ENVIRONMENTAL
CLIMATE CONTROL
EQUIPMENT & SOLUTIONS

Green Line

ULTI+ R32 CC+

Solution ErP 2021

R32

Reversible single flow heat pump coupled with one or several condensing boiler(s)

MADE IN FRANCE

www.ett-hvac.com

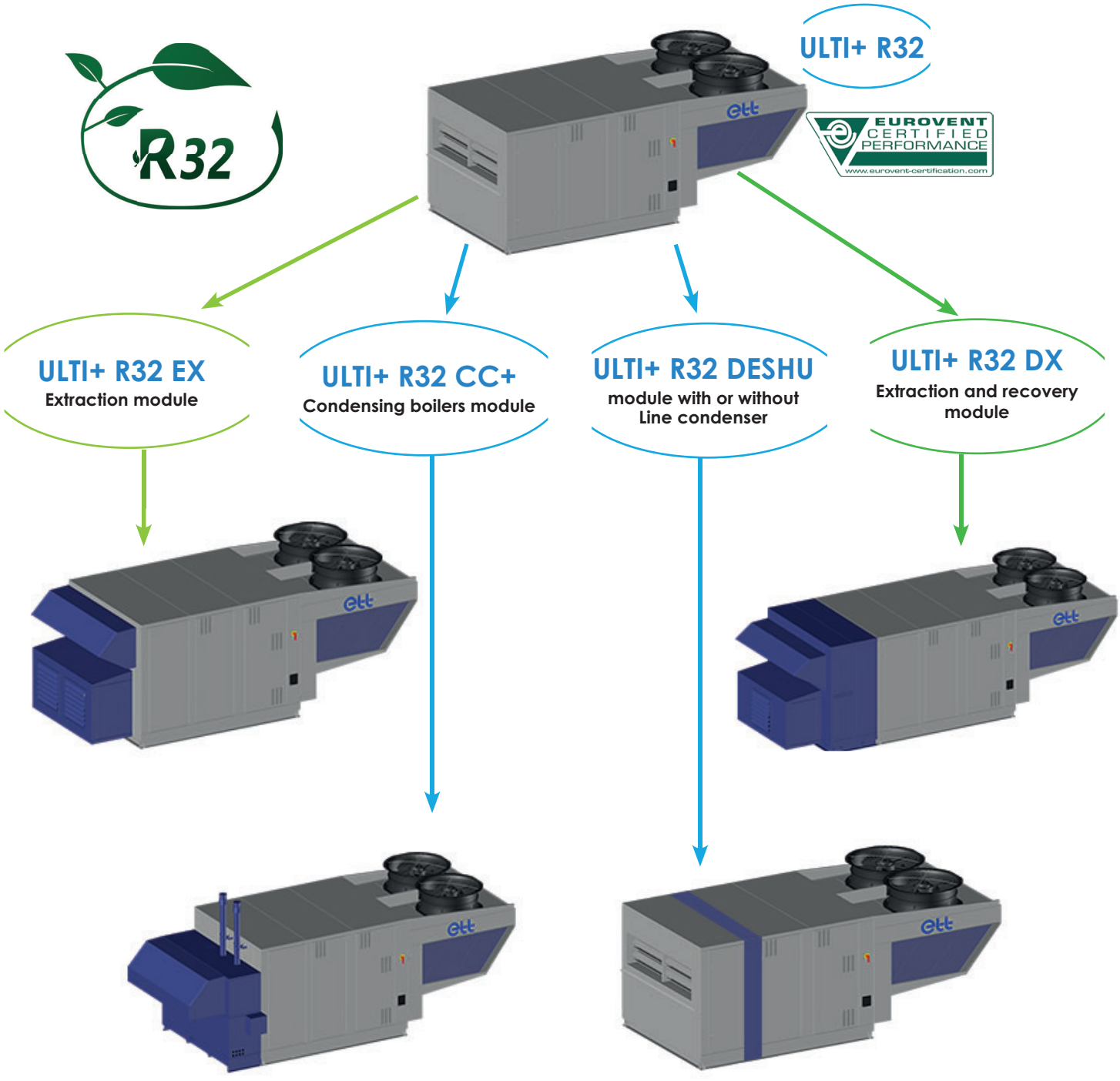
ULTI+ R32 CC+: A unit from the Green Line ULTIMA range

The ULTIMA Green Line is ETT's new modular rooftop range of the latest generation. It combines quality materials, performance, energy savings, acoustics, regulation and new generation connected components allowing the units to operate constantly in an optimal way.

An unrivalled depth of range (flow rates/powers) that perfectly meets the weight and space constraints for existing units to be replaced.

Its modular design allows you to adapt unit capacity to your needs. You may choose to install **the standard ULTI+ R32 heat pump**, or to customise the packaged unit with additional modules (condensing boiler(s), extraction module, extraction module with rotary heat exchanger) to adapt unit performance to the environment and requirements of your application.

Modularity principle of the ULTIMA Green Line range



ULTI+ CC+ R32: ErP Ready Rooftop

When they adopted the KYOTO protocol, the Member States of the European Union (EU) voted a set of measures known as the "energy-climate package", aiming at:

- ✓ reducing greenhouse gas emissions by 20%;
- ✓ reducing energy consumption by 20%;
- ✓ increasing the proportion of renewable energies to 20% of the final energy

Directive 2009/125/EC on the ecodesign of ErPs (Energy related Products) has been adopted to achieve these objectives.

This directive applies to all products using energy or having an impact on energy consumption. It includes a **"bunch of regulations"** that sets performance requirements for each type of product. **Regulation (EU) 2016/2281 on cooling products, high temperature process chillers and fan coil units**.

- **1 January 2021**

Information on the CC+ units and other air heating equipment:

The nitrogen emissions - expressed in nitrogen dioxide equivalent - of the air heating equipment (including equipment built into rooftop units) must not exceed the following values:

- **26 Sept. 2021**
  70 mg/kWh HHV

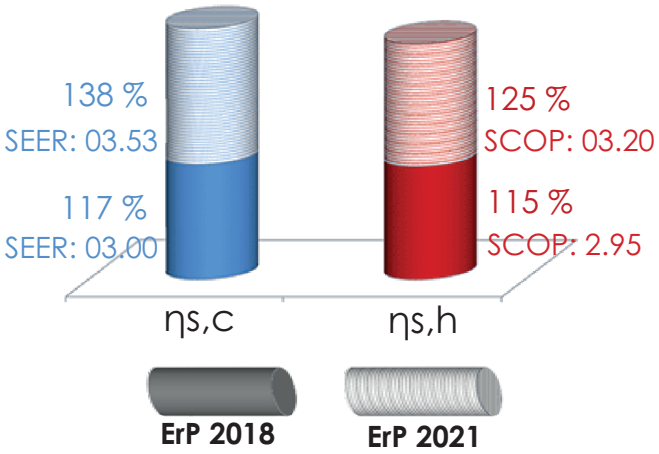
From 1st of January 2018 rooftops failing to comply with ErP Regulation (EU) 2281/2016 may no longer be marketed in Europe.

Regulatory impacts from 1st of January 2018

The European Parliament compels rooftop manufacturers to comply with Regulation (EU) 2281/2016 on ErPs, in order to give the users the possibility to evaluate their energy consumption.

This regulation defines the Ecodesign minimum requirements and sets a new rating method for rooftop energy efficiency: the **seasonal efficiency.**
This new measure gives **a more realistic indication of the energy efficiency** and environmental impact of any heating or cooling system.

Seasonal efficiency to be reached according to ErP 2018 and ErP 2021.



A summary sheet stating **rated capacity & seasonal efficiency** is available on request.

SCOP

Seasonal Coefficient of Performance

SCOP corresponds to the ratio between the annual demand in heating for the reference climate and the annual electricity consumption for heating.

$$\eta s,h = \frac{SCOP}{2.5} - 3\%$$

SEER

Seasonal efficiency

SEER corresponds to the ratio between the annual demand in cooling for the reference climate and the annual electricity consumption for cooling.

$$\eta s,c = \frac{SEER}{2.5} - 3\%$$

2.5: Conversion coefficient to the primary energy
3 %: Control-related factor

ENERGIE TRANSFERT THERMIQUE

CONTENTS

General description

The **ETT** packaged unit is delivered ready to operate. Its full aluminium structure (frame & casing) ensures an excellent corrosion protection (20-year anti-corrosion guarantee). The **ETT** unit can be installed either at ground level or on a roof.

Eco-Design fosters DISCONSTRUCTION: the recyclability of **ETT** units is 98% (Reuse and recycling rate based on ULTI+ R32 21).

Environmental impact:

The Ultima Green Line is eco-responsible and uses R32, a refrigerant with a low environmental impact :

- ✓ Zero ozone depletion (ODP)
- ✓ Global Warming Potential (GWP) of 675

Our technical choices have several impacts on the environment

- **Legal and regulatory framework:**

- In accordance with Directive 2008/98/EU on waste, clause 26: "The polluter-pays principle is a guiding principle at European and international levels. The waste producer and the waste holder should manage the waste in a way that guarantees a high level of protection of the environment and human health.", ETT is a member of "Ecologic" for France.
- In accordance with articles 5.3, 5.4 and 11 of Regulation (EC) No 303/2008, ETT holds a certificate of capability to handle refrigerants (no. 637).

- **Aluminium: a good choice for the planet!**

- Aluminium is endlessly 100% recyclable.
- Recycling covers over 30% of aluminium needs.

- **Consumables: efficient waste management:**

- Filtration: ETT units include "ecodesign" air filters (selective sorting frame - grille - media)

- **Low polluting ETT manufacturing process:**

- Selective sorting, waste recovery, 80% of waste is recycled.

No paint on casings, no use of solvent.

- **ETT Certifications**

- **ISO 14001** Certification : (Environmental Management System).
- **Iso 9001 Certification**: our Quality organisation is the subject of the AFAQ Certificate n° 1994/2016f. Each unit is checked and tested at the factory, prior to shipment, and a test certificate is issued.
- **RCS Certification: quality of the CSR management system - Corporate Social Responsibility**

We placed ease of operation at the heart of our units design:

- The **separate technical section** facilitates unit control and maintenance and allows measurement and adjustment during operation.
- The **BEST controller** is specifically designed for this application. It allows great flexibility, thus optimum performance of the **ETT** unit through a user-friendly interface, be it local or remote (with remote display, PC or BMS).

CE Moreover, each unit is delivered with an **EC certificate of conformity** and complies with the standards listed below:

- Machinery Directive 2006/42/EC - Operator's safety
- Low Voltage Directive (LVD) 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Règlement (UE) 216/426 – Appareils à gaz
- EN 60204-1 - Safety of machinery – Electrical equipment of machines
- EN 378-2: 2017 – Safety and environmental requirements
- Pressure Equipment Directive (PED) 2014/68/EU (sections 2.10, 2.11, 3.4, 5a and 5d of Annex I)
- EcoDesign regulations (EU) 2281/2016 on ErPs

100% recyclable aluminium

20-year guarantee against corrosion frame - casing

Unit description

20-year guarantee against corrosion frame - casing

Solution ErP 2021

Aluminium frame and casing

Optimised tightness and thermal insulation.

Reduced weight, for new and renovation projects.

Numerous available arrangements.

20-Year anti-corrosion guarantee.

Propeller fans

Variable-speed propeller fans, communicating, with bionic blade design, electronically commutated (EC) motor, optimum performance and low acoustic level.

Ecodesign filtration

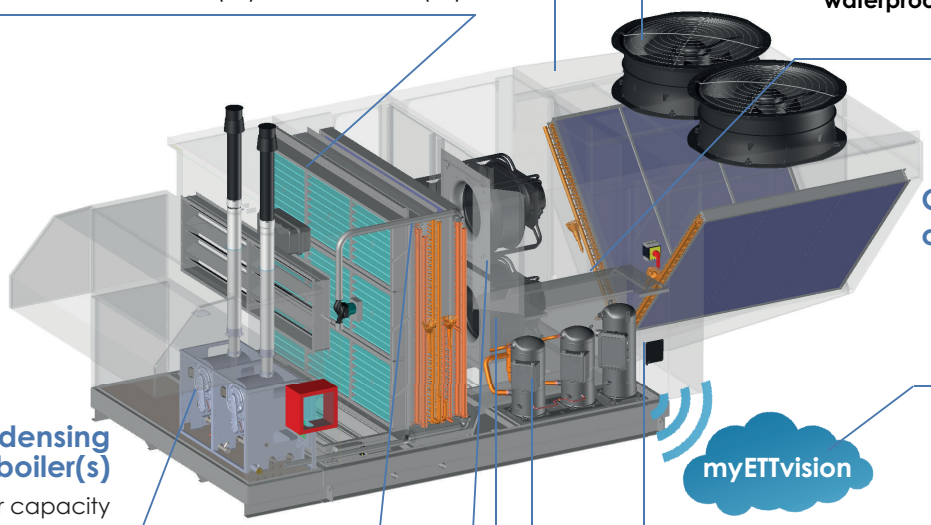
Low pressure drop.

Fouling analogue control.

Options ISO Coarse 65% (G4) rechargeable, ISO ePM10 50% (M5), ISO Coarse 65% (G4)+ISO ePM1 55% (F7), ISO Coarse 65% (G4)+ISO ePM1 80%(F9), ISO ePM1 55% (F7), ISO ePM1 80%(F9).

Sealed electrical box

Separate electrical board **in IP44 waterproof** housing for greater safety.



Connected components

Optimal machine operation.

Can be connected to the myETTvision communication platform

Condensing boiler(s)

Highly modular capacity with 1 to 4 boilers of 63 kW HHV.

New generation controller with display

Control enabling optimum operation in all conditions.

Thermal exchangers

Optimised exchangers for better energy efficiency.

Vinyl option available.

Multi-stage circuit with new generation R32 compressors

Optimum performance whatever the part load.

Electronic expansion valves.

Internal fans

Variable speed fans with flow rate measure

Analogue air flow controller (AFC), communicating, direct transmission, electronically commutated (EC) motor, optimum performance and low acoustic level.

Low Noise option available.

AFC option available with flow rate auto-adjustment.

Leak detector

Reduces the frequency of periodic visits to your equipment.

R32

** ErP (Energy related Product) 2021 Ready: the Green Line Ultima range complies with the ecodesign requirements for air heating products, cooling products (EU Regulation 2016/2281).*

Unit description

Energy
savings

The Green Line ULTIMA range is an efficient, economical and environmentally friendly solution for buildings heating and air conditioning.

The ULTI+ R32 CC+ is designed to offer **precise control as well as optimum and continuous energy efficiency** during all its operating years.

QUALITY
Premium components and processes

- **Sustainable and recyclable equipment**: **Aluminum body and frame**, 100% recyclable, 20-year anti-corrosion guarantee
- Non-polluting process
- Eco design approach to combine economy and optimum performance (SEER, SCOP)
- Very easy replacement of existing units; **identical existing roofcurbs**
- Reduced unit dimensions and weight

Accessibility
and flexibility

- Technical compartment allowing quick and easy access to the air veins.
- Free and easy access **to the filters by removable panels.**
- **Components easily accessible** for **maintenance**.
- Wide **choice of powers** to adapt to the needs of each project
- **Numerous possible arrangements** to meet the installation requirements of every project

Connected components
New Generation Controller

- Enabling unit communication
- Sending technical data from the units to an external server to allow optimum remote control with myETTvision

R32 refrigerant
With low GWP

- New ULTIMA Green Line with R32, low GWP (675) fluid.
- **Actively participates in compliance with** the CO2 equivalent tonnage quota, a legal obligation imposed on the gas producer/ importer.
- Helps to minimize the impact on the greenhouse effect.

CC+ module
with one or several condensing boiler(s)

FOR COLD ENVIRONMENTS

The CC+ module is used as an auxiliary, to complement the thermodynamic system or to replace it if the outside temperature is too low.

Acoustic
performance

MAIN FEATURES

- **New generation variable - speed propellers and fans**
- **Control system adjusting rotation speed to power stages**

Because environmental noise reduction is essential, our **standard** self-contained units **are designed to meet your acoustic requirements**.

ETT goes the extra mile...

Installation

Outdoor, on the rooftop or at ground level.

ETT services

- 5-year guarantee as standard
- A team to guide you from commissioning to operational support
- Manufacturer visits and audits
- Installation optimisation and retrofit
- Service contracts
- Staff training
- Access to the ETT Services hotline

myETTvision platform

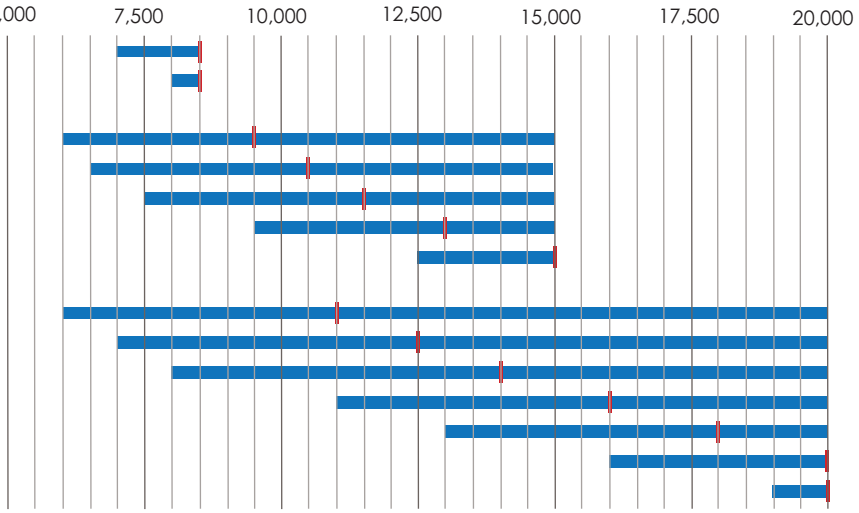
myETTvision lets you control and optimise your installation, remotely.

Unit description

A WIDE RANGE

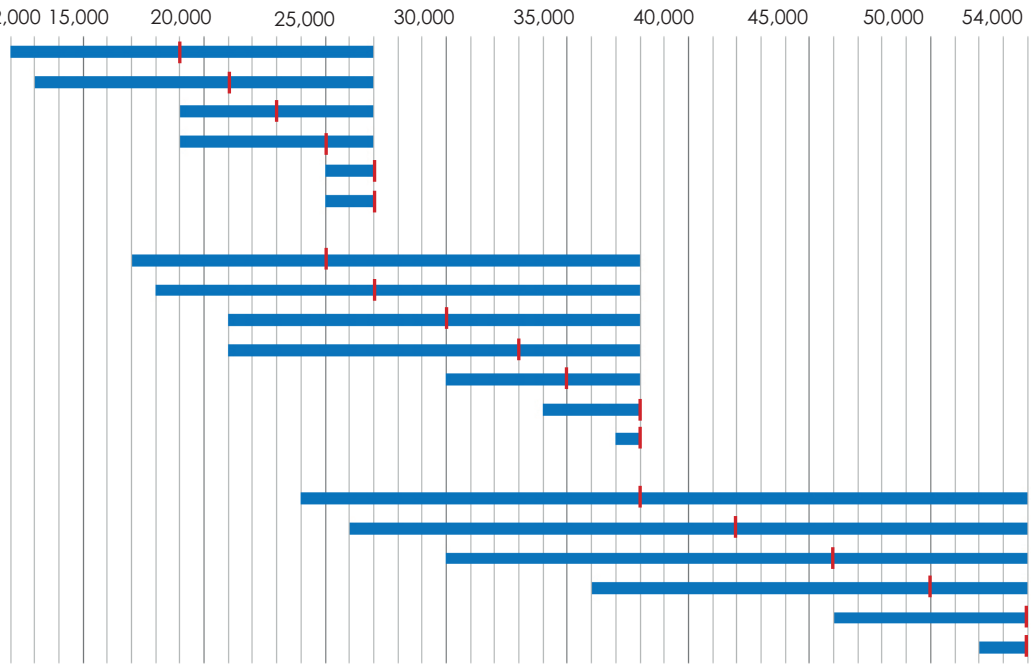
Flow rates (m³/h) & Rated flow rate (l)

Unit	Capacity
ULTI+ R32 01-045 CC+	40
ULTI+ R32 01-050 CC+	43
ULTI+ R32 11-045 CC+	43
ULTI+ R32 11-050 CC+	46
ULTI+ R32 11-055 CC+	52
ULTI+ R32 11-065 CC+	60
ULTI+ R32 11-075 CC+	67
ULTI+ R32 12-050 CC+	49
ULTI+ R32 12-055 CC+	55
ULTI+ R32 12-065 CC+	63
ULTI+ R32 12-075 CC+	70
ULTI+ R32 12-080 CC+	78
ULTI+ R32 12-090 CC+	87
ULTI+ R32 12-100 CC+	92



Flow rates (m³/h) & Rated flow rate (l)

Unit	Capacity
ULTI+ R32 21-090 CC+	84
ULTI+ R32 21-095 CC+	90
ULTI+ R32 21-110 CC+	102
ULTI+ R32 21-115 CC+	115
ULTI+ R32 21-130 CC+	122
ULTI+ R32 21-140 CC+	132
ULTI+ R32 22-115 CC+	109
ULTI+ R32 22-130 CC+	124
ULTI+ R32 22-140 CC+	132
ULTI+ R32 22-150 CC+	144
ULTI+ R32 22-160 CC+	161
ULTI+ R32 22-180 CC+	177
ULTI+ R32 22-200 CC+	190
ULTI+ R32 23-180 CC+	168
ULTI+ R32 23-200 CC+	190
ULTI+ R32 23-220 CC+	211
ULTI+ R32 23-245 CC+	232
ULTI+ R32 23-270 CC+	254
ULTI+ R32 23-285 CC+	273



Operating principles

The unit operates as a reversible heat pump:

> Source: outside air
> Treated fluid: inside air

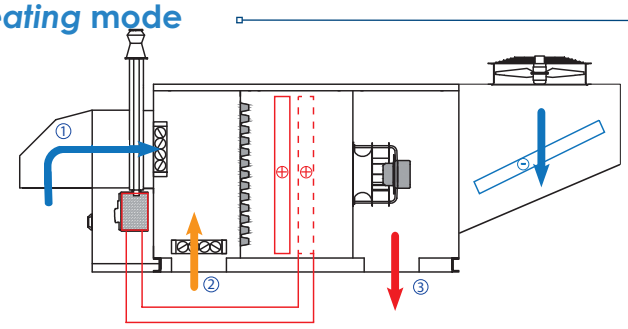
The following operating modes are available:

> Heat pump
> Air conditioner
> Free Cooling: free cooling through outside air, without thermodynamics
> Heat pump + condensing boiler
> Condensing boiler

In these modes the unit can operate:

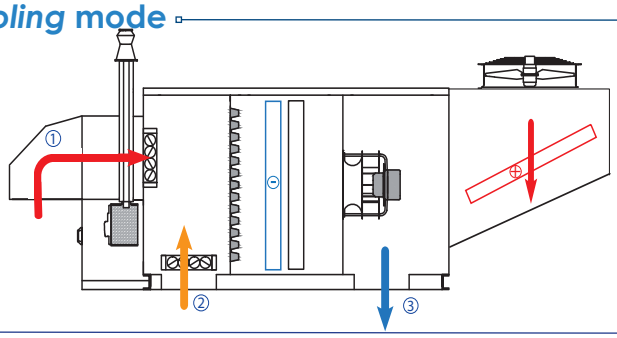
> With all recirculated air
> With all fresh air
> With mixed-air

Heating mode



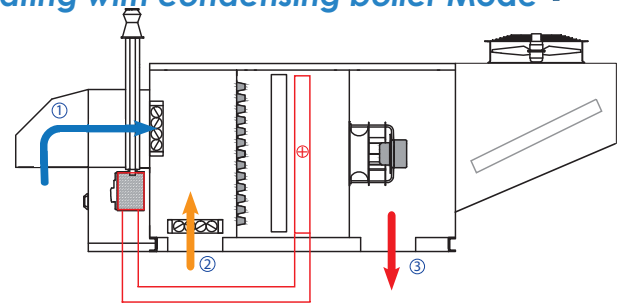
Heating mode: In winter, comfort temperature is maintained thanks to the change over system and auxiliary heaters (optional).

