filter extract air	
5	Heat exchanger	
6	Electrical connection box	
7	Damper by-pass outdoor air	
8	Pressure transmitter supply air fan/extract air filter	
9	Pressure transmitter extract air fan/supply air filter	
10	Re-heater battery	
11	Pressure transmitter defrosting exchanger	
12	Air flow sensor [1]	

1 *Only valid for units with electrical re-heater battery*

4.6.2 Condensation and heat insulation

Outdoor air duct and exhaust ducts must always be well insulated against condensation. Correct insulation installation on ducts connected to the unit is especially important. All ducts installed in cold rooms/areas must be well insulated. Use insulating covering (minimum 100 mm mineral wool) with plastic diffusion barrier. In areas with extremely low outdoor temperatures during the winter, additional insulation must be installed. Total insulation thickness must be at least 150 mm.

Caution

- If the unit is installed in a cold place make sure that all joints are covered with insulation, and tape well
- Duct connections/duct ends should be covered during storage and installation
- Do not connect tumble dryers to the ventilation system

4.6.3 Silencers

To avoid fan noise being transferred via the duct system, silencers should be installed both on supply and extract air.

To avoid noise being transferred between rooms via the duct system and also to reduce noise from the duct system itself, installation of silencers before every inlet diffuser is recommended.

4.6.4 Electrical connection, components

Danger

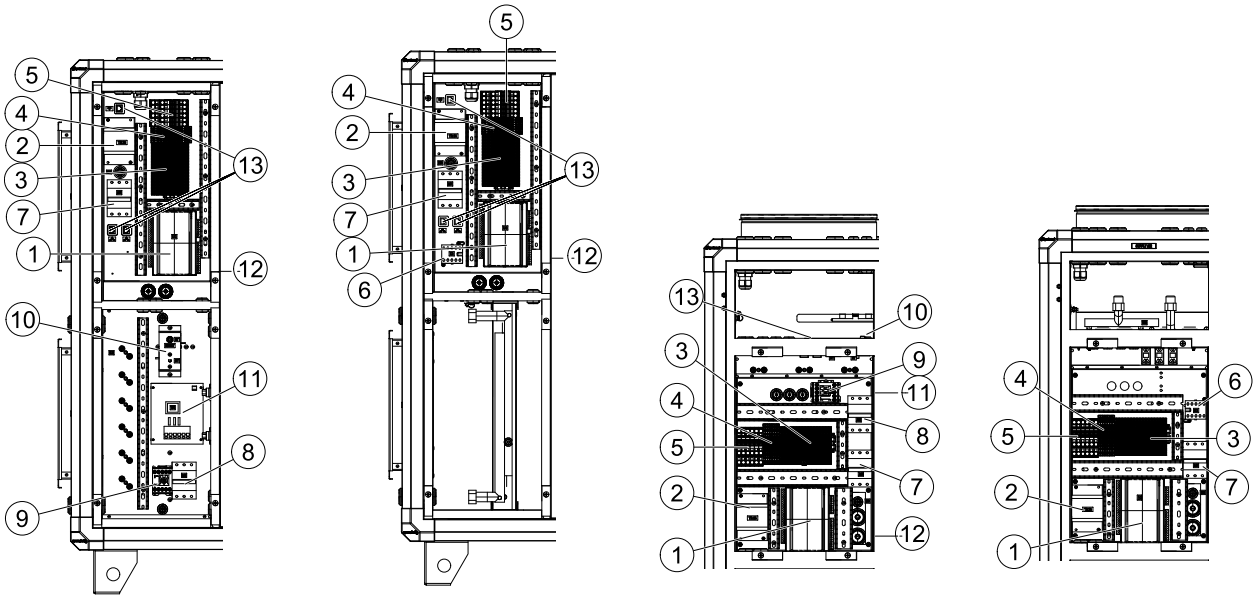
- Make sure that the mains power supply to the unit is disconnected before performing any maintenance or electrical work!
- All electrical connections must be carried out by an authorized installer and in accordance with local rules and regulations.

All electric connections are made in the electrical connection box which can be found in the front of the unit. The hatch is removed by unscrewing four screws.

Reset the manual overheat protection for Topvex TX/C by pushing the red button on top of the electrical heater frame, reachable by opening the units door. For Topvex SX/C it is reachable by unscrewing the lower hatch (to the re-heater battery).

