

## Ventilation unit

## Zehnder Novus 300

### Use

The Zehnder Novus (F) 300 comfort ventilation device was specially developed for use in demanding residential and commercial buildings. It combines maximum comfort, simple operation and high efficiency with flexible integration in building services. The Zehnder Novus (F) 300 ventilation device moves up to 177 cfm of air at an external pressure of 0.8 "wc.

### Efficiency

The integrated counterflow-duct heat exchanger achieves efficiencies up to 95%. For user comfort this means: No unpleasant draft effects because the supply air is heated almost to room temperature even at outside temperatures around freezing.

### Fans

Supply/extract fans are maintenance-free 230 VAC radial fans with integrated power supply and electronic switching. The fans run at a constant volume flow to keep the air volume constant at any selected fan speed. The air volume is not affected even if the filters become soiled. Supply air and extract air settings can be made separately for each fan level in increments of 1% from 29 - 177 cfm.

### Filters

The Zehnder Novus (F) 300 ventilation unit is fitted with class G4 filters (Merv 7/8) as standard for outside air and extract air. An optional F7 pollen filter (MERV 13) is available for outside air.

### Installation

The Zehnder Novus (F) 300 ventilation unit is characterised by its compact design. All air connections are located on the top of the unit. The unit can be mounted either vertically or horizontally on a wall or a mounting frame. As the design of the unit means that it can be supplied in a left-hand or right-hand version, installation is flexible and air ducts can be routed exactly where they are needed.

### Control and operation

The ventilation unit is controlled and operated using the control unit, which is usually installed in the main living area of the home. The high-quality TFT touch panel with colour display and intuitive user guidance provides the means for control and operation via a touch screen and optimises communication with the ventilation unit.

### Maintenance

To maintain the Zehnder Novus (F) 300, users simply have to change the integrated filters in the front of the unit regularly (every 6 months) and visually inspect the heat exchanger. The heat exchanger should be cleaned at least every 2 years (more often if it gets very dirty). This can be done by simply removing the heat exchanger from the device and cleaning it with soapy water. Please see the unit manual for additional servicing tasks.



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### **Frost protection**

The unit must be installed in a frost-free location.

The Zehnder Novus (F) 300 is equipped with automatic protection against freezing. This prevents the heat exchanger from freezing should the outside air temperature drop to a very low level. If the outside air temperature or the supply air temperature at the unit drops below the threshold value, the fans will shut down temporarily. A suitable means of frost protection specifically for the unit can be connected upstream to heat the outside air (during winter).

### **Bypass**

During summer nights and in the transition periods with strong sunshine the house often becomes too warm while the outside air remains pleasantly cool. In this case heat removal by what is known as "free cooling" helps: The cooler outside air is supplied to the rooms in the living area bypassing the heat recovery system. The Zehnder Novus (F) 300 ventilation unit is equipped with a sensor-controlled motorised bypass valve for this purpose. The bypass is a standard component and takes 100% of the return air past the heat exchanger.

### **Options**

#### **Humidity recovery**

Unit versions with a humidity heat exchanger are available as alternatives to the standard heat exchanger. The optional enthalpy exchanger (Zehnder Novus F 300) is fitted with an anti-microbial polymer membrane which is capable of recovering both heat and significant humidity. There is no risk of odours, germs or other particles being transferred during the physical process of humidity recovery.

- **Pollen filter**

A large pollen filter installed in the supply air line keeps the inside of the house pollen-free and reduces the particulate, spore and germ load: breathe freely in times of increasing allergies.

