

Topvex SR/TR03, SR/TR04, SR/TR06 Compact Air Handling Unit

Installation instructions

GB

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1 EU Declaration of conformity

Manufacturer



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hereby confirms that the following products:

Air handling units

| EI | None | HWL | HWH |
|---------------------|---------------------|------------------|---------------------|
| Topvex SR03-SR06 | Topvex SR03-SR06 | Topvex SR03-SR06 | Topvex SR03-SR06 |
| Topvex SR03-SR06 M0 | Topvex SR03-SR06 M0 | – | Topvex SR03-SR06 M0 |
| Topvex TR03-TR06 | Topvex TR03-TR06 | Topvex TR03-TR06 | Topvex TR03-TR06 |
| Topvex TR03-TR06 M0 | Topvex TR03-TR06 M0 | – | Topvex TR03-TR06 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 SR/TR 03-06 manufactured by Systemair AB. Topvex SR/TR 03-06 include the following model options:

- **Model:** SR03, SR04, SR06, TR03, TR04, TR06
- **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 (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 weights Topvex SR 03-06

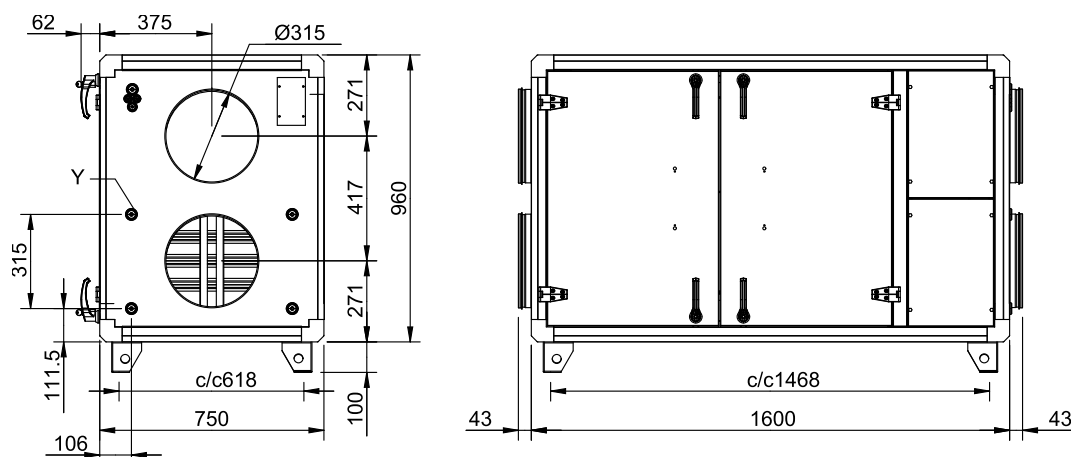


Fig. 1 Dimensions (mm) SR03 (Drawn as a right hand unit)

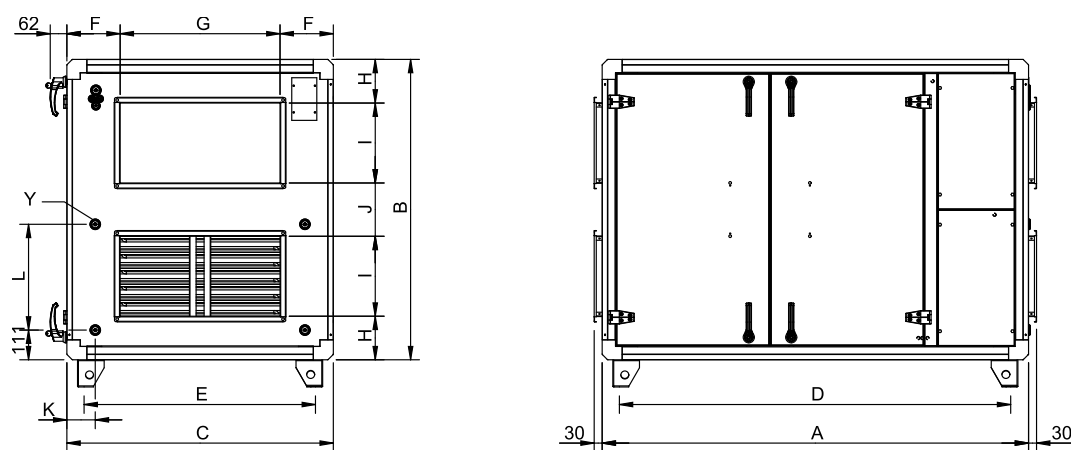


Fig. 2 Dimensions (mm) SR04, SR06 (Drawn as a right hand unit)

| Model | A | B | C | D (c/c) | E (c/c) | F |
|-------|------|------|------|---------|---------|-----|
| SR04 | 1600 | 1041 | 850 | 1315 | 565 | 175 |
| SR06 | 1600 | 1128 | 1000 | 1468 | 868 | 200 |

| Model | G | H | I | J | K |
|-------|-----|-----|-----|-----|-----|
| SR04 | 500 | 171 | 250 | 200 | 355 |
| SR06 | 600 | 164 | 300 | 200 | 396 |

