

The Air Handling Unit For All Seasons

Maxi Comfort 800





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Always a good climate

The Systemair Maxi Comfort 800 is a monoenergetic or bivalent all-year heat pump including controller. The unit ventilates, cools, heats, regulates supply and exhaust air flows, mixes, filters and saves energy thanks to its intelligent electronics. Its compact design means that no further installation work is necessary on the unit. It only requires a mains power connection and a connection for the condensate drain.

This allows rapid installation and simple commissioning of the unit, which is tested and ready for service, and only needs to be plugged in.

It is also possible to interconnect and operate up to five units in order to cover larger capacity ranges.

The typical areas of application of the Maxi Comfort 800 include: Bank branches, petrol stations, offices, boutiques, bakeries, doctors' surgeries, residential buildings, and it is also ideal for server rooms.





Climate control unit

The Maxi Comfort 800 is controlled by a pre-programmed control unit with flash memory.

It can be used to control up to five units (1 master, 4 slaves) automatically or manually. A separate electricity consumption optimisation function is integrated, as well as a run time and error message protocol display.

The control panel consists of a control and indicator display with input keys and a real-time clock. There is also an interface to the motherboard. The standard values and operational status are displayed in cleartext on a four-line LCD display.

The unit can be switched on and off directly on the control unit.



All information and queries concerning the required mode can be displayed and modified using the cable remote control with LCD display and external keys.

Case dimensions: (W x H x D) 156 x 82 x 31 mm



Unit description

The multi-function Maxi Comfort 800 unit with heat recovery in compressor mode is generally available in two versions:

- As a **false ceiling unit** with three air vents towards the inside (recirculating, inlet and extracted air) and three air vents towards the outside (discharge and 2 x external air), each DN 250.
- As a **visible unit** with blow grid towards the room and three air vents towards the outside (discharge and 2 x external air), each DN 250.

The speed adjustment of the single inlet radial fans with forward curved blades is linear and stepless from 0-100%. The motor is protected by the integrated thermocontacts.

Control

Supply and exhaust air can be programmed according to requirements using the integrated control function, for a constant overpressure, balanced pressure or underpressure function. This depends on the use made of the property. The room and external temperatures (and also the supply air temperature if property-specific usage is required), as well as the temperatures of the heat exchangers, are monitored by two independent sensors in order to achieve the best possible control in terms of energy.

Customer-specific settings are permanently stored in a flash memory (also in the event of voltage loss). The room and external temperatures, all flap settings, the speeds of the centrifugal

fans as well as the parameters of the cooling system are cyclically scanned by an internal „watchdog“ and analysed in order to define the operating states.

Heat pump

The rolling piston compressor is on a vibration-free mount, is sound-proofed and fully hermetic, and has a top-mounted crankcase heater. This ensures that the viscosity of the compressor oil is maintained when the unit is out of operation for a longer period of time, and when external temperatures are very low. The refrigerant R407 C is used as the working medium in the closed refrigeration circuit with stop valve, expansion valve and reverse valve.

The Maxi Comfort 800 has large-surface heat exchangers with capillary tube injection and upstream electrostatic Class F5 filters (supply and extract air). Air transport between the heat exchangers is effected with sound-absorbing mixer chambers and flaps to provide multiple functions, so that internal dust accumulation in the machine unit is prevented.

The circuit is monitored by a high-pressure and a low-pressure sensor, as well as by a high-pressure switch.

Electrical heating battery

A 2 kW electrical heating battery with overheat protection is also installed in the unit; this switches off the heater at a temperature of 80°C and switches it on again when the temperature falls to 35°C.



Casing:

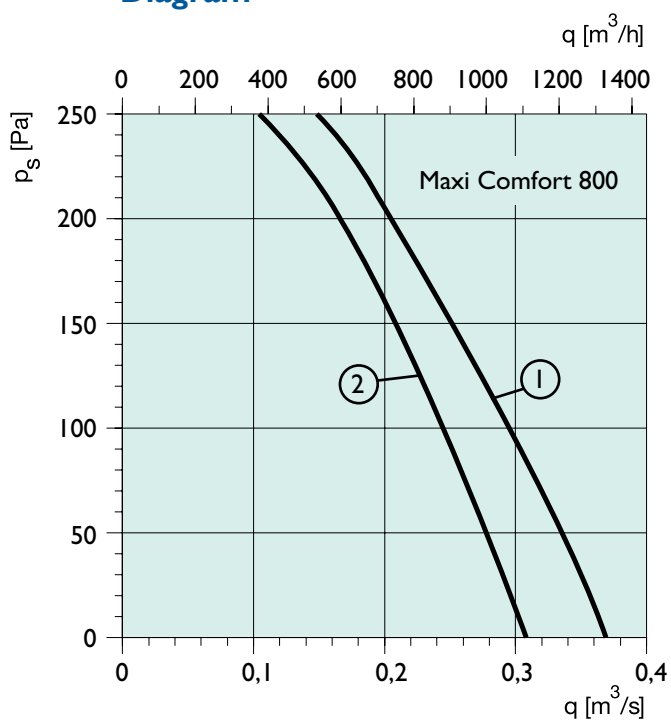
The casing is made of sheet steel (powder-coated, RAL 9010) with 10/15 mm insulation. Air mixing chambers insulated on the inlet and outlet air sides with motor-operated, insulated flaps that are airtight to the outside (0-100%) ensure low-noise operation. When the unit is switched off, the external air connections are closed with an airtight seal.