Cooling mode



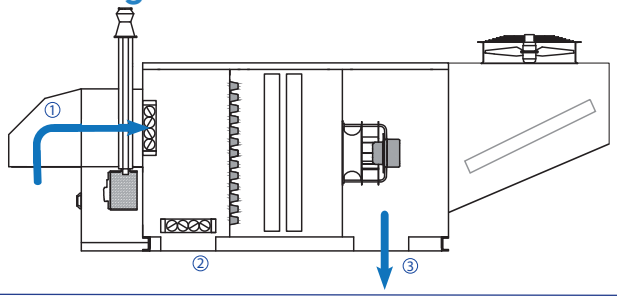
Cooling mode: In summer, comfort temperature is maintained thanks to the thermodynamic system.

Heating with condensing boiler Mode



Heating with condensing boiler mode: In winter, comfort temperature is maintained thanks to the condensing boiler system.

Free Cooling mode

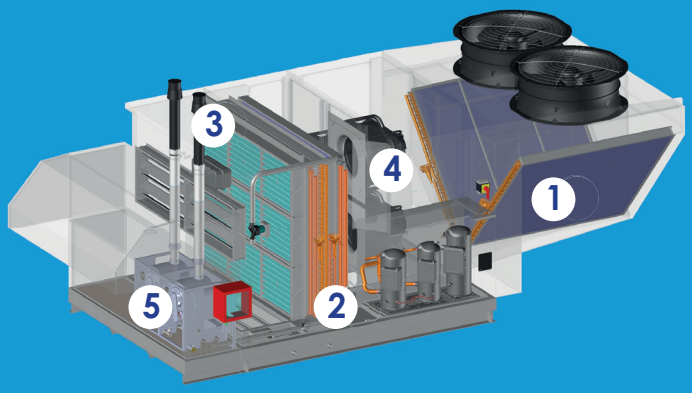


Free Cooling mode: In mid-season, comfort temperature is maintained using in priority the difference between outside air and inside air to cool the building.

Free Cooling **allows considerable savings** by delaying the use of thermodynamics.

① Fresh air ② Return air ③ Supply air

Detailed components



The ETT packaged unit comprises 5 different sections:

1. The external section allows thermal exchanges with the environment.
2. A separate technical compartment containing the refrigeration and air conditioning components. the regulatory bodies.
3. The internal section ensures air change and air treatment.
4. A watertight electrical compartment (IP44).
5. The separate technical section houses the condensing boiler(s) and the control components.

Aluminium frame and casing:

- **Motorised, aluminium, low pressure drop 2-damper mixing box with class 3 upstream/downstream airtightness and class B frame airtightness (according to EN1751), the ULTI+ R32 CC+ offers:**
  - ✓ Optimum fresh air supply proportions, thanks to the CO_2 probe.
  - ✓ Free Cooling mode switch to delay thermodynamic circuit operation and allow significant energy savings.
  - ✓ **Perfect weather resistance, 20-year anti corrosion guarantee on casing.**
- **Watertight floor** with drainage outlets around the unit, connected to rubber siphons.
- **Aluminium vertical panels and roof, mounted on aluminium frame.**
- **Access through large removable panels**. Doors tightness is ensured by a flexible gasket under compression, providing ideal sealing day after day.
- **Acoustic and thermal insulation using 80 to 100 mm M0 rock wool** on frame and **50 mm M0 glass wool on panels and roof**, in accordance with **French Public Access Buildings regulations** (Article CH36).
- Optional rain hood on fresh air (to be installed by the installer

Air assembly:

- **Eco-design filtration**, easily removable - ISO Coarse 65% efficiency (G4) in **98 mm** pleated media to increase filter life and reduce pressure drop, clogging controlled by analog pressure switch.
- **Different filtration levels available** according to project and requirements : ISO Coarse 65% rechargeable (G4) 98mm, ISO ePM10 50% (M5) 98mm, ISO Coarse 65% (G4) + ISO ePM1 55% (F7) 48+48mm, ISO ePM1 55% (F7) 98mm, ISO Coarse 65% (G4) + ISO ePM1 80% (F9) 48+48mm, ISO ePM1 80% (F9) 98mm.
- **Replacement filter kit available as an option**
- **Propeller fans (High Energy Performance)**

  Pioneer, ETT has opted for last generation fans:
  - ✓ With their new design and electronically commutated (EC), variable-speed motor, these fans allow an air flow rate increase of up to 15 %, while keeping the same absorbed power.
  - ✓ **Innovative blade design** resulting in lower compressors consumption thanks to lower HP and higher LP in the different operating modes.
  - ✓ Communicating for real time operation adjustment.
  - ✓ Increased diameter for optimum performance and low acoustic level: unprecedented values.

Detailed components

- **Last generation internal fans (High Energy Performance):**
  - ✓ **Direct transmission** (gain on maintenance, reliability and consumption).
  - ✓ **Electronically commutated (EC) variable-speed motor**, with AFC flow rate measurement (gain on commissioning).
  - ✓ Aluminium wheel;
  - ✓ Communicating for real time operation adjustment.
  - ✓ Integrated Soft Starter system for reduced starting current and soft start (textile ducting).

- **Low Noise option** available.
- **AFC option** with flow rate auto-adjustment, for filter fouling compensation.
- **VDP option** (power/flow rate variation) for energy consumption reduction.

Energy and thermodynamic assembly:

- **For units with several thermodynamic circuits,** only the first circuit is equipped with a tandem. This allows the thermal power supplied to be staggered according to the needs of the application, for less consumption and more comfort.
- **Communicating electronic expansion valves** combining increased optimisation of the exchangers and fast stabilisation of the thermodynamic system.
- **Reinforced thermal exchangers** made with aluminium fins and copper pipes with double helical grooving for better thermal exchange. External exchangers designed for delayed frosting and quick and efficient defrosting.

  Vinyl coating available on request.
- **Refrigeration circuits** compliant with the European directive on pressure equipment (PED 2014/68/EU).
- **R32 refrigerant**.
- **Tandem circuits** to stage the supplied power and save energy during operation in part load. Operation in part load considerably reduces the number of defrost cycles and their duration.
- **The refrigeration circuit is fitted with isolation valves** at the terminals of the compressor unit. During an intervention on the compressor group, these isolation valves make it possible to facilitate repair and maintenance of the refrigeration circuit.
- **Anti-acid filter drier.**
- **Cycle reversal valve**.
- **Optimised defrosting** thanks to the new design of the external section (**optimised for ecodesign**).
- **Leak detection:** The ULTI+ R32 CC+ is equipped with a leak detector in standard version. This detector allows to put the unit in safety stop in case of leakage of R32.

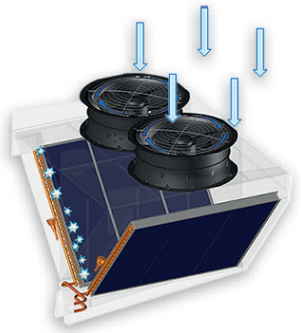
  The leak detection also reduces the frequency of periodic visits to your equipment.

Detailed components

Optimised defrosting:

Defrosting principle:

- ✓ The condensation of humidity produces frost on the coil.
- ✓ The concerned propeller fan stops operating (simultaneous defrosting cycles are banned).
- ✓ The refrigeration system 4-way valve reverses: during defrosting, the coil operates as a condenser.
- ✓ The coil is dried.
- ✓ The other refrigeration circuit continues to operate normally.



Additional heating equipment - CC+ module:

- **Premix type condensing boiler** compliant with the 2009/142/EC directive on gas appliances.
- **Highly modular capacity** with 1 to 4 boilers of 63 kW HHV.
- **Hot water coil** in the supply air stream.
- **Circulation pump.**
- **Expansion tank.**

This equipment ensures exchanges between two separated circuits:

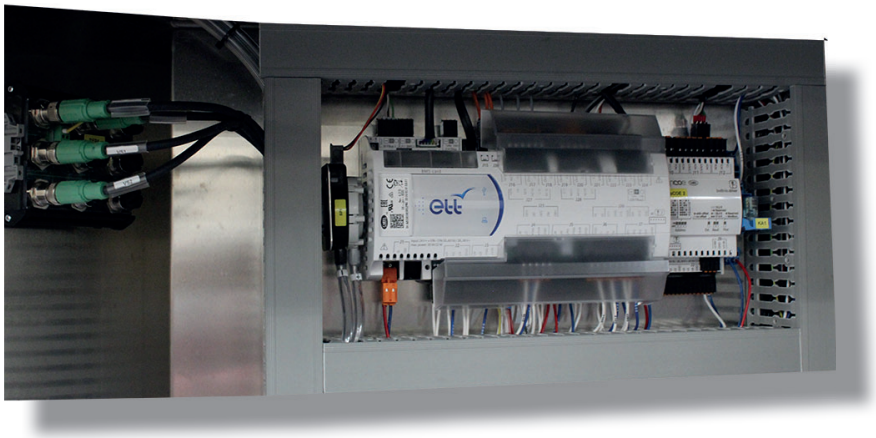
- **Smoke circuit** with concentric flue to separate smoke evacuation from air supply, except for applications < -20°C (supplied by ETT, to be mounted by the installer).
- **Condensing boiler** with 98% to 108% LHV efficiency.
- Antacid syphons are used to treat condensate.
- **Control board** to constantly monitor boiler securities.
- **Differential pressure switch** to control boiler operation.
- **Water outlet/inlet temperature probes**.
- **Water flow regulator.**
- **One controller** for all boilers' electronic cards to modulate capacity from 30% to 100%.

  The module controller and the rooftop unit controller are wired in order to adjust the air flow rate and capacity according to requirements.

Detailed components

Electrical assembly in a sealed compartment (IP44) :

- **Electrical board** compliant with French standards NF EN C 15-100 and NF EN 60204-01, including:
  - ✓ An ETT controller with an optional Touch Screen remote display or by native modbus BMS.
  - ✓ **Power switch** with lockable external handle for full load cut-off. Connection using standard universal cable. Optional copper/aluminium connection boxes.
  - ✓ **400-230-24 volts transformer** for regulation and control circuits.
  - ✓ **Fault synthesis** with pending dry contact on terminal.
  - ✓ **Numbered terminal blocks** with disconnecting terminals for remote controls and transfers.
  - ✓ **Terminal block** for compressors load shedding.
  - ✓ **Internal wiring** with numbered ferrules at both extremities
  - ✓ **Ik3 breaking capacity** of basis 10 kA.
  - ✓ **PHASE CHECKER**
  - ✓ **All components protected** by circuit breakers.
  - ✓ **LV distribution rated voltage** compliant with French standards, i.e. rated voltage of 230/400V. French standards also set minimum and maximum acceptable values at the user supply point (average value for 10 lm) within a -10%/+10% range from rated values. They also define the maximum acceptable value of the voltage drop gradient to 2 %. The voltage drop gradient represents the additional voltage drop created on a network point if 1 KW single-phase is added on this point.



Advanced control assembly:

- **Temperature control with 2 setpoints for Cooling/Heating mode according to 2002/91/EC Directive: reactivity, accuracy and anticipation.**

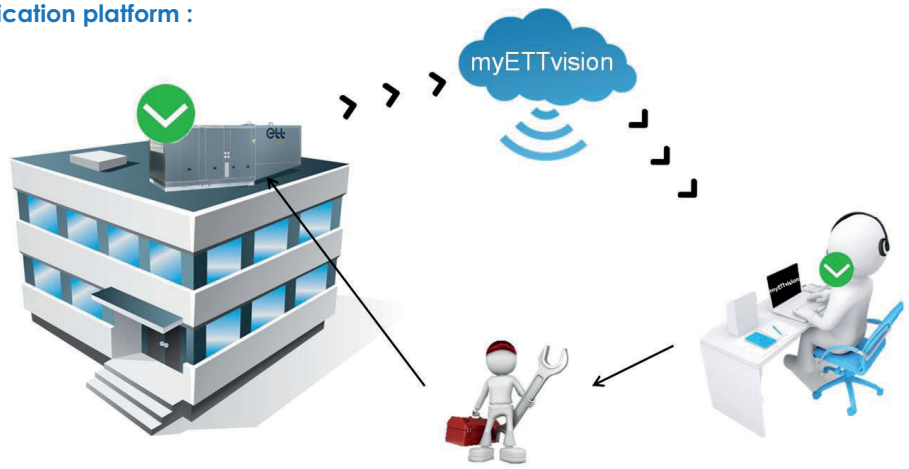
  Economy mode or Comfort mode controls available.
- **Filters fouling analogue control** (FFAC), fouling measurement and indication on the controller enabling preventive filter replacement for optimum air quality and reduced consumption.
- **Real time control of propeller fan rotation speed** depending on operating mode, outside temperature and thermodynamic capacity, for optimum acoustic performance and energy savings.
- **VDP function (power/flow rate variation)**, as an option, to allow inside air flow rate adjustment according to thermodynamic capacity.
- **Analogue air flow controller (AFC)** to measure and display supply air fans flow rate on the controller, with optional flow rate auto-adjustment for filter fouling compensation.
- **Air quality control with CO_2 probe** to optimise fresh air quantities and reduce energy consumption.
- **Free Cooling function**: cooling with outside air, delaying thermodynamic operation for significant energy savings.
- **Free Cooling banning function**, as an option, to reduce latent contribution in Free Cooling phase using inside and outside specific humidity comparison.
- Indoor humidity control, optional, with or without energy recovery.

Detailed components

- **Year-round kit function**, as an option, for Cooling mode operation at outside temperatures lower than 15°C.
- **Electrical energy metering**, with distribution of power consumption according to operating modes.
- **Monitoring, diagnostic and security and fault management** (freezestat, smoke detector, fire thermostat, HP switch, compressor MAP monitoring…), with written fault history.
- **Refrigerant leak detection aid**.
- **myETTvision remote communication platform allowing access to parameter setting, operation and energy monitoring, access to the faults of your machine park.**

myETTvision:

ETT remote communication platform :



ULTI+ R32 CC+ operational advice

OPERATION: COST, PERFORMANCE AND GUARANTEE

Equipment installation and optimisation have a major impact on **units total cost.**

They affect 3 levers:

- **Total cost**
  - ✓ Purchase and installation costs (20 to 25%)
  - ✓ Operating and maintenance costs (75 to 80%)
- **Installation efficiency**
  - ✓ **Operating cost**
  - ✓ **Users' comfort**
  - ✓ **Durability**
  - ✓ **Availability**
- **Conformity**
  - ✓ **Regulations**
  - ✓ Manufacturer's guarantee

Equipment operation and maintenance must ensure regulatory compliance, starting with commissioning. Operating instructions aim at optimising unit performance and settings. Also, the validity of the guarantee is conditional upon strict compliance with these instructions.

Periodic checks must include, at least:

- **Technical features control and setting** (safety devices, ventilation, refrigeration circuits, etc.)
- **Control adjustment** (setpoints, operating schedule, advanced parameters, etc.)
- **Technical and regulatory checks:**
  - Leakage checking, once or twice a year
  - Commissioning, periodic checks and periodic requalification (pressure equipment monitoring)
  - Filters replacement, 2 to 4 times a year depending on the type of filters and installation environment
  - Sensor element control and replacement for humidity probes, CO_2 probes and smoke detectors
- Related equipment control and maintenance (diffusion networks, probes condition, etc.)

ETT services allow **trouble-free operation** of your equipment and guarantee **optimum performance** and **regulatory compliance** of the installation.

Main options

Frame - Casing	▪ Aluminium double skin in internal section ▪ Motorised external damper for supply air, except downwards (2006/42/EC Directive)
Acoustics	▪ Low Noise EC supply air fans ▪ Compressors acoustic jackets
Air handling	▪ Operation with all recirculated air (excluding Public Buildings) ▪ Operation with all fresh air ▪ Actuating smoke detector with battery back-up ▪ Epoxy coating for supply air fans ▪ Analogue air flow controller (AFC) with supply air fans flow rate auto-adjustment ▪ Pressure gauge for supply air filters ▪ Coarse 65% (G4) refillable 98mm ISO Coarse 65% (G4) filters with analogue sensor ▪ ISO ePM10 50% (M5) 98mm supply air filters with analogue probe ▪ Double filters ISO Coarse 65% (G4) + ISO ePM1 55% (F7) or ISO ePM1 80% (F9) (48 + 48mm) on supply with analog probe ▪ ISO ePM1 55% (F7) 98mm supply air filters with analogue probe ▪ ISO ePM1 80% (F9) 98mm supply air filters with analogue probe ▪ Fresh air cowl extension ▪ Defrost damper
Thermodynamics	▪ Cooling only operating mode (non-reversible unit) ▪ Compressor MAP monitoring ▪ Vinyl coating on thermodynamic coils ▪ Refrigerant leak detection aid ▪ HP and LP pressure gauge
Auxiliaries	▪ Recovery hot water coil with analogue frost thermostat (if CC+ module connected as auxiliary) ▪ Auxiliary hot water coil with analogue frost thermostat (if CC+ module connected for preheating) ▪ Progressive 3-way valve for hot water coil ▪ Stop valve on outlet + TA regulating valve on inlet for hot water coil ▪ Auxiliary 2-sequential stage electric heaters + Load shedding using dry contact(if CC+ module connected in preheating mode)
Electricity	▪ Total electrical energy metering according to 2002/91/EC ▪ Aluminium/Copper connection terminal blocks (Mandatory for aluminium supply all cable) ▪ 230V/16 A single-phase socket in the technical section (separate power supply to be provided by the installer) ▪ IT earthing system compatibility ▪ Cable protective cowl for outside power supply (to be mounted by the installer)
Installation	▪ Aluminium adjustable connection roof curb ▪ Aluminium adaptation connection roof curb ▪ Aluminium adjustable ventilated roof curb ▪ Aluminium ventilated adaptation roof curb ▪ 200, 400 or 600mm aluminium feet

Main options

Control	▪ Operation in year-round mode (compressor authorisation in Cooling mode with outside temp. < +15°C) ▪ Control function in Comfort mode (setpoint temperatures control by PID) ▪ Free Cooling banning based on specific humidity comparison ▪ VDP operation (power/flow rate variation) ▪ HPE+ operation (High Energy Performance) ▪ Dehumidification function level 1 (without heating capacity recovery) ▪ Dehumidification function level 2 (with heating capacity recovery & on/off refrigerating 3WV) ▪ Average room temperature (4 probes) ▪ Minimum fresh air slaving using turret contacts (3 maximum)
Gas	▪ Connectable gas metering (delivered dismounted - external mounting by the installer). ▪ Mounted 300-20 mbar gas expansion valve (different according to the types of gas) ▪ Condensing boilers used for preheating ▪ Condensing boilers used as auxiliaries
Communication	▪ myETTvision ▪ ETT TouchScreen remote display ▪ CCAD remote display ▪ Native Modbus RS485 ▪ Modbus IP ▪ BacNet IP ▪ LonWorks
Guarantee	▪ 6 to 10 years guarantee expansion

Technical features

	DESCRIPTION	Unit	045	050
VENTILATION	**FLOW RATES**			
	Rated air flow rate	**m³/h**	8,500	8,500
	Minimum air flow rate	**m³/h**	7,000	8,000
	Maximum air flow rate	**m³/h**	8,500	8,500
	ACOUSTICS(1)			
	Sound power level on supply air	**dB(A)**	79	78
	Outside sound power level	**dB(A)**	81	83
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	**dB(A)**	53	55
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C** (1)			
	Net cooling capacity	**kW**	40.1	43.1
	Net EER	**kW/kW**	3.02	3.01
	SEASONAL EFFICIENCY (2)			
	Design net cooling capacity	**kW**	40.1	43.1
	SEER	**kW/kW**	4.82	4.58
	ηs,C	**%**	190	180
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C** (1)			
	Net heating capacity	**kW**	42.5	46.4
	Net COP	**kW/kW**	3.93	3.81
	RATED PERFORMANCES AT -7°C (3)			
	Net heating capacity	**kW**	29.0	32.7
	Net COP	**kW/kW**	3.13	3.08
	SEASONAL EFFICIENCY (2)			
	Design net heating capacity	**kW**	37.2	40.8
	SCOP	**kW/kW**	3.94	3.90
	ηs,H	**%**	155	153
GAS GENERATOR	LHV heating capacity	**kW**	63	63
	AS AUXILIARY (8)			
	Rated heating capacity - Exchanger inlet +20°C	**kW**	63	63
	FOR PREHEATING (8)			
	Rated heating capacity - Exchanger inlet -10°C	**kW**	63	63
	Rated heating capacity - Exchanger inlet +0°C	**kW**	63	63
GENERAL	**ELECTRICAL DATA**			
	Total installed electrical power (4)	**kW**	22.5	23.9
	Total installed electrical intensity (4)	**A**	36.6	38.9
	Starting current	**A**	124.7	125.8
	Maximum absorbed electrical power (5)	**kW**	15.2	16.3
	REFRIGERATION CIRCUIT(S)			
	Power stages	**-**	2	2
	OPERATING LIMITS IN COOLING MODE			
	Maximum outside temperature(6)	**°C**	+51	+ 50
	Minimum outside temperature (6)	**°C**	+15	
	Minimum internal coil inlet temperature	**°C**	+18	
	OPERATING LIMITS IN HEATING MODE			
	Minimum outside temperature	**°C**	-15	
	Minimum internal coil inlet temperature	**°C**	+12	
	WEIGHT			
	Unit weight without options (7)	**kg**	695	698
	Connection roof curb weight	**kg**	73	
	Standard ventilated roof curb weight	**kg**	102	

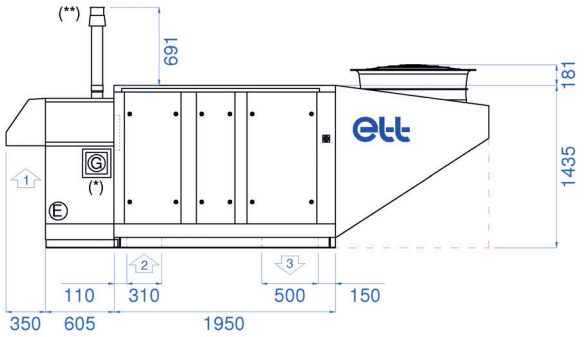
(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

(5) Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

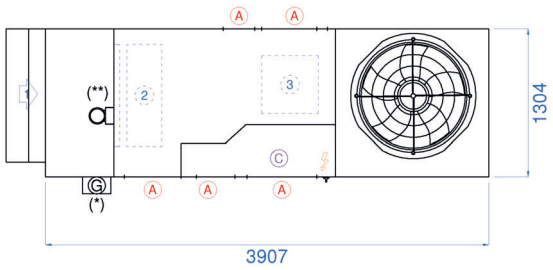
Dimensions and connections

SUPPLY AIR *below*

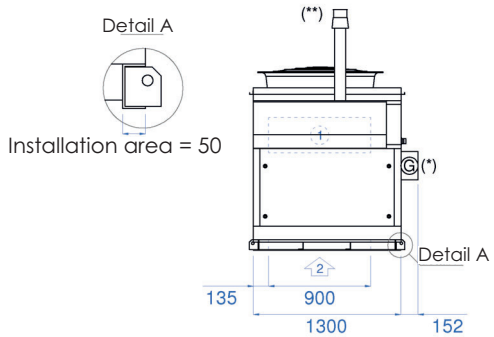
Front view:



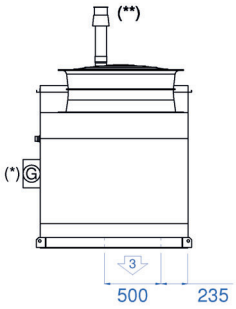
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

	Length	Width (1)	Height
Casing dimensions	3,907 mm	1,304 mm	1,435 mm

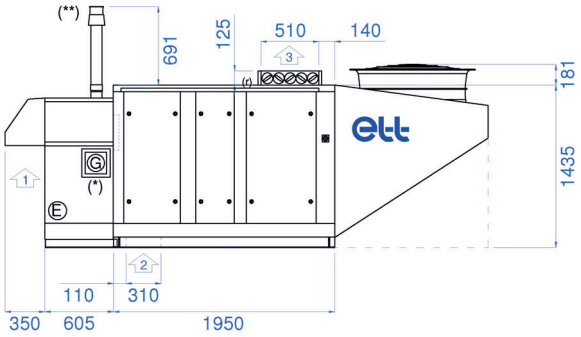
(1) Return air on side: +125 mm

Nota: Fresh air cowls shall be fitted by the installer.