Y: 15R 1/2" Inner thread

Table 1 Weights Topvex SR 03-06

| Model | Weight (kg) |
|-------|-------------|
| SR03 | 220 |
| SR04 | 270 |
| SR06 | 300 |

3.2.2 Space required Topvex SR 03-06

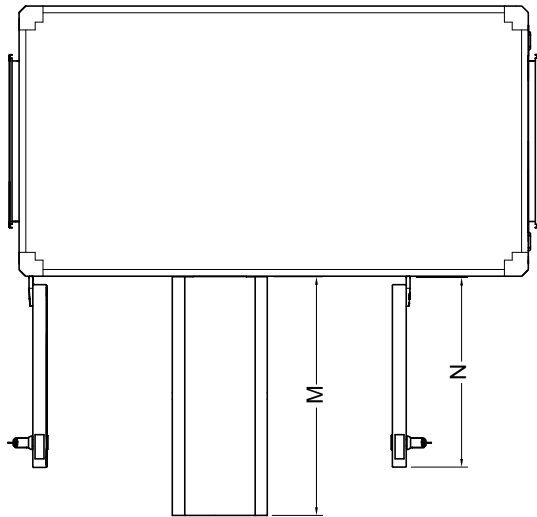


Fig. 3 Space required

| Model | M (mm) | N (mm) |
|-------|--------|--------|
| SR03 | 650 | 603 |
| SR04 | 750 | 603 |
| SR06 | 900 | 603 |

3.2.3 Dimension and weight Topvex TR 03-06

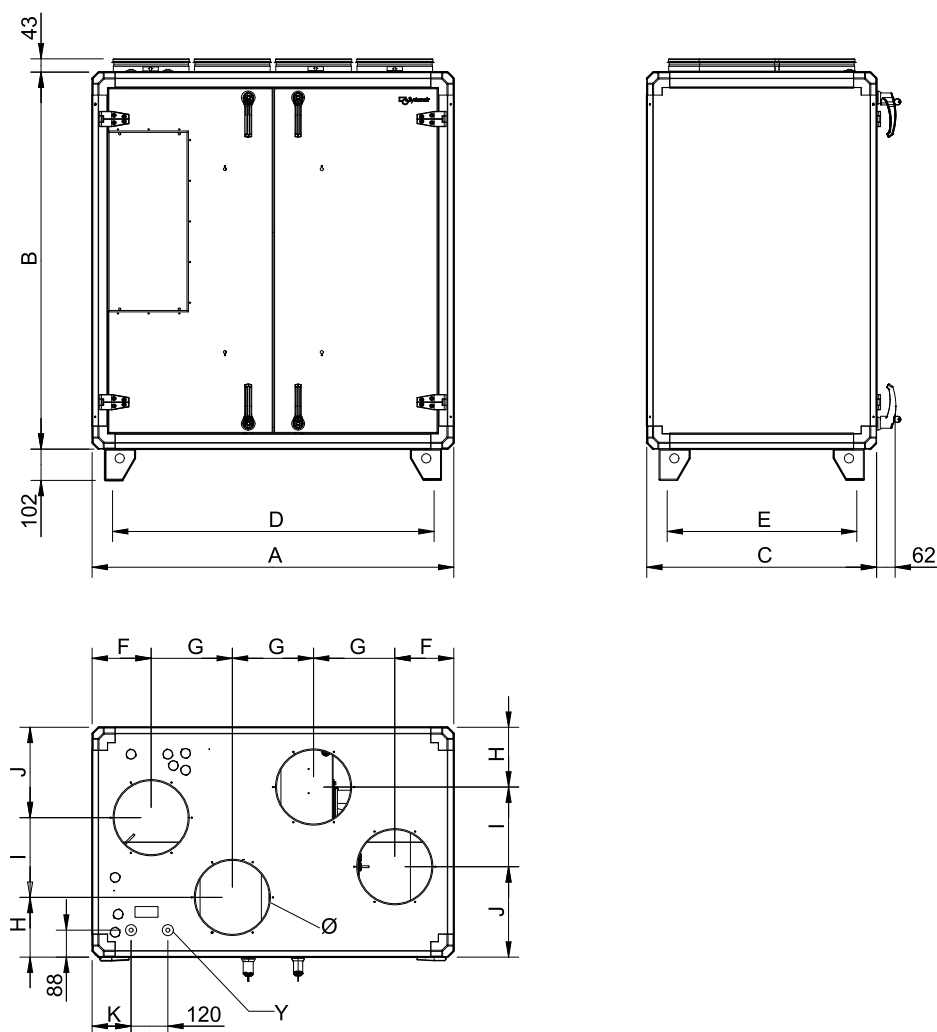


Fig. 4 Dimensions (mm) TR03, TR04 (Drawn as a left hand unit)

