



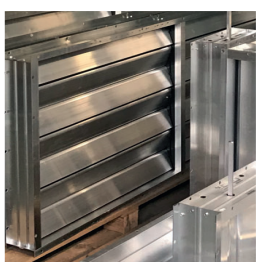
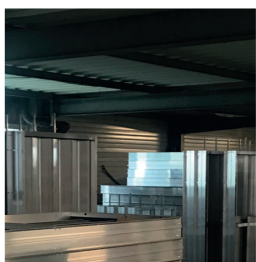
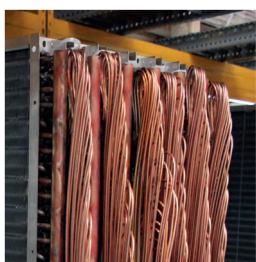
ENVIRONMENTAL  
CLIMATE CONTROL  
EQUIPMENT  
& SOLUTIONS



2024  
2025



## Parts & Services



[www.ett-hvac.com](http://www.ett-hvac.com)



## CONTENTS

Presentation of ETT .....	2
ETT, the air handling expert, from design to manufacturing.....	2
ETT, priority to research & innovation .....	3
Each application sector has its own climate requirements.....	3
Optimising operations .....	4
ETT services.....	5
Reducing energy consumption .....	6
Adiabatic cooling in a rooftop .....	7
Upgrade your ETT rooftops, without replacing them! .....	8
Examples of technical upgrades and optimisation.....	9
Retrofitting of thermal units .....	16
Refrigeration circuit.....	21
Ventilation.....	31
Control.....	37
ETT Syscom .....	41
Remote touch display ETT Control Box .....	42
Installing-Connecting ETT Control Box .....	43
Standard software ETT Control Box .....	45
Supervision: myETTVision .....	49
CCAD display .....	52
Modbus Communication .....	53
Electricity .....	57
Auxiliary .....	61
Hydraulics.....	65
Conversion tables .....	67
ETT general terms of sale .....	69

# ETT, the air handling expert, from design to manufacturing

Energie Transfert Thermique is recognised as a specialist in the design of bespoke energy recovery air handling systems and the manufacturer of high performance heat pumps.

AT the tip of the Brittany coast, the plant is **ISO 9001 and ISO 14001 certified**, and has a surface area of 18,000 m<sup>2</sup> 16,000 of which is dedicated to production.

With a turnover of €66.5 million in 2023 and more than **343 employees**, ETT has a **nationwide presence** and is represented internationally by a network of agents and distributors.

With its **Research and Development department**, ETT has based its growth on **an approach that listens to its markets, innovates and respects the environment**.

1979

Creation of **Energie Transfert Thermique**

1999

AFAQ ISO 9001 Certification  
no. QUAL/1994/2016e

2001

Expansion and new organisation:  
8 000 m<sup>2</sup> for production, R&D Department

2007

ETT executives take over the company  
(LMBO)

2010

AFAQ ISO 14001 Certification  
no. QUAL/2010/37694.2

2011

ETT doubles its production capacity

2015

Eurovent Certification



2021

Directive on ErP  
(Energy related Products)



2020

CSR assessment:  
Corporate Social Responsibility



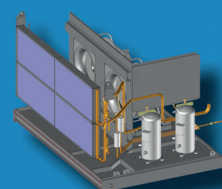
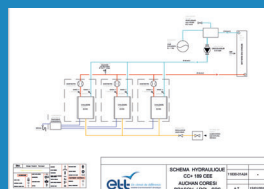
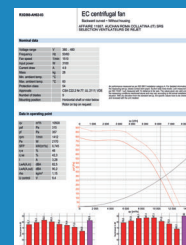
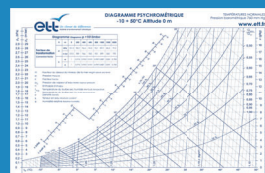
## ► 4 core skills

Sheet metal worker - Refrigeration technician - Heating specialist- Electrician



## ► 4 Engineering and Design departments

R&D - Projects - Execution & Methods - Electricity & Regulation



# ETT, priority to research & innovation

**ETT closely monitors the technical and regulatory developments that will shape tomorrow's HVAC systems.**

It bases its approach on the skills of its various design offices and its expert engineers with dedicated backgrounds.

The technical services rely on the **Research & Development Department** to provide innovative technical solutions **tested and validated in our climatic room.**

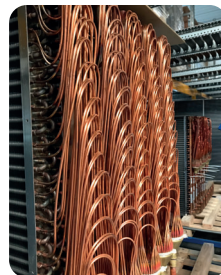
As the market leader in self-contained reversible air-conditioning systems, **ETT advises and supports companies and local authorities** operating in the fields of mass retailing, specialised retailing, the service sector, industry, theatres and leisure centres, swimming pools and ice rinks, public housing, and more.

**Our highly-qualified team** can provide solutions to your air treatment and air pollution control problems helping you to save energy while improving the comfort and safety of your staff and customers, as well as the quality of your products.

› Project & Studies Department

› Process planning Department

› Electricity & Control systems Department



## Each application sector has its own climate requirements



### › Commercial facilities

- Mass retail industry
- Specialised retail shops
- Shopping centres



### › Leisure & Entertainment

- Swimming pools and spas
- Skating rinks
- Cinemas and theatres
- Entertainment and multipurpose halls
- Exhibition centres
- Amusement parks



### › Tertiary sector

- Restaurants
- Hotels
- Office buildings
- Collective housing
- Education
- Healthcare facilities



### › Industry & Special markets

- Food industry
- Printing
- Mechanics & Automotive
- Electricity and electronics
- Chemistry & Pharmacy
- Textile & Clothing
- Plastics industry
- Data Centres
- Transport/Logistics
- Energy
- Shipbuilding
- Defence sector
- Airports
- Oil & Gas

ETT is present in all APPLICATIONS where **TEMPERATURE CONTROL** **HUMIDITY control** and **AIR QUALITY** are important aspects of the process or the environment.



# Optimising operations

The **quality of the operation** and the facility itself have a major impact on the **company's business** and **operating budget**.

It affects 3 parameters:

- **Its overall cost**
  - Purchase and Implementation (15%)
  - Operating costs (85 %)
- **Its performance**
  - **Operating** costs
  - **User** satisfaction
  - **Durability**
  - **Availability**
- **Its conformity**
  - **Regulations**
  - Manufacturer's **warranty conditions**



**As soon as it is commissioned, the plant must be operated and maintained** in such a way as to guarantee regulatory compliance. Operating instructions aim at optimising unit performance and settings. Also, the validity of the guarantee is conditional upon strict compliance with these instructions.

**ETT recommends that maintenance visits include at least:**

- **Checking/adjusting technical functions** (safety, ventilation, refrigeration circuits, etc.)
- **Control** adjustment (setpoints, time slots, advanced parameters, etc.)
- **Technical and regulatory** checks:
  - 1 or 2 leak checks per machine per year
  - Initial commissioning inspection, periodic inspections, and periodic re-qualifications (monitoring of pressure equipment)
  - Filters replacement, 2 to 4 times a year depending on the type of filters and installation environment
  - Checking and replacing sensitive parts of relative humidity sensors, CO<sub>2</sub> sensors or smoke detectors
- Inspection and maintenance of the environment (distribution networks, irrigation sensors, etc.)

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

# ETT services

## Guarantee

- Warranty Parts, Labour and Travel cost: Please contact us.
- 20-year guarantee against corrosion
- Technical hotline
- Responsiveness
- Availability of parts

20-year guarantee  
against corrosion  
frame - casing



## Optimisation & Retrofit

- Regulatory upgrades
- Energy optimisation
- Evolution of the application
- Controls - Communication

### References...

- Ikéa
- Gaumont
- Sagem
- Center Park



### Our solutions

- Energy recovery
- In-line dehumidification
- Control optimisation
- Variable-speed drives



# Reducing energy consumption

## A common sense approach ...

At a time when energy costs are soaring, it is important for **ETT** to offer its customers **eco-responsible** air conditioning equipment that is **increasingly energy-efficient**.

But given the number of machines installed over the last 20 years, this approach cannot be confined to new machines alone.

This is why **ETT** has developed a solution which, by combining an **adiabatic cooling module** with the thermodynamic circuits of the existing rooftop, enables **considerable energy savings to be made**.

Compared with 100% thermodynamic solutions,  
**the financial savings achieved** by adding adiabatic modules vary from **35 to 85 % depending on the sites**.

In summer, evaporative cooling takes over from thermodynamic operation.

As well as contributing to the **decarbonisation** process, this solution increases the service life of the compressors, as they are subjected to much less stress.

In 2019, a French decree (2019-771) came into force, setting 20-year targets for the gradual but significant reduction of energy consumption by owners of commercial buildings.

In particular, it recommends the installation of high-energy performance equipment, as well as the introduction of monitoring and active management systems for HVAC installations. With this in mind, ETT has developed this service, which is a practical and proven solution for reducing energy consumption in facilities already equipped with ETT machines, both in France and in all other countries where they are installed.

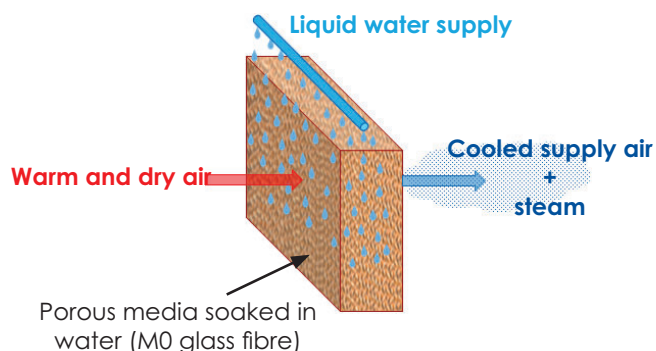
# Adiabatic cooling in a rooftop

## How does it work?

### Operating Principle

**Adiabatic cooling** is based on the principle of **heat transfer** between warm air and cool water.

**The air cools** by transferring its heat to the water, which changes from a liquid to a gas.

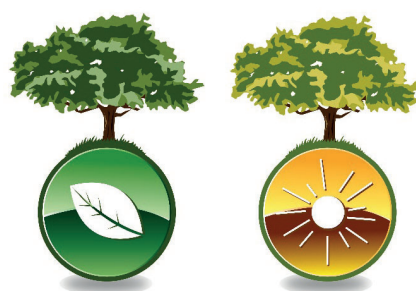


Coupled with thermodynamic circuits, this adiabatic module gives priority to compressor start-up during the summer period.



#### In cold weather


The adiabatic function is on stand-by. The rooftop only operates in thermodynamic heating mode



#### In hot weather

The control system prioritises adiabatic operation. The thermodynamic circuits are relayed in the event of unfavourable external conditions that prevent the T° and Rh set points from being met

## What are the advantages?

Rooftop operating mode	Consumption items (Other than supply air fans)	Ratio of energy costs Total per hour
Thermodynamics	Electricity only · Compressor(s) · Propeller fan(s)	 Divided by 7 on average
Adiabatic	Electricity (water pump) <sup>o</sup> + water	

### What about water consumption?

In all the large sales outlets equipped, annual water consumption is measured at **a maximum of 15 %** of that of the sanitary block.



# Upgrade your ETT rooftops, without replacing them!

## How does it work?

ETT services offers a service to **improve the energy performance** of your installation by adding an adiabatic module to the existing rooftop (ULTIMA range or older generation).

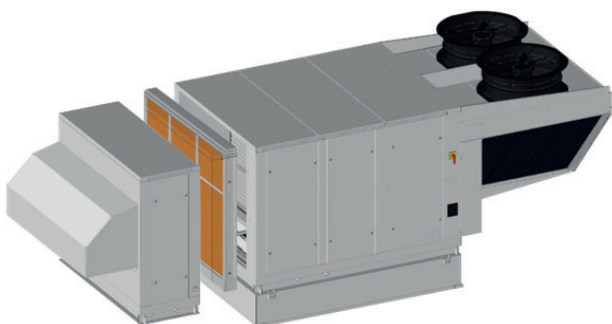
### Details of the service:

- Feasibility study
- Manufacturing of the adiabatic module
- Supply and installation of the module
- Modification of the machine control system
- Adiabatic rooftop unit commissioning
- Service contract (OPTION)  
Annual monitoring, control and optimisation of the installation's energy performance

### Two integration options:

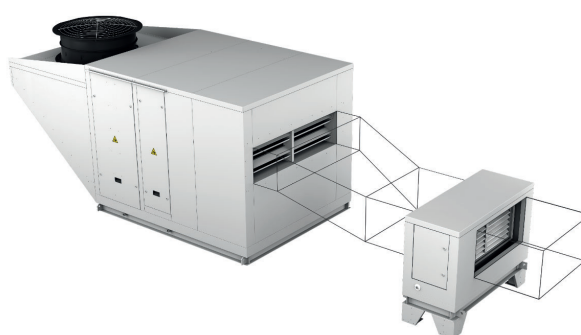
#### ETT rooftops from the ULTIMA range

**Built-in adiabatic module**  
« Backpack » configuration with all fresh air



#### Rooftops outside the ULTIMA range or adiabatic insertion impossible

**Separate adiabatic module**  
“duct-mounted” on fresh air intake



ULTIMA size	Weight of the Adia module with water
ULTI+ 11	175 kg
ULTI+ 12	225 kg
ULTI+ 21	325 kg
ULTI+ 22	450 kg

For non-ULTIMA machines, the PLC needs to be retrofitted to include the most recent version

**Contact the ETT Services sales manager in your area!**

+ 33 (0)2 98 48 02 22

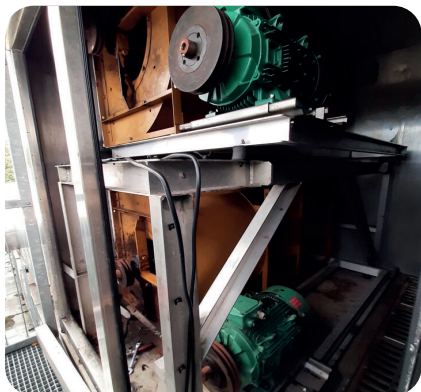
[ett.services@ett-hvac.com](mailto:ett.services@ett-hvac.com)

# Examples of technical upgrades and optimisation

MULTI-PRODUCT  
ADAPTED

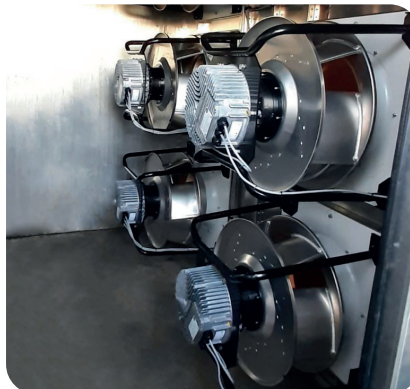
## Unit complete refurbish

BEFORE



Refurbish  
&  
optimisation

AFTER



## Regulatory compliance

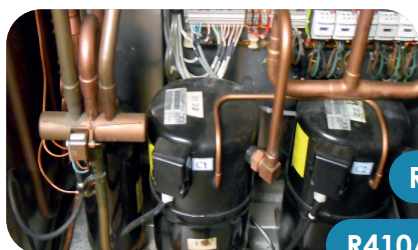
### A tried and tested method

- Complete renovation of circuits
- 2-year guarantee
- Over 2.500 retrofits performed
- ISO 9001 & ISO 14001

### Advantages of alternative fluids

- Low GWP
- Near zero capacity loss
- Durability and longevity

BEFORE



R407C

R410A

AFTER



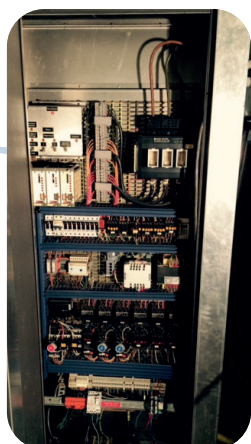
R32

R513A

Other Refrigerants

## Electrical boards replacement

BEFORE



- Last generation control system
- Variable-speed drives
- myETTVision supervision depending on country of installation



AFTER



# Examples of technical upgrades and optimisation

MULTI-PRODUCT  
ADAPTED

## Hygienisation

- Conventional wall cleaning
- High pressure etching of the exchangers
- Decontamination by saturation with micro diffusion of a biocide, fungicide and bactericidal agent
- Microbiological validation by ATP-metric
- Interior protection using resins specially designed for AHUs (VOC-free, solvent-free)

BEFORE



AFTER



## Control upgrade

- PLC replacement
- Electrical board replacement
- Multi-brand compatibility
- Remote control
- Durability

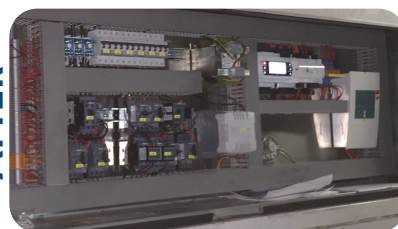
### Energy optimisation

- 2 setpoints
- Ventilation stop in neutral zone
- Fresh air management
- Reduced operation
- Destratification
- Variable-speed drives

BEFORE



AFTER



## Ventilation and speed variation

- Ventilation refurbish
- Epoxy coating
- Low speed mode
- 50% energy savings in Low Speed mode

BEFORE



AFTER



Eligible incentives



# Examples of technical upgrades and optimisation

MULTI-PRODUCT  
ADAPTED

## Refurbishment of refrigeration circuits

- HEAT exchangers with vinyl, heresite, stainless steel coating
- Fully insulated refrigeration assembly
- Electronic expansion



## Battery cleaning service

In order to maintain the performance of the equipment, it is essential to clean the exchangers (Condensers and evaporators) regularly and correctly. This cleaning also significantly extends the service life of important plant components, such as compressors.

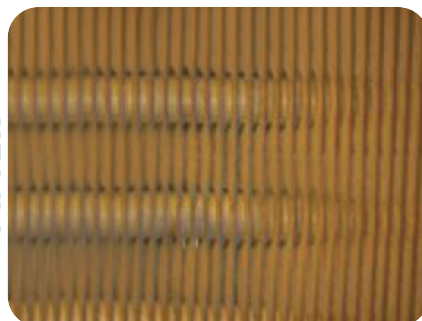
ETT Services supports you in the maintenance of your heat exchangers, through the implementation of endoscopic controls and our cleaning processes.

- Coil cleaning

BEFORE

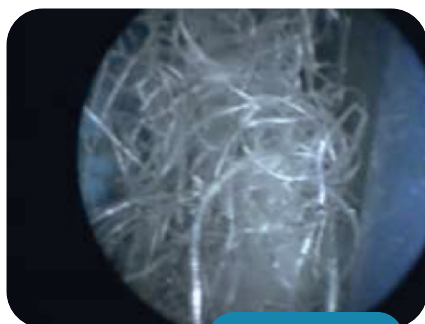


AFTER



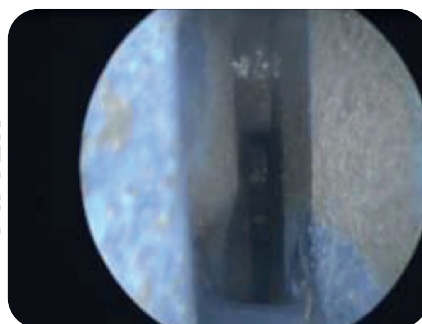
- Endoscopic control

BEFORE



dust

AFTER

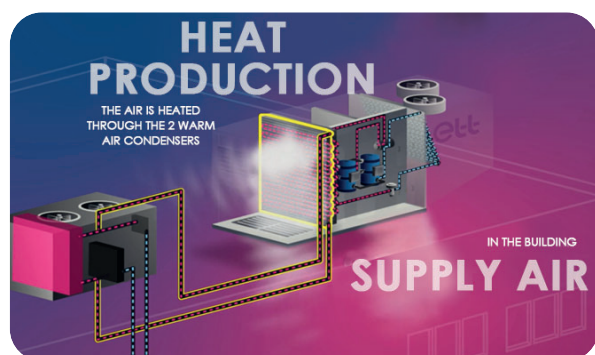
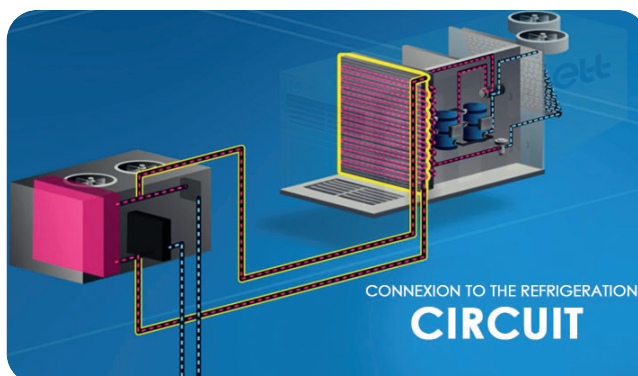




# Examples of technical upgrades and optimisation

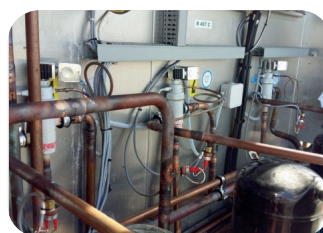
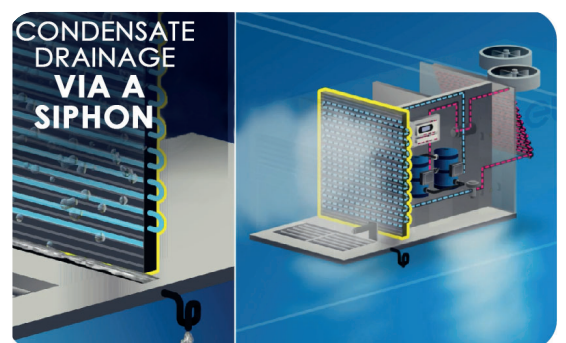
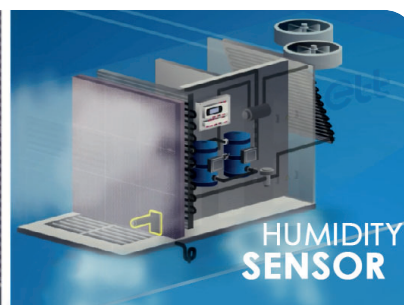
MULTI-PRODUCT  
ADAPTED

## Energy recovery



## Dehumidification function

### Refrigerated showcases



3-way valves for in-line condenser

Year-round operation





# Examples of technical upgrades and optimisation

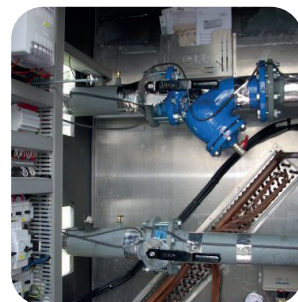
MULTI-PRODUCT  
ADAPTED

## Unit transformation (air-to-air > air-to-water heat pump)

BEFORE



AFTER



## Unit transformation (air-to-air > in-line dehumidification rooftop unit)

BEFORE



AFTER

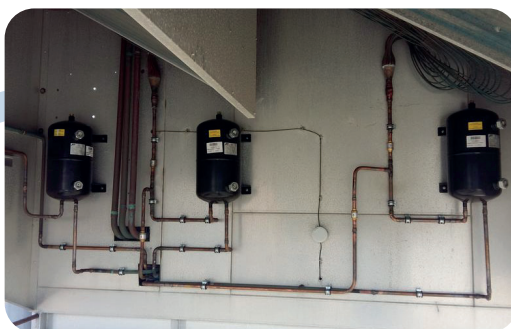


- In-line condenser
- Refrigeration 3-way valves
- Liquid receivers

BEFORE



AFTER



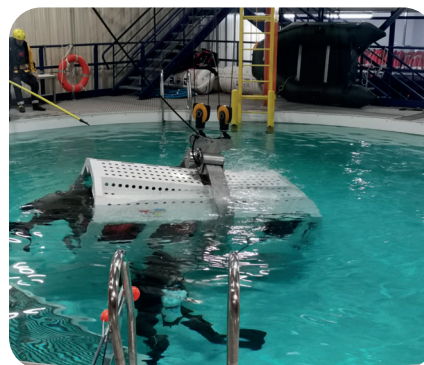
# ETT Services Organisation

## A dedicated team

- Experience of ETT technicians : **8 years on average**
- Training time on ETT equipment for each ETT technician : **80 hours**

The various training courses given by the Tuners are:

> **OPITO offshore training** (For those who go abroad for Oil & Gas projects)



Several ETT technicians have completed this training and are now qualified to work on offshore platforms.

After a theoretical part, they performed a pool test simulating a helicopter accident to test their ability to extract themselves safely from the aircraft.

- > Working at heights **training**
- > Electrical **Qualification training** (BC / BR / BE tests/ B2V tests/ HOV)
- > Brazing **training** in accordance with standard NF EN 14276-1
- > Gas boiler combustion test **training**
- > Regulation **training**
- > Training in **ETT specific techniques**



## Need advice? Looking for solutions?

The ETT Services team is available to **advise you** and **provide the best solution** for your project.

For more information, call:

**+ 33 (0)2 98 48 02 22**

**ett.services@ett-hvac.com**

# PED Regulations

Refrigeration machines (air conditioners, heat pumps, chillers, etc.) all have **Pressurized Equipment**. As soon as they are manufactured, this equipment must comply with **PED 2014/68/UE** and:

- Directive 2014/29/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the placing on the market of simple pressure vessels.
- Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the placing of pressure equipment on the market.
- Directive 2015/1535/EU of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on information society services.

These directives form the European regulatory framework equivalent to the French Order of 20/11/2017, harmonising legislation within EU Member States concerning the marketing and regulation of pressure equipment and pressure vessels.

**ETT** can support you in carrying out all or part of the actions for which the operator is responsible, in compliance with current legislation.

**For further information, please contact**

**+33 (0)2 98 48 02 22**  
**ett.services@ett-hvac.com**  
**www.ett-hvac.com**





# Retrofitting of thermal units

For any operator who undertakes a retrofit or optimisation of his air handling plant, it is important to ask the right questions about the evolution of the refrigerant used in his units. The purpose of this document is to provide all the criteria for choosing the most suitable solution according to the constraints of the site.

## What does the legislation say?



The **F-GAS II Regulation** (art. R.543-75 to 123) governs the use of refrigerants to limit greenhouse gas emissions (80% reduction required between 2015 and 2030). The texts clearly encourage the use of refrigerants with ever lower GWP.

### What is the GWP of a refrigerant?

*GWP=Global Warming Potential*

This index reflects the warming power of a refrigerant emitted into the atmosphere compared with that of the same mass of CO<sub>2</sub> (GWP of CO<sub>2</sub> = 1).

The higher the GWP of a gas, the more negative its impact on the environment

Air conditioning for domestic and "food refrigeration" applications is clearly impacted by the **F-GAS II** regulation, which sets a schedule for banning the marketing and use of a large number of HFCs (Hydrofluorocarbons) depending on their GWP values and their applications.

For the other sectors (Tertiary, Commercial, Industry, Hospital, etc.), the **F-GAS II** regulation does not impose any prohibition or restriction on HFCs to date. So there is still plenty of room for manoeuvre.

### Key points to remember:

Apart from domestic air conditioning and food refrigeration, R410A and R407C HFCs can be used without restriction.

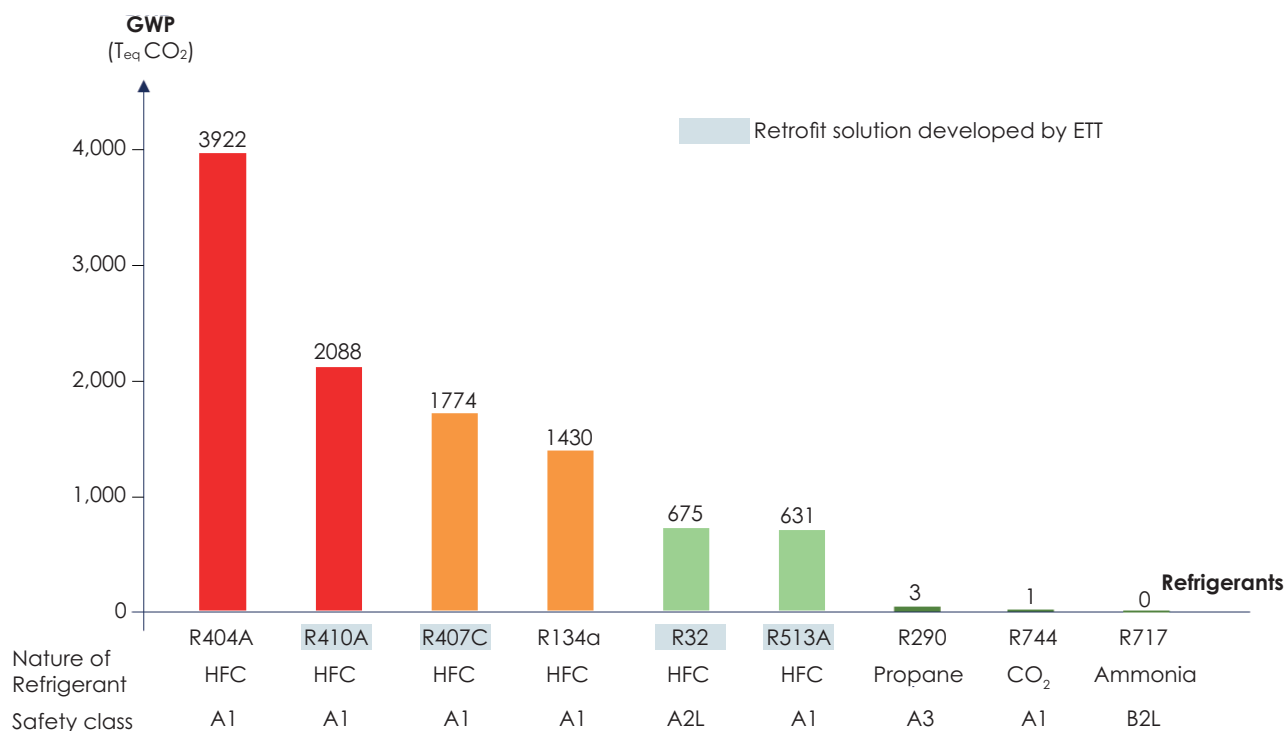
## Classification of the different refrigerants

Depending on their nature, refrigerants have a greater or lesser impact on the greenhouse effect. Their degree of flammability also plays a role in the precautions to be taken for the retrofit of the installation.

### Safety classification of refrigerants (NF EN 378):

	Non-toxic or low toxicity	High toxicity
Non-flammable	A1	B1
Low flammability	A2L	B2L
Flammable	A2	B2
Highly flammable	A3	B3

# Retrofitting of thermal units



## ETT Solutions - Retrofit with R410A or R407C



### Substitution :

Initially, **R410A** and **R407C** were mainly developed to replace **R22** (banned by the F-GAS II regulation since 2015).

### Thermodynamic performances :

They are clearly in favour of **R410A**, compared to **R22**, but even more so compared to **R407C** (a zeotropic fluid with a glide of 6°K and therefore penalising for the dimensioning of the exchangers). This is why R410A has been one of the most widely used gases in reversible comfort heat pump installations in recent years.

### Environmental impact:

The GWP of **R410A** (2088) and **R407C** (1774) are of the same order of magnitude as that of R22 (1810). However, unlike **R22**, which has been completely banned since 2015, **R410A** and **R407C** have no effect on the ozone layer.

### Key benefits :

Statutorily, there is nothing today to prevent the use of **R410A** and **R407C** as a fluid substitute in comfort applications not covered by the **F-GAS II** regulation (Tertiary, Commercial, Industry...). Retrofitting an installation with these gases remains possible for the time being in this context, and has the advantage of not requiring major work on the existing refrigeration circuits or intervention by an independent verification body under the **Pressure Equipment Directive (PED)**. It should be noted that it is not necessary to replace the exchangers when retrofitting from **R22** to **R407C**, as the operating pressures are virtually identical. This results in lower retrofit costs.

# Retrofitting of thermal units

## ETT Solutions - Retrofit with R513A



### Substitution :

**R513A** is best known for being a direct substitute for **R134a** (applications such as liquid coolers, commercial refrigeration, etc.) and even for **R404A** in positive refrigeration. It can also be used in comfort air conditioning as a replacement for **R22**, **R410A** or **R407C**, but requires a feasibility study depending on the field of application (sizing of compressors, pipe diameters, etc.).

### Thermodynamic performances :

They are almost equivalent to those of **R134a** for air conditioning. They are very good compared with those of **R410A**, provided that the necessary modifications are made to the refrigeration circuits. **R513A** retrofits will not be carried out in heating units where there are no plans to change the pipework.

### Environmental impact:

The GWP of **R513A** is more than half that of **R134a**, while its performance is virtually identical.

### Key benefits :

**R513A** is distinguished from other low-GWP fluids by its A1 safety class (non-flammable) and low operating pressure. A retrofit of a machine to **R513A** is therefore considered to be an "Insignificant Change" and does not require specific control under the PED. **R513A** is particularly well suited to pool dehumidification applications.

## ETT Solutions - Retrofit with R32



### Substitution :

In recent years, a large number of manufacturers have chosen **R32** as the low-GWP fluid to replace **R410A** (reversible comfort air conditioning).

### Thermodynamic performances :

**R32** offers higher thermal efficiency, COP and ERR than **R410A** (+ 5 to 10% in thermodynamic performance). For the same power ratings, the **R32** refrigerant charge required will be 20 to 30% lower.

### Environmental impact:

The GWP of **R32** is 3 times lower than that of **R410A**. What's more, it is very easy to recycle because it is a single molecule ("pure body"). It is clearly, in fact, seen as a viable alternative for some years to come.

### Key benefits :

In addition to its advantages in terms of environment and electricity consumption, **R32** is also a fluid whose purchase price per kg is one of the lowest on the market (2 times less than the **R410A**, 3 times less than the **R407C**).

### Constraints :

The **A2L** (low flammable) classification of **R32** implies that precautions must be taken and requirements must be met for its use.

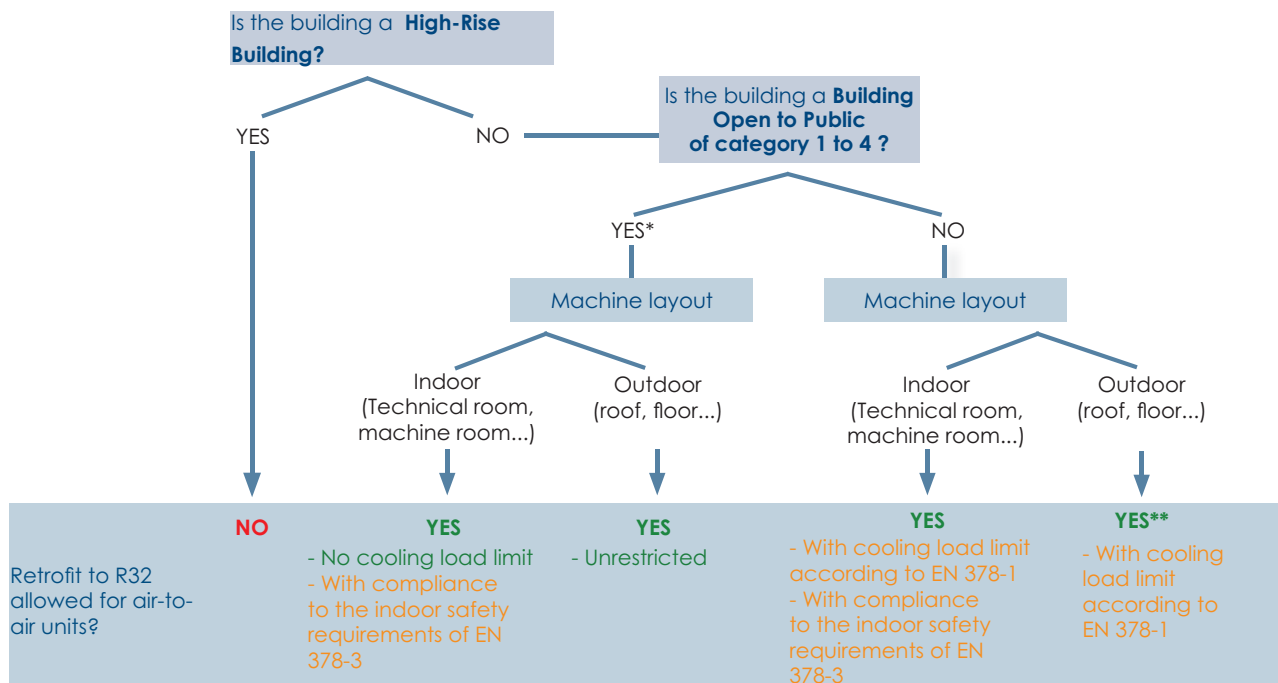
Retrofitting with **R32** therefore involves modifying the machine: separating the electrical cabinet from the refrigeration circuits, integrating a leak detector into the machine, replacing the exchangers for a larger exchange surface, etc. If the machine is located in a technical room, it is also necessary to check whether an ATEX extractor is required (according to standard NF EN 378-3).

Modifications to the machines are considered "significant" in the sense of the PED and as such must be checked afterwards by an **independent authorised body**.



# Retrofitting of thermal units

## ETT Solutions - Retrofit to R32 (continued)



(\*) French Article CH35:2019, which is mandatory in 'BoP' of categories 1 to 4, states in paragraph 3 that the risk management measures it recommends do not apply to hermetically sealed equipment.

As this is the case for ETT heat pumps, no cooling load limitation applies in 'BoP' of categories 1 to 4.

(\*\*) Except for 'BoP', for machines located outdoors, loads of R32 <20 kg/circuit are fully allowed by NF EN 378-1.

### The EN 378:2017 standard defines the safety and environmental requirements for heat pumps

NF EN 378-1	NF EN 378-3
Part 1 provides a method of calculating the maximum acceptable refrigerant charge in machines. It takes into account several criteria: the category of access to the room (general, supervised, reserved), the location of the machine (outside, confined, ventilated room, etc.), the toxicity and flammability of the fluid...	Part 3 is devoted to the safety levels to be provided in the rooms according to a risk analysis taking into account the nature of the refrigerant, its maximum charge per circuit, the volume of the room, etc. This can lead to the installation of gas detectors with shutdown of the installation, triggering of alarms, ATEX extraction fans with minimum flow rates, etc. This is the case for <b>R32</b> .

# Retrofitting of thermal units

## Heat pumps retrofit: getting support in the process

There are many criteria when choosing the replacement fluid that will give a second life to your refrigeration installation: environmental impact, energy savings, simplicity of modifications (compatibility of oils, compressors, exchangers, etc.), investment costs, cost of consumables, etc.

In all cases, a feasibility study is mandatory before any technical and commercial offer is submitted. For this purpose, **ETT Services** is at your disposal to advise and guide you according to your constraints.

Criteria	R410A	R407C	R513A	R32
Environmental impact	-	+	+++	+++
Energy consumption	++	-	++	+++
Heating performances	+++	++	+	+++
Cooling performances	+++	++	++	+++
Impact of machine modification	++	++	+	-
PED-related constraints	+++	+++	+++	-
Gas purchase costs	+	+	-	+++

[ - ; + ; ++ ; +++ ]: from least to most favourable



For further information, please contact

Tel: +33 (0)2 98 48 02 22

[ett.services@ett-hvac.com](mailto:ett.services@ett-hvac.com)

[www.ett-hvac.com](http://www.ett-hvac.com)





Refrigeration circuit



# Parts for refrigeration

## Compressors

### / Scroll compressors SZ R407C ON/OFF

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
■ FCO103604	SZ161-4	400/50/3	86	A 1"3/8 - R 7/8" - ODF
■ FCO103605	SZ185-4RZM	400/50/3	103	A 2"1/4 - R 1"3/4



### / Reciprocating compressors MTZ R407C ON/OFF

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
FCO10280	MTZ40	400/50/3	26	A 5/8" - R 1/2" - ROT
FCO10310	MTZ80	400/50/3	40	S 1"1/8 - D 3/4" - ROT
FCO10320	MTZ100	400/50/3	60	S 1"1/8 - D 3/4" - ROT
■ FCO10330	MTZ125	400/50/3	64	S 1"1/8 - D 3/4" - ROT
■ FCO10340	MTZ160	400/50/3	69	A 1"1/8 - R3/4" - ROT



### / Scroll compressors ZR R407C ON/OFF

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
FCO103749	ZR 16	400/50/3	103	S1"3/4 - D1"1/4" - ROT
FCO1037109	ZR 19	400/50/3	107	S2"1/4 - D1"3/4" - ROT
FCO20025	ZR 40	400/50/3	28	S 3/4" - D 1/2" - ODF
FCO20026	ZR 48	400/50/3	31	S 7/8" - D 1/2" - ODF
FCO20030	ZR 61	400/50/3	38	S 7/8" - D 1/2" - ODF
FCO20035	ZR 81	400/50/3	41	S 7/8" - D 3/4" - ODF
■ FCO1037153	ZR 125	400/50/3	61	A 1"3/8 - R 7/8" - ODF
■ FCO1037154	ZR 160	400/50/3	64	A 1"3/8 - R 7/8" - ODF
■ FCO1037155	ZR 190	400/50/3	66	A 1"3/8 - R 7/8" - ODF



### / Reciprocating compressors delivered without variable-frequency drive VTZ R407C SRV

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
FCO150381	VTZ 38	400/50/3	21	S 1"1/4 - D 3/1" - ROT
FCO150541	VTZ 54	400/50/3	24	S 1"1/4 - D 3/1" - ROT
FCO150861	VTZ 86	400/50/3	35	S 1"3/4 - D 1"1/4 - ROT
■ FCO151216	VTZ 121	400/50/3	40	S 1"3/4 - D 1"1/4 - ROT
■ FCO151711	VTZ 171	400/50/3	60	S 1"3/4 - D 1"1/4 - ROT



■ Stock item

# Parts for refrigeration

## / Compressor drives

ETT ref.	Associated compressor
<b>FCO150382</b>	ZTZ 38
<b>FCO150542</b>	VTZ 54
<b>FCO150862</b>	VTZ 86
■ <b>FCO1512161</b>	VTZ 121
■ <b>FCO151712</b>	VTZ 171
■ <b>EPU3501191</b>	Terminal for VTZ compressor drive
<b>FCOYPV039</b>	YPV030/038



Refrigeration  
circuit

## / Scroll compressors ZP R410A ON/OFF

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
■ <b>FCO11306</b>	ZP 54	400/50/3	34	S 7/8" - D 1/2" - ODF
■ <b>FCO11307</b>	ZP 61	400/50/3	40	S 7/8" - D 1/2" - ODF
■ <b>FCO103708</b>	ZP 83	400/50/3	39.5	S 7/8" - D 1/2" - ODF
■ <b>FCO1037091</b>	ZP 91	400/50/3	56	S 7/8" - D 3/4" - ODF
■ <b>FCO103712</b>	ZP 103	400/50/3	58	A 1 3/8" - R 7/8" - ODF
<b>FCO103713</b>	ZP 120	400/50/3	61	A 1 3/8" - R 7/8" - ODF
■ <b>FCO1047191</b>	ZP 154	400/50/3	65	A 1 3/8" - R 7/8" - ODF
■ <b>FCO1047201</b>	ZP 182	400/50/3	66	A 1 3/8" - R 7/8" - ODF



## / Scroll compressors SH R410A ON/OFF

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO1036157</b>	DSH140	400/50/2	68	A 1 3/8" - R 7/8" - ODF
■ <b>FCO1036159</b>	DSH161	400/50/3	69	A 1 3/8" - R 7/8" - ODF
■ <b>FCO1036160</b>	DSH184	400/50/3	71.5	A 1 3/8" - R 7/8" - ODF



## / Compressors GSD R410A ON/OFF

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
■ <b>FCO403610</b>	GSD6-0120	400/50/3	89	S 1 3/8" - D 7/8"
■ <b>FCO403611</b>	GSD6-0137	400/50/3	89	S 1 3/8" - D 7/8"
■ <b>FCO403613</b>	GSD6-0182	400/50/3	89	S 1 3/8" - D 7/8"
■ <b>FCO403614</b>	GSD6-0235	400/50/3	90	S 1 3/8" - D 7/8"



## / Compressors GSD - R32

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO403802</b>	GSD60120VLB	400/50/3	82	A 1 3/8" - R 7/8" - ODF
<b>FCO403801</b>	GSD60137VLB	400/50/3	82	A 1 3/8" - R 7/8" - ODF
<b>FCO403803</b>	GSD60154VL	400/50/3	82	A 1 3/8" - R 7/8" - ODF
<b>FCO403800</b>	GSD60182VLB	400/50/3	82	A 1 3/8" - R 7/8" - ODF
<b>FCO403804</b>	GSD80385VL	400/50/3	144	S 1 5/8" - D 1 1/8" - ODF



■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.

# Parts for refrigeration

## / Compressors DSF - R32

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO0121A</b>	DSF155	400/50/3	67	A 1"3/8 - R 7/8" - ODF
<b>FCO0121C</b>	DSF175	400/50/3	69	A 1"3/8 - R 7/8" - ODF
<b>FCO0121B</b>	DSF200	400/50/3	71.5	A 1"3/8 - R 7/8" - ODF

## / Screw compressors - R513a

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO106310</b>	ZR 310	380/50/3	188	A 1"5/8 - R 1"3/8



## / Digital Scroll compressors ZPD R410A

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO108034</b>	ZPD 034	400/50/3	30	S 7/8" - D 1/2" - ODF
<b>FCO108042</b>	ZPD 042	400/50/3	32	S 7/8" - D 1/2" - ODF
<b>FCO100854</b>	ZPD 054	400/50/3	34	S 7/8" - D 1/2" - ODF
<b>FCO108061</b>	ZPD 061	400/50/3	41	S 7/8" - D 1/2" - ODF
■ <b>FCO108072</b>	ZPD 072	400/50/3	45	S 7/8" - D 1/2" - ODF
<b>FCO108083</b>	ZPD 083	400/50/3	45	S 7/8" - D 1/2" - ODF
<b>FCO108104</b>	ZPD 104	400/50/3	59	A 1"3/8 - R 7/8" - ODF
<b>FCO108122</b>	ZPD 122	400/50/3	61	A 1"3/8 - R 7/8" - ODF
<b>FCO108154</b>	ZPD 154	400/50/3	64	A 1"3/8 - R 7/8" - ODF
■ <b>FCO108182</b>	ZPD 182	400/50/3	66	A 1"3/8 - R 7/8" - ODF



## / Compressors YP - R32

ETT ref.	Designation	Power supply (V/Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FCO203708</b>	YP 83	400/50/3	39.5	S 7/8" - D 1/2" - ODF
<b>FCO203709</b>	YP 91	400/50/3	40.8	S 7/8" - D 3/4" - ODF
<b>FCO203710</b>	YP 104	400/50/3	48.8	A 1"1/8 - R 7/8" - ODF
<b>FCO203711</b>	YP 122	400/50/3	48.8	A 1"1/8 - R 7/8" - ODF
<b>FCO203717</b>	YP 137	400/50/3	62.6	A 1"3/8 - R 7/8" - ODF
<b>FCO203712</b>	YP 154	400/50/3	64.9	A 1"3/8 - R 7/8" - ODF
<b>FCO203713</b>	YP 182	400/50/3	66.2	A 1"3/8 - R 7/8" - ODF
<b>FCO203714</b>	YP 232	400/50/3	91.6	S 1"5/8 - D 1"1/8 - ODF
<b>FCO203715</b>	YP 292	400/50/3	91.6	S 1"5/8 - D 1"1/8 - ODF
<b>FCO203716</b>	YP 385	400/50/3	176.9	S 1"5/8 - D 1"1/8 - ODF
<b>FCOYPV030</b>	YPV030	400/50/3	18.1	A 3/4" - ODF R 1/2" - ODF
<b>FCOYPV038</b>	YPV038	400/50/3	19.8	A 3/4" - ODF R 1/2" - ODF



## / ATEX compressors

ETT ref.	Designation	Power supply (V/ Hz/Ph)	Weight (Kg)	Suction/Discharge diameter
<b>FSP15345C</b>	EX-HGX34e/380-4 S	400/50/3	94	A 1"1/8 - R 7/8"



■ Stock item



# Parts for refrigeration

## Compressor options

### / Compressor gaskets

ETT ref.	Associated compressor type	Diameter	A (suction) / R (exhaust)
■ <b>FDV99104</b>	VTZ 38 to 54	1"	D
■ <b>FDV99105</b>	VTZ 38 to 54 ZR 11 to 16 MTZ 80 to 160 VTZ 86 to 171	1"1/4	D
■ <b>FDV99120</b>	ZR 11 to 16 ZP 80 to 160 SH 86 to 171 SZ 185 ZR 19	1"3/4	A D
■ <b>FDV99110</b>	SZ 185 (suction) ZR 19 (suction)	2" 1/4	A



### / Crankcase heaters

ETT ref.	Associated compressor type	Power supply (V/Hz/Ph)	Electrical power (w)
<b>EDV20039</b>	SZ 161	400/50/3	50
■ <b>EDV20040</b>	SZ 185 VTZ 171	400/50/3	75
■ <b>EDV20025</b>	MTZ 40 to 160 VTZ 38 to 171	400/50/3	35
<b>EDV20050</b>	ZR 11 to 81 ZR 90 VTZ 86 to 121	400/50/3	70
■ <b>EDV20052</b>	ZR 40 to 81 ZR 122 ZP 54 to 83	400/50/3	70
■ <b>EDV20053</b>	ZR 108 to 190 ZP 103 to 182 SH 161 to 184	400/50/3 480/50/3	66 93
<b>EDV20060</b>	VTZ 38 to 54	400/50/3	54
<b>EDV200531</b>	ZR 16	400/50/3	82 120



### / Oil Ester

ETT ref.	Associated compressor type	Oil ref.	Designation
■ <b>FDV99018</b>	Reciprocating	160 PZ	1L can
■ <b>FDV99013</b>	Scroll	160 SZ	1L can
<b>FDV9902171</b>	COPELAND	RL32-AMF	1L can
<b>FDV990217</b>	COPELAND	RL32-AMF	5L can



### / Oil Copeland R32

ETT ref.	Associated compressor type	Oil ref.	Designation
<b>FDV99025</b>	YP compressor	NXGS020	5L

#### ■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.

# Parts for refrigeration

## / Oil Danfoss R32

ETT ref.	Associated compressor type	Oil ref.	Designation
<b>FDV800001</b>	DSF compressor	POE 185SL	1L

## / Oil BITZER R32

ETT ref.	Associated compressor type	Oil ref.	Designation
■ <b>FDV99015</b>	GSD compressor	PVE-BVC32	5L
■ <b>FDV99016</b>	GSD compressor	PVE-BVC32	1L

## Expansion valves

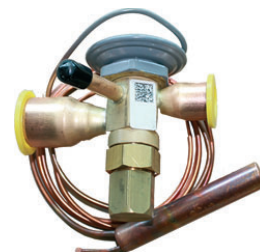
### / R407C thermostatic expansion valves (thermostatic assembly + valve body)

ETT ref.	Designation	Associated compressor	ODF diameters
■ <b>FCC200601</b>	ONE 15CP100	MTZ 160 SZ 185 ZR 16 - ZR 19	5/8" - 7/8"
■ <b>FCC20050</b>	SNE 10CP100	MTZ 80 to 125 VTZ 11 - ZR 12	5/8" - 7/8"



### / R410A thermostatic expansion valves

ETT ref.	Designation	Associated compressor	ODF diameters
■ <b>FCC20000</b>	BBIZE-8	ZP 90 to 120 SH 161	5/8" - 7/8"
■ <b>FCC200001</b>	BBIZE-5	ZP 90	5/8" - 7/8"
■ <b>FCC200005</b>	BBIZE-15	ZP 166 and ZP 180 SH 161 and SH 184	5/8" - 7/8"



### / R407C thermostatic assembly

ETT ref.	Designation	Associated expansion valve
■ <b>FCC20080</b>	KT84	ONE15CP100 + SNE10CP100

### / R410A thermostatic assembly

ETT ref.	Designation	Associated expansion valve
■ <b>FCC20091</b>	ZCP160	BBIZE-8
■ <b>FCC2000011</b>	KT-45-ZGA 60"	BBIZE-5
■ <b>FCC2000051</b>	KT-45-5 ZCP180 60"	BBIZE-15



■ Stock item

# Parts for refrigeration

## / R407C & R410A electronic expansion valves

ETT ref.	Designation	Flow direction	ODF diameters
<b>FCC203000</b>	EX4-I21	UNI-FLOW	3/8" -5/8"
■ <b>FCC203002</b>	EX5-U21	UNI-FLOW	5/8" -7/8"
■ <b>FCC203005</b>	EX6-I21	UNI-FLOW	7/8" -1"1/8"
■ <b>FCC204001</b>	E2V30	BI-FLOW	5/8" -5/8"
■ <b>FCC204002</b>	E2V24	BI-FLOW	1/2" -1/2"
■ <b>FCC204003</b>	E2V35	BI-FLOW	5/8" -5/8"
■ <b>FCC204004</b>	E2V18	BI-FLOW	1/2" -1/2"
■ <b>FCC204005</b>	E2V14	BI-FLOW	1/2" -1/2"
■ <b>FCC204006</b>	E3V45	BI-FLOW	3/4" -7/8"



## / Regulators for electronic expansion valves

ETT ref.	Designation	Associated expansion valve	Communication
■ <b>EMS4003641</b>	E2V TWIN	EV2 x 2	RS485
■ <b>EMS400366</b>	E2V	EV2	LAN
■ <b>EMS400404</b>	Rechargeable battery for electronic expansion valve EC3X32 and EC3X33		



## / Accessories for electronic expansion valves

ETT ref.	Designation
<b>EMS400390</b>	Expansion valve ECD-002 terminal for EC3
<b>EMS400392</b>	Copeland PT407M pressure sensor
<b>EMS400393</b>	COPELAND PT4-M30 PRESSURE SENSOR CABLE
<b>EMS400394</b>	NTC ECN-N60 temperature sensor
■ <b>EMS40036</b>	E2V driver connector
<b>EMS400361</b>	Carel E2V driver cable
<b>EMS400362</b>	Pocket display for E2V electronic expansion valve
■ <b>EMS400374</b>	CAREL SPKT Pressure sensor
■ <b>EMS4003742</b>	CAREL sensor cable 5 m
■ <b>EMS40074</b>	T° sensor Carel 6 m



## Refrigeration circuit

### / 4-way valves

ETT ref.	Designation	Suction diameter	Discharge diameter
■ <b>FVA20079</b>	without coil	1" 1/8	7/8"
■ <b>FVA200862</b>	without coil	7/8"	5/8"



### / 4-way valve coils (220V power supply)

ETT ref.	Designation
■ <b>EDV10060</b>	RANCO 220V for FVA200801
■ <b>EDV100605</b>	SHF 220V for FVA20079
■ <b>EDV100603</b>	BEAM SHF for FVA20079
<b>EDV10075</b>	ASC3 230/50-60 AC
■ <b>EDV100601</b>	DANFOSS 220V



■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.



# Parts for refrigeration

## / Driers

ETT ref.	Bi-flow	Connection	Diameters
■ FCC10009	YES	Brazed	163 3/8"
■ FCC10032	YES	Brazed	165 5/8"
■ FCC10022	YES	Brazed	305 5/8"
FCC100224	YES	Brazed	307 7/8"
FCC100226	YES	Brazed	309 1' 1/8"
■ FCC10023	YES	Brazed	084 1/2"
■ FCC10031	NO	Brazed	165 5/8"
■ FCC10021	NO	Brazed	305 5/8"
FCC 10034	NO	Brazed	307 7/8"
■ FCC10036	NO	Bolted	165 5/8"



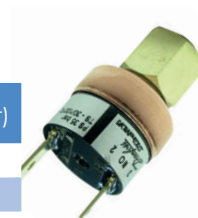
## / Valves

ETT ref.	ODF diameters
■ FCC30005	3/8"
■ FCC30007	1/2"
■ FCC30010	5/8"
■ FCC30026	3/4"
■ FCC30025	7/8"
■ FCC30030	1" 1/8"



## / HP/ LP pressure switches

ETT ref.	Designation	Type	Refrigerant	Operating range (bar)
■ FMS10010	LP	061 F 1039	R407C	1.0 / 2.5
■ FMS10031	HP 29 bar	061 F 8326	R407C	29/21
■ FMS10022	LP	061 F 7361	R410A	2.2 +/- 0.2
■ FMS100142	HP 40 bar	061 F 8410	R410A	40 / 33
FMS10005	ATEX LP	RT1AE		0.8 / 5
FMS10006	ATEX HP	RT6AEW		5.0 / 25.0



## / 3-way valves without coil

ETT ref.	Designation	Diameter
■ FVA20015	S85D5B	5/8"
■ FVA20016	S8D7B-HP	7/8"
FVA20017	S8D9B-HP	1-1/8"



■ Stock item

# Parts for refrigeration

/ 3-way valve coil

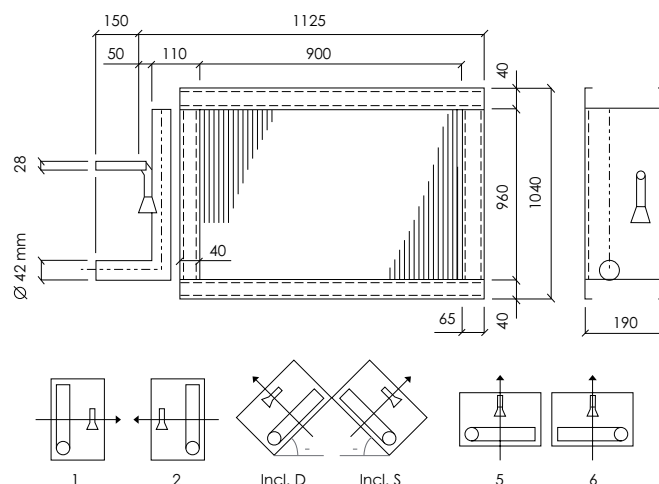
ETT ref.	Designation	Match
■ <b>FVA200162</b>	MKC-1 208	FVA20015 FVA20016 FVA20017

Heat exchangers

/ Air exchangers

Study on request

Example of selection:



\* Process: HERESITE coating  
ELECTROFIN coating

**ELECTROFIN**



**HERESITE**



■ Stock item

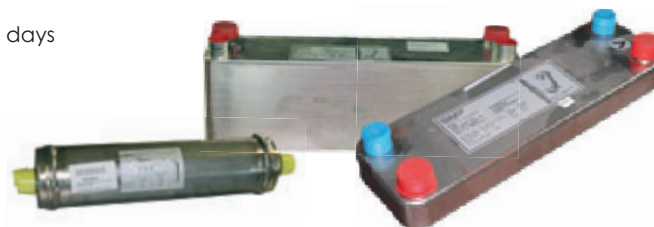
ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.

# Parts for refrigeration

## / Plate heat exchangers on water (on flanges or welded)

\* Lead time: made to measure: Consult us  
standard stock(no specific treatment): 8 days

\* Process: Epoxy  
Blygold  
Heresite  
Vinyl



## / Hot water - chilled water coils

Study on request



ETT offers a battery cleaning service to maintain the performance of the equipment.  
More information: page 11

■ Stock item

# elt



Ventilation

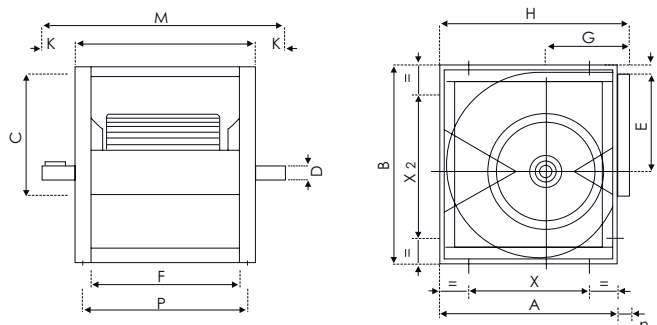


# Parts for ventilation

## Fans

### / Cubik fan

Indicate the following dimensions if required.



### / Centrifugal fans (pulley - belt)

ETT ref.	Designation	Shaft diameter (mm)	Weight (Kg)
■ VVE30070	AT 15/15 C	25	25
■ VVE30090	AT 18/18 C	25	38
VVE30100	TDA 20/20R	35	84
VVE30120	TDA 25/25R	35	113
VVE30126	AT 28/28 TIC	40	127
VVE40040	AT 18/18S	25	33
VVE60022	ADH 500 R	35	65
VVE600222	ADH 560R	40	86
VVE60032	ADH 355R	30	29
VVE70071	RDH 355 R	30	34
VVE70141	RDH 710 R	58	165



Note: Drive on request according to installation flow rates and pressure drops.  
Epoxy coating on request.

### / Plug fans: fan + electronically commutated motor

ETT ref.	Designation	Dimensions (H x L)	Weight (Kg)
■ VVE9991031	K3G310 - 3.24kW - 4100rpm	460 x 460	25
■ VVE9991032	K3G355 - 1.7kW - 2600rpm	460 x 460	23
■ VVE9991034	K3G450 - 5.7kW - 2750rpm	615 x 615	54
■ VVE99910353	K3G500 - 3.5kW - 1910rpm	615 x 615	41
■ VVE9991037	K3G500 - 3.5kW - 1910rpm	700 x 700	43
VVE9991051	K3G560 - 4.7kW - 1750rpm	700 x 700	67
■ VVE9991059	K3G500 - 5.5kW - 2200rpm	700 x 700	60
■ VVE9991061	K3G560 - 3kW - 1500rpm	700 x 700	52
VVE9991062	K3G250 - 0.8kW - 3580rpm	400 x 400	11
VVE9991033	K3G400 - 3.5kW - 2680rpm	460 x 460	32



### / Spare blades

ETT ref.	Propeller description	Diameter	Weight (Kg)
■ VVE100301	9/4Z 30° AL 24	710	3.0
■ VVE100311	9/4Z 30° AL 24	730	2.0
■ VVE10056	5B 40° AL 28	750	2.1
VVE100701	12B 35° AL 28	800	5.7



■ Stock item

# Parts for ventilation

## / Balls and bearings for centrifugal fans

ETT ref.	Associated fans
<b>VVE99070</b>	AT 7/7 at 10/8 C or S
<b>VVE99071</b>	AT 12/9 à 18/18 C or S
■ <b>VVE990711</b>	AT 12/9 to 15/15 G2C
<b>VVE99072</b>	AT 20/15 to 22/22 T
<b>VVE990721</b>	AT 18/15 to 30/28 G2C
<b>VVE99073</b>	AT 25/20 to 30/28 T
<b>VVE99081</b>	ADN - ADH - RDN - RDH version L or R from 160 to 225
<b>VVE99082</b>	ADN - ADH - RDN - RDH version L or R from 280 to 315
<b>VVE99083</b>	ADN - ADH - RDN - RDH version L or R from 355 to 400
■ <b>VVE99084</b>	ADN - ADH - RDN - RDH version L or R from 450 to 500
<b>VVE99085</b>	ADN - ADH - RDN - RDH version L or R from 560 to 630
<b>VVE990857</b>	ADN - ADH - RDN - RDH version L or R 710
<b>VVE99074</b>	ADN - ADH - RDN - RDH version K from 200 to 225
<b>VVE99075</b>	ADN - ADH - RDN - RDH version K 250
<b>VVE99076</b>	ADN - ADH - RDN - RDH version K from 280 to 315
<b>VVE99077</b>	ADN - ADH - RDN - RDH version K from 355 to 400
<b>VVE99078</b>	ADN - ADH - RDN - RDH version K from 450 to 500
<b>VVE99079</b>	ADN - ADH - RDN - RDH version K from 560 to 800
<b>VVE99080</b>	ADN - ADH - RDN - RDH version K from 900 to 1000
<b>VVE9908</b>	ADN - ADH - RDN - RDH version G2K2 from 500 to 1000

## / Complete variable-speed propeller fans

ETT ref.	Propeller description	Diameter	Supply air
■ <b>VVE1503081</b>	1.85kW 1230rpm	630	UPWARDS
<b>VVE1503058</b>	0.93kW 900rpm	710	UPWARDS
■ <b>VVE1503059</b>	2.85kW 1250rpm	710	UPWARDS
<b>VVE150873</b>	1.85kW 950rpm	800	UPWARDS
■ <b>VVE150876</b>	3kW 1090rpm	800	DOWNWARDS
<b>VVE150885</b>	1.9kW 930 rpm	910	DOWNWARDS
■ <b>VVE150886</b>	4kW 1210 rpm	910	DOWNWARDS
■ <b>VVE150884</b>	0.68kW 570 rpm	910	DOWNWARDS



## / Propeller fan motors (400V/50Hz/3ph)

ETT ref.	Designation	Weight (Kg)	Rotation speed (rpm)	Electrical power (kW)
■ <b>VMO5004011</b>	24	13.5	1,000	0.75 kW
■ <b>VMO5005011</b>	28	24	1,000	1.5 kW

### ■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.

# Parts for ventilation

## / Centrifugal fan motors

ETT ref.	Shaft diameter	Weight (kg)	Rotation speed (rpm)	Electrical power (kW)
VMO80040	24	18	1500	1.1 kW
VMO80050	24	20	1500	1.5 kW
VMO80060	28	24.5	1500	2.2 kW
VMO80070	28	32	1500	3.0 kW
VMO80090	28	34	1500	4.0 kW
VMO80100	38	57	1500	5.5 kW
VMO80110	38	60	1500	7.5 kW
VMO80120	38	70	1500	9.0 kW
VMO80140	42	91	1500	11.0 kW
VMO80150	42	102	1500	15.0 kW
VMO80125	48	136	1500	18.5 kW
VMO80130	48	110	1500	22.0 kW
VMO801811	55	200	1500	30.0 kW
VMO80185	60	274	1500	37.0 kW
VMO7012584	42	92	3000	18.5 kW
VMO8010014	38	48	1500	5.5 kW
VMO8015014	42	160	3000	15 kW

Note: For other dimensions, please contact us.



IE3 and IE3 fan motors



## / Accessories on request

Designation
Flexible connection
Motor slides/supports
Hubs
Pulleys
Belts
Propeller grille fasteners



## / Damper motors

ETT ref.	Designation	Power (Nm)
■ EMO10153	GDB 161.1H	5Nm
■ EMO101531	GLB 161.1H	10Nm
■ EMO10100	SM24SR/500	15Nm
■ EMO10164	GCA 326.1E	16Nm
■ EMO10151	GBB 161.1H	20Nm
EMO10161	GBB 161.1E	20Nm



■ Stock item

# Parts for ventilation

## / Aluminium dampers

ETT ref.	Dimensions (H x L) (FR CH range)	Range
<b>VRE10092</b>	0900*0310	ULTI 01
<b>VRE10140</b>	1200*0310	FRCH-RE Series 1 2005 EFFI+ Series 1 ULTI 11
<b>VRE10195</b>	1400*0410	FR CH RE Series 2 2005
<b>VRE10216</b>	1500*0410	ULTI 12
<b>VRE10303</b>	1800*0510	FRCH-RE Series 2 2005 FRCH RR - HPE+ et HPE+CEE Series 2 2010 FRCH GAC RR - GAC HPE+ et GAC CEE Series 2 2010 EFFI+ Series 2 ULTI 21
<b>VRE10304</b>	1800*0610	CABINET EX Series 3 2009 FRCH RR - HPE+ et HPE+CEE Series 3 2010 FRCH GAC RR - GAC HPE+ et GAC CEE Series 3 2010 EFFI+ Series 3
<b>VRE10305</b>	1800*0710	EFFI+ Series 4
<b>VRE10306</b>	1800*0810	EFFI+ Series 4
<b>VRE10350</b>	2000*0510	FORMER RANGE IROISE series 2 and series 3 (FCHRR WITHOUT FRAME) FRCH RR series 2 2005 FRCH RR series 3 2005 FRCH GAC series 2 2005 FRCH GAC series 3 2005 FRCH RR et HPE+ series 2 2009 FRCH RR et HPE+ series 3 2009 FRCH GAC RR et GAC HPE+ series 2 2009 FRCH GAC RR et GAC HPE+ series 3 2009 FRCH RR et HPE+ series 2 2005 - 2009 FRCH RR et HPE+ series 3 2005 - 2009
<b>VRE10353</b>	2000*0810	FR CH RR and HPE+ Series 3 2009



Ventilation

Note: For other dimensions, please contact us.

## Filtration

### / Gravimetric filters (ISO ePM1 50% filtration (F7) type)

ETT ref.	Dimensions
<b>VFI20270</b>	397 x 498 x 48
<b>VFI20275</b>	498 x 498 x 48
<b>VFI20295</b>	287 x 595 x 48
<b>VFI20291</b>	498 x 595 x 48
<b>VFI20290</b>	595 x 595 x 48

### / Polypropylene filters (Type ISO ePM1 50% (F7))

ETT ref.	Dimensions
<b>VFI21005</b>	397 x 498 x 48
<b>VFI20792</b>	498 x 498 x 48
<b>VFI21003</b>	287 x 595 x 48
■ <b>VFI21008</b>	498 x 595 x 48
<b>VFI20799</b>	595 x 595 x 48

■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.



# Parts for ventilation

## / Standard 95% gravimetric filters (ISO Coarse 65% filtration (G4) type)

ETT ref.	Dimensions
■ VFI10020	397 x 498 x 48
■ VFI10030	498 x 498 x 48
■ VFI10010	287 x 595 x 48
■ VFI10055	498 x 595 x 48
■ VFI10090	595 x 595 x 48
■ VFI10100	397 x 625 x 48
■ VFI10060	498 x 625 x 48

ETT ref.	Dimensions
■ VFI10025	397 x 498 x 98
■ VFI10031	498 x 498 x 98
■ VFI10223	287 x 595 x 98
■ VFI10056	498 x 595 x 98
■ VFI10222	595 x 595 x 98
■ VFI10101	397 x 625 x 98
■ VFI100600	498 x 625 x 98



## / Refillable 95% gravimetric filters (ISO Coarse 65% filtration (G4) type)+ Refill

Filtres	
ETT ref.	Dimensions
VFI10215	397 x 498 x 48
■ VFI10216	498 x 498 x 48
VFI10225	287 x 595 x 48
VFI10217	498 x 595 x 48
■ VFI10220	595 x 595 x 48
■ VFI10210	397 x 625 x 48
■ VFI10205	498 x 625 x 48
VFI10227	397 x 397 x 98
VFI102151	397 x 498 x 98
VFI102101	397 x 625 x 98
VFI1021601	498 x 498 x 98
VFI10226	498 x 625 x 98
VFI102232	287 x 595 x 98
■ VFI102171	498 x 595 x 98
VFI102211	595 x 595 x 98

Refills	
ETT ref.	Dimensions
VFI11220	397 x 498 x 48
■ VFI11215	498 x 498 x 48
VFI11221	287 x 595 x 48
VFI11217	498 x 595 x 48
VFI11219	595 x 595 x 48
VFI11216	397 x 625 x 48
VFI11218	498 x 625 x 48
VFI30510	397 x 397 x 98
VFI30600	397 x 498 x 98
VFI30520	397 x 625 x 98
■ VFI30650	498 x 498 x 98
VFI30530	498 x 625 x 98
■ VFI30490	287 x 595 x 98
■ VFI30500	498 x 595 x 98
VFI30550	595 x 595 x 98



## / Gravimetric filters (ISO ePM1 80% filtration (F9) type)

ETT ref.	Dimensions
VFI21016	498 x 498 x 48
VFI21014	397 x 498 x 48
VFI21012	287 x 595 x 48
VFI21018	498 x 595 x 48
VFI21010	595 x 595 x 48

## / Filters washable 50 times - stainless steel frame (type ISO Coarse 65% (G4))

ETT ref.	Dimensions
VFI22014	397 x 498 x 98
VFI22013	498 x 498 x 98
VFI22010	498 x 595 x 98
VFI22012	592 x 287 x 98
VFI22011	592 x 592 x 98

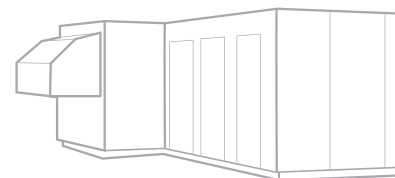
Note: For other dimensions, please contact us.

■ Stock item





# Parts for control



**Warning:** valid for replacement part by part.  
For all modifications to existing installations, please contact us  
+33 (0)2 98 48 02 22  
or email [ett.services@ett-hvac.com](mailto:ett.services@ett-hvac.com)

## / Communication cards

ETT ref.	Communication card description	Communication type	Suitable PLC
■ <b>EOT3010703</b>	COM. CARD PCO1000WB0	PCO WEB ETHERNET-IP	PCO3/PCO5+
■ <b>EOT301012</b>	COM. CARD PCO100FD10	JBUS LINK RS485 FIELD CARD	PCO3/PCO5+
■ <b>EOT301011</b>	COM. CARD PCOS004850	JBUS LINK RS485 SERIAL CARD	PCO3/PCO5+

### KEY BENEFITS

- Ease of use
- Quick setpoints change
- View alarms
- Remote diagnostics (from customer's web server)
- Better monitoring of units for optimised adjustment of their consumptions
- Communication speed: Max. 10 megabits/s according to type of network
- Low investment cost compared to a BMS
- Optimised security with myETTVision



## / PLCs with factory program (please specify project no.)

ETT ref.	Designation	Reference	Display
<b>EOT1017301</b>	SMALL 8e/8s	PCO5+	No
■ <b>EOT10175</b>	LARGE 18e/18s	PCO5+	Yes
■ <b>EOT10174</b>	LARGE 18e/18s	PCO5+	No
<b>EOT10176</b>	SMALL 8e/8s	pCO-OEM+	No
<b>EOT10177</b>	MEDIUM 12e/12s	pCO-OEM+	No
<b>EOT1017815</b>	MEDIUM 20e/18s	C.pCO-OEM+	No
<b>EOT1017816</b>	Expansion 10e/6s	C.pCOE ENHANCED	No
<b>EOT1017819</b>	Unit display for CPCO-OEM+		



■ Stock item



# Parts for control

## / Remote displays

ETT ref.	Designation
<b>EPP00002</b>	pCO3 V9
■ <b>EPP00003</b>	pCO3 V10
<b>EPP00004</b>	PCO5+ V13
<b>EPP00005</b>	PGD TOUCH REMOTE TERMINAL
<b>EPP00006</b>	TOUCH SCREEN REMOTE TERMINAL
<b>EPP00007</b>	TOUCH SCREEN remote display ( if unit-display link >50 m)
■ <b>ECM10111</b>	T-derivator
■ <b>ECM 101121</b>	CONNECTION CABLE
<b>ECM101205</b>	PCO3 pocket
<b>ECM101220</b>	PCO5+ pocket
<b>ECM101230</b>	Pocket for PCO5+
■ <b>ECM10124</b>	PCO3 remote terminal (Up to V9 programs)
<b>ECM101241</b>	PCO3 remote terminal (Programs V10 to V13)
<b>ECM10125</b>	PCO5+ remote terminal

■ Please specify ETT reference (project no.)



## / Temperature sensors - °C

ETT ref.	Designation	Controller type
■ <b>EMS40076</b>	Room air	pCO
■ <b>EMS40074</b>	Gas/Liquid Outside air/Return air/Supply air	pCO



## / Humidity sensors

ETT ref.	Designation	Type
■ <b>EMS4006111</b>	Room air	0-10V
■ <b>EMS400506</b>	Return air / Outside air	0-10V
<b>EMS4005061</b>	Return air / Outside air (Sensor & Stainless steel filter)	0-10V



## / Sondes CO<sub>2</sub>

ETT ref.	Designation	Type
■ <b>EMS4006051</b>	CO <sub>2</sub> ducting	24Vac / 0-10V
<b>EMS4006103</b>	CO <sub>2</sub> room sensors	24Vac/ 0-10v
<b>EMS4006104</b>	VOC environment	THERMOKON



■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.



# Parts for control

## / Fire thermostats

ETT ref.	Designation
■ <b>EMS30133</b>	Manual reset
■ <b>EMS30120</b>	Automatic reset



## / Frost protection thermostats

ETT ref.	Designation
■ <b>EMS300301</b>	FROST PROTECTION THERMOSTAT - 1 digital contact + 1 signal 0/ 10v - capillary 6 m
■ <b>EMS30033</b>	FROST THERMOSTAT - 1 ON/OFF contact - 6m capillary



## / Smoke detectors

ETT ref.	Designation	Type
■ <b>EMS700263</b>	Optical detector head	Caraibes
<b>EMS7030</b>	R32 gas detector	OLCT10
<b>EMS7031</b>	R32 gas detection cell	OLCT10
<b>EMS7035</b>	R410 gas detector	OLCT10
<b>EMS7001621</b>	Stand-alone detection unit + bracket	LOTUS PLUS
<b>EMS700162</b>	Actuating detector	LOTUS PLUS



## / Filter fouling pressure switches/ Air flow switches

ETT ref.	Description (setting scale)
■ <b>EMS10040</b>	FILTER PRESSURE SWITCH G4- 0.2- 3 mbar
■ <b>EMS10041</b>	FILTER PRESSURE SWITCH F7- 0.5- 5 mbar



## / Analogue airflow control sensors

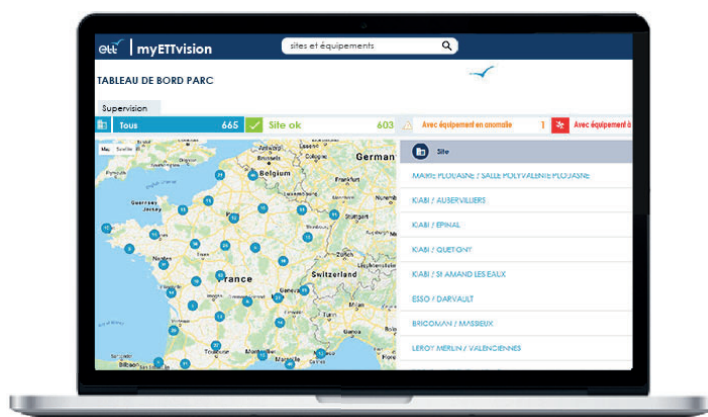
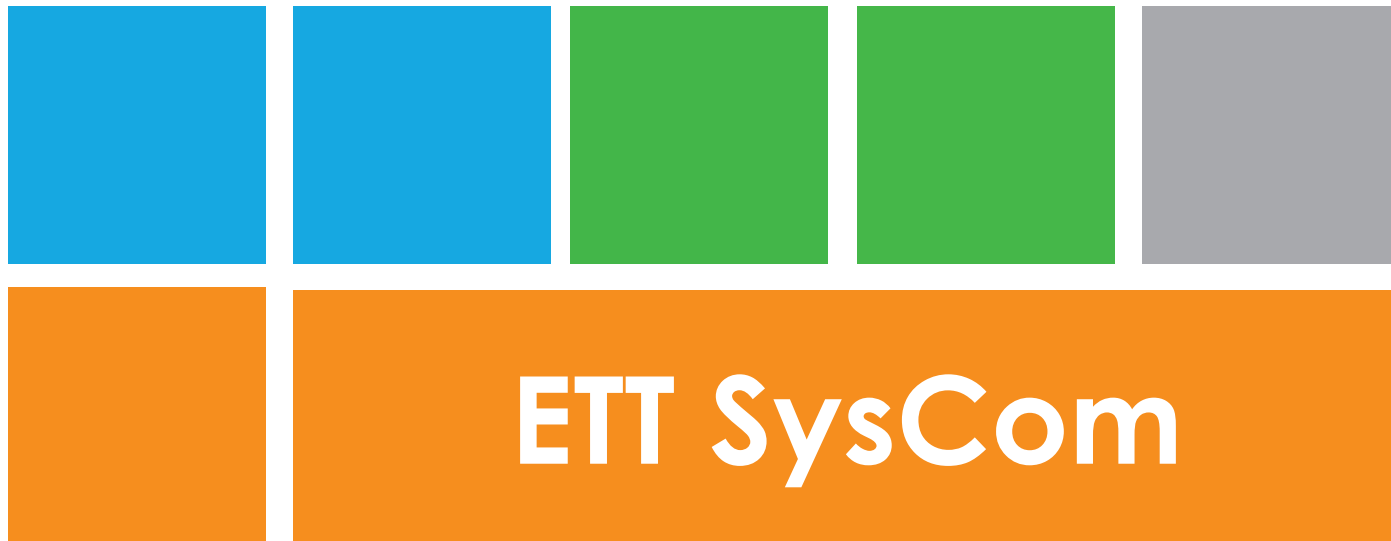
ETT ref.	Designation
■ <b>EMS401702</b>	PRESSURE SENSOR 0/10mbar - 4/20 mA - 18/33Vdc
■ <b>EMS401712</b>	PRESSURE SENSOR 0/05mbar - 4/20 mA - 18/33Vdc
■ <b>EMS401742</b>	PRESSURE SENSOR 0/16mbar - 4/20 mA - 18/33Vdc



■ Stock item



ENVIRONMENTAL CLIMATE  
CONTROL EQUIPMENT &  
SOLUTIONS



ETT SysCom

## Communication tools Regulation and control system

# Remote touch display ETT Control Box

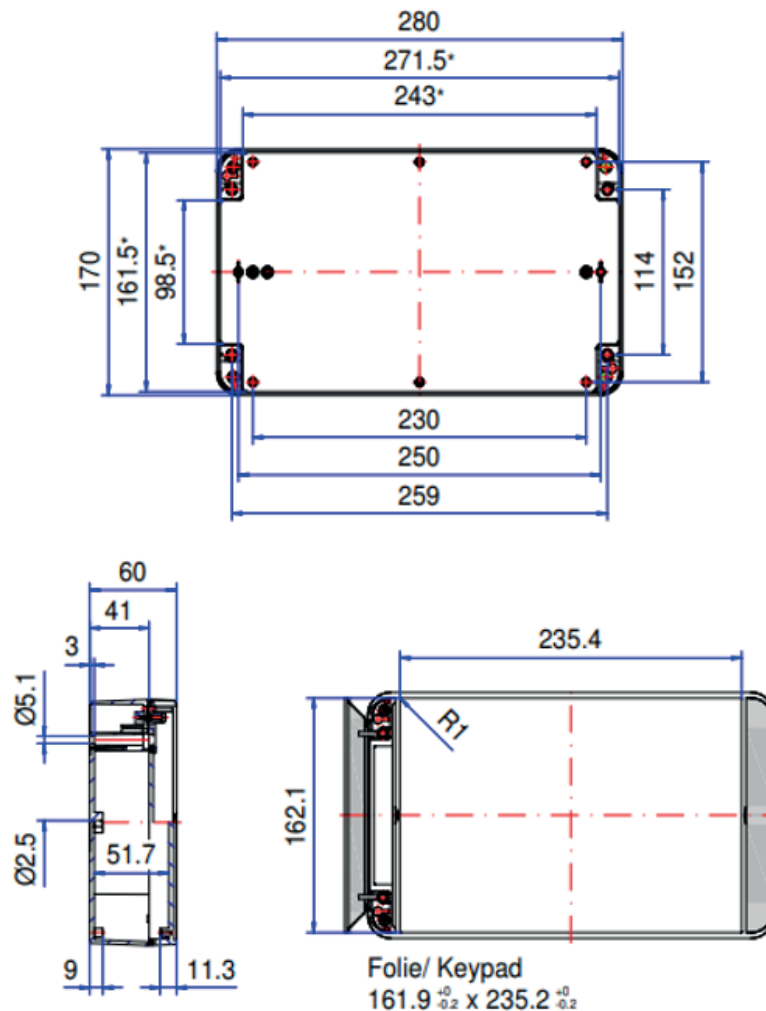
The display shows the status of all ETT units (from 1 to 15) equipped with ETT PLCs. It also allows to change UNIT parameters such as temperature settings.

## Equipment

The room where the display is located must be equipped with a 230Vca socket close to its location. The length of the power cable is one metre.

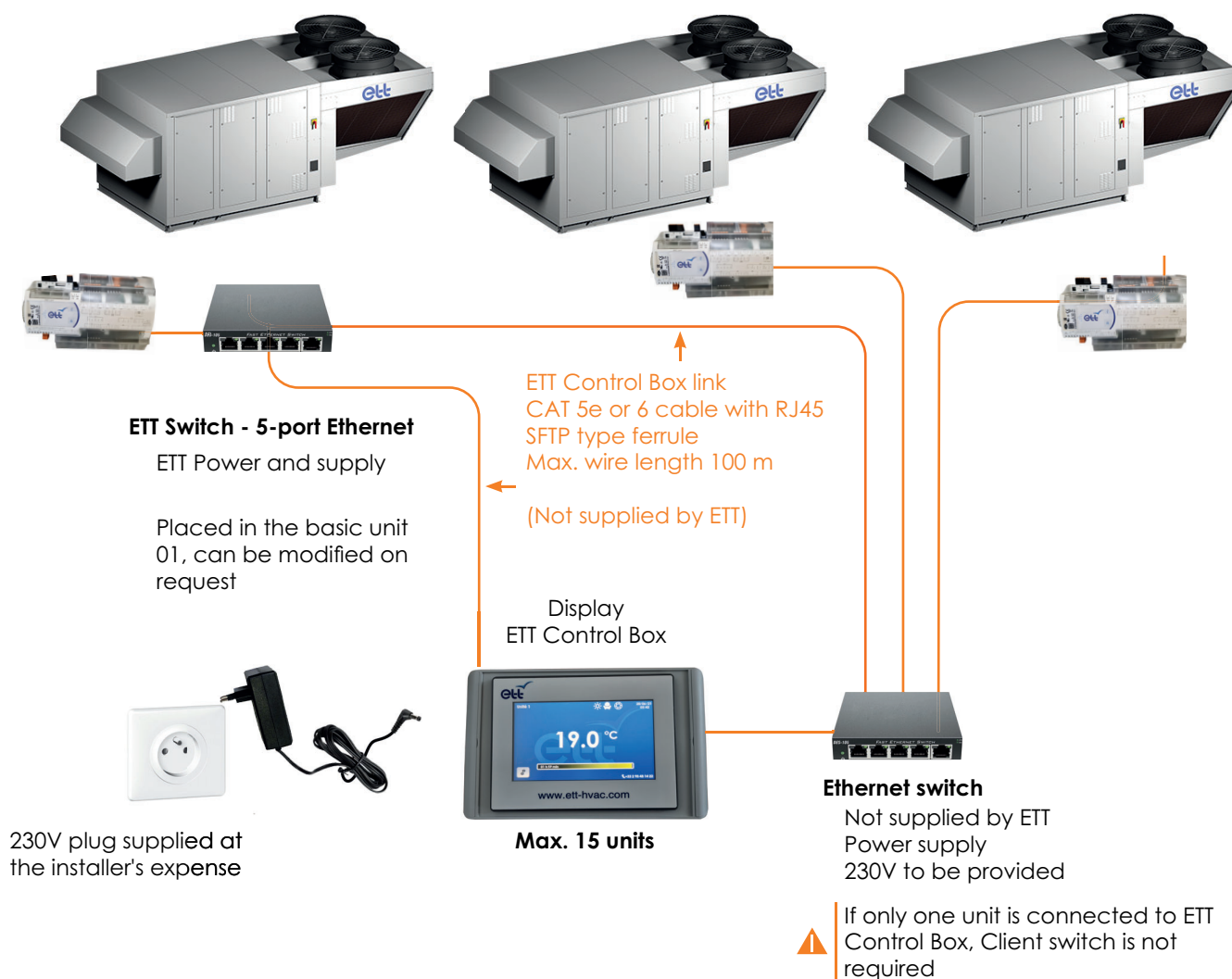


The PVC case containing the display is from ROLEC SC172, it is fixed with 4 screws not supplied.



# Installing-Connecting ETT Control Box

## Display connection diagram



- Connecting the display to the **Client switch or ETT switch** in the 1st unit
- Connect the power cable to a 230 Vac socket (installation and socket to be provided by the installer).



# Installing-Connecting ETT Control Box

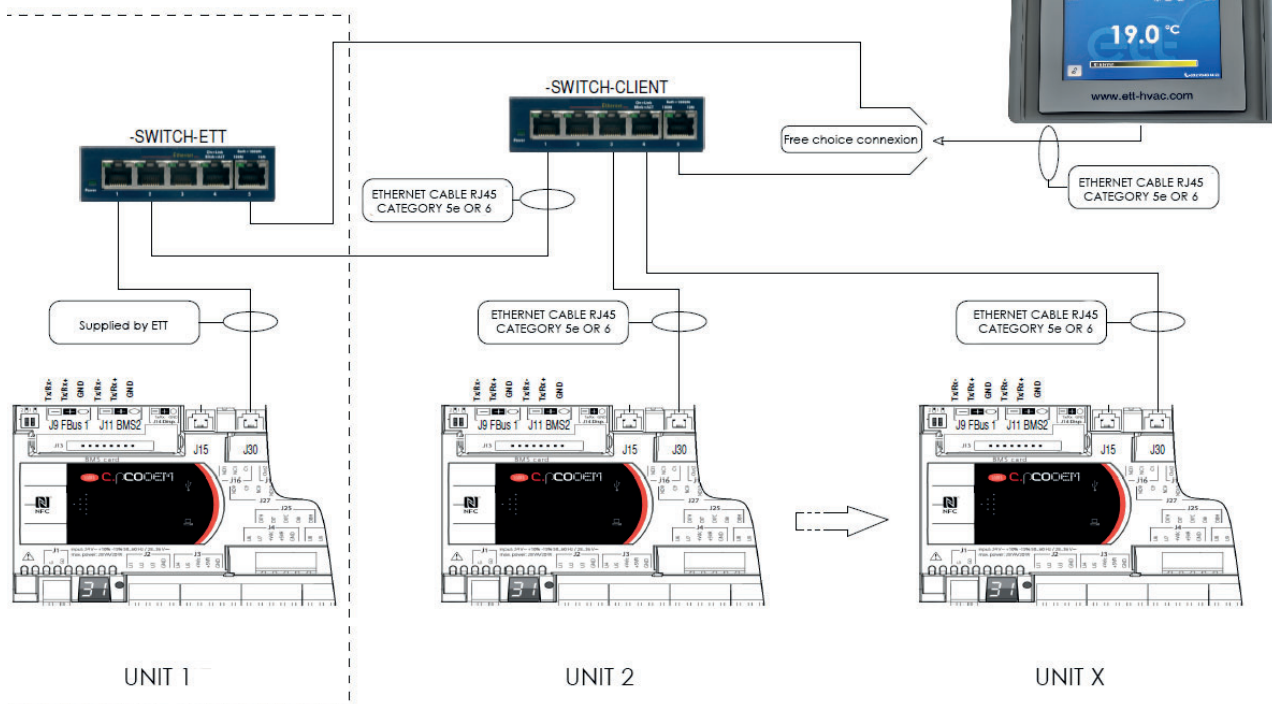
## Electrical diagram of the display connection



The supply and installation of the Ethernet cables between the various elements is the responsibility of the installer. The supply and power supply of the switch marked "CLIENT SWITCH" is the responsibility of the installer. MAXIMUM LENGTH OF THE ETHERNET CABLES: 100M between two equipments.

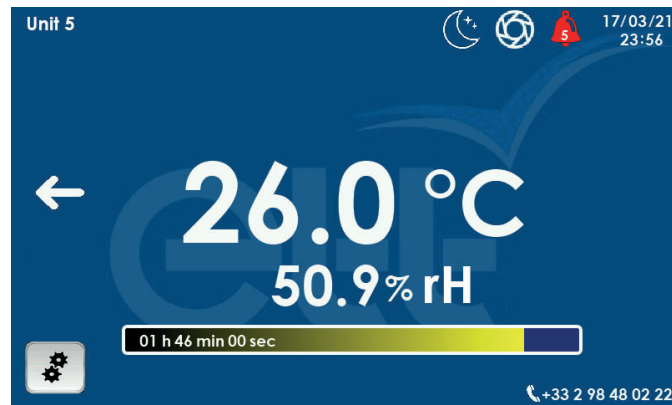














Supply of 230V socket at the installer's expense



# Standard software ETT Control Box

## Main screen



- 1 Unit name  
Can be changed from the menu **4 - Display configuration**
- 2 Unit mode
  -  Heating mode
  -  Cooling mode
  -  Dehumidification
  -  Deshumidification Mode/ Heating
  -  Dehumidification/Cooling mode
- 3 Unit status
  -  Vacancy mode
  -  Operating, occupancy mode
  -  Stopping (post-ventilation)
  -  Unit stopped
  -  Unit in alarm stop
- 4 Free wheel symbolizing ventilation
- 5 Number of site-wide alarms - Press the bell for direct access
- 6 PLC date and time
- 7 Temperature set point or Control sensor according to configuration
- 8 Next unit (if several units)
- 9 Relative humidity sensor (if enabled)
- 10 Unit restart duration status bar if activated)
- 11 Access to main menu
- 12 Connectivity
  -  Disconnected PLC
  -  Waiting for communication

# Standard software ETT Control Box

## Main tree structure



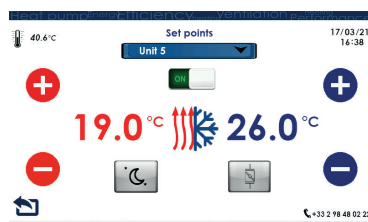
From the main display press the symbol at the bottom left of the screen



Press the arrow to return

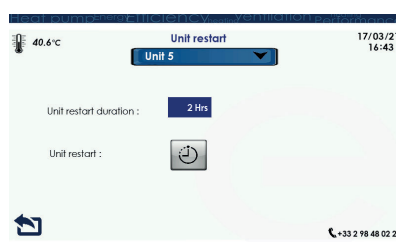


## Setpoints adjustment

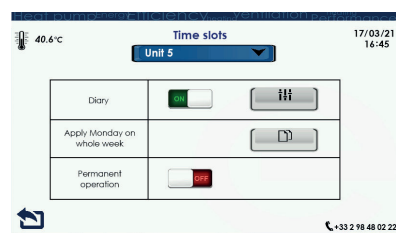


Antifrost set point : 12.0 °C

Fresh air minimum : 20 %  
Quality fresh air maximum : 20 %  
Rush 1 minimum : 20 %  
Rush 2 minimum : 40 %  
Rush 3 minimum : 60 %

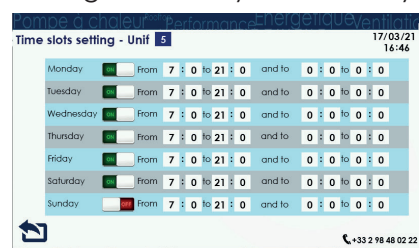


Unit temporary restart with time setting.




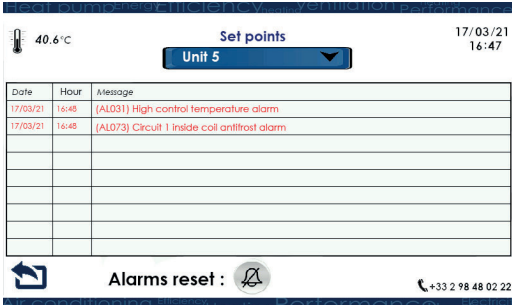
Enabling the weekly schedule or forcing permanent operation.

Setting the weekly timer unit by unit.




# Standard software ETT Control Box





Date	Hour	Message
17/03/21	16:48	(AL031) High control temperature alarm
17/03/21	16:48	(AL073) Circuit 1 inside coil antifrost alarm

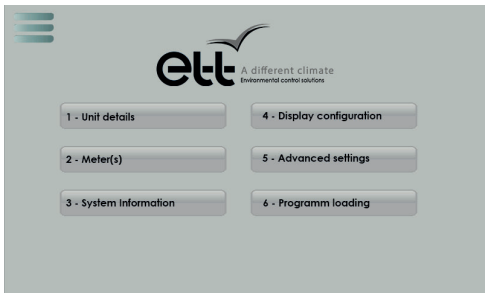
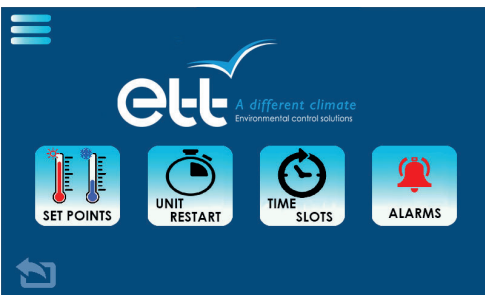
Alarms reset : 

+33 2 98 48 02 22

View and acknowledge alarms.

## Display menu

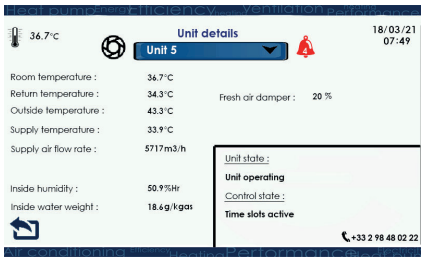
The display menu gives access to a detailed view of the unit and to the configuration of the ETT Control Box display.



Press the arrow to return



1 - Unit details



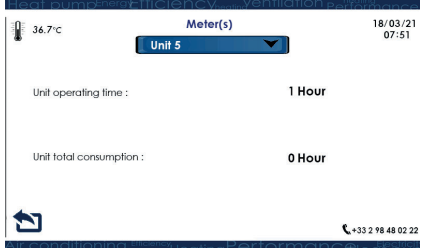
Room temperature :	36.7°C
Return temperature :	34.3°C
Outside temperature :	43.3°C
Supply temperature :	33.9°C
Supply air flow rate :	5717m3/h
Inside humidity :	50.9%Rh
Inside water weight :	18.6g/kgas

Fresh air damper : 20 %

Unit state :  
Unit operating  
Control state :  
Time slots active

Unit detailed status  
Machine air sensor readings

2 - Meter(s)

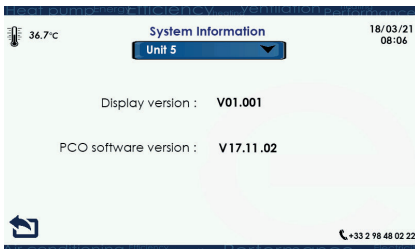
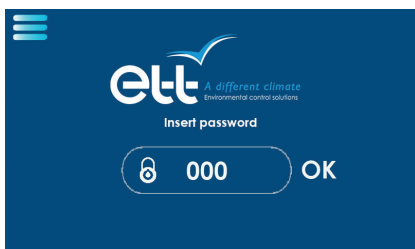
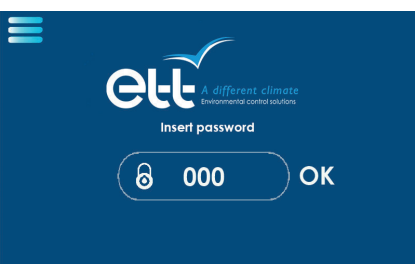


Unit operating time :	1 Hour
Unit total consumption :	0 Hour

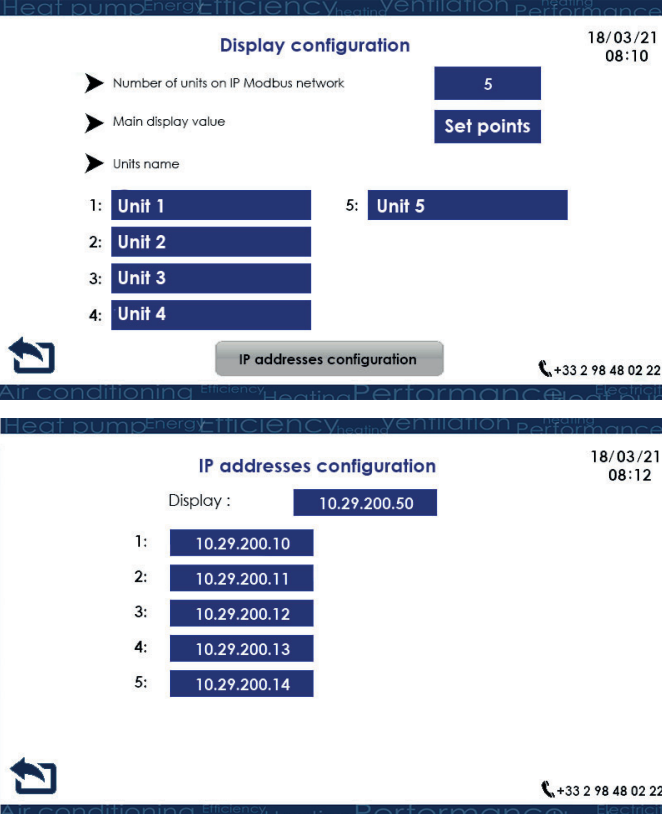
Hour meters  
Power consumption



# Standard software ETT Control Box

<b>3 - System Information</b>		<p>Terminal software version</p> <p>Unit PLC software version</p>
<b>4 - Display configuration</b>		<p>Access to ETT Control Box configuration</p> <p>For ETT staff only</p>
<b>5 - Advanced settings</b>		<p>Access to unit's parameters</p> <p>For ETT staff only</p>

## Display configuration



**Display configuration** 18/03/21 08:10

- Number of units on IP Modbus network: 5
- Main display value: Set points
- Units name:
  - 1: Unit 1
  - 2: Unit 2
  - 3: Unit 3
  - 4: Unit 4
  - 5: Unit 5
- IP addresses configuration: +33 2 98 48 02 22

**IP addresses configuration** 18/03/21 08:12

Display : 10.29.200.50

- 1: 10.29.200.10
- 2: 10.29.200.11
- 3: 10.29.200.12
- 4: 10.29.200.13
- 5: 10.29.200.14

+33 2 98 48 02 22

### Setting the number of units

When leaving the factory, the unit displays the regulated setpoint. The regulated temperature sensor can be displayed.

Each unit can be named, using a maximum of 20 characters.

The IP addresses of the display and the units can be set.

A restart of the display is requested when exiting the page

# Supervision: myETTvision

## Internet communication via a 4G connection

### Description:

- > Remote access to unit operating data
- > Reach: accessible outside the unit installation site
- > 4G connection



### Features:

- > Internet-based access using a web browser (Internet Explorer 8 or higher)
- > Unit parameters remote display
- > Temperature setpoints modification
- > Display and acknowledge any faults
- > Set time slots
- > Display of operating hours (unit, compressor, auxiliary (electric heater))
- > Temperature curves display/history
- > Monitoring of unit/site consumption (total and monthly) (consumption of ventilation, cooling and heating (RT 2005)) if energy metering option chosen
- > Alarm history

### Safety devices:

- > Data repatriation to a « protected » server in a highly secure DATA CENTER
- > Storage of all data over several years
  - Access control
  - Fire detection
  - Electrical redundancy
  - IP security with Firewall
  - Servers redundancy

« Since databases are crucial to the way companies operate, they are sensitive to their protection. For this reason, these centres maintain high levels of security and service to ensure the integrity and operation of the equipment on site. »

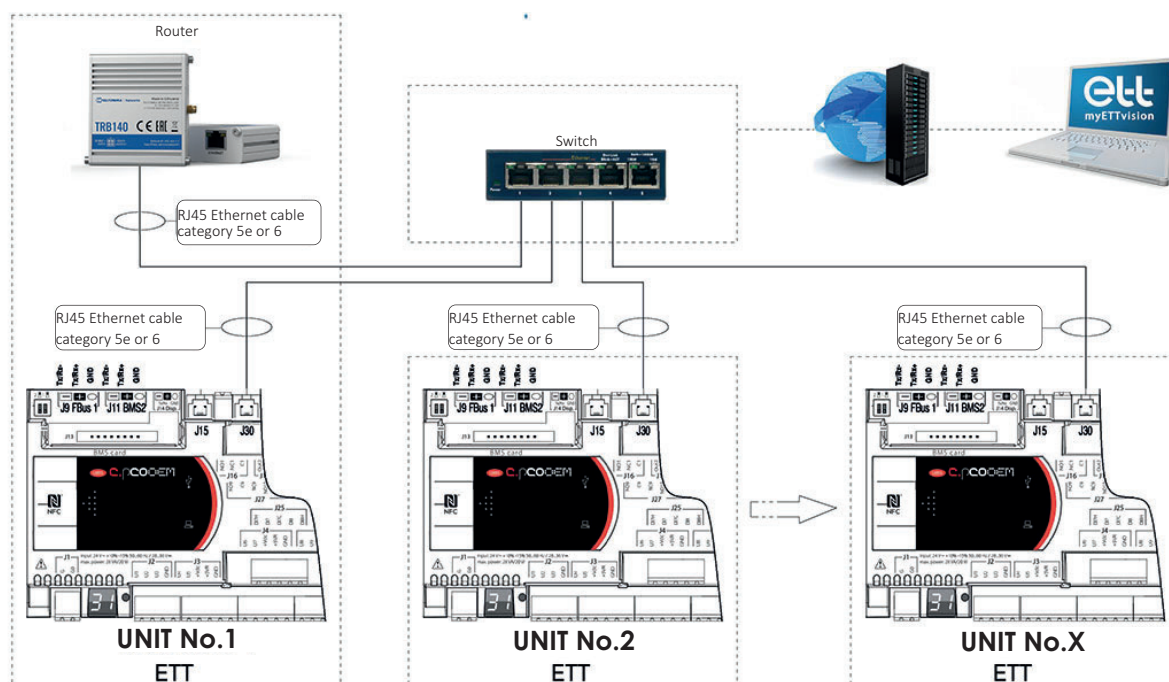
## Connection to the Internet via a 4G connection

### Equipment:

#### To be supplied and installed by the installer:

- > Ethernet cables (category 5e or 6) connecting the units, the switch and the router
- > Switch and its power source
- > Secure connection via VPN tunnel.

The maximum length of Ethernet cables is 100 m between the two devices.



The document specifying the applicable network configuration must be completed by the customer and returned to ETT when the order is placed.

# Supervision: myETTVision

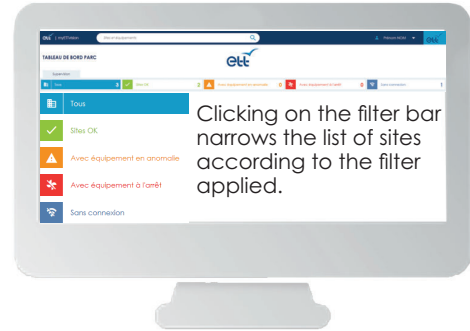
Internet communication via a 4G connection

## myETTVision functions

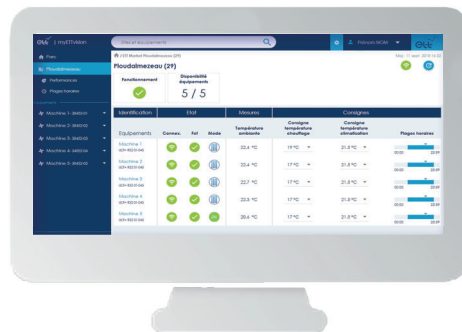
### Fleet management



### Sites sorted by status:



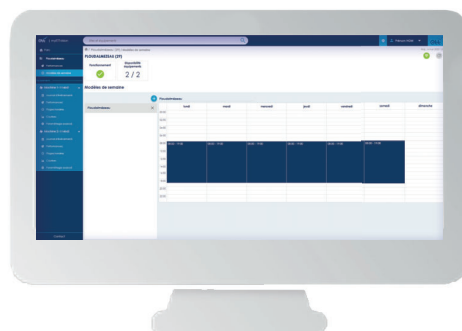
### Site overview:



### Navigation menu:



### Site time slots:



### Site performances:

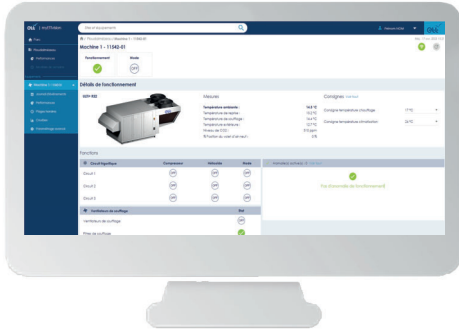


# Supervision: myETTVision

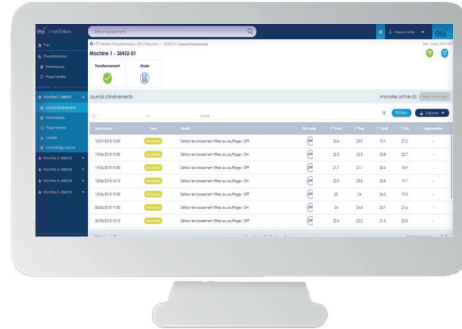
Communication Internet par connexion 4G

## myETTVision functions

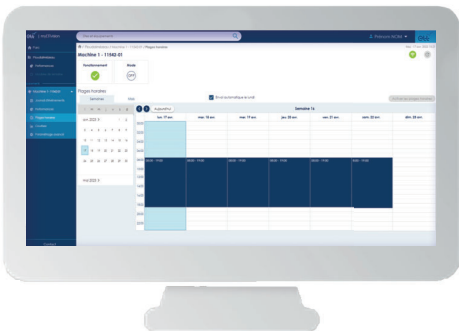
### Unit management



### Event log (equipment):



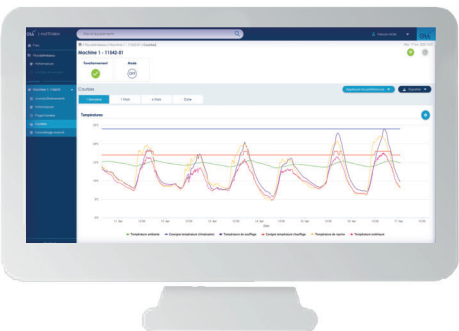
### Unit operating schedule:



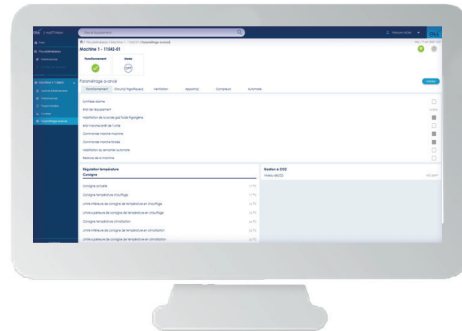
### Unit performances:



### Unit curves:



### Unit advanced parameters:





# CCAD display

Local communication for a single unit

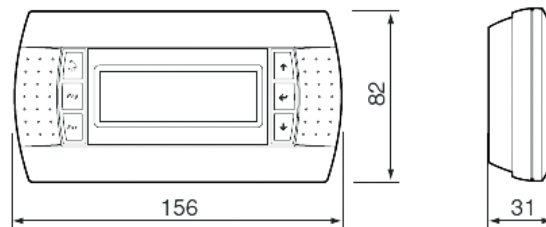


## Features:

- > Remote access to all unit parameters and information
  - > Data identical to the PLC display.
  - > Modification of setpoints, time slots, clock, etc.
  - > Display and acknowledge any faults.
- Reach: on the site where the unit is installed

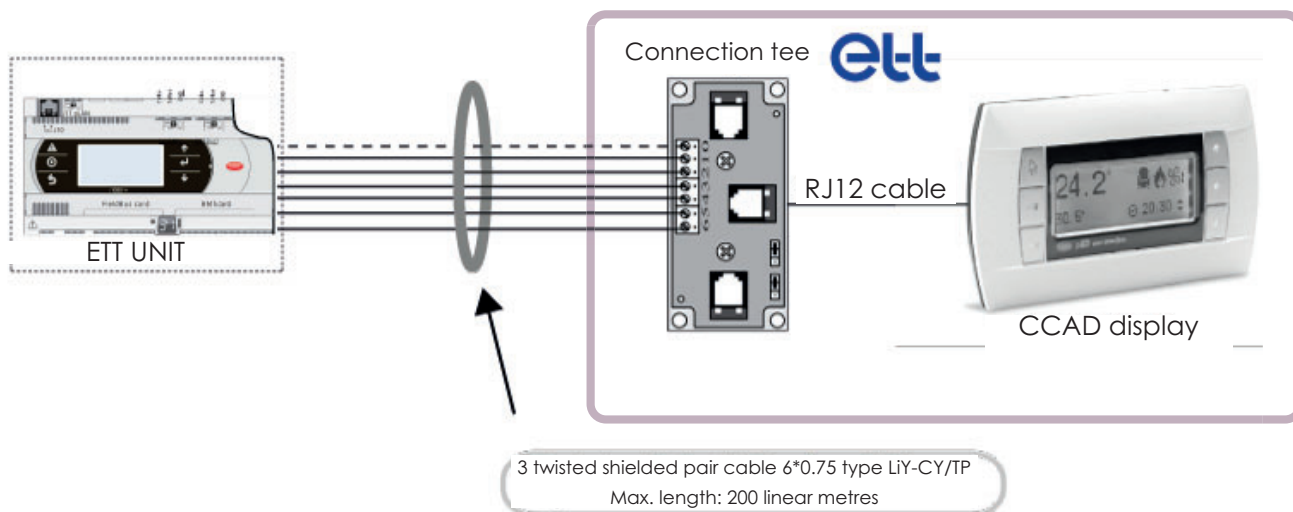
## Installation and connections:

- > Wall mounting.
- > The connection tee must be installed in an electrical junction box.



## Equipment:

- > The installer is responsible for supplying and installing the connection cables between the unit and the CCAD display.
- > The installer is responsible for fitting the connection tee in an electrical connection box.



# Modbus Communication

## Features:

- > Unit parameters remote display.
- > Modification of setpoints, time slots, clock, etc.
- > Display and acknowledge any faults.

## Description:

To enable Modbus communication, the ETT system includes the CAREL® PLC.

The Modbus protocol used on ETT machines is based on the following documents:

- > Modbus\_Application\_Protocol\_V1\_1b3
- > Modbus\_over\_serial\_lineV1\_02.

**Modbus** is a master/slave protocol.

The **master** (BMS...) polls the **slaves**. This protocol enables a master and 247 slaves to be connected on the same bus. Exchanges between the BMS and the units enable information to be centralised and units to be controlled from a single location.



The PLC in the network acts as a slave in RTU (Remote Terminal Unit) transmission mode. In RTU mode, the coding is 8 bits with a 16-bit CRC error check.

## Communication parameters:

- Asynchronous series of 8 data bits, 2 stop bits and no parity.
- Communication speed is 9,600 bauds.
- Synchronisation between packets is achieved with a simulated 3.5 characters silence, i.e. a synchronous transmission. Silence duration between packets depends on the speed imposed.
- Network is RS485.

## Available communication functions:

Description	Code	Note
Read Output Status	01	Read digital variables
Read Input Status	02	Read digital variables
Read Output Registers	03	Read analogue variables
Read Input Registers	04	Read analogue variables
Force Single Coil	05	Write digital variable
Force Single Registers	06	Write analogue variable
Force Multiple Coils	15	Multiple write of digital variables
Preset Multiple Registers	16	Multiple write of analogue variables

## Meaning of the error codes:

Condition	Code	Description
Function not available on the card.	1	Illegal function
Wrong register address or required register out of range.	2	Illegal data address
Value written outside the acceptable range.	3	Illegal data value

# Modbus Communication

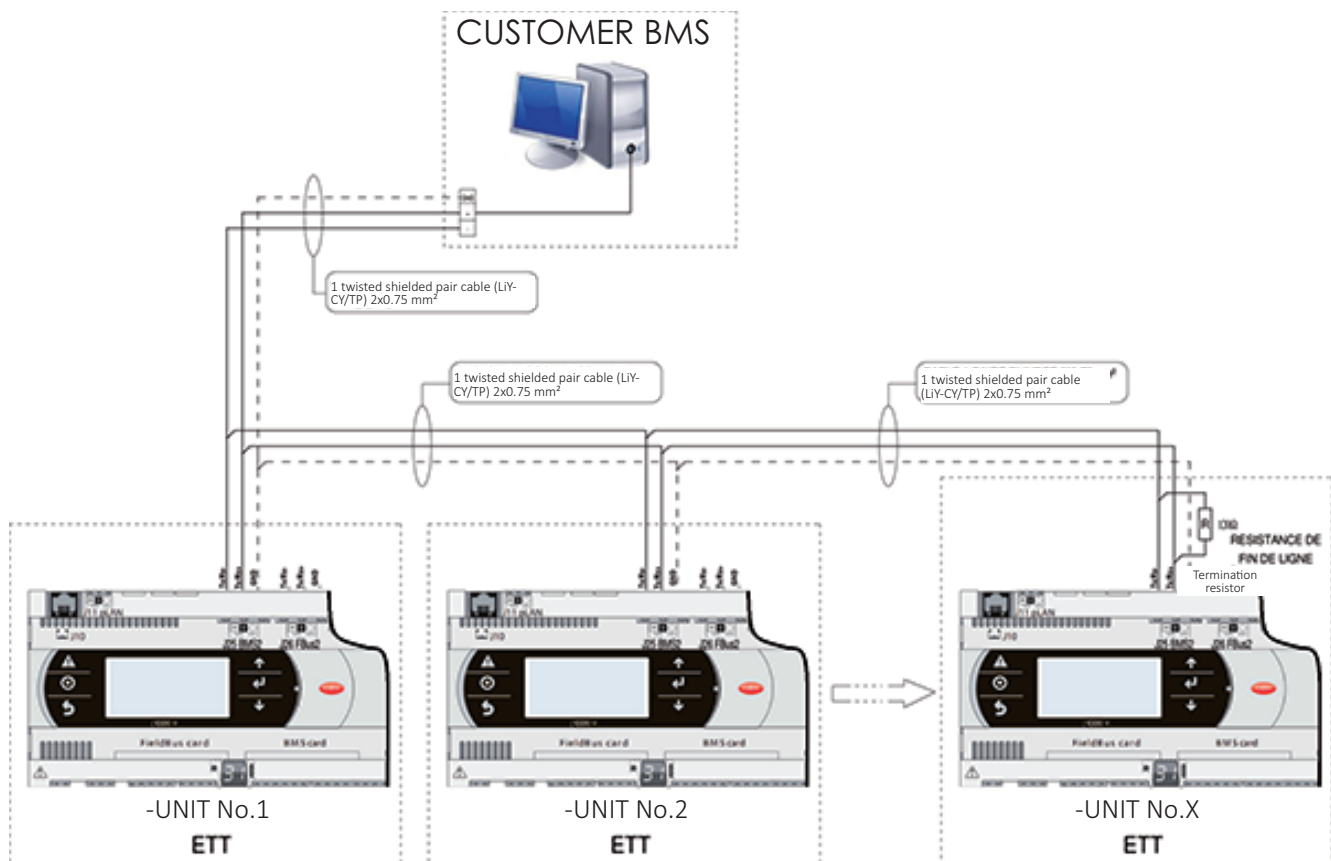
## RS485 bus schematic diagram

### Connections:

- > The maximum number of slaves is 247.
- > Unique slave number for each unit.
- > Communication protocol in the PLC must be Modbus RS485.
- > Communication speed: 9600 bauds, 8 data bits, 2 stop bits, without parity.
- > 1 shielded pair (LIY-CY/TP) 0.75 mm<sup>2</sup> minimum bus.

### Equipment:

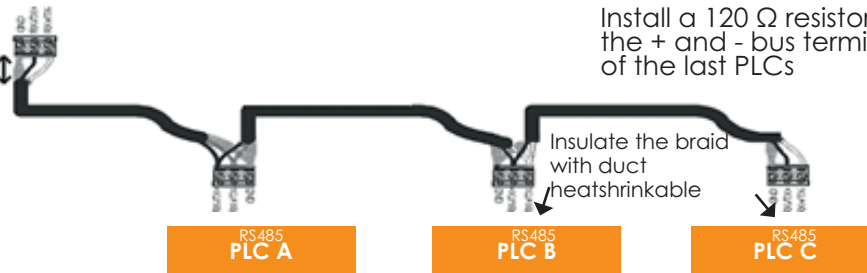
- > The exchange table set on the card is supplied by ETT.
- > The connection cables between the unit and the BMS shall be provided and installed by the installer.
- > The customer is responsible for configuring the BMS.



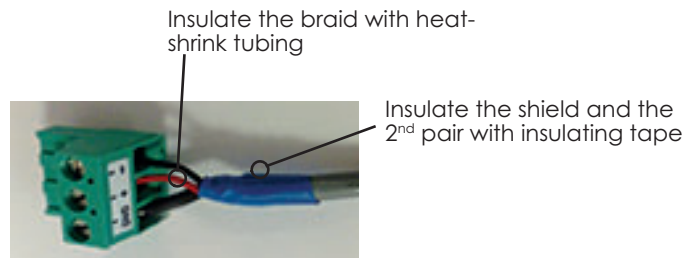
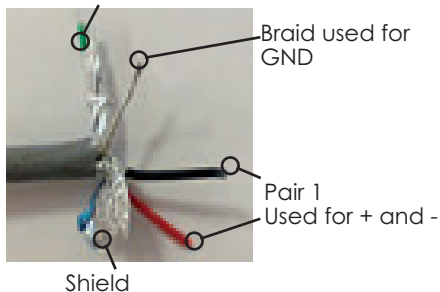
# Modbus Communication

## RS485 bus wiring

Length  
maximum  
stripped wire:  
2 cm



If it is a 2 pairs cable:  
pair 2 with shield unused



## Check: function test

### > Programming

- Check that all PLCs have a different address on the bus.
- Check the selected communication protocol on the PLC.
- Check communication speed.

### > Wiring

- Bus length < 1,000 metres.
- Check that the transformer's secondary which supplies the PLC is not earthed.
- Check that the communication bus is not star-shaped.
- Check that the bus does not pass near any power cables or units that could interfere with the line (transformer, motor, generator, etc.).
- Check that a 120 ohms resistor is connected between the - and + terminals of the last PLC on the bus.
- Check that GND is insulated with heat-shrink tubing on all stripped parts.
- Check that connection cables are not stripped on more than 2 cm.

### > Test

- Check the RS485 bus insulation on each terminal (GND + and -) and the earthing.
- Disconnect the BMS communication bus.
- If possible, disconnect all the PLCs from the network.
- Place an ohmmeter instead of the BMS and test the following insulations:
  - Between GND and +: **Infinite value**
  - Between GND and -: **Infinite value**
  - Between GND and earth: **Infinite value**
  - Between + and earth: **Infinite value**
  - Between - and earth: **Infinite value**
  - Between + and -: **Between 120  $\Omega$  and 240  $\Omega$**

If any of these tests fails, separate the bus in 2 and install a 120  $\Omega$  resistor on the separation, then, test each part separately to locate the problem.



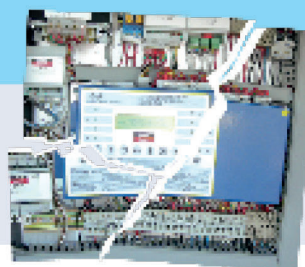
# Control system upgrade



## A fast and economical solution

- + Compatibility with other brands
- + Optimised energy efficiency
- + Remote control (local, BMS, web)
- + Responsiveness and availability in case of failure
- + Flexible operation
- + High security

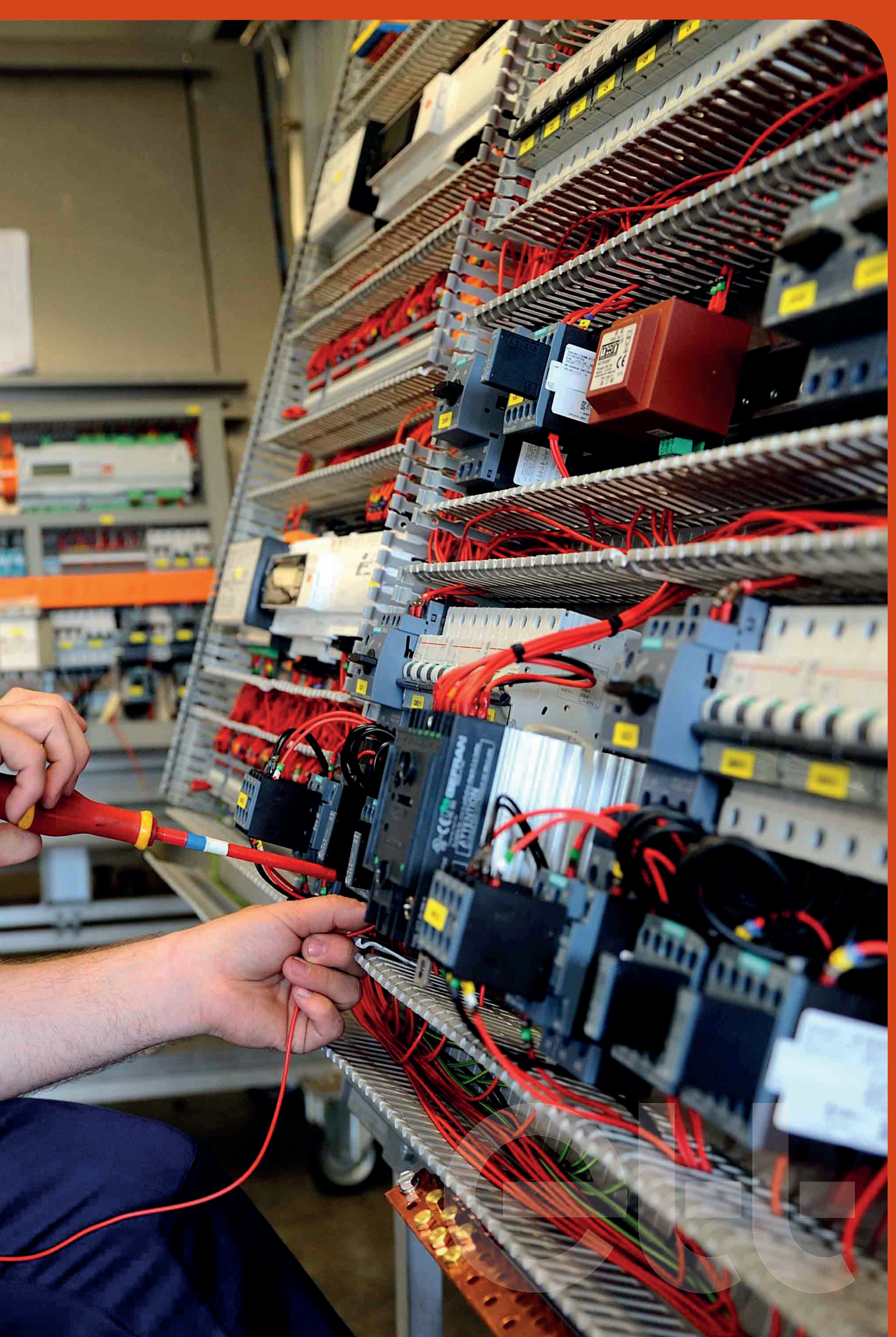
**Replace**  
your old controller



**Contact us:**  
**Tel. +33 (0)2 98 48 02 22**  
Fax +33 (0)2 98 48 09 12  
[ett.services@ett.fr](mailto:ett.services@ett.fr)  
[www.ett.fr](http://www.ett.fr)

- ➔ Implementation by ETT (optional)
- ➔ Possibility to replace the entire electrical board







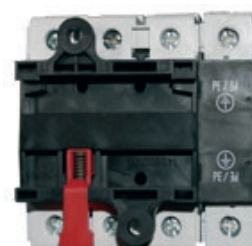
## / Variable-speed drives

ETT ref.	Power (kW)	Voltage	Max. operating current
<b>EPU38141</b>	ATV212- 0.75	3-ph 400V	1.7A
■ <b>EPU38142</b>	ATV212- 1.5	3-ph 400V	3.7A
<b>EPU38143</b>	ATV212- 2.2	3-ph 400V	5.3A
<b>EPU38144</b>	ATV212- 3.0	3-ph 400V	7.2A
<b>EPU38145</b>	ATV212- 4.0	3-ph 400V	9.1A
■ <b>EPU38146</b>	ATV212- 5.5	3-ph 400V	12.0A
<b>EPU38147</b>	ATV212- 7.5	3-ph 400V	15.5A
<b>EPU38148</b>	ATV212- 11.0	3-ph 400V	23A
<b>EPU38149</b>	ATV212- 15.0	3-ph 400V	31A
<b>EPU38150</b>	ATV212- 18.5	3-ph 400V	37A
<b>EPU38151</b>	ATV212- 22.0	3-ph 400V	42.5A
<b>EPU38152</b>	ATV212- 30.0	3-ph 400V	56A
<b>EPU38153</b>	ATV212- 37.0	3-ph 400V	70A
<b>EPU38154</b>	ATV212- 45.0	3-ph 400V	86A



## / Main circuit breakers

ETT ref.	Designation	Voltage	Vario
<b>EIP10010</b>	VCF0	3-ph 400V	3 x 25A
<b>EIP10020</b>	VCF1	3-ph 400V	3 x 32A
<b>EIP10030</b>	VCF2	3-ph 400V	3 x 40A
<b>EIP10040</b>	VCF3	3-ph 400V	3 x 63A
■ <b>EIP10050</b>	VCF4	3-ph 400V	3 x 80A
■ <b>EIP10060</b>	VCF5	3-ph 400V	3 x 125A
■ <b>EIP10061</b>	VCF6	3-ph 400V	3 x 175A



## / Earthing rods

ETT ref.	Designation	Voltage	Vario
<b>EIP99089</b>	VZ14	3-ph 400V	25A to 40A
<b>EIP99090</b>	VZ15	3-ph 400V	63A to 80A
<b>EIP99100</b>	VZ16	3-ph 400V	125A to 175A



■ Stock item

## / Compressor motor starters

ETT ref.	Operating range	Voltage	Brand
<b>EPU22070</b>	2.8 A / 4 A	3-ph 400V	Siemens
<b>EPU22080</b>	3.5 A / 5 A	3-ph 400V	Siemens
<b>EPU22090</b>	4.5 A / 6.3 A	3-ph 400V	Siemens
<b>EPU22100</b>	7 A / 10 A	3-ph 400V	Siemens
<b>EPU22110</b>	10 A / 16 A	3-ph 400V	Siemens
<b>EPU22120</b>	13 A / 20 A	3-ph 400V	Siemens
<b>EPU22130</b>	16 A / 22 A	3-ph 400V	Siemens
<b>EPU22140</b>	18 A / 25 A	3-ph 400V	Siemens
<b>EPU22150</b>	23 A / 28 A	3-ph 400V	Siemens
<b>EPU22160</b>	27 A / 32 A	3-ph 400V	Siemens
<b>EPU20191</b>	2.5 A / 4 A	3-ph 400V	Schneider
<b>EPU20209</b>	6 A / 10 A	3-ph 400V	Schneider
<b>EPU20218</b>	17 A / 23 A	3-ph 400V	Schneider
<b>EPU20219</b>	20 A / 25 A	3-ph 400V	Schneider
■ <b>EPU20208</b>	24 A / 32 A	3-ph 400V	Schneider

**Note:** Auxiliary contact and RC circuit to be replaced.  
For other references, please contact us.



## / Electrical protections

ETT ref.	Designation	SCC
■ <b>EPU17021</b>	2*1A C	6kA
■ <b>EPU17022</b>	2*2A C	6kA
<b>EPU17023</b>	2*3A C	6kA
<b>EPU17024</b>	2*4A C	6kA
■ <b>EPU17025</b>	2*6A C	6kA
<b>EPU17027</b>	2*16A C	6kA
<b>EPU17041</b>	2*1A D	6kA
<b>EPU17044</b>	2*4A D	6kA
■ <b>EPU17045</b>	2*6A D	6kA
■ <b>EPU17050</b>	3*0.5A C	6kA
<b>EPU17055</b>	3*10A C	6kA
■ <b>EPU17056</b>	3*16A C	6kA
■ <b>EPU17058</b>	3*25A C	6kA
■ <b>EPU17059</b>	3*32A C	6kA
<b>EPU17060</b>	3*40A C	6kA
<b>EPU17061</b>	3*50A C	6kA

**Note:** For other references, please contact us.

## / Transformers for control and regulation circuits

ETT ref.	Designation	Power (VA)	Primary voltage	Secondary voltage
■ <b>EPU50161</b>	7380BE	630	400 V	230V / 24V

## / Transformers for burners

ETT ref.	Designation	Power (VA)	Primary voltage	Secondary voltage
<b>EPU50200</b>	44268	1,000	400V / 230V	230V / 115V

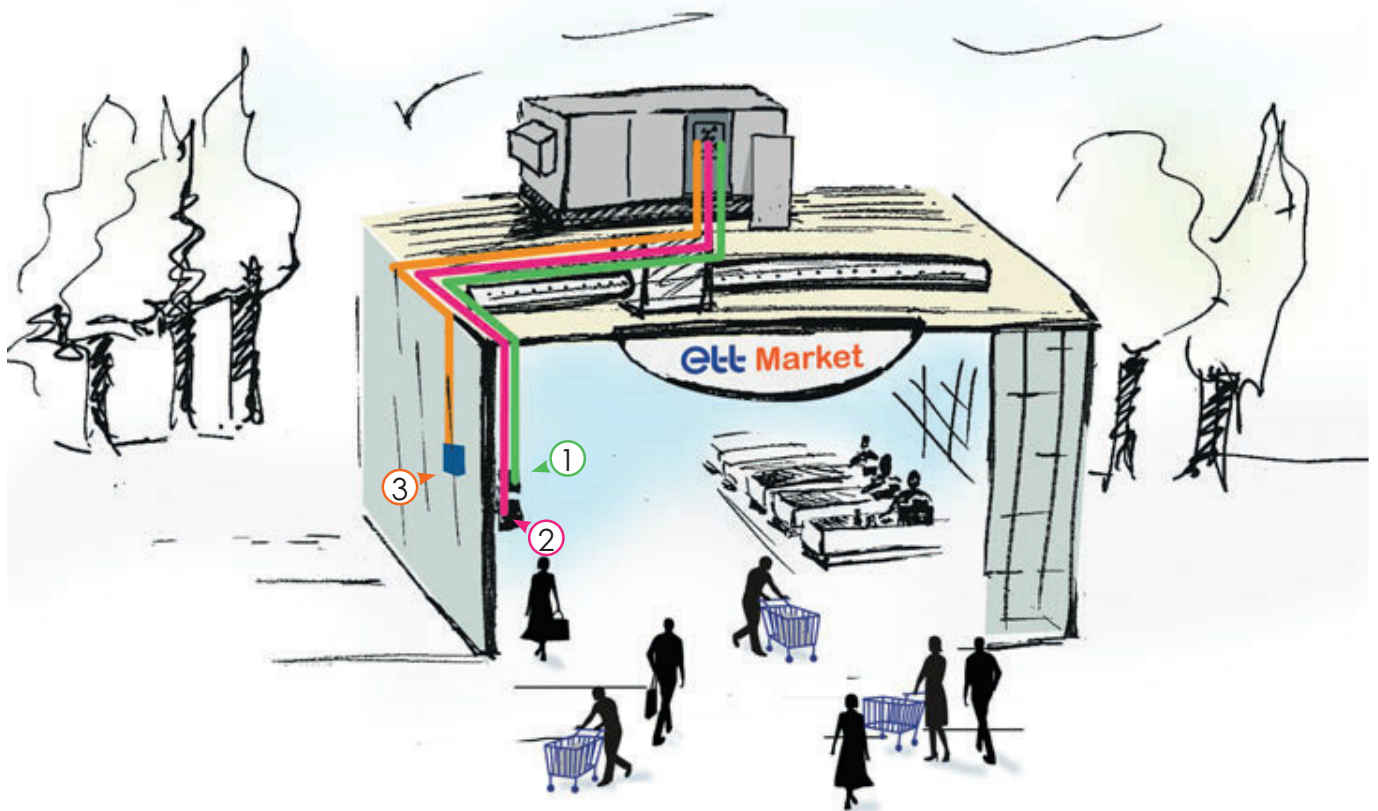
### ■ Stock item

ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.





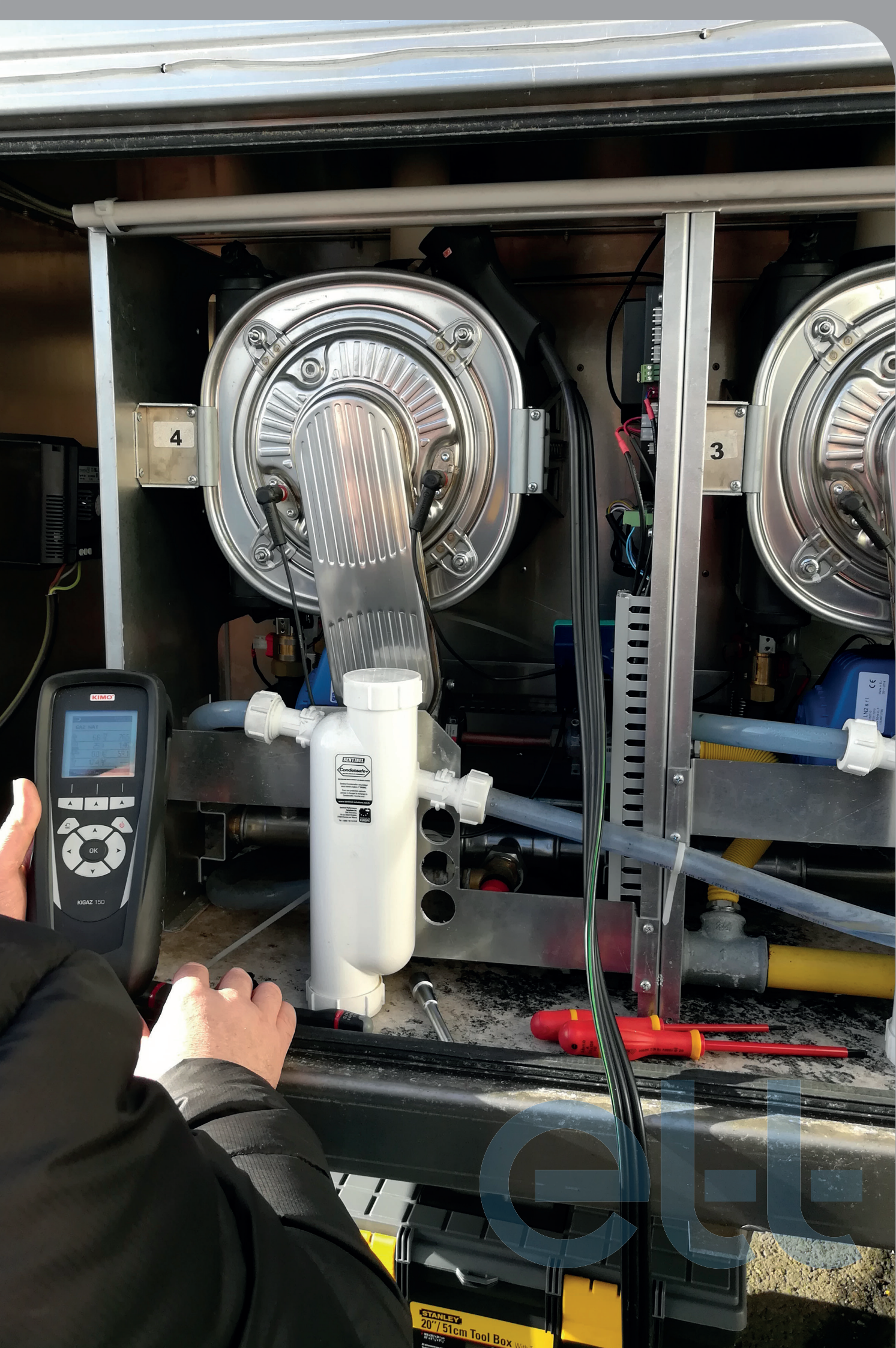
# Sensors connection principle



- ① **Room sensor:** 1 pair shielded cable, 2 x 0,75 mm<sup>2</sup> LIY-CY (max.length. 100 lm)
- ② **CO<sub>2</sub> sensor:** 2 twisted shielded pairs cable , 4 x 0,75 mm<sup>2</sup> LIY-CY (max. length. 100 lm)
- ③ **Relative humidity sensor:** 2 twisted shielded pairs cable , 4 x 0,75 mm<sup>2</sup> LIY-CY (max. length. 100 ml) (Optional)

- Note:**
- In order to measure a sensor value that is as representative as possible of the environment, avoid installing them:
    - > near a heat source (spotlights, cooking appliances, glass walls, chimney ducts)
    - > in draughty areas (close to storerooms, entrances, openings)
    - > in dead zones (behind shelving, corners of buildings)
    - > close to high-traffic areas (checkouts, fitting rooms)
  - For accurate measurements:
    - > the sensors must not be located in the axis of the duct used for their wiring, otherwise they may be disturbed by a parasitic air flow.
    - > The routing of control cables must be separate from the routing of power cables (risk of electromagnetic interference).







# Auxiliary

## / Electric heaters

ETT ref.	Power (kW)	Power supply (V/Hz/Ph)	Dimensions (mm)
<b>ERE11080</b>	1000 W	230 V	L = 245 mm
■ <b>ERE11081</b>	1500 W	230 V	L = 345 mm
■ <b>ERE11010</b>	2000 W	230 V	L = 445 mm
<b>ERE11020</b>	2500 W	230 V	L = 540 mm
<b>ERE11030</b>	3000 W	230 V	L = 635 mm
<b>ERE11040</b>	4000 W	230 V	L = 825 mm
<b>ERE11050</b>	5000 W	230 V	L = 1010 mm
<b>ERE11060</b>	6000 W	230 V	L = 1600 mm
<b>ERE11070</b>	7000 W	230 V	L = 1645 mm

Note: heater brackets on request.



## / Spare parts for CC+ module

ETT ref.	Designation
<b>HGGY914</b>	Water pressure sensor
<b>HGGY906</b>	IMT1 supply card
<b>HGGY904</b>	CTA slave card
<b>HGGY973</b>	Condensing boiler
<b>HGGY925</b>	Circulator for 63 kW module
<b>HGGY926</b>	Circulator for 126 kW module
<b>HPO90028</b>	Circulator for 189 kW module
<b>HPO90028</b>	Circulator for 252 kW module
<b>HGGY907</b>	Burner control box
<b>HGGY909</b>	Boilers outlet header
<b>HGGY918</b>	Flow meter
<b>HGGY967</b>	Ignition electrode
<b>HGGY908</b>	Gas solenoid valve
<b>HGGY923</b>	Individual gas hose
<b>HGGY922</b>	Smoke seal
<b>HGGY6100</b>	Condensation extension
<b>HGGY903</b>	Regulator
<b>HGGY968</b>	Ionisation sensor
<b>HGGY919</b>	Outlet temperature sensor
<b>HGGY920</b>	Inlet temperature sensor
<b>HGGY910</b>	Safety valve
<b>HGGY913</b>	Venturi gas pipe
<b>HGGY916</b>	Burner fan

■ Stock item

# Auxiliary

/ ATEX Emergency stop casing

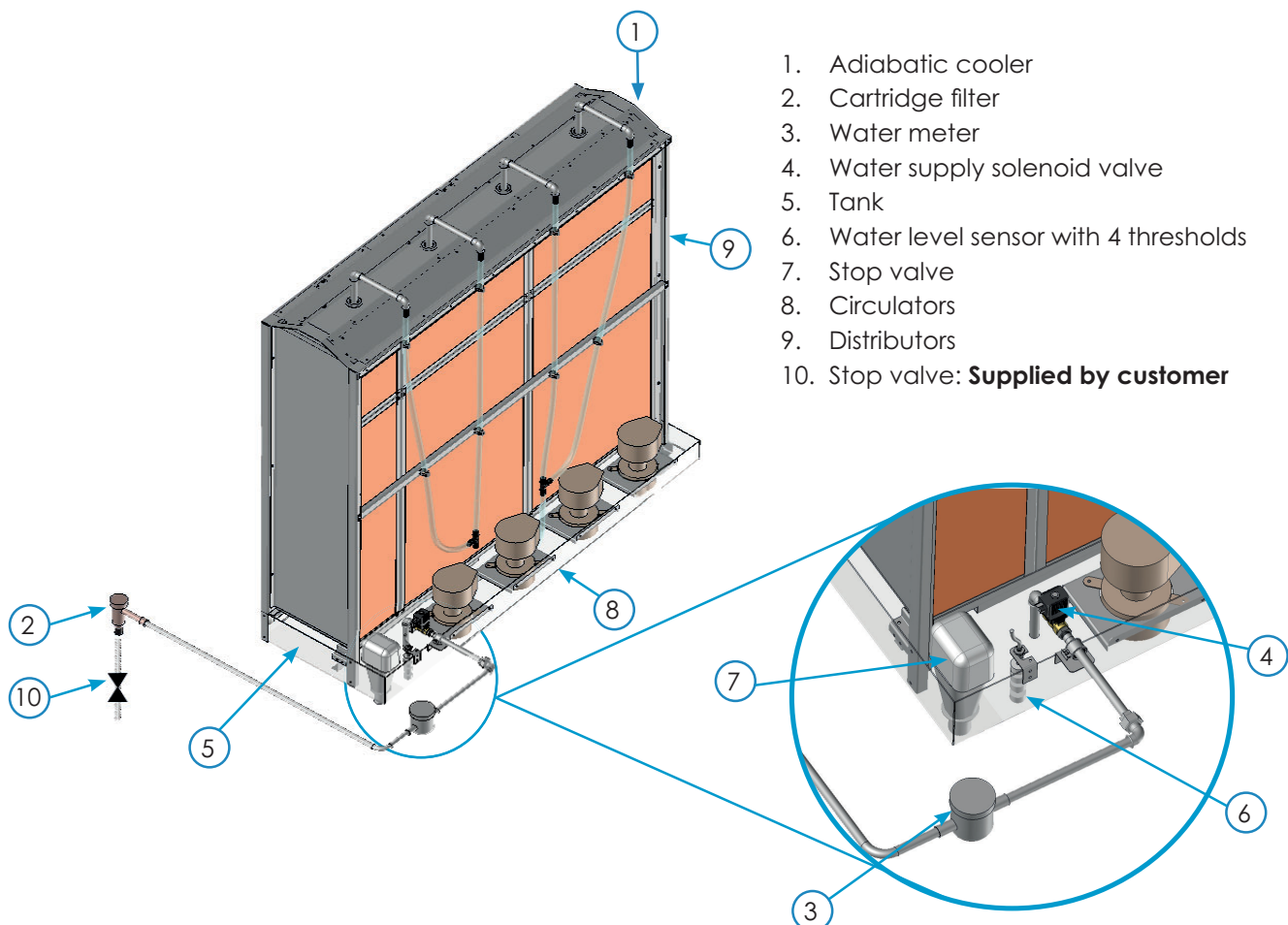
ETT ref.	Designation
<b>EIP30430</b>	STAHL series 8040



/ Spare parts for adiabatic AHU

ETT ref.	Designation
<b>HPO60001</b>	CIRCULATION PUMP
<b>HPO60002</b>	STOP VALVE
<b>VHU42402104</b>	WATER LEVEL DETECTOR
<b>VHU60003</b>	GLASPAD 0760 45/15
<b>HSP60001</b>	TAP WATER SUPPLY SOLENOID VALVE
<b>HPO60004</b>	CARTRIDGE FILTER

## Operating principle of the adiabatic cooler:



### ■ Stock item

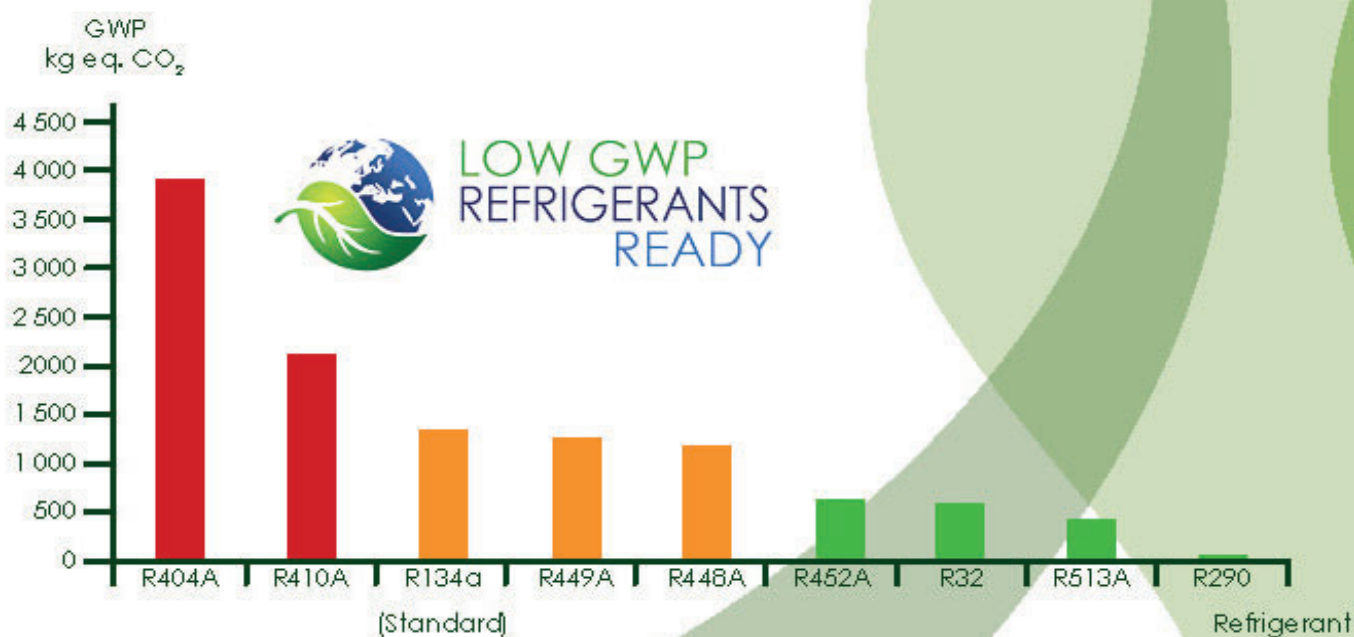
ETT may change equipment technical data without prior notice.  
Specifications given in this document are for information only and are not contractual.



# Choose the refrigerant that best meets your technical & environmental constraints



One application,  
one refrigerant !





# Hydraulic parts

## / Paddle flow switches

ETT ref.	Designation
■ <b>EMS60016</b>	WATER FLOW CONTROL NITRILE VKS



## / 3-way valve body

ETT ref.	Designation	Specifications
<b>HEO701801</b>	VXP45.25-6.3	PN16 DN25 KVS6.3
■ <b>HEO70181</b>	VXP45.25-10	PN16 DN25 KVS10
■ <b>HEO70191</b>	VXP45.32-16	PN16 DN32 KVS16
<b>HEO70201</b>	VXP45.40-25	PN16 DN40 KVS25



## / 3-way valve motors

ETT ref.	Designation
<b>EMO990102</b>	SAS61- 24V 0/10V
■ <b>EMO99011</b>	SSC61 - 24V 0/10V



■ Stock item

# CONVERSION TABLES

## > Calculation of the frequency of leak tests

Checking frequency			Once a year	Twice a year	4 times a year
Metric ton of CO <sub>2</sub> equivalent			5 to 50	50 to 500	>500
Refrigerant	R134a	Unit refrigerant load (kg)	3.5 to 35 kg	35 to 349.7 kg	>349.7 kg
	R407C	Unit refrigerant load (kg)	2.82 to 28.2 kg	28.2 to 281.8 kg	> 281.8 kg
	R410A	Unit refrigerant load (kg)	2.39 to 23.9 kg	23.9 to 239.5 kg	> 239.5 kg
	R32	Unit refrigerant load (kg)	7.40 to 74 kg	74 to 740 kg	>740 kg

$$T(^{\circ}\text{C}) = 5/9 \times (T(^{\circ}\text{F}) - 32)$$

Cond power output = Cool. power. + Comp Power input

**COP** = Heat. power / Power input

**EER** = Cool. power / Power input

**Capacity calculation [kW: kJ/s]**

**P** = Qm x C(water) x DT or **P<sub>sensitive</sub>** = Qv x C(air) x DT

**Qm**: mass flow rate kg/s

**Qv**: volumetric flow rate m<sup>3</sup>/s

**C**: water specific heat

$$\frac{4.18 \text{ kJ}}{\text{kg} \times ^{\circ}\text{C}}$$

air specific heat

$$\frac{0.34 \text{ kJ}}{\text{m}^3 \times ^{\circ}\text{C}}$$

**DT**: Delta temperature  $^{\circ}\text{C}$

## > Copper tubing

Outside diameter      Thickness

inch	mm	mm
1/4	6.35	1.00
3/8	9.52	1.00
1/2	12.70	1.00
5/8	15.07	1.00
3/4	19.05	1.00
7/8	22.22	1.00
1	25.40	1.00
1 1/8	28.57	1.00
1 3/8	34.92	1.24
1 5/8	41.27	1.24
2 1/8	53.97	1.65
2 5/8	66.67	2.10

## > Converting power units

	watt	kcal/s	kgm/s	Btu/h	ch	hp	kW
1 watt	= 1	0.00024	0.10197	3.41	0.00136	0.00134	0.001
1 kcal/sec.	= 4186.8	1	426.93	14271	5.6924	5.6145	4.1868
1 kgm/s	= 9.806	0.00234	1	33.438	0.01333	0.01328	0.009806
1 Btu/h	= 0.29327	0.00007	0.02989	1	0.0004	0.00039	0.00029
1 ch	= 736	0.17555	75	2510	1	0.986	0.7355
1 hp	= 745.7	0.17811	76	2542.12	1.01342	1	0.7457
1 kW	= 1,000	0.23885	101.972	3409.8	1.3596	1.341	1

## > Converting energy units

	joule	kcal	Btu	kgm	ch.h	hp.p	kWh
1 joule	= 1	0.00023885	0.00094715	0.101971	0.000000378	0.000000372	0.000000278
1 kcal	= 4186.8	1	3.964	426.8	0.001581	0.001556	0.001162
1 Btu	= 1054.4	0.252	1	107.6	0.0003987	0.0003926	0.0002928
1 kgm	= 9.80665	0.002343	0.0092	1	0.000003703	0.00000365	0.000002724
1 ch.h	= 2647800	632.61	2511	270000	1	0.98632	0.736
1 hp.p	= 2685000	642.5	2545	273745	1.01387	1	0.74565
1 kWh	= 3600000	860.11	3411	367097	1.359622	1.34111	1



# CONVERSION TABLES

## > Converting pressure units

		atm	kg/cm <sup>2</sup>	bar	psi	pascal	mm H <sub>2</sub> O	mm Hg
1 kg/cm <sup>2</sup>	=	1	1.033	1.0133	14.69	101325	10330	760
1 kcal	=	0.9678	1	0.981	14.223	98066	10000	735.56
1 bar	=	0.986	1.019	1	14.5	100000	10200	750.06
1 psi	=	0.006804	0.07031	0.069	1	6895	703.1	51.715
1 Pa	=	0.00000987	0.0000102	0.00001	0.000145	1	0.1019	0.0075
1 mm H <sub>2</sub> O	=	0.0000968	0.0001	0.0000981	0.00142	9.808	1	0.0735
1 mm Hg	=	0.0013159	0.0013159	0.001333	0.0193367	133.322	13.595	1

## > Specific enthalpy

		kJ/kg	kcal/kg	Btu/lb
1 kJ/kg	=	1	0.2388	0.43
1 kcal/kg	=	4.187	1	1.8
1 Btu/lb	=	2.326	0.5556	1

## > Area units

1 cm <sup>2</sup> = 0,155 Sq.in	1 Sq.in = 6,45 cm <sup>2</sup>
1 m <sup>2</sup> = 10,764 Sq.ft	1 Sq.ft = 929 cm <sup>2</sup>
1 m <sup>2</sup> = 1,196 Sq.yd	1 Sq.yd = 0,836 m <sup>2</sup>

## > Volume units

1 cu.in = 16,387 cm <sup>3</sup>	1 cm <sup>3</sup> = 0,061 cu.in
1 cu.ft = 0,0283 m <sup>3</sup>	1 dm <sup>3</sup> = 0,03531 cu.ft
1 cu.yd = 0,7646 m <sup>3</sup>	1 m <sup>3</sup> = 1,308 cu.yd

## > Density and specific volume

1 m <sup>3</sup> /kg = 16,01 cu.ft/lb	1 cu.ft/lb = 0,06424 m <sup>3</sup> /kg
1 kg/m <sup>3</sup> = 0,06424 lb/cu.ft	1 lb/cu.ft = 16,01 kg/m <sup>3</sup>

## > Metric units

1 m = 1.094 yd	1 in = 24,5 mm
1 m = 3.281 yd	1 ft = 0.3048 m
1 mm = 0,03937 in	1 yd = 0.9144 m
<b>1 ft = 12 in</b>	<b>1 yd = 3 ft</b>

## > Thermal conductivity

		W/m.K	kcal/m.h.°C	Btu/ft.h.°F
1 W/m.K	=	1	0.86	0.5779
1 kcal/m.h.°C	=	1.1626	1	0.672
1 Btu/ft.h.°F	=	1.73	1.488	1

## **ARTICLE 1: Application and enforceability of these General Terms of Sale**

These general terms of sale (GTS) apply to any equipment and service sold or delivered by ETT to its customers.

The act of placing an order implies acceptance by the Buyer, without reservation, of these GTS, to the exclusion of any other document that contradicts these GTS, unless otherwise expressly specified in the offer.

ETT reserves the right to refuse to complete a sale or to complete a sale under derogation conditions if the request is considered abnormal or made in bad faith or in case of previous payment incident or insolvency of the Customer.

Unless formally accepted in writing by ETT, no special condition may prevail over those stated herein. Any condition of a contrary nature put forth by the Buyer shall, unless explicitly accepted in writing by ETT, be non-invocable against ETT, irrespective of the moment when it may be brought to our attention. Should ETT at any time not enforce any of the provisions of the GTS, it cannot be interpreted as a waiver of our right to enforce such condition at a later date.

## **ARTICLE 2: Equipment and ordering process**

On the basis of information communicated by the Buyer, ETT shall draw up an offer describing:

- the Equipment that may be provided, with relevant technical data;
- the Services that may be supplied with the Equipment;
- the price of the Equipment and Services.

This offer is based on information communicated by the Customer and is in no way a substitute for detailed study from the Customer, where appropriate by an engineering office (thermal Engineering office and HVAC engineering office) that defines precisely and on a reasoned basis the means to be implemented to guarantee the results.

The offer is valid for thirty (30) days from the date of issue. After this date, the Buyer may no longer benefit from the offer, unless accepted in writing by ETT.

The Buyer shall refer to the dated offer by ETT when placing the order. Placing the order binds the Customer to the terms of the order. ETT shall send the Customer an acknowledgement of order. The Customer shall sign the acknowledgement of order and return it to ETT. The contract is deemed concluded unless otherwise specified within 8 days from the date of issue of the acknowledgement of order.

If the Buyer cancels the order before this deadline, the Buyer will be liable to ETT for an amount equal to 15% of the total amount of the order, taxes included. Once the contract is concluded, the Buyer is obligated to take up and pay for all of the Equipment and Services included in the order.

## **ARTICLE 3: Transport and delivery terms**

Delivery terms are specified in the acknowledgement of order and shall be confirmed to the Buyer about ten (10) days before delivery. The Equipment shall be delivered to the delivery point set out in the offer, at the Customer's expense.

For some restricted access areas or places difficult to access (city centres, etc.), the Customer shall provide ETT with the address a freight centre outside the city for delivery. The Buyer undertakes 1) to give ETT access to the site for Equipment delivery; 2) to unpack the Equipment in the presence of a representative of ETT, or of its carrier, upon arrival of the Equipment on site; 3) to make any observation necessary in case of damage, missing item or nonconformity compared to the contract terms and to confirm these reservations both on the delivery note and by registered letter with acknowledgement of receipt to the carrier and to ETT, accompanied by appropriate supporting documents, within forty-eight (48) hours of receipt of the Equipment.

Should the Buyer fail to perform this procedure, no claim will be admissible, and the delivery of the Equipment shall imply acceptance without reservation. ETT will process the claim within ten (10) working days of receipt thereof. If no reply is received within this period, the claim shall be deemed to be denied. If ETT confirms the nonconformity or defect, on principle, it shall repair the Equipment, on site or at its premises.

Handling and installation must be carried out in accordance with the instructions provided for this purpose. If the Equipment is stored, the Buyer shall take appropriate steps to protect it.

## **ARTICLE 4: Invoicing and payment conditions**

All advance payments include VAT.

30 % deposit to be received when the Buyer places the order, invoicing on delivery (or at the time of availability if the delivery has been postponed by the Customer) or on-site intervention in the case of services, when the Buyer is covered under the credit insurance taken out by the Seller: remaining 70% to be received by bank transfer at sixty (60) days from date of invoice, when the Buyer is not covered by the Seller's credit insurance: : balance of 70 % to be received by bank transfer 10 working days before delivery of the Equipment (or at the time of availability if the delivery has been postponed by the Customer) or before the intervention on site in the case of services.

In the case of a rental contract, payment will be made monthly on presentation of an invoice or by monthly direct debit.

If, during the performance of the order, the financial guarantee granted to the Vendor, on behalf of the Buyer, by the credit insurance organisation is cancelled, the Vendor may require the Buyer, before delivery (or at the time of availability if delivery has been postponed by the Customer) or before on-site intervention in the case of services, to pay one or more instalments corresponding to the total amount of the order.

No holdback is allowed and no discount is granted for early payment.

ETT shall not, in any way, be bound to the acceptance of the work by the customer of the Buyer and shall not suffer any financial holdback for this purpose.

The prices take into account the VAT applicable on the day of the order. Any change in the rate applicable to VAT will automatically be reflected in the price of the products

Ref.: MARK-CGV\_01-EN-L

and services sold.

For machines destined for the domestic market, and also for foreign countries, if local taxes, for whatever reason, are to be borne by ETT, these will be invoiced in addition to the agreed sales price excluding taxes.

Penalty clause: in the event of non-payment of an invoice on its due date, a late payment penalty of 15% of the amount due or remaining due will be claimed. This penalty shall be payable by operation of law without the need for prior formal notice, and may not be less than 120 euros excluding VAT. According to French decree N° 2012-1115 dated 2 October 2012: in case of overdue payment the contractual penalty due to the creditor, in addition to delay penalties, shall amount to forty (40) euros.

If delivery has been postponed by the Customer, or if for reasons beyond the Seller's control the ordered Equipment has to be stored on the Seller's site, the Seller shall charge the Customer variable storage costs depending on the nature of the Equipment from the beginning of the storage period until the date of actual delivery of the Equipment.

## **ARTICLE 5: Service contracts**

The amount of the Service Contract corresponding to our service is defined for a period of twelve months. It will be revalued each year according to the variation of the last available index following : French INSEE NAF rev. 2 section D of the revised hourly labour cost [...] air conditioning, identifier 001565186. The amount will be revalued according to the following index formula:  $Pf = (Pi \times Vf) / Vi$ , with Pi: the last amount in force, Vi: the index value at the date of the last amount in force, Vf: the index value at the date of the tariff revision, Pf: the revised price at the date of the tariff revision.

## **ARTICLE 6: Transfer of risks and costs**

### **Metropolitan France**

The transfer of risks occurs when the Equipment is made available at the factory, even when free of charge delivery has been agreed upon. As a result, the Equipment travels at the risk of the Buyer. It is therefore the Buyer's responsibility to make all necessary reserves and to undertake any complaint against the carrier in the event of damage, defect or missing items.

### **Outside Metropolitan France**

Deliveries outside metropolitan France may be completed by the Buyer or by the Seller as per the Incoterms (ICC 2020) stated in the offer sent to the Buyer by the Seller and confirmed in the acknowledgement of order. The transfer of risks and costs complies with 2020 Incoterm rules.

## **ARTICLE 7: Warranty**

The guarantee shall only apply to the Equipment delivered by the Seller and shall only be effective towards the Buyer.

ETT grants the Buyer a contractual guarantee of one (1) year, covering parts for all territories and parts, labour and travel for Metropolitan France only. In any case, the guarantee cannot exceed a period of one (1) year from the date of commissioning by ETT, or eighteen (18) months from the date of delivery to the Buyer, whichever is the earlier. It is stated that neither the implementation of the guarantee, nor the repair time, nor a period of non-use of the Equipment by the Customer, nor the suspension of the guarantee, for any reason whatsoever, may extend the guarantee.

Within the framework of the guarantee, after assessment by the Seller and acceptance of its the responsibility, provided that the conditions for application of the guarantee are met, ETT undertakes to proceed with the necessary steps to repair and adjust the Equipment, subject to availability of human and material resources, and excluding:

- parts damaged due to normal wear and tear;
- refrigerant and consumables;
- compensation for any further damage, whether direct or indirect, foreseeable or not.

Any claim under guarantee from the Customer shall be sent to ETT as a written claim accompanied by a fault diagnosis made by the Buyer at its own expenses. The Buyer's diagnosis, necessary to establish the enforcement of the guarantee, shall be validated by ETT before any action can be implemented under guarantee.

Application of the warranty is subject to strict compliance with the manufacturer's cumulative conditions:

- The price of the Equipment and ancillary Services has been fully settled. In this respect, the Buyer accepts that he has been informed by ETT of the integration of a module into the equipment delivered by the latter, through which a shutdown of the latter is likely to be provoked if the Buyer does not pay for his order in full. No guarantee shall apply due to such an event, the Buyer undertakes to inform his own sub-purchasers and to make it his personal business, with regard to them, of the direct and/or indirect consequences of the triggering of the aforementioned dedicated module.
- The Equipment has been correctly installed (including connections), in accordance with the drawings and written recommendations provided by ETT.
- The Equipment has been commissioned by an ETT-approved technician with no reservations raised by ETT.
- The Equipment is used in accordance with ETT's instructions for operation and within the operating range recommended by ETT.

- The equipment is the subject of a maintenance contract subscribed as soon as it is put into service. Maintenance must be carried out without interruption in accordance with the ETT requirements mentioned in the Maintenance and Operating Instructions manual at the frequencies indicated. The maintenance booklet should be made available on site and, upon request, a copy may be sent to ETT.
- Service and maintenance are carried out by a technician trained and approved by ETT.
- For full quality control, during the entire warranty period, wear parts and consumables must be supplied by ETT, and changed at the frequency prescribed by ETT in the Maintenance and Operating Instructions manual.
- No intervention, other than maintenance, shall be carried out on the equipment and its regulation without prior written agreement of ETT.
- The guarantee does not cover any degradation due to frost, water damage, carelessness or abnormal use of the equipment.

The Buyer shall be solely responsible for any damage it might cause and/or suffer within the scope of use of the Equipment.

During the guarantee period, the Buyer undertakes to provide ETT with maintenance records of the Equipment upon first request and to enable ETT to audit the Equipment at its expenses.

In case of failure to comply with Equipment operation and maintenance instructions, ETT may suspend the guarantee by a written notification sent to the Buyer. The suspension of guarantee may cease after an audit validating that the Equipment has been upgraded by the Buyer at its expenses.

Because the continuity of manufacture of parts cannot be guaranteed, and also due to technological and/or regulatory developments, the supply of strictly identical spare parts is not guaranteed.

The use, under the responsibility of the customer or a partner of the customer, of a BMS and/or AI (Artificial Intelligence) module, in particular in the case of disturbance of regulation and/or modifications to the safety loops of our tools, shall result, at the risk and peril of the customer or his partner, in the invalidity of all ETT's commitments to the customer, including the effectiveness of the initial regulation as well as the manufacturer's guarantee.

## **ARTICLE 8: Onsite Intervention**

The Customer shall ensure the following aspects at its own expenses and under its responsibility:

- Before the intervention: Equipment availability, preparatory work, proper and secured access to the Equipment.
- During the intervention: any other arrangement and mean required for the installation or for the prevention of specific risks on the site of the installation of the Equipment.

The commissioning service consists, via environmental monitoring, testing and measurement, of checking the operation of the machine in situ. This service occurs after the complete installation and connection of the machine by and under the exclusive responsibility of the installer.

At the end of the intervention, the Customer shall sign the maintenance order submitted by the ETT representative, on which it shall mention any possible comments, provided that any claim raised after the departure of the ETT representative will not be accepted. The Customer shall not assign ETT personnel to any other work than the tasks described. ETT declines any responsibility for work performed by its personnel without written approval.

## **ARTICLE 9: Responsibility**

During repairs duration, ETT shall only be liable for alteration or destruction of Equipment if the Customer can provide evidence that the damage results from ETT's fault.

In the event of any accident or disaster during the intervention, ETT shall only be liable for its own personnel.

Under guarantee, ETT will grant no compensation for indirect or non-material damage such as, but not limited to income loss, profit loss, operating loss, financial cost, loss of orders, any commercial disruption, etc.

The Customer waives, both on its own behalf and on behalf of its insurers, any recourse against ETT and its insurers following any claim (direct, indirect, material, immaterial, etc.) whatever its nature and origin.

With regard to operating liability, post-delivery liability and product liability, ETT's liability, whatever the cause and whatever the circumstances, is limited, on the one hand, to the guarantees covered by ETT's insurance contract, i.e., all damage combined (bodily injury, property damage and consequential or non-consequential immaterial damage), and, on the other hand, to the amounts guaranteed by this same contract. It is expressly agreed and accepted by the purchaser that delays in delivery, whatever the cause, including when they are caused by a failure by one of ETT's suppliers, to ETT's detriment, to comply with its own contractual lead times, and/or by a shortage of ETT's workforce, do not entitle the purchaser to any compensation whatsoever.

## **ARTICLE 10: Treatment of waste from the Equipment (on French territory)**

In accordance with the provisions of the French Environmental Code (art. R543-195 et seq.), applicable on French territory in respect of professional Waste Electrical and Electronic Equipment (WEEE), ETT fulfils its obligations regarding the end of the life cycle of the air conditioning equipment it markets by funding the recycling branch of Ecologic (or equivalent), that freely collects them.

In accordance with article L 541-2 of the Environmental Code, it is the customer's responsibility to contact Ecologic (or equivalent) as soon as possible before delivery of the new units so that it can be present at the unloading and take back the equipment

Ref.: MARK-CGV\_01-EN\_L

emptied of its refrigerants. Make your request by logging on to: [www.e-dechet.com/deee/enlevement-deee](http://www.e-dechet.com/deee/enlevement-deee).

## **ARTICLE 11: Intellectual property**

ETT equipment is protected by intellectual and/or industrial property rights with which the Customer undertakes to comply. The Customer agrees to refrain from removing, modifying and/or adding any distinctive mark from/to the Equipment.

## **ARTICLE 12: Reservation of ownership clause**

ETT EQUIPMENT IS SOLD WITH A RESERVATION OF OWNERSHIP, WHERE TRANSFER OF OWNERSHIP IS SUBJECT TO FULL PAYMENT OF EQUIPMENT PRICE (PRINCIPAL AMOUNT AND ANY ACCESSORY AMOUNTS). In the absence of full payment, whatever the cause, and after the Buyer has been informed by ETT, the equipment is likely to be stopped through the dedicated module installed by ETT, as mentioned in article 7 hereof, of which the Buyer hereby accepts to be aware. Nevertheless, the Buyer bears the risks related to the Equipment from the moment it takes possession of it.

It is understood that simple remittance of an instrument creating an obligation to pay, a bill of exchange or other payment form, shall not represent payment, the debt owed to ETT by the Buyer remain due with all the guarantees related thereto, including the reservation of ownership, until the instrument of payment or commercial paper has actually been paid in full.

If the Buyer has sold the Equipment before complete payment of the price, and is subject to a Court procedure of legal adjustment or compulsory liquidation proceedings or a protective measure, the Buyer acknowledges that the amount owed to ETT on account of the price of the Equipment will be transferred to the price paid, or to be paid, by the end-buyer.

In this case, the Buyer expressly authorises ETT to claim and obtain the price of the Equipment from the end-buyer, and the Buyer shall abstain from claiming payment of this price from the end-buyer in parallel, apart from its margin.

In contradiction with article 551 of the French Civil Code, this reservation of ownership clause shall apply even if the Equipment is sealed to a structure (immovable or otherwise) or to another element, and even if the structure or other element has to be damaged in order to take back possession of the Equipment. Likewise, the provisions of article 566 of the French Civil Code are declared by the parties as null and void. In case of late payment of all or part of the price by more than thirty (30) days after the agreed date, ETT shall be entitled to take back the Equipment by any means that it finds necessary, and at the expenses of the Customer. Should this takeover operation impair the structure, its operational use or any other element to which the Equipment was attached, the Customer shall abstain from holding ETT liable.

## **ARTICLE 13: Data**

When the technical data collected and processed by the Equipment is neither personal data nor data protected by intellectual property rights, ETT is authorized to use it for any purpose within its field of activity. In case of transfer of this data to third parties, ETT undertakes to respect the strictest confidentiality as to the identity of the customer. Where the data is personal data within the meaning of the European Regulation, ETT processes this data solely for the purpose of selling the Equipment or providing the Services and to offer the Customer other Equipment and Services, in line with our obligations and support. The data is intended solely for our authorized services and is submitted to the selected subcontractor where appropriate for the implementation of the above purposes. The Buyer holds rights over his data, including a right of access, rectification, deletion and limitation of processing, and may contact his usual ETT sales representative in order to exercise them.

## **ARTICLE 14: Force majeure and other circumstances**

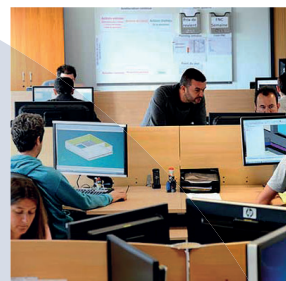
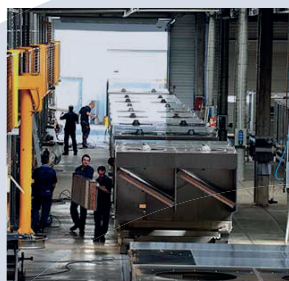
In case of force majeure, ETT may, at its choice and discretion, shall be entitled to stop performing some or all of its obligations, or to unconditionally terminate the contract without any compensation for the Customer.

By "force majeure" is meant any unforeseeable, irresistible or external event beyond the control of ETT, which could not be reasonably foreseen at the time of the conclusion of the contract and whose effects cannot be avoided by appropriate measures, prevents the performance of its obligation by ETT.

Force majeure may include (non-exhaustive list): war, hostilities (whether war is declared or not), act of enemies, terrorism, insurrection, riots, disturbances, national strikes, natural disasters, state of health emergency, epidemics, air or sea disasters, ...

## **ARTICLE 15: Attribution of jurisdiction**

French law is exclusively applicable to any legal relationship arising from this contract. Prior to any legal proceedings, the parties shall seek to resolve their dispute amicably via Alternative Dispute Resolution (ADR). The Commercial Court of Brest will have sole competence in case of dispute of any kind concerning the phrasing, performance or termination of the contracts entered into by ETT and its customers, and the aforesaid applies even in the event of summary judgements, incidental claims, multiple defendants or introduction of third parties.



Reference: MARK-BRO\_04-EN\_F

ETT - Route de Brest - BP26

29830 Ploudalmézeau - France

Tel: +33 (0)2 98 48 14 22

Fax: +33 (0)2 98 48 09 12

Export Contact: +33 (0)2 98 48 00 70

ETT Services: +33 (0)2 98 48 02 22

[www.ett-hvac.com](http://www.ett-hvac.com)