### Benefits

- Comfort ventilation up to 300 m³/h
- Heat recovery with an efficiency of up to 95%
- Humidity recovery with enthalpy exchanger (optional)
- Low power consumption thanks to the high energy efficiency of the ventilation unit (0.23 Wh/m³)
- Low noise level (21 dB(A) 3 m away from the unit)
- Automatic 100% summer bypass
- Frost protection controller (including protection against the downstream hot water heating element icing over)
- Quick, safe installation and maintenance
- Easy operation with intuitive colour TFT touch panel
- Filter replacement indicator
- Preheater and postheater integration possible
- Small minimum air volume, designed specifically for residential buildings
- Set up for operation in conjunction with heat-producing appliances
- Automatic controller for external air quality sensors

### Article numbers

L = supply air left, R = supply air right, V = preheater

Luxe = advanced control

Description	Article number	Reference number
Novus 300 L	527 001 980	93 35
Novus 300 L Enthalpy	527 002 010	93 77

### Tender text

#### Zehnder Novus (F) 300 comfort ventilation unit

with plastic counterflow-duct heat exchanger with thermal efficiency of up to 95% optional: counterflow humidity heat exchanger with selective polymer membrane film, supply and extract fans with separate variable control in 1% increments, EC fans with constant volume flow control, automatically controlled integrated 100% bypass, maximum air volume up to 177 cfm at 0.8 "wc, H x W x D: 38.5 x 31.2 x 23.7 inch, left-hand/right-hand vertical/horizontal design, unit with universal controller for automatic timers or sensors, function to monitor filter running time, frost protection control, communication unit to control preheater and postheater, geothermal heat exchanger flap.

### Air directions

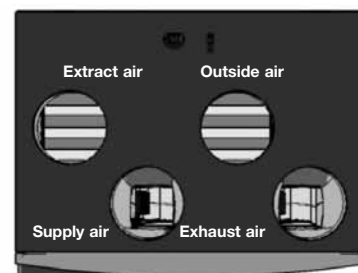
The figures on the right show air directions when looking from above.

A = extract air

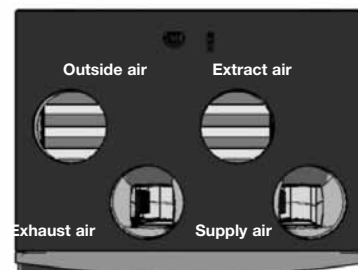
B = supply air

C = exhaust air

D = outside air



Left-hand unit version



Right-hand unit version

## Ventilation unit

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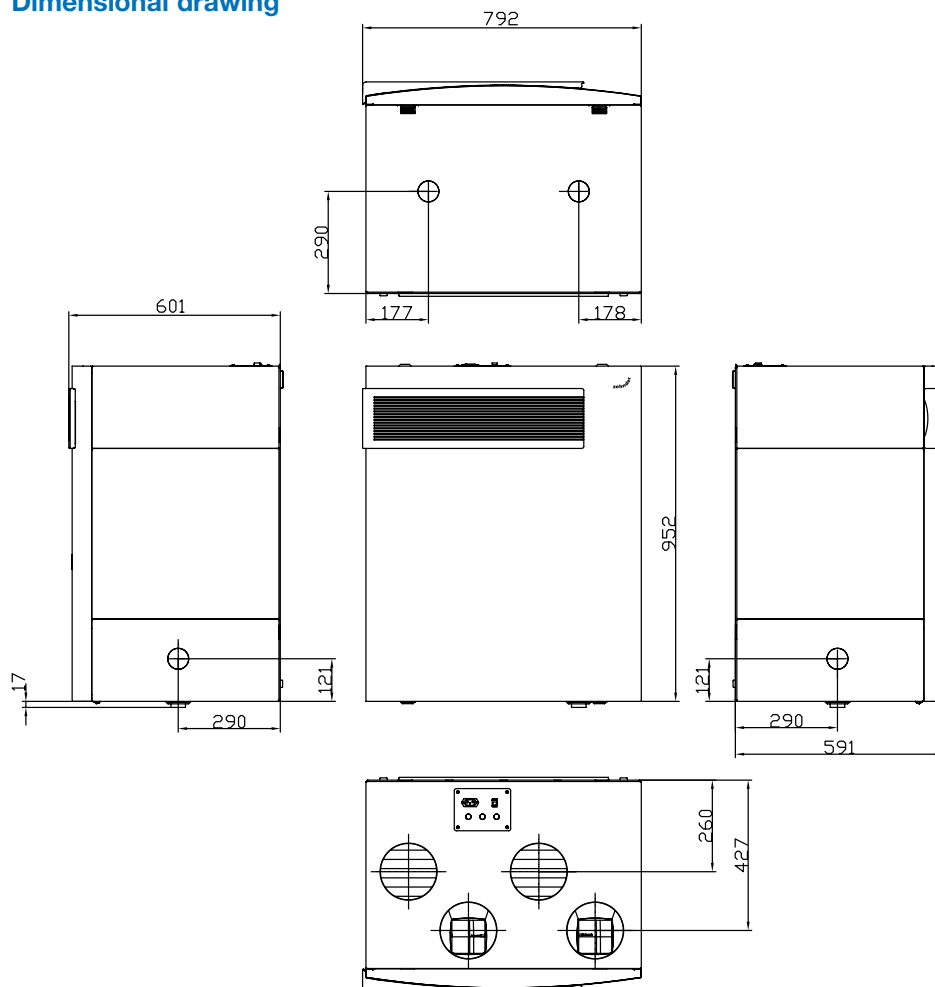
### Technical specifications

Dimensions	
Height (inch)	38.5
Width (inch)	31.2
Depth (inch)	23.7

### Specification

Heat exchanger material	- Plastic (counterflow-duct heat exchanger) - Polymer (humidity heat exchanger)
Interior lining material	Expanded polypropylene (EPP)
Heat output	up to 95%
Weight	110.2 lb

### Dimensional drawing



## Ventilation unit

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### Certificates

- Passivhaus (passive house)

### Equipment

Equipment	Novus 300	Novus F 300
Enthalpy exchanger		x
Left-hand/right-hand design	x	x
DN 125 connector	x	x
Ready to plug in design	x	x
TFT touch panel control unit	x	x

### Control

Fan levels: STANDBY, ABSENT, LEVEL 1, LEVEL 2, LEVEL 3

Fan levels can be programmed separately for supply air and extract air for each fan level in 1% increments (35 - 118 cfm)

Weekly timer programme can be customised

Automatic sensors (CO<sub>2</sub>, humidity, air quality) optional with external sensor

Digital ON/OFF interface (e.g. external contact for OFF)

Option to connect intermittent ventilation sensor

Filter running time monitoring

Frost protection controller (including protection against the downstream hot water heating element icing over)

Unit set up for operation in conjunction with a heat-producing appliance

Error messages

Running time monitoring (separate for fans/unit)

