ENVIRONMENT
AND CLIMATIC
SOLUTIONS
MATERIAL

X-RCAM+ R290

R290

Double-flow heat pump with plate heat exchanger
For the treatment of hygienic fresh air

MADE IN FRANCE

www.ett-hvac.com

ENERGIE TRANSFERT THERMIQUE

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General description

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

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

Our technical choices have a major impact on the environment

•DECARBONATION:

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

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

•ALUMINIUM : PERFORMANCE AND DURABILITY!

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

• ECO-DESIGN:

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

• LOW-POLLUTION MANUFACTURING PROCESS:

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

• END OF MACHINE LIFE:

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

EcoLogic

• ETT CERTIFICATIONS

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

GOLD | Top 5% ecovadis Sustainability Rating JAN2025

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

ISO 14001 ISO 9001

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

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

ETT, a positive impact company, contributes to a more sustainable world through its range of products and services.

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

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

20-year guarantee against corrosion frame - casing

ENERGY SAVING

ENVIRONMENTAL ATTITUDE

SERVICE LINK

Risk analysis

The **Explosion Protection Document (DRPCE)** is a safety document that identifies, assesses, and controls risks when using flammable or combustible products (as is the case with R32 or R290 refrigerants).

The drafting of the **DRPCE** is required uniformly for all A2L to A3 fluids (according to NF EN 378 2017).

This is a mandatory document for companies where explosive atmospheres may form (presence of flammable gases, vapors, or dusts).

It aims to assess explosion risks, define ATEX zones, and implement prevention and protection measures.

This risk analysis must be conducted by the operator of the building where the machine is installed and provided at the time of commissioning.

Safety and intervention zone

Since propane is heavier than air, it is important to avoid any areas where gas could accumulate near the machine in the event of a leak.

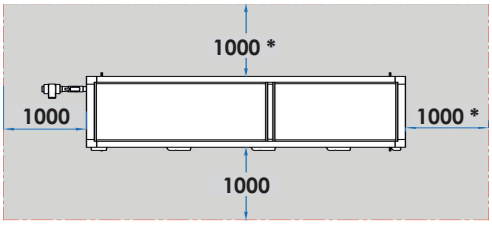
Therefore, in the case of machines installed outdoors, particular attention must be paid to the positioning of the machines in relation to openings (such as Skydomes) and parapets.

In the case of machines installed indoors, it is recommended to duct the valve to the outside of the building to vent gases in case of leakage. It is also recommended to duct the recirculation fan from the technical compartment to the outside of the building.

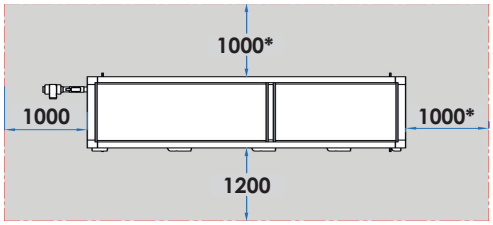
Likewise, it is necessary to ensure the absence of air intakes, wall openings, drainage channels, and low points near the machine.

For each machine size, a safety zone must be maintained (indicated by the shaded area in the diagrams below), and this zone must be free of any external machine equipment.

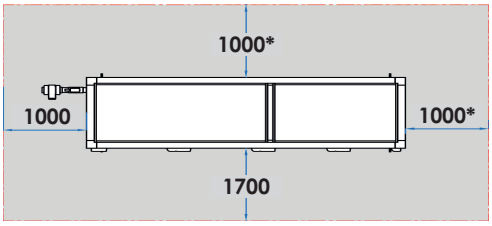
SAFETY AND INTERVENTION ZONE DEPENDING ON THE TYPE OF MACHINE



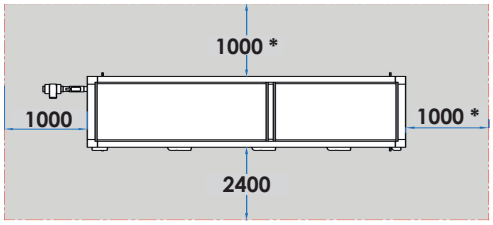
X-RCAM+ R290 T2



X-RCAM+ R290 T3



X-RCAM+ R290 T4



X-RCAM+ R290 T5

(* excluding machine against a wall)

Special case of work on the refrigeration circuit:

In this case, the technician must maintain a **5-meter** safety distance **all around** the machine (not shown in the diagrams).

During the intervention, it is essential to secure this expanded zone by preventing any ignition sources and checking that there is no possibility of gas leakage into the building (by closing openings and air intakes, in particular). If it is not possible to seal these openings, an analysis must be carried out to implement preventive measures such as a deflector or a safety system must be installed.

This analysis must be carried out as soon as the machine is installed.

Unit description

X-RCAM+ R290 (**R**ecovery **C**lean **A**ir **M**anagement) is a dual-flow heat pump with double energy recovery from the exhaust air. It is designed to supply **hygienic fresh air at a neutral temperature**, as required by regulations for public buildings: hotels, collective housing, hospitals and nursing homes, as well as office buildings.

Regulation is based on the supply air temperature.

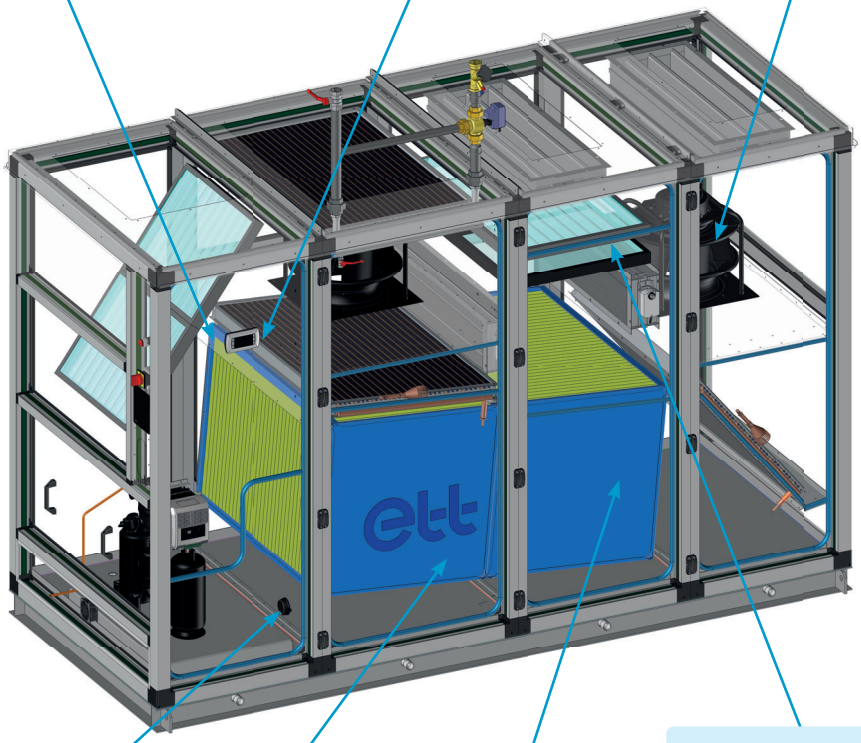
Thanks to the various innovations and materials used, the **X-RCAM+ R290** combines performance, reliability, air quality and respect for the environment.

New generation PLC with display
- Controls for optimum operation
- New ETT Control Box touch display (optional)
- Ventilated electrical board separated from the technical compartment
- Basic phase controller

Connected components
- myETTvision 1-year subscription provided with no commitment
- 4G maintenance gateway

myETTvision

Fans
- Basic epoxy protection
- Analogue air flow controller (AFC), communicating, direct transmission, "EC" electronically commutated motor, optimum performance and low acoustic level



Leak detector
- With propane detector, safety chain and mixing fan from the technical compartment NEW !

Eco-design filtration
- Low pressure drop.
- Analogue clogging controller.
- ISO ePM10 50% (M5) and standard ISO ePM1 50% (F7) on supply air
- ISO ePM10 50% (M5) on exhaust air.

Energy recovery
- Cross-flow plate heat exchanger
- Corrosion-resistant paint
- Efficiency greater than 73% in 100% fresh air mode (in accordance with EN308)
- Eurovent-certified heat exchanger

Thermodynamic batteries
- New R290 refrigerant **with a low GWP (0.02)** NEW !

GWP = Global warming potential
- Enhanced heat exchangers for a lower refrigerant load NEW !
- Coils with vinyl-protected fins
- Electronic expansion valves

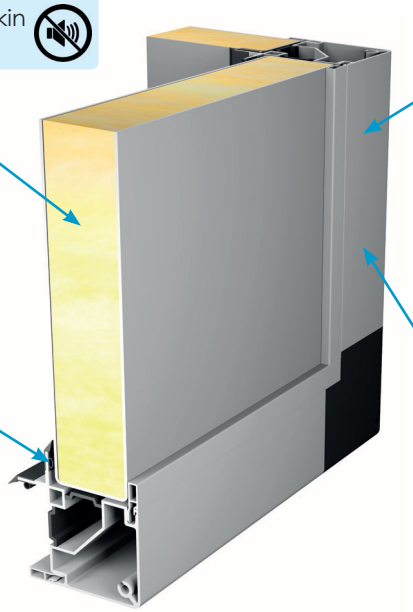
R290

Unit description

Aluminium frame and casing assembly
- New system with improved thermal performance, class T2TB2 (in accordance with NF EN 1886)
- Optimised tightness and thermal insulation.
- Compression locks
- Reduced weight, for new and refurbish projects.

20-year guarantee against corrosion frame - casing

Reinforced insulation
- 50 mm thick glass wool classified M0/A2s1d0
- Integrated thermal bridge breaker
- Reinforced acoustic insulation with double skin and high-density glass wool



Seal
- Airtightness level L1 (according to NF EN 1886) Hygienic quality VDI6022

100% recyclable aluminium

Intallation in a technical compartment
- Compact casing for wall mounting.
- Narrow machine width for easy door access during installation
- Multiblock delivery available as an option.
- Machine easily cleanable with integrated condensate tray.