The unit must not be put into operation before all the electrical safety precautions have been read and understood. See the enclosed wiring diagram for internal and external wiring.

All external connections to possible accessories are made to terminals inside the electrical connection box.



Position	Description
1	Control unit CU283W-4
2	Transformer 230/24V AC
3	Terminals for internal and external components
4	Terminals for internal wiring
5	Terminals for mains power supply to the unit
6	Contactor (K2) On/Off Pump control water (HW units only, not present in EL-units)
7	Automatic fuse
8	Automatic fuse for heater (EL units only)
9	Contactor (K3) EL heater (EL units only)
10	Manual over heat protection reset (EL units only)
11	TTC El heater control (EL units only)
12	Switch module
13	Panel outlet

4.6.5 External connections

Table 3 Connections to external functions

Terminal block		Description	Remark
	PE	Ground	
N	N	Earthed neutral (mains power supply)	Used for phase 230V 1~ and 400V 3~
L1	L1	Phase (mains power supply)	Used for phase 230V 1~ if the unit has this mains 400V 3~/230V 3~
L2	L2	Phase (mains power supply)	400V 3~/230V 3~
L3	L3	Phase (mains power supply)	400V 3~/230V 3~
1	G	Auxiliary supply (Pressure transmitter. Water valve actuators)	24V AC
2	G0	Reference (Water valve actuator mains)	24V AC
10	DO ref	DO reference	G (24V AC)
12 [1]	DO 2	Outdoor/Exhaust air damper	24V AC Max. 2,0 A continuous load
WP	L1	Circulation pump hot water system	230V AC
14[1]	DO 4	Cooling pump	24V AC
15[1]	DO 5	DX Cooling step 1	24V AC
16[1]	DO 6	DX Cooling step 2	24V AC
17[1]	DO 7	Alarm output for DO signals	24V AC
30	AI Ref	Supply air temperature sensor reference	neutral
31	AI 1	Temperature sensor, supply air	
40	Agnd	UI reference	neutral
41 [2]	UAI 1/(UDI 1)	Pressure transmitter extract air	
42[2]	UAI 2/(UDI 2)	Pressure transmitter supply air	
44	UAI 3/(UDI 3)	Frost protection sensor water heating battery	Use terminal 40 as reference
4[3]	DI ref	Extended running/Fire alarm reference	+ 24V DC
P1:50/P2:60	B	Exo-line B	Modbus, Exo-line connection
P:151/P2:61	A	Exo-line A	Modbus, Exo-line connection
P1:52/P2:62	N	Exo-line N	Modbus, Exo-line connection
74 [3]	DI 4	Extended running	Normally open contact Use terminal 4 as reference
75[3]	DI 5	Fire alarm	Normally open contact Use terminal 4 as reference
76 [3]	DI 6	External stop	Normally open contact Use terminal 4 as reference
90	Agnd	AO Reference	neutral
93	AO 3	Control signal valve actuator, Water Heating	0–10V DC
94	AO 4	Control signal valve actuator, Cooling	0–10V DC

1 *Maximum current load for all DO combined: 8A*
2 *Connection to external pressure sensor in case of pressure controlled unit (VAV)*
3 *These inputs may only be wired to voltage free contacts*

4.6.6 BMS Connection

Communication possibilities for control unit.

- RS485(Modbus): 50-51-52 or 60-61-62
- RS485(BACnet): 50-51-52 or 60-61-62
- RS485(Exoline): 50-51-52-53 or 60-61-62-63
- TCP/IP Exoline
- TCP/IP Modbus
- TCP/IP WEB
- TCP/IP BACnet

RS 485 connection

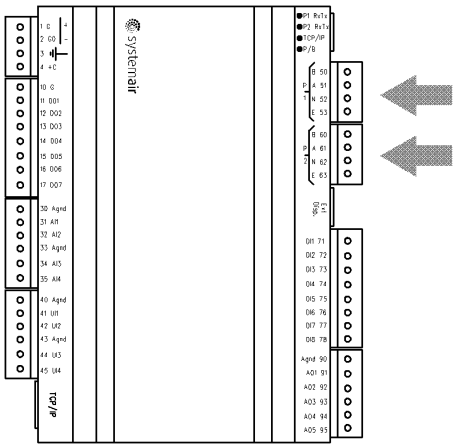


Fig. 8

TCP/IP connection

Connect the device to panel outlet or switch module, depending on type of air handling unit.