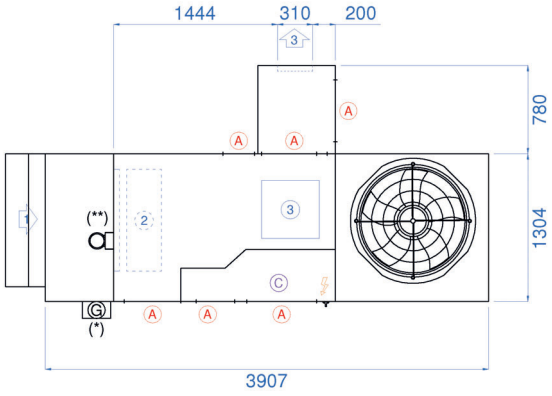
Dimensions and connections

SUPPLY AIR *on top*

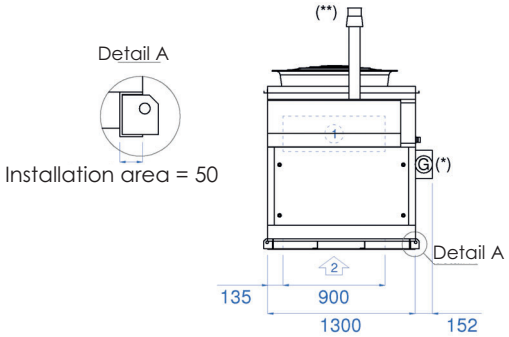
Front view:



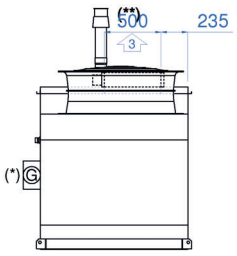
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

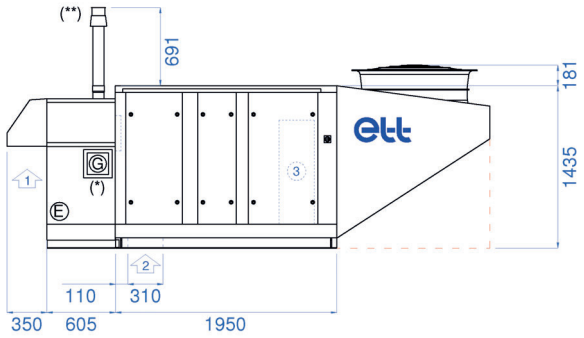
	Length	Width [1]	Height
Casing dimensions	3,907 mm	1,304 mm	1,435 mm

(1) Return air on side: +125 mm

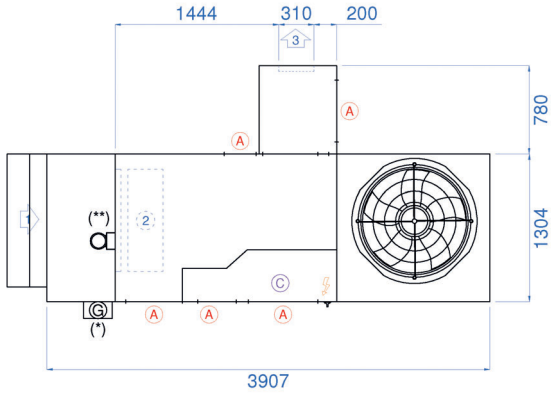
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on* side

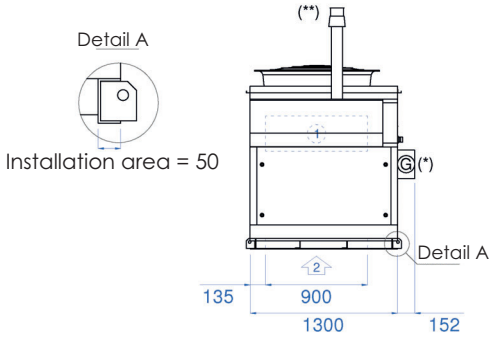
Front view:



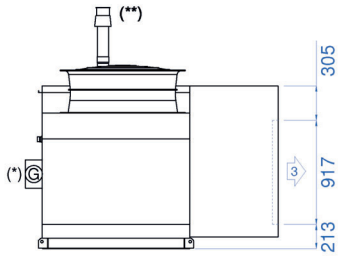
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

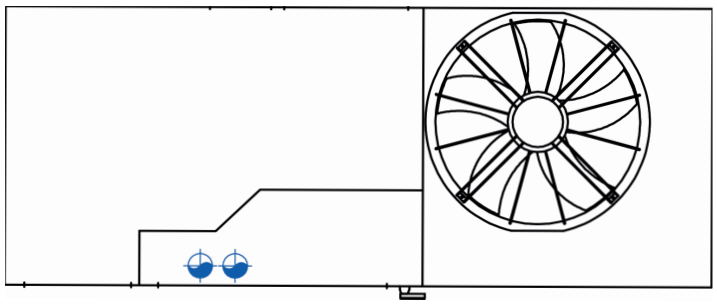
	Length	Width (1)	Height
Casing dimensions	3,907 mm	1,304 mm	1,435 mm

(1) Return air on side: +125 mm

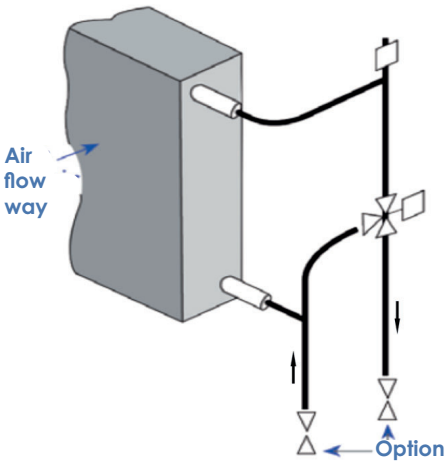
Nota: - Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



		Unit	045	050
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	113.2	113.2
	Water flow rate	m³/h	5.0	5.0
	Exchanger pressure drop	mWC	1.8	1.8
	Exchanger and 3WV pressure drop (1)	mWC	2.8	2.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.8	3.8
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	95.4	95.4
	Water flow rate	m³/h	4.2	4.2
	Exchanger pressure drop	mWC	1.4	1.4
	Exchanger and 3WV pressure drop (1)	mWC	2.0	2.0
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.7	2.7
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	96.2	96.2
	Water flow rate	m³/h	4.2	4.2
	Exchanger pressure drop	mWC	1.4	1.4
	Exchanger and 3WV pressure drop (1)	mWC	2.0	2.0
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.7	2.7
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	78.4	78.4
	Water flow rate	m³/h	3.5	3.5
	Exchanger pressure drop	mWC	0.9	0.9
	Exchanger and 3WV pressure drop (1)	mWC	1.4	1.4
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	1.9	1.9

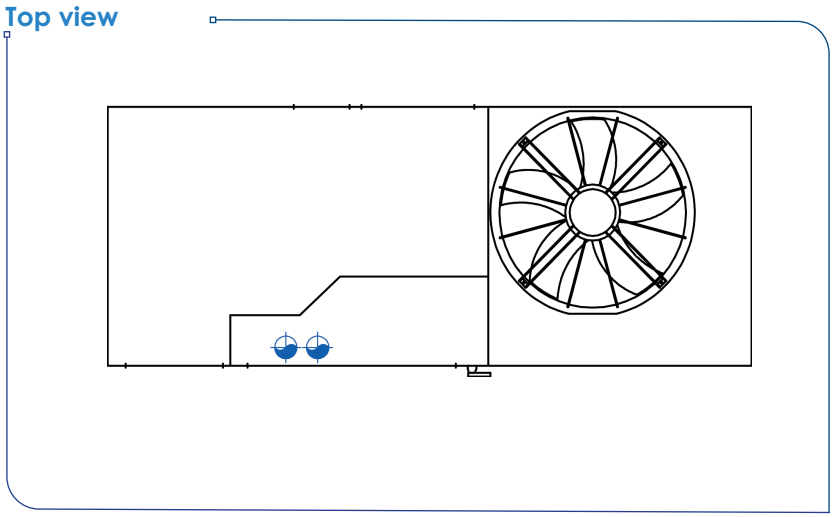
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

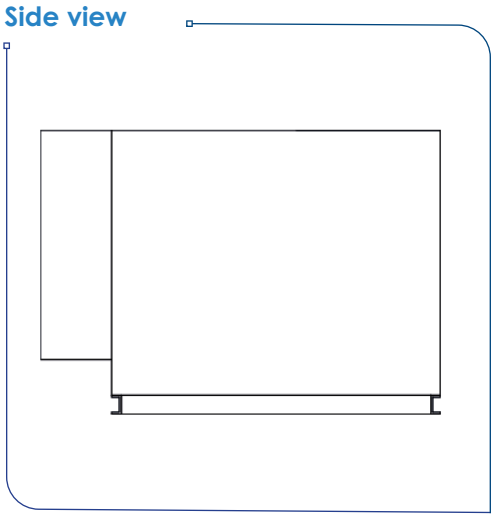
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	045	050
35/30°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	35.5	35.5
	Water flow rate	m³/h	6.2	6.2
	Exchanger pressure drop	mWC	3.0	3.0
	Exchanger and 3WV pressure drop (1)	mWC	4.5	4.5
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	6.0	6.0
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	18.6	18.6
	Water flow rate	m³/h	3.2	3.2
	Exchanger pressure drop	mWC	0.9	0.9
	Exchanger and 3WV pressure drop (1)	mWC	1.3	1.3
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	1.7	1.7

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

Technical features

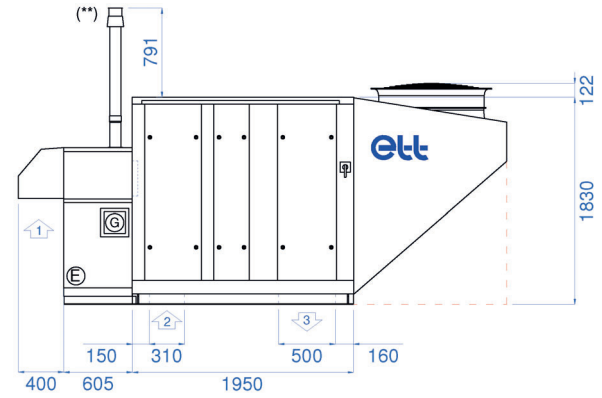
	DESCRIPTION	Unit	045	050	055	065		075	
VENTILATION	**FLOW RATES**								
	Rated air flow rate	**m³/h**	9,500	10,500	11,500	13,000		15,000	
	Minimum air flow rate	**m³/h**	6,000	6,500	7,500	9,500		12,500	
	Maximum air flow rate	**m³/h**	15,000	15,000	15,000	15,000		15,000	
	ACOUSTICS(1)								
	Sound power level on supply air	**dB(A)**	75	78	79	82		87	
	Outside sound power level	**dB(A)**	77	77	79	82		89	
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	**dB(A)**	49	49	51	54		61	
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C** (1)								
	Net cooling capacity	**kW**	43.2	46.5	52.0	59.5		67.0	
	Net EER	**kW/kW**	3.40	3.31	3.24	3.17		3.13	
	SEASONAL EFFICIENCY (2)								
	Design net cooling capacity	**kW**	43.2	46.5	52.0	59.5		67.0	
	SEER	**kW/kW**	5.31	4.79	4.71	4.60		4.71	
	ηs,C	**%**	210	189	185	181		185	
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C** (1)								
	Net heating capacity	**kW**	43.9	47.5	53.9	61.3		69.3	
	Net COP	**kW/kW**	4.25	4.29	4.17	4.06		3.92	
	RATED PERFORMANCES AT -7°C (3)								
	Net heating capacity	**kW**	30.0	33.0	37.2	42.9		48.2	
	Net COP	**kW/kW**	3.39	3.35	3.37	3.25		3.11	
	SEASONAL EFFICIENCY (2)								
	Design net heating capacity	**kW**	40.0	42.7	47.5	54.0		60.9	
	SCOP	**kW/kW**	4.33	4.28	4.18	3.99		3.82	
	ηs,H	**%**	170	168	164	157		150	
GAS GENERATOR	LHV heating capacity	**kW**	63	63	63	63	126	63	126
	AS AUXILIARY (8)								
	Rated heating capacity - Exchanger inlet +20°C	**kW**	63	63	63	63	126	63	126
	FOR PREHEATING (8)								
	Rated heating capacity - Exchanger inlet -10°C	**kW**	63	63	63	63	126	63	126
	Rated heating capacity - Exchanger inlet +0°C	**kW**	63	63	63	63	126	63	126
GENERAL	**ELECTRICAL DATA**								
	Total installed electrical power (4)	**kW**	25.3	26.7	30.2	33.7		35.5	
	Total installed electrical intensity (4)	**A**	40.9	43.2	49.0	54.9		56.7	
	Starting current	**A**	129.0	130.1	160.9	175.2		174.0	
	Maximum absorbed electrical power (5)	**kW**	15.3	16.8	19.0	22.0		24.9	
	REFRIGERATION CIRCUIT(S)								
	Power stages	**-**	2	2	2	2		2	
	OPERATING LIMITS IN COOLING MODE								
	Maximum outside temperature(6)	**°C**	+50	+ 49	+ 51	+ 50		+ 48	
	Minimum outside temperature (6)	**°C**			+15				
	Minimum internal coil inlet temperature	**°C**			+18				
	OPERATING LIMITS IN HEATING MODE								
	Minimum outside temperature	**°C**			-15				
	Minimum internal coil inlet temperature	**°C**			+12				
	WEIGHT								
	Unit weight without options (7)	**kg**	891	911	938	975		1,063	
	Connection roof curb weight	**kg**			80				
	Standard ventilated roof curb weight	**kg**			112				

(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

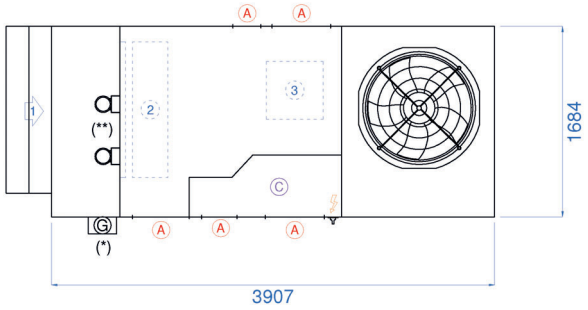
(5) Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

SUPPLY AIR *below*

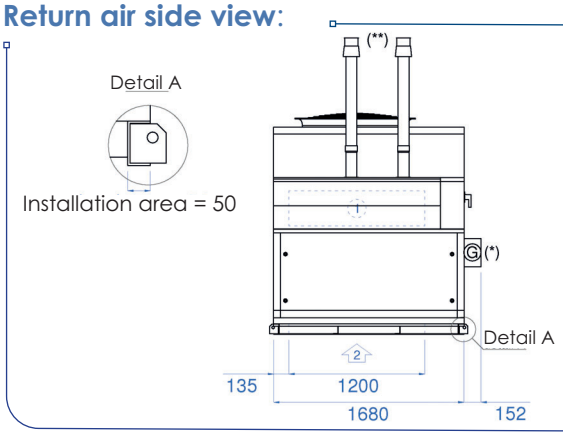
Front view:



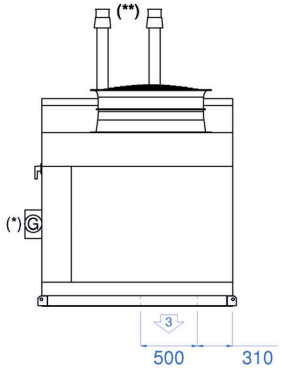
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

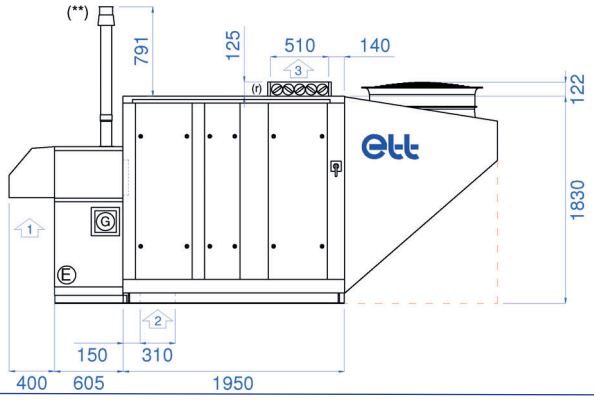
	Length	Width [1]	Height
Casing dimensions	3,907 mm	1,684 mm	1,830 mm

(1) Return air on side: +125 mm

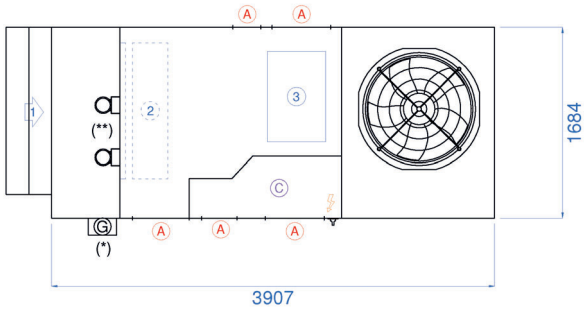
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on top*

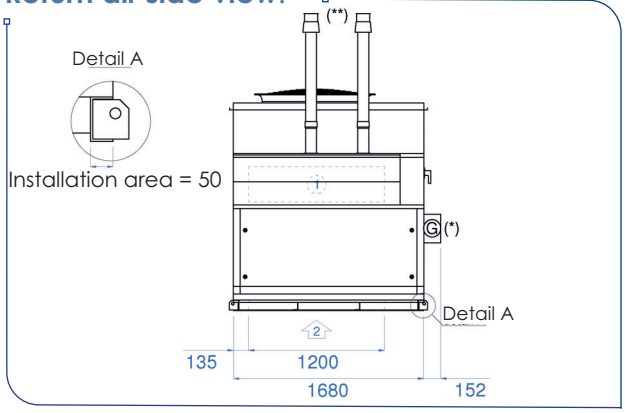
Front view:



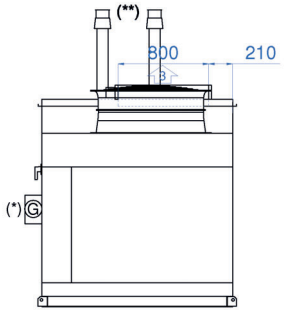
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

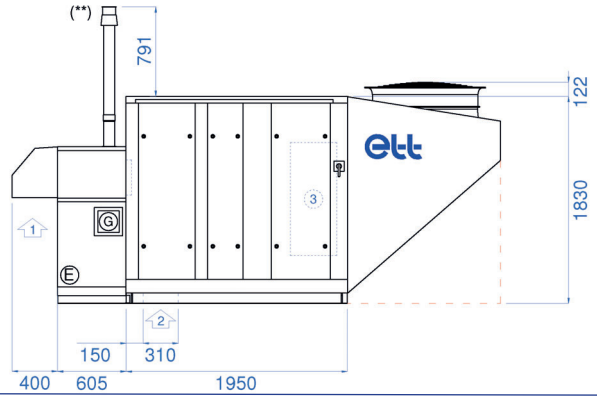
	Length	Width (1)	Height
Casing dimensions	3,907 mm	1,684 mm	1,830 mm

(1) Return air on side: +125 mm

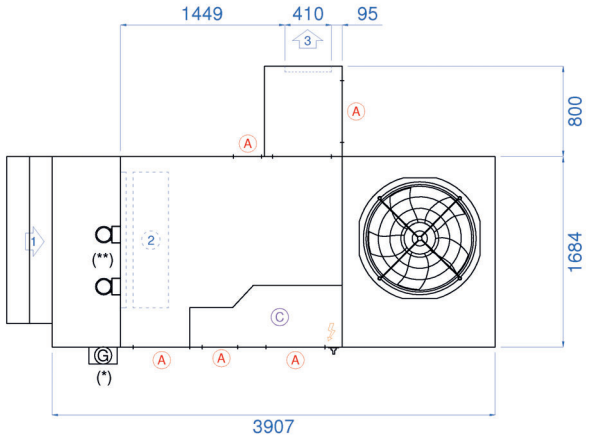
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on side*

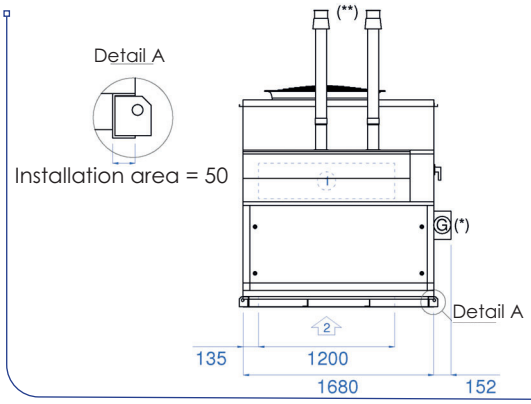
Front view:



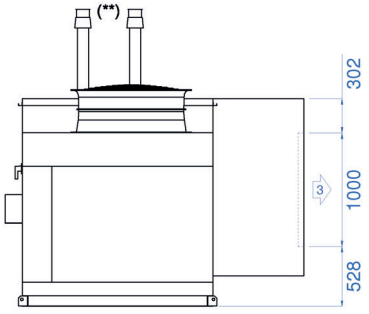
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

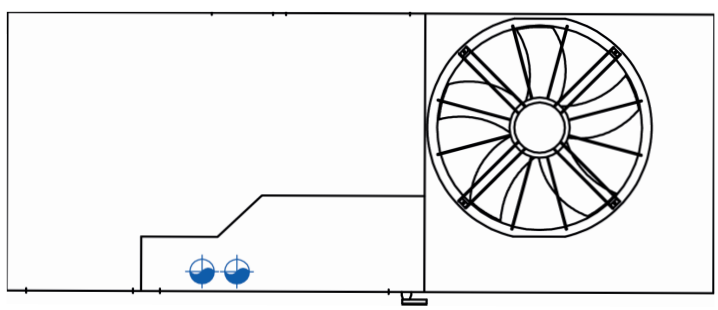
	Length	Width (1)	Height
Casing dimensions	3,907 mm	1,684 mm	1,830 mm

(1) Return air on side: +125 mm

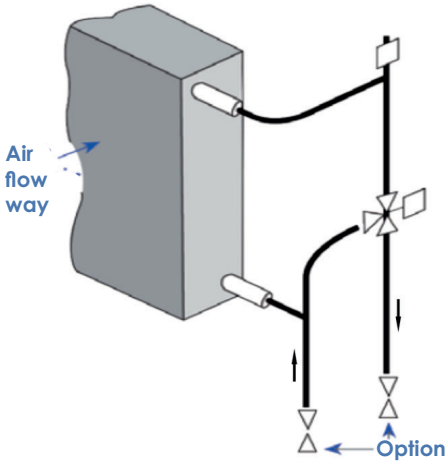
Nota: - Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