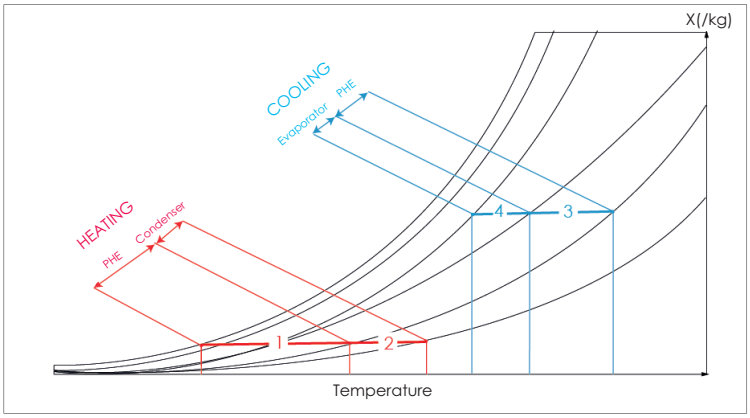
TÜV NORD

*EN1886 performance level on ETT model housing tested and validated by the TUV Nord laboratory (2022)

NF EN 1886: 2008	ETT "Model Box" performance				
Mechanical distortion			D3	D2	D1
Case leak (overpressure +700Pa)			L3	L2	L1
Case leak (negative pressure - 400Pa)			L3	L2	L1
Filter frame leak	M5	F6	F7	F8	F9
Transmittance	T5	T4	T3	T2	T1
Thermal bridge	TB5	TB4	TB3	TB2	TB1

Operating principles

Energy recovery from exhaust air in winter and summer is carried out via a heat exchanger (PHE). The setpoint temperature can be maintained thanks to this recovery and, to the heat pump reversible cycle if required.



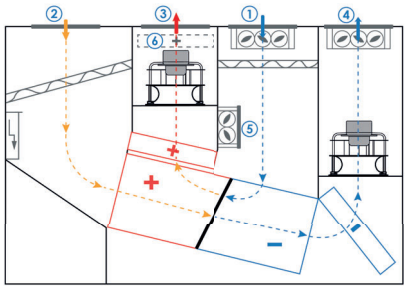
The machine operates as a reversible heat pump:

- Source : exhaust air
- Treated fluid: hygienic fresh air
- With 100% fresh air - 100% exhaust air with supply air temperature control.

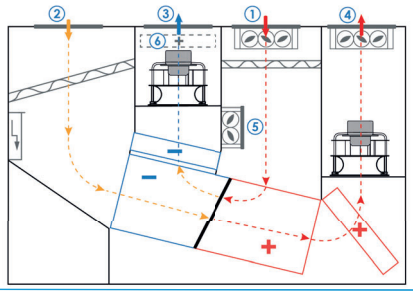
The following operating modes are available:

- Heating mode: the exhaust air transfers its heat to the outside fresh air through the plate heat exchanger (minimum efficiency 70%) [1]. If required by the heating load, supplementary heating is provided by the variable-capacity refrigeration circuit condenser to optimally maintain the setpoint temperature [2].
- Cooling mode: Heat from the fresh air is recovered and transferred to the exhaust air via a plate heat exchanger (minimum efficiency 70%) [3]. If necessary, the variable-capacity refrigeration circuit evaporator is engaged to precisely maintain the required setpoint [4].
- Free Cooling Mode

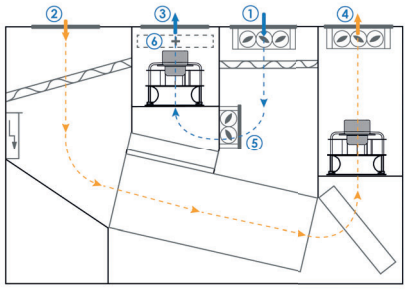
Heating Mode:



Cooling Mode:

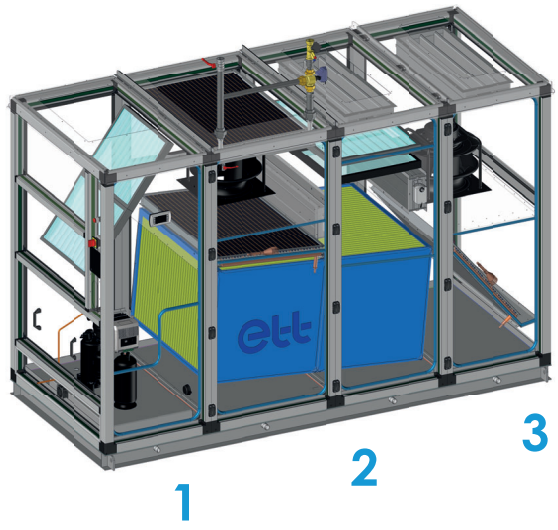


Free Cooling Mode:



① Fresh air ② Return air ③ Supply air ④ Exhaust air ⑤ Free Cooling damper ⑥ Heating auxiliary

Detailed components of the unit



The ETT packaged unit has 3 different compartments:

1. A technical compartment housing the refrigeration components, the electrical board and the control devices.
2. A supply air compartment for fresh air renewal.
3. An extraction compartment for recovering and/or rejecting heat from the extracted air (depending on the operating mode).

Aluminium frame and casing :

- **Rigid** and lightweight **packaged** unit, with perfect weather resistance and a 20-year anti corrosion warranty on the entire casing.
- **Watertight floor** with drainage outlets around the unit, connected to rubber traps.
- **Full** aluminium **casing** AG3.
- **High-performance thermal and aeraulic casing: T2 & TB2 thermal class, L1 & F9 leakage level as per NF EN 1886.**
- A separate **technical compartment** that facilitates maintenance and control of the unit, enables measurements to be taken and settings to be fine-tuned during operation.
- **Access via** oversized, **removable hinged doors**. The panels are fitted **with compression locks**. The removable panels are sealed by compression on a flexible lip seal, ensuring a perfect sealing over time.
- **Double-skin internal sound and heat insulation** of the side walls using 50 mm thick glass wool classified M0/A2s1d0, protected by a 13/10 thick aluminium sheet for mechanical protection and ease of maintenance
- **Floor thermal and acoustic insulation** prvided by50 mm glass wool,M0/ A2s1d0 with double-skin.
- **A separate technical compartment** that facilitates maintenance and control of the unit, enables measurements to be taken and settings to be fine-tuned during operation.
- **3-damper mixing box** comprising a motorised fresh air damper with a bird proof grid, a motorised exhaust air damper and a motorised mixing damper, providing precise airflow proportions and optimising Free Cooling economizer operation. The dampers have extruded aluminium blades with low pressure drop due to the aircraft wing profile. The damper frame is made of aluminium.

Detailed components of the unit

Air handling assembly:

- **Eco-concept filtration: 48 mm + 48 mm thick** at supply, easily removable, ISO ePM10 50% (M5) pleated media + ISO ePM1 50% (F7) efficiency, with filter fouling monitoring via regulator.
- **Eco-concept filtration: 48 mm thick** at return, easily removable, ISO ePM10 50% (M5) efficiency in pleated media with fouling controlled by the regulator.
- **Last generation internal fans (High Energy Performance):**
  - ✓ **Direct transmission** (savings in maintenance, reliability and consumption).
  - ✓ **Fitted with a variable speed " EC "** electronically commutated motor combined with an Analogue Flow Controller - AFC (savings on commissioning).
  - ✓ Communicating, for real time operation adjustment.
  - ✓ With integrated Soft Starter to reduce starting current and enable soft starting (textile ducts).

Energy and thermodynamic assembly:

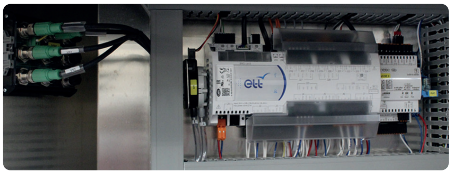
- **Refrigeration circuits** compliant with the European Pressure Equipment Directive (PED 2014/68/EU).
- **Variable-speed compressor** for optimized unit efficiency. Supply air temperature control via inverter drive.
- **Refrigerant** R290.
- **A plate heat exchanger,** with aluminium plates, with high recovery capacity and sized to optimise the heat pump's efficiency. The plate heat exchanger recovers heat from the extracted air and transfers it on the fresh air side to the second half of the plate heat exchanger. Heat transfer takes place without energy consumption. The plate heat exchanger will be protected by vinyl treatment on the plates and anti-corrosion paint on the frame.
- **Direct expansion heat exchangers,** with copper tubes and aluminium fins, with high heat exchange capacity optimised by a thermostatic expansion valve, selected for an air speed of less than 2.6 m/s to avoid any risk of condensate being carried away. Direct expansion heat exchangers are protected with vinyl coating.
- **Two (2) electronic expansion valves** combining increased optimisation of the heat exchangers and fast stabilisation of the thermodynamic system.
- **Anti-acid** filter drier.
- **H.P**pressure switch.
- **Liquid tank** with safety relief valve.
- **Suction** accumulator.
- **Leak detection:** The X-RCAM+ R290 is fitted with leak detection as standard. This device alerts the user in the event of a R290 refrigerant leak and automatically puts the unit into a safe mode.

Detailed components of the unit

Electrical assembly:

■ **Electric board** compliant with standards NF EN C 15-100 and NF EN 60204-01, including:

- ✓ **A ETT PLC** with display.
- ✓ **A power switch** with lockable external handle for full load cut-off. Standard universal cable connection. Optional copper/aluminium junction boxes.
- ✓ A 400-230-24V **transformer** for control and regulation circuits.
- ✓ **Numbered terminal blocks** with disconnect terminals for all transfers or remote controls.
- ✓ **A terminal block** for compressor load shedding.
- ✓ **Internal wiring** fully numbered at both ends with numbered rings.
- ✓ An Ik3 **breaking capacity** of 10 kA basic.
- ✓ All components **protected** by circuit breakers.
- ✓ **A phase controller.**



Control assembly:

- **NTC-type temperature sensors** whose reliability and accuracy have been tested and validated both in the factory and on site.
- **One or more BEST** (Building Energy Saving Technology) **PLCs** developed specifically by ETT for this range of machines. Programmes are updated annually to add functions required in certain applications and to optimise machine power consumption as far as possible.
- **Native MODBUS IP** communication protocol (optional BacNet IP).