| Model | A | B | C | D (c/c) | E (c/c) | F |
|-------|------|------|-----|---------|---------|-----|
| TR03 | 1180 | 1230 | 750 | 1048 | 618 | 193 |
| TR04 | 1480 | 1280 | 850 | 1348 | 718 | 209 |

| Model | G | H | I | J | K | Ø |
|-------|-----|-----|-----|-----|-----|-----|
| TR03 | 265 | 195 | 260 | 295 | 127 | 250 |
| TR04 | 354 | 315 | 220 | 315 | 163 | 315 |

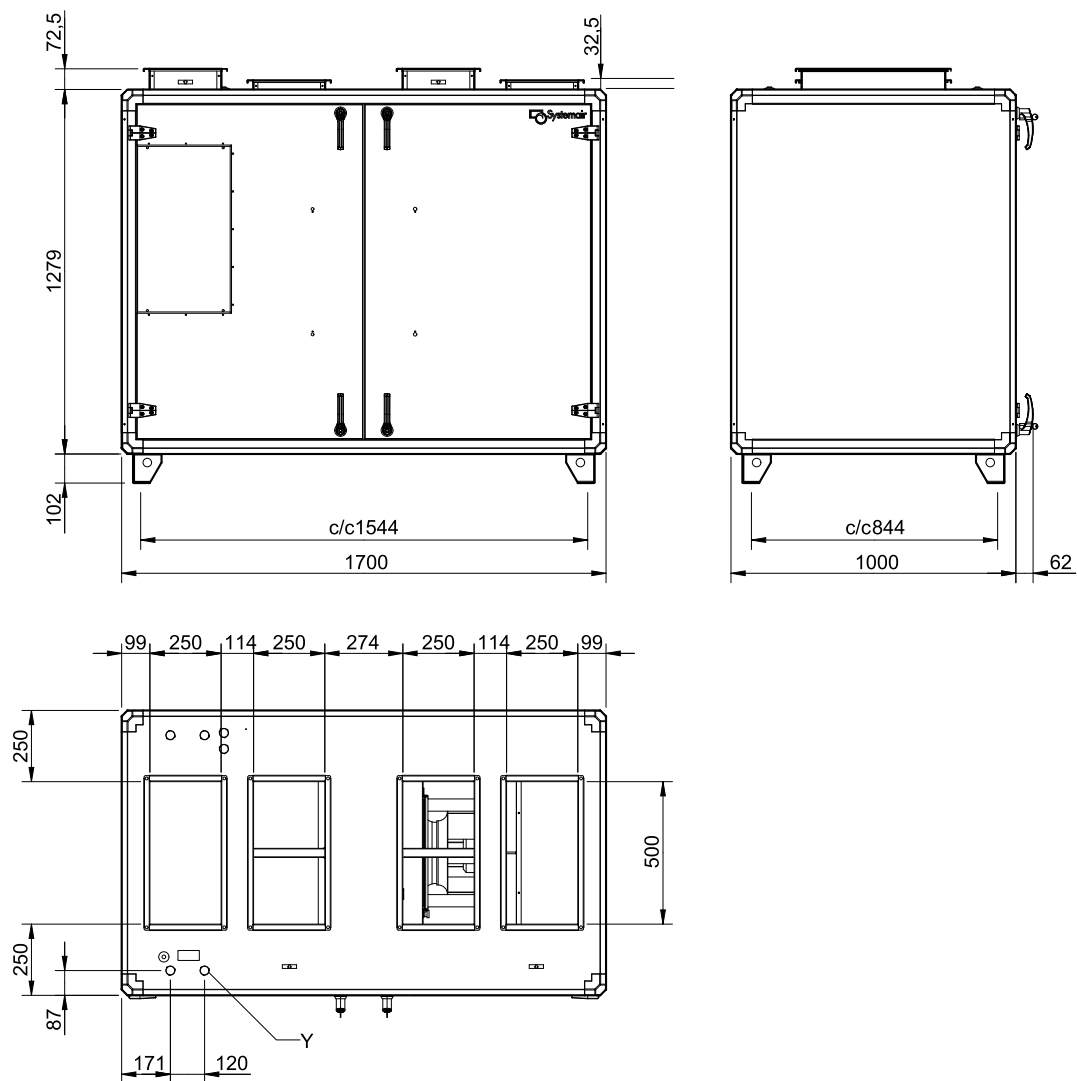


Fig. 5 Dimensions (mm) TR06

Table 2 Weights Topvex TR 03-06

| Model | Weight |
|-------|--------|
| TR03 | 230 |
| TR04 | 290 |
| TR06 | 360 |