CAPACITIES

		Unit	045	050	055	065	075
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	153.2	163.7	173.6	187.7	205.1
	Water flow rate	m³/h	6.8	7.3	7.7	8.3	9.1
	Exchanger pressure drop	mWC	2.4	2.7	3.0	3.5	4.1
	Exchanger and 3WV pressure drop (1)	mWC	4.1	4.7	5.2	6.1	7.2
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.9	6.7	7.5	8.8	10.4
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	130.1	138.8	147.2	159.1	173.6
	Water flow rate	m³/h	5.8	6.1	6.5	7.0	7.7
	Exchanger pressure drop	mWC	1.8	2.0	2.2	2.6	3.0
	Exchanger and 3WV pressure drop (1)	mWC	3.0	3.4	3.8	4.5	5.3
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	4.3	4.9	5.5	6.4	7.6
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	130.8	139.7	148.0	160.0	174.7
	Water flow rate	m³/h	5.8	6.2	6.6	7.1	7.7
	Exchanger pressure drop	mWC	1.8	2.0	2.2	2.6	3.0
	Exchanger and 3WV pressure drop (1)	mWC	3.0	3.5	3.9	4.5	5.3
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	4.4	4.9	5.5	6.4	7.6
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	107.7	114.8	121.6	131.3	143.1
	Water flow rate	m³/h	4.8	5.1	5.4	5.8	6.3
	Exchanger pressure drop	mWC	1.3	1.4	1.6	1.8	2.1
	Exchanger and 3WV pressure drop (1)	mWC	2.1	2.4	2.7	3.1	3.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.0	3.4	3.8	4.4	5.2

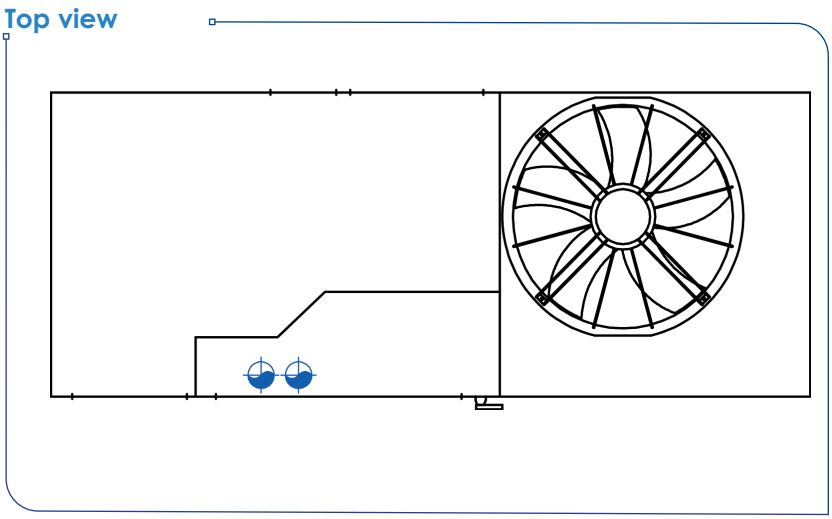
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

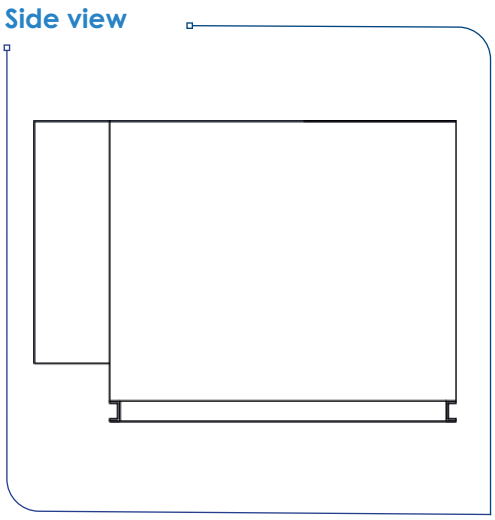
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	045	050	055	065	075
35/30°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	48.2	51.5	54.7	59.1	64.6
	Water flow rate	m³/h	8.4	8.9	9.5	10.2	11.2
	Exchanger pressure drop	mWC	4.0	4.5	5.0	5.8	6.8
	Exchanger and 3WV pressure drop (1)	mWC	6.7	7.6	8.5	9.8	11.6
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	9.4	10.7	12.0	14.0	16.6
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	25.9	27.6	29.3	31.5	34.3
	Water flow rate	m³/h	4.5	4.8	5.1	5.5	6.0
	Exchanger pressure drop	mWC	1.3	1.4	1.6	1.8	2.1
	Exchanger and 3WV pressure drop (1)	mWC	2.1	2.3	2.6	3.0	3.5
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.9	3.2	3.6	4.2	4.9

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

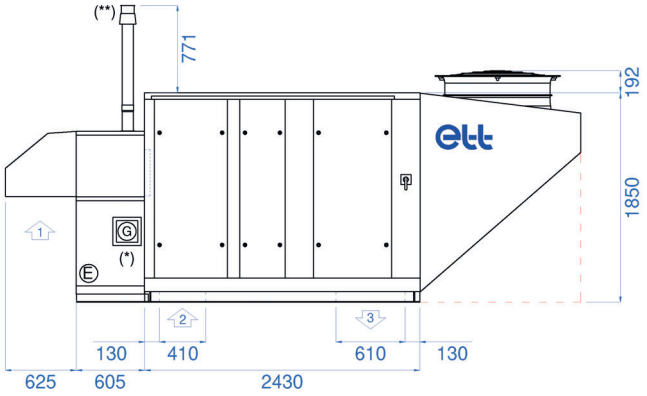
	DESCRIPTION	Unit	050	055	065	075	080	090	100
VENTILATION	**FLOW RATES**								
	Rated air flow rate	**m³/h**	11,000	12,500	14,000	16,000	18,000	20,000	20,000
	Minimum air flow rate	**m³/h**	6,000	7,000	8,000	11,000	13,000	16,000	19,000
	Maximum air flow rate	**m³/h**	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	ACOUSTICS(1)								
	Sound power level on supply air	**dB(A)**	74	76	77	80	83	86	86
	Outside sound power level	**dB(A)**	77	79	83	85	83	89	90
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	**dB(A)**	49	51	55	57	55	61	62
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C** (1)								
	Net cooling capacity	**kW**	48.8	54.9	62.8	69.9	77.6	87.0	92,1
	Net EER	**kW/kW**	3.54	3.44	3.35	3.25	3.15	3.01	3.01
	SEASONAL EFFICIENCY (2)								
	Design net cooling capacity	**kW**	48.8	54.9	62.8	69.9	77.6	87.0	92.1
	SEER	**kW/kW**	5.31	5.03	4.91	4.99	4.81	4.96	4.50
	ηs,C	**%**	209	198	193	197	189	195	177
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C** (1)								
	Net heating capacity	**kW**	48.1	54.3	63.2	71.3	79.9	91.3	97.4
	Net COP	**kW/kW**	4.73	4.65	4.49	4.43	4.26	3.90	3.94
	RATED PERFORMANCES AT -7°C (3)								
	Net heating capacity	**kW**	33.0	37.3	43.4	48.6	54.9	63.1	66.8
	Net COP	**kW/kW**	3.72	3.66	3.53	3.42	3.31	3.05	3.08
	SEASONAL EFFICIENCY (2)								
	Design net heating capacity	**kW**	44.0	48.0	55,5	62,3	69,6	79,0	83,5
	SCOP	**kW/kW**	4.68	4.50	4.34	4.34	4.05	3.90	3.78
	ηs,H	**%**	184	177	171	171	159	153	148
GAS GENERATOR	LHV heating capacity	**kW**	63	63 126	63 126	63 126	63 126	63 126	63 126
	AS AUXILIARY (8)								
	Rated heating capacity - Exchanger inlet +20°C	**kW**	63	63 126	63 126	63 126	63 126	63 126	63 126
	FOR PREHEATING (8)								
	Rated heating capacity - Exchanger inlet -10°C	**kW**	63	63 126	63 126	63 126	63 126	63 126	63 126
	Rated heating capacity - Exchanger inlet +0°C	**kW**	63	63 126	63 126	63 126	63 126	63 126	63 126
GENERAL	**ELECTRICAL DATA**								
	Total installed electrical power (4)	**kW**	25.6	28.2	32.6	34.5	39.4	47.0	45.8
	Total installed electrical intensity (4)	**A**	41.6	46.0	53.3	55.1	63.2	78.6	74.2
	Starting current	**A**	128.5	158.0	173.6	172.4	184.9	244.0	218.7
	Maximum absorbed electrical power (5)	**kW**	16.7	19.1	22.2	25.2	28.6	33.8	35.0
	REFRIGERATION CIRCUIT(S)								
	Power stages	**-**	2	2	2	2	2	2	2
	OPERATING LIMITS IN COOLING MODE								
	Maximum outside temperature(6)	**°C**	+ 50	+ 48	+50	+ 49	+ 50	+ 49	+ 48
	Minimum outside temperature (6)	**°C**				+ 15			
	Minimum internal coil inlet temperature	**°C**				+ 18			
	OPERATING LIMITS IN HEATING MODE								
	Minimum outside temperature	**°C**				- 15			
	Minimum internal coil inlet temperature	**°C**				+ 12			
	WEIGHT								
	Unit weight without options (7)	**kg**	1,088	1,138	1,145	1,212	1,240	1,253	1,290
	Connection roof curb weight	**kg**				104			
	Standard ventilated roof curb weight	**kg**				146			

(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

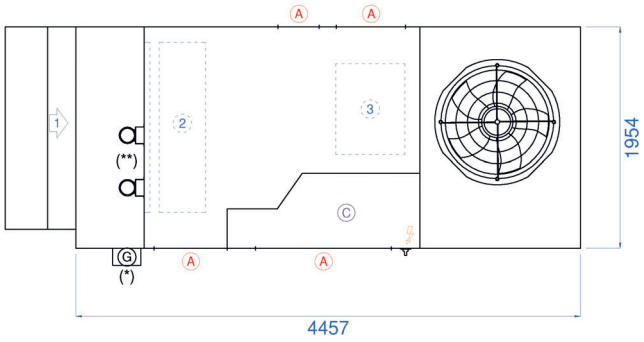
(5) Cooling mode: Inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

SUPPLY AIR *below*

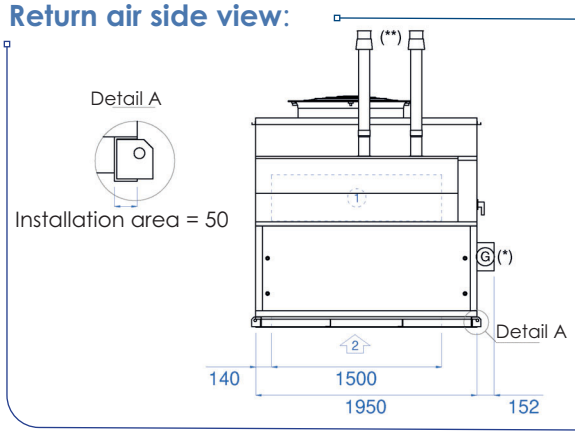
Front view:



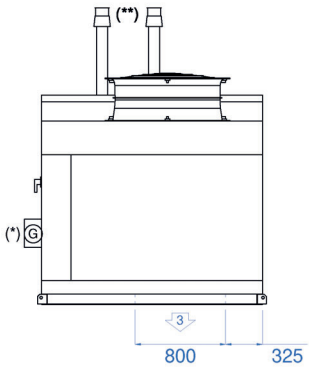
Top view:



Return air side view:



Supply air side view:



✱ Exhaust and fresh air must be separated by 8m minimum. **/!\ A SUPPRIMER**

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

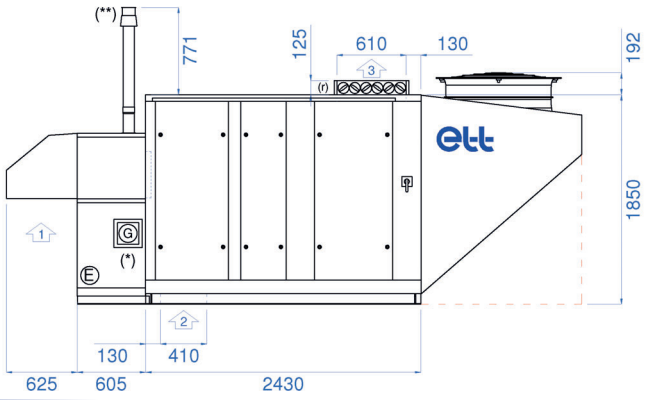
	Length	Width (1)	Height
Casing dimensions	4,457 mm	1,954 mm	1,850 mm

(1) Return air on side: +125 mm

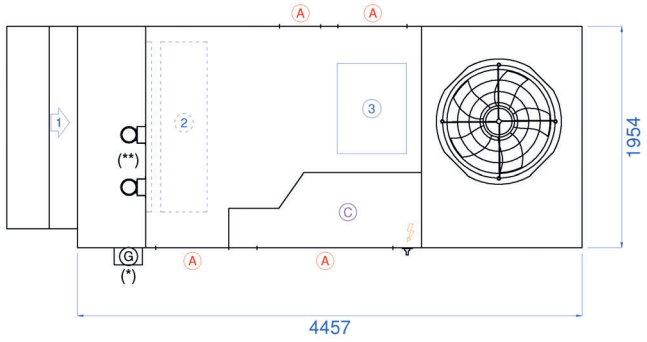
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on top*

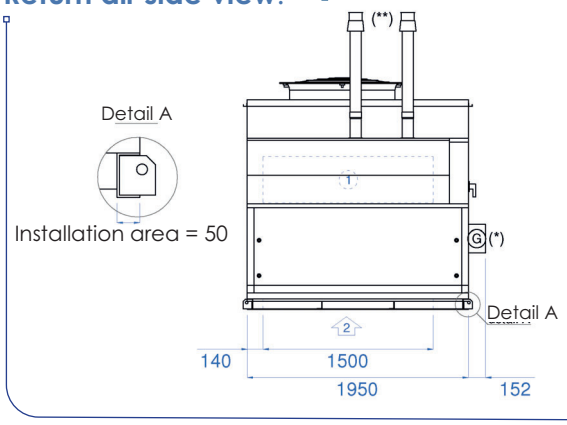
Front view:



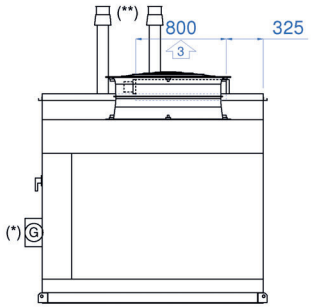
Top view:



Return air side view:



Supply air side view:



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③ Supply air
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--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

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(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

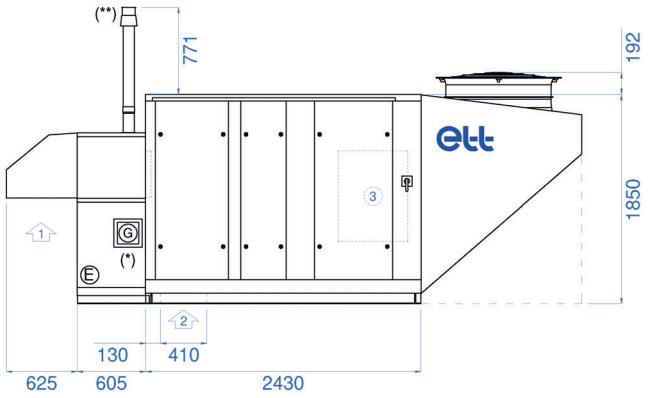
	Length	Width [1]	Height
Casing dimensions	4,457 mm	1,954 mm	1,850 mm

(1) Return air on side: +125 mm

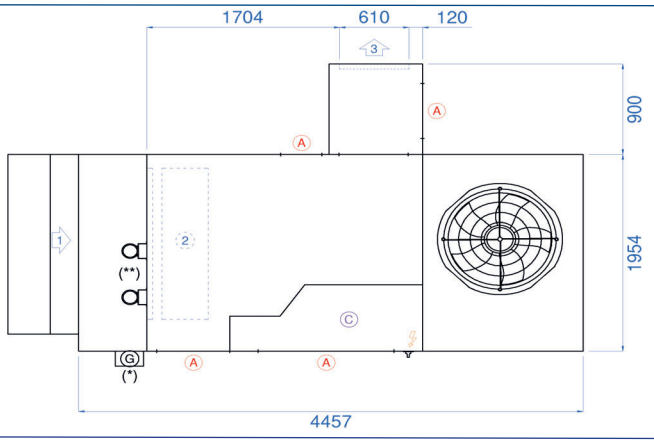
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on side*

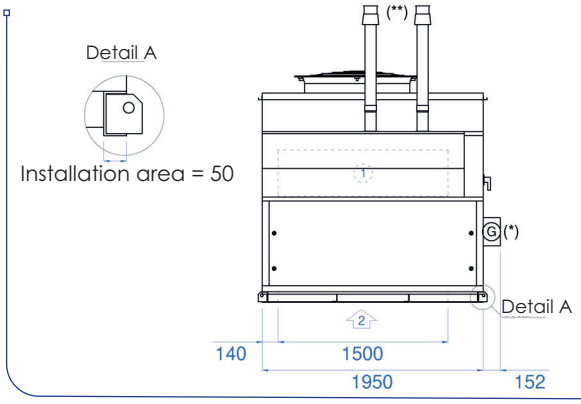
Front view:



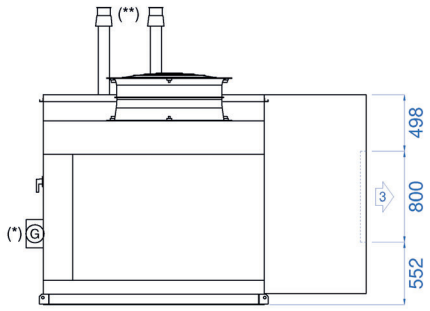
Top view:



Return air side view:



Supply air side view:



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Casing dimensions	4,457 mm	1,954 mm	1,850 mm

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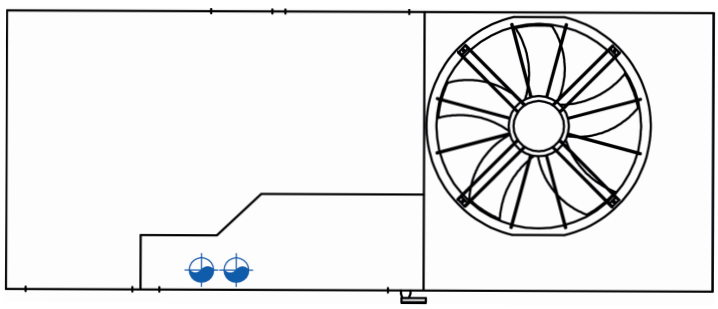
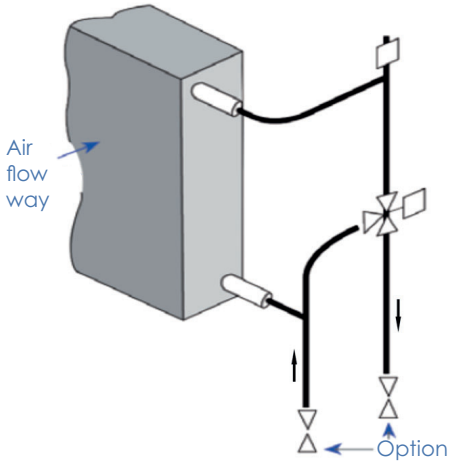
Nota:
- Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



CAPACITIES

		Unit	050	055	065	075	080	090	100
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	179.7	195.7	210.7	229.4	246.8	263.0	263.0
	Water flow rate	m³/h	8.0	8.7	9.4	10.2	11.0	11.7	11.7
	Exchanger pressure drop	mWC	0.9	1.1	1.2	1.4	1.6	1.9	1.9
	Exchanger and 3WV pressure drop (1)	mWC	1.8	2.1	2.5	2.9	3.3	3.8	3.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.8	3.3	3.8	4.5	5.2	5.9	5.9
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	151.6	164.9	177.4	193.0	207.4	220.9	220.9
	Water flow rate	m³/h	6.7	7.3	7.8	8.5	9.2	9.8	9.8
	Exchanger pressure drop	mWC	0.7	0.8	0.9	1.0	1.2	1.4	1.4
	Exchanger and 3WV pressure drop (1)	mWC	1.3	1.5	1.8	2.1	2.4	2.7	2.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.0	2.4	2.7	3.2	3.7	4.2	4.2
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	152.9	166.3	179.0	194.7	209.3	223.0	223.0
	Water flow rate	m³/h	6.7	7.3	7.9	8.6	9.2	9.8	9.8
	Exchanger pressure drop	mWC	0.7	0.8	0.9	1.1	1.2	1.4	1.4
	Exchanger and 3WV pressure drop (1)	mWC	1.3	1.5	1.8	2.1	2.4	2.7	2.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	2.0	2.4	2.8	3.3	3.8	4.3	4.3
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	124.7	135.5	145.5	158.1	170.0	180.9	180.9
	Water flow rate	m³/h	5.5	6.0	6.4	7.0	7.5	8.0	8.0
	Exchanger pressure drop	mWC	0.5	0.5	0.6	0.7	0.8	0.9	0.9
	Exchanger and 3WV pressure drop (1)	mWC	0.9	1.0	1.2	1.4	1.6	1.8	1.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	1.4	1.6	1.9	2.2	2.5	2.8	2.8

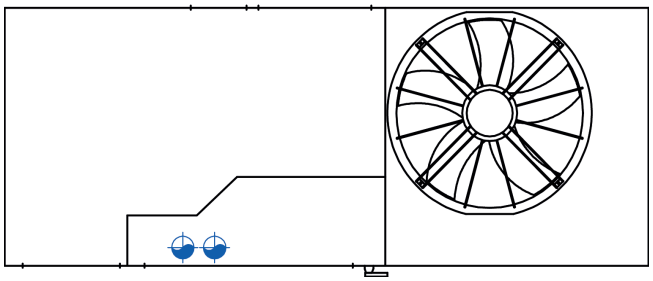
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

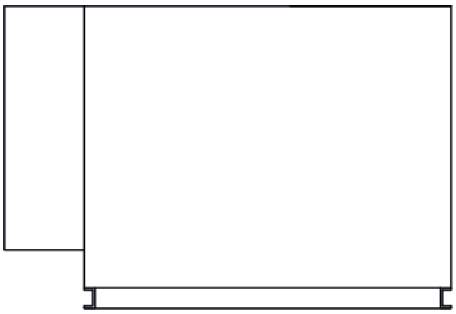
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	050	055	065	075	080	090	100
35/30°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	56.1	61.1	65.8	71.7	77.1	82.2	82.2
	Water flow rate	m³/h	9.7	10.6	11.4	12.4	13.4	14.2	14.2
	Exchanger pressure drop	mWC	1.5	1.7	2.0	2.3	2.7	3.0	3.0
	Exchanger and 3WV pressure drop (1)	mWC	2.8	3.3	3.9	4.5	5.2	5.9	5.9
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	4.4	5.2	6.0	7.0	8.1	9.2	9.2
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	29.5	32.0	34.4	37.3	40.0	42.5	42.5
	Water flow rate	m³/h	5.1	5.5	6.0	6.5	6.9	7.4	7.4
	Exchanger pressure drop	mWC	0.4	0.5	0.6	0.7	0.8	0.9	0.9
	Exchanger and 3WV pressure drop (1)	mWC	0.8	0.9	1.1	1.3	1.5	1.6	1.6
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	1.2	1.4	1.7	2.0	2.2	2.5	2.5