The condensation basin and the internal air ducts are made entirely of stainless steel. There is a 22 mm condensation connection on the side of the casing to drain off condensation.

Installation

Through the self-supporting design of the unit, it can be fastened to the ceiling without an installation bracket.

Diagram



Sound power level

L_{wA} , dB (A)	Mid-frequency band, Hz								
	Tot	63	125	250	500	1k	2k	4k	8k
	57	34	39	50	52	53	48	41	34

- ① External air flow at 100 %
- ② Recirculating air flow at 100 %



Technical Data		Maxi Comfort 800
Motor compressor		Rolling piston compressor, fully hermetic
Refrigerant		R407C
Ventilation functions		
Supply air [m³/h]		300 - 850, infinitely variable
Extract air [m³/h]		300 - 850, infinitely variable
Mixed air [m³/h]		300 - 850, infinitely variable
Fresh air (Option over-/underpressure) [m³/h]		300 - 850, infinitely variable
Air conditioning functions		
Refrigerating capacity [W] acc. to DIN 8957		max. 4.500
Heat pump [W] at L7/L20		max. 4.700 (COP 2,9)
Additional electric heater [W]		2.000
Air capacity [m³/h]		300 - 850, infinitely variable
Fresh air [%]		variable, 0 - 100
Noise level LwA [dB(A)]		
	without compressor	57
	with compressor	57
Electrostatic filters		
		20 mm thick
Supply air		F5
Fresh and exhaust air (via heat exchanger)		F5
Electrical data		
Mains connection		400 V~/50 Hz (3PH/N/PE) or 3 x 230 V (1PH/N/PE)
Control voltage		24/230 V~, 0-10 V
Supply air fan PI [W]		170
Extract air fan PI [W]		170
Cooling with compressor [W]		1.950
Cooling with free cooling [W]		300
Heating with heat pump [W]		1.950
Heating with electric heater, recirculating air [W]		2.150
Heating with electric heater, supply and exhaust air [W]		2.300
Casing dimensions		
	False ceiling unit:	W x H x D / 1350 x 488 x 628 mm
	Visible unit:	W x H x D / 1350 x 488 x 648 mm
Casing:		
Material		Sheet steel
Surface		Powder-coated (RAL 9010)
Weight [kg]		140 (standard version)



Advantages of Maxi Comfort 800

Consultant

- Simple conceptual design of an installation with the functions of cooling, heating and ventilation with defined capacity ranges in one standardised product.
- Delivered ready for connection and operation; no supply lines need to be installed for heating or cooling, therefore no installation requiring different installers.
- No unsightly external unit (condenser unit) required for cooling; the unit does not need to be filled with refrigerant on site.

Installer

- Fast and simple calculation and installation without ancillary work for supply connections.
- Compact unit, few accessories required for simple installation. Previous experience not required.
- Simple commissioning as control unit is integrated ready for operation.

Operators

- Simple handling of control with the „Comfort Operation“ function. Here, the unit itself decides on the mode that makes most sense in terms of energy consumption. The operator does not have to work his way through the various menus of the control unit in order to change the operating status.
- Very low maintenance requirements - only the filter has to be replaced regularly, 1-2 times a year.
- Only one unit has to be maintained for air handling (heating, cooling and ventilation) of rooms or apartments. In the event of malfunctions, you have only one contact person.

Safety:

All functions of all units are checked thoroughly before they leave the factory. For every unit, a record is kept of the inspection, so that the efficiency of the unit can be verified at all times.



Functional description

Comfort mode

This mode offers maximum comfort and does not require any previous experience on the part of the user. The user only has to enter the required room temperature (temperature range from 18 - 25 °C). A standard value is displayed. A desired proportion of fresh air can also be added (recommended: 30 - 40 %); the same percentage is also automatically carried over to the extracted air.

The unit itself detects whether it is necessary to heat up or to cool down, and which mode is most practical in terms of ecology and cost-effectiveness. As soon as the required room temperature has been reached, the Maxi Comfort unit becomes very quiet. Thanks to the variable-speed fan motors, the unit only runs at a minimum speed so that the comfortable climate can be maintained.

Note:

After the Maxi Comfort 800 has been commissioned, a system configuration is carried out. While this is taking place, all temperature values and operating parameters are also determined. This configuration takes 60 seconds, and is followed by the system startup.

Manual mode

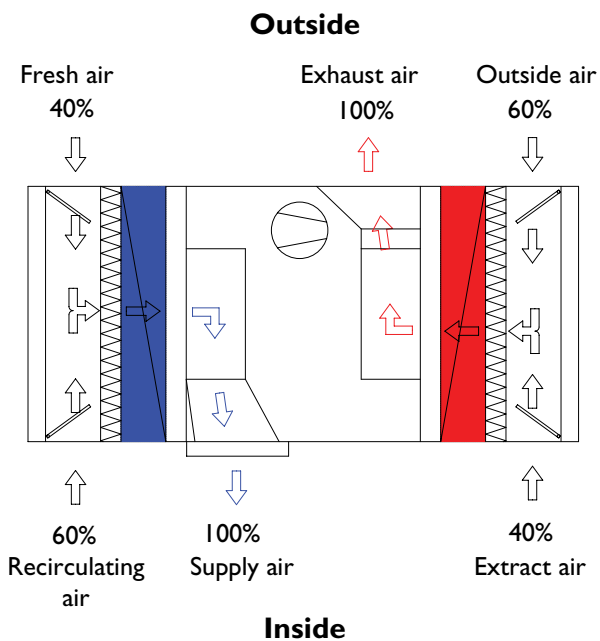
The user himself decides which mode is to be used (e.g. whether heating is to be effected solely with the heat pump or in conjunction with the electric heater). The relevant operating parameters such as standard temperature, air displacement and proportion of fresh air are determined by means of a simple query routine.



