

PRODUCT DATA

COMFORT 1200 BY NILAN



Ventilation & passive heat recovery



Commercial



Passive
heat recovery



Ventilation
< 1400 m³/h

COMFORT 1200

The Comfort 1200 is a ventilation unit suitable for central ventilation of residential buildings, schools, offices and business facilities with a ventilation requirement of up to 1400 m³/h.

Every component has been carefully selected with a view to unsurpassed quality and each component is tested throughout the entire production process, as are the finished units before leaving the factory. This quality control reflects our high standards, which not only exceed market requirements but also take them several steps further.

Automatic control

The Comfort 1200 is supplied with an integrated CTS 602i control, which is operated by the enclosed HMI touch panel.

The modern CTS 602i control communicates Modbus RTU RS485. A CTS system using this type of communication can easily be connected to the device.

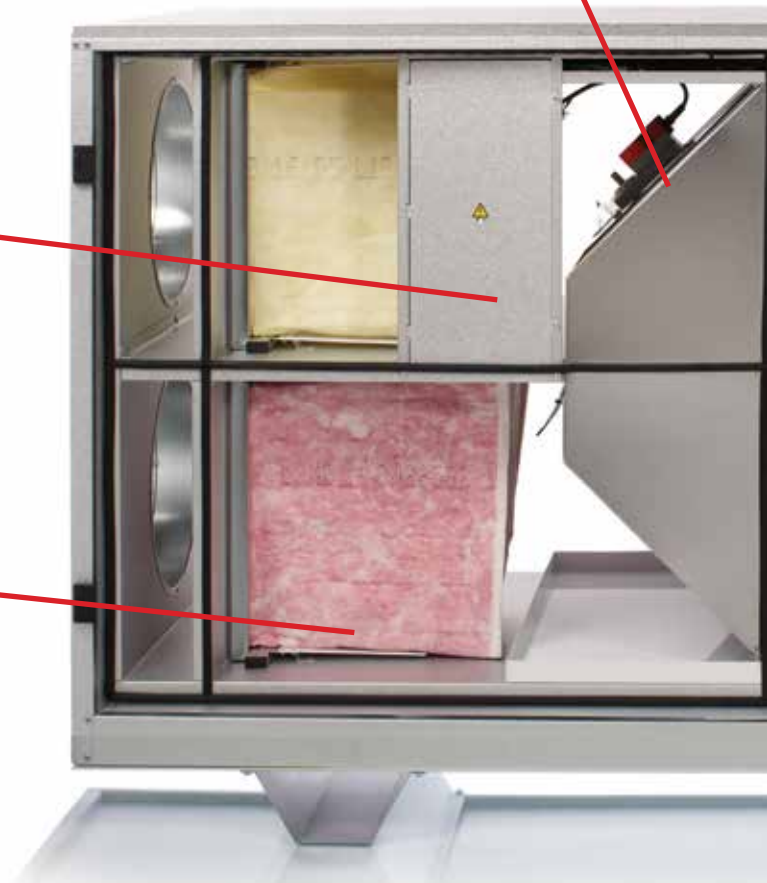
Filters

The Comfort 1200 is supplied with bag filters. An ISO ePM10 >60% (M5) filter in the air exhaust and an ISO ePM1 50% (F7) filter for fresh air are supplied as standard.

The CTS 602i control has a built-in pressure controlled filter monitor.

Modulating bypass

An automatic bypass valve directs the fresh air past the heat exchanger when waste heat recovery is not necessary, thus conserving energy.



Doors

The large doors allow easy access for the changing the filters, as well as for servicing of the unit.



Frost protection

An electric heater can be purchased for frost protection. This prevents the formation of ice in the counterflow heat exchanger in the event of long periods of frost.



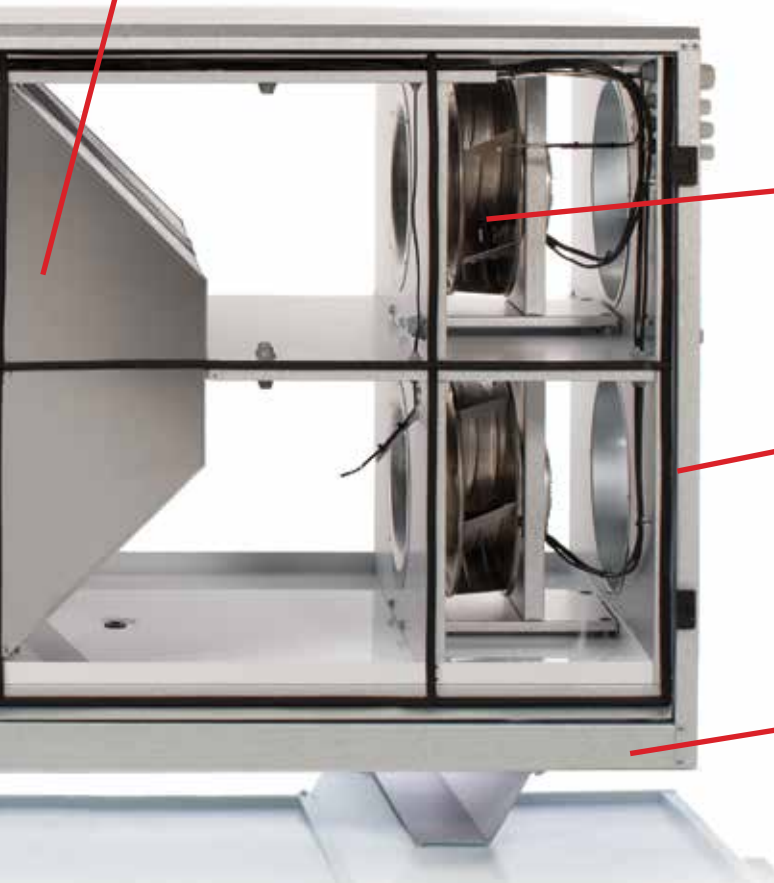


User APP solution via gateway LAN/WiFi

Counterflow heat exchanger

Heat recovery is achieved by two counter flow heat exchangers made of highly corrosion resistant marine aluminium. The counterflow heat exchangers have an energy efficiency of more than 80% and prevent odours being transferred from the extracted air to the supply air.

The CTS 602i control allows for cooling recovery.



Plug fans

The two fan sections consist of energy-efficient EC motors with built-in motor controllers operated by a 0-10V signal.