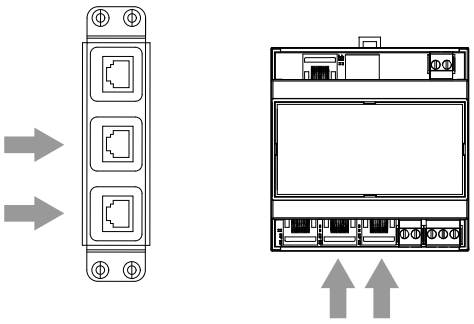


Fig. 9 Panel outlet view is an example,

Note:

RJ 45

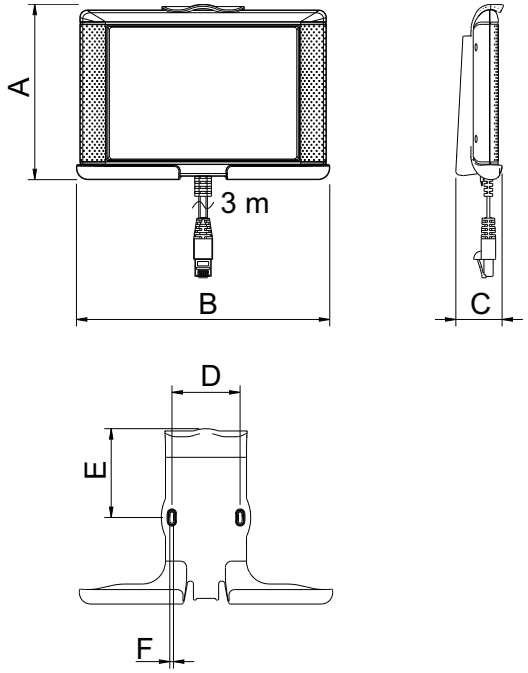
24V HMI connection dedicated for the display. The connection is only for HMI and no other connections is permitted.

4.7 Installing NaviPad control panel

The protection class of the NaviPad control panel is IP 54 and 0-50° permitted ambient temperature. If NaviPad is mounted outdoor the panel needs to be protected against direct UV radiation. Communication between the panel and the controller in the cabinet is possible with up to 100 meters of cable.

4.7.1 Dimensions

NaviPad is the control panel for Systemair´s Air handling units. NaviPad has an easy to understand menu structure and contains 13 languages.

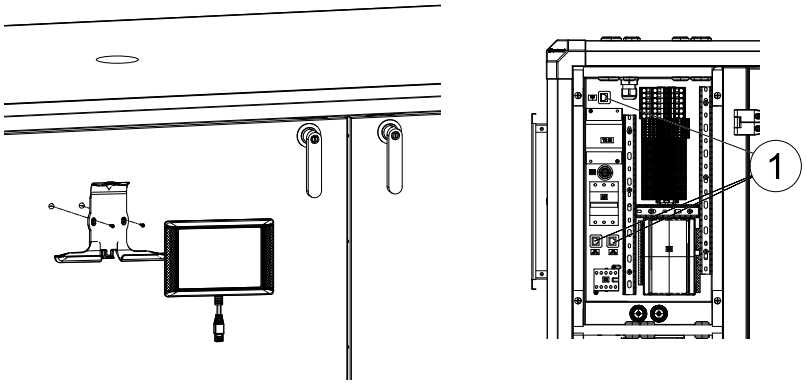


A	B	C	c/cD	E	F
153	221	40,3	59,4	77,5	3,2

4.7.2 Mount NaviPad

The NaviPad control panel with 3 m cable, holder and screws are enclosed with the air handling unit. The air handling units has pre-drilled holes in the doors. Mount the control panel holder on the air handling unit and place NaviPad in the holder. NaviPad is connected to the panel outlet (pos 1) in the air handling unit at delivery.

See enclosed Quick guide for operating of the control panel.



4.8 Additional equipment

For information concerning additional external equipment such as valve actuators, motorized dampers, roof units, wall grilles etc. see technical catalogue and their enclosed instructions.

For electrical connections of external components see enclosed wiring chart.

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