ENVIRONMENTAL
CLIMATE CONTROL
EQUIPMENT & SOLUTIONS

DESHU XP+

Thermodynamic double flow dehumidifier

MADE IN FRANCE

www.ett-hvac.com

CONTENTS

General description

The **ETT** packaged unit is delivered ready to operate. Its full aluminium structure (frame and casing), ensures an excellent corrosion protection (20-year anti- corrosion guarantee).

Aluminium facilitates the REFURBISHMENT of machines for a second life, unlike a steel structure.

Our technical choices have a major impact on the environment

•DECARBONATION:

ETT is committed to an ambitious approach to reducing greenhouse gas emissions:

- Reducing the energy consumption of our machines
- Fluid refrigerants with low GWP
- Energy monitoring & AI
- Adiabatic cooling
- Development of machine retrofits

•ALUMINIUM : PERFORMANCE AND DURABILITY!

- Lightweight: 3 times lighter than steel
- Corrosion resistant and long lifespan
- Thermal performance
- 100% recyclable indefinitely
- Facilitates the refurbishment of our machines

• ECO-DESIGN:

Our technologies are designed with sustainability in mind, reducing their environmental impact throughout their life cycle.

• LOW-POLLUTION MANUFACTURING PROCESS:

- Selective sorting: 80% recovery rate
- No paint or solvents

• END OF MACHINE LIFE:

In compliance with regulations, ETT is a member of the Ecologic eco-organisation for the end-of-life processing of machines, which are 98% recyclable.

EcoLogic

• ETT CERTIFICATIONS

- **CSR assessment**: ECOVADIS Gold Medal for our CSR approach

GOLD | Top 5% ecovadis Sustainability Rating JAN 2025

- **ISO 14001 & ISO 9001 certification** : our Quality and Environmental Management System

ISO 14001 ISO 9001

- **Certificate of competence for handling refrigerants**
- **Membership of the UN Global Compact**
- **Qualiopi certification** for our training centre

Qualiopi processus certifié RÉPUBLIQUE FRANÇAISE
La certification qualité a été délivrée au titre de la catégorie d'action suivante : Actions de formation

As a positive-impact company, ETT contributes to a more sustainable world through its decarbonising products and services.

CE In addition, each unit is delivered with a certificate of conformity to EU standards and complies with the following standards:

- Machinery Directive 2006/42/EC - Operator's safety
- Low Voltage Directive (LVD) 2014/35/EU - Electricity
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Regulation (EU) 2016/426 – Gas appliances
- Standard NF EN 60204 -1- Electrical appliances
- Standard EN 378-2 : 2017 – Safety and environmental requirements
- PED Directive 2014/68/EU (in accordance with Articles 2.10, 2.11, 3.4, 5a and 5d of Annex 1) - Pressure equipment
- EcoDesign regulations ErP UE 2281/2016

20-year guarantee against corrosion frame - casing

ENERGY SAVING

ENVIRONMENTAL ATTITUDE

SERVICE LINK

Unit description

With a wealth of e**XP**erience in the field of dehumidification in France and A**br**oad, ETT offers you a new generation of DEHUMIDIFIERS... The DESHU HPE+ becomes **DESHU XP+.**

The **DESHU XP+** is an improved unit with increased capacities and new options to meet the dehumidification needs of swimming pools and thalassotherapy centres.

Eco-design filtration

Low pressure drop level.

NEW! Fouling analogue control.

Standard ISO ePM10 50% (M5), ISO ePM1 50% (F7), ISO ePM1 80% (F9) (optional bag filter).

Fans

NEW! Specific protection for salty and sulphurous environments (H2+S)

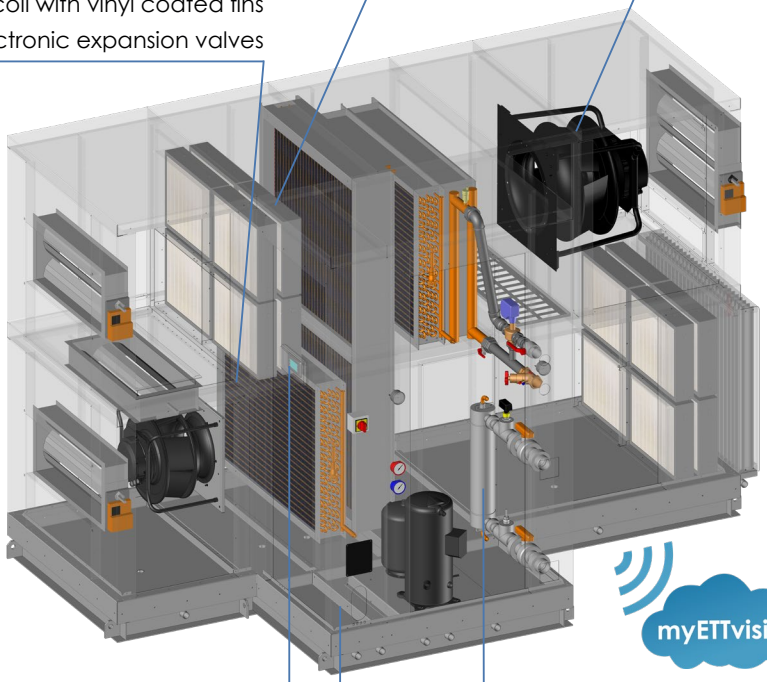
Analogue Flow Controller (AFC), communicating, direct drive, electronically commutated motor « EC », optimal efficiency and low noise level.

Thermodynamic coils and heat recuperator

NEW! Optimised heat exchangers with reduced refrigerant charge

Protected coil with vinyl coated fins

NEW! Electronic expansion valves



Connected components

Optimum unit operation.

Possibible connection to myETTvision communication platform.

NEW! Remote box for communication outside the engine room.

New generation PLC with display

NEW! Control for optimal operation

Possibility to compare the outdoor specific humidity in Free Cooling and dehumidification modes

New ETT Control Box display

Electrical board separated from the technical room

Standard phase controller

Thalassotherapy options NEW!

Varnishing of pipes and brazes

Titanium insulated water exchanger

Coils protection with heresite coating

Salt filter and fine filter (ISO ePM1 50% (F7) or ISO ePM1 80% (F9)) on return

Aluminium frame-casing assembly

20-year guarantee against corrosion frame - casing

Optimised tightness and heat insulation.
Reduced weight, for new and refurbish projects.

Depressurization of the technical compartment to avoid any pollution by the stale air during recovery NEW!

Compact casing that can be placed against a wall

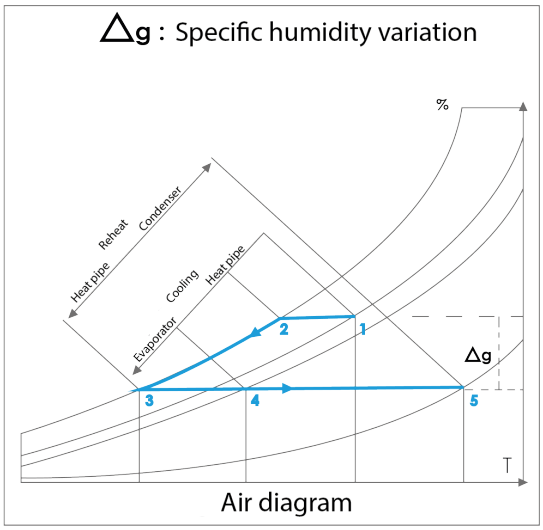
Operating principles

Dehumidification is ensured by the heat pump cooling cycle coupled with a heat pipe.

The heat pipe recovers heat without external energy, which allows significant energy savings and compressors' size reduction by 30 to 50%, thus reducing power consumption.

Exhaust air is dried up firstly through a pre-cooling process on the heat pipe and then through final cooling on the evaporator. Heat is then transferred to the supply air side, firstly to the other part of the heatpipe and secondly to the air condenser, to heat the dehumidified air.

Due to latent heat recovery and energy supplied by the compressors, the supply air temperature at condenser outlet is higher than the air temperature at unit inlet (room temperature).



Adaptive control:

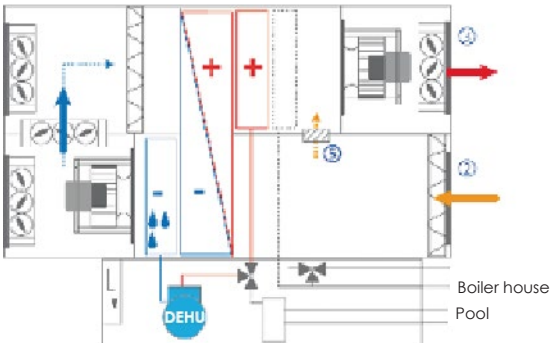
For temperate climates:

- During **periods of vacancy**, regulation favors thermodynamics in recycling and will launch a cycle of dechlorination one hour before opening to the public.
- **During occupation**, dehumidification will be ensured by fresh air, in order to ensure comfort to the occupants, thermodynamics will then operate as a heat pump in order to enhance the heat on the air or on the water.

For hot and tropical climates:

- **Comparison of the outdoor specific humidity with the return specific humidity**,thermodynamic discards if derived from the outdoor specific humidity.
- Authorization of Free Cooling if conditions are favourable.
- Thermodynamic cooling

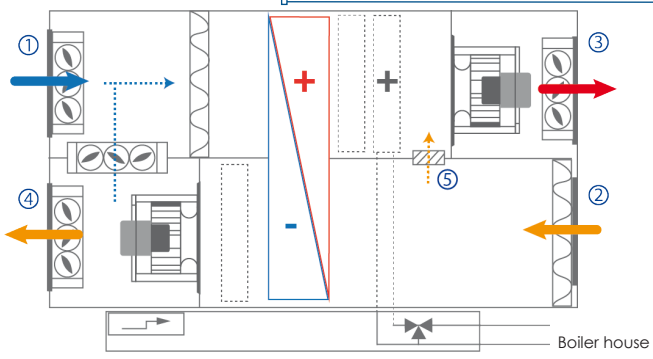
Vacancy Mode :



In vacancy mode, thermodynamic dehumidification with air recycling and recovery from the air or water in the pools.