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

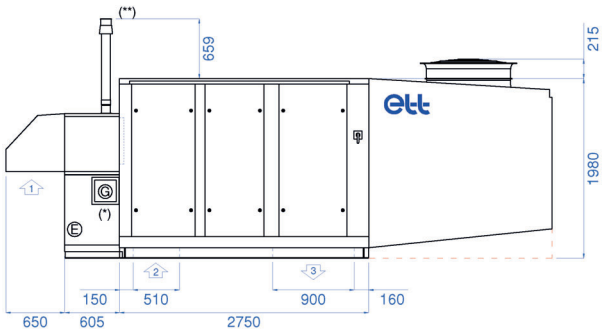
	DESCRIPTION	Unit	090	095	110	115	130	140
VENTILATION	**FLOW RATES**							
	Rated air flow rate	m^3/h	19,000	21,000	23,000	25,000	27,000	27,000
	Minimum air flow rate	m^3/h	12,000	13,000	19,000	19,000	25,000	25,000
	Maximum air flow rate	m^3/h	27,000	27,000	27,000	27,000	27,000	27,000
	ACOUSTICS(1)							
	Sound power level on supply air	dB(A)	77	79	80	81	83	83
	Outside sound power level	dB(A)	80	81	86	87	90	92
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	dB(A)	52	53	58	59	62	64
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C** (1)							
	Net cooling capacity	kW	84.2	90.0	101.8	114.6	121.8	131.5
	Net EER	kW/kW	3.51	3.38	3.26	3.17	3.15	3.06
	SEASONAL EFFICIENCY (2)							
	Design net cooling capacity	kW	84.2	90.0	101.8	114.6	121.8	131.5
	SEER	kW/kW	5.40	5.07	4.91	4.77	4.94	4.60
	ηs,C	%	213	200	193	188	194	181
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C** (1)							
	Net heating capacity	kW	84.5	90.9	105.9	120.1	127.3	139.5
	Net COP	kW/kW	4.26	4.27	4.04	3.99	3.98	3.84
	RATED PERFORMANCES AT -7°C (3)							
	Net heating capacity	kW	57.4	62.5	72.3	81.9	86.4	95.1
	Net COP	kW/kW	3.39	3.40	3.20	3.16	3.11	3.02
	SEASONAL EFFICIENCY (2)							
	Design net heating capacity	kW	76.8	80.3	92.5	101.5	111.1	117.3
	SCOP	kW/kW	4.06	3.98	3.78	3.74	3.69	3.43
	ηs,H	%	159	156	148	146	144	134
GAS GENERATOR	LHV heating capacity	kW	63 126	63 126	63 126	63 126 189	63 126 189	63 126 189
	AS AUXILIARY (8)							
	Rated heating capacity - Exchanger inlet +20°C	kW	63 126	63 126	63 126	63 126 189	63 126 189	63 126 189
	FOR PREHEATING (8)							
	Rated heating capacity - Exchanger inlet -10°C	kW	63 126	63 126	63 126	63 126 189	63 126 189	63 126 189
	Rated heating capacity - Exchanger inlet +0°C	kW	63 126	63 126	63 126	63 126 189	63 126 189	63 126 189
GENERAL	**ELECTRICAL DATA**							
	Total installed electrical power (4)	kW	46.1	49.2	58.2	63.3	65.1	70.5
	Total installed electrical intensity (4)	A	75.8	80.4	95.8	104.1	105.9	115.0
	Starting current	A	190.3	210.5	226.0	308.8	310.7	357.4
	Maximum absorbed electrical power (5)	kW	29.5	32.6	37.6	42.8	45.7	50.1
	REFRIGERATION CIRCUIT(S)							
	Power stages	-	4	4	4	4	4	4
	OPERATING LIMITS IN COOLING MODE							
	Maximum outside temperature(6)	°C	+ 50	+ 49	+ 49	+ 49	+ 48	+ 48
	Minimum outside temperature (6)	°C	+ 15					
	Minimum internal coil inlet temperature	°C	+ 18					
	OPERATING LIMITS IN HEATING MODE							
	Minimum outside temperature	°C	- 15					
	Minimum internal coil inlet temperature	°C	+ 12					
	WEIGHT							
	Unit weight without options (7)	kg	1,493	1,537	1,611	1,639	1,667	1,662
	Connection roof curb weight	kg	121					
	Standard ventilated roof curb weight	kg	169					

(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

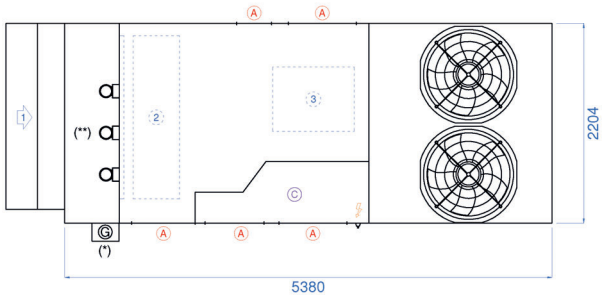
(5) Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

SUPPLY AIR *below*

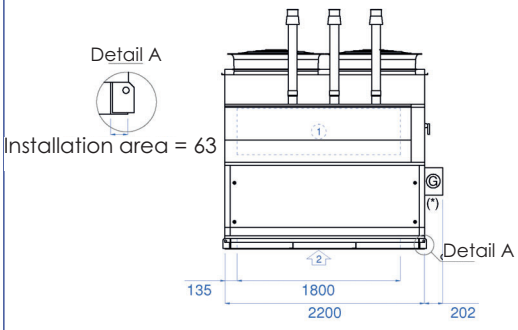
Front view:



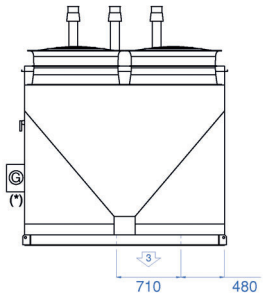
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

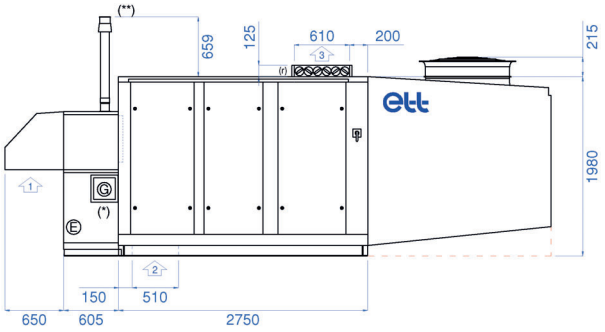
	Length	Width (1)	Height
Casing dimensions	5,380 mm	2,204 mm	1,980 mm

(1) Return air on side: +125 mm

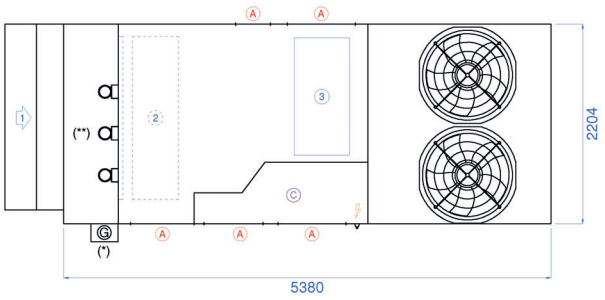
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on top*

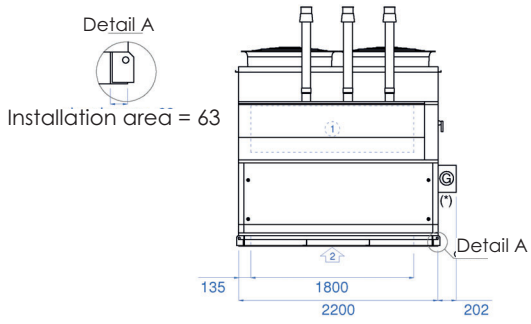
Front view:



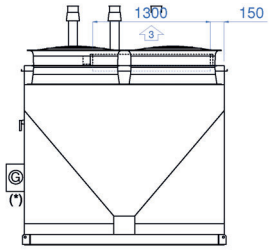
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

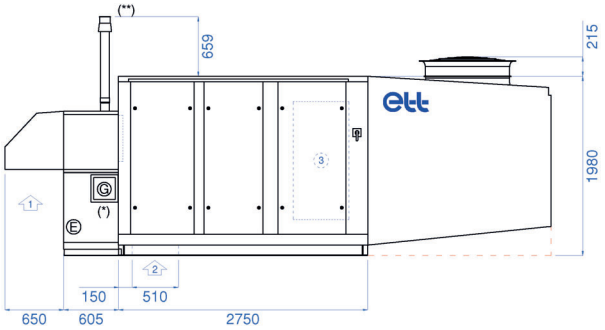
	Length	Width [1]	Height
Casing dimensions	5,380 mm	2,204 mm	1,980 mm

(1) Return air on side: +125 mm

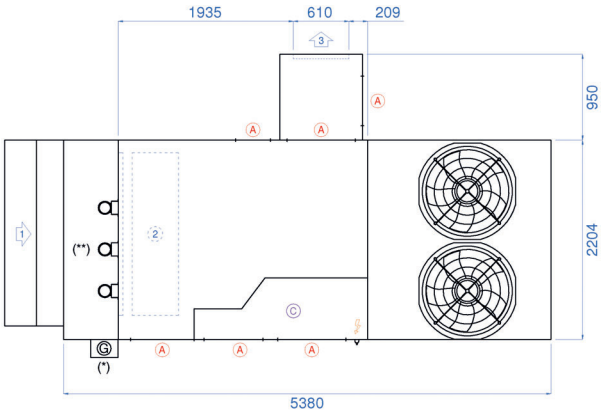
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on side*

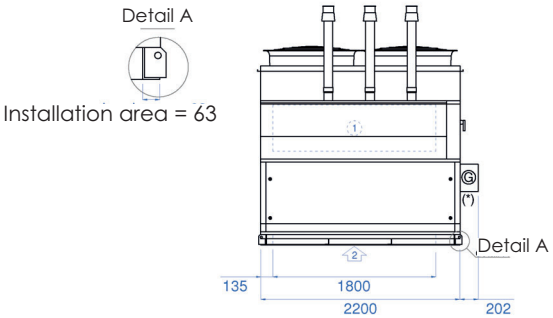
Front view:



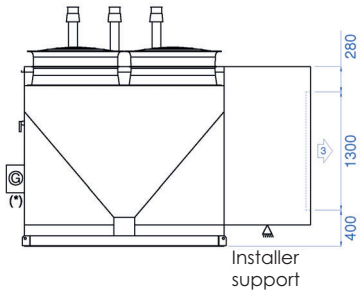
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

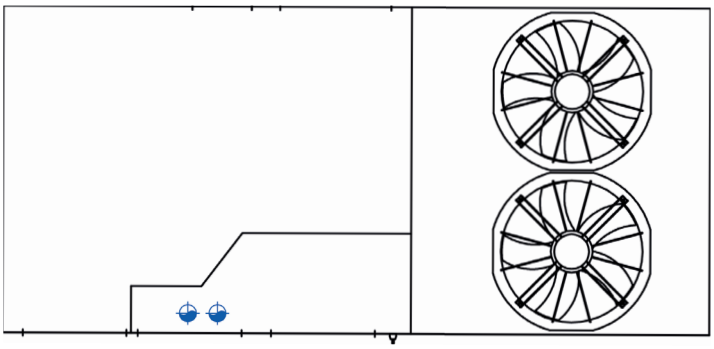
	Length	Width [1]	Height
Casing dimensions	5,380 mm	2,204 mm	1,980 mm

(1) Return air on side: +125 mm

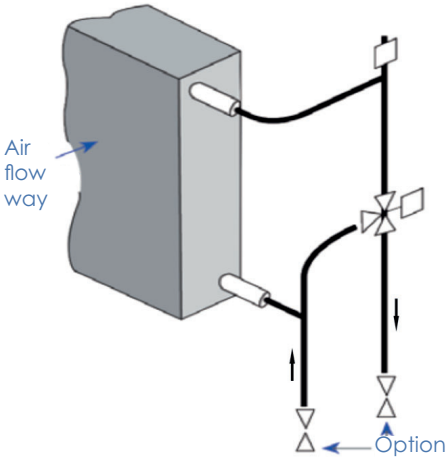
Nota: - Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



CAPACITIES

		Unit	090	095	110	115	130	140
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	287.6	306.6	324.5	341.6	357.9	357.9
	Water flow rate	m³/h	12.8	13.6	14.4	15.2	15.9	15.9
	Exchanger pressure drop	mWC	2.0	2.3	2.6	2.8	3.1	3.1
	Exchanger and 3WV pressure drop (1)	mWC	4.3	4.9	5.5	6.1	6.7	6.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	6.9	7.9	8.8	9.7	10.7	10.7
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	242.7	258.6	273.5	287.8	301.3	301.3
	Water flow rate	m³/h	10.7	11.4	12.1	12.7	13.3	13.3
	Exchanger pressure drop	mWC	1.5	1.7	1.9	2.1	2.3	2.3
	Exchanger and 3WV pressure drop (1)	mWC	3.1	3.5	4.0	4.4	4.8	4.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.0	5.6	6.3	6.9	7.6	7.6
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	244.6	260.6	275.7	290.1	303.8	303.8
	Water flow rate	m³/h	10.8	11.5	12.2	12.8	13.4	13.4
	Exchanger pressure drop	mWC	1.5	1.7	1.9	2.1	2.3	2.3
	Exchanger and 3WV pressure drop (1)	mWC	3.2	3.6	4.0	4.4	4.8	4.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.0	5.7	6.4	7.0	7.7	7.7
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	199.7	212.6	224.8	236.3	247.3	247.3
	Water flow rate	m³/h	8.8	9.4	9.9	10.5	10.9	10.9
	Exchanger pressure drop	mWC	1.0	1.2	1.3	1.4	1.6	1.6
	Exchanger and 3WV pressure drop (1)	mWC	2.1	2.4	2.7	3.0	3.2	3.2
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.4	3.8	4.3	4.7	5.1	5.1

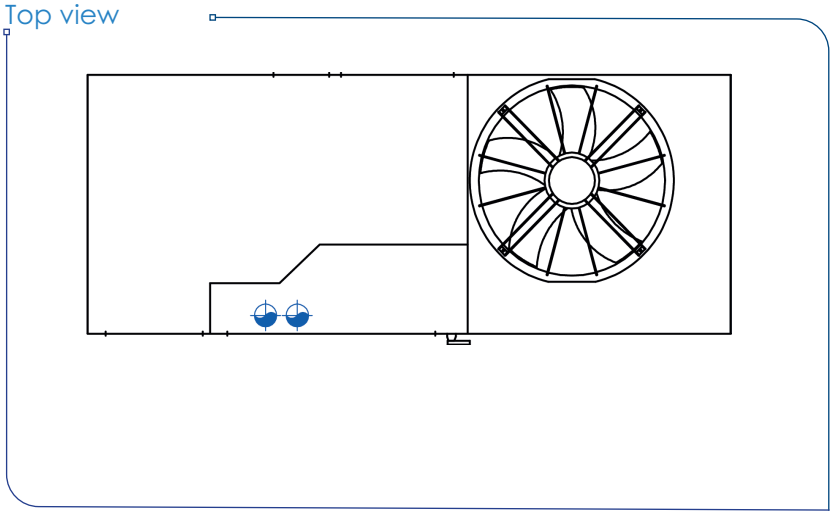
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

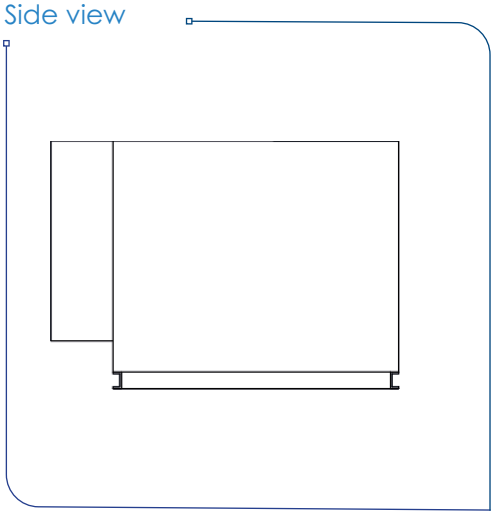
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	090	095	110	115	130	140
35/30°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	90.1	96.0	101.7	107.0	112.1	112.1
	Water flow rate	m³/h	15.6	16.6	17.6	18.5	19.4	19.4
	Exchanger pressure drop	mWC	3.3	3.7	4.2	4.6	5.0	5.0
	Exchanger and 3WV pressure drop (1)	mWC	6.8	7.7	8.7	9.6	10.5	10.5
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	10.8	12.2	13.7	15.2	16.6	16.6
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	47.4	50.4	53.3	56.0	58.5	58.5
	Water flow rate	m³/h	8.2	8.7	9.2	9.7	10.1	10.1
	Exchanger pressure drop	mWC	1.0	1.1	1.2	1.4	1.5	1.5
	Exchanger and 3WV pressure drop (1)	mWC	2.0	2.2	2.5	2.7	2.9	2.9
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.1	3.5	3.8	4.2	4.6	4.6

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

Technical features

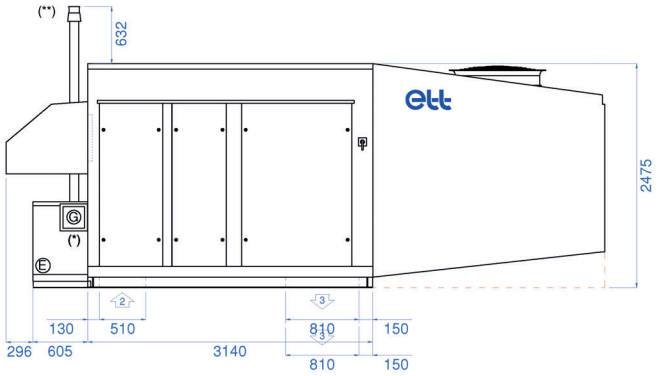
	DESCRIPTION	Unit	115	130	140	150	160	180	200
VENTILATION	**FLOW RATES**								
	Rated air flow rate	m³/h	25,000	27,000	30,000	33,000	35,000	38,000	38,000
	Minimum air flow rate	m³/h	17,000	18,000	21,000	21,000	30,000	34,000	37,000
	Maximum air flow rate	m³/h	38,000	38,000	38,000	38,000	38,000	38,000	38,000
	ACOUSTICS(1)								
	Sound power level on supply air	dB(A)	77	78	80	82	84	85	85
	Outside sound power level	dB(A)	86	87	90	91	87	88	91
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	dB(A)	58	59	62	63	59	60	63
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C** (1)								
	Net cooling capacity	kW	109.2	123.8	131.7	143.7	161.0	177.4	189.8
	Net EER	kW/kW	3.56	3.48	3.44	3.31	3.21	3.07	2.97
	SEASONAL EFFICIENCY (2)								
	Design net cooling capacity	kW	109.2	123.8	131.7	143.7	161.0	177.4	189.8
	SEER	kW/kW	5.32	5.23	5.26	5.09	4.85	4.61	4.57
	ηs,C	%	210	206	208	200	191	181	180
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C** (1)								
	Net heating capacity	kW	107.5	123.0	130.9	144.3	163.4	183.4	199.5
	Net COP	kW/kW	4.64	4.57	4.57	4.47	4.23	4.05	3.93
	RATED PERFORMANCES AT -7°C (2)								
	Net heating capacity	kW	72.8	82.7	89.3	98.8	112.3	127.7	139.2
	Net COP	kW/kW	3.51	3.48	3.48	3.38	3.18	3.03	2.91
	SEASONAL EFFICIENCY (2)								
	Design net heating capacity	kW	93.0	106.5	116.7	119.8	139.0	156.9	170.0
	SCOP	kW/kW	4.23	4.13	4.18	4.01	3.70	3.37	3.45
	ηs,H	%	166	162	164	157	145	132	135
GAS GENERATOR	LHV heating capacity	kW	63 126 189	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252
	AS AUXILIARY (6)								
	Rated heating capacity - Exchanger inlet +20°C	kW	63 126 189	126 189 252	126 189 252	126 189 252	126 189 252	126 189 251	126 189 251
	FOR PREHEATING (6)								
	Rated heating capacity - Exchanger inlet -10°C	kW	63 126 189	126 189 252	126 189 252	126 189 251	126 189 252	126 189 251	126 189 251
	Rated heating capacity - Exchanger inlet +0°C	kW	63 126 189	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252
GENERAL	**ELECTRICAL DATA**								
	Total installed electrical power (4)	kW	60.3	65.5	67.3	72.7	83.7	92.2	96.9
	Total installed electrical intensity (4)	A	99.0	107.3	109.1	118.2	136.3	148.1	156.4
	Starting current	A	229.2	312.0	313.9	360.6	378.7	401.2	421.4
	Maximum absorbed electrical power (5)	kW	36.7	42.1	45.5	51.2	58.3	66.6	66.4
	REFRIGERATION CIRCUIT(S)								
	Power stages	-	4	4	4	4	4	4	4
	OPERATING LIMITS IN COOLING MODE								
	Maximum outside temperature(6)	°C	+ 50	+ 50	+ 49	+ 48	+ 49	+ 48	+ 48
	Minimum outside temperature (6)	°C				+ 15			
	Minimum internal coil inlet temperature	°C				+ 18			
	OPERATING LIMITS IN HEATING MODE								
	Minimum outside temperature	°C				- 15			
	Minimum internal coil inlet temperature	°C				+ 12			
	WEIGHT								
	Unit weight without options (7)	kg	2,122	2,173	2,283	2,278	2,307	2,376	2,358
	Connection roof curb weight	kg				163			
	Standard ventilated roof curb weight	kg				228			

(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

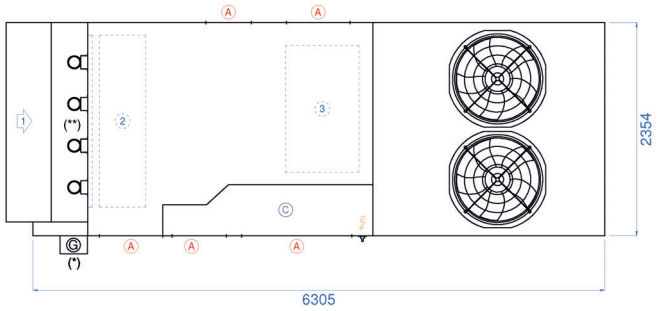
(5) Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

SUPPLY AIR *below*

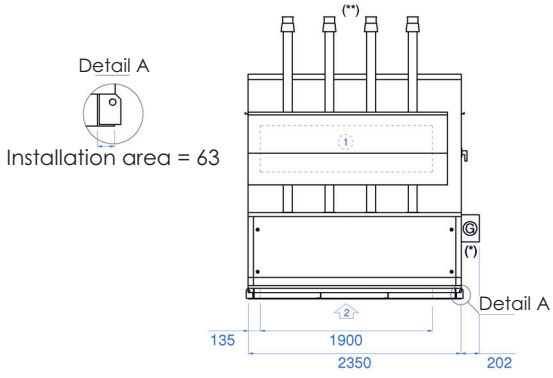
Front view:



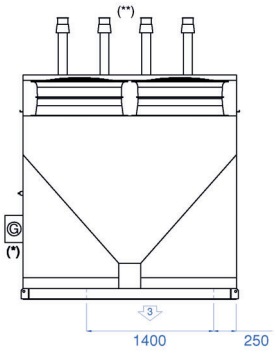
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

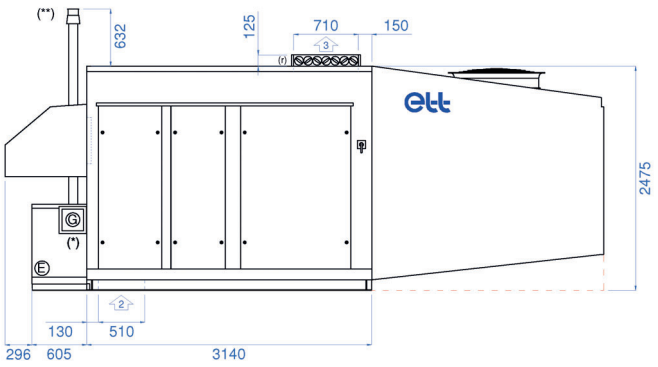
	Length	Width (1)	Height
Casing dimensions	6,305 mm	2,354 mm	2,475 mm

(1) Return air on side: +125 mm

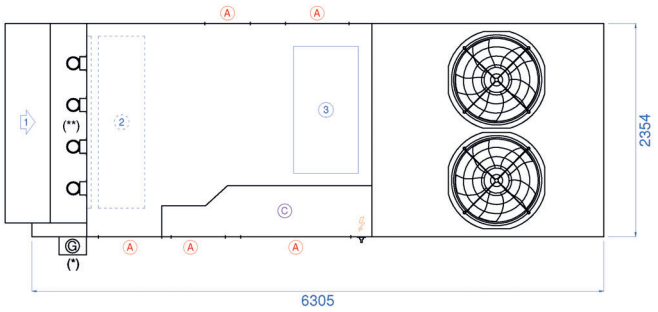
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on top*

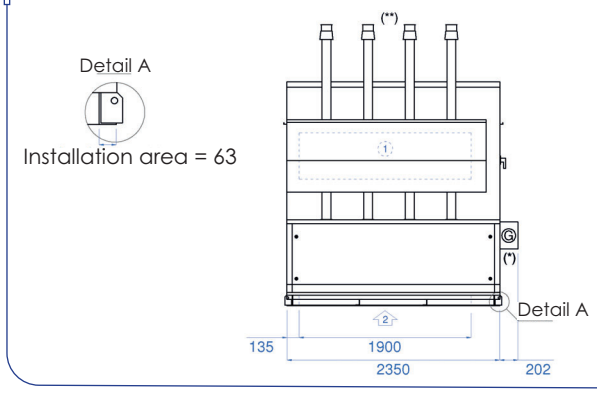
Front view:



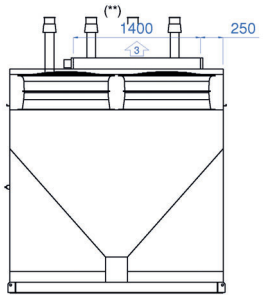
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

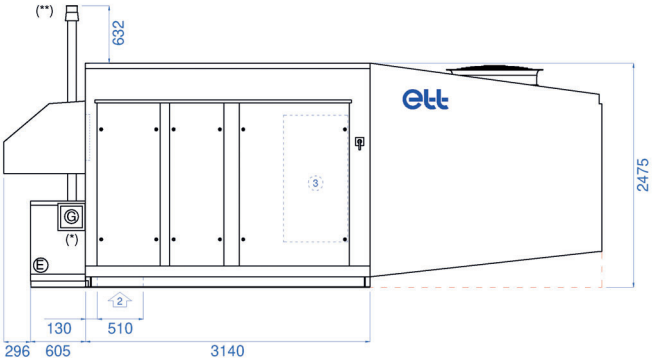
	Length	Width (1)	Height
Casing dimensions	6,305 mm	2,354 mm	2,475 mm

(1) Return air on side: +125 mm

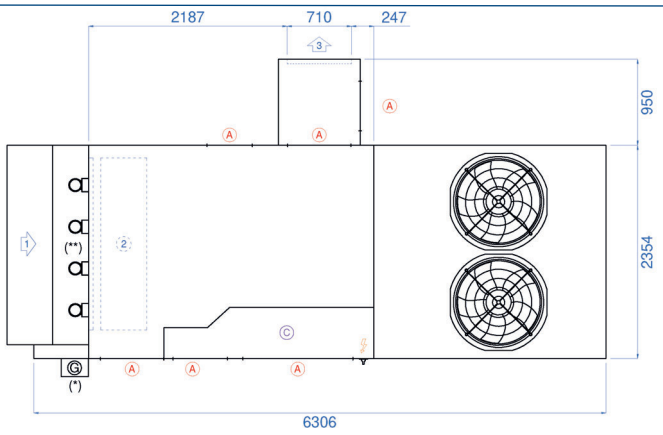
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on side*

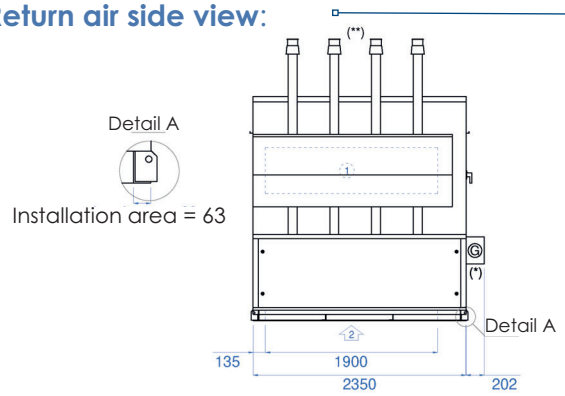
Front view:



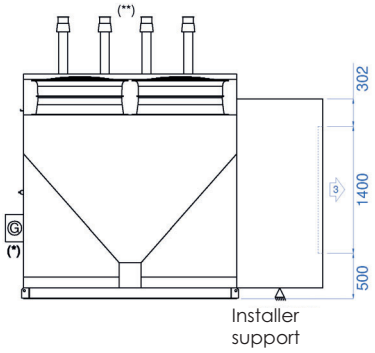
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

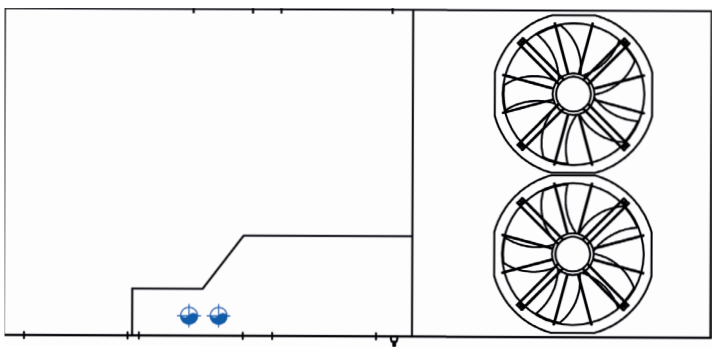
	Length	Width (1)	Height
Casing dimensions	6,305 mm	2,354 mm	2,475 mm

(1) Return air on side: +125 mm

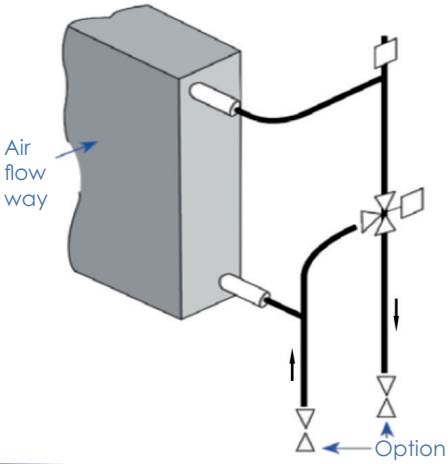
Nota: - Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



CAPACITIES

		Unit	115	130	140	150	160	180	200
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	299.0	314.3	336.2	356.8	370.0	388.9	388.9
	Water flow rate	m³/h	13.3	14.0	14.9	15.9	16.4	17.3	17.3
	Exchanger pressure drop	mWC	2.2	2.4	2.7	3.0	3.3	3.6	3.6
	Exchanger and 3WV pressure drop (1)	mWC	4.7	5.1	5.9	6.6	7.1	7.8	7.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	7.4	8.2	9.4	10.6	11.3	12.5	12.5
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	252.7	265.5	283.7	301.0	311.9	327.7	327.7
	Water flow rate	m³/h	11.2	11.7	12.5	13.3	13.8	14.5	14.5
	Exchanger pressure drop	mWC	1.6	1.8	2.0	2.2	2.4	2.6	2.6
	Exchanger and 3WV pressure drop (1)	mWC	3.4	3.7	4.2	4.7	5.1	5.6	5.6
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.3	5.9	6.7	7.5	8.1	8.9	8.9
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	254.6	267.5	285.9	303.3	314.4	330.3	330.3
	Water flow rate	m³/h	11.2	11.8	12.6	13.4	13.9	14.6	14.6
	Exchanger pressure drop	mWC	1.6	1.8	2.0	2.2	2.4	2.6	2.6
	Exchanger and 3WV pressure drop (1)	mWC	3.4	3.7	4.3	4.8	5.1	5.7	5.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.4	6.0	6.8	7.7	8.2	9.1	9.1
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	208.2	218.6	233.5	247.5	256.4	269.2	269.2
	Water flow rate	m³/h	9.2	9.7	10.3	10.9	11.3	11.9	11.9
	Exchanger pressure drop	mWC	1.1	1.2	1.4	1.5	1.6	1.8	1.8
	Exchanger and 3WV pressure drop (1)	mWC	2.3	2.5	2.9	3.2	3.5	3.8	3.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.6	4.0	4.6	5.1	5.5	6.1	6.1

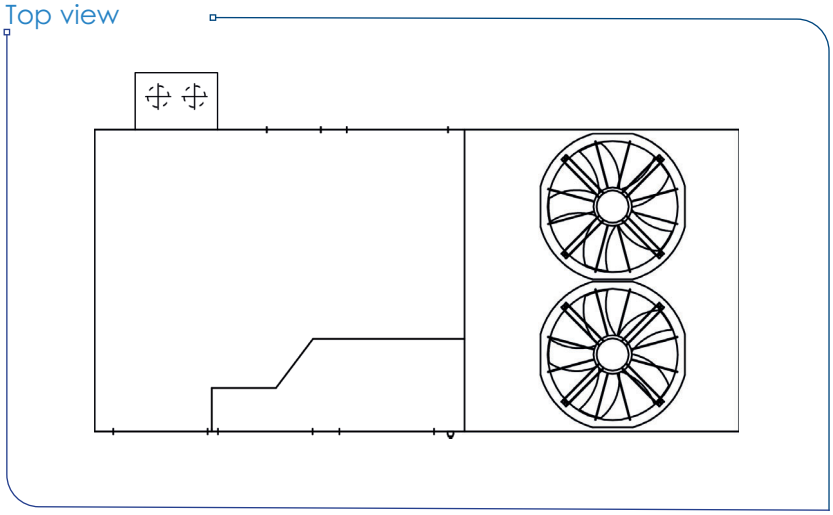
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

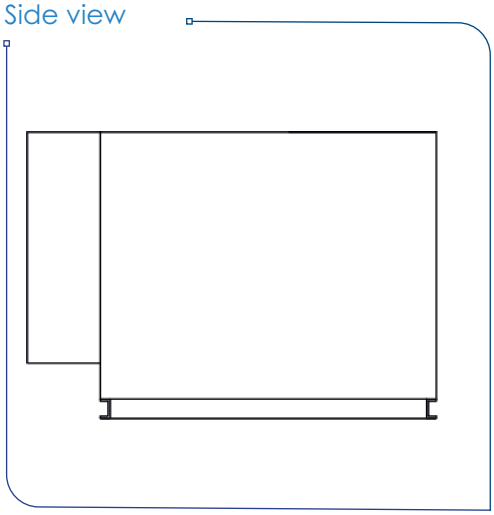
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	115	130	140	150	160	180	200
35/30°C water regime and Exchanger inlet air temperature 10 °C	Heating capacity	kW	93.7	98.5	105.4	111.9	116.0	121.9	121.9
	Water flow rate	m³/h	16.2	17.1	18.3	19.4	20.1	21.1	21.1
	Exchanger pressure drop	mWC	3.5	3.9	4.4	4.9	5.3	5.8	5.8
	Exchanger and 3WV pressure drop (1)	mWC	7.3	8.1	9.2	10.4	11.1	12.3	12.3
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	11.6	12.8	14.6	16.5	17.7	19.5	19.5
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	49.6	52.0	55.5	58.8	60.8	63.8	63.8
	Water flow rate	m³/h	8.6	9.0	9.6	10.2	10.5	11.1	11.1
	Exchanger pressure drop	mWC	1.1	1.2	1.3	1.5	1.6	1.7	1.7
	Exchanger and 3WV pressure drop (1)	mWC	2.1	2.3	2.6	3.0	3.2	3.5	3.5
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.3	3.6	4.1	4.6	5.0	5.5	5.5

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

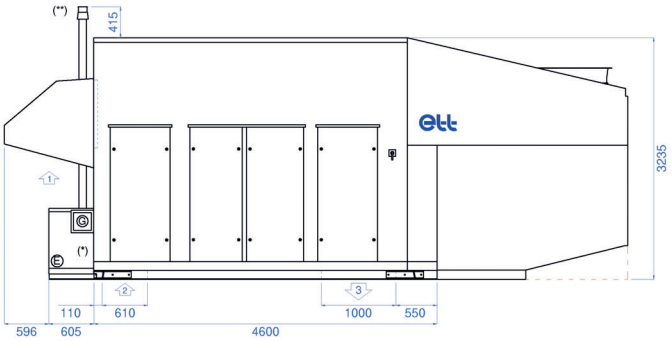
	DESCRIPTION	Unit	180	200	220	245	270	285
VENTILATION	**FLOW RATES**							
	Rated air flow rate	**m³/h**	38,000	42,000	46,000	50,000	54,000	54,000
	Minimum air flow rate	**m³/h**	24,000	26,000	30,000	36,000	46,000	52,000
	Maximum air flow rate	**m³/h**	54,000	54,000	54,000	54,000	54,000	54,000
	ON SUPPLY AIR							
	Sound power level on supply air	**dB(A)**	80	81	83	85	85	86
	Outside sound power level	**dB(A)**	88	90	91	87	90	92
	Resultant outdoor sound pressure at 10m ref. 2*10-5 in free field, direction 2	**dB(A)**	60	62	63	59	62	64
PERFORMANCES COOLING	**RATED PERFORMANCES AT +35°C (1)**							
	Net cooling capacity	**kW**	168.2	186.3	211.1	231.6	254.0	273.5
	Net EER	**kW/kW**	3.55	3.36	3.32	3.24	3.10	2.99
	SEASONAL EFFICIENCY (2)							
	Design net cooling capacity	**kW**	168.2	186.3	211.1	231.6	254.0	273.5
	SEER	**kW/kW**	6.47	5.74	5.67	5.06	5.16	4.90
	ηs,C	**%**	256	227	224	200	203	193
PERFORMANCES HEATING	**RATED PERFORMANCES AT +7°C (1)**							
	Net heating capacity	**kW**	164.8	186.4	210.3	234.2	259.7	285.2
	Net COP	**kW/kW**	4.48	4.27	4.27	4.16	4.00	3.79
	RATED PERFORMANCES AT -7°C (2)							
	Net heating capacity	**kW**	114.5	129.6	145.7	162.8	181.4	200.3
	Net COP	**kW/kW**	3.60	3.48	3.45	3.36	3.25	3.12
	SEASONAL EFFICIENCY (2)							
	Design net heating capacity	**kW**	152.7	173.9	181.0	202.4	224.9	247.9
	SCOP	**kW/kW**	4.72	4.46	4.46	4.23	4.21	3.89
	ηs,H	**%**	186	175	176	166	165	152
GAS GENERATOR	LHV heating capacity	**kW**	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252
	AS AUXILIARY (6)							
	Rated heating capacity - Exchanger inlet +20°C	**kW**	126 189 252	126 189 251	126 189 252	126 189 252	126 189 252	126 189 252
	FOR PREHEATING (6)							
	Rated heating capacity - Exchanger inlet -10°C	**kW**	126 189 252	126 188 252	126 189 252	126 189 252	126 188 252	126 188 252
	Rated heating capacity - Exchanger inlet +0°C	**kW**	126 188 252	126 189 252	126 189 252	126 189 252	126 189 252	126 189 252
GENERAL	**ELECTRICAL DATA**							
	Total installed electrical power (4)	**kW**	93.7	101.4	110.0	127.0	137.8	148.6
	Total installed electrical intensity (4)	**A**	155.0	174.0	184.6	208.4	226.4	244.4
	Starting current	**A**	285.2	317.2	389.3	413.1	468.8	486.8
	Maximum absorbed electrical power (5)	**kW**	56.8	65.9	74.7	82.7	94.6	102.9
	REFRIGERATION CIRCUIT(S)							
	Power stages	-	4	4	4	4	4	4
	OPERATING LIMITS IN COOLING MODE							
	Maximum outside temperature(6)	**°C**	+ 52	+ 51	+ 50	+ 51	+ 50	+ 49
	Minimum outside temperature (6)	**°C**	+ 15					
	Minimum internal coil inlet temperature	**°C**	+ 18					
	OPERATING LIMITS IN HEATING MODE							
	Minimum outside temperature	**°C**	- 15					
	Minimum internal coil inlet temperature	**°C**	+ 12					
	WEIGHT							
	Unit weight without options (7)	**kg**	2,978	2,990	3,085	3,135	3,150	3,150
	Connection roof curb weight	**kg**	210					
	Standard ventilated roof curb weight	**kg**	294					

(1) According to EN 14511.
Cooling mode: inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB.
Heating mode: inside conditions: +20°C DB /+12°C WB and outside conditions: +7°C DB/+6°C WB.
(2) According to EcoDesign regulations 2016/2281.
(3) According to EN 14511.
Heating mode: inside conditions: +20°C DB and outside conditions: -7°C DB/-8°C WB.
(4) Three-phase power supply 400V - 50 Hz + earth without neutral.
The values indicated do not include any options and may change during the design phase and must be confirmed after the order has been placed.

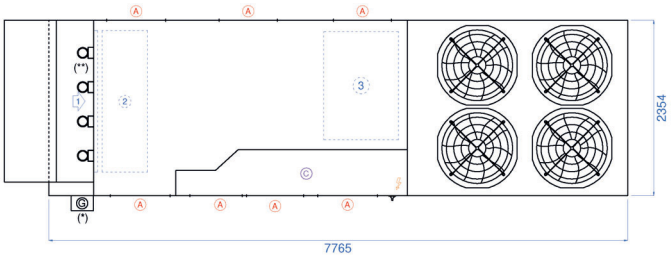
(5) Cooling mode: Inside conditions: +27°C DB /+19°C WB and outside conditions: +35°C DB/24°C WB. Rated air flow rate, 400 Pa available pressure on return + supply air & fouled ISO Coarse 65% filters.
(6) For inside conditions: +27°C DB / +19°C WB at rated air flow rate.
(7) Weight for an available pressure of 400 Pa and CC+ module maximum capacity used on the unit.
(8) With 35% ethylene glycol (freezing point at -20°C).

SUPPLY AIR *below*

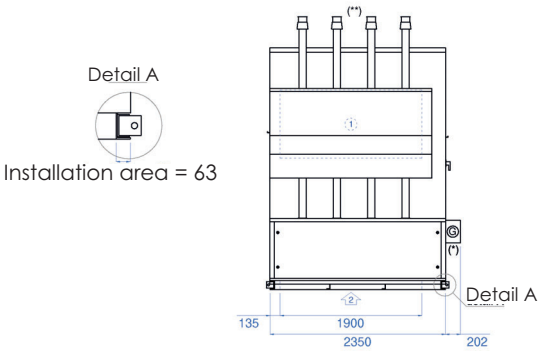
Front view:



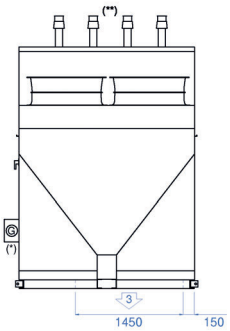
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

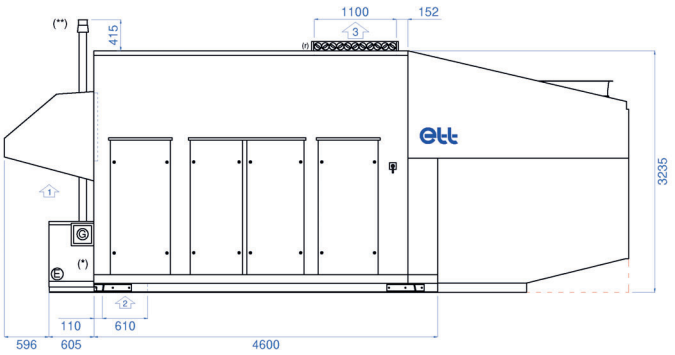
	Length	Width (1)	Height
Casing dimensions	7,766 mm	2,350 mm	3,225 mm

(1) Return air on side: +125 mm

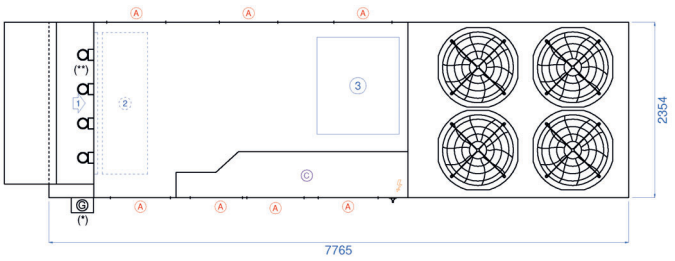
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on top*

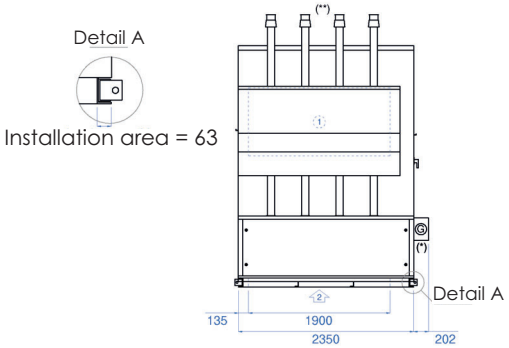
Front view:



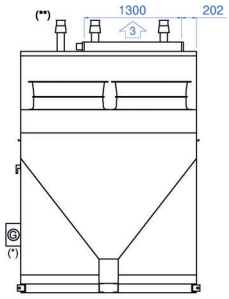
Top view:



Return air side view:



Supply air side view:



(*) Optional: Gas box., connection to be made by the installer.

(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

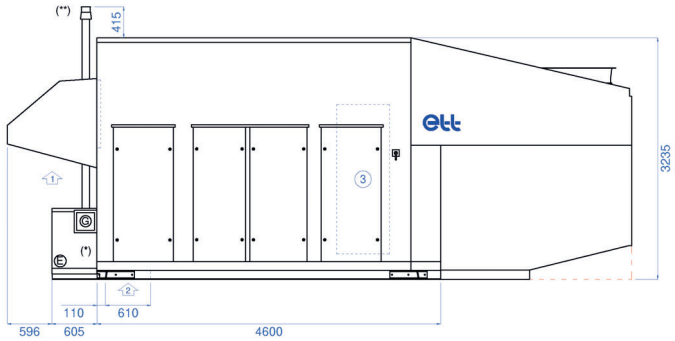
	Length	Width (1)	Height
Casing dimensions	7,766 mm	2,350 mm	3,225 mm

(1) Return air on side: +125 mm

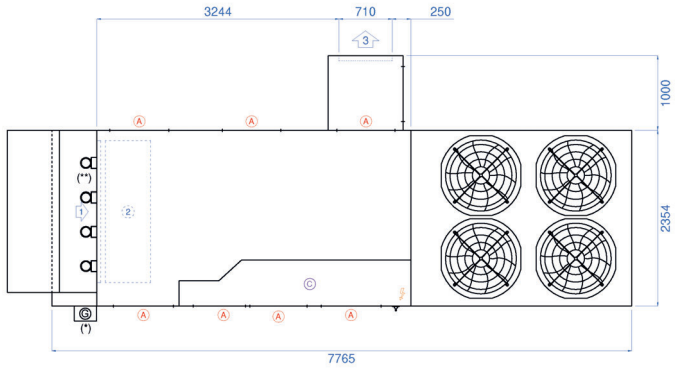
Nota: Fresh air cowls shall be fitted by the installer.