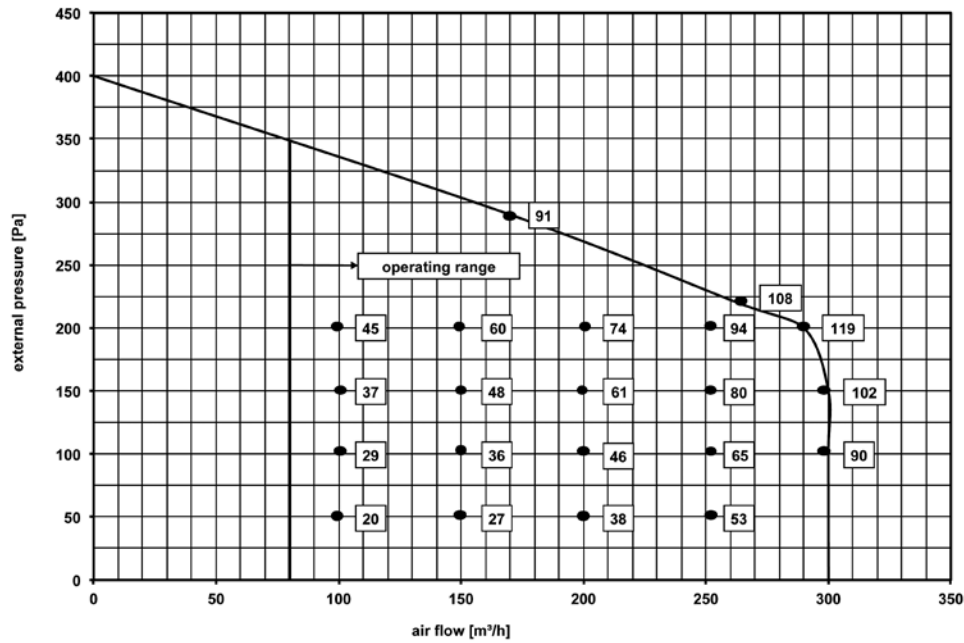
Power consumption in standby < 1 W

### Options (with add-on module)

- Triggering of an external defroster heater
- Triggering of a heating circuit or air reheating register
- Triggering of an electric butterfly valve on the geothermal heat exchanger

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### Technical specifications

#### Sound, supply air

Sound power at the supply air connection at a distance of 0 ft.

Ventilation unit		Volume flow						
Type	cfm	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Novus 300	118	57	53	58	61	54	48	42
Novus 300	177	60	59	63	66	62	56	52

#### Sound, extract air

Sound power at the extract air connection at a distance of 0 ft.

Ventilation unit		Volume flow						
Type	cfm	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Novus 300	118	36	42	37	31	22	17	15
Novus 300	177	42	50	38	37	28	21	16

# Certificate

valid until 31.12.2011

Passivhaus  
Institut  
Dr. Wolfgang Feist  
Rheinstraße 44/46  
D-64283 Darmstadt



**Component  
suitable for**

**Passive Houses: Heat recovery unit**

**Manufacturer: Paul Wärmerückgewinnung GmbH**

**Name of product: novus 300**

**The following criteria were checked for the award of this certificate:**

The criteria are valid for the cool temperate climate.

**1) Passive House Thermal Comfort Criterion:**

A minimum supply air temperature of 16.5 °C is achieved at an ambient temperature of -10 °C.

Reasoning: In Passive Houses there is no need to install radiators on exterior walls. In order to avoid discomfort due to exposure to cold air, the supply air temperature must not sink below a minimum value.

**2) Efficiency Criterion (heat):**

The effective dry heat recovery rate, determined at an ambient air temperature between -15 and 10 °C, dry extraction air (21 °C) and with balanced mass flows, must be greater than

$\eta_{HR,t,eff} \geq 75\%$  (in this case 93 % [200 m³/h], 94,4 % [145 m³/h]).

**3) Efficiency Criterion (electricity):**

The unit's total specific electric power consumption for the operating levels applied in Passive Houses must not exceed 0,45 W/(m³/h), for the supply air delivered at design mass flow

(in this case 0,24 Wh/m³ [145 m³/h], 0,23 Wh/m³ [200 m³/h]).

**4) Air-tightness and thermal insulation:**

The interior and exterior air leakage flow rates must not exceed 3 % of the nominal extraction air flow rate. (Requirements and verification are described in the certificate's appendix.)

**5) Balancing and controllability:** (Requirements and verification are described in the certificate's appendix.)

**6) Sound insulation:** The installation in a separate room for building services is required for this unit.

The required sound pressure level of 35 dB(A) in the installation space with an equivalent absorption area of 4 m² is not achieved. The unit has to be set up in a separate room. sound levels of < 25 dB(A) in living spaces and < 30 dB(A) in functional spaces are achieved with sound absorbers. (Requirements and verification are described in the certificate's appendix.)

**7) Room air hygiene:** An outdoor air filter F7 is integrated in the unit.

If the unit and all components are installed and operated according to the manufacturer's instructions, the unit will provide perfectly hygienic supply air. (Requirements and verification are described in the certificate's appendix.)

**8) Anti-freeze protection:** (Requirements and verification are described in the certificate's appendix.)

**The certificate is to be used as follows:**

**COMPONENT  
suitable for  
PASSIVE  
HOUSES  
Dr. Wolfgang Feist**



**Heat recovery unit:  
Heat recovery rate  
(effective): 93 %  
Electric efficiency: 0,24 Wh/m³**

CDE-FLYERTS251, V0112, en, subject to changes