The efficient fan wheels have rear facing impellers and are extremely quiet.

Construction

The Comfort 1200 is housed in a strong frame structure of Aluzinc with 50 mm insulation.

Base

The Comfort 1200 is delivered with a robust, built-in base.

Heating elements

External water or electric heating elements, regulated by the CTS 602i control, can be purchased.

The water-heating element can be built into the unit.

Pressure control

The extraction and/or supply fan can be operated with the aid of a pressure transmitter.



COMFORT 1200

Technical specifications

Dimensions (W x D x H)	1815 x 825 x 970 mm
Weight	230 kg
Min. Airvolume	400 m ³ /h
Max. Airvolume	1400 m ³ /h
Power consumption	500W
Power supply	230 V (±10 %), 50/60 HZ
Max. phase	13 A
Standby power	4 W
Plate type casing	Aluzinc steel plate
Heat exchanger type	Aluminium counterflow heat exchanger
Filter class	Standard bagfilters ISO ePM10 >60% (M5) Extract air and ISO ePM1 50% (F7) Fresh air
Duct connections	Ø 315 mm
Condensate drain	PVC, Ø 20x1.5 mm
External leakage underpressure (*1)	< 1.45 %
External leakage overpressure (*2)	< 2.14 %
Internal leakage (*3)	< 2.90 %
Tightness class	IP31

*1 At ± 250 Pa and 1200 m³/h according EN 308/EN 13141-7.

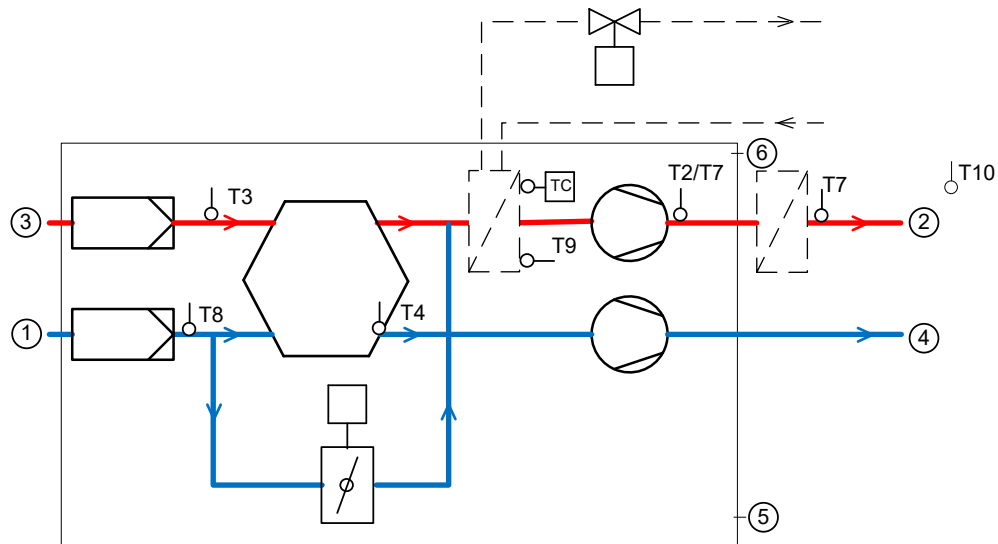
*2 At ± 100 Pa and 1200 m³/h according EN 308/EN 13141-7.

*3 At ± 100 Pa and 1200 m³/h according EN 308/EN 13141-7.

Motor and motor control

Motor type	EC-Engine
Motor class in accordance with IEC 60034-30	IE3 (Premium efficiency)
Voltage input	1 x 230 V
Current overload protection	Built-in
Control signal with third party control system	0 - 10 V DC
Fluid temperature (air)	-20 / +40 °C
Ambient temperature (operating)	-20 / +40 °C

Functional diagram



Connections

- 1: Fresh air
- 2: Supply air
- 3: Extract air
- 4: Discharge air
- 5: Condensate drain
- 6: Electric and water heating

Automation

- T2/T7: Supply air sensor
- T9/TC: Heating element frost protection
- T3: Extract air sensor
- T4: Discharge air and defrost sensor
- T8: Fresh air sensor
- T10: Room sensor

PLANNING DATA

Nilan units are tested in accordance with the valid standards of accredited independent test institutes.

Capacity

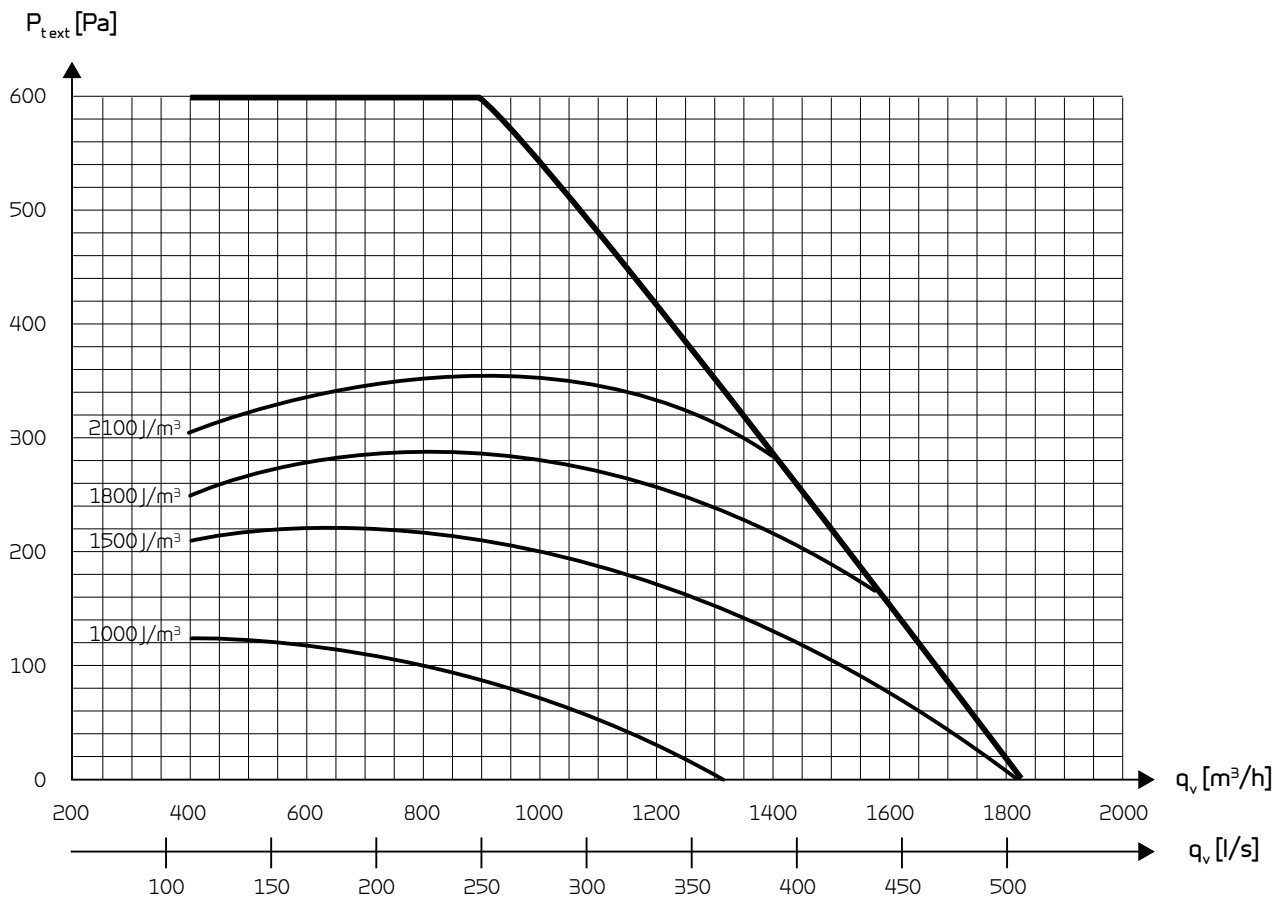
Capacity of standard unit as a function of q_v and $P_{t,ext}$.

SFP values according to EN 13141-7 are for standard units with ISO ePM10 >60% (M5) filter in extract air, ISO ePM1 50% (F7) filter in fresh air and no heating element.

SFP values comprise the unit's total power consumption incl. control.

Conversion factor: $\frac{J/m^3}{3600} = W/m^3/h$

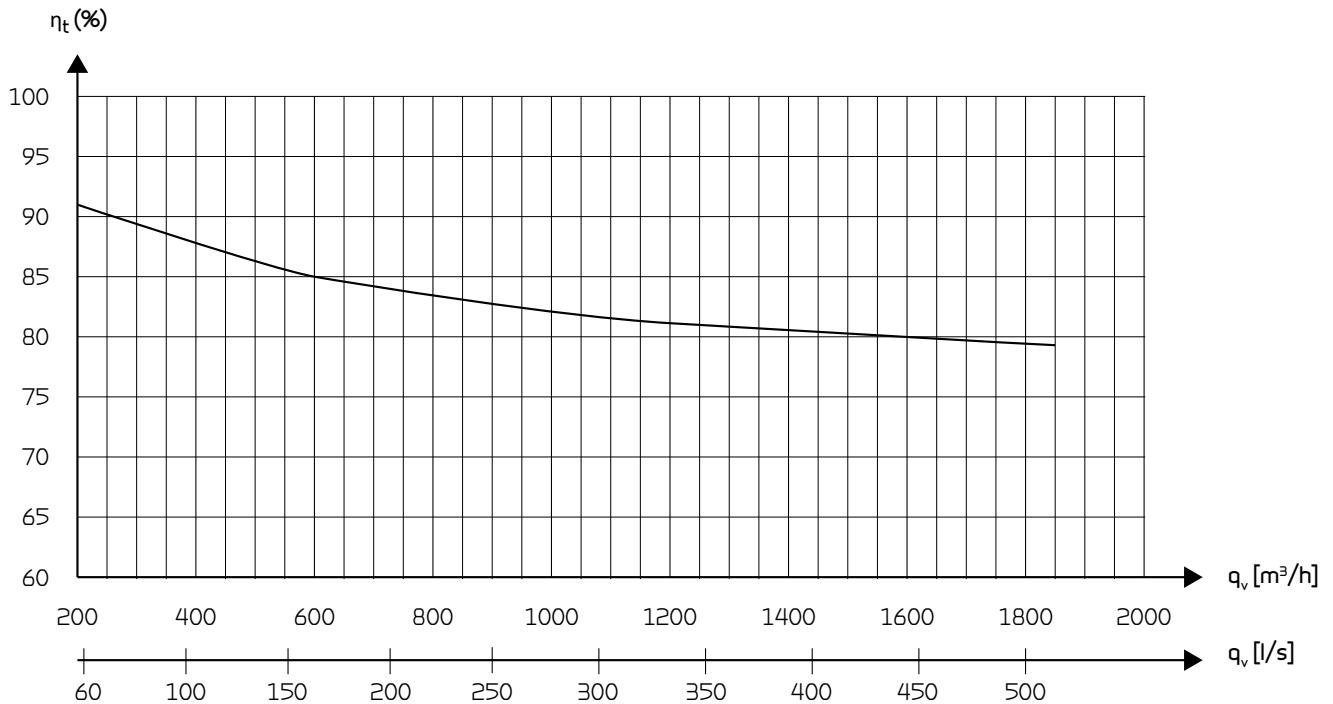
Attention! The SFP values are measured and stated as a total value for both fans.



Temperature efficiency

Temperature efficiency for unit with counterflow heat exchanger according to EN308 (dry).

Temperature efficiency EN308: $\eta_t = (t_{\text{supply air}} - t_{\text{fresh air}}) / (t_{\text{extract air}} - t_{\text{fresh air}})$



Sound data

Sound data for $q_v = 1200 \text{ m}^3/\text{h}$ and $P_{t, \text{ext}} = 250 \text{ Pa}$ according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level L_{wA} drops with falling air volume and falling back pressure.

Sound output level L_{pA} at a given distance will depend on acoustic conditions in the place of installation.

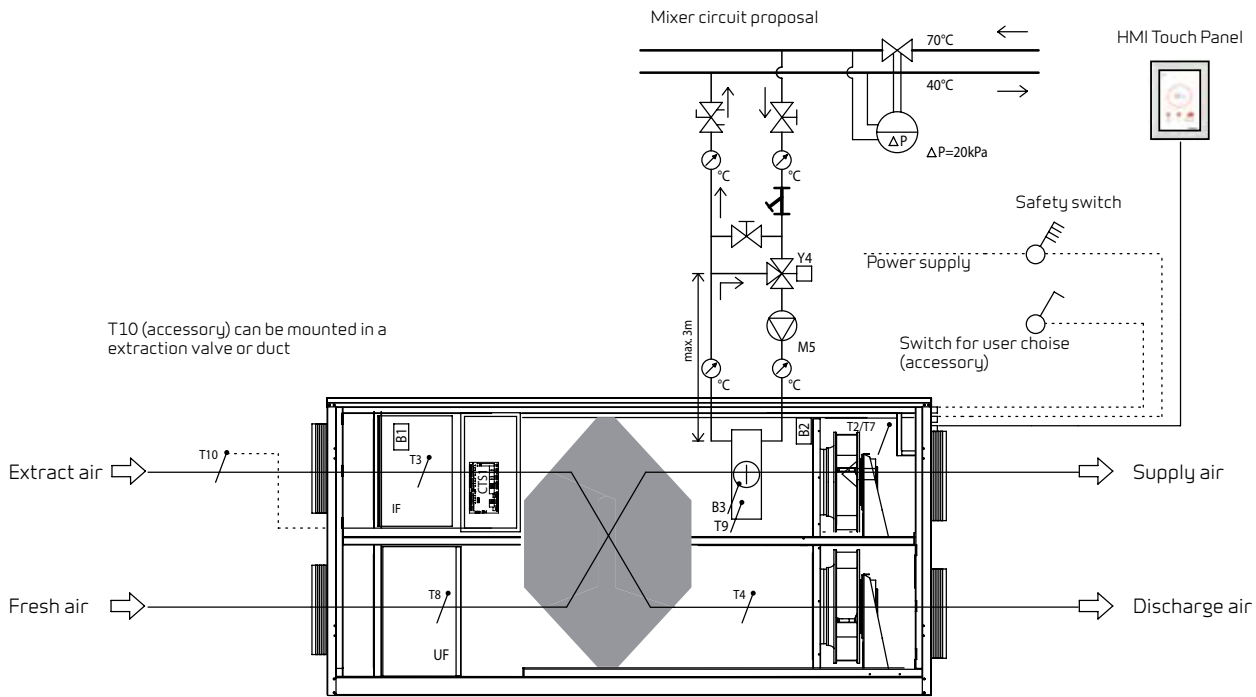
Sound output level (L_{wA})

Oktavband Hz	Surface dB(A)	Supply air dB(A)	Extract air dB(A)	Fresh air dB(A)	Discharge air dB(A)
63	48	66	58	59	65
125	46	63	57	58	63
250	44	69	64	66	68
500	33	69	60	61	67
1.000	26	71	54	54	71
2.000	27	71	50	51	72
4.000	28	66	47	47	69
Total ± 2 dB(A)	51	77	67	69	77

PLANNING DATA

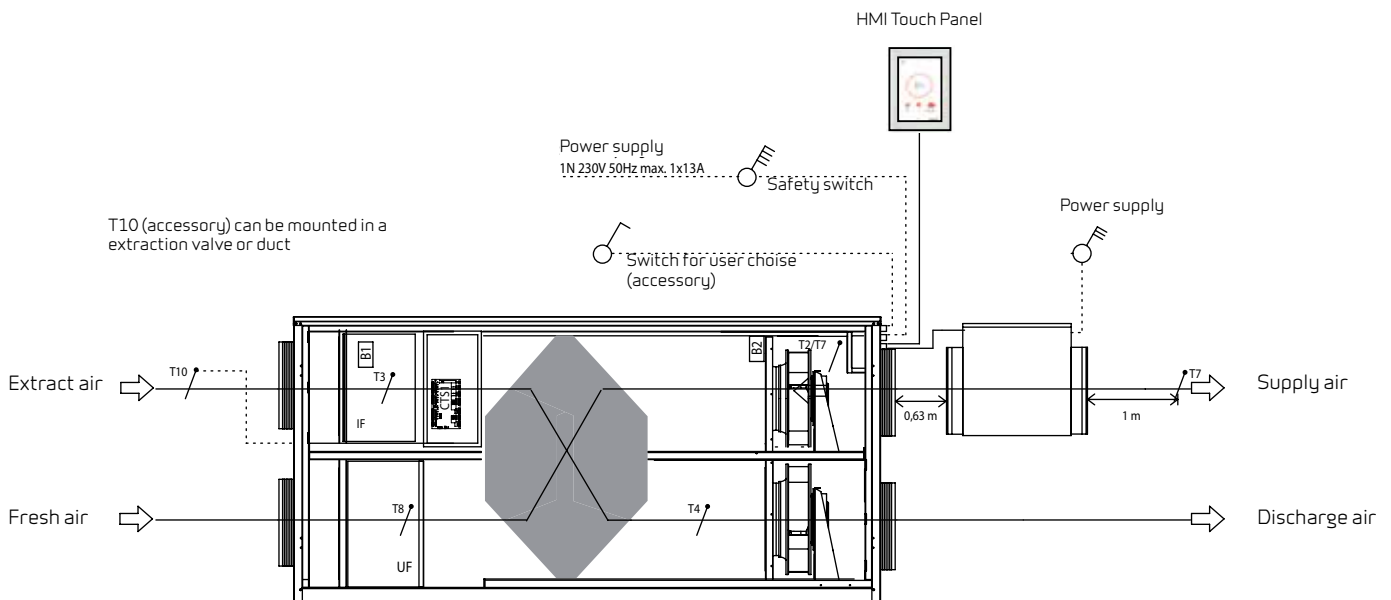
Heating elements (accessory)

Water heating element (for internal fitting)



- T2/T7: Supply air sensor
- T9: Heating element frost protection
- T3: Extract air sensor
- T4: Discharge air and defrost sensor
- T8: Fresh air sensor
- T10: Room sensor

Electrical heating element (duct mounted)



Capacity - Heating element (accessory)



Electrical heating element

The electrical heating element is fitted in the air inlet duct at a distance of min. 2 x duct diameter from the system's fresh air inlet connection pipe (normally min 400 mm.) and connected to the CTS 602i control panel and 3 x 400 V supply.

The electrical heating element can supply up to 6 kW of heat.



Water heating element for internal fitting

The water heating element is designed to be built into the system and must be connected to the primary heating supply and the CTS 602i control. The water heating element includes copper pipes and aluminium fins.

Capacities can be seen in the table below.

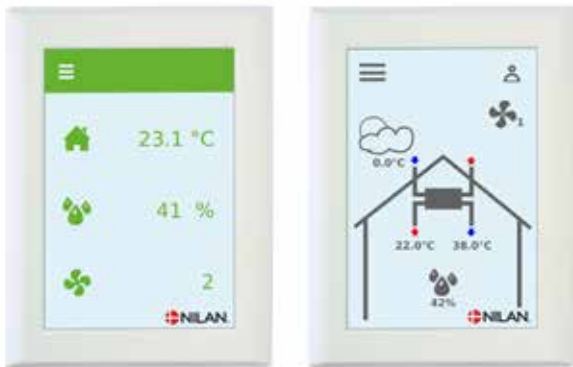
Capacity water heating element

Temperature input/output [°C]	Water side			Air side			
	Flow [l/h]	Pressure drop [kPa]	Output [kW]	Flow [m³/h]	Temperature before WHE* [°C]	Temperature after WHE* [°C]	Pressure drop over WHE* [Pa]
40/30	156	2.2	1.8	400	16	29.2	4.2
	206	3.6	2.4	600	16	27.7	8.1
	249	5.1	2.9	800	16	26.6	13.0
	286	6.6	3.3	1000	16	25.7	18.7
	319	8.0	3.7	1200	16	25.0	25.2
	350	9.5	4.1	1400	16	24.5	32.4
60/40	142	1.8	3.3	400	16	40.0	4.2
	188	2.9	4.3	600	16	37.1	8.1
	226	4.1	5.2	800	16	35.1	13.0
	260	5.2	6.0	1000	16	33.5	18.7
	290	6.4	6.7	1200	16	32.3	25.2
	318	7.5	7.3	1400	16	31.3	32.4
70/40	107	1.0	3.7	400	16	42.9	4.2
	140	1.7	4.8	600	16	39.5	8.1
	168	2.3	5.8	800	16	37.2	13.0
	192	3.0	6.6	1000	16	35.4	18.7
	214	3.6	7.4	1200	16	34.0	25.2
	234	4.2	8.1	1400	16	32.9	32.4

* Water heating element.

AUTOMATION

CTS 602i Control



The CTS 602i HMI touch panel is featuring a wide range of functions, e.g., menu-controlled operation, weekly programme settings, filter monitor with timer, fan speed adjustment, summer bypass (free cooling), supply-heating element control, error messages etc.

The CTS602 comes with factory settings, including a default setting which can be customised to operational requirements to achieve optimum operation and utilisation of the system.

There is an option for selecting between 2 front page images for the main screen.

Operating instructions for the CTS 602 can be found in a separate user manual supplied with the unit.

Nilan User APP

A Nilan gateway is fitted as standard on the Comfort 1200, where the user can gain access to the unit via a Nilan User APP. The APP enables the user to access and monitor the current operation, also from the outside of the property.

The APP allows you to adjust the default settings of, for instance, room temperature, fan speed level and the humidity control system.

The APP shows when filter change is next due. This is an important function, and you are automatically notified when filters need changing or an alarm is triggered.

It also provides you with useful trend curves so you can follow the operation of the unit for the previous week with regards to, for instance, room temperature or humidity level.

Using a LAN connector, you connect the gateway to the Modbus of the unit and then to the user's internet router via a LAN or a WiFi connection. This creates a secure cloud connection between the unit and the smartphone.



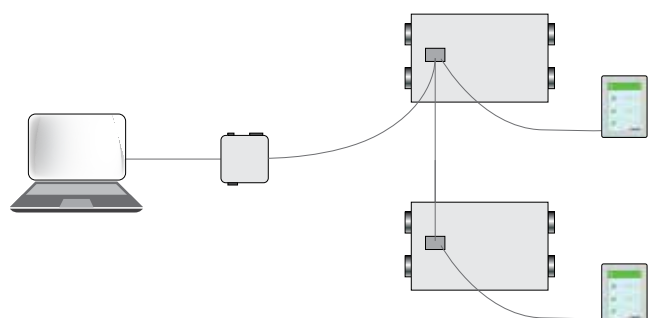
External communication

The CTS602 control unit communicates by default with Modbus RTU RS485 communication. A CTS system using this form of communication can easily be connected to the unit.

Nilan units have an open Modbus communication, i.e. not only can the unit be monitored, but its operation can also be set in the same way as it can via the operating panel.

The protocol is by default set up for a Modbus RTU30 address; however, values can be set between 1 and 247.

A Modbus converter allows you to connect one or more units to a computer to monitor and control the unit.



Functions overview		+ Standard - Accessories
Alarms	Description of errors indicated with alarms. Alarm log displaying the latest 16 alarms.	+
Joint alarm	The CTS602 control system has an output signal that is activated in the case of an alarm. It can be connected to, for example, external automation.	
Filter monitor	Filter alarm with timer that can be set to 30/90/180/360 days.	+
Data display	An overview of the current operation with regards to temperatures, fan speed level etc.	+
Week program	The CTS602 control system has 3 week programs that can be set individually (the default setting is "off").	+
Humidity control system	Enables a higher or lower degree of ventilation at a high/low level of humidity.	-
Air quality	Enables you to adjust the degree of ventilation depending on the CO ₂ level in the air.	-
Winter low	You can prevent a low level of humidity in the dwelling by activating low ventilation at low outdoor temperatures.	+
Temperature regulation	Enables you to control the operation of the unit in accordance with the room temperature.	+
Summer/winter mode	You can set the unit to operate in summer or winter mode.	
Language	You can choose from more than 10 languages in the control panel.	+
User levels	The menu in the control panel is divided into 3 user levels: User/Installer/Factory.	+
User selection 1	Enables you to override the operating mode via an external potential free signal.	+
Electrical after-heating element	An electrical after-heating element allows you to control the supply air temperature. In this way the unit can help heat the dwelling.	-
Water after-heating element	A water after-heating element allows you to control the supply air temperature. In this way the unit can help heat the dwelling.	-
Frost protection	In order to protect a potential water after-heating element against frost damage, the unit will stop and display an alarm if the temperature in the water after-heating element becomes too low.	-
Air exchange	Stepless setting of four fan speed levels. The supply air and the extract air can be set individually.	+
De-icing	Based on temperature, this automatic function de-ices the counterflow heat exchanger if ice has formed within it.	+
Room low	Safety function that will cause the ventilation unit to stop if the heating system for the dwelling fails. This will prevent the unit from cooling the dwelling even further.	+
External heating	The ventilation unit can control an external heat supply in accordance with the current room temperature.	+
External fire automation system	You can connect the ventilation unit to an external fire automation system or to a fire thermostat. This will signal to the unit whether to stop or continue operation.	+
Integral fire automation system	The ventilation unit is available with an integral fire automation system that can control fire and smoke dampers.	-
Pressure sustaining regulator	You can install a pressure sustaining regulator on the side of both the extract air and the supply air.	-
Delayed start-up	You can activate a delayed start-up of the fans if you install, for instance, a shut-off damper.	+
Restore settings	You can save the current settings and subsequently restore them if, for instance, the user has altered the settings on the unit. You can also reinstall the default settings.	+
Manual operation	Different functions can be tested manually.	+
Energy saving function	You can activate a power saving function of the operation.	+
Modbus	You can set the Modbus address of the unit. The default setting is 30.	+
Data logging	It is possible to log the operational data of the unit every 1 - 120 min. Alarms are logged when they occur.	+
Control panel	You can choose from 2 different images for the main screen.	+

You can find further information about all the functions in the Software and Installation instructions for the unit.

OPERATION

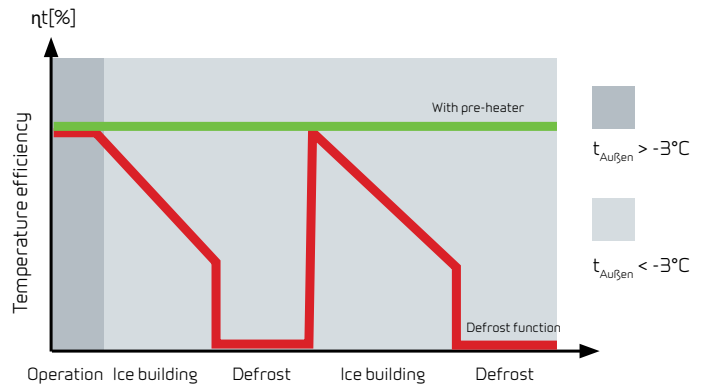
Frost protection

All ventilation units with a counterflow heat exchanger will ice up if the outdoor temperature is below freezing for a prolonged period.

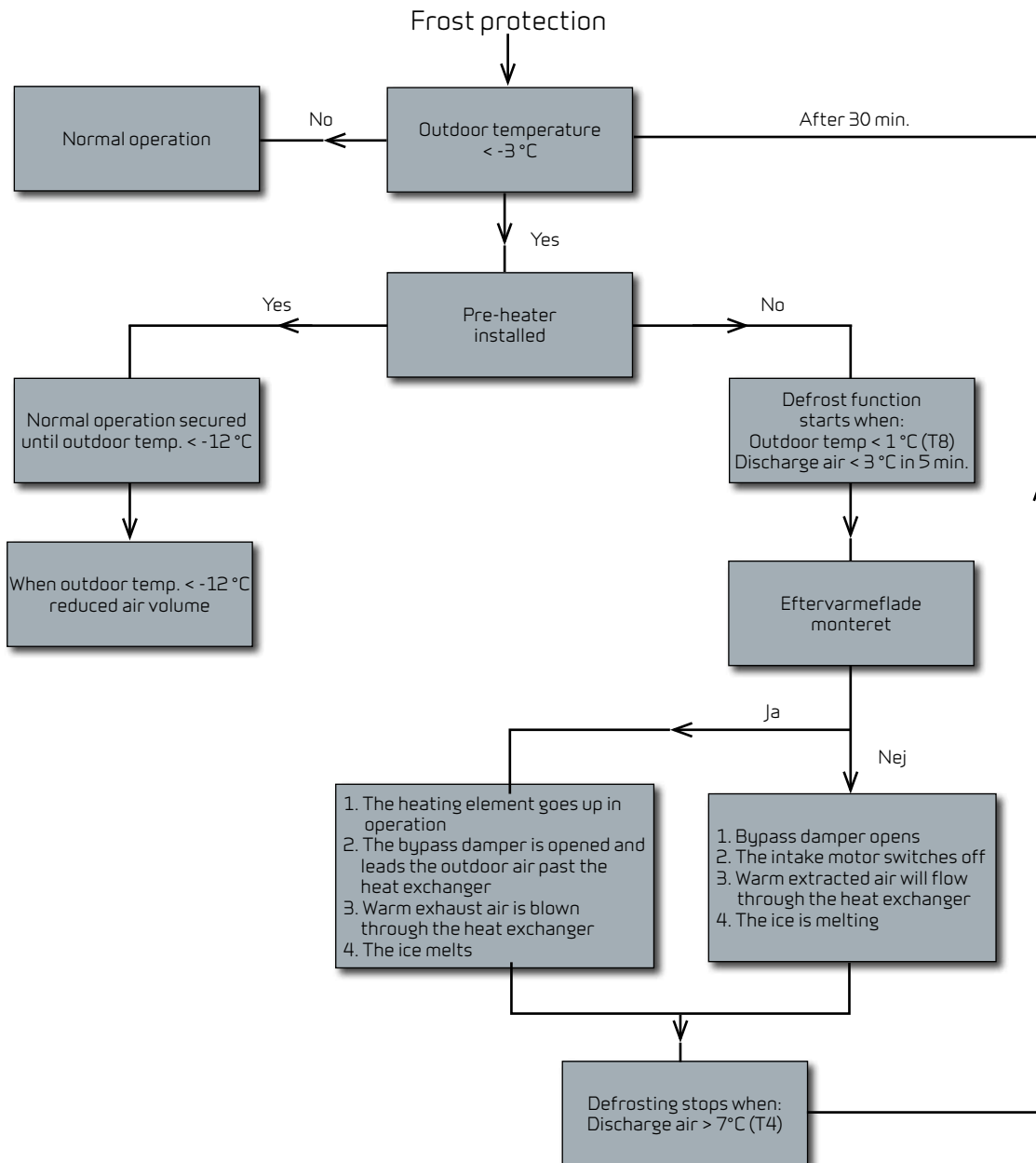
The extracted air condenses when it is cooled down during heat recovery. The high temperature efficiency will slowly turn the condensate to ice, which will block up the counterflow heat exchanger unless action is taken to remedy this.

Consideration must be given to whether the unit's operation can be protected during a lengthy period of frost or whether it is acceptable to decrease its operation.

In homes which are occupied at night, it would be advisable to protect the unit against frost when the outdoor temperature is coldest by using a pre-heating element. On the other hand, if the ventilation is for an office, it may be acceptable to decrease the operating level at night.



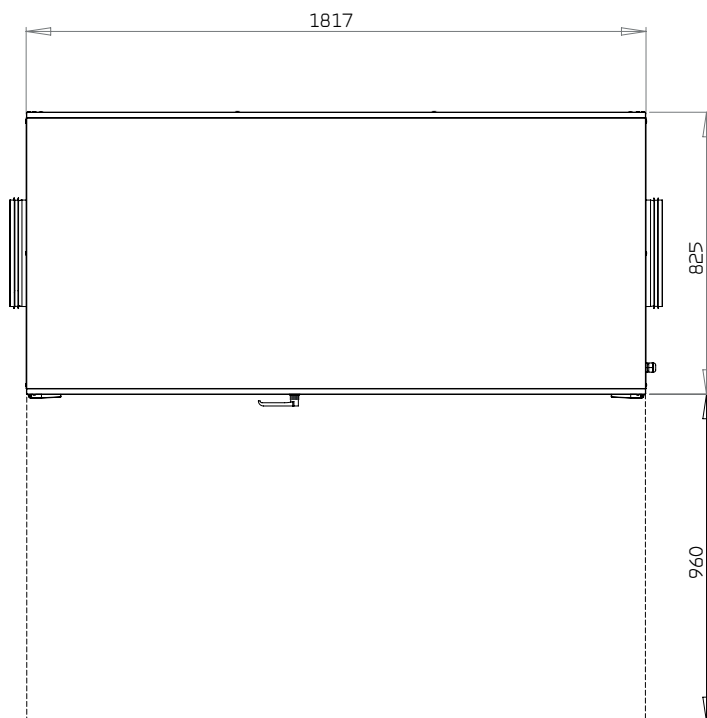
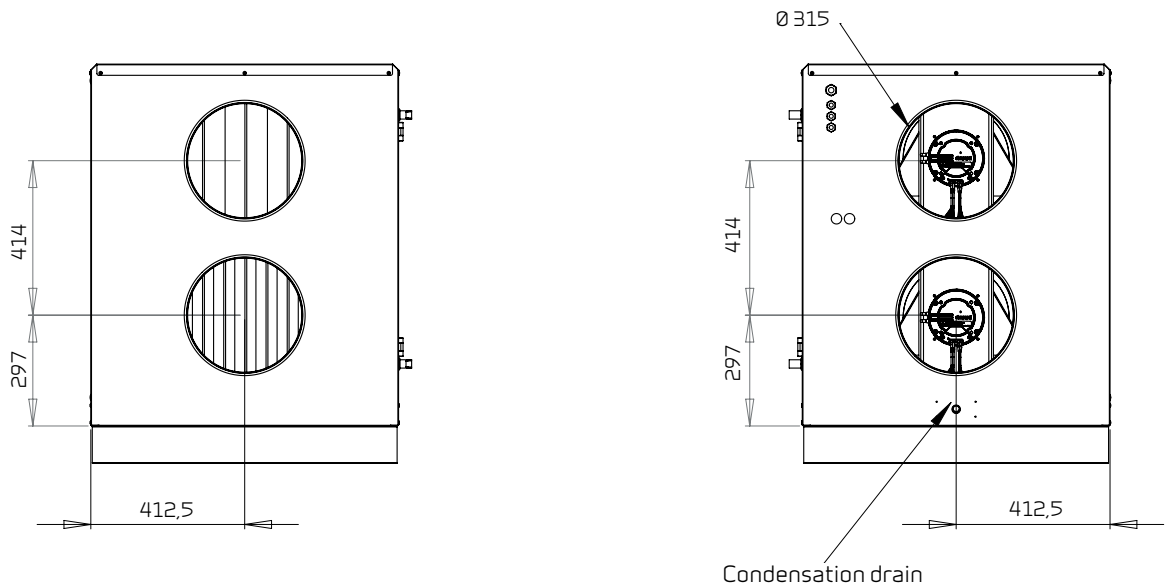
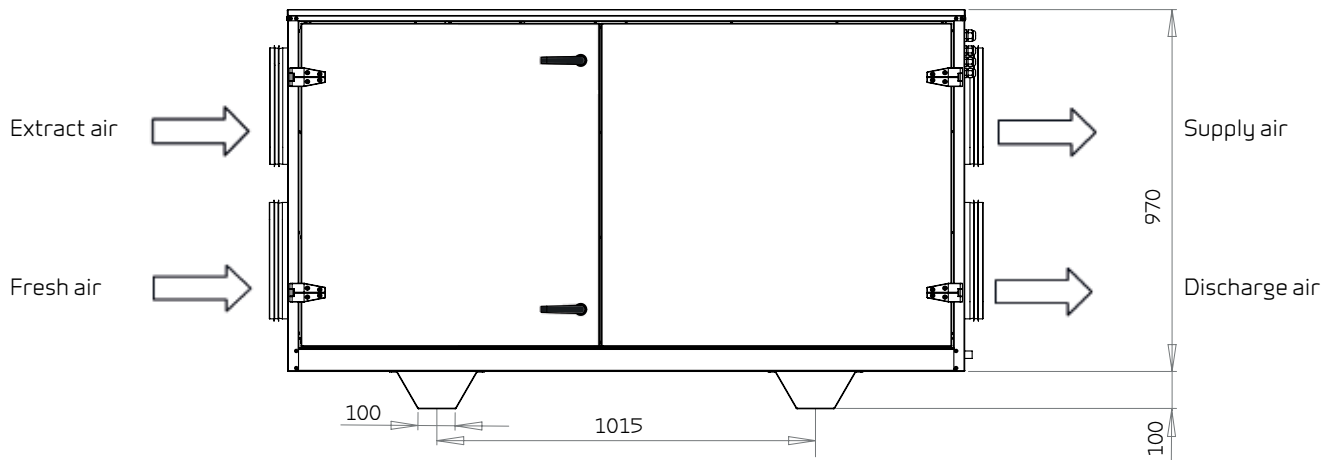
The energy used for the preheating is not wasted, as it ensures a constant high temperature efficiency



DIMENSIONAL DRAWING

COMFORT 1200 BY NILAN

Right model



ACCESSORIES



Electrical pre-heating element (Frost protection)

An electrical pre-heating element heats up the outdoor air before it enters the unit. This avoids having to defrost the unit, resulting in a loss of power. There are temperature sensors supplied to be fitted in the ducts.



Electrical heating element incl. regulation

When you fit an electrical heating element, you can raise the fresh air temperature to the desired level at any time. The electrical heating element is supplied ready to fit into the fresh air duct and, for easy fitting, the device is pre-fitted with all the required sensors.



Water heating element incl. regulation

The supply temperature can always be raised to the required level using a water heating element. The water heating element is designed to be built into the unit and must be connected to the primary heating supply. Supplied with two-way adjustment valve, temperature sensor and frost thermostat.



Pressure transmitter

The extraction and/or supply fan can be operated with the aid of one or two pressure transmitters.



Expansion PCB

The expansion PCB provides additional functions for the CTS 602i control unit, e.g., controlling the EM-box (see list of functions on page 7).



Humidity- and CO₂-sensor

For demand control ventilation the unit can be integrated with an humidity- and CO₂-sensor.



Top cover

If Comfort 1200 is going to be installed outside, it is possible to order a top cover which protects the unit against rain and snow.

Heating cable

To protect the condensation outlet against frost, a 3 metre-long self-regulating heating cable can be ordered.



Installation set

Vibration absorbers and a water trap for the condensation outlet.

DELIVERY AND HANDLING

Transport and storage

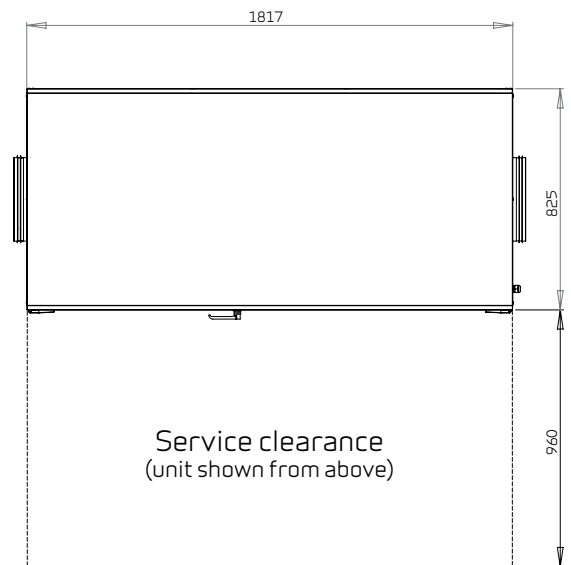
Comfort 1200 comes in factory packaging that protects it during transport and storage. Comfort 1200 must be stored in a dry place in its original packaging until installation.

The packaging should only be removed immediately prior to installation.

Installation conditions

During installation, future service and maintenance should be taken into account. We recommend a minimum gap in front of and behind the unit of 96 cm.

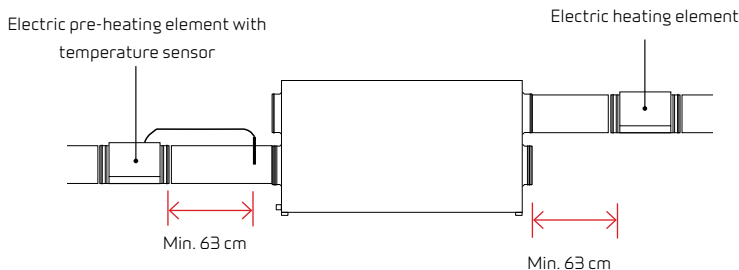
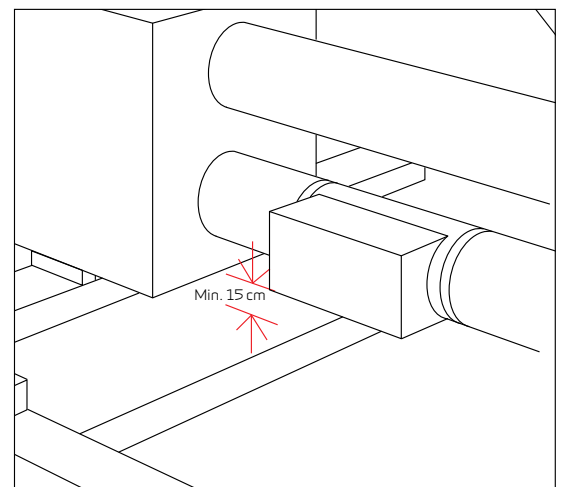
The unit must be installed level for the sake of the condensate drain. The condensate drain requires clearance of min. 12,5 cm under the drain nozzle.



Installation of electric heating element

Electric heating elements (accessories) are fitted in the duct. The fitter should ensure that there is a safe distance of at least 15 cm between the electric heating element and any inflammable material. The heating element must be insulated using fire-resistant insulation material.

The electric heating element must be connected by an authorised electrician.



INFORMATION FROM A TO Z

Nilan develops and manufactures premium-quality, energy-saving ventilation and heat pump solutions that provide a healthy indoor climate and low-level energy consumption with the greatest consideration for the environment. In order to facilitate each step in the construction process - from choosing the solution through to planning, installation and maintenance - we have created a series of information material which is available for download at www.nilan.dk.



Brochure

General information about the solution and its benefits.



Product data

Technical information to ensure correct choice of solution.



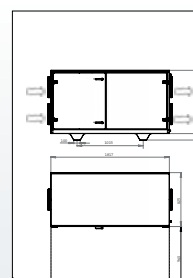
Installation instructions

Detailed guide for installation and initial adjustment of the solution.



User manual

Detailed guide for regulation of the solution to ensure optimum day-to-day operation.



Drawings

Tender documents and 3D drawings are available to download for planning purposes.

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Visit us at www.nilan.dk to find out more about our company and solutions, download further information and find your nearest dealer.



Nilan A/S
Nilanvej 2
8722 Hedensted
Danmark
Tlf. +45 76 75 25 00
Fax +45 76 75 25 25
nilan@nilan.dk
www.nilan.dk