

# Application guide



## **BALTIC** **24 - 85 kW**

**BAC - BAH**      Rooftop units  
**BAG - BAM**





# BALTIC™

## APPLICATION GUIDE

Ref : BALTIC-AGU-0411-E

1. GENERAL DESCRIPTION	2
2. OPTIONS	15
3. GENERAL DATA	24
4. PERFORMANCES	28
5. ACOUSTIC DATA	52
6. ELECTRICAL DATA	54
7. WIRING DIAGRAMS	55
8. CONTROL VARIABLES	57
9. REFRIGERATION DRAWINGS	60
10. DIMENSIONAL DATA	64
11. OPTIONS WEIGHTS	82



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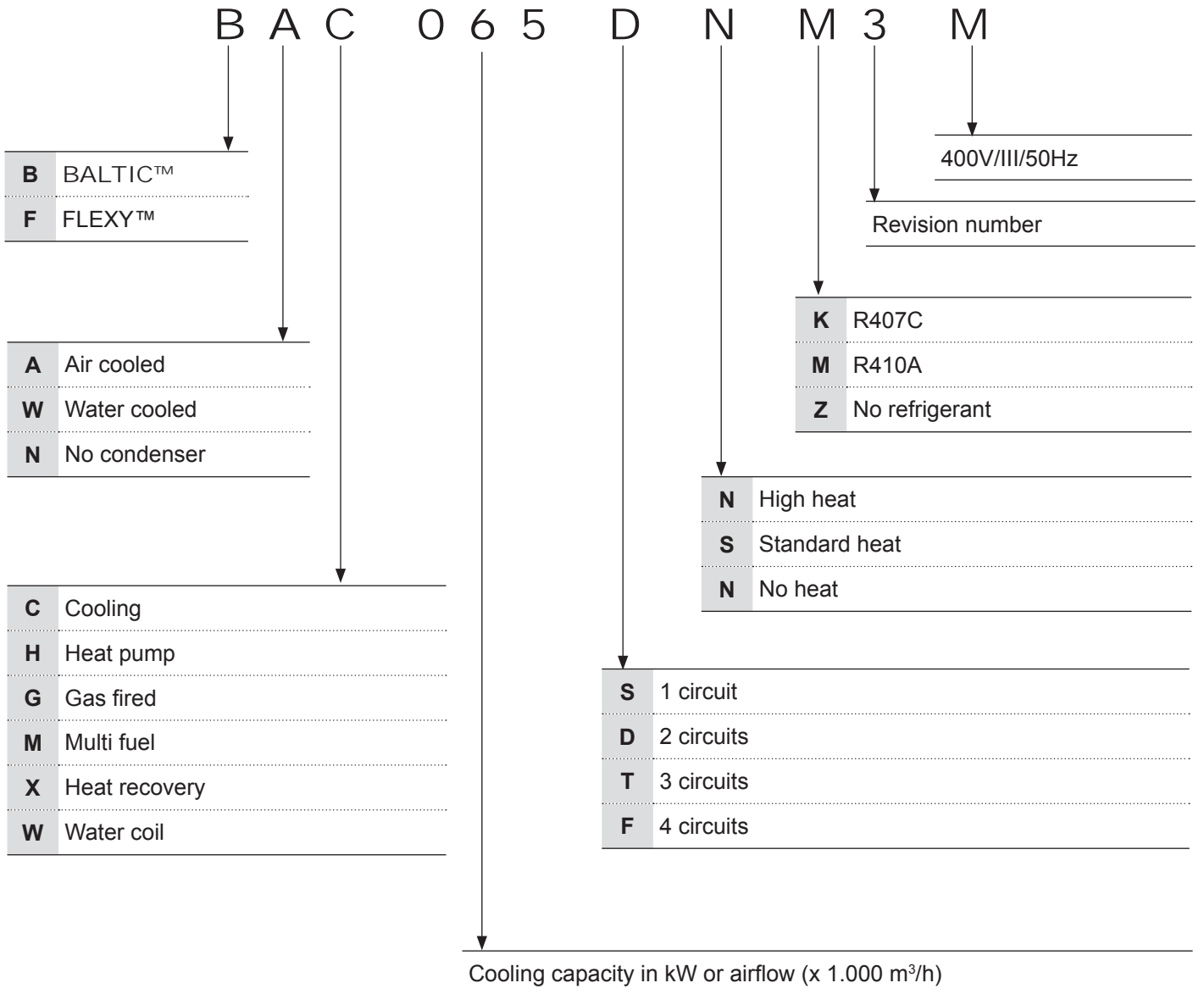
Product designed and manufactured under quality management systems certified ISO 9001 and ISO 14001.



Version 2008 Version 2004

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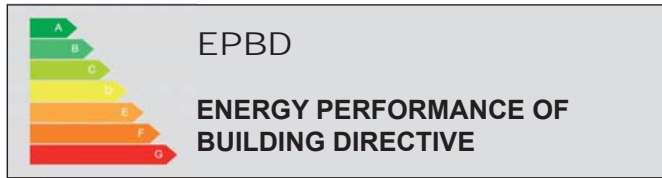
**EXAMPLE :**



## SUSTAINABLE ENERGY DEVELOPMENT CHALLENGES

Faced with challenges relating to competitiveness and climate change, Europe has launched several initiatives for an intelligent energy strategy.

New regulations reflect the European Union's commitments on climate change and its determination to reach 20% efficiency improvement in buildings by 2020.



One of the major requirements of the new EPBD is to set Energy Certificates for buildings which grade the energy efficiency based on the building annual energy consumption. Soon companies will have to display their energy certificates to the public.

## THE EXPERIENCE & COMMITMENT OF THE EUROPEAN LEADER TO DRIVE CONTINUOUS ENERGY SAVINGS

Lennox contribution to combat rising energy costs and global warming is to design innovative, efficient and dependable products, while providing best comfort and air quality.

As a major player in the European HVAC market, Lennox is a reference in sustainable development and has been assembling its products in ISO-14001 certified factories since 2007.



*eComfort™ illustrates Lennox commitment towards energy efficiency and environmentally friendly solutions.*

*Like any other Lennox Rooftop unit, BALTIC™ is Eurovent certified.*



*BALTIC™ brings you the latest technologies and three year warranty\* for long lasting energy savings.*

\* 3 year warranty applies to compressors, heat exchangers fans and fan motors. Condition applies.

## BALTIC™ : THE BEST LIFE CYCLE COST IN THE MARKET

For more than 10 years BALTIC™ has been the reference in terms of sustainable energy efficiency and performance.

*BALTIC™ provides the best life cycle cost thanks to high energy efficiency and reduced set up time and maintenance costs.*

### Low Energy consumption



- For a packaged air conditioner, 90% of the CO2 emissions are indirect emissions caused by the energy consumption.
- 35% energy savings with BALTIC™ when compared to a standard rooftop installed on a retail building.
- Innovative solutions for long lasting energy savings:
  - eDrive Direct transmission variable speed ventilation system
  - Advanced refrigeration system with multiscroll R410A compressor assemblies, electronic expansion valves, extended heat exchange surface area, alternate and dynamic defrost cycles.
  - Fresh air and free cooling management.
  - Optimized operation with CLIMATIC™ 60

### Reduced maintenance Costs



- Fully factory tested plug and play packaged system.
- eDrive™ direct transmission fan with zero maintenance and airflow measurement with eFlow™.
- CLIMATIC™ 60, CLIMATIC™ Wizard, unit remote management and supervision through GPRS with ADALINK Service.