3.2.4 Space required Topvex TR 03-06

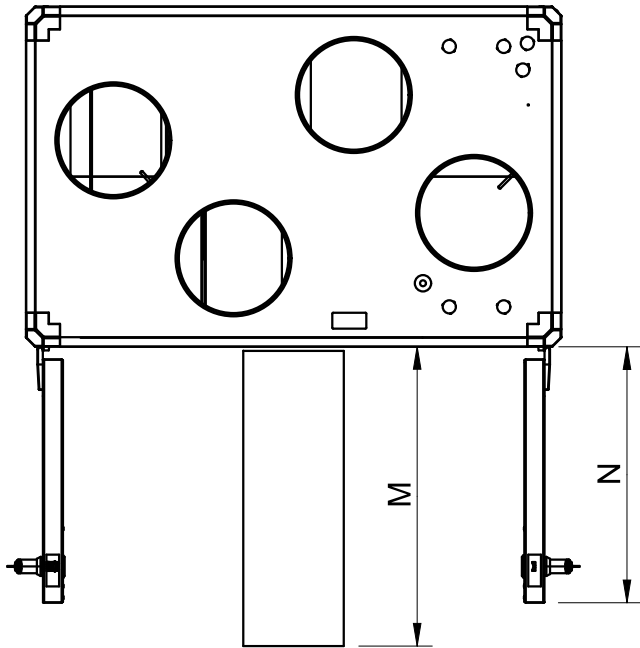


Fig. 6

| Model | M (mm) | N (mm) |
|-------|--------|--------|
| TR03 | 660 | 570 |
| TR04 | 760 | 715 |
| TR06 | 910 | 825 |

3.2.5 Electrical data Topvex SR/TR 03-06

Table 3 Power Consumption

| Model | Fans (W tot.) 230V 1~ and 400 V 3N~ | El Heating battery (kW tot.) | Fuse (mains) (A) for 230V 1~ and 400 V 3N~ | Fuse (mains) (A) for 230V 1~ and 230V 3~ |
|-------------------------|-------------------------------------|------------------------------|--|--|
| SR/TR03 EL | 1412 | 3 | 3x13 | 3x16 |
| SR/TR03 (None, HWL/HWH) | 1412 | - | 10 | 10 |
| SR/TR03 EI M0 | 1014 | 3 | 3x13 | 3x16 |
| SR/TR03 (None, HWH M0) | 1016 | - | 13 | 13 |
| SR/TR04 EL | 1460 | 4 | 3x16 | 3x20 |
| SR/TR04 (None, HWL/HWH) | 1460 | - | 10 | 10 |
| SR/TR04 EI M0 | 1560 | 4 | 3x16 | 3x20 |
| SR/TR04 (None, HWH M0) | 1560 | - | 10 | 13 |
| SR/TR06 EL | 1794 | 6.3 | 3x16 | 3x25 |
| SR/TR06 (None, HWL/HWH) | 1794 | - | 3x10 | 3x10 |
| SR/TR06 EI M0 | 2066 | 6.3 | 3x16 | 3x25 |
| SR/TR06 (None, HWH M0) | 2066 | - | 3x10 | 3x13 |

3.3 Transport and storage

The Topvex SR/TR 03-06 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 in one piece containing all necessary components, wrapped in plastic on a pallet for easy transportation.

When transporting the Topvex SR/TR 03-06 units, use a forklift placed on the gable of the unit (figure 7.)



Warning

The unit is heavy. Be careful during transport and mounting. Risk of injury through pinching. Use protective clothing.