Functional description

COOLING-function

Fresh air 40 %

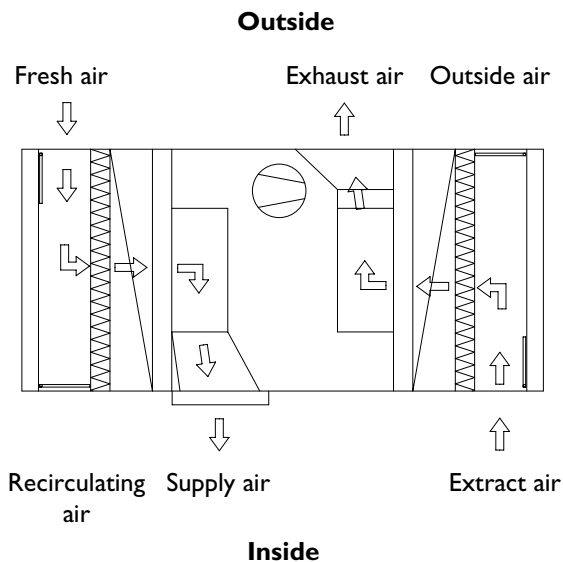


If the room temperature is higher than the preset standard temperature, the room air is cooled and also dehumidified. This causes the air to be cleaned and thus leads to an improvement in the quality of the air. In this mode, a fresh air proportion of max. 40% is recommended.

- Fresh air and extracted air adjustable 0-100 %

VENTILATION-function / FREE COOLING

Ventilation 100 %



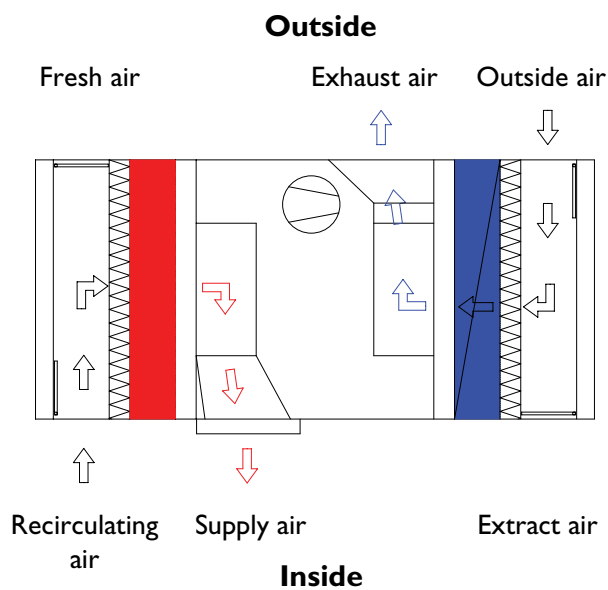
Energy-saving and cost-saving cooling without compressor, with 100% fresh air. This type of cooling can and should be used if the room temperature is above the standard temperature and also the external temperature is below the standard temperature. In this case, the external air itself can be used for cooling by allowing it to flow directly into the room.

- Free cooling function available in comfort and in manual mode.
- In comfort mode, automatic activation if the temperature conditions are suitable.



HEAT PUMP-function (heating)

Recirculating air 100 %



Very much energy can be saved with this type of heating, since the majority of the incoming heat is taken from the ambient air and only a small amount of electrical energy is required (recommended: max. 40% fresh air, minimum temperature for use = approx. -15°C). Optimum operation is possible at external temperatures of $+5^{\circ}\text{C}$ to $+15^{\circ}\text{C}$. This is when the Maxi Comfort 800 works most efficiently.