### Better recycling management



- Unit assembled in an ISO14001 certified facility.
- Refrigerant R410A to reduce refrigerant charge.
- Reduced material usage with compact packaged design.

GENERAL DESCRIPTION

BALTIC™ R410A has been designed to perfectly match light commercial applications such as offices, restaurants, shopping outlet-villages and supermarkets.



BALTIC™ is available in cooling only, heat pump, gas heater or dual fuel (gas heater and heat pump). It operates with environmentally friendly R410A HFC, providing cooling capacities from 24 kW up to 85 kW in 3 different Box sizes.

*Lennox contribution to counter rising energy costs was to develop BALTIC™ the most efficient rooftop unit designed to provide the best and lowest life cycle cost*

**GUARANTIED SUSTAINABLE PERFORMANCE WITH eDRIVE™**

eDrive™ is Lennox' answer for high efficiency ventilation with direct transmission, variable speed drives to save energy and reduce maintenance costs.

**ADVANCED REFRIGERATION CIRCUIT**

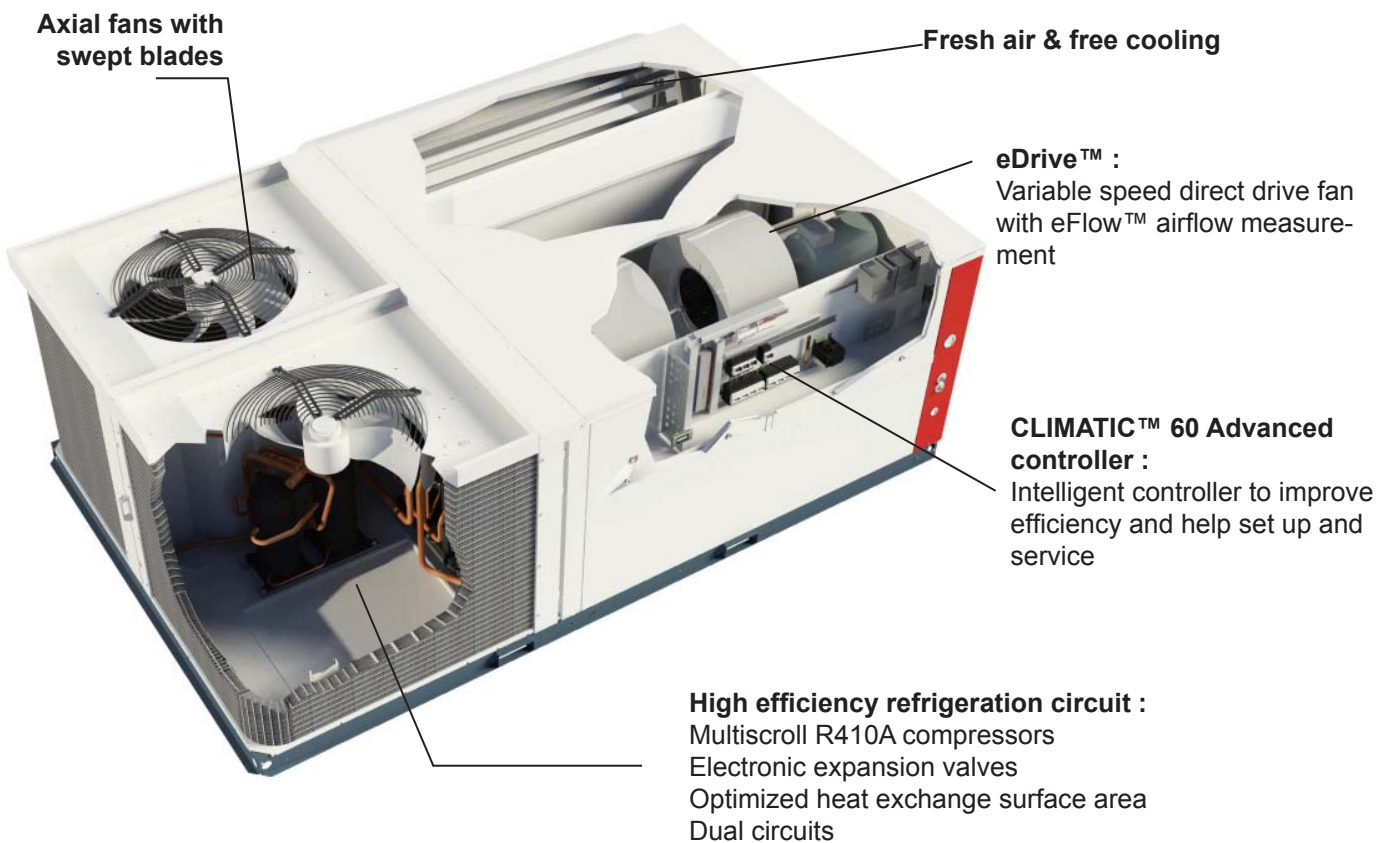
New BALTIC™ features high efficiency, environmentally friendly refrigeration circuits  
The new refrigeration circuit is fitted with multiscroll R410A compressors, electronic expansion valves and optimized heat exchange surface area. It includes advanced condenser fan design and allows Dynamic and alternate defrost.

**FRESH AIR & FREE COOLING**

Fresh air management and Free Cooling are standard features of new BALTIC™ that can reduce annual energy consumption.

**CLIMATIC™ 60 ADVANCED CONTROLLER**

CLIMATIC™ 60 controller intelligently improves efficiency and helps set up and service operations to guarantee long lasting performance



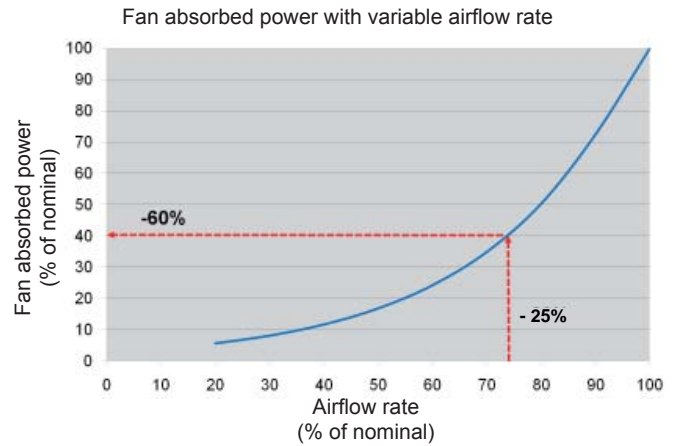
## eDRIVE™ VENTILATION

eDrive™ is a standard feature of Lennox BALTIC™ units for ventilation with direct transmission, variable speed drives that saves energy and reduces maintenance costs.



### VARIABLE SPEED DRIVE

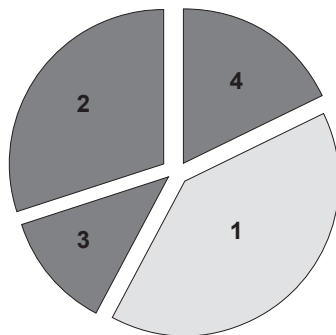
Airflow reduction during part load operation and dead zone can help save on energy consumption.