The microprocessor, memory and size of the PLCs are adapted to the application and the options selected, incorporating a factory-set programme of 160 possible configurations.

The PLC is housed in a plastic enclosure, which guarantees a high level of mechanical protection and reduces the risk of electrostatic discharges.

The PLC performs the following functions, among others:

- ✓ **On/off by remote contact** or vacancy contact
- ✓ **Occupancy/vacancy mode** according to programmed schedule (2 time slots per day).
- ✓ Water law control modulates supply air temperature based on outdoor air temperature.
- ✓ **Fault overview** with dry contact for transfer to customer system.
- ✓ **Management of safety devices** (anti-freeze thermostat, smoke detector, HP pressure switch, R290 sensor, mixing fan) and faults.
- ✓ **Measurement, indication and adjustment of the supply/extraction airflow rate,** enabling precise control of airflow rates according to the machine's operating modes.
- ✓ **Fault history** in literal form (no code) with time and outdoor temperature display.
- ✓ **Recording of** machine, compressor and auxiliaries **operating times**.
- ✓ **Control of the machine's operating points,** whatever the external environment, enabling comfort to be managed for users, while considering the relationship between energy efficiency and the protection of the building.
- ✓ **Constant airflow control system**: The X-RCAM+ R290 maintains constant supply airflow via ETT filter fouling control equipment. Progressive SRV ETT refrigeration regulation ensures occupant comfort through precise supply air condition control. This configuration is recommended for hygienic fresh air handling applications requiring neutral temperature.
- ✓ **Variable airflow regulation** available via SCP/RPC sensors.
- ✓ **Auxiliary heating/cooling management** (hot water coil or chilled water coil options as selected).
- ✓ **Defrost management** optimized for: Energy savings mode (100% recirculation, no auxiliary heat). Air quality mode (100% fresh air).

The maintenance gateway (4G router + switch) provides essential features to ensure the performance, reliability, and scalability of your equipment:

- ▶ Provides a reliable and constant connection to the server
- ▶ Real-time monitoring in the event of anomalies or failures on critical systems
- ▶ Offers connected customer support that facilitates technical assistance through remote diagnostics, thereby limiting on-site interventions
- ▶ Prepares for the implementation of an Energy Performance Contract.
- ▶ Able to receive software updates incorporating the latest improvements from ETT in terms of regulation, energy performance, and comfort.
- ▶ Prepares for future developments related to artificial intelligence, such as predictive maintenance or data analysis

Main options

Frame - Casing	▪ Machine for outdoor installation ▪ Motorised external supply air damper (2006/42/EC Directive) ▪ Stainless steel frame 'METU' ▪ Multi-block * ▪ Blocking plate kit for multi-block transport
Acoustics	▪ STOPFLAM foam sound insulation for the technical compartment ▪ Acoustic insulation for fresh air cowl
Air handling	▪ Pressure gauge per filtration cell ▪ Filter Fouling Analogue Control (FFAC) ▪ Actuating smoke detector with battery back-up ▪ Opacimetric filters ISO ePM1 80% (F9) th. 48 mm on supply air ▪ Replacement filters ▪ SCP and RPC sensors
Thermal heat exchangers	▪ Hot water coil with analogue frost protection thermostat ▪ Chilled water coil ▪ Modulating 3-way valve mounted on the hot water coil or chilled water coil ▪ Pre-assembled shut-off valve + balancing valve ▪ Indirect adiabatic module option (see pages 28 and 29)
Installation	▪ Feet, aluminium, 200, 400 mm
Electrics and communication	▪ Machine Global Energy Meter ▪ Software licence for BacNet IP protocol ▪ IT regime compatibility Global Machine Energy Metering ▪ ETT 'Control Box' remote touch display ▪ TWIN regulation (see page 21) ▪ Additional years of subscription to myETTvision beyond the first year offered without commitment (4G gateway), provided the service is available in the relevant country ▪ Supply air constant pressure control (SCP with air flow rate variation ensuring constant supply air conditions)**
Reinforced protections	▪ Heresite coating on hot water coil or chilled water coil ▪ Hérésite protection on thermodynamic coils ▪ High-performance plug fan with H2+S protective coating

* depending on model

** Contact factory for consultation on minimum operating airflow rates.

Technical features

X-RCAM+ R290
2-3000 / 2-4000

	DESCRIPTION	Unit	2-3000	2-4000
VENTILATION	**SUPPLY AIR**			
	Nominal supply and return airflow rates	**m3/h**	3,000	4,000
	Minimum/maximum air flow	**m3/h**	3,000 / 4,000	
	FANS (1)			
	Supply fan electrical power input	**kW**	0.9	1.4
	Exhaust fan electrical power input	**kW**	0.8	1.2
	ACOUSTICS (1)			
	Sound power level at supply air	**dB(A)**	80	85
	Outside sound power level	**dB(A)**	64	68
	Resulting external sound pressure at 10m ref. 10^{-5} in free field	**dB(A)**	33	37
AIR CONDITIONING PERFORMANCE	**NOMINAL PERFORMANCE AT +35°C** (1) (2)			
	Overall cooling capacity	**kW**	10.0	12.9
	Overall EER including fan power consumption	**kW/kW**	4.1	3.4
	Recovered cooling capacity via plate heat exchanger.	**kW**	6.1	8.3
	Plate heat exchanger efficiency	**%**	74	75
HEATING PERFORMANCE	**NOMINAL PERFORMANCE AT +7°C** (1) (3)			
	Overall heating capacity	**kW**	14.2	18.3
	Overall COP including fan power consumption	**kW/kW**	6.8	5.9
	Recovered cooling capacity via plate heat exchanger.	**kW**	9.8	13.3
	Plate heat exchanger efficiency	**%**	74	75
	NOMINAL PERFORMANCE AT -7°C (1) (3)			
	Overall heating capacity	**kW**	27.6	36.8
	Overall COP including fan power consumption	**kW/kW**	11.1	9.9
	Recovered cooling capacity via plate heat exchanger.	**kW**	21.7	29.5
	Plate heat exchanger efficiency	**%**	79	81
GENERAL DATA	**ELECTRICAL DATA** (1)			
	Total installed electrical power	**kW**	9.3	9.3
	Total installed electrical current	**A**	23	23
	Starting current	**A**	23	23
	REFRIGERATION CIRCUITS			
	Number of compressors	**-**	1	
	Type	**-**	Variable	
	OPERATING LIMITS			
	Maximum outside temperature	**°C**	45	
	Minimum outside temperature	**°C**	-15	
	POIDS (1)			
	Unit weight without any option	**kg**	660	

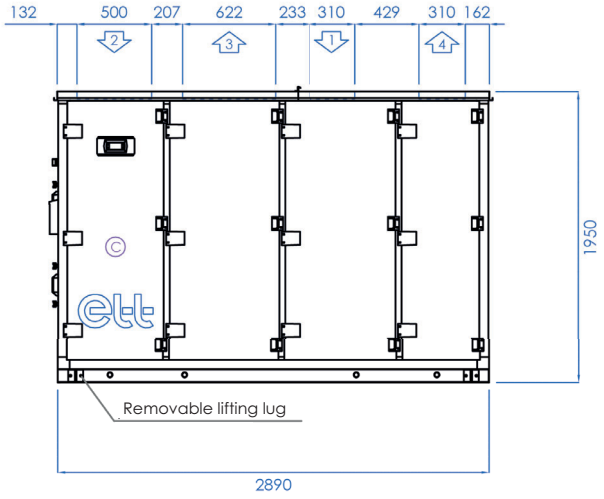
(1) Standard configuration for external static pressure of 250 Pa at supply, 250 Pa at exhaust, and filtration of ISO ePM10 50% (M5) + ISO ePM1 50% (F7) at supply a ISO ePM10 50% (M5) at exhaust without auxiliary.
(2) Indoor conditions: +27°C DB / +19°C WB - Outside conditions : +35°C DB / 24°C WB - Supply air conditions: +26°C

(3) Inside conditions: +20°C DB / +12°C WB - Outside conditions : +7°C DB / +6°C WB - Outside conditions : -7°C DB / -8°C WB - Supply air conditions: +20°C

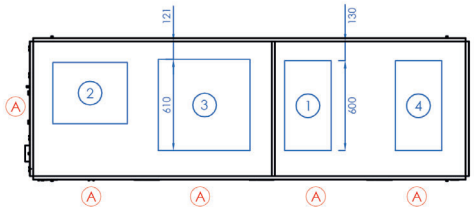
Dimensions and connections

X-RCAM+ R290
2-3000 / 2-4000

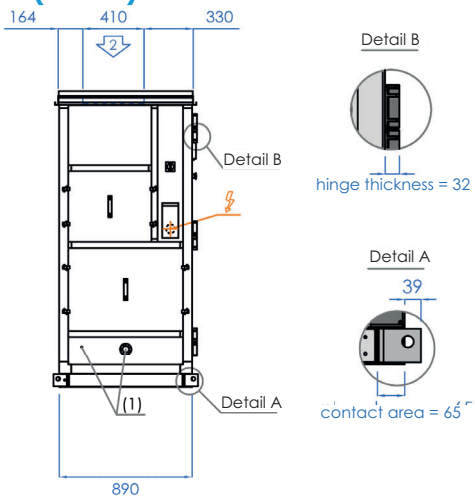
Front view:



Top view:

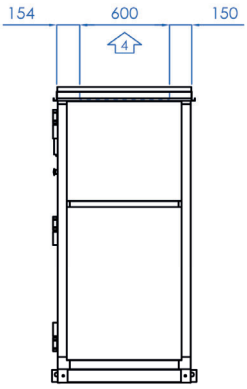


Side view (return):



(1): Mixing fan and sleeved valve outlet

Side view (exhaust):



① Fresh air
② Return air
③ Supply air
④ Extracted air
Ⓐ Access
⚡ Power supply
Ⓒ Technical compartment

	Length	Width	Height
Dimensions of assembled casing (mm)	2,890	890	1,984
Overall dimensions for transport (mm)	2,959	967	1,984

Note:
- Allow for a minimum 200 mm support under the unit for connection of condensate traps.
- ETT recommends either a distance of 8 metres between fresh air intakes and exhaust air outlets, or the installation of equipment such as a 'polluted' air return system to make this impossible.

Technical features

X-RCAM+ R290
3-5000 / 3-6000

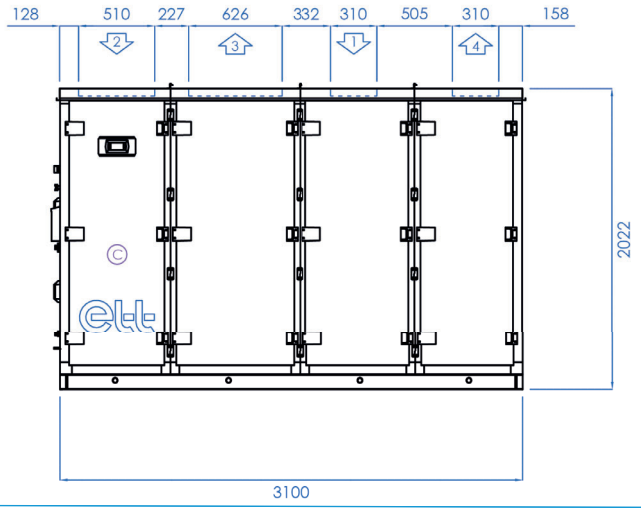
	DESCRIPTION	Unit	3-5000	3-6000
VENTILATION	**SUPPLY AIR**			
	Nominal supply and return airflow rates	**m3/h**	5,000	6,000
	Minimum/maximum air flow	**m3/h**	5,000/6,000	
	FANS (1)			
	Supply fan electrical power input	**kW**	1.4	2.0
	Exhaust fan electrical power input	**kW**	1.3	1.7
	ACOUSTICS (1)			
	Sound power level at supply air	**dB(A)**	81	85
	Outside sound power level	**dB(A)**	64	67
	Resulting external sound pressure at 10m ref. 10^{-5} in free field	**dB(A)**	33	37
AIR CONDITIONING PERFORMANCE	**NOMINAL PERFORMANCE AT +35°C** (1) (2)			
	Overall cooling capacity	**kW**	15.8	18.8
	Overall EER including fan power consumption	**kW/kW**	4.0	3.5
	Recovered cooling capacity via plate heat exchanger.	**kW**	10.2	12.5
	Plate heat exchanger efficiency	**%**	74	75
HEATING PERFORMANCE	**NOMINAL PERFORMANCE AT +7°C** (1) (3)			
	Overall heating capacity	**kW**	22.5	27.2
	Overall COP including fan power consumption	**kW/kW**	7.0	6.2
	Recovered cooling capacity via plate heat exchanger.	**kW**	16.4	19.8
	Plate heat exchanger efficiency	**%**	74	75
	NOMINAL PERFORMANCE AT -7°C (1) (3)			
	Overall heating capacity	**kW**	45.8	55.1
	Overall COP including fan power consumption	**kW/kW**	11.2	10.1
	Recovered cooling capacity via plate heat exchanger.	**kW**	36.4	44.1
	Plate heat exchanger efficiency	**%**	80	81
GENERAL DATA	**ELECTRICAL DATA** (1)			
	Total installed electrical power	**kW**	10.5	10.5
	Total installed electrical current	**A**	27	27
	Starting current	**A**	27	27
	REFRIGERATION CIRCUITS			
	Number of compressors	**-**	1	
	Type	**-**	Variable	
	OPERATING LIMITS			
	Maximum outside temperature	**°C**	45	
	Minimum outside temperature	**°C**	-15	
	WEIGHT (1)			
	Unit weight without any option	**kg**	960	

(1) Standard configuration for external static pressure of 250 Pa at supply, 250 Pa at exhaust, and filtration of ISO ePM10 50% (M5) + ISO ePM1 50% (F7) at supply of ISO ePM10 50% (M5) at exhaust without auxiliary.
(2) Inside conditions: +27°C DB / +19°C WB - Outside conditions : +35°C DB / 24°C WB - Supply air conditions: +26°C
(3) Inside conditions: +20°C DB / +12°C WB - Outside conditions : +7°C DB / +6°C WB - Outside conditions : -7°C DB / -8°C WB - Supply air conditions: +20°C

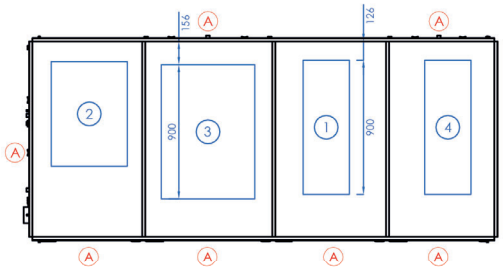
Dimensions and connections

X-RCAM+ R290
3-5000 / 3-6000

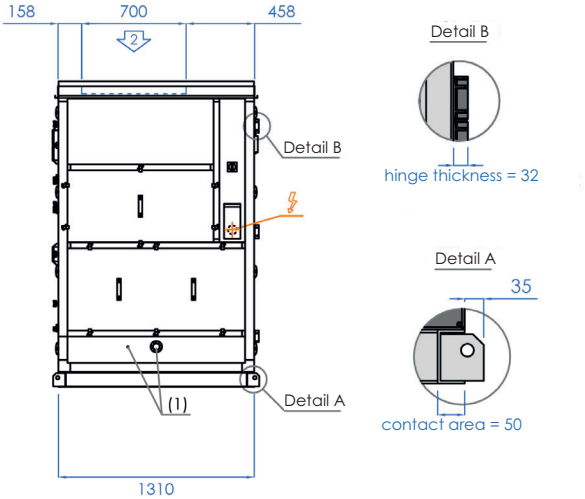
Front view:



Top view:

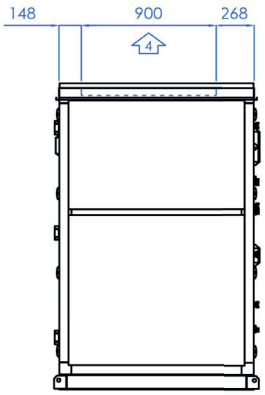


Side view (return):



(1): Mixing fan and sleeved valve outlet

Side view (exhaust):



① Fresh air
② Return air
③ Supply air
④ Extracted air
Ⓐ Access
⚡ Power supply
Ⓒ Technical compartment

	Length	Width	Height
Dimensions of assembled casing (mm)	3,100	1,310	2,054
Overall dimensions for transport (mm)	3,163	1,385	2,054

Note:
- Allow for a minimum 200 mm support under the unit for connection of condensate traps.
- ETT recommends either a distance of 8 metres between fresh air intakes and exhaust air outlets, or the installation of equipment such as a 'polluted' air return system to make this impossible.

Technical features

X-RCAM+ R290

4-7000 / 4-8000 / 4-9000 / 4-10000

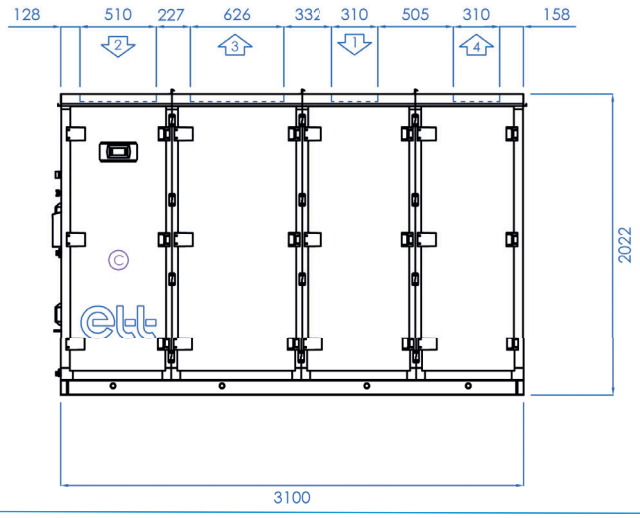
	DESCRIPTION	Unit	4-7000	4-8000	4-9000	4-10000
VENTILATION	**SUPPLY AIR**					
	Nominal supply and return airflow rates	**m3/h**	7,000	8,000	9,000	10,000
	Minimum/maximum air flow	**m3/h**	7,000/10000			
	FANS (1)					
	Supply fan electrical power input	**kW**	2.0	2.5	3.1	3.9
	Exhaust fan electrical power input	**kW**	1.7	2.1	2.6	3.2
	ACOUSTICS (1)					
	Sound power level at supply air	**dB(A)**	84	87	89	91
	Outside sound power level	**dB(A)**	67	69	72	74
	Resulting external sound pressure at 10m ref. 10^{-5} in free field	**dB(A)**	36	38	41	43
AIR CONDITIONING PERFORMANCE	**NOMINAL PERFORMANCE AT +35°C** (1) (2)					
	Overall cooling capacity	**kW**	22.7	26.0	29.2	32.2
	Overall EER including fan power consumption	**kW/kW**	4.3	3.9	3.5	3.1
	Recovered cooling capacity via plate heat exchanger.	**kW**	14.3	16.4	18.6	21.8
	Plate heat exchanger efficiency	**%**	74	74	75	75
HEATING PERFORMANCE	**NOMINAL PERFORMANCE AT +7°C** (1) (3)					
	Overall heating capacity	**kW**	33.5	37.6	41.7	46.0
	Overall COP including fan power consumption	**kW/kW**	7.2	6.8	6.2	5.6
	Recovered cooling capacity via plate heat exchanger.	**kW**	22.9	26.5	29.8	33.3
	Plate heat exchanger efficiency	**%**	74	75	75	75
	NOMINAL PERFORMANCE AT -7°C (1) (3)					
	Overall heating capacity	**kW**	64.5	74.1	83.3	92.8
	Overall COP including fan power consumption	**kW/kW**	11.6	11.0	10.2	9.4
	Recovered cooling capacity via plate heat exchanger.	**kW**	51.7	58.9	66.3	73.9
	Plate heat exchanger efficiency	**%**	80	81	81	81
GENERAL DATA	**ELECTRICAL DATA** (1)					
	Total installed electrical power	**kW**	22.8	22.8	22.8	22.8
	Total installed electrical current	**A**	35	35	35	35
	Starting current	**A**	35	35	35	35
	REFRIGERATION CIRCUIT					
	Number of compressors	**-**	1			
	Type	**-**	Variable			
	OPERATING LIMITS					
	Maximum outside temperature	**°C**	45			
	Minimum outside temperature	**°C**	-15			
	WEIGHT (1)					
	Unit weight without any option	**kg**	1,280			

(1) Standard configuration for external static pressure of 250 Pa at supply, 250 Pa at exhaust, and filtration of ISO ePM10 50% (M5) + ISO ePM1 50% (F7) at supply of ISO ePM10 50% (M5) at exhaust without auxiliary.
(2) Inside conditions: +27°C DB / +19°C WB - Outside conditions : +35°C DB / 24°C WB - Supply air conditions: +26°C
(3) Inside conditions: +20°C DB / +12°C WB - Outside conditions : +7°C DB / +6°C WB - Outside conditions : -7°C DB / -8°C WB - Supply air conditions: +20°C

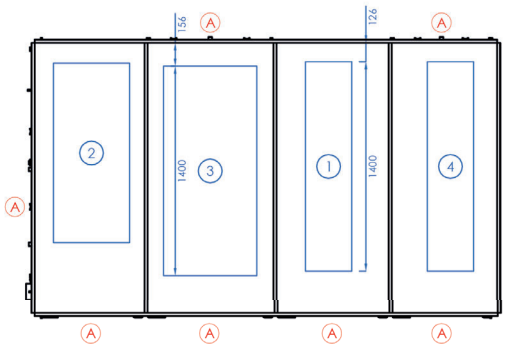
Dimensions and connections

X-RCAM+ R290
4-7000 / 4-8000 / 4-9000 / 4-10000

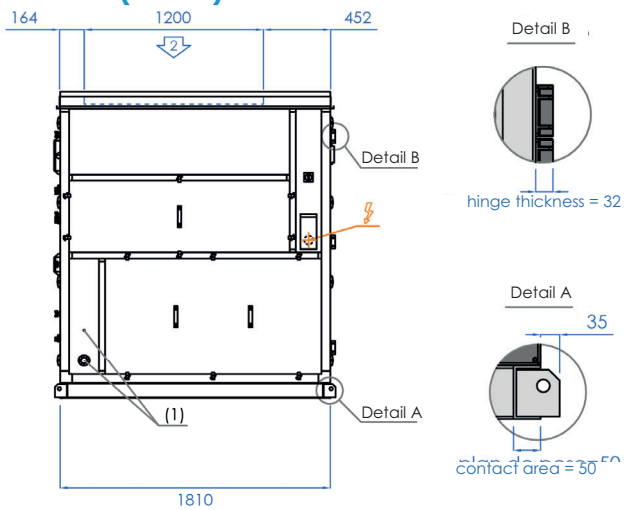
Front view:



Top view:

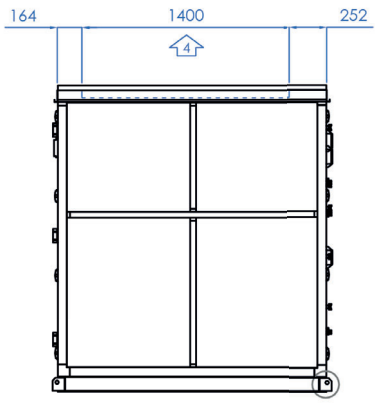


Side view (return):



(1): Mixing fan and sleeved valve outlet

Side view (exhaust):



① Fresh air
② Return air
③ Supply air
④ Extracted air
Ⓐ Access
⚡ Power supply
Ⓒ Technical compartment

	Length	Width	Height
Dimensions of assembled casing (mm)	3,100	1,810	2,054
Overall dimensions for transport (mm)	3,163	1,885	2,054

Note: - Allow for a minimum 200 mm support under the unit for connection of condensate traps.
- ETT recommends either a distance of 8 metres between fresh air intakes and exhaust air outlets, or the installation of equipment such as a 'polluted' air return system to make this impossible.

Technical features

X-RCAM+ R290

5-11000 / 5-12000 / 5-13000 / 5-14000 / 5-15000

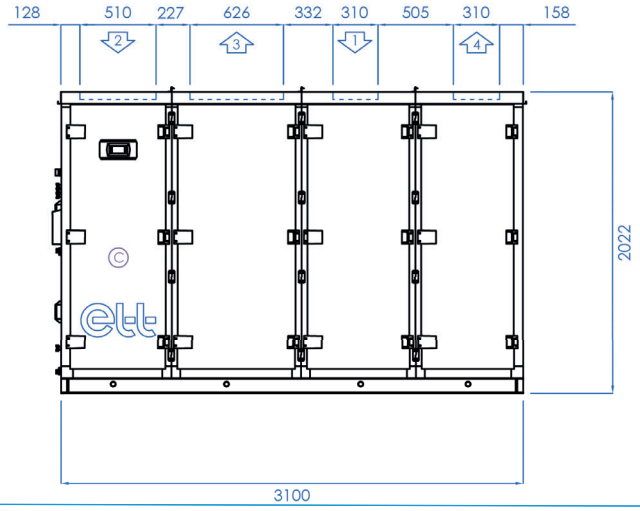
	DESCRIPTION	Unit	5-11000	5-12000	5-13000	5-14000	5-15000
VENTILATION	**SUPPLY AIR**						
	Nominal air flow	m3/h	11,000	12,000	13,000	14,000	15,000
	Minimum/maximum air flow	m3/h	11,000/15,000				
	FANS (1)						
	Supply fan electrical power input	kW	3.2	3.8	4.0	4.8	5.7
	Exhaust fan electrical power input	kW	2.7	3.2	3.2	3.8	4.5
	ACOUSTICS (1)						
	Sound power level at supply air	dB(A)	85	87	87	88	90
	Outside sound power level	dB(A)	68	70	70	72	73
	Resulting external sound pressure at 10m ref. 10-5 in free field	dB(A)	37	39	39	41	42
AIR CONDITIONING PERFORMANCE	**NOMINAL PERFORMANCE AT +35°C** (1) (2)						
	Overall cooling capacity	kW	36.5	40.0	43.4	46.1	48.8
	Overall EERincluding fan power consumption	kW/kW	4.1	3.8	3.7	3.4	3.1
	Recovered cooling capacity via plate heat exchanger.	kW	22.5	24.8	26.9	29.1	31.2
	Plate heat exchanger efficiency	%	74	75	75	75	75
HEATING PERFORMANCE	**NOMINAL PERFORMANCE AT +7°C** (1) (2)						
	Overall heating capacity	kW	51.0	55.4	59.0	63.2	67.6
	Overall COP including fan power consumption	kW/kW	7.1	6.7	6.8	6.3	5.8
	Recovered heating capacity via plate heat exchanger.	kW	36.0	39.8	43.1	46.5	49.9
	Plate heat exchanger efficiency	%	74	75	75	75	75
	NOMINAL PERFORMANCE AT -7°C (1) (2)						
	Overall heating capacity	kW	99.9	109.5	118.6	128.2	137.9
	Overall COP including fan power consumption	kW/kW	11.3	10.8	11.0	10.3	9.6
	Recovered heating capacity via plate heat exchanger.	kW	80.2	88.1	95.8	103.4	110.9
	Plate heat exchanger efficiency	%	80	81	81	81	81
GENERAL DATA	**ELECTRICAL DATA** (1)						
	Total installed electrical power	kW	24.2	24.2	28.4	28.4	28.4
	Total installed electrical current	A	37	37	44	44	44
	Starting current	A	37	37	44	44	44
	REFRIGERATION CIRCUIT						
	Number of Compressors	-	1				
	Type	-	Variable				
	OPERATING LIMITS						
	Maximum outside temperature	°C	45				
	Minimum outside temperature	°C	-15				
	WEIGHT (1)						
	Unit weight without any option	kg	1,580				

(1) Standard configuration for external static pressure of 250 Pa at supply, 250 Pa at exhaust, and filtration of ISO ePM10 50% (M5) + ISO ePM1 50% (F7) at supply of ISO ePM10 50% (M5) at exhaust without auxiliary.
(2) Inside conditions: +27°C DB / +19°C WB - Outside conditions : +35°C DB / 24°C WB - Supply air conditions: +26°C
(3) Inside conditions: +20°C DB / +12°C WB - Outside conditions : +7°C DB / +6°C WB - Outside conditions : -7°C DB / -8°C WB - Supply air conditions: +20°C

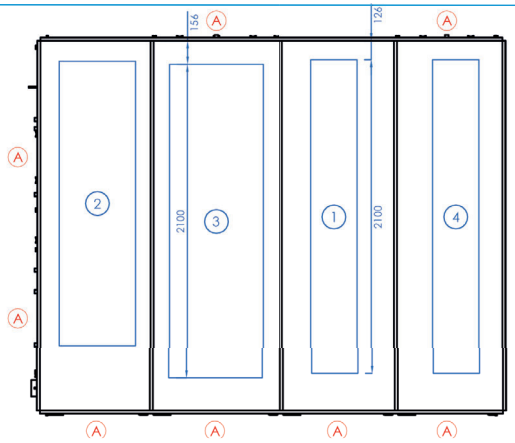
Dimensions and connections

X-RCAM+ R290
5-11000 / 5-12000 / 5-13000 / 5-14000 / 5-15000

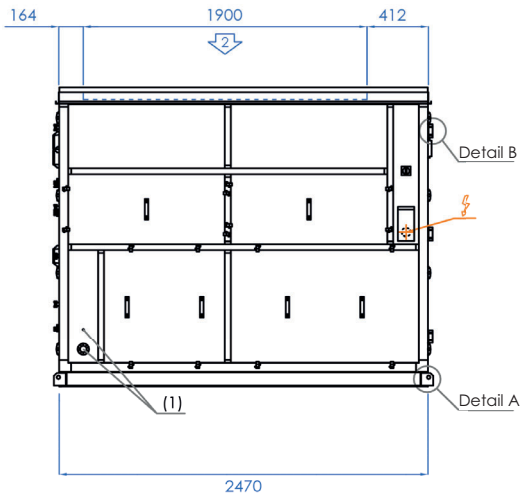
Front view:

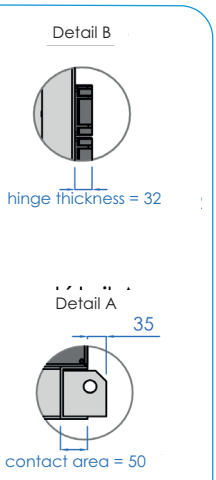


Top view:



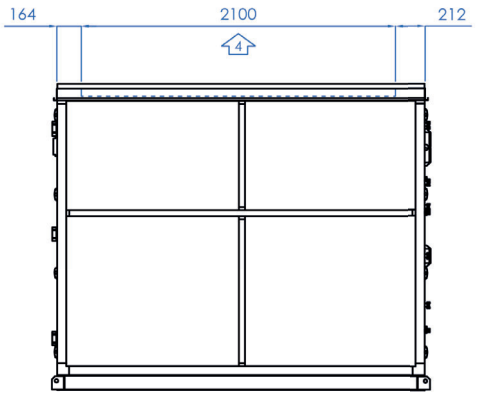
Side view (return):





(1): Mixing fan and sleeved valve outlet

Side view (exhaust):



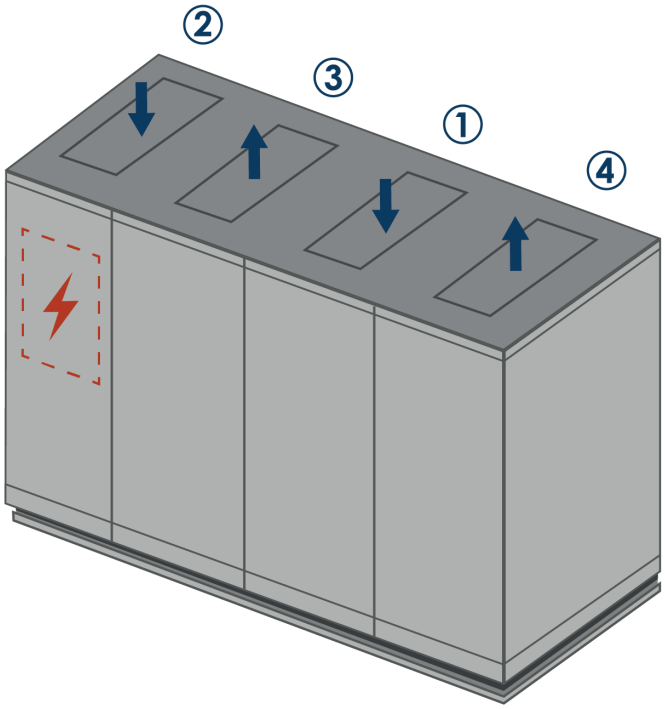
① Fresh air
② Return air
③ Supply air
④ Extracted air
Ⓐ Access
⚡ Power supply
Ⓒ Technical compartment

	Length	Width	Height
Dimensions of assembled casing (mm)	3,100	2,470	2,054
Overall dimensions for transport (mm)	3,163	2,545	2,054

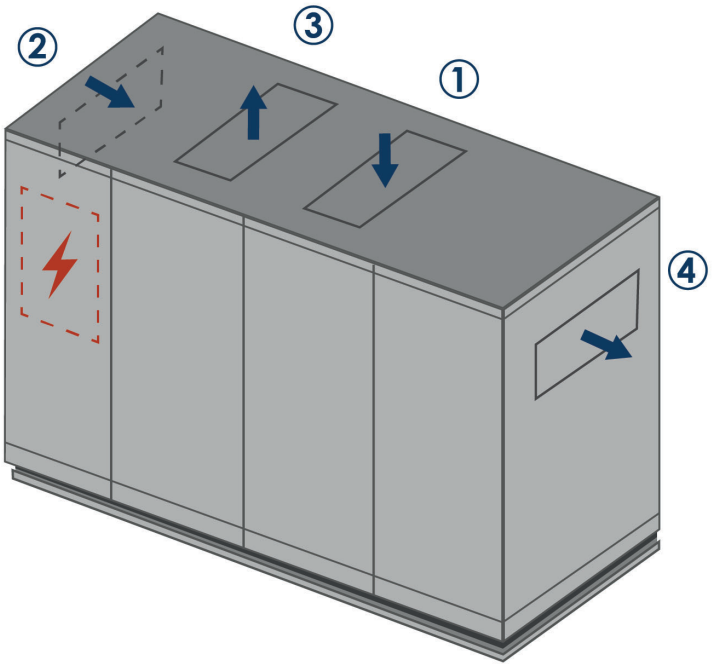
Note: - Allow for a minimum 200 mm support under the unit for connection of condensate traps.
- ETT recommends either a distance of 8 metres between fresh air intakes and exhaust air outlets, or the installation of equipment such as a 'polluted' air return system to make this impossible.

Air handling layouts

LAYOUT A



LAYOUT B



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

TWIN regulation option

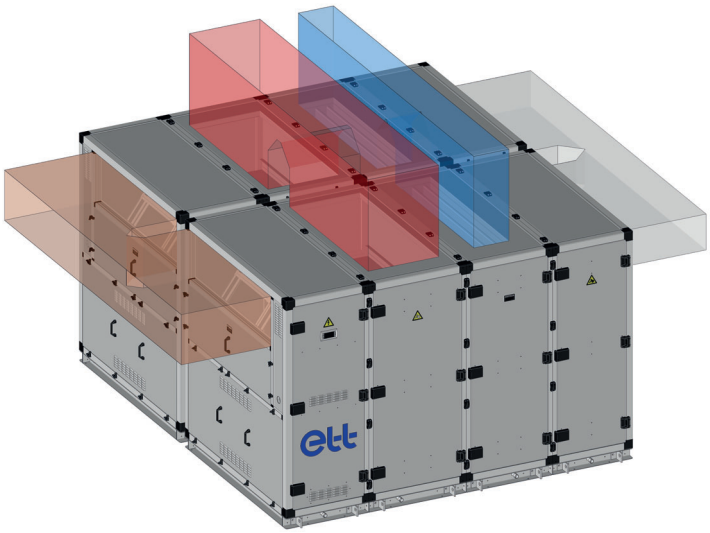
The X-RCAM+ R290 units can be coupled together.

This process allows for:

- ✓ **Doubling** the treated airflow rates
- ✓ **Adapting** to site-specific installation **constraints**.

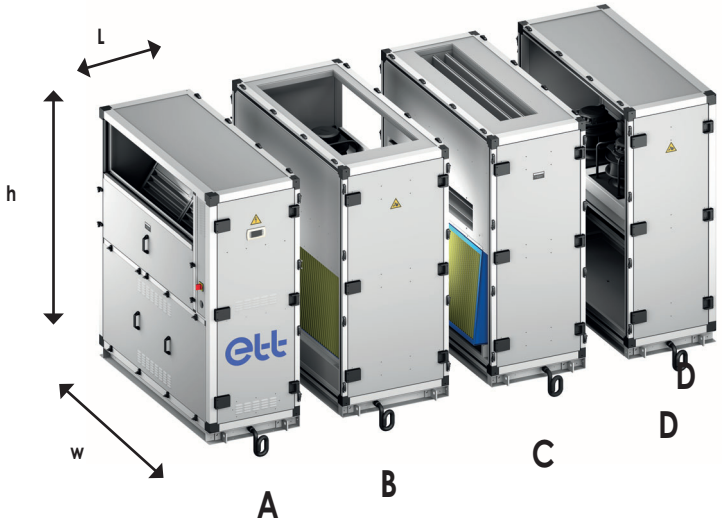
The machines can be positioned back-to-back or separately.

The operation of the machines is controlled through the installation of a master PLC.



Multi-block option

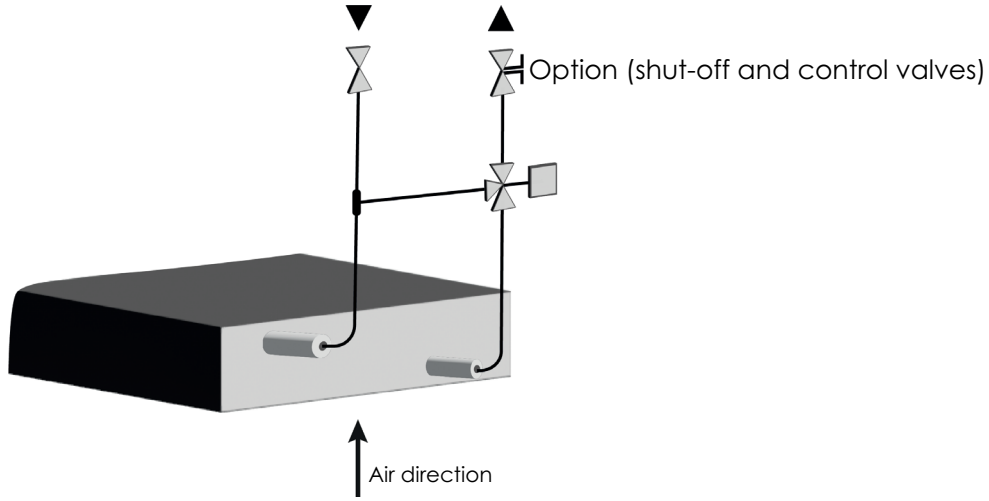
The X-RCAM+ R290is available in multibloc configuration for casing sizes 3-4-5, facilitating installation in space-constrained technical rooms.



Block	Unit	Length (Ll)			Width (W)	Height (H)
		T3	T4	T5	T3/T4/T5	
A	mm	1,389	1,889	2,549	780	2,040
B					870	
C					838	
D					743	

Auxiliaries: Hot water coils

Piping diagram



Hot water coil auxiliary heater is integrated into the X-RCAM+ R290 casing, located beneath the supply air plenum.

CONNECTIONS AND WEIGHTS

	Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Customer connection diameter	mm	15x21		20x27		26x34				33x42				
Coil weight + 3WV with water	kg	9		12		17				24				

POWER RATINGS

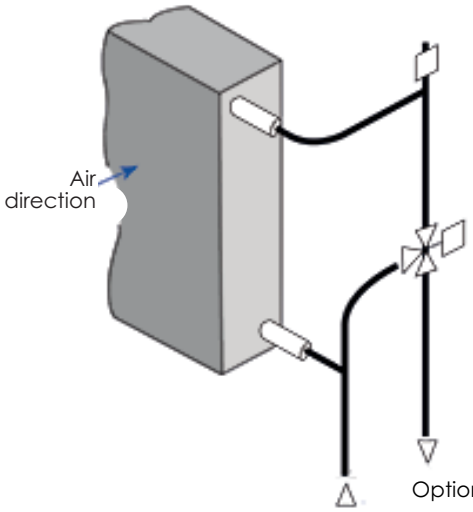
		Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Water regime 90/70	Max. power	kW	13.1	15.6	21.8	24.4	31.4	34.1	36.7	39.1	46.7	49.2	51.7	54.1	56.4
	Max. flow rate	m³/h	0.6	0.7	1.0	1.1	1.4	1.5	1.6	1.7	2.1	2.2	2.3	2.4	2.5
	Coil + 3WV pressure drop	mWC	1.6	2.2	3.0	3.7	2.5	2.8	3.2	3.5	1.0	1.1	1.2	1.4	1.4
Water regime 80/60	Max. power	kW	10.9	13.0	18.1	20.3	26.2	28.4	30.6	32.6	38.6	40.8	42.8	44.8	46.7
	Max. flow rate	m³/h	0.5	0.6	0.8	0.9	1.2	1.3	1.4	1.4	1.7	1.8	1.9	2.0	2.1
	Coil + 3WV pressure drop	mWC	1.5	1.6	2.5	2.6	1.9	2.1	2.5	2.8	1.0	1.1	0.9	1.0	1.0

OPTIONAL: SHUT-OFF VALVE ON FLOW AND "TA" BALANCING VALVE ON RETURN

		Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Water regime 90/70	Pressure drop: Shut-off valve and TA valve, 3-turn opening	mWC	0.3	0.4	0.2	0.3	0.4	0.5	0.6	0.6	0.4	0.5	0.5	0.6	0.7
Water regime 80/60		mWC	0.2	0.3	0.2	0.2	0.3	0.4	0.4	0.5	0.3	0.3	0.4	0.4	0.4

Auxiliary: Chilled water coils

Piping diagram



Chilled water coil auxiliary cooler for the X-RCAM+ R290 is shipped separately for duct mounting.

CONNECTIONS AND WEIGHTS

	Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Customer connection diameter	mm	15x21		20x27		26x34				33x42				
Coil weight + 3WV with water	kg	9		12		17				24				

CAPACITIES AND PRESSURE DROPS FOR 29°C SUPPLY AIR TEMPERATURE AND FULL-LOAD COOLING CAPACITY AT 40°C OUTDOOR

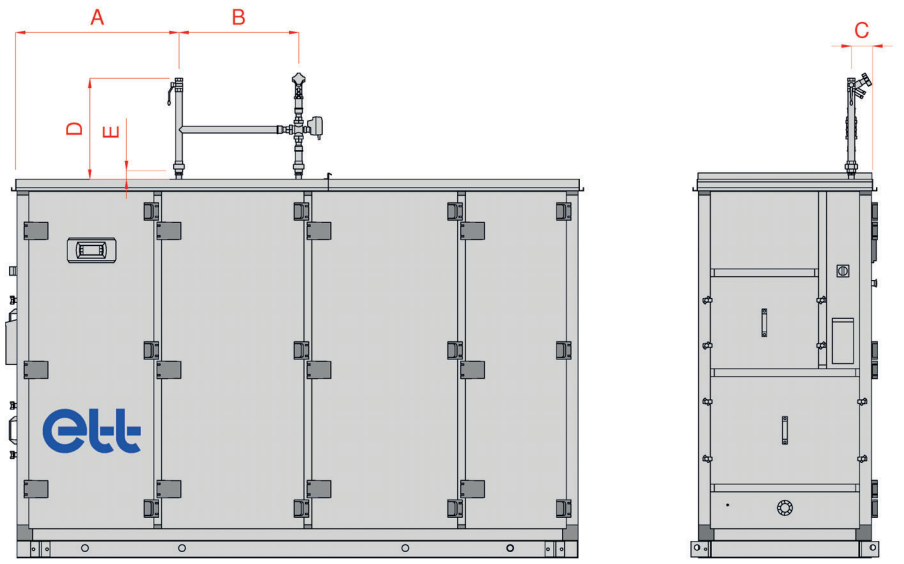
		Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
07/12 °C water regime	Max. power	kW	5.3	6.3	8.9	10.0	12.9	14.0	15.0	16.0	18.6	19.6	20.6	21.5	22.1
	Max. flow rate	m³/h	0.9	1.1	1.5	1.7	2.2	2.4	2.6	2.7	3.2	3.4	3.5	3.7	3.9
	Pressure drop: 3-Way Valve + coil	mWC	4.2	5.7	7.7	9.5	6.3	7.4	8.4	9.2	2.3	2.6	2.8	3.1	3.3

OPTIONAL: SHUT-OFF VALVE ON FLOW AND "TA" BALANCING VALVE ON RETURN

		Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
07/12 °C water regime	Pressure drop: Shut-off valve and TA valve, 3-turn opening	mWC	0.6	0.9	0.6	0.7	1.1	1.3	1.5	1.7	1.1	1.2	1.3	1.4	1.6

Connections: Hot water coil

Block diagram - Front view



Connection interface: "Hot water coil auxiliary"

DIMENSIONS

	Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
A	mm	834	834	866	866	866	866	866	866	866	866	866	866	866
B	mm	617	617	617	617	617	617	617	617	617	617	617	617	617
C	mm	103	103	129	129	129	129	129	129	129	129	129	129	129
D	mm	475	475	557	557	665	665	665	665	648	648	648	648	648
E	mm	46	46	41	41	41	41	41	41	41	41	41	41	41

Sound level*, supply air/exhaust air
Spectrum by frequency band

At unit supply air

Available pressure: 250 Pa at supply air, 250 Pa at exhaust air

	FREQUENCY BANDS Hz ►										
	Supply air flow rate (m^3/h) ▼	Processed air flow rate (m^3/h) ▼	63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
2-3000	3,000	3,000	47	54	65	70	75	75	70	61	80
2-4000	4,000	4,000	51	58	69	74	80	80	76	69	85
3-5000	5,000	5,000	51	59	68	74	77	75	71	67	81
3-6000	6,000	6,000	53	62	71	77	80	79	75	72	85
4-7000	7,000	7,000	52	58	68	74	80	80	75	67	84
4-8000	8,000	8,000	54	60	71	76	82	82	78	71	87
4-9000	9,000	9,000	56	61	73	78	84	84	81	74	89
4-10000	10,000	10,000	52	63	75	80	87	87	84	78	91
5-11000	11,000	11,000	55	63	72	78	81	80	75	72	85
5-12000	12,000	12,000	56	64	73	80	83	82	77	75	87
5-13000	13,000	13,000	53	64	70	78	82	82	79	71	87
5-14000	14,000	14,000	53	66	72	79	83	84	81	73	88
5-15000	15,000	15,000	54	67	73	80	84	86	82	75	90

At exhaust air side

Available pressure: 250 Pa at supply air, 250 Pa at exhaust air

	FREQUENCY BANDS Hz ►										
	Supply air flow rate (m^3/h) ▼	Processed air flow rate (m^3/h) ▼	63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
2-3000	3,000	3,000	45	53	63	67	73	73	68	58	78
2-4000	4,000	4,000	50	56	67	72	78	78	74	66	82
3-5000	5,000	5,000	49	57	66	72	75	74	68	64	79
3-6000	6,000	6,000	52	60	69	75	78	77	73	70	83
4-7000	7,000	7,000	50	56	66	71	78	78	73	64	82
4-8000	8,000	8,000	52	58	69	74	80	80	76	68	84
4-9000	9,000	9,000	49	59	71	76	82	82	79	71	87
4-10000	10,000	10,000	50	61	73	78	84	84	81	75	89
5-11000	11,000	11,000	53	61	70	76	79	78	73	70	84
5-12000	12,000	12,000	55	63	72	78	81	80	75	73	85
5-13000	13,000	13,000	51	62	68	75	80	79	77	68	84
5-14000	14,000	14,000	51	64	69	76	81	81	79	70	86
5-15000	15,000	15,000	52	65	71	77	82	82	80	73	87

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

Sound level* fresh air intake/return air

X-RCAM+ R290

Spectrum by frequency band

At unit fresh air intake

Available pressure: 250 Pa at supply air, 250 Pa at exhaust air

	FREQUENCY BANDS Hz ►										
	Supply air flow rate (m^3/h) ▼	Processed air flow rate (m^3/h) ▼	63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
2-3000	3,000	3,000	37	44	53	56	52	49	43	34	59
2-4000	4,000	4,000	40	48	58	60	57	54	50	42	64
3-5000	5,000	5,000	43	47	57	59	55	51	47	42	63
3-6000	6,000	6,000	46	50	60	62	58	55	51	48	66
4-7000	7,000	7,000	41	48	57	60	56	54	49	40	64
4-8000	8,000	8,000	42	50	60	62	59	56	52	44	66
4-9000	9,000	9,000	44	51	62	65	61	59	56	48	69
4-10000	10,000	10,000	45	53	64	67	63	61	59	52	71
5-11000	11,000	11,000	48	51	61	63	59	55	51	48	67
5-12000	12,000	12,000	49	53	63	65	61	57	53	51	69
5-13000	13,000	13,000	46	52	59	59	60	57	56	43	66
5-14000	14,000	14,000	47	53	60	60	61	58	58	45	67
5-15000	15,000	15000	47	54	62	62	62	60	60	48	68

At return air side

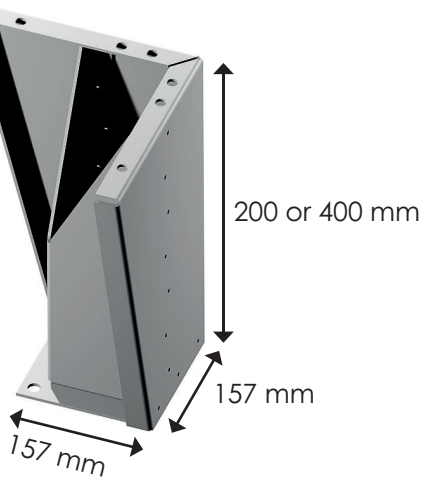
Available pressure: 250 Pa at supply air, 250 Pa at exhaust air

	FREQUENCY BANDS Hz ►										
	Supply air flow rate (m^3/h) ▼	Processed air flow rate (m^3/h) ▼	63	125	250	500	1000	2000	4000	8000	Overall level Lw (dB(A))
2-3000	3,000	3,000	35	43	52	55	51	48	43	34	58
2-4000	4,000	4,000	39	47	57	59	56	53	49	43	63
3-5000	5,000	5,000	42	47	56	58	54	51	46	43	62
3-6000	6,000	6,000	45	50	59	62	57	54	50	50	65
4-7000	7,000	7,000	39	47	56	59	56	53	48	41	63
4-8000	8,000	8,000	40	49	58	61	58	56	52	45	65
4-9000	9,000	9,000	42	51	61	64	60	58	55	49	68
4-10000	10,000	10,000	43	52	63	66	62	60	58	53	70
5-11000	11,000	11,000	46	51	60	63	58	55	51	50	66
5-12000	12,000	12,000	47	53	62	64	60	57	53	53	68
5-13000	13,000	13,000	44	51	57	58	59	57	56	44	65
5-14000	14,000	14,000	45	53	59	59	60	58	58	46	66
5-15000	15,000	15,000	45	54	60	60	61	59	59	49	67

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

Accessories for installation: Feet

Fixed aluminium foot
Unit weight: 1 kg



All X-RCAM+ R290 units require support feet.

Unit	2-3000	2-4000	3-5000	3-6000	4-7000	4-9000	5-11000	5-13000	5-15000
Number of feet (Packaged unit)	4	4	4	4	6	6	6	6	6
Number of feet (Multi-block)	-	-	16	16	16	16	16	16	16

Indirect adiabatic option

DESCRIPTION

The adiabatic module is installed upstream of the plate heat exchanger in the return air stream.

helps to lower the return air temperature, thus enhancing the efficiency of the heat exchanger.

The system significantly reduces the operating hours of the thermodynamic circuit during the summer months. Remote casing option available.

	Size	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Dimensions of assembled casing L x W x H (1)	mm	900x670x1,500		1,320x670x1,300		1,820x670x1,370				1,920x670x1,700				
Transport overall dimensions L x W x H (1)	mm	950x670x1,500		1,370x670x1,300		1,870x670x1,370				1,970x670x1,700				
Water connection size: Ø.	mm	G 1/2"		G 1/2"		G 1/2"				G 1/2"				
Weight of the adiabatic module (water-filled)	kg	108		141		239				353				

RATED PERFORMANCE AT +35°C(2) (3)

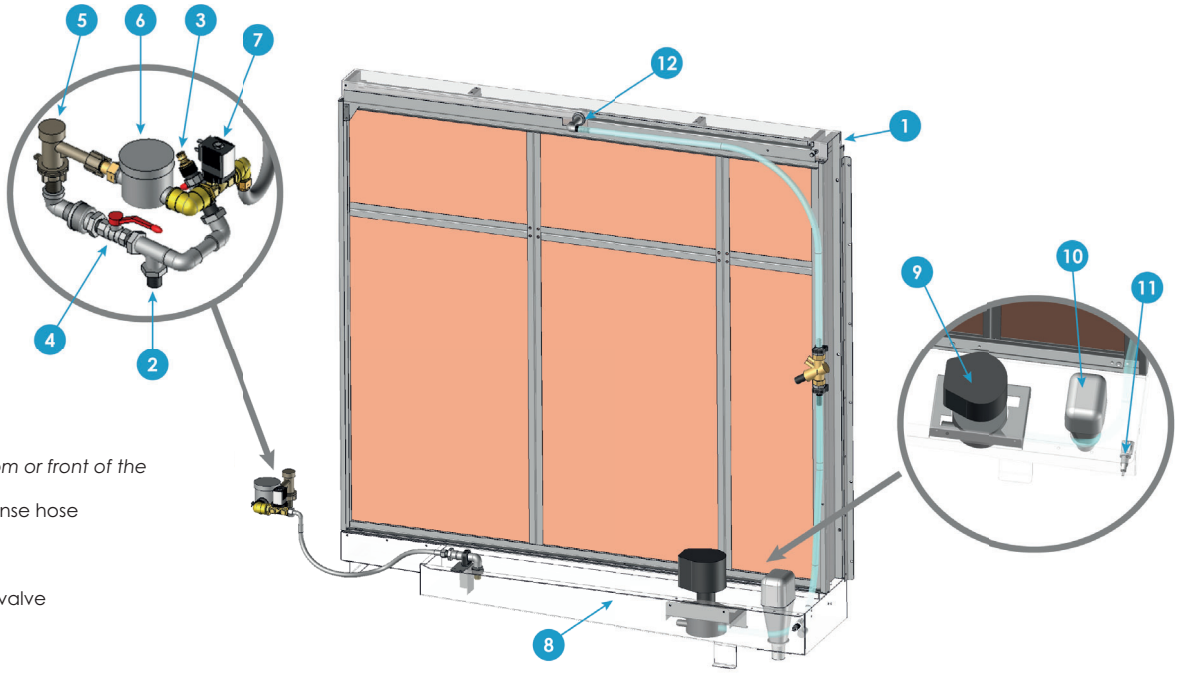
	Size	2-3000	2-4000	3-5000	3-6000	4-7000	4-8000	4-9000	4-10000	5-11000	5-12000	5-13000	5-14000	5-15000
Overall cooling capacity	kW	11.0	14.5	18.3	22.0	25.6	29.2	32.8	36.1	40.3	44.6	47.8	51.2	54.4
EER	kW/kW	5.8	4.7	5.9	5.1	6.1	5.6	5.0	4.4	6.1	5.7	5.7	5.1	4.6
Plate heat exchanger efficiency	%	74	75	74	75	74	74	75	75	74	76	75	75	75
Adiabatic humidifier efficiency	%	93	93	93	93	93	93	93	93	93	93	93	93	93

(1) Includes 200 mm support feet.

(2) Standard configuration for external static pressure of 250 Pa at supply, 250 Pa at exhaust, and ISO filtration ePM10 50% (M5) + ISO ePM1 50% (F7) at supply and ISO ePM10 50% (M5) at return, without auxiliary.

(3) Inside conditions: +27°C DB / +19°C WB - Outside conditions: +35°C DB / 24°C WB - Supply air conditions: +26°Cw

Operating principle of the adiabatic chiller



1. Adiabatic chiller
2. Water supply
(Connection at the bottom or front of the machine)
3. Connector for media rinse hose
4. Stop valve
5. Cartridge filter
6. Water meter
7. Water supply solenoid valve
8. Water tank
9. Pump
10. Drain solenoid valve
11. Float
12. Distribution manifold

When cold is required, the water supply solenoid valve opens to fill the tank until the float contact is activated. Once this level is reached, the pump starts to feed a water distribution manifold located above the adiabatic media. The fibreglass media will uniformly become saturated with water through run-off.

The hot air passing through the moist media will transfer its heat to the water and evaporate some of it.

At the media outlet, the air is cooled while the water, which is still in the liquid phase, continues to trickle and then falls back into the tank. It is then pumped back into the media loop. There is no loss of water.

Drain cycles are intelligently controlled to ensure minerals are properly removed, based on both water hardness and the amount of water evaporated. This reduces water consumption by 20% compared with traditional dilution systems.

If there is no cooling demand (room temperature set point reached, machine shut down at the end of the day, etc.), a time delay is started, after which the tank and all the water distribution pipes are completely drained to eliminate the risk of legionella developing.

Caution:

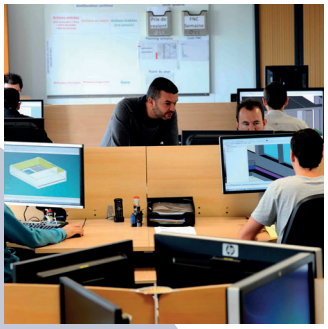
The water supply pressure to the adiabatic module must be greater than 1 bar and must not exceed 3 bar for each machine.

The water hardness of the water to be supplied to the adiabatic module must be provided when the purchase order is placed. If this is not the case, the number of cycles before emptying will be defined according to the average water hardness for the department.

Adiabatic cooling and legionella

The risk of legionella developing is eliminated because the 3 simultaneous conditions that could favour it are not met:

> automatic emptying of the water tank when the machine is switched off prevents water from standing for long periods of time.
> the temperature of the run-off water remains below temperatures conducive to the development of the bacteria (between 25 and 45°C).
> due to the technology and the effective air speed through the soaked media, there is no water entrainment.



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