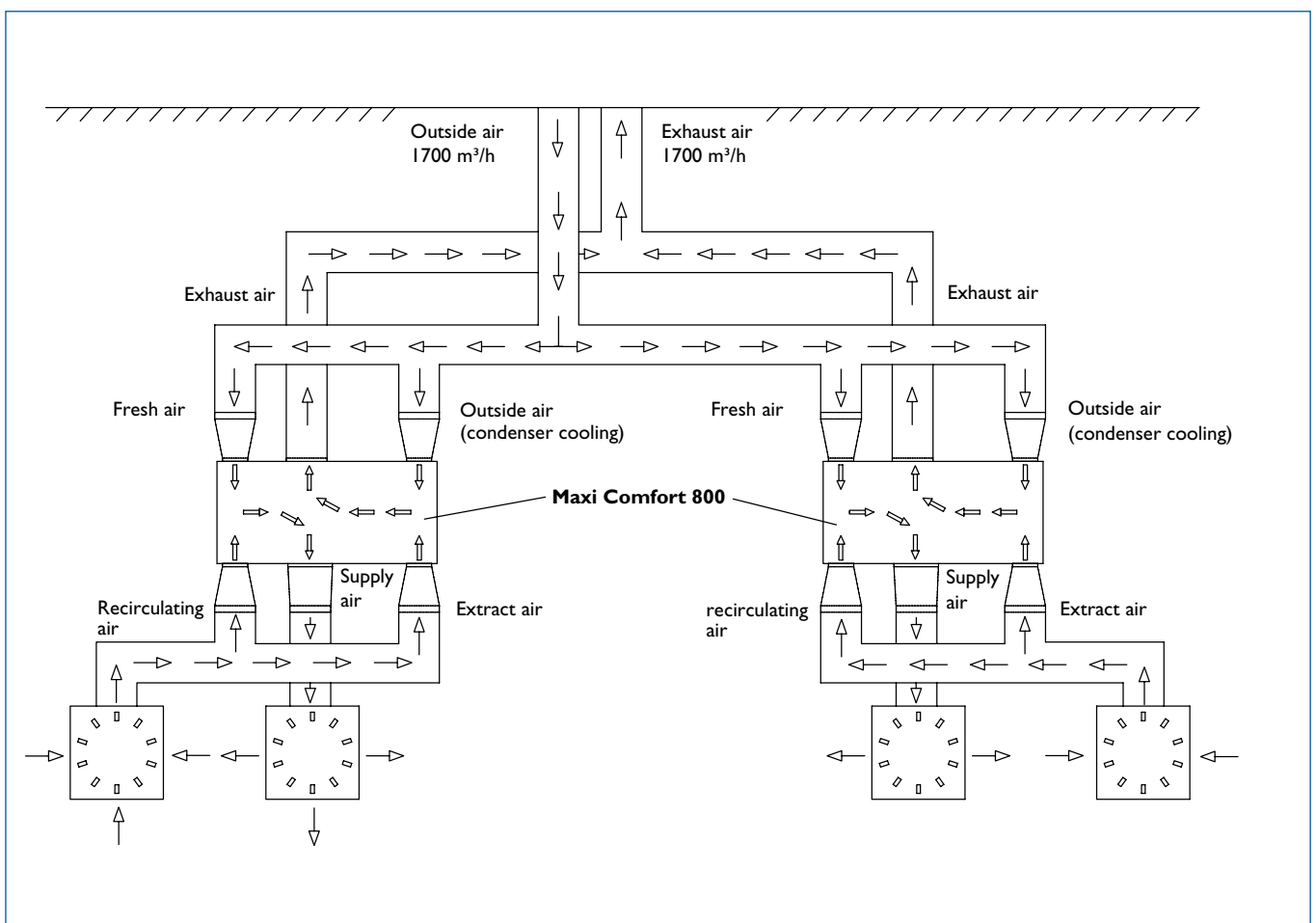
- Fresh air and extracted air adjustable 0-100 %

Electric heater

Heating with electrical heating battery without heat pump.

Here, a maximum fresh air component of approx. 30% is recommended

Air flows / Sketch of functioning principle, interconnected operation



Fresh air, exhaust air, outside air and supply air must be insulated in order to prevent condensation on the outside of the ducts.



The four ventilation functions

Ventilation

Incoming fresh air is filtered (100%) and stale room air is extracted, with the options of overpressure or underpressure.

- Ventilation is not arbitrary, on the contrary, the desired air replacement is always carried out, irrespective of external conditions.
- The quantity of air can be selected within the operating limits.
- The incoming fresh air is filtered, and an improved air quality is achieved even in city centres.

Mixed air

Incoming fresh air is filtered and stale room air is extracted, with the additional option of regulating the recirculating air share from 0 - 100%.

This function differs from „Ventilation“ in that the proportion of fresh air can be selected separately (0-100%). This offers the option of guaranteeing a high level of air circulation in the room despite a low level of incoming fresh air.

Exhaust air

Simply extracting the stale room air leads to underpressure and thus to air replacement in adjacent rooms as well.

This can help to achieve selective ventilation in several rooms. In this case, Maxi Comfort 800 merely transports air out of the room and into the open air. This creates underpressure in the room, forcing the air from the other rooms to follow on. The fresh air itself is taken in through gaps in windows and doors, or through air grids.

Supply air

Simply allowing filtered fresh air to flow into the room leads to overpressure and thus to air replacement in adjacent rooms as well.

In contrast to air extraction, the Maxi Comfort 800 allows only filtered fresh air to flow into the interior of the room. This creates overpressure, which forces the air to flow into other rooms. The stale air escapes through gaps in windows and doors, or through air grids.

This allows the same effect to be achieved as with normal air extraction, but with the advantage that the air is filtered by the Maxi Comfort 800, which means improved air quality.



Operation in a single-family dwelling

As an all-year unit, the Maxi Comfort 800 is ideal for use in a single-family dwelling. It has a heating capacity of approx. 4700 W, a cooling capacity of approx. 4500 W, it can supply and extract air and it can use its free cooling function to cool automatically without consuming additional energy. Depending on the temperatures, the intelligent controller can decide itself which mode is necessary or which mode saves most costs.

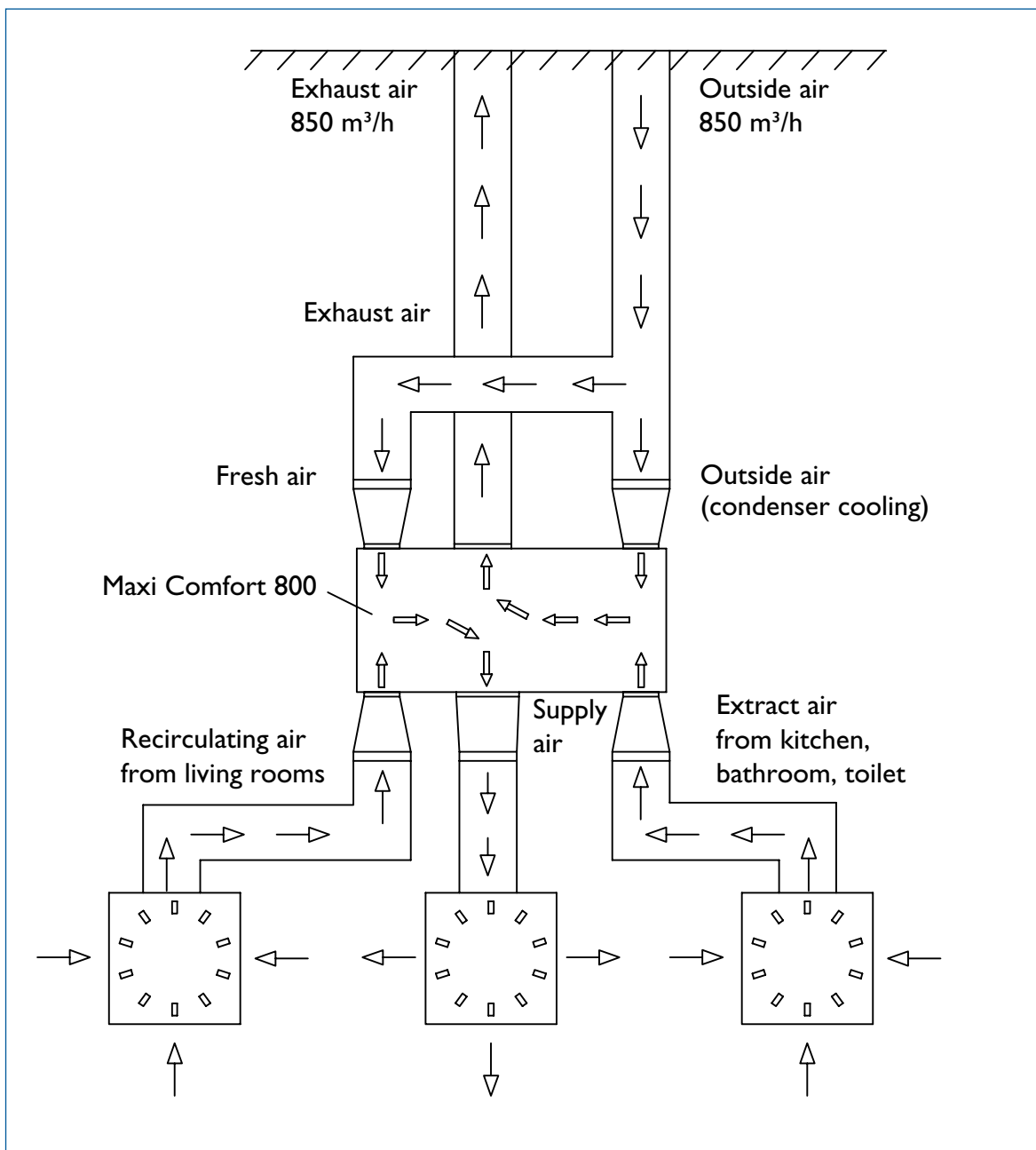
To prevent air from the kitchen, bathroom or toilet from mixing with fresh air and being drawn into living rooms, there is a separate exhaust air connection which transports this contaminated air directly to the outside.

The fresh air is mixed with recirculating air from the living rooms, heated up or cooled down and then blown into the living rooms and bedrooms as supply air. Mixed air is necessary, since the fresh air requirements alone are insufficient for heating and cooling. To obtain the required temperature, a higher air replacement rate is necessary.

The Maxi Comfort 800 thus offers the functions of heating, cooling and ventilation for a single-family dwelling in one self-contained unit. Only water heating has to be implemented as a separate domestic installation.