### SAVING ENERGY WITH eDRIVE™ VARIABLE SPEED, DIRECT DRIVE FAN.

With a rooftop, the blower fan motor is one of the major contributors to annual energy consumption.

Fans usually run 97% of the year at full speed to circulate the air inside the building. 42% of the annual energy consumption of an air conditioner is due to the fan motor, which can be more than compressors.



<b>1</b>	Annual compressor consumption	<b>48 %</b>
<b>2</b>	Annual consumption of other electrical systems	<b>48 %</b>
<b>3</b>	Remaining annual fan motor consumption	<b>12 %</b>
<b>4</b>	Energy savings thanks to eDrive™	<b>30 %</b>

There is no need to reduce airflow rate too much to achieve important energy savings: For example reducing airflow rate by only 25% will save 60% on the fan motor energy usage.

- BALTIC™ integrates the new eDrive™ which automatically adjust airflow rate to the needs, saving up to 30% annual rooftop energy consumption.
- Airflow Rate can be easily adjusted to the exact needs, thanks to eFlow™ the airflow measurement and display system.
- eDrive™ will correct power factor to reduce current.
- eDrive™ integrates soft starter feature as standard, that will reduce inrush current during fan starts and makes the unit fully compatible with flexible ducts air diffusion systems.

### DIRECT TRANSMISSION

eDrive™ is a direct transmission system without pulleys nor belts. It eliminates friction losses improving energy efficiency even at full speed.

Worn-out or loose fan belts can increase fan energy consumption by up to 15%. eDrive™ direct transmission system guaranties the performance over the life cycle of the unit.

## AIRFLOW RATE MANAGEMENT WITH EDRIVE™

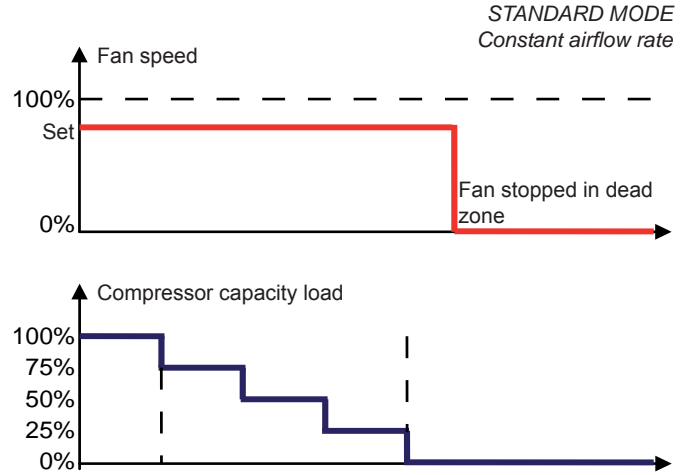
CLIMATIC™ 60 and eFlow™ manage airflow rate passing through the unit following 3 possible strategies.

eDrive™ control strategies can be changed with each time zone in occupied or unoccupied mode. Whatever the control strategy, soft starter is still available to inflate flexible ducts and reduce inrush current during fan starts.

### STANDARD MODE

#### Constant airflow rate

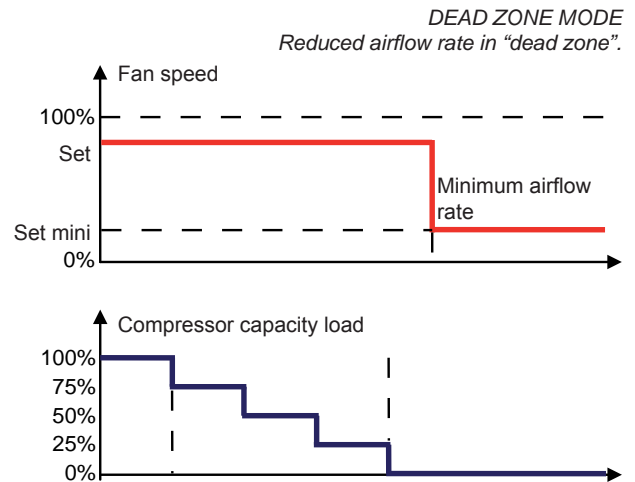
In this case the airflow rate is set to the required value during start up but does not change with the building load or when the unit goes into “dead zone”. In this case On/Off fan control is still available during dead zones.



### DEAD ZONE MODE

#### Reduced airflow rate in “dead zone”.

In this case the airflow rate is set to the required value during start up and reduced to a minimum airflow rate set value when the unit goes into “dead zone”. In this case the fan will not stop when the unit operates in dead zone.

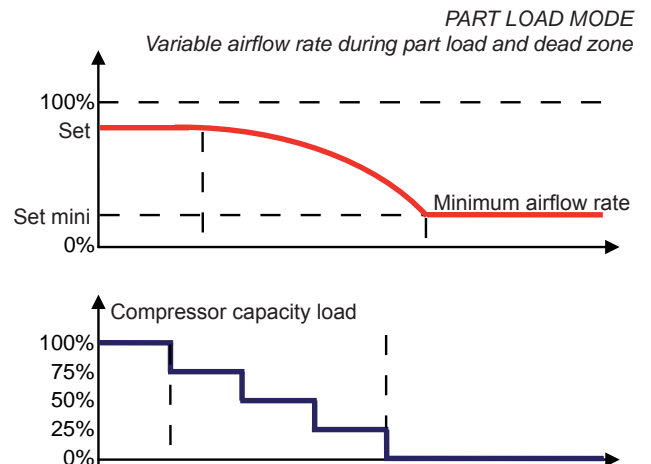


### PART LOAD MODE

#### Variable airflow rate during part load and dead zone.

In this case the airflow rate is set to the required value during start up and reduced to the minimum set value according to the compressor capacity factor. As the compressors are being stopped the fan will slowly decrease the airflow rate to reach the minimum set value. In this case again the fan will not stop when the unit operates in dead zone.

In any case the choice between the different strategies will depend on the application constraints but they will all generate to some extents, energy savings and improved comfort when compared to the basic ventilation systems usually installed in our industry.



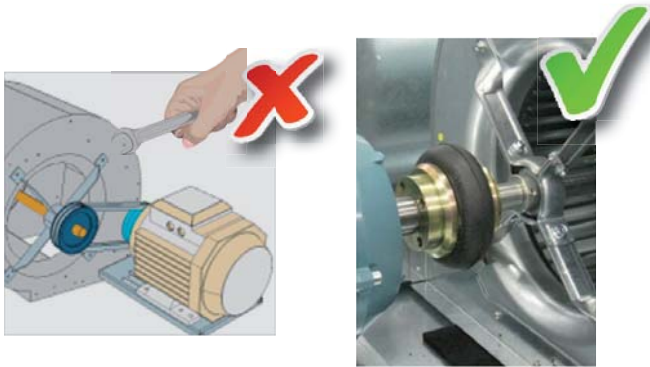




**eDRIVE™  
START-UP AND SERVICE  
MADE EASY**

BALTIC™ rooftop unit helps reduce set-up time and maintenance costs thanks to eDrive™, the most reliable and easiest fan system available.