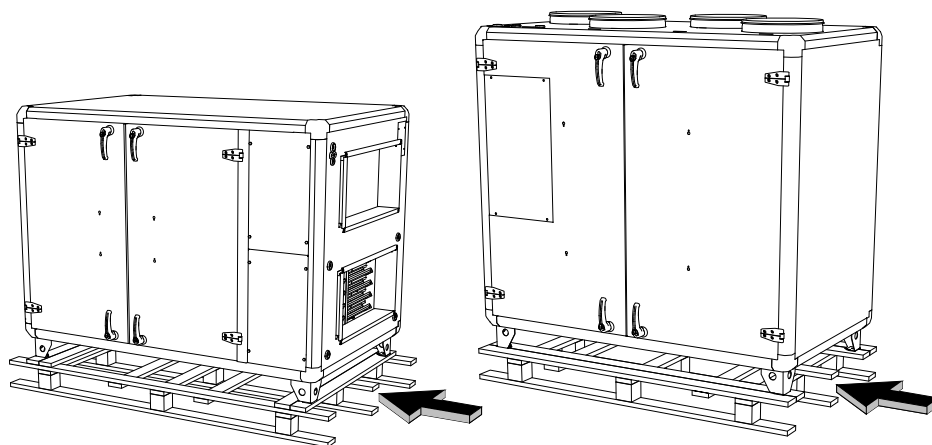


Fig. 7 Transporting the unit

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

Place the unit on a **horizontal flat surface**. It's important that the unit is completely levelled before it is put into operation.

Place the unit preferably in a separate room (e.g. storage, laundry room, attic or similar).

Topvex SR/TR 03-06 can be installed outside if weather protected. An outdoor air section, ODS is available as accessory.

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 (figure 3 and figure 6).

Avoid placing the appliance against a wall, as low frequency noise can cause vibrations in the wall even if the fan noise-level is acceptable. If this is not possible it is recommended to carefully insulate the wall.

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.

4.3 Installing the unit

The unit must be installed in the following position (figure 8 and figure 9).

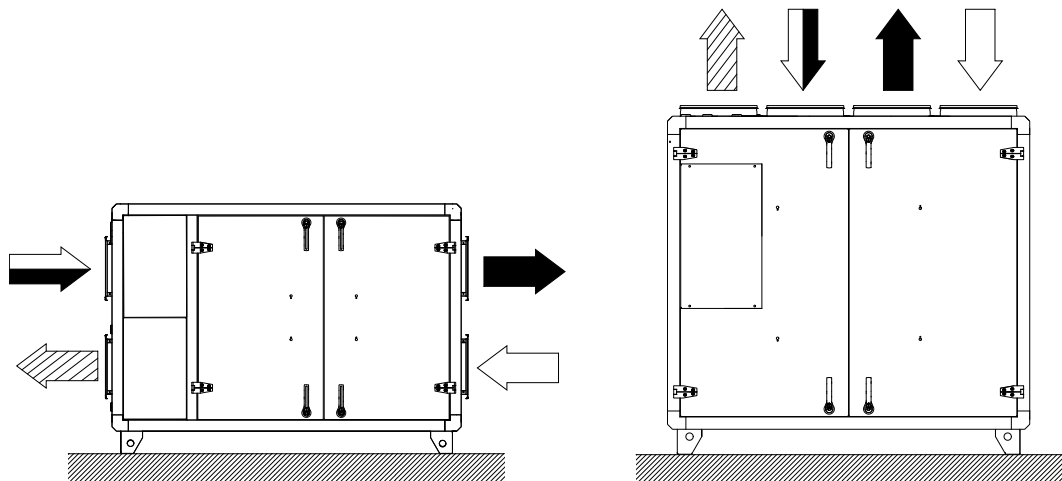


Fig. 8 Installation position (left hand unit)

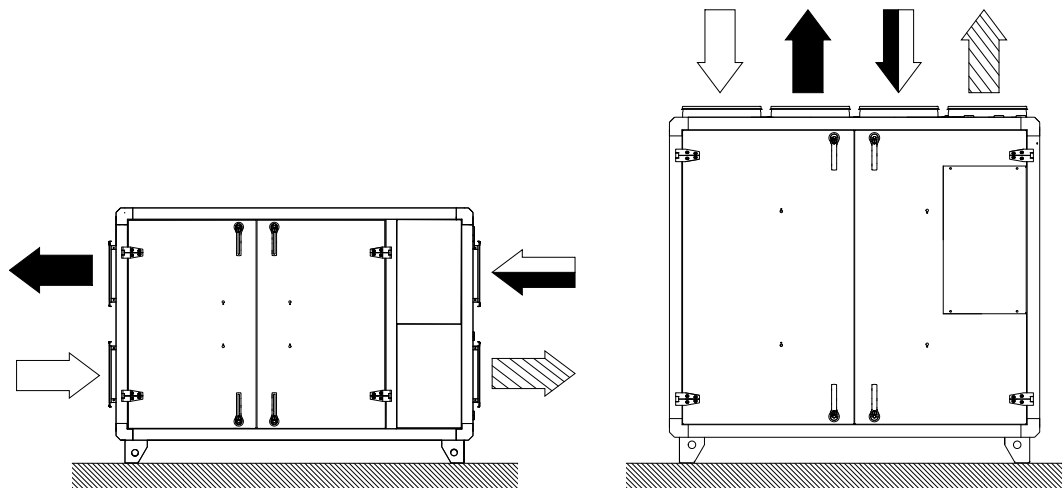






Fig. 9 Installation position (right hand unit)

Table 4 Symbol description

| Symbol | Description |
|---|-------------|
|  | Supply air |
|  | Exhaust air |
|  | Outdoor air |
|  | Extract air |

4.3.1 Installation procedure



Warning

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



Warning

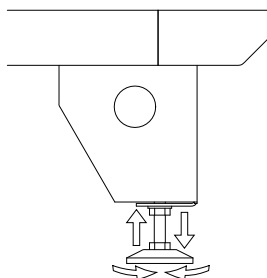
The unit's electrical connection to the mains power supply must be preceded by an all pole circuit breaker with a minimum 3 mm gap.



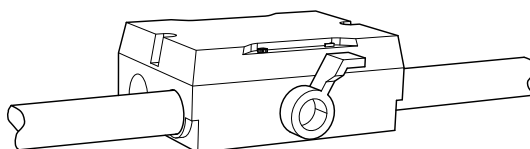
Danger

- 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.

- 1 Prepare the surface where the unit is to be mounted. Make sure that the surface is flat, levelled and that it supports the weight of the unit. Perform the installation in accordance with local rules and regulations.
- 2 Lift the unit in place.
- 3 Level the unit with help of the enclosed mounting feet



- 4 Connect the unit electrically to the mains power supply through the all pole circuit breaker, safety switch (accessory). For Topvex SR 03-06 the wiring is led through the gable of the unit. For Topvex TR 03-06 the wiring is led through the top of the unit casing. In both cases the wiring is led directly to the electrical connection box. See enclosed wiring diagram, and (chapter 4.5.5) for more information.



4.4 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 10). See chapter 4.5.5 to which terminals the sensor needs to be connected in the electrical connection box. Other temperature sensors are built in to the unit from factory.

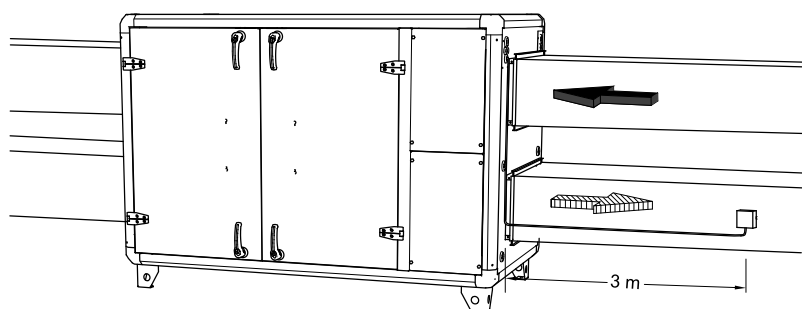


Fig. 10 Installed supply air sensor (right hand connected unit)

4.5 Connections

4.5.1 Ducting

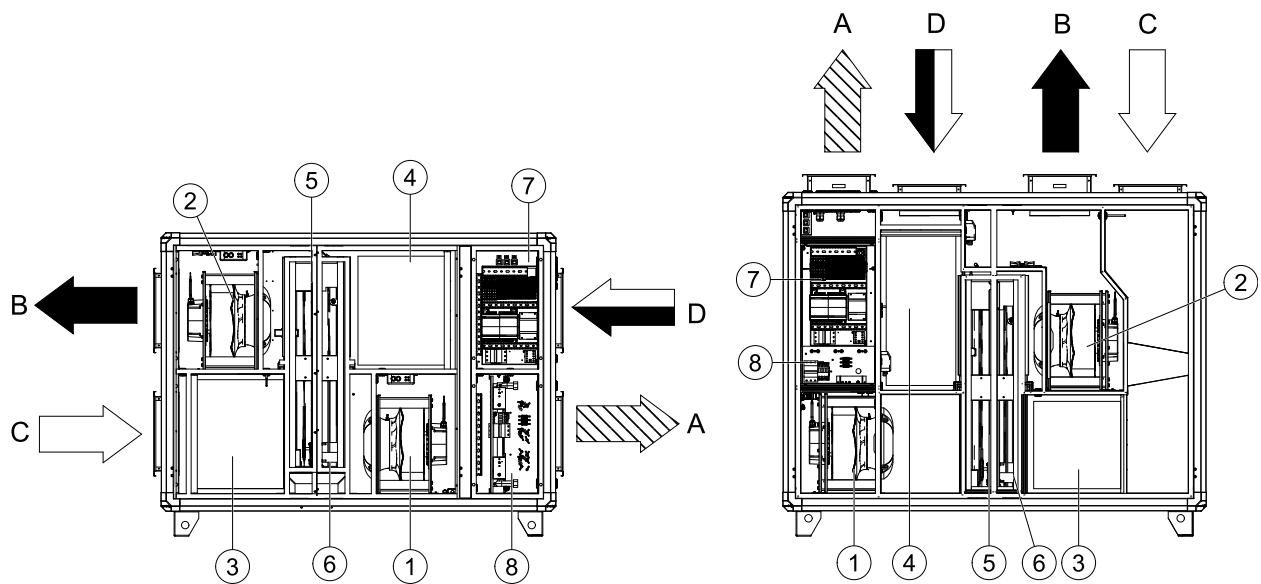






Fig. 11 Connections and basic components (SR06 right hand unit, TR06 left hand unit)

| 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 | Rotor motor | |
| 7 | Electrical connection box | |
| 8 | Re-heater battery | |

4.5.2 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

4.5.3 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.

4.5.4 Electrical connections, components

All electric connections are made in the electrical connection box which can be found in the front of the unit (figure 12). The hatch is removed by unscrewing four screws (figure 12).

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 (table 4.5.5).

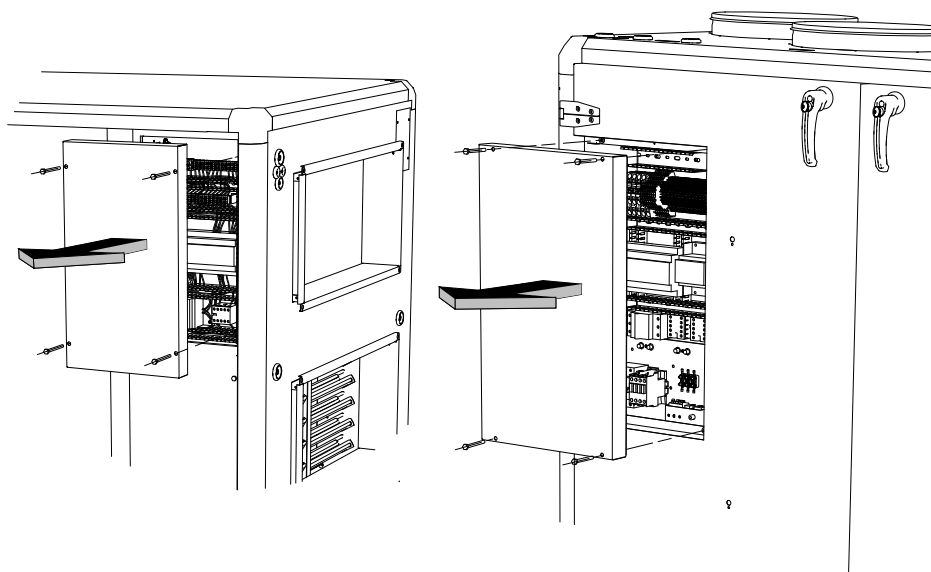


Fig. 12 Opening the electrical connection box



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.

Topvex SR/TR 03-06 are equipped with a built in regulator and internal wiring (figure 13).

The figure shows the electrical connection box for the Topvex TR 03-06 units. The connection box for the Topvex SR 03-06 has the same layout and components with the difference that the electrical heater is situated in a separate compartment.

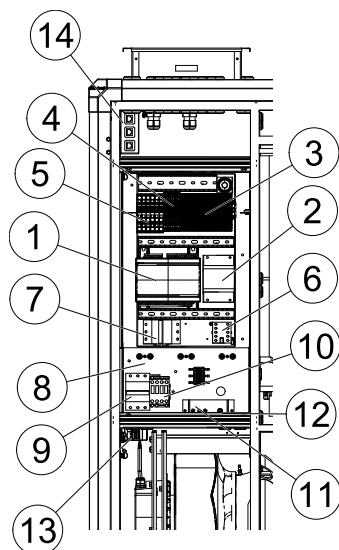


Fig. 13 Electric components

| 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 supply to the unit |
| 6 | Contactor (K2) Pump control water (HW units only, not present in EL-units) |
| 7 | Automatic fuse |
| 8 | Electric heater frame |
| 9 | Automatic fuse for heater |
| 10 | Contactor (K3) for control of EL heater |
| 11 | Thermostat (EL units) |
| 12 | Manual over heat protection reset (EL units) |
| 13 | Switch module |
| 14 | Panel outlet |

4.5.5 External connections

Table 5 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

4.5.6 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

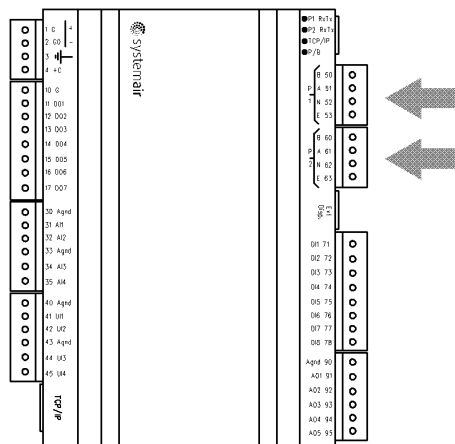


Fig. 14

TCP/IP connection

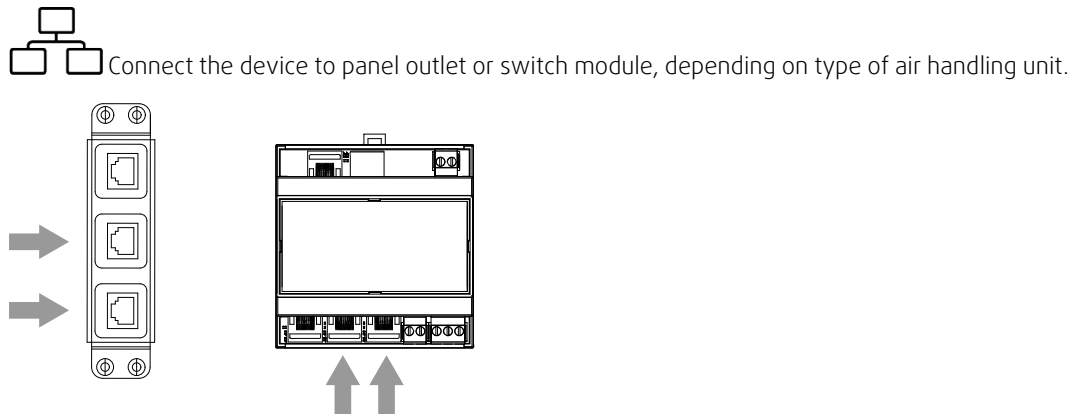


Fig. 15 Panel outlet view is an example,



Note:

RJ 45

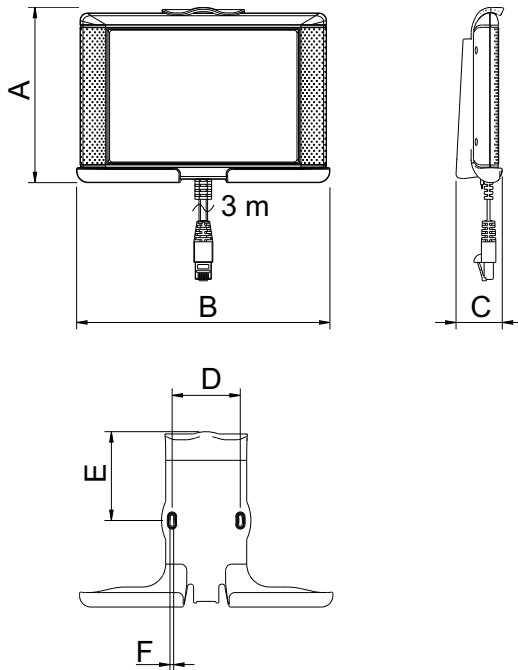
24V HMI connection dedicated for the display. The connection is only for HMI and no other connections is permitted.

4.6 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.

4.6.1 Dimensions

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

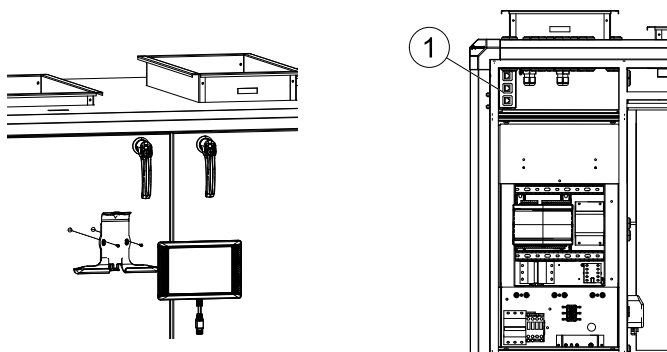


| A | B | C | c/cD | E | F |
|-----|-----|------|------|------|-----|
| 153 | 221 | 40,3 | 59,4 | 77,5 | 3,2 |

4.6.2 Mount NaviPad

The NaviPad control panel with 3 m cable, holder and screws are enclosed with the air handling unit. The air handling unit 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.



4.7 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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