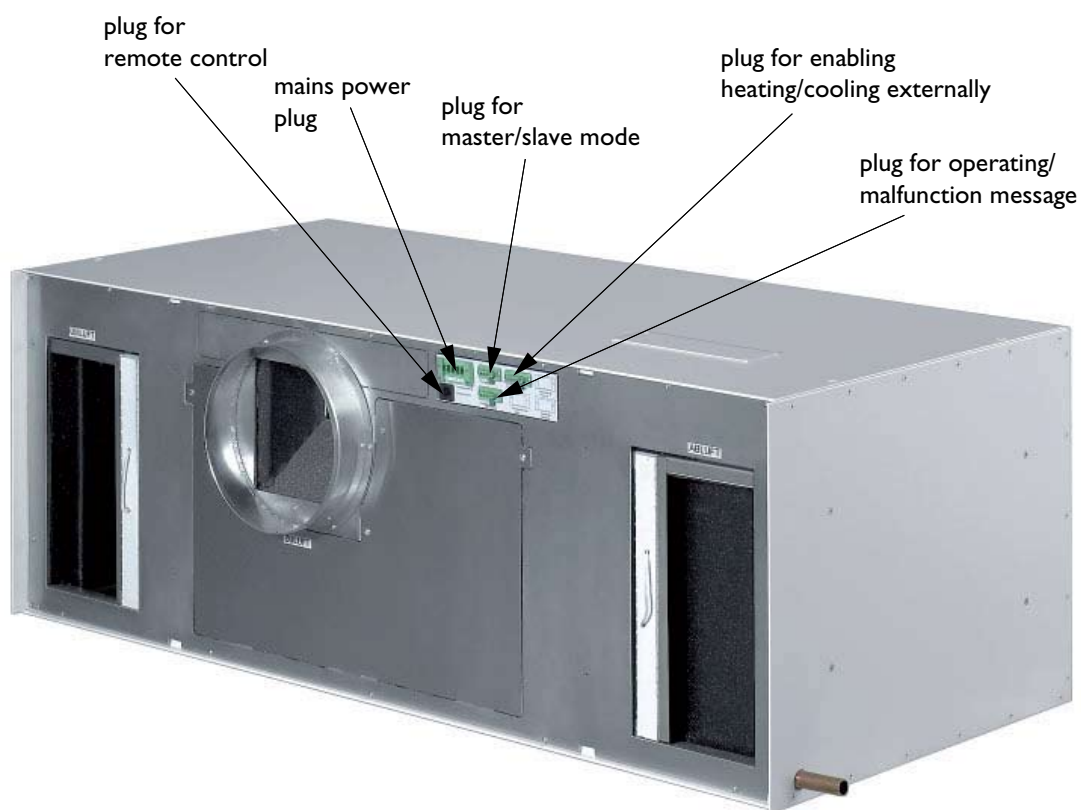


Air flows / Sketch of functioning principle, single-family dwelling



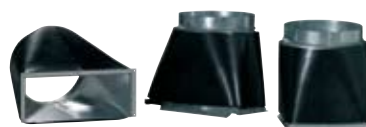
Fresh air, exhaust air, outside air and supply air must be insulated in order to prevent condensation on the outside of the ducts.

Electrical connections



Accessories

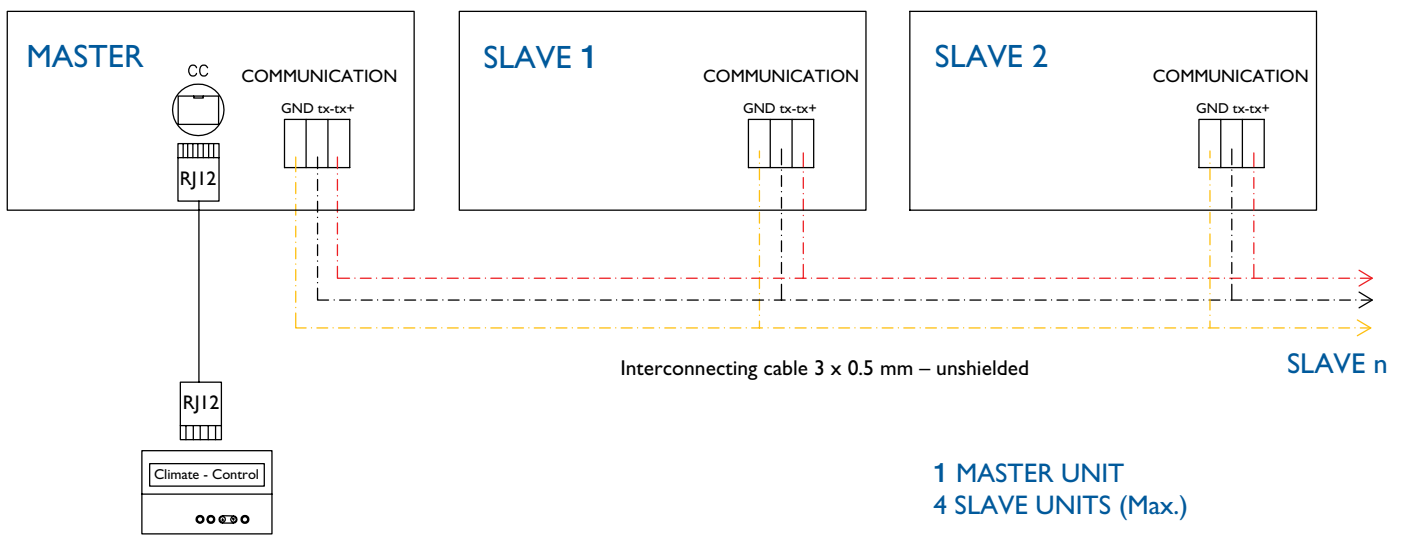
Adapter set (external) Maxi Comfort 800
External air (2x), exhaust air (1x) to DN 250



Adapter set (internal) Maxi Comfort 800
Recirculating air (1x), exhaust air (1x) to DN 250

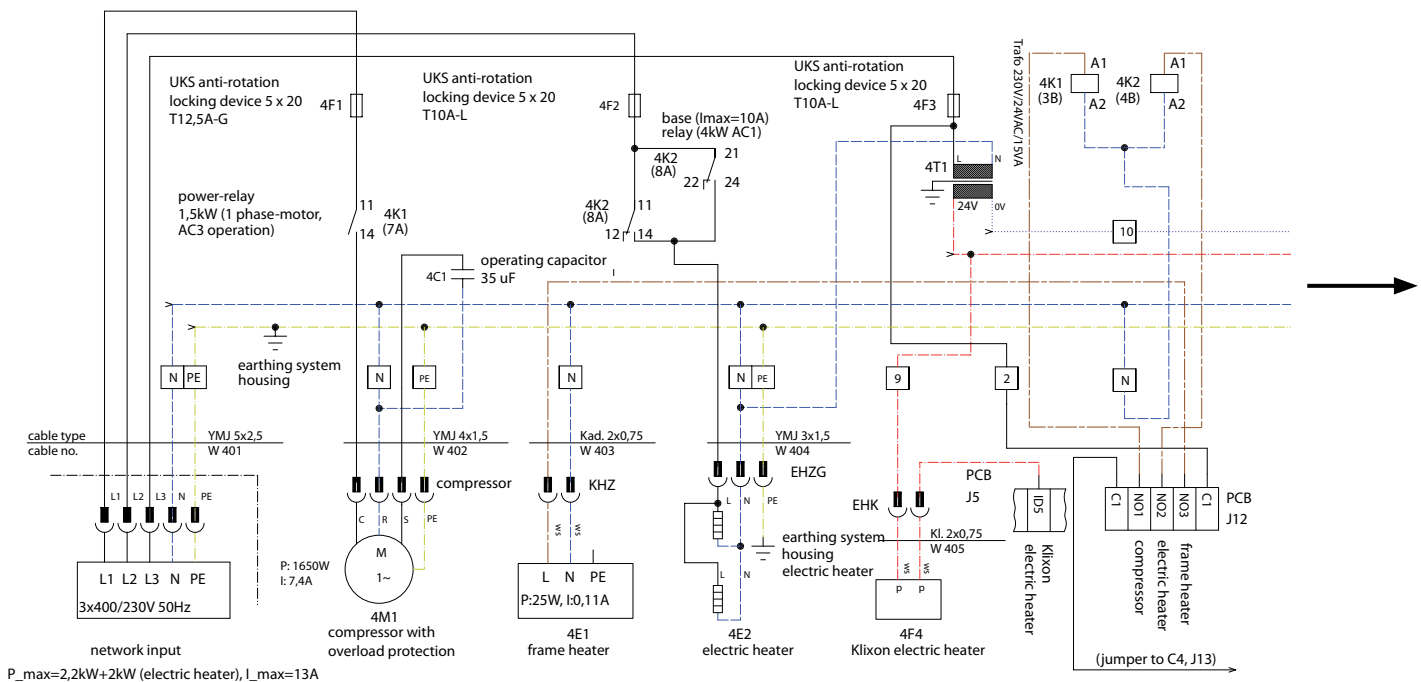


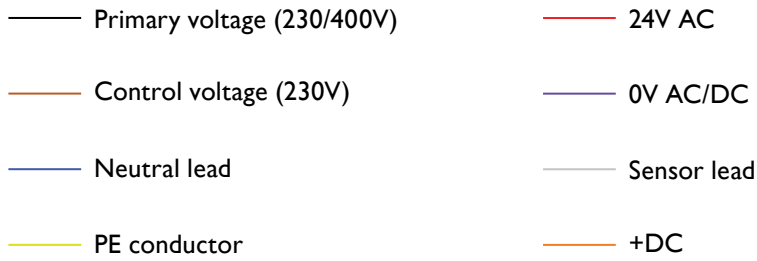
Maxi Comfort 800 - Master / Slave - network



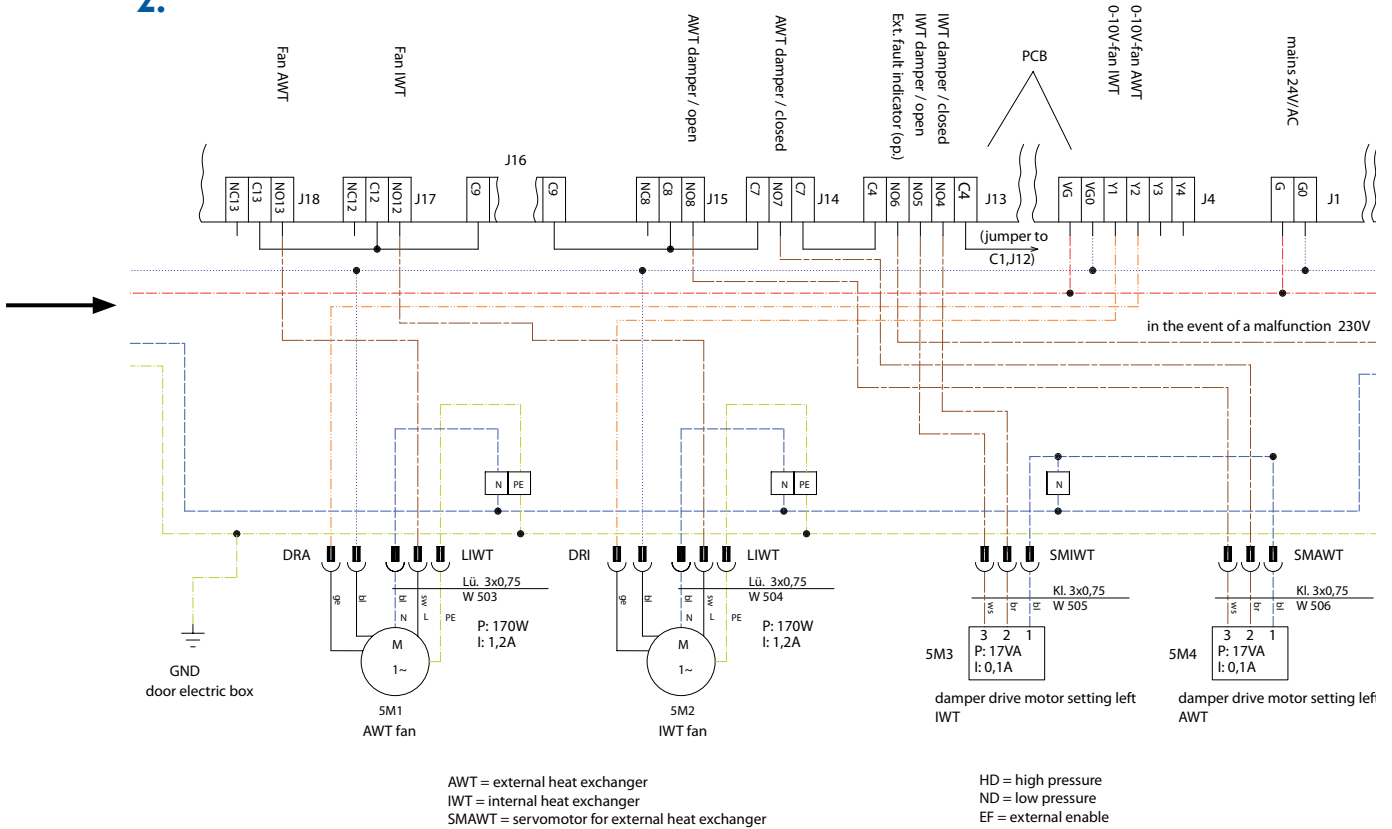
Wiring diagram

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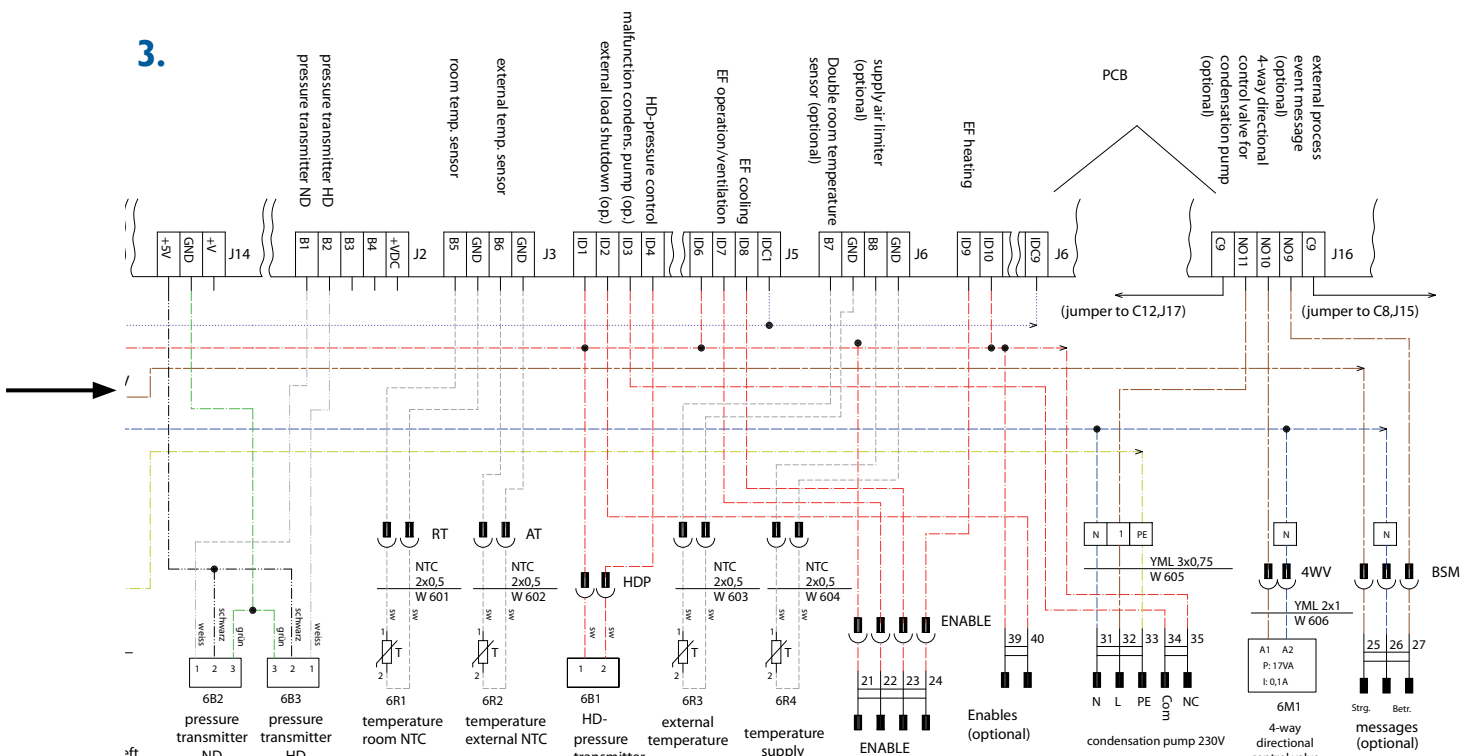




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