SUPPLY AIR *on side*

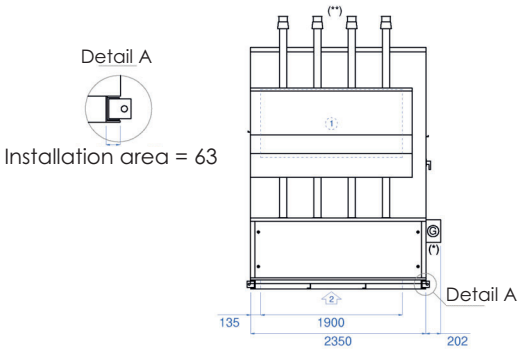
Front view:



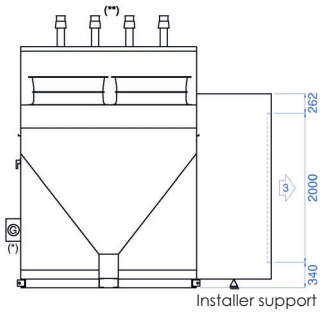
Top view:



Return air side view:



Supply air side view:



① Fresh air
② Return air
③ Supply air
⚡ Power supply
Ⓐ Access
Ⓒ Technical section
--- Provide 400 mm clearance (minimum) to allow air passage below the unit.

(*) Optional: Gas box., connection to be made by the installer.
(**) Number of available flues: 2, 3 or 4 for series 3. Connection shall be made by the installer.

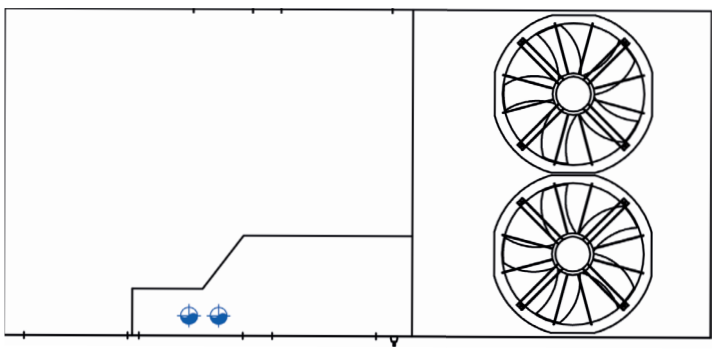
	Length	Width (1)	Height
Casing dimensions	7,766 mm	2,350 mm	3,225 mm

(1) Return air on side: +125 mm

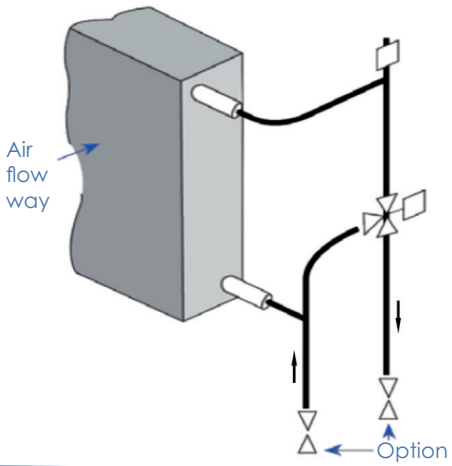
Nota: - Fresh air cowls shall be fitted by the installer.
- Lateral box shall be fitted by the installer.
- Supply air damper electrical connection shall be made by the installer.

SCHEMATIC DIAGRAM AND CONNECTION

Top view



Principle



CAPACITIES

		Unit	180	200	220	245	270	285
90/70°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	313.9	334.7	354.3	372.9	390.7	390.7
	Water flow rate	m³/h	14.0	14.9	15.7	16.6	17.4	17.4
	Exchanger pressure drop	mWC	2.4	2.7	3.0	3.3	3.6	3.6
	Exchanger and 3WV pressure drop (1)	mWC	5.1	5.8	6.5	7.2	7.9	7.9
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	8.2	9.3	10.4	11.5	12.6	12.6
80/60°C water regime and Exchanger inlet air temperature 10°C	Heating capacity	kW	265.2	282.5	298.8	314.4	329.2	329.2
	Water flow rate	m³/h	11.7	12.5	13.2	13.9	14.6	14.6
	Exchanger pressure drop	mWC	1.8	2.0	2.2	2.4	2.6	2.6
	Exchanger and 3WV pressure drop (1)	mWC	3.7	4.2	4.7	5.1	5.6	5.6
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	5.9	6.7	7.4	8.2	9.0	9.0
90/70°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	267.1	284.6	301.1	316.8	331.8	331.8
	Water flow rate	m³/h	11.8	12.6	13.3	14.0	14.7	14.7
	Exchanger pressure drop	mWC	1.8	2.0	2.2	2.4	2.7	2.7
	Exchanger and 3WV pressure drop (1)	mWC	3.7	4.2	4.7	5.2	5.7	5.7
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	6.0	6.8	7.6	8.3	9.1	9.1
80/60°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	218.4	232.4	245.7	258.4	270.4	270.4
	Water flow rate	m³/h	9.7	10.3	10.9	11.4	12.0	12.0
	Exchanger pressure drop	mWC	1.2	1.4	1.5	1.7	1.8	1.8
	Exchanger and 3WV pressure drop (1)	mWC	2.5	2.9	3.2	3.5	3.8	3.8
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	4.0	4.5	5.1	5.6	6.1	6.1

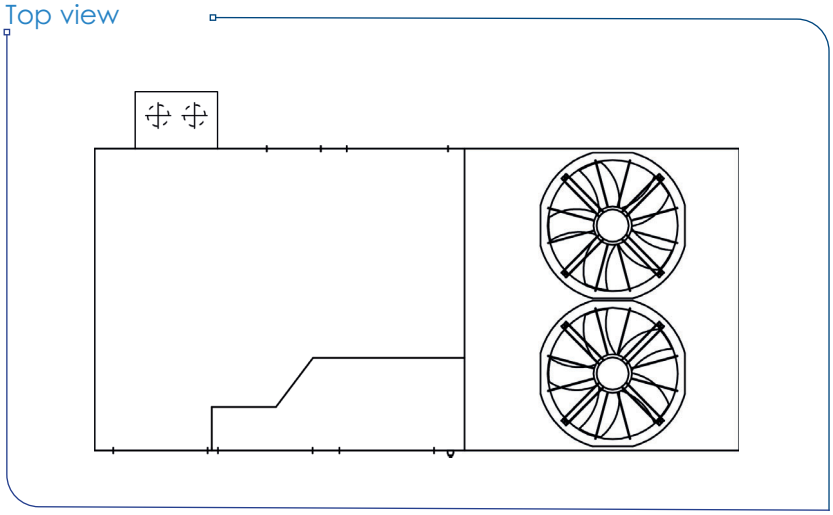
(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

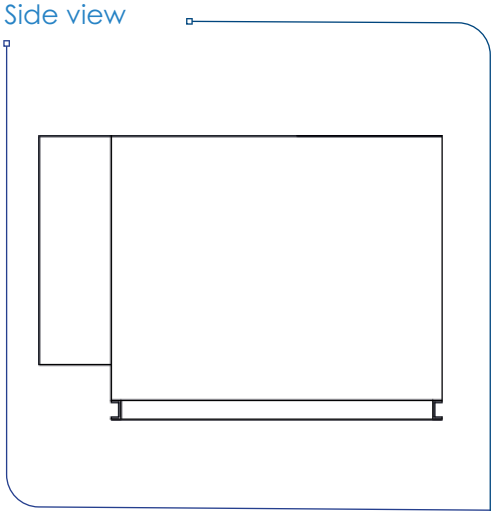
SCHEMATIC DIAGRAM AND CONNECTION

► Connection opposite the technical section

Top view



Side view



► Same connection as the hot water coil

See schematic diagram and connection.

CAPACITIES

		Unit	180	200	220	245	270	285
35/30°C water regime and Exchanger inlet air temperature 10 °C	Heating capacity	kW	98.4	104.9	111.1	116.9	122.5	122.5
	Water flow rate	m³/h	17.1	18.2	19.2	20.3	21.2	21.2
	Exchanger pressure drop	mWC	3.9	4.4	4.9	5.4	5.9	5.9
	Exchanger and 3WV pressure drop (1)	mWC	8.1	9.1	10.2	11.3	12.4	12.4
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	12.8	14.5	16.2	18.0	19.7	19.7
35/30°C water regime and Exchanger inlet air temperature 20°C	Heating capacity	kW	52.0	55.2	58.4	61.3	64.1	64.1
	Water flow rate	m³/h	9.0	9.6	10.1	10.6	11.1	11.1
	Exchanger pressure drop	mWC	1.2	1.3	1.4	1.6	1.7	1.7
	Exchanger and 3WV pressure drop (1)	mWC	2.3	2.6	2.9	3.2	3.5	3.5
	Exchanger, 3WV, SV and TAV pressure drop (2)	mWC	3.6	4.1	4.6	5.0	5.5	5.5

(1) With 3WV option
(2) With 3WV, SV and TAV option

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8
Technical data for non-glycol water, at rated air flow rate.

Technical features: Condensing boiler

TECHNICAL DATA

Designation	Unit	Reference LHV			
LHV HEATING CAPACITY	**kW**	63	126	189	252
Heating capacity modulation	**%**	26 to 100	13 to 100	9 to 100	7 to 100
Circulation pump electrical capacity	**W**	90	90	310	310
G25 natural gas flow rate (25 mbar) LVH = 9.3 kWh/Nm3	**Nm3/h**	7.4	14.8	22.2	29.6
2E-G20 natural gas flow rate (GZ-50) (20 mbar) LVH = 10.2 kWh/Nm3	**Nm3/h**	7.2	14.4	21.6	28.8
2LW-G27 natural gas flow rate (GZ-41.5) (20 mbar) LVH = 9.3 kWh/Nm3	**Nm3/h**	8.0	16.0	24.0	32.0
G30/31 propane gas flow rate (37 mbar)	**kg/h**	4.9	9.8	14.7	19.6
Required pressure for the NG burner with gas expansion valve	**mbar**	300			
Gas connection diameter	**mm x mm**	15 x 21	20 x 27	20 x 27	20 x 27

GAS CONNECTION

The gas supply must correspond to the thermal module capacity and feature all appropriate security and control devices (such as a stop valve) according to the applicable standards.

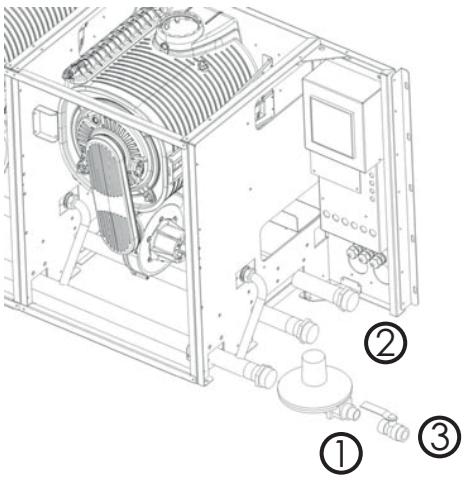
Pipe diameters shall be specifically studied, considering gas type, gas flow rate and pipelines length. Pipes pressure drop must not exceed 5 % of the supply pressure.

The gas thermal module is intended for low pressure gas supply, below 50mbar.

In case of higher supply pressure, install a flow regulator suitable for the total installed power (available as an option, to be fitted by the installer).

In case of serial connection, install a single regulator manifold.

1 - Gas inlet
2 - Gas expansion valve
3 - Stop valve

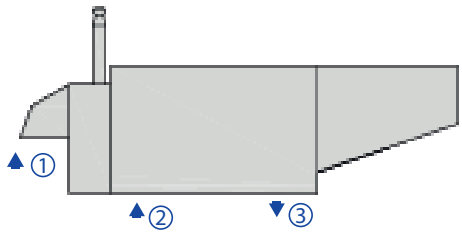


Nota: For simultaneous operation, the main network pressure regulator must be suitably dimensioned to handle the maximum flow from all equipment installed on the network.

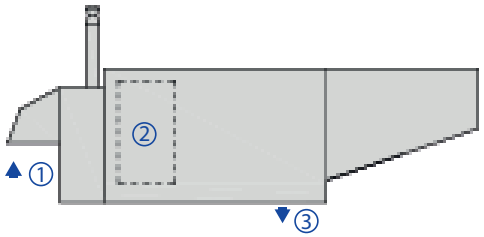
Arrangements

SUPPLY AIR *downwards*
Installation on roof curb or customer frame on roof

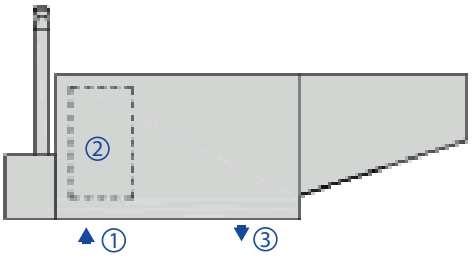
Arrangement 1.1



Arrangement 1.8

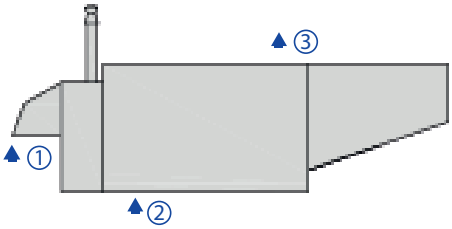


Arrangement 1.10

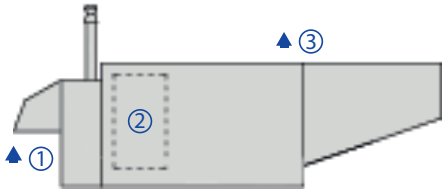


SUPPLY AIR *upwards*
Installation on feet (400 mm minimum) or customer frame
Feet are optional. A supply air damper is necessary for units bigger than 10000 m³/h in Public Access Buildings.

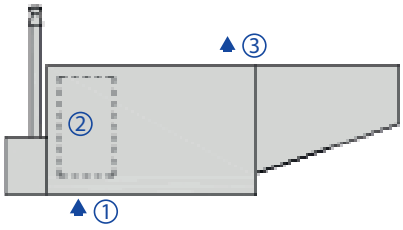
Arrangement 2.1



Arrangement 2.8



Arrangement 2.10

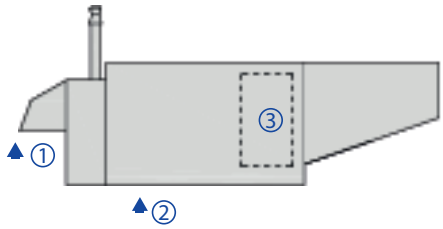


① Fresh air ② Return air ③ Supply air

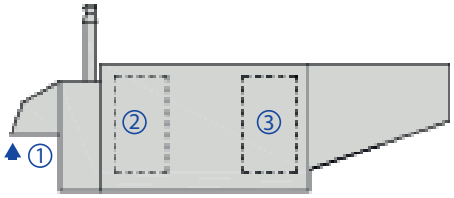
Arrangements

SUPPLY AIR *on side*
Opposite the technical section (with 400 mm feet minimum)

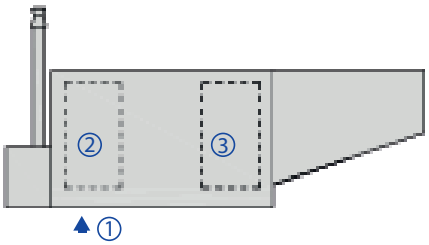
Arrangement 3.1



Arrangement 3.8



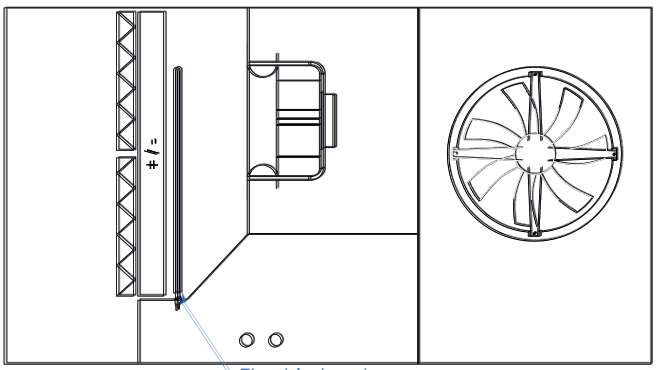
Arrangement 3.10



① Fresh air ② Return air ③ Supply air

Auxiliary: Sequential electric heaters

SCHEMATIC DIAGRAM



AVAILABLE CAPACITIES (in kW)

Total capacity (kW)	Current (A)	1st stage	2nd stage	Ulti+ R32 01__ CC+	Ulti+ R32 11__ CC+	Ulti+ R32 12__ CC+	Ulti+ R32 21__ CC+	Ulti+ R32 22__ CC+	Ulti+ R32 23__ CC+	Weight (kg)
7.5	10.8	3	4.5	•						2.4
9	13.0	3	6	•						2.9
12	17.3	4.5	7.5	•						3.4
12	17.3	3	9		•					3.4
15	21.7	6	9	•	•					4.2
18	26.0	9	9	•						4.7
18	26.0	6	12		•		•			5.0
21	30.3	6	15		•	•		•		5.9
21	30.3	9	12	•			•			5.5
24	34.6	9	15	•	•	•	•	•		6.4
27	39.0	12	15		•	•	•	•		7.2
30	43.3	12	18		•	•	•	•		7.8
33	47.6	9	24		•	•				8.6
33	47.6	12	21					•		6.4
36	52.0	12	24			•	•			9.4
36	52.0	15	21					•		10.6
39	56.3	15	24			•	•			10.3
39	56.3	18	21					•		12.4
42	60.6	12	30			•				11.3
42	60.6	18	24				•	•	•	12.1
45	65.0	15	30			•	•			12.2
45	65.0	21	24					•	•	12.7
48	69.3	18	30				•	•		14.0
54	77.9	18	36				•	•	•	17.6
60	86.6	24	36				•			18.0
60	86.6	18	42					•	•	18.8
66	95.3	24	42					•	•	19.2
72	103.9	30	42					•	•	21.1
81	116.9	39	42					•	•	25.3
90	129.9	33	57						•	26.6
99	142.9	39	60						•	31.2
108	155.9	39	63						•	31.8
117	168.9	54	63						•	35.9

Nota: For higher performances, please contact us. •

Options weight (kg)

Options	Ulti+ R32 01__ CC+	Ulti+ R32 11__ CC+	Ulti+ R32 12__ CC+	Ulti+ R32 21__ CC+	Ulti+ R32 22__ CC+	Ulti+ R32 23__ CC+
Frame - Casing						
Unit with Vertical (V) or Lateral (L) supply air	31	55	73	84	119	169
Removal of FA + RA dampers	-10	-16	-22	-33	-34	-48
50 mm double skin	28	40	54	70	97	152
Fresh air cowl	7	9	10	19	20	20
Thermal exchangers						
Hot water coil as auxiliary or for preheating, with water	21	35	47	60	76	76
Hot water coil as auxiliary or for preheating, with water, with 3WV option	23	37	49	63	79	79
Hot water coil as auxiliary or for preheating, with water, with 3WV, SV and TAV option	26	39	53	66	83	83
Dehumidification level 2	18	33	43	38	40	82
Installation						
Ventilated aluminium connection roof curb	73	80	104	121	163	210
Aluminium ventilated roof curb	102	112	146	169	228	294

3WV: 3-way valve
SV: Stop valve on outlet
TAV: TA regulating valve on inlet, opened 7/8

Dehumidification option with heat recovery through in-line condenser

The dehumidification option enables room humidity control. This feature is particularly suited for large and medium-sized stores, where the installation of numerous closed refrigerated showcases requires a treatment of latent contributions through air handling.

Various configurations are available to adapt to each specific project.

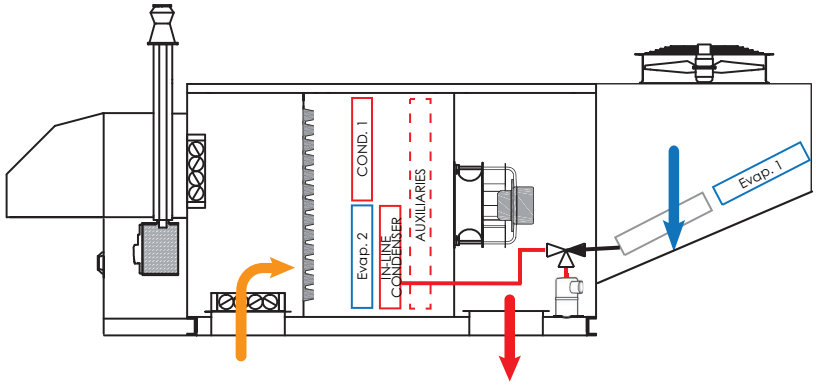
Return air flows through the evaporator(s), causing humidity contained in the air to condense.

Recovered calories can be transferred thanks to the in-line condenser (optional). The heating capacity of the thermodynamic cycle is thus returned to treated air.

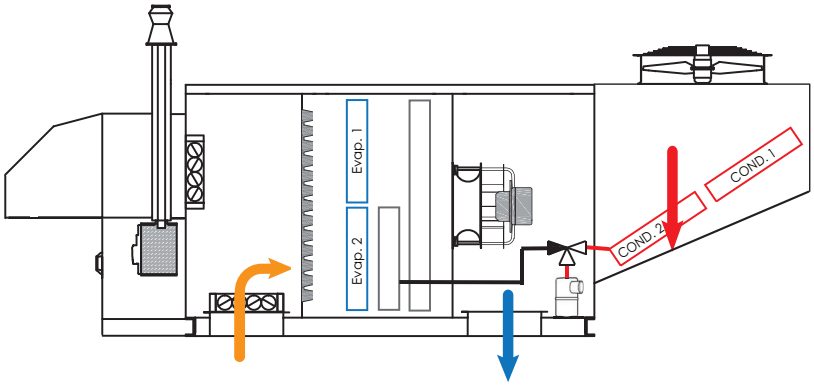
Calories can also be rejected on the external condenser (in summer).

Depending on outdoor and indoor conditions, control enables dehumidification through fresh air introduction, thus delaying the start of the thermodynamic system.

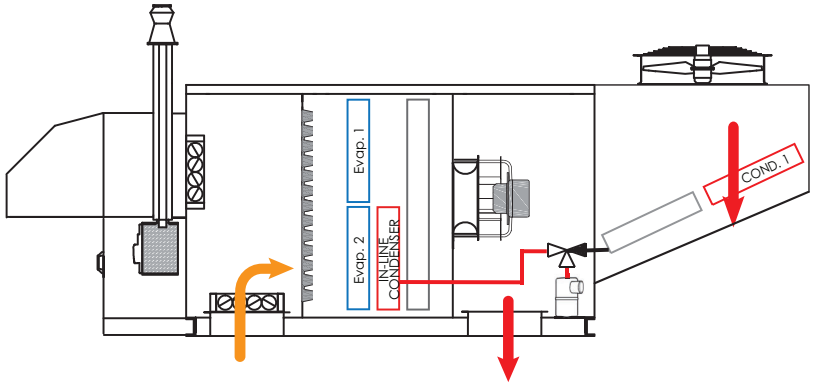
Winter



Summer



Mid-season



Dehumidification option with heat recovery through in-line condenser

OPTION LEVELS PER CIRCUIT

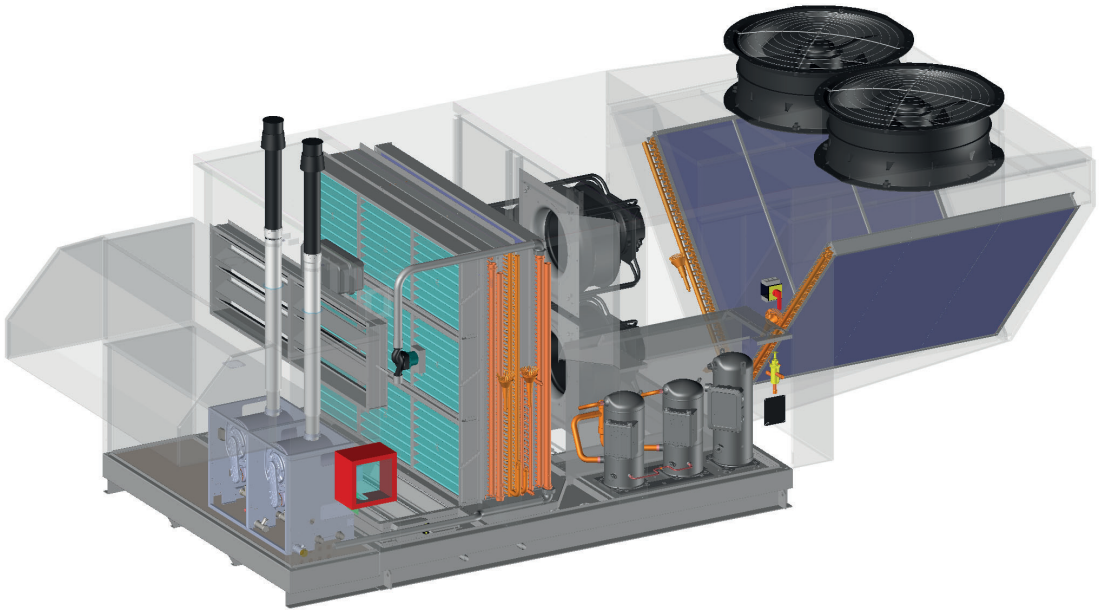
Level 1:

Dehumidification without energy recovery. The refrigeration circuit features a year-round kit in order to enable dehumidification operation in winter. Heat is evacuated through the external condenser.

Level 2:

Dehumidification with energy recovery through in-line condenser, on/off refrigeration 3-way valve (for one circuit) and year-round kit (for all the circuits). The heat recovered is transferred either to the air stream or to the external condenser depending on the season or on the supply air temperature setpoint.

For each level, an additional auxiliary heater may be installed for winter operation, depending on project characteristics.



Dehumidification option with heat recovery through in-line condenser

TECHNICAL FEATURES

	Ulti+ R32 01__ CC+		045	050
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	15.2	16.6
	Recovery capacity through in-line condenser (optional)	kW	49.9	52.5
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	11.7	12.7
	Recovery capacity through in-line condenser (optional)	kW	45.0	47.5

	Ulti+ R32 11__ CC+		045	050	055	065	075
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	17.3	18.0	21.0	23.4	26.7
	Recovery capacity through in-line condenser (optional)	kW	54.7	58.9	66.9	75.7	87.0
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	13.3	13.8	16.0	17.8	20.6
	Recovery capacity through in-line condenser (optional)	kW	49.7	53.6	60.7	68.6	79.3

	Ulti+ R32 12__ CC+		050	055	065	075	080	090	100
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	19.4	22.3	25.3	29.6	30.9	33.0	37.8
	Recovery capacity through in-line condenser (optional)	kW	61.7	70.9	80.5	92.8	101.7	112.3	121.1
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	15.0	17.1	19.4	23.0	23.6	25.2	29.2
	Recovery capacity through in-line condenser (optional)	kW	56.4	64.6	73.2	84.9	92.7	101.7	109.9

	Ulti+ R32 21__ CC+		090	095	110	115	130	140
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	30.7	32.4	37.7	41.2	43.8	50.3
	Recovery capacity through in-line condenser (optional)	kW	54.3	60.2	61.2	73.6	74.8	85.0
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	28.5	30.7	35.0	38.1	41.3	46.6
	Recovery capacity through in-line condenser (optional)	kW	49.2	54.5	55.5	66.5	67.7	77.1

	Ulti+ R32 22__ CC+		115	130	140	150	160	180	200
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	39.3	44.1	45.8	50.7	56.4	62.9	71.3
	Recovery capacity through in-line condenser (optional)	kW	63.7	77.9	79.5	95.5	96.0	117.3	121.7
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	37.2	41.3	44.0	48.5	53.4	59.1	65.8
	Recovery capacity through in-line condenser (optional)	kW	58.0	70.8	72.5	86.8	87.9	106.5	110.3

	Ulti+ R32 23__ CC+		180	200	220	245	270	285
Return air conditions Cooling mode 26°C DB / 50% RH (1)	Dehumidification capacity	kg/h	61.8	67.5	74.5	82.5	94.7	105.1
	Recovery capacity through in-line condenser (optional)	kW	108.5	120.1	134.4	147.9	164.9	173.5
Return air conditions Heating mode 20°C DB / 50% RH (2)	Dehumidification capacity	kg/h	57.3	62.3	69.0	75.7	87.5	95.8
	Recovery capacity through in-line condenser (optional)	kW	98.5	108.9	121.8	133.8	149.2	156.8

(1) At 80% of rated air flow rate, for an outside temperature of +35°C, with 95% saturation
(2) At 80% of rated air flow rate, for an outside temperature of +7°C, with 95% saturation

Probes connection principle

- ① **Room probe:** 1 twisted shielded pair wire, 2 x 0.75 mm² LiY-CY (max. length 100 lm)
- ② **CO_2 probe:** 2 twisted shielded pairs wire, 4 x 0.75 mm² LIY-CY (max. length 100 lm)
- ③ **Humidity probe:** 2 twisted shielded pairs wire, 4 x 0.75 mm² LIY-CY (max. length 100 lm) *(optional)*

Nota: Please note that the value indicated can vary depending on probe location. For more representative results, do not install them:

> Close to heat sources (spotlights, cooking appliances, glass walls, smoke ducts)
> In draft zones (close to entrance, stockrooms, openings)
> In dead zones (behind shelvings, in a corner)
> Close to crowded areas (checkouts, fitting rooms)

- For accurate measurements:
  > Do not install the probes in the axis of the duct used for their wiring.
  > Do not install control cables and power cables in the same duct (risk of electromagnetic interference).

Installation accessories: Roof curbs

DESCRIPTION

The roof curb provides interfacing between the roof and the rooftop unit. It has been designed to facilitate assembly on the roof and unit installation.

Adapter interface

on existing roof curb:

- Compliant with French standard NF P 84-206-1 (Grooved sheet metal roofing with waterproofing coating) and fire-safety regulations for PAB.
- Aluminium packaged roof curb, lighter than other galvanised steel constructions.
- Adjustable angles to compensate roof slope. Other slope percentages are available on request (optional). Please confirm the roof slope percentage and direction upon order confirmation.
- Cap flashing allows continuous insulation and waterproofing membrane (up to 100 mm thick) on roof curb external side as stipulated by 2002/91/EC Directive.
- Roof curbs are intended for steel decks up to 145 mm high and insulation up to 200 mm high (i.e. max. H = 345 mm).

Packaged roof curb

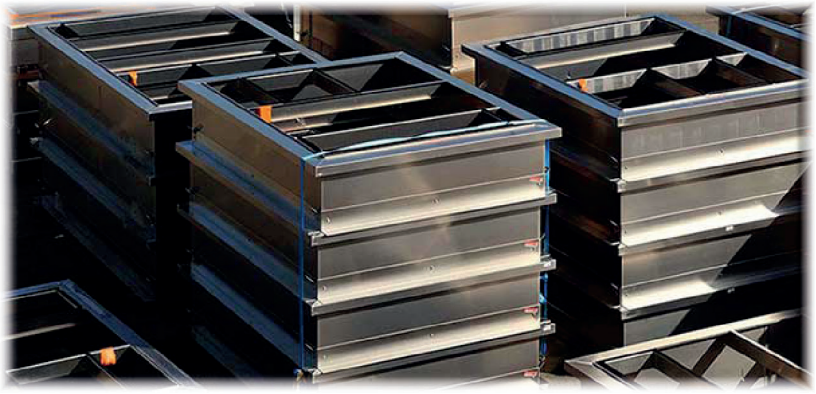
Adjustable ventilated roof curb

- Compliant with French standard NF P 84-206-1 (Grooved sheet metal roofing with waterproofing coating) and fire-safety regulations for PAB.
- Aluminium packaged roof curb, lighter than other galvanised steel constructions.
- Adjustable angles to compensate roof slope. Other slope percentages are available on request (optional). Please confirm the roof slope percentage and direction upon order confirmation.
- 200 mm ventilated air space in accordance with French fire-safety regulations for PAB. 4 (or 6) feet fixed by bolting and tightness guaranteed with foam gasket on supply air and return air ducts frames.
- The air space also provides acoustic insulation since it considerably reduces airborne noise from below the unit.
- 200 mm length double skin insulated supply and return air ducts connections, with external aluminium mechanical protection.
- Cable pipes below the unit for power supply cable and hot water coils pipework.
- The insulation below the roof curb is made of 25 mm glass wool with a protection veil. The insulation is secured with aluminium clips welded on the sheet metal for a better fastening than gluing methods. Insulation limits thermal losses and avoids under-surface condensation.
- Cap flashing allows continuous insulation and waterproofing membrane (up to 100 mm thick) on roof curb external side as stipulated by 2002/91/EC Directive.
- Roof curbs are intended for steel decks up to 145 mm high and insulation up to 200 mm high (i.e. max. H = 345 mm).
- Lifting lugs to facilitate cranage.

Packaged roof curb

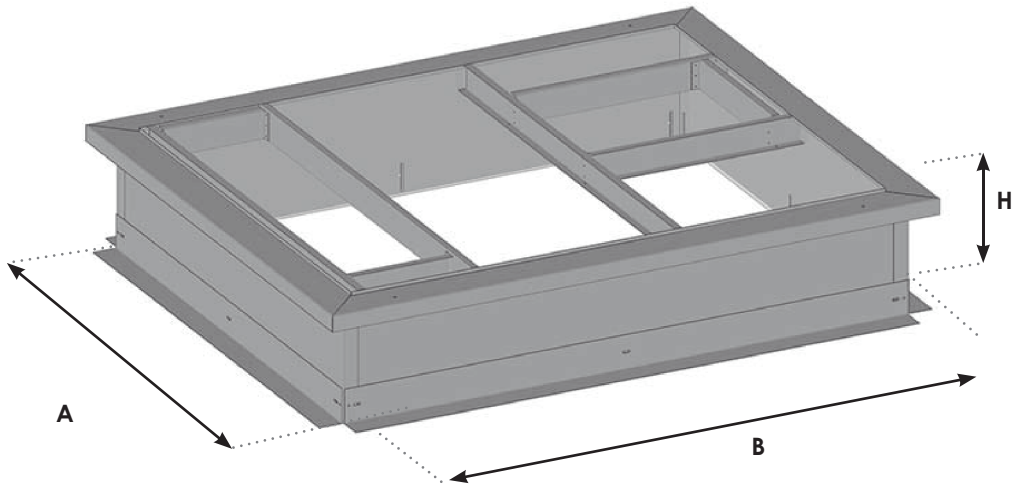
Adjustable connection roof curb

- Bespoke roof curb to be adapted on any type of existing roof curb or header according to dimensions sent by the installer (see our particular clauses for this equipment).



Installation accessories: Roof curbs

ADJUSTABLE CONNECTION ROOF CURB

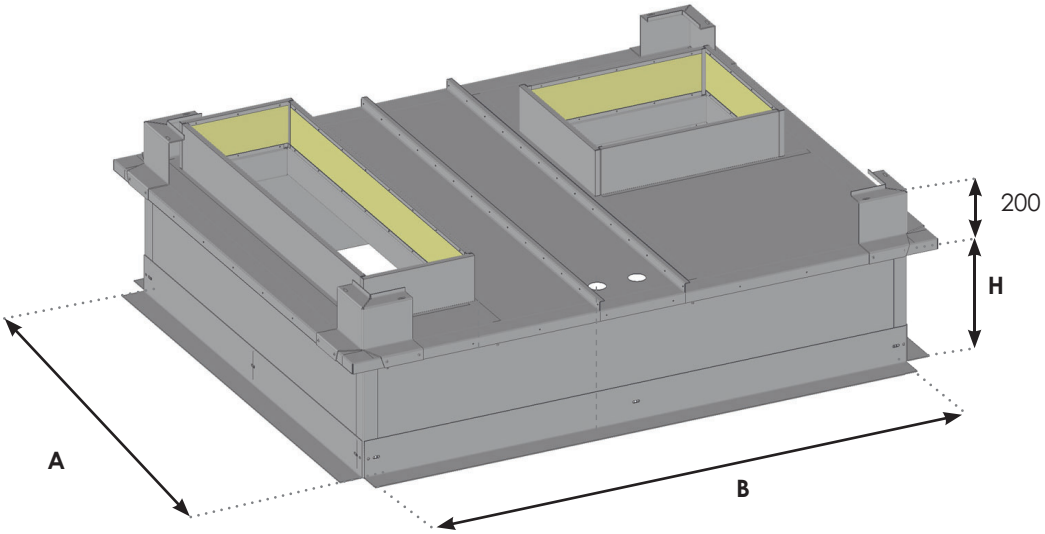


WARNING: For this roof curb installation, the installer has the decennial responsibility for cover guarantee. Please indicate the roof slope and direction when placing the order. Roof curbs are intended for steel decks up to 145 mm high and insulation up to 200 mm high (i.e. max. H = 345 mm). Roof curbs have to be back-drilled after mounting. Mastic application below unit frame.

Dimensions (mm)	A	B	H	Overall width	Overall length	Overall height	Maxi slope lengthwise (%)	Maxi slope widthwise (%)	Weight (Kg)
Ulti+ R32 01__ CC+	1,320	1,970	550	1,534	2,178	568	5.0	7.5	73
Ulti+ R32 11__ CC+	1,700	1,970	550	1,914	2,178	563	5.0	5.8	80
Ulti+ R32 12__ CC+	1,970	2,450	600	2,184	2,658	618	5.0	6.2	104
Ulti+ R32 21__ CC+	2,220	2,770	600	2,434	2,978	618	5.0	6.2	121
Ulti+ R32 22__ CC+	2,370	3,160	600	2,584	3,368	618	5.0	6.7	163
Ulti+ R32 23__ CC+	2,370	4,020	650	2,586	4,428	668	5.0	8.5	210

Installation accessories: Roof curbs

ADJUSTABLE VENTILATED ROOF CURB

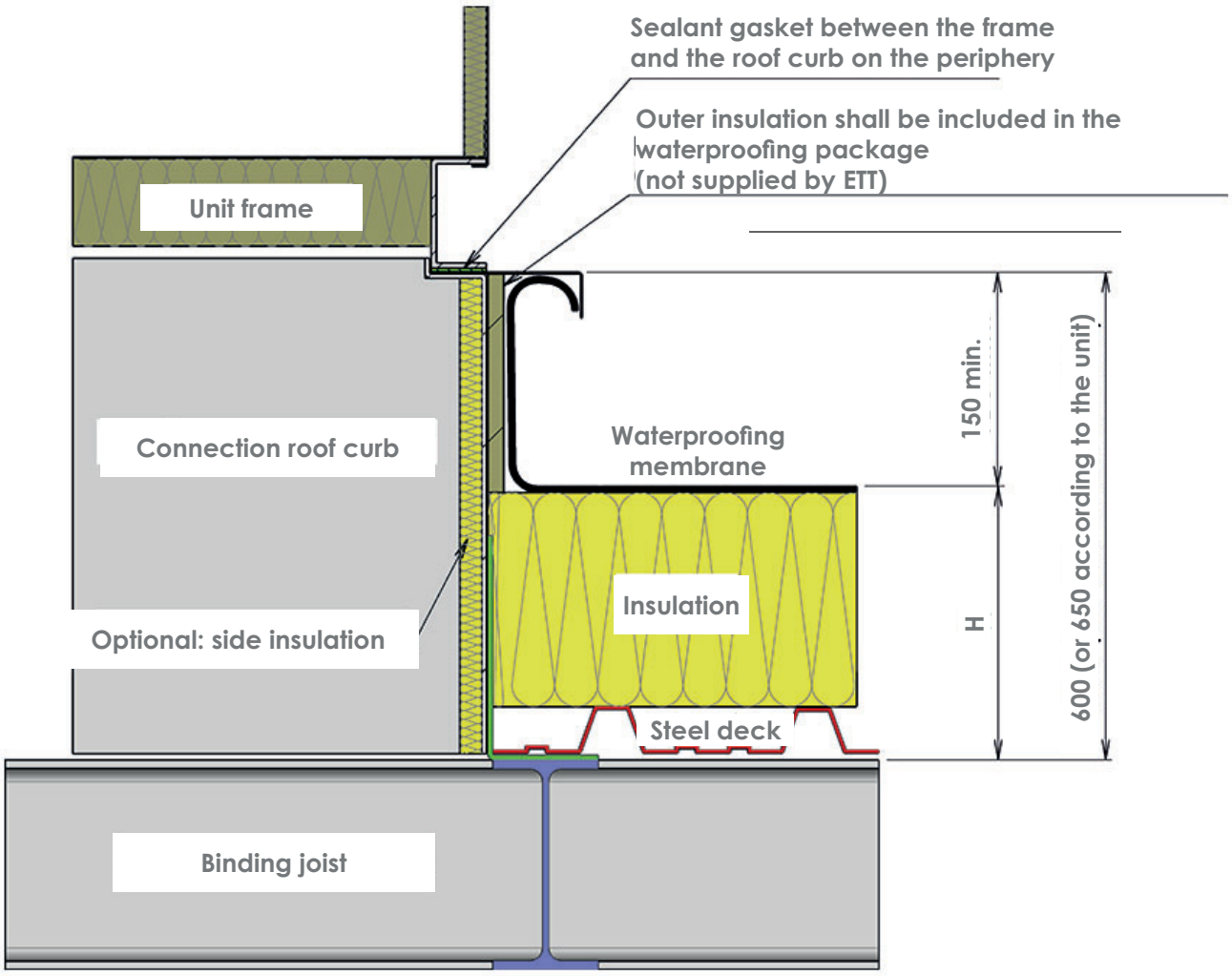


WARNING: For this roof curb installation, the installer has the decennial responsibility for cover guarantee. Please indicate the roof **slope and direction** when placing the order. Roof curbs are intended for steel decks up to 145 mm high and insulation up to 200 mm high (i.e. max. H = 345 mm). Roof curbs have to be back-drilled after mounting. **The unit must be bolted to the roof curb.** Mastic application below unit frame.

Dimensions (mm)	A	B	H	Overall width	Overall length	Overall height	Maxi slope lengthwise (%)	Maxi slope widthwise (%)	Weight (Kg)
Ulti+ R32 01__ CC+	1,320	1,970	550	1,524	2,168	768	5.0	7.5	102
Ulti+ R32 11__ CC+	1,700	1,970	550	1,904	2,168	763	5.0	5.8	112
Ulti+ R32 12__ CC+	1,970	2,450	600	2,174	2,648	818	5.0	6.2	146
Ulti+ R32 21__ CC+	2,220	2,770	600	2,424	2,968	818	5.0	6.2	169
Ulti+ R32 22__ CC+	2,370	3,160	600	2,574	3,358	818	5.0	6.7	228
Ulti+ R32 23__ CC+	2,370	4,020	650	2,576	4,418	868	5.0	8.5	294

Installation accessories: Roof curbs

ROOF CURBS INSTALLATION PRINCIPLE

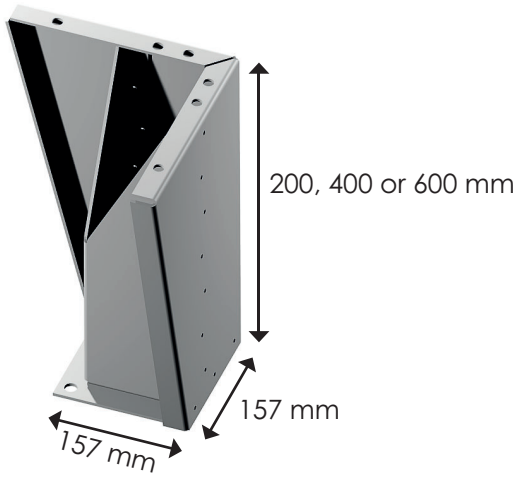


Roof curbs are intended for steel decks up to 145 mm high and insulation up to 200 mm high (i.e. max. H=345 mm).

Nota: One (for connection roof curb) or two (for ventilated roof curb) optional cover sheets can be added to protect the building from the weather during the time between roof curb installation and unit installation.

Installation accessories: Feet

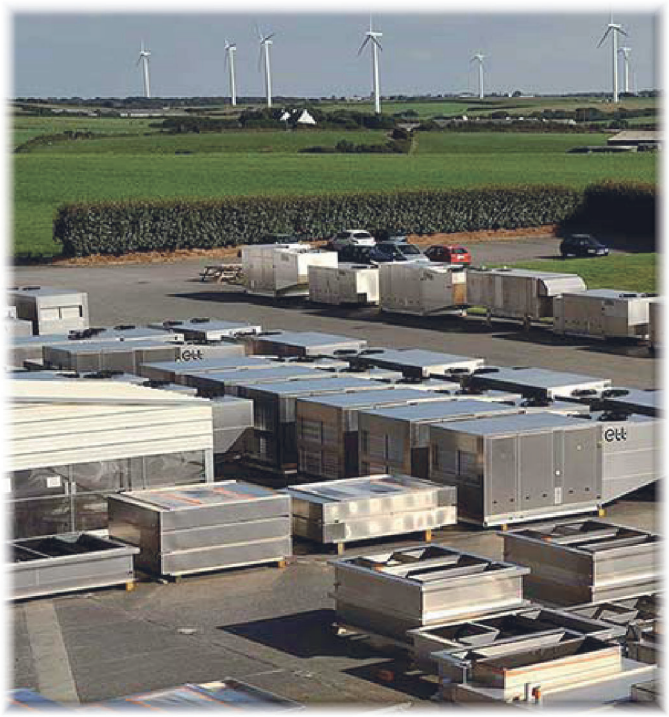
Aluminium fixed foot
Unit weight: 1kg

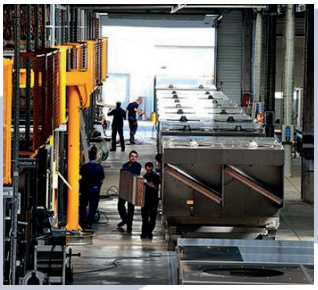


The feet shall be mounted at the corners of the frame. Concerning the ULTI+ R32 - 23 CC+ boxes, two ddditionnal feet shall be placed at the center of the frame.

	Ulti+ R32 01 CC+	Ulti+ R32 11 CC+	Ulti+ R32 12 CC+	Ulti+ R32 21 CC+	Ulti+ R3 22 CC+	Ulti+ R32 23 CC+
No. of feet	4	4	4	4	4	6 (*)

(*) The central feet have a 200 x 200 base (instead of 157 x 157 mm).





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