The air flow can be lowered to reduce energy consumption.

Dechlorination Mode :



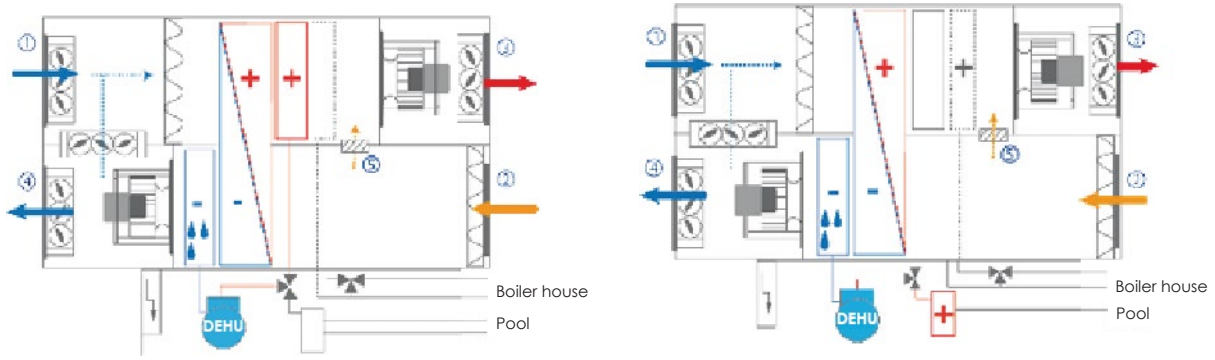
Dechlorination mode prior to occupancy mode to clean indoor air.

This mode can also be activated manually.

① Fresh air ② Return air ③ Supply air ④ Exhaust air ⑤ Supply air bypass

Operating principles

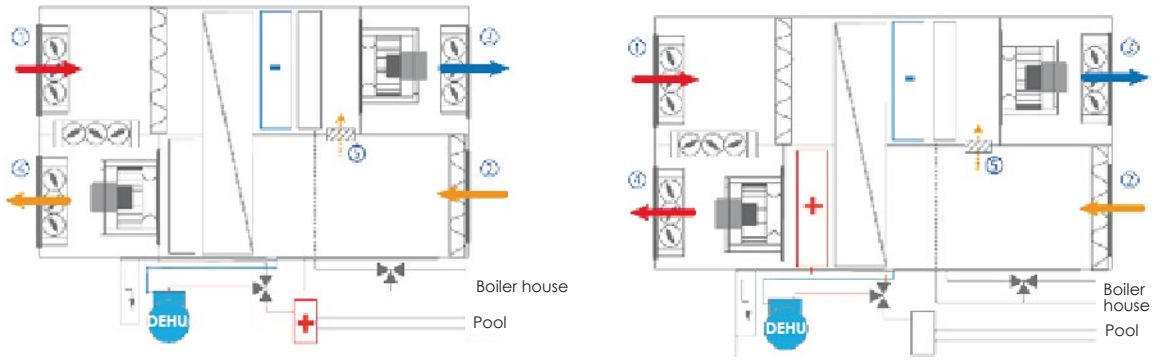
Occupancy mode - *Dehumidification* :



In occupancy mode, dehumidification is carried out by modulating the fresh air. The heat is then recovered by the action of the heat pipe and then the heat pump, and recovered from the air or water.

For hot and tropical climates, the outdoor specific humidity is measured to control the fresh air register.

Refresh mode:



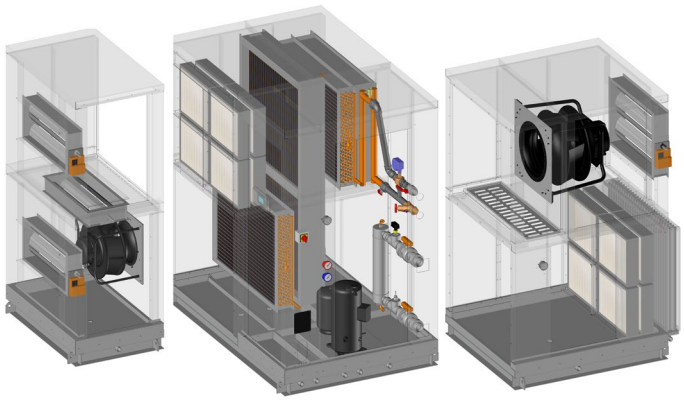
Regulation favours cooling by Free Cooling.

If the external conditions are not favourable, then cooling will be carried out by the thermodynamic system,

Heat can also be recovered from water.

① Fresh air ② Return air ③ Supply air ④ Exhaust air ⑤ Supply air bypass

Detailed components of the unit



The ETT packaged unit comprises 3 different sections:

1. The exhaust air section ensures dehumidification and energy recovery.
2. The separate technical section houses the refrigeration components, the electrical board and the control components.
3. The supply air section ensures air change and room air treatment.

Aluminium frame and casing assembly :

- **Rigid, compact** and lightweight packaged unit, perfectly weather-resistant, with a 20-year anti corrosion guarantee on casing.
- **Watertight floor** with drainage outlets around the unit, connected to rubber traps.
- **Full aluminium** casing (AG3).
- A separate **technical compartment** that facilitates maintenance and control of the unit, enables measurements to be taken and settings to be fine-tuned during operation.
- **Access through** large **removable panels**. Panels are closed with square locks. Doors tightness is ensured by a flexible gasket under compression, providing ideal elasticity day after day.
- **Double skin internal soundproofing and heat insulation** of the walls using 50 mm thick glass wool classified M0/A2s1d0, protected by a 13/10 thick aluminium sheet for mechanical protection and ease of maintenance.
- **Floor soundproofing and heat insulation** using 80 mm M0/A2s1d0-rated rock wool with double skin.
- 3-register **mixing box** consisting of a fresh air register with bird proof grid, a discharge exhaust air register and a mixing air register, all motorised, to ensure the desired proportions and optimise the Free Cooling phases. Registers have extruded aluminium blades with low pressure drop thanks to the plane wing profile. The register frame is made of aluminium.

Detailed components of the unit

Aeraulics assembly :

- Easily removable **98 mm thick Eco-design filtration** (supply and exhaust) - ISO ePM10 50% (M5) efficiency in pleated media with fouling controlled by the regulator.
- • High performance plug fan on supply and exhaust air sections to avoid losses due to pulley-belt transmissions thus improving energy efficiency. The fans will be standard H2S protected for application in aggressive atmospheres such as thalassotherapy applications
- **Last generation internal fans (High Energy Performance):**
  - ✓ **Direct transmission** (gains in maintenance, reliability and consumption),
  - ✓ Fitted **with a variable speed "EC" electronically commutated motor** combined with an Analogue Flow Controller - AFC (easier to commission),
  - ✓ Communicating for real time operation adjustment.
  - ✓ Integrated Soft Starter system for reduced starting current and soft start (textile ducting)

Energy and thermodynamic assembly:

- **Refrigeration circuits** compliant with European directive on pressure equipment (PED 2014/68/EU).
- R410A **refrigerant.**
- **A fixed heat pipe** with copper tubes and aluminium fins, with high recovery capacity and sized to optimise the heat pump's output. The heat pipe recovers heat from the extracted air and transfers it to the fresh air side of the second half of the heat pipe. This process uses no energy. The heat pipe is protected by a vinyl coating.
- **Direct expansion heat exchangers, with** copper tubes and aluminium fins, with high heat exchange capacity optimised by a thermostatic expansion valve, selected for an air speed of less than 2.5 m/s to avoid any risk of condensate being carried away. Coils are oversized in order to achieve the highest possible COP. Direct expansion exchangers are protected with vinyl coating.
- **2 electronic expansion valves** for increased optimised heat exchanger operation and rapid stabilisation of the thermodynamic system
- Anti-acid **filter drier.**
- HP **pressure switch**

Detailed components of the unit

Electrical assembly:

- **Electrical board** compliant with French standards NF EN C 15-100 and NF EN 60204-01, including:
- ✓ **An ETT PLC** with display.
- ✓ **A power switch** with lockable external handle for full load cut-off. Standard universal cable connection. Optional copper/ aluminium connection boxes.
- ✓ A 400-230-24 V **transformer** for control and regulation circuits.
- ✓ **A fault summary** with pending dry contact on terminal.
- ✓ **Numbered terminal blocks** with disconnectable terminals for all transfers or remote controls.
- ✓ **A terminal block** for compressor load shedding.
- ✓ **Internal wiring** fully numbered at both ends with numbered rings.
- ✓ An Ik3 **breaking capacity** of 10 kA basic.
- ✓ All components **protected** by circuit breakers.
- ✓ **A phase controller**

Additional heat package:

- ✓ Heating auxiliary (electric heater or hot water coil) specially designed for the project.

Control assembly:

- NTC-type **temperature sensors.** Their accuracy and reliability have been tested and validated both at the factory and on site.
- **One or more BEST PLCs** (Building Energy Saving Technology) especially developed by ETT for this range of units. Programs are updated annually in order to add functions requested for some applications and to optimise units power consumption.
- Native IP MODBUS communication protocol (BACnet IP optional)

The microprocessor, memory and PLC size are adapted to the chosen applications and options by integrating a program set-up in the factory out of 160 possible configurations.

The PLC is in a plastic box that guarantees a high mechanical protection and reduces electrostatic shock threats.

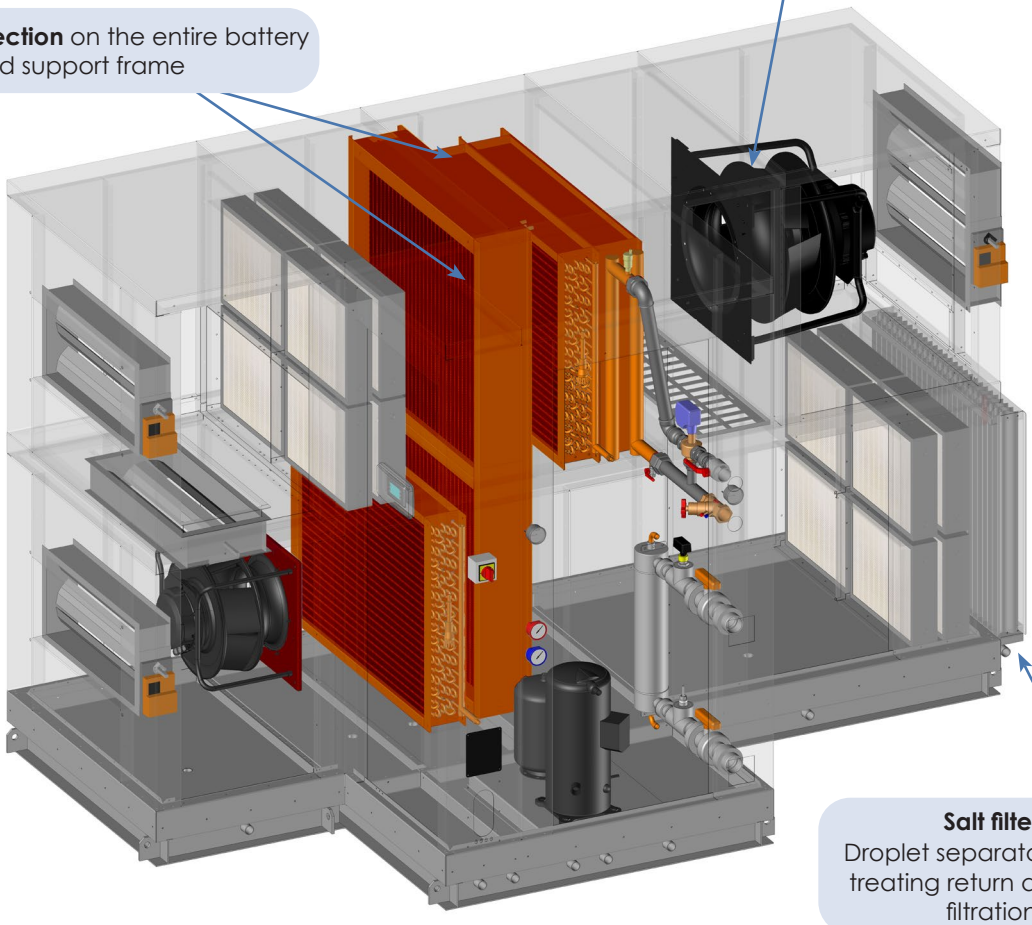
The PLC performs the following functions, among others:

- ✓ **On/Off by remote contact** or vacancy contact.
- ✓ **Occupancy/Vacancy mode** according to programmed schedule (2 time slots per day).
- ✓ **Fault summary** by dry contact for report to customer system.
- ✓ **Management of safety devices** (frost protection thermostat, smoke detector, HP pressure switch, etc.) and faults.
- ✓ **Control of supply and extract airflow** according to a progressive law based on indoor temperature and humidity setpoints.
- ✓ **Optimisation** and equalisation of compressor operating time.
- ✓ **Measurement, indication and adaptation of the supply/extraction airflow rates** according to the machine's operating modes.
- ✓ **Management of night-time energy consumption** with limited ventilation
- ✓ **Fault history in** literal form (no code) with indication of time and outdoor temperature.
- ✓ **Recording of** unit, compressor and auxiliaries operating times.
- ✓ **Control of the unit's operating points,** whatever the external environment, enabling comfort to be managed for users, taking into account the relationship between energy efficiency and the protection of the building.

Thalasso and Spa option

Heresite protection on the entire battery and support frame

Fan H2+S with a coating to resist to salt spray. For use in humidity-saturated environments.



Salt filter
Droplet separator for pre-treating return air before filtration

Double varnishing of copper piping and brazing of refrigeration circuit components

Main options

Frame - Casing	▪ Motorised external supply air register (CH 38 - 2006/42/EC Directive) ▪ Packaged or 3-block unit
Acoustics	▪ Acoustic insulation of the technical compartment with STOPFLAM foam ▪ Acoustic insulation of the fresh air cowl ▪ Compressors acoustic jackets
Aeraulics	▪ High performance plug fans with H2S protective coating ▪ High flow fans ▪ Pressure gauge per filtration cell ▪ Filters fouling analogue control (FFAC) ▪ Actuating smoke detector with battery back-up ▪ ISO ePM10 50% (M5), ISO ePM1 50% (F7) or ISO ePM1 80% (F9) opacimetric filters 98 mm thick ▪ ISO ePM1 80% (F9) polydihedral opacimetric filters in polypropylene 292 mm thick for supply air only
Thermodynamics	▪ HP and LP pressure gauge ▪ Electronic expansion valves ▪ Cooling with reverse cycle
Thermal exchangers	▪ 3-stage electric heater ▪ Triac ▪ Hot water coil with analogue anti-freeze thermostat ▪ 3-way progressive valve mounted on hot water coil ▪ Pre-assembled shut-off valve + balancing valve
Installation	▪ aluminium feet 200, 400 or 600 mm
Electrics and communication	▪ Unit global energy metering ▪ Phase checker ▪ Humidity sensor on fresh air with comparison of specific humidity (recommended with cooling by cycle inversion) ▪ Software licence for BacNet IP protocol ▪ IT earthing system compatibility ▪ ETT Control box Remote touch display ▪ MyETTvision remote communication platform
Recovery	▪ 316 L stainless steel insulated water condenser with 3-way valve and self-resetting water flow controller (only during chlorine water treatment) ▪ CPVC stop valve on water-cooled condenser
Thalassotherapy and spa option	▪ Heat pipe with heresite coating ▪ Hot water coil with heresite coating ▪ Thermodynamic coils with heresite coating ▪ Double coating of pipes ▪ Aluminium salt filters on return ▪ Titanium insulated water condenser with 3-way refrigerant valve and self-resetting water flow controller ▪ Fine filters (ISO ePM1 50% (F7) or ISO ePM1 80% (F9)) for return and supply air

Technical features

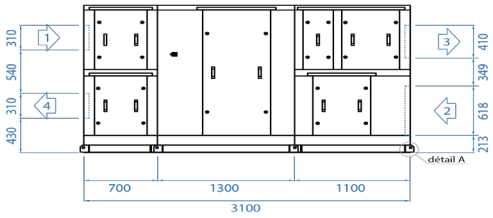
Deshu XP+ 107

	DESIGNATION	Unit	107
SPECIFICATIONS	Rated supply air flow rate	m^3/h	6000
	Min./Max. supply air flow rate	m^3/h	3400/7100
	Treated air flow rate dehumidification	m^3/h	4000
	Min./Max. treated air flow rate	m^3/h	3400/4600
	Dehumidification capacity on a heating base 100% recycling (2)	kg/h	17.4
	Dehumidification capacity on a heating base with 20% of FA(2)	kg/h	26.1
	Dehumidification capacity on a heating base with 50% of FA(2)	kg/h	39.1
	Thermodynamic COP on a heating base(2)	kW/kW	5.13
	Overall efficiency on a heating base (2)(6)	kW/kW	6.67
	Heat pipe recovery capacity(2)	kW	6.8
	Air-cooled condenser recovery capacity(2)	kW	23.6
	Water-cooled condenser recovery capacity on pool water (4)	kW	24.8
	Recommended total water flow rate per water-cooled condenser recovery pool (4)	m3/h	4.5
	Pressure drop, with water-cooled condenser for recovery on pool water (4)	mWC	1
	Hot water coil maximum capacity, 80/60°C, exchanger inlet at 10°C	kW	68.3
	Total cooling capacity in cooling cycle (3)	kW	19.4
	Number of independent refrigeration circuits	U	1
ELECTRICAL CONNECTION	Unit total electrical power installed (standard)(1)	kW	13.3
	Total rated/starting current (standard) (1)	A	18.1/84.2
FANS	**SUPPLY AIR**		
	Number of fans (standard)	u	1
	Installed power	kW	2.97
	Power absorbed at 300 Pa available for recovery	kW	1.93
	EXHAUST AIR		
	Number of fans	u	1
	Installed power	kW	2.94
	Absorbed/Installed electrical power with 300 Pa available for return air	kW	1.91
	Average sound pressure level at 10 m ref. $2x10^{-5}$ in free field	dB(A)	47.1
GENERAL	Filters efficiency		M5 / F7 / F9 (5)
	Weight of block A (without options)	kg	130
	Weight of block B (without options)	kg	400
	Weight of block C (without options)	kg	190
	ETT unit weight without options	kg	720

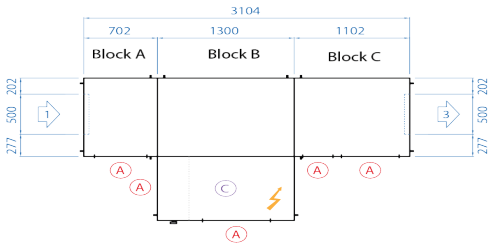
(1)Excluding electrical resistors.
(2) Conditions: Recovery 28°C/65% RH; exterior -7°C/95% RH.
(3) Conditions: Recovery 29°C/70% RH; exterior +35°C/40% RH.
(4) Conditions: 28°C pool water; 28°C/65% RH return air
(5) ISO ePM10 50% (M5) / ISO ePM1 50% (F7), / ISO ePM1 80% (F9)
(6) 3-phase power supply 400V - 50Hz + earth without neutral.

Dimensions and connections

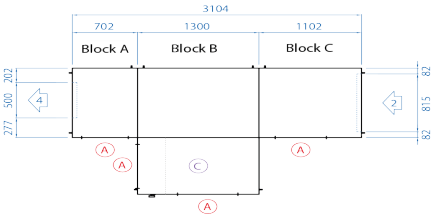
Front view:



Top view (fresh air/supply air):



Top view (return air/exhaust air):



① Fresh air
② Return air
③ Supply air
④ Exhaust air
Ⓐ Access
⚡ Power supply
Ⓒ Technical section

	Length	Width	Height
Dimensions of assembled casing (mm)	3100	1775	1840
Overall dimensions for transport (Packaged unit) (mm)	3170	1852	1840
Overall dimensions for transport - BLOCK A (mm)	733	1045	1840
Overall dimensions for transport - BLOCK B (mm)	1852	1370	1840
Overall dimensions for transport - BLOCK C(mm)	1135	1045	1840

Note: Provide 200 mm clearance (minimum) below the unit for condensate traps connection.

Technical features

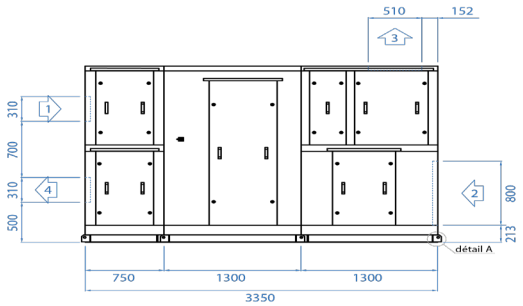
Deshu XP+ 109 - 110 - 125

	DESIGNATION	Unit	109	110	125
SPECIFICATIONS	Rated supply air flow rate	m³/h	7500	8250	9750
	Min./Max. supply air flow rate	m³/h	4000/9000	4600/10250	5800/11500
	Treated air flow rate dehumidification	m³/h	5000	5500	6500
	Min./Max. treated air flow rate	m³/h	4000/5800	4600/6300	5800/7300
	Dehumidification capacity on a heating base 100% recycling (2)	kg/h	23.2	26.3	30.2
	Dehumidification capacity on a heating base with 20% of FA(2)	kg/h	33.8	37.8	43.9
	Dehumidification capacity on a heating base with 50% of FA(2)	kg/h	49.6	55.0	64.5
	Thermodynamic COP on a heating base(2)	kW/kW	5.74	5.52	5.34
	Overall efficiency on a heating base (2)(6)	kW/kW	8.01	8.19	7.96
	Heat pipe recovery capacity(2)	kW	9.6	10.8	12.4
	Air-cooled condenser recovery capacity(2)	kW	31	35.3	40.6
	Water-cooled condenser recovery capacity on pool water (4)	kW	32.3	36.8	42.2
	Recommended total water flow rate per water-cooled condenser recovery pool (4)	m3/h	5.8	6.6	7.5
	Pressure drop, with water-cooled condenser for recovery on pool water (4)	mWC	1.6	2	2.5
	Hot water coil maximum capacity, 80/60°C, exchanger inlet at 10°C	kW	91.2	97.5	111.3
	Total cooling capacity in cooling cycle (3)	kW	25.9	29.1	33.5
	Number of independent refrigeration circuits	U	1	1	1
ELECTRICAL CONNECTION	Unit total electrical power installed (standard)(1)	kW	14.9	16.3	19.0
	Total rated/starting current (standard) (1)	A	20.3/110.8	23.7/137.8	27.6/150.4
FANS	**SUPPLY AIR**				
	Number of fans (standard)	u	1	1	1
	Installed power	kW	3.4	3.4	4.45
	Power absorbed at 300 Pa available for recovery	kW	2.21	2.21	2.89
	EXHAUST AIR				
	Number of fans	u	1	1	1
	Installed power	kW	2.94	2.97	2.97
	Absorbed/Installed electrical power with 300 Pa available for return air	kW	1.91	1.93	1.93
	Average sound pressure level at 10 m ref. $2x10^{-5}$ in free field	dB(A)	46.7	44.4	45.4
GENERAL	Filters efficiency		M5 / F7 / F9 (5)	M5 / F7 / F9 (5)	M5 / F7 / F9 (5)
	Weight of block A (without options)	kg	175	175	175
	Weight of block B (without options)	kg	600	600	600
	Weight of block C (without options)	kg	275	275	275
	ETT unit weight without options	kg	1050	1050	1050

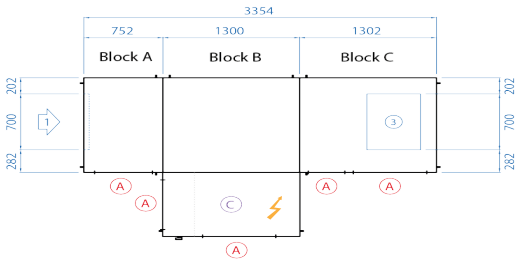
(1)Excluding electrical resistors.
(2) Conditions: Recovery 28°C/65% RH; exterior -7°C/95% RH.
(3) Conditions: Recovery 29°C/70% RH; exterior +35°C/40% RH.
(4) Conditions: 28°C pool water; 28°C/65% RH return air
(5) ISO ePM10 50% (M5) / ISO ePM1 50% (F7), / ISO ePM1 80% (F9)
(6) Three-phase power supply 400V-50Hz + earth without neutral.

Dimensions and connections

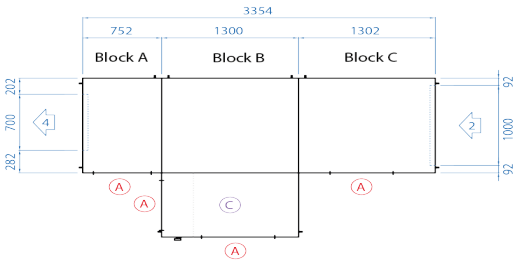
Front view:



Top view (fresh air/supply air):



Top view (return air/exhaust air):



① Fresh air
② Return air
③ Supply air
④ Exhaust air
Ⓐ Access
⚡ Power supply
Ⓒ Technical section

	Length	Width	Height
Dimensions of assembled casing (mm)	3350	1980	2200
Overall dimensions for transport (Packaged unit) (mm)	3420	2057	2200
Overall dimensions for transport - BLOCK A (mm)	1250	785	2200
Overall dimensions for transport - BLOCK B (mm)	2057	1370	2200
Overall dimensions for transport - BLOCK C(mm)	1335	1250	2200

Note: Provide 200 mm clearance (minimum) below the unit for condensate siphons connection.

Technical features

Deshu XP+ 160 - 185

	DESIGNATION	Unit	160	185
SPECIFICATIONS	Rated supply air flow rate	m³/h	12000	15000
	Min./Max. supply air flow rate	m³/h	7100/16500	8300/18000
	Treated air flow rate dehumidification	m³/h	8000	10000
	Min./Max. treated air flow rate	m³/h	7100/10500	8300/12000
	Dehumidification capacity on a heating base 100% recycling (2)	kg/h	41.5	46.3
	Dehumidification capacity on a heating base with 20% of FA(2)	kg/h	57.5	67.4
	Dehumidification capacity on a heating base with 50% of FA(2)	kg/h	81.6	99.2
	Thermodynamic COP on a heating base(2)	kW/kW	5.65	5.78
	Overall efficiency on a heating base (2)(6)	kW/kW	8.13	8.47
	Heat pipe recovery capacity(2)	kW	16	19.4
	Air-cooled condenser recovery capacity(2)	kW	54.8	61.8
	Water-cooled condenser recovery capacity on pool water (4)	kW	55.6	63.4
	Recommended total water flow rate per water-cooled condenser recovery pool (4)	m3/h	8.1	9.3
	Pressure drop, with water-cooled condenser for recovery on pool water (4)	mWC	2.8	3.6
	Hot water coil maximum capacity, 80/60°C, exchanger inlet at 10°C	kW	145.5	172.8
	Total cooling capacity in cooling cycle (3)	kW	45.3	51.6
	Number of independent refrigeration circuits	U	1	1
ELECTRICAL CONNECTION	Unit total electrical power installed (standard)(1)	kW	25.4	28.4
	Total rated/starting current (standard) (1)	A	35.7/173.6	40.5/214.2
FANS	**SUPPLY AIR**			
	Number of fans (standard)	u	2	2
	Installed power	kW	6.8	6.8
	Power absorbed at 300 Pa available for recovery	kW	4.42	4.42
	EXHAUST AIR			
	Number of fans	u	1	1
	Installed power	kW	3.40	4.45
	Absorbed/Installed electrical power with 300 Pa available for return air	kW	2.21	2.89
	Average sound pressure level at 10 m ref. $2x10^{-5}$ in free field	dB(A)	45.3	46.3
GENERAL	Filters efficiency		M5 / F7 / F9 (5)	M5 / F7 / F9 (5)
	Weight of block A (without options)	kg	265	265
	Weight of block B (without options)	kg	795	795
	Weight of block C (without options)	kg	365	365
	ETT unit weight without options	kg	1425	1425

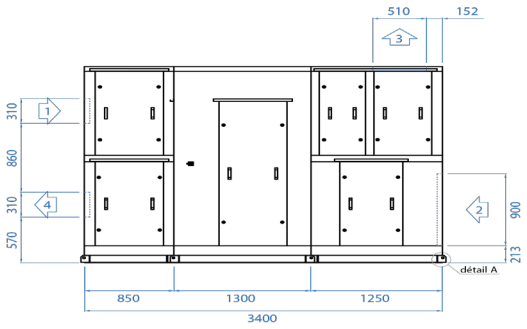
(1)Excluding electrical resistors.
(2) Conditions: Recovery 28°C/65% RH; exterior -7°C/95% RH.
(3) Conditions: Recovery 29°C/70% RH; exterior +35°C/40% RH.
(4) Conditions: 28°C pool water; 28°C/65% RH return air

(5) ISO ePM10 50% (M5) / ISO ePM1 50% (F7), / ISO ePM1 80% (F9)
(6) Three-phase power supply 400V-50Hz + earth without neutral.

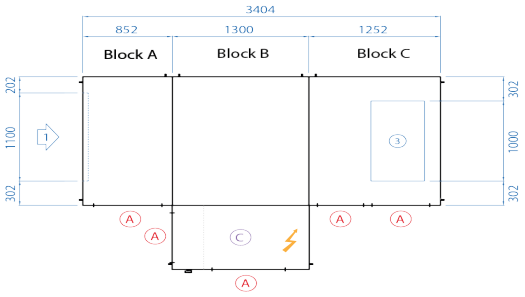
Dimensions and connections

Deshu XP+ 160 - 185

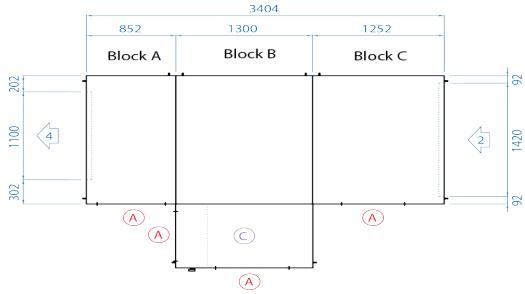
Front view:



Top view (fresh air/supply air):



Top view (return air/exhaust air):



① Fresh air
② Return air
③ Supply air
④ Exhaust air
Ⓐ Access
⚡ Power supply
Ⓒ Technical section

	Length	Width	Height
Dimensions of assembled casing (mm)	3400	2400	2450
Overall dimensions for transport - BLOCK A (mm)	1670	885	2450
Overall dimensions for transport - BLOCK B (mm)	2477	1370	2450
Overall dimensions for transport - BLOCK C(mm)	1670	1285	2450

Note: Provide 200 mm clearance (minimum) below the unit for condensates siphons connection.

Technical features

Deshu XP+ 210 - 225

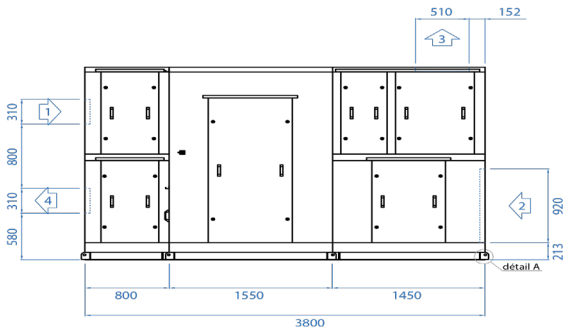
	DESIGNATION	Unit	210	225
SPECIFICATIONS	Rated supply air flow rate	m³/h	16500	19500
	Min./Max. supply air flow rate	m³/h	9400/20000	12500/24000
	Treated air flow rate dehumidification	m³/h	11000	13000
	Min./Max. treated air flow rate	m³/h	9400/13000	12500/14500
	Dehumidification capacity on a heating base 100% recycling (2)	kg/h	53.8	62.5
	Dehumidification capacity on a heating base with 20% of FA(2)	kg/h	76.5	89.5
	Dehumidification capacity on a heating base with 50% of FA(2)	kg/h	110.5	130.1
	Thermodynamic COP on a heating base(2)	kW/kW	5.77	5.57
	Overall efficiency on a heating base (2)(6)	kW/kW	8.42	8.22
	Heat pipe recovery capacity(2)	kW	21.6	25.5
	Air-cooled condenser recovery capacity(2)	kW	72.7	83.01
	Water-cooled condenser recovery capacity on pool water (4)	kW	74.7	85.3
	Recommended total water flow rate per water-cooled condenser recovery pool (4)	m3/h	13.2	15
	Pressure drop, with water-cooled condenser for recovery on pool water (4)	mWC	2	2.5
	Hot water coil maximum capacity, 80/60°C, exchanger inlet at 10°C	kW	199.3	229.0
	Total cooling capacity in cooling cycle (3)	kW	60.8	68.1
	Number of independent refrigeration circuits	U	2	2
ELECTRICAL CONNECTION	Unit total electrical power installed (standard)(1)	kW	32.5	37.9
	Total rated/starting current (standard) (1)	A	47.3/147.6	55.4/161.4
FANS	**SUPPLY AIR**			
	Number of fans (standard)	u	2	2
	Installed power	kW	6.8	8.8
	Power absorbed at 300 Pa available for recovery	kW	4.42	6.02
	EXHAUST AIR			
	Number of fans	u	2	2
	Installed power	kW	5.94	5.94
	Absorbed/Installed electrical power with 300 Pa available for return air	kW	3.86	3.86
	Average sound pressure level at 10 m ref. $2x10^{-5}$ in free field	dB(A)	47.4	47.3
GENERAL	Filters efficiency		M5 / F7 / F9 (5)	M5 / F7 / F9 (5)
	Weight of block A (without options)	kg	290	290
	Weight of block B (without options)	kg	950	950
	Weight of block C (without options)	kg	460	460
	ETT unit weight without options	kg	1700	1700

(1)Excluding electrical resistors.
(2) Conditions: Recovery 28°C/65% RH; exterior -7°C/95% RH.
(3) Conditions: Recovery 29°C/70% RH; exterior +35°C/40% RH.
(4) Conditions: 28°C pool water; 28°C/65% RH return air

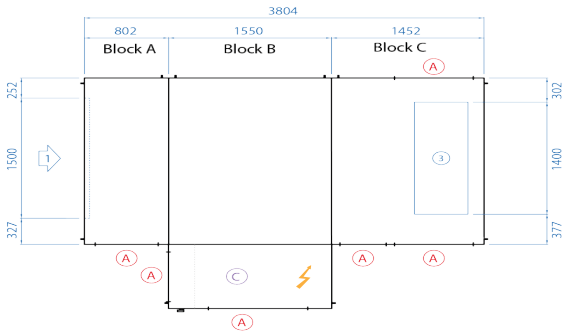
(5) ISO ePM10 50% (M5) / ISO ePM1 50% (F7), / ISO ePM1 80% (F9)
(6) Three-phase power supply 400V-50Hz + earth without neutral.

Dimensions and connections

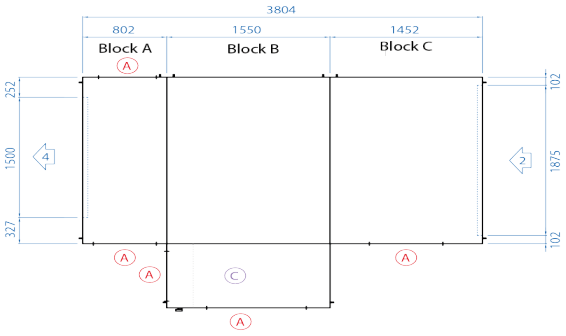
Front view:



Top view (fresh air/supply air):



Top view (return air/exhaust air):



① Fresh air
② Return air
③ Supply air
④ Exhaust air
Ⓐ Access
⚡ Power supply
Ⓒ Technical section

	Length	Width	Height
Dimensions of assembled casing (mm)	3800	2875	2400
Overall dimensions for transport - BLOCK A (mm)	2145	835	2400
Overall dimensions for transport - BLOCK B (mm)	2952	1620	2400
Overall dimensions for transport - BLOCK C(mm)	2185	1485	2400

Note: Provide 200 mm clearance (minimum) below the unit to connect the condensate traps.

Technical features

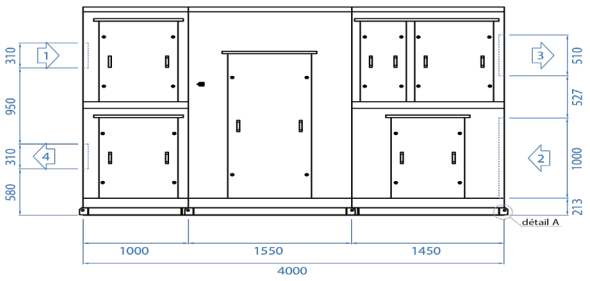
Deshu XP+ 260 - 285

	DESIGNATION	Unit	260	285
SPECIFICATIONS	Rated supply air flow rate	m³/h	24000	30000
	Min./Max. supply air flow rate	m³/h	14500/28500	17500/35000
	Treated air flow rate dehumidification	m³/h	16000	20000
	Min./Max. treated air flow rate	m³/h	14500/19000	17500/23000
	Dehumidification capacity on a heating base 100% recycling (2)	kg/h	81.7	90.1
	Dehumidification capacity on a heating base with 20% of FA(2)	kg/h	114.0	132.9
	Dehumidification capacity on a heating base with 50% of FA(2)	kg/h	162.5	197.1
	Thermodynamic COP on a heating base(2)	kW/kW	5.58	5.67
	Overall efficiency on a heating base (2)(6)	kW/kW	7.76	8.19
	Heat pipe recovery capacity(2)	kW	32.2	38.2
	Air-cooled condenser recovery capacity(2)	kW	108.9	122.5
	Water-cooled condenser recovery capacity on pool water (4)	kW	117.3	126.3
	Recommended total water flow rate per water-cooled condenser recovery pool (4)	m3/h	16.1	18.6
	Pressure drop, with water-cooled condenser for recovery on pool water (4)	mWC	2.8	3.6
	Hot water coil maximum capacity, 80/60°C, exchanger inlet at 10°C	kW	289.4	344.2
	Total cooling capacity in cooling cycle (3)	kW	88.2	101.5
	Number of independent refrigeration circuits	U	2	2
ELECTRICAL CONNECTION	Unit total electrical power installed (standard)(1)	kW	52.7	56.2
	Total rated/starting current (standard) (1)	A	73.1/192	81.4/230
FANS	**SUPPLY AIR**			
	Number of fans (standard)	u	3	3
	Installed power	kW	13.35	13.2
	Power absorbed at 300 Pa available for recovery	kW	8.67	9.03
	EXHAUST AIR			
	Number of fans	u	2	2
	Installed power	kW	8.90	8.80
	Absorbed/Installed electrical power with 300 Pa available for return air	kW	5.78	6.02
	Average sound pressure level at 10 m ref. $2x10^{-5}$ in free field	dB(A)	49.2	47.1
GENERAL	Filters efficiency		M5 / F7 / F9 (5)	M5 / F7 / F9 (5)
	Weight of block A (without options)	kg	420	420
	Weight of block B (without options)	kg	1505	1505
	Weight of block C (without options)	kg	605	605
	ETT unit weight without options	kg	2530	2530

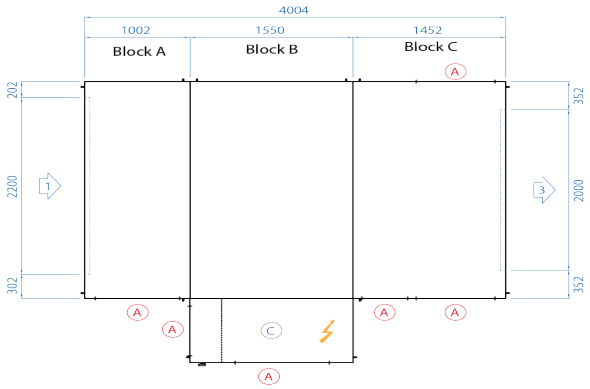
(1)Excluding electrical resistors.
(2) Conditions: Recovery 28°C/65% RH; exterior -7°C/95% RH.
(3) Conditions: Recovery 29°C/70% RH; exterior +35°C/40% RH.
(4) Conditions: 28°C pool water; 28°C/65% RH return air
(5) ISO ePM10 50% (M5) / ISO ePM1 50% (F7), / ISO ePM1 80% (F9)
(6) Three-phase power supply 400V-50Hz + earth without neutral.

Dimensions and connections

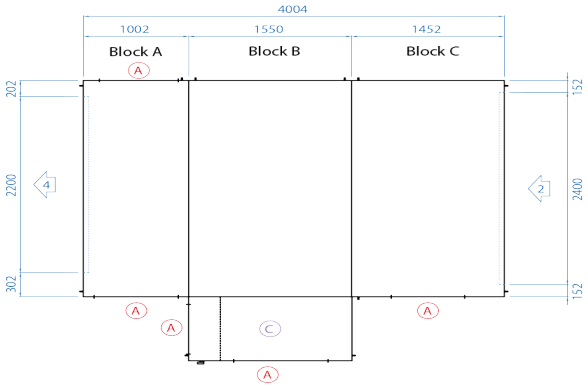
Front view:



Top view (fresh air/supply air):



Top view (return air/exhaust air):



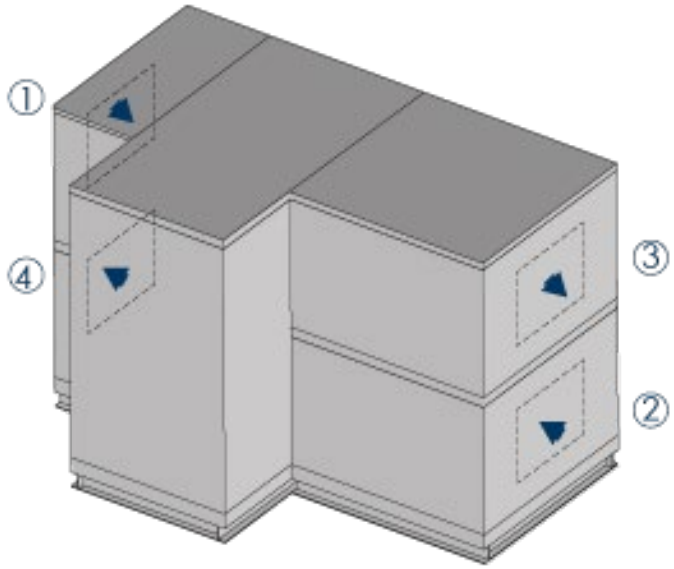
① Fresh air
② Return air
③ Supply air
④ Exhaust air
Ⓐ Access
⚡ Power supply
Ⓒ Technical section

	Length	Width	Height
Dimensions of assembled casing (mm)	4000	3500	2600
Overall dimensions for transport - BLOCK A (mm)	2770	1035	2600
Overall dimensions for transport - BLOCK B (mm)	3577	1620	2600
Overall dimensions for transport - BLOCK C(mm)	2770	1485	2600

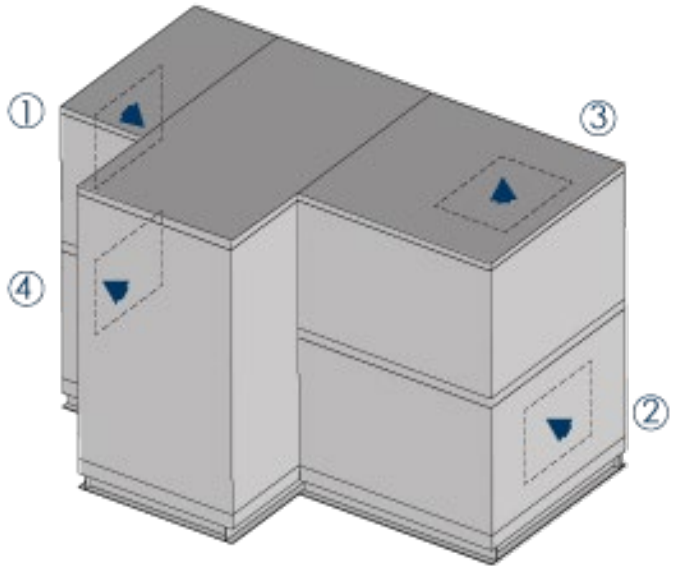
Note: Provide 200 mm clearance (minimum) below the unit for condensates siphons connection.

Airflow arrangements

Arrangement A



Arrangement B



① Fresh air ② Return air ③ Supply air ④ Exhaust air

Auxiliaries: Hot water coils

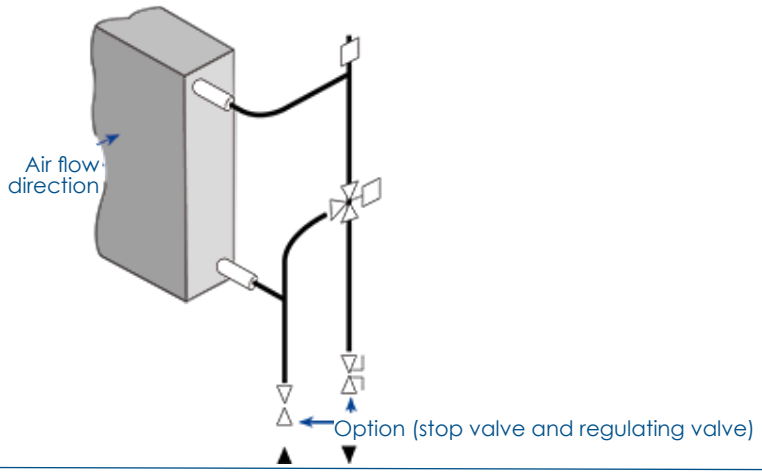
Available capacities (en kW)

Total capacity (kW)	Current (A)	1st stage	2nd stage	107	109	110	125	160	185	210	225	260	285	Weight (kg)
9	13	3	6	•	•	•	•	•	•	•	•	•	•	7.8
12	17.3	3	9	•	•	•	•	•	•	•	•	•	•	8.4
15	21.7	6	9	•	•	•	•	•	•	•	•	•	•	9.2
18	26	6	12	•	•	•	•	•	•	•	•	•	•	10
21	30.3	6	15	•	•	•	•	•	•	•	•	•	•	10.7
24	34.6	9	15	•	•	•	•	•	•	•	•	•	•	11.3
27	39	9	18	•	•	•	•	•	•	•	•	•	•	13.9
30	43.3	12	18	•	•	•	•	•	•	•	•	•	•	14.7
33	47.6	12	21	•	•	•	•	•	•	•	•	•	•	13.8
36	52	15	21	•	•	•	•	•	•	•	•	•	•	14.5
39	56.3	15	24		•	•	•	•	•	•	•	•	•	15.2
42	60.6	18	24		•	•	•	•	•	•	•	•	•	17.8
45	65	18	27			•	•	•	•	•	•	•	•	18.6
48	69.3	21	27				•	•	•	•	•	•	•	17.7
54	77.9	21	33				•	•	•	•	•	•	•	21
60	86.6	21	39					•	•	•	•	•	•	20.8
63	90.9	27	36					•	•	•	•	•	•	25
72	103.9	27	45					•	•	•	•	•	•	23.8
81	116.9	27	54						•	•	•	•	•	31.5

Note: An additional coil can be mounted in the supply air duct or on the fresh air inlet for higher performances. Please consult us.

Auxiliaries: Hot water coils

Schematic diagram



Connections and weights

	Unit	107	109	110	125	160	185	210	225	260	285
Customer connection diameter	mm	33/42	40/49	40/49	40/49	50/60	50/60	50/60	50/60	66/76	66/76
Coil + 3WV with water	kg	45	71	71	71	110	110	133	133	220	220

Capacities and pressure drops for an air inlet temperature on coils of +10°C (STANDARD)

		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Max. power	kW	68	91	98	111	146	173	199	229	289	344
	Max. flow rate	m³/h	3.0	4.0	4.3	4.9	6.4	7.6	8.8	10.1	12.7	15.1
	Coil + 3WV pressure drop	mWC	4.2	3.4	3.9	5.0	2.8	4.0	3.2	4.2	4.2	5.9
Water regime 50/40°C	Max. power	kW	39	53	56	64	83	99	114	132	167	199
	Max. flow rate	m³/h	3.4	4.6	4.9	5.6	7.2	8.6	9.9	11.4	14.5	17.2
	Coil + 3WV pressure drop	mWC	5.6	4.6	5.2	6.7	3.7	5.3	4.3	5.6	5.6	7.9

Capacities and pressure drops for an air inlet temperature on coils of +10°C (SIMMETRIC UNIT)

		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Max. power	kW	61	81	87	99	130	154	177	204	258	306
	Max. flow rate	m³/h	2.7	3.6	3.8	4.4	5.7	6.8	7.8	9.0	11.3	13.5
	Coil + 3WV pressure drop	mWC	3.6	3.1	3.5	4.6	2.5	3.6	2.9	3.9	3.7	5.2
Water regime 50/40°C	Max. power	kW	35	47	50	57	74	88	102	117	149	177
	Max. flow rate	m³/h	3.0	4.1	4.3	5.0	6.5	7.7	8.8	10.2	12.9	15.4
	Coil + 3WV pressure drop	mWC	4.9	4.2	4.7	6.1	3.3	4.7	4.0	5.2	4.9	6.9

Optional : flow shut-off valve and return TA control valve

		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Stop and TA valves pressure drop (3-turn opening)	mWC	1	1	1.2	1.4	0.9	1.2	1.6	2.1	0.4	0.6
Water regime 50/40°C	Stop and TA valves pressure drop (3-turn opening)	mWC	1.3	1.3	1.4	1.8	1.1	1.5	2.1	2.6	0.5	0.7

Auxiliaries: Hot water coils

Capacities and pressure drops for an air inlet temperature on coils of +20°C (STANDARD)

		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Max. power	kW	57	76	82	93	121	144	166	192	242	288
	Max. flow rate	m³/h	2.5	3.4	3.6	4.1	5.3	6.3	7.3	8.4	10.6	12.7
	Coil + 3WV pressure drop	mWC	3.0	2.6	2.8	3.6	2.1	2.8	2.7	3.2	3.4	4.5
Water regime 50/40°C	Max. power	kW	28	37	40	46	59	70	82	93	119	141
	Max. flow rate	m³/h	2.5	3.2	3.5	4.0	5.1	6.1	7.1	8.1	10.4	12.3
	Coil + 3WV pressure drop	mWC	3.0	2.4	2.8	3.7	2.2	3.1	2.4	3.1	3.1	4.4

Capacities and pressure drops for an air inlet temperature on coils of +20°C (SIMMETRIC UNIT)

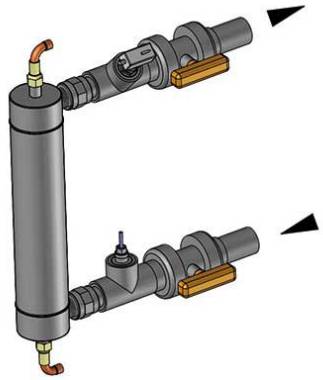
		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Max. power	kW	50	68	73	83	108	128	148	170	215	256
	Max. flow rate	m³/h	2.2	3.0	3.2	3.6	4.7	5.6	6.5	7.5	9.5	11.3
	Coil + 3WV pressure drop	mWC	2.7	2.4	2.5	3.3	1.8	2.5	2.5	3.0	3.1	4.0
Water regime 50/40°C	Max. power	kW	25	33	36	41	52	62	73	83	106	126
	Max. flow rate	m³/h	2.2	2.9	3.1	3.6	4.5	5.4	6.3	7.2	9.2	10.9
	Coil + 3WV pressure drop	mWC	2.7	2.2	2.6	3.3	2.0	2.8	2.2	2.9	2.8	3.9

Optional : flow shut-off valve and return TA control valve

		Unit	107	109	110	125	160	185	210	225	260	285
Water regime 80/60°C	Stop and TA valves pressure drop (3-turn opening)	mWC	1	1	1.2	1.4	0.9	1.2	1.6	2.1	0.4	0.6
Water regime 50/40°C	Stop and TA valves pressure drop (3-turn opening)	mWC	1.3	1.3	1.4	1.8	1.1	1.5	2.1	2.6	0.5	0.7

Water condenser

Schematic diagram



This equipment allows heat to be transferred to pool water when the desired room air temperature is reached. The water-cooled condenser is made of 316L stainless steel and features a freon 3-way valve and a water flow regulator with automatic reset (for chlorine water treatment only)

For other water treatments, use a titanium exchanger.

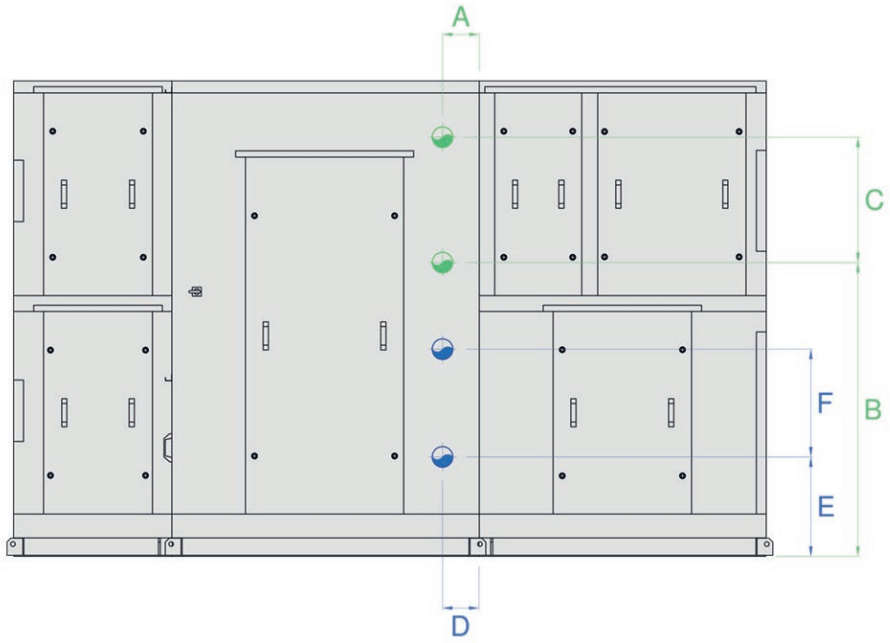
Stop valves are available as an option.

	Unit	107	109	110	125	160	185
Quantity		1	1	1	1	1	1
Total heating capacity	**kW**	**24.8**	**32.3**	**36.8**	**42.2**	**55.6**	**63.4**
Total flow rate	**m^3/h**	4.5	5.8	6.6	7.5	8.1	9.3
Inlet temperature	**°C**	28	28	28	28	28	28
Outlet temperature	**°C**	33	33	33	33	34	34
Exchanger pressure drop, per condenser	**mWC**	1	1.6	2	2.5	2.8	3.6
Total weight	**kg**	26.1	36.2	36.2	36.2	40	40
Connection diameter	**mm**	63	63	63	63	63	63

	Unit	210	225	260	285
Quantity		2	2	2	2
Total heating capacity	**kW**	**74.7**	**85.3**	**117.3**	**126.3**
Total flow rate	**m3/h**	13.2	15	16.1	18.6
Inlet temperature	**°C**	28	28	28	28
Outlet temperature	**°C**	33	33	34	34
Exchanger pressure drop, per condenser	**mWC**	2	2.5	2.8	3.6
Total weight	**kg**	70.3	70.3	78	78
Connection diameter	**mm**	75	75	75	75

Connections : Hot water coil & water condenser

Functional Schematic - Front View



Connection interface "Auxiliary : hot water coil" / Connection interface "Water condenser"

	Unit	107	109	110	125	160	185	210	225	260	285
A	mm	155	154	154	154	155	155	186	186	186	186
B	mm	1213	1274	1274	1274	1390	1390	1374	1374	1483	1483
C	mm	135	155	155	155	562	562	538	538	633	633
D	mm	127	127	127	127	127	127	144	144	144	144
E	mm	309	309	309	309	309	309	502	502	502	502
F	mm	544	544	544	544	544	544	544	544	544	544

Sound level* at supply/exhaust
Frequency band spectrum

On supply air side

	FREQUENCY BAND Hz ▶		63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
	Supply air flow rate (m³/h) ▼	Treated air flow (m³/h) ▼									
107	6000	4000	54.2	61.2	71.9	77.8	83.8	83.5	80.5	74.2	88.3
109	7500	5000	54.9	63.4	73.4	79.9	82.4	81.0	77.7	75.1	87.1
110	8250	5500	55.4	63.9	73.9	80.4	82.9	81.5	78.2	75.6	87.6
125	9750	6500	51.7	64.5	72.6	79.2	83.0	85.0	81.1	76.9	89.0
160	12000	8000	57.9	66.4	76.4	82.9	85.4	84.0	80.7	78.1	90.1
185	15000	10000	58.4	66.9	76.9	83.4	85.9	84.5	81.2	78.6	90.6
210	16500	11000	58.4	66.9	76.9	83.4	85.9	84.5	81.2	78.6	90.6
225	19500	13000	54.7	70.9	74.8	83.5	83.7	82.4	80.3	73.9	89.1
260	24000	16000	56.0	68.8	76.9	83.5	87.3	89.3	85.4	81.2	93.3
285	30000	20000	56.5	72.7	76.6	85.3	85.5	84.2	82.1	75.7	90.8

On exhaust air side

	FREQUENCY BAND Hz ▶		63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
	Supply air flow rate (m^3/h) ▼	Treated air flow rate (m^3/h) ▼									
107	6000	4000	49.2	61.0	74.3	79.7	87.4	87.2	85.0	78.3	91.9
109	7500	5000	49.2	61.0	74.3	79.7	87.4	87.2	85.0	78.3	92.0
110	8250	5500	53.7	60.7	71.4	77.3	83.3	83.0	80.0	73.7	87.8
125	9750	6500	54.2	61.2	71.9	77.8	83.8	83.5	80.5	74.2	88.3
160	12000	8000	55.4	63.9	73.9	80.4	82.9	81.5	78.2	75.6	87.6
185	15000	10000	51.7	64.5	72.6	79.2	83.0	85.0	81.1	76.9	89.0
210	16500	11000	56.7	63.7	74.4	80.3	86.3	86.0	83.0	76.7	90.8
225	19500	13000	57.2	64.2	74.9	80.8	86.8	86.5	83.5	77.2	91.3
260	24000	16000	54.2	67.0	75.1	81.7	85.5	87.5	83.6	79.4	91.5
285	30000	20000	54.7	70.9	74.8	83.5	83.7	82.4	80.3	73.9	89.1

*Lw: sound power level (dB(A))

Sound level* at fresh air intake/return
Frequency band spectrum

At fresh air inlet

	FREQUENCY BAND Hz ▶		63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
	Supply air flow rate (m^3/h) ▼	Treated air flow rate (m^3/h) ▼									
107	6000	4000	49.7	62.1	74.2	80.0	86.6	86.1	84.2	75.8	91.1
109	7500	5000	51.5	62.7	74.5	80.1	86.6	86.1	84.2	75.9	91.1
110	8250	5500	54.4	62.7	72.5	78.0	82.6	82.0	79.3	71.6	87.2
125	9750	6500	53.9	63.1	72.3	78.1	83.1	82.5	80.0	72.2	87.7
160	12000	8000	56.4	65.6	75.0	81.0	82.3	80.7	77.7	73.6	87.3
185	15000	10000	54.6	66.2	74.4	80.1	82.5	84.0	80.5	74.8	88.5
210	16500	11000	57.4	65.7	75.5	81.0	85.6	85.0	82.3	74.6	90.2
225	19500	13000	57.0	67.3	75.1	80.9	86.1	85.5	82.9	74.7	90.6
260	24000	16000	54.7	68.2	75.8	82.0	84.9	86.5	83.2	77.3	90.9
285	30000	20000	55.4	71.8	75.4	83.6	83.2	81.8	79.9	71.6	88.8

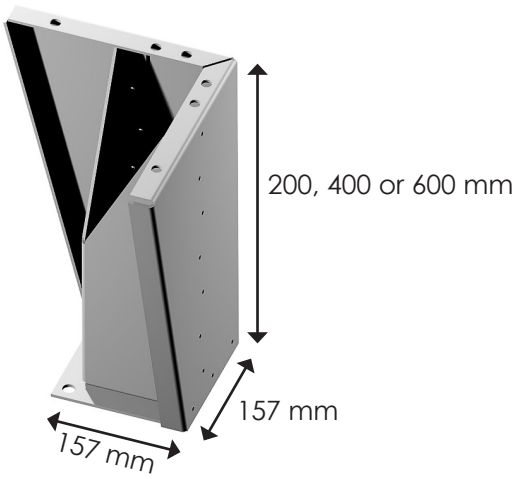
On return air side

	FREQUENCY BAND Hz ▶		63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
	Supply air flow rate (m^3/h) ▼	Treated air flow rate (m^3/h) ▼									
107	6000	4000	48.7	62.3	73.1	76.9	74.0	74.3	71.9	68.7	81.6
109	7500	5000	52.5	63.4	73.9	77.5	74.1	74.1	71.5	70.8	82.1
110	8250	5500	52.8	63.7	72.9	77.4	72.2	72.9	71.6	70.2	81.4
125	9750	6500	49.2	64.0	71.7	74.6	72.4	74.3	75.3	71.1	81.4
160	12000	8000	55.8	66.2	75.4	79.9	74.5	75.0	73.8	72.8	83.8
185	15000	10000	55.7	66.7	75.6	80.1	74.9	75.8	74.9	73.4	84.2
210	16500	11000	55.8	66.7	75.9	80.4	75.2	76.0	74.6	73.2	84.4
225	19500	13000	52.8	68.9	73.8	74.7	74.8	76.1	75.5	67.3	82.4
260	24000	16000	53.3	68.4	75.6	78.2	76.5	78.5	79.8	75.6	85.5
285	30000	20000	54.5	71.2	74.9	74.3	76.2	77.4	77.1	68.2	83.6

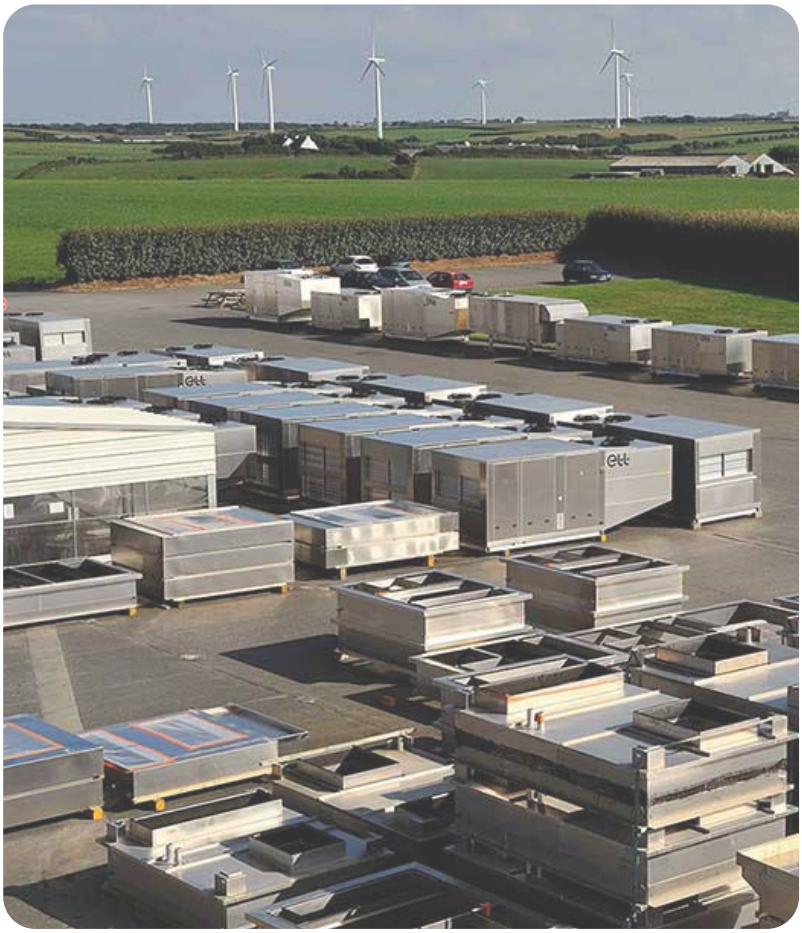
*Lw: sound power level (dB(A))

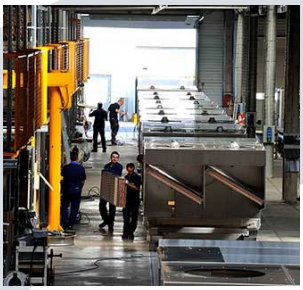
Installation accessories : Feet

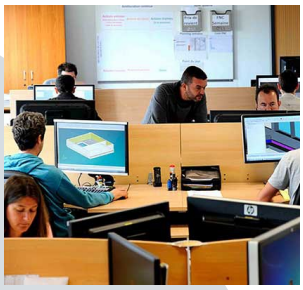
Fixed aluminium foot
Unit weight: 1 kg



Unit	107	109	110	125	160	185	210	225	260	285
Number feet (Packaged)	8	8	8	8	n/a	n/a	n/a	n/a	n/a	n/a
Number feet (3-block)	12	12	12	12	12	12	12	12	14	14







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