- No more pulleys nor belts to adjust during start up and service  
→ Maintenance free fan.



- Thanks to eFlow™, the airflow rate can be read and adjusted directly on the electronic display without any intervention on the fan. With eFlow™, any change in pressure or airflow rate in the system can be diagnosed quickly.
- CLIMATIC™ 60 and eFlow™ can monitor the airflow rate and compensates for the dirty filters, while waiting for the necessary maintenance.



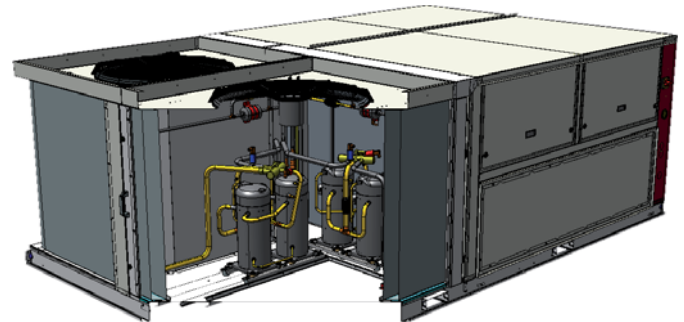
- Constant airflow rate and dirty filters.  
On top of all the above control strategies eDrive™ with eFlow™ airflow measurement system, gives the possibility to maintain airflow rate as the filters are getting dirty. If enabled, this new standard feature will maintain the airflow rate, normally reduced by the additional pressure drop created by the dirty filters, while waiting for the necessary maintenance.

*Managing airflow rate with variable speed and direct transmission is the first step toward energy savings and improved comfort. eDrive™ guarantees long lasting energy savings and easy start up and service.*

**ADVANCED REFRIGERATION SYSTEM**

The refrigeration circuit is responsible for up to 40% of the annual energy consumption of a typical packaged air conditioning unit.

New BALTIC™ features high efficiency, environmentally friendly refrigeration circuits with multiscroll R410A compressors, electronic expansion valves and optimized heat exchange surface area.



**SAVING ENERGY WITH ADVANCED REFRIGERATION CIRCUIT DESIGN**

**R410A refrigerant**

Efficient systems such as BALTIC™ are designed around R410A refrigerant to achieve the best performances.

- Energy efficient refrigerant thanks with pressure drop in the pipes: Higher evaporating pressure and lower condensing pressure improve compressor EER & COP.
- R410A compressors have a better isentropic efficiency.
- Environmentally friendly refrigerant: It contains No Chlorine (ODP=0). Significant refrigerant charge reduction (-40%) that limits the global warming potential of the system. R410A optimized heat exchangers use less material (copper, aluminum ...)

**Electronic Expansion Valve**

In order to achieve superior efficiency in all conditions, the new BALTIC™ is fitted as standard with state of the art electronic expansion valves.

- The new electronic expansion valves are directly driven by Climatic™60 controller and optimize performance in both cooling and heating modes and provide reliable and accurate operation in all conditions all year round.
- The new valve profile is design to ensure smooth and precise control at low capacities for improved part load performances.
- Increased serviceability with replaceable parts.

**Optimized heat exchange surface area**

To achieve the best performance in all load conditions, the new BALTIC™ is designed around optimized heat exchangers.

- Heat exchange surface area was increased by +40% on the outdoor and +30% on the indoor, when compared to the previous BALTIC™ range.
- Larger heat exchangers reduce pressure drop on the air side lowering fan motor consumption.

**Advanced condenser fan design**

New outlet fan design with aluminium swept blades brings the latest fan technology to improve energy consumption and airflow rate on the outdoor coils while reducing sound power level.



**Dynamic and alternate defrost**

Defrost is necessary to ensure efficient operation of heat pumps in winter. Typical rooftop starts defrost cycle when the outside temperature is below a set temperature and repeat the defrost cycles periodically. It results sometimes in starting an expensive defrost cycle when it is very cold outside but very dry, or too warm, in other words when the coil is not frozen.

- Dynamic Defrost is Lennox' answers to unnecessary defrost cycles. Dynamic defrost detects icing of the coil by monitoring the difference between refrigerant and outside temperature and starts the defrost cycle only when required. Under certain conditions a rooftop unit equipped with this built in dynamic defrost feature can run several hours in heat pump mode without starting any defrost cycle. Dynamic defrost can save up to 15% on annual energy consumption.
- Alternate defrost saves energy by reducing the need for auxiliary heating during defrost cycles. With Alternate defrost when one circuit starts a defrost cycle the other circuit is running in heat pump at full capacity to minimize the need for auxiliary heating. Alternate defrost is available as standard on all dual circuit BALTIC™ units starting from size 045kW.



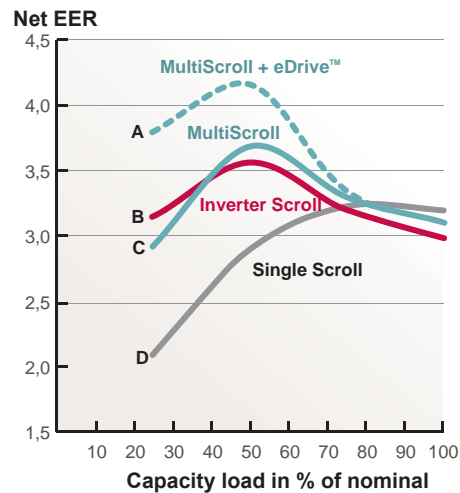
**High efficiency multiscroll technology**

Air conditioning equipments are sized to cover the need for the most critical weather conditions which most likely will occur only a few days or even a few hours during the year.

Most of the time, in Europe, the external temperature drops below the reference value and consequently systems usually run 96% of the time at part load. It is therefore important to design system around part load performance to achieve the lowest possible annual energy consumption.

BALTIC™ provides Eurovent A Class efficiency and best possible part load efficiencies year round with high efficiency multiscroll R410A compressor technology.

Evolution of the net EER with varying capacity load



- |                         |                 |
|-------------------------|-----------------|
| A Multiscroll + eDrive™ | C Multiscroll   |
| B Inverter scroll       | D Single scroll |

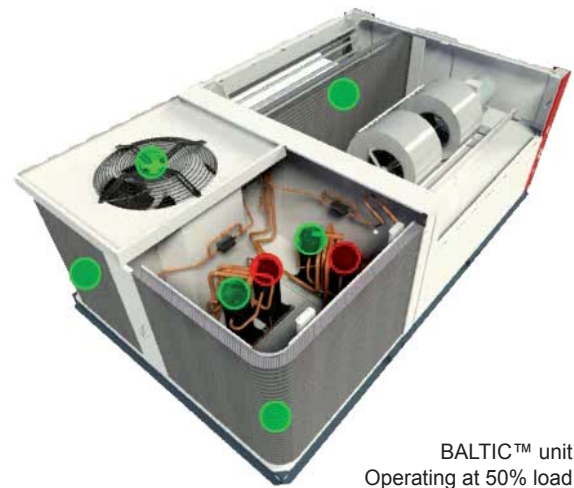
Source: PERSAPAC Study by Cetiat, Eurovent, Armine & EDF  
Lennox Europe Laboratory comparative testing on rooftops

Multiscroll™ compressor technology with electronic expansion valves allows energy consumption reduction when compared to “inverter” solutions:

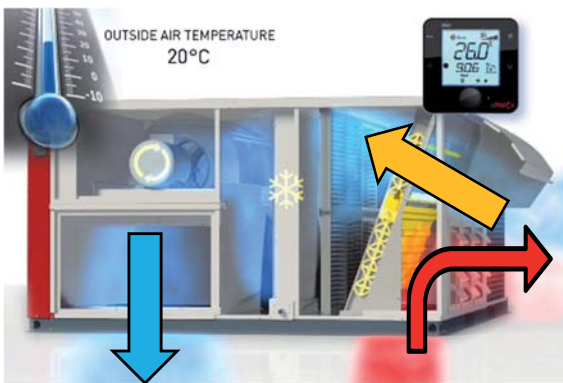
- Multiscroll compressors are always running at their best nominal operating conditions whereas compressors with inverter control usually run at 90Hz for nominal point down to 30Hz for low capacities.
- Energy consumption due to inverter electronics for speed variation can reduce efficiency by up to 5%.
- Multiscroll compressor assemblies optimize heat exchanger usage during part load operation. For example, with 50% capacity load, a BALTIC™ would only start one compressor on each circuit. The running compressors would then benefit from the whole heat exchange surface area and the whole airflow rate: The EER is then increased to 4.5 in some cases.
- Multiscroll compressor assemblies improve operating limits giving the possibility to unload compressors providing cooling to the building even when the outdoor temperatures are very high. With unloading, BALTIC™ can operate and supply cooling operating one compressor with outdoor temperatures reaching 50°C

- With its simple ON/OFF part load management, multiscroll compressor assembly is simpler and more reliable than inverter compressors: Speed variation on compressors implies complex oil management, and expensive heavy external inverter drive with fragile electronics.

*Multiscroll R410A compressor technology with electronic expansion valves and optimized heat exchange area brings the best possible energy efficiency year round.*



FRESH AIR AND FREE COOLING



New buildings that comply with EPBD will have good thermal insulation with high internal loads and will require cooling even when outdoor temperatures are low. Managing fresh air is mandatory in a building to control CO2 level and comfort.

Fresh air management and Free Cooling are standard features of new BALITC™ that can reduce annual energy consumption.



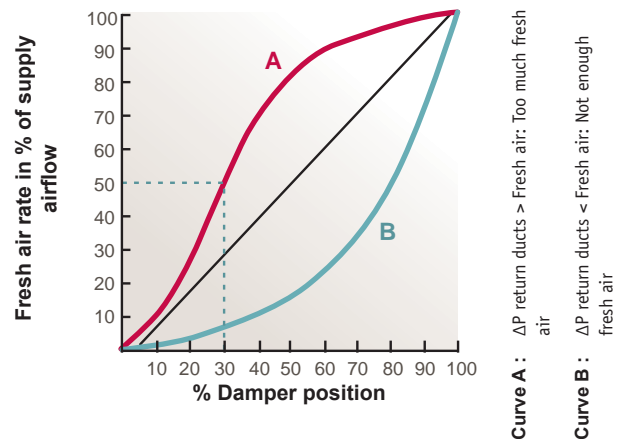
**SAVING ENERGY WITH FRESH AIR & FREE COOLING**

- Thermodynamic cooling can be replaced by Free Cooling when outdoor temperature is below the building set point saving up to 15% on annual energy consumption.
- Introducing just the required amount of Fresh Air in a building can reduce energy consumption.

Because a fresh air damper curve is not linear, it is not accurate to assume that the percentage of opening of the damper is equal to the percentage of fresh air entering the building. However, this linear control of a damper is by far the most used in the industry.

important to our customer, BALITC™ can manage the percentage of fresh air more accurately.

As an example, 20% extra fresh air can represent 1300€/year extra energy consumption. (BALITC™ BAH 085 with 18000m<sup>3</sup>/h and 0.17€/kwh. Set points: 26°C summer / 20°C Winter)



If the pressure drop in return air duct is high, the amount of fresh air actually introduced in the building can be higher than required. This extra fresh air will have to be cooled in summer and heated in winter, increasing energy consumption of the system.

BALITC™ will periodically recalibrates fresh air dampers to ensure just the required amount of fresh air is introduced in the building. This recalibration is achieved using the return air, outdoor air and supply air sensors.

## CLIMATIC™ 60 ADVANCED CONTROLLER

The new generation of microprocessor based control, CLIMATIC™ 60 will equip the BALTIC™ rooftop range. It inherits more than 20 years of technology and field operating experience from its predecessors Climatic™ control platforms.

CLIMATIC™ 60 controller intelligently improves efficiency and helps set up and service operations to guarantee long lasting performance.



### OPTIMIZED OPERATION AND SETUP SAVES ENERGY

CLIMATIC™ 60 is designed to provide the best energy efficiency throughout unit's life cycle while ensuring reliable and consistent operation with user friendly interfaces.

This new controller constantly monitors more machine parameters than ever to improve rooftop operation and maximize efficiency and reliability.



- 1 Indoor air temperature (humidity and CO2 option)
- 2 Outdoor air temperature (humidity option)
- 3 Return and supply air temperature
- 4 Filter pressure drop
- 5 Airflow rate with eFlow™
- 6 Refrigerant pressures, temperatures & compressor monitoring
- 7 Power energy metering

### Refrigeration circuit efficiency management

The new PI algorithm of the climatic™60 controls the supply air temperature and a temperature difference between supply and return. It is able to optimize the refrigeration circuit operation to match perfectly the required cooling or heating load maximizing efficiency and comfort thanks to multiscroll compressor staging and electronic expansion valves.

It will also improve reliability with features such as compressor operating limits monitoring, (High and Low refrigerant pressure and temperature now measured and displayed on DS60 and Bus) refrigerant leak detection or compressor operating time equalization and protection against excessive short cycling.

The new BALTIC™ benefits from an extended operating envelope thanks to its large heat exchangers and the possibility to unload compressors when outdoor temperature is very high (above 48°C) This feature will ensure that some cooling is still provided even with temperatures above 48°C.

### Dynamic defrost:

It is a standard feature of all Lennox heat pumps. It limits the number and the duration of the defrost cycles in winter to maximize COP.

### Free cooling:

It is one of the most important features of this new rooftop as it maximise seasonal efficiency by reducing the use of thermodynamic cooling in mid season.

### Intelligent fresh air management:

With accurate percentage of fresh air the dampers are regularly calibrated to introduce just the required amount of fresh air in the building to reduce annual energy consumption. The fresh air ratio can also be controlled using the indoor CO2 level as an input.

### Intelligent heating priority optimization:

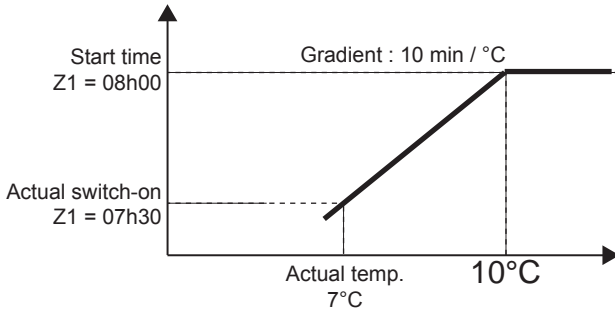
This unique feature on the market, allows the user to program the priority between the different heating elements (thermodynamic, electric pre-heaters or auxiliary heating). This is particularly interesting on dual fuel units or units with electrical pre-heaters. This feature maximizes energy efficiency by optimizing heat pump operation depending on the outdoor temperature.

**Morning anticipation and dynamic set point**

The unit can be programmed to switch-on in the morning to reach the occupied zone temperature set point just in time.

The rooftop will start heating the building at a different time in the morning depending on the outdoor temperature: The lower the outdoor temperature, the earlier the rooftop would start to ensure that the set point is reached by the time the first occupied zone (Z1) is starting. This is to avoid early start when outdoor temperature is mild.

Example for a unit programmed to anticipate morning switch-on if outdoor temperature is below 10°C at a rate of 10 minutes/°C.



Dynamic set point can be used in summer to offset the ambient temperature set point according to the outdoor temperature. This is to avoid large temperature difference between indoor and outdoor. The indoor temperature set point would then increase with the outdoor temperature improving comfort and saving large amount of energy.

**Staggered start feature**

If there is a power shortage, units will not restart at the same time. To make this feature available, units have to be addressed with a different number between 1 and 12. The unit will start a number of minutes after power return depending on its address (Address \* 10 seconds).

Example: unit number 3 will start 30 seconds after power is back. This is a very important feature to avoid current peaks during start up.

**Communication and unit interlink**

Master/slave or cascade control is a standard feature of the new BALTIC™ units. It can be used to connect up to 24 rooftops. The units can then be programmed to optimize efficiency and improve reliability following 6 different strategies:

**1: Master Slave "total":**

The master gives the ventilation order, its set point and its room temperature/humidity/CO2 to all other rooftops.

**2: Master Slave "temperature":**

The master gives the ventilation order and its room temperature/humidity/CO2 to all other rooftops, but they have their own set point.

**3: Master Slave "average":**

The master gives the ventilation order and the room temperature/humidity/CO2 used by all rooftop is the average of all rooftop, each rooftop has its own set point.

**4: Master Slave "cooling/heating":**

All rooftop are stand-alone but the slaves have to have the same running mode as the master (Cooling or heating).

**5: Master Slave "Back-up":**

One rooftop is the back-up unit and will operate if any of the other rooftops is stopped due to a major problem.

**6: Rolling Back-up mode:**

Same as above, except the "back-up" unit will change once a week on Tuesday.

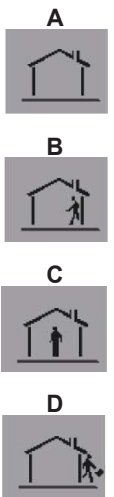
Note that, the outside temperature/humidity/CO2 given to all rooftops can either be the average of all unit connected or the external humidity/temperature of the master, allowing the use of a single "weather station" for the whole site.

**Faults and alarms**

CLIMATIC™ 60 manages more than 90 different faults and alarms codes and can store the last 32 with time and date. The stored faults and alarms can then be displayed on the DS60 and on the communication bus with the full text detail.

**Scheduling**

In order to ensure the unit perfectly matches the requirements of the most difficult applications in terms of occupation and varying internal loads, the new CLIMATIC™ 60 offers now up to 7 time zones per day (Z0 to Z6) adjustable by steps of 10 minutes. Each time zone can be programmed to follow one of four possible operating modes: A,B,C & D



**New CLIMATIC™ 60 commissioning Wizard**

CLIMATIC™ 60 Wizard is Lennox new commissioning assistant to help service engineers configure the rooftop and ensure reliable and long lasting efficient operation.

With the CLIMATIC™ 60 Wizard the unit can be connected to a PC through RS485. Each set point and unit parameter can then be accessed and configured through the wizard. Every change of setting on the wizard immediately updates the climatic program. Factory settings are always available and the wizard can give dynamic help for each setting in different languages. Site and customer information can also be added to the site information page.



Once the commissioning is done, the configuration can be saved to be copied to another unit or on another site. The commissioning engineer can then create a print out version summarising configuration details such as: unit type, model and serial number, site information, software/hardware version, name of the engineer and full detailed unit configuration.

**CONSTRUCTION, INSTALLATION AND SERVICE**

**UNIT CONSTRUCTION**

Assembled in compliance with CE requirements, BALTIC™ units comply with PED 97-23 and EN 60204 standard. They are manufactured in ISO 9001 and ISO14001 factories. Electrical components are selected to the highest standards, refrigeration components are generously sized to ensure maximum performance and reliability. Quality manufacturing procedures together with a culture of continuous improvement at all LENNOX factories ensure the products are built to the highest standards. Anticorrosion fixings and anticorrosion coating on the casing: BALTIC™ is designed to ensure long operational life time. Its casing is made of corrosion resistant galvanized steel with UV resistant RAL9002 polyester paint. Further resistance is provided on the BALTIC™ range through the use of anticorrosion fixings (A2 Anticorrosion) as standard.

**TRANSPORT AND HANDLING**

To facilitate handling and to minimize risk of damage to the units, from site lifting and positioning, LENNOX has equipped the BALTIC™ units with “lifting lugs” located in the base frame. All units are also fitted with lifting rails to facilitate handling with a forklift. Note that ONE of the base rails must be removed before installation on roofcurb. The rail located under the condenser coil MUST stay in place





For the same reason, the condenser coils are protected with a plastic net, guarding them against damages that sometimes occur during transport and installation

For transport and handling, the units are wrapped in a retractable plastic protection.



All BALTIC™ units have a flat top design 1.2 m high to improve architectural integration. This unique feature allows discrete installation on the roof, reducing the need for costly cladding solutions around the units.

Thanks to their low height, all BALTIC™ units are stackable for transport, doubling the number of units in a truck compared.



## PLUG AND PLAY UNIT

All options are factory installed on the unit, which means that they are ready for use, optimizing the time spent on site for the installation. Bottom entry (through the base) for electrical power and Hot Water (if option fitted) lines are available as standard. To make installation easier, BALTIC™ power supply does not require "neutral" connection. It is powered by 400 V, 3 phases, 50 Hz.

### Circuit breakers

To improve safety and extend life time, circuit breakers protect against over-loading, over current and a disconnected supply phase. Maintenance is also improved as there is no requirement to change fuses. The electrical panel is manufactured in accordance with EN60204 electrical directive.

### Numbered wires

All wires and connectors are numbered as shown on the electrical drawing to facilitate maintenance and diagnostic

## AIRFLOW CONFIGURATION AND ECONOMIZER

All BALTIC™ units are supplied with economizer and fresh air hood as a standard feature to improve comfort through better fresh air management and allow energy savings with free cooling.



Unless specified otherwise when ordered, BALTIC™ rooftops are shipped with downflow configuration and with 100 Pa external static pressure and nominal airflow. However, the airflow and pressure characteristics can be set up at the factory to your particular project requirements that will help reducing time spent on site.

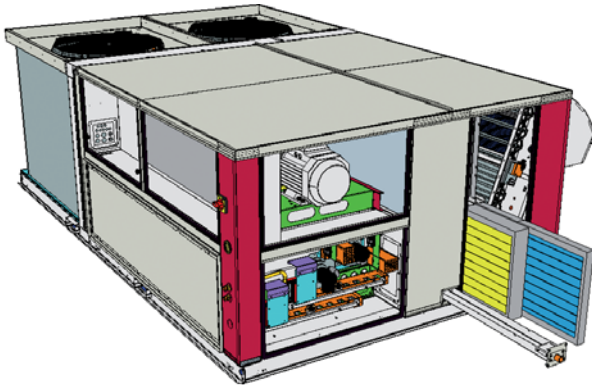
## VARIABLE SPEED DRIVE AND AIRFLOW ADJUSTMENT

For cases where the actual external static pressure or airflow on a particular project is different from what is specified on an order, LENNOX has enhanced the BALTIC™ rooftop by providing variable speed drive and airflow rate measurement capability as standard

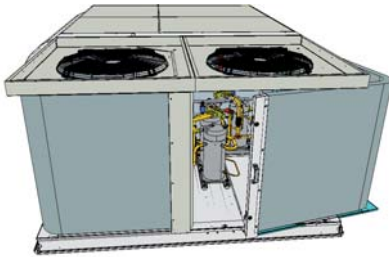
The installer can easily and quickly measure and adjust the airflow within a 20% window without moving the mounted fan motors. The variable speed fan with direct transmission provides flexibility and peace of mind for commissioning.

## EASY ACCESS TO ALL COMPONENTS

External panels are easily removed providing clear access to all components.

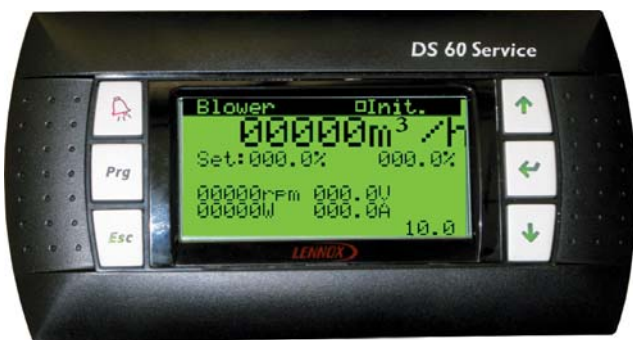


On the size 045 and above, the compressor's compartment is accessible through the LENNOX "Hinged Access coil". This very unique feature gives a very good access to the compressors while keeping the machine compactness.



## REFRIGERANT PRESSURE READINGS

No need to access to refrigerant pressure gauges. With the New BALTIC™, refrigerant pressures and superheat on each circuit can be read directly on the service display DS60 or a BMS as all units are equipped with high and low pressure sensors and refrigerant suction temperature probes.



## INDOOR AIR QUALITY

### M0 FIREPROOF INSULATION

Because, for LENNOX, health and safety issues cannot be compromised, all rooftops feature M0 fire proof insulation. This 65 kg/m<sup>3</sup> Rockwool insulation is mechanically fitted to the unit improving the safety of the rooftop against fire (the insulation will not burn and smoke will not be generated in case of fire). As standard, most of the doors and panels around the air treatment section of the new BALTIC™ already include double skin.

### eDRIVE™ VENTILATION SYSTEM

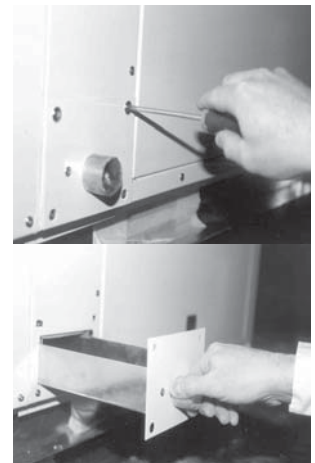
eDrive™ features a direct transmission assembly between the fan and motor ensuring that no belt particles can be carried away into the building. This ventilation system is compliant with EN13779 air quality norm.

### ANALOGUE DIRTY FILTER INDICATION

It is provided as standard by a differential pressure sensor that measures the pressure drop across the evaporator coil and filters. If this pressure drop is above 50Pa, the rooftop is considered to be operating. The exact pressure drop can be seen through the Intelligent CLIMATIC™60 service display or BMS. This feature further improves safety and reliability of the BALTIC™ rooftops. It prevents overheating of any device if the fan belt is broken. The set point between "dirty" and "clean" can be adjusted by the installer/users. (Default value is approximately 250Pa).

### REMOVABLE DRAIN PAN

All BALTIC™ units are equipped with a sloped removable drain pan and a drain trap supplied loose as a kit to be assembled on site. The drain pan can slide out of the insulated base of the unit to be cleaned, preventing growth of bacteria and algae in the drain pan.



### FILTERS

EU3 standard filters ensure easy service and maintenance. On start-up we recommend that you change these basic filters for ones with replaceable media and metal frame (G4 or G4 +F7100mm).

Note that filters fire classification compliance with local regulation must be checked.



## REFRIGERATION OPTIONS

### Low Noise Option

This option consists in replacing the standard AC condenser fans by high efficiency EC (Electronically Commutated) axial fans. The noise reduction is achieved by managing the fan rotation speed depending on outdoor temperature, building load and time zone. They are managed using the same Active Acoustic Attenuation algorithm as the NEOSYSTEM

### Automatic refrigerant leak detection

With this option the unit will be equipped with refrigerant high and low pressure sensor and suction / liquid temperature probes. The CLIMATIC™ 60 will then monitor the sub cooling and the superheat on each circuit to detect any refrigerant leak.

## FRESH AIR OPTIONS

As managing fresh air is becoming mandatory in most buildings economiser is now fitted as standard with the New BALTIC™

### Advanced control pack

Where a higher level of controllability is required to make the BALTIC™ even more flexible, LENNOX have compiled a pack that includes two advanced control features.

- **"Enthalpy control on economiser"**.

The CLIMATIC™ 60 and its humidity sensors (return air and fresh air) ensures that the economiser does not use 100% fresh air if the outside air has a higher enthalpy than the return air. This feature is relevant in regions where the relative humidity is high or when the desired room air condition is very dry.

- **"Humidity control"**

The CLIMATIC™ 60 and its humidity sensors, analyze dry and wet bulb temperatures to control dehumidification. Humidity control is only available if ambient temperature is in cooling or dead zone. The dehumidification algorithm can dry the air by passing it through the coil in cooling mode.

A specific function in the program can be activated to control the minimum supply air temperature, by maintaining it equal to the heating set point, using auxiliary heaters (Electric, Hot water coil or gas burner).

A proportional 0-10V contact is also available to control an external humidifier.

### Indoor air quality sensor

Indoor air quality is controlled from the CLIMATIC™ 60 main controller. A VOC (Volatile Organic Component) sensor detects the amount of CO2 in the ambient air between 0 and 2000PPM. (This obviously varies depending upon space occupancy levels). The VOC sensor sends a proportional signal (0-20mA) to the CLIMATIC™ 60 controller which will then modulate the fresh air.

## AIRFLOW CONFIGURATIONS AND ROOFCURBS

### Basic airflow configurations

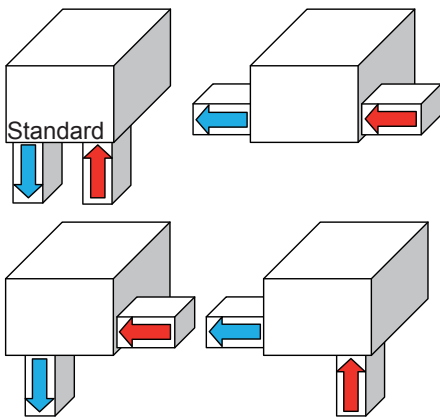
Unless specified otherwise when ordered, BALTIC™ rooftops are shipped with downflow supply and return configuration. Units can be configured before shipment with the required airflow configurations to suit the building needs.

Note that with the new BALTIC™ it is still possible to change the airflow configuration once the unit is assembled.

### Drive kits up to 800Pa

As all installations are different, it is useful to have the ability to adapt to different airflow and pressure conditions and this can be achieved through the selection of various choices of motors and drives that can provide up to 800Pa at nominal airflow rate. BALTIC™ features the new eDrive™ direct transmission variable speed drive. Each kit is then made of a motor a fan and the corresponding coupling. There are only five drive kits to cover the full airflow and pressure range for each unit. This means that commissioning on site can be done easily and quickly, minimizing installation costs.

### Air Sock Control:



It is a standard feature of the new BALTIC™ and it allows the air socks to be progressively filled with air on start up. It takes 1 minute to go from 0% of air to nominal air flow.

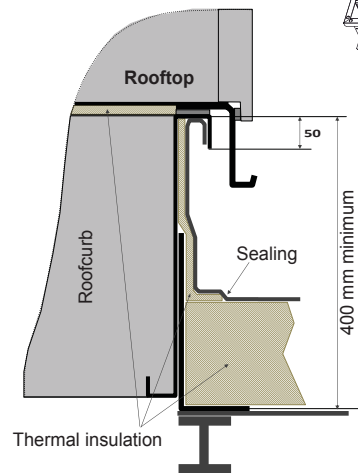
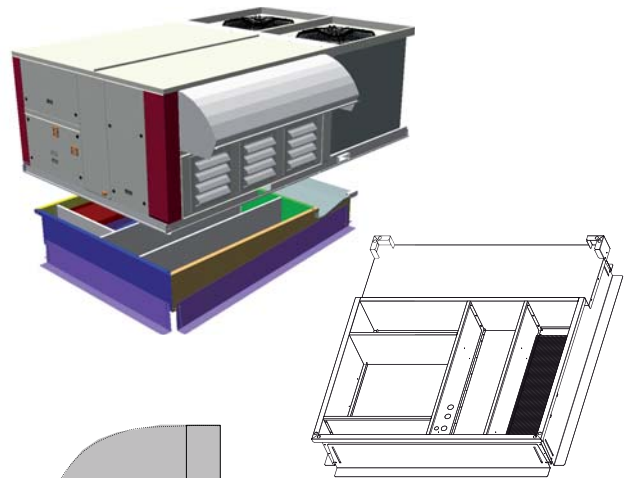
Note that in order to minimize energy consumption and reliability, it is highly recommended not to oversize the drive kits of the Rooftop during the selection.

### Non adjustable non assembled roofcurb.

A sturdy mounting frame designed for single package units providing an automatic weatherproof sealed rooftop installation. This roofcurb is shipped knocked down and must be assembled on site.

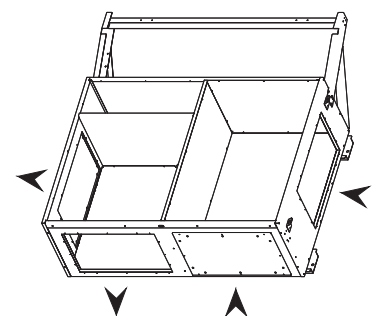
### Adjustable roofcurb.

The adjustable roofcurb are made of galvanized steel with 2.5mm thick mounting flanges. This adjustable roofcurb is designed to be installed on roofs with slopes up to 4 to 5% in all directions enabling the BALTIC™ to be compatible with most roof profiles. Downflow roof curbs are the easiest and cheapest way to install packaged air-conditioning systems to a single volume building. The frame can be secured directly to the roof structure thanks to its built-in adjustable flanges and sealing liner returns.



### Multidirectional roofcurb

This option is a required when customer wants to have horizontal return and horizontal supply on the same side. It is also required with the power exhaust fan or gravity exhaust damper options combined with horizontal return flow configuration.



EXHAUST AIR

UNIT WITH NO EXHAUST AIR OPTION

1 → 2: ESP (external static pressure) given in eLencal correspond to the static pressure between inlet and outlet of the unit and includes all options and accessories delivered with the unit with the exception of the ductwork. This external static pressure will be used to push the air through the supply and the return ductwork installed on site.

**ESP =**

**Supply duct pressure drop + return duct pressure drop**

**Example :**

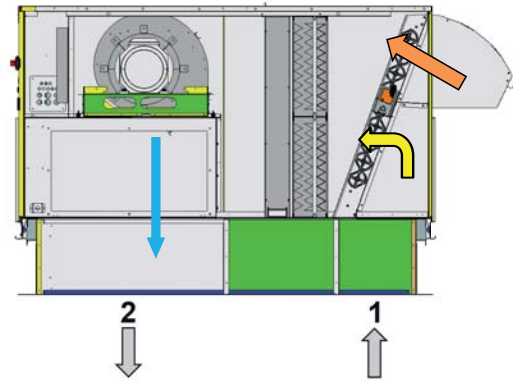
With an eLencal ESP = 350 Pa and a return ductwork pressure drop of 150 Pa → Remaining available static pressure for the supply ductwork = 200Pa

In any case, on a basic unit, the return ductwork pressure drop should be lower than 150 Pa.

The airflow is usually set during start up for a given fresh air rate. During normal operation the fresh air ratio will change and eventually the unit will go to full fresh air during free cooling operation. If the pressure drop in the return ductwork is high, the fan may trip on over current protection when it operates with full fresh air where the pressure drop is much lower.

If the return ductwork pressure drop is higher than 150 Pa :

- Select an extraction roofcurb which will include an extraction fan and the appropriate drive kit for the given airflow and pressure drop.
- BALTIC™ with eDrive™ includes constant airflow operation that can control and limit the airflow as the pressure drop reduces.



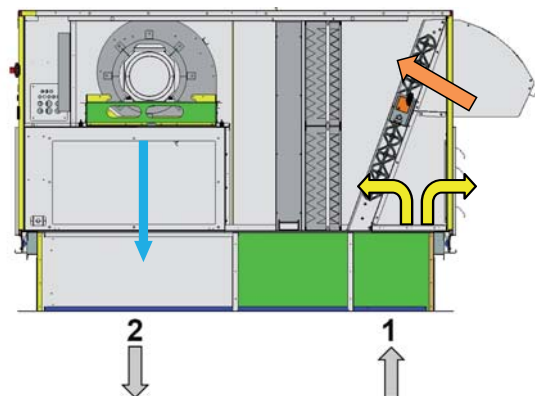
GRAVITY EXHAUST DAMPER

1 → 2: ESP “Supply” in eLencal

Gravity exhaust dampers are used to relief pressure when outside air is being introduced in a building with good air tightness.

Building air tightness	Medium
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	Low < 50 Pa
Building pressure control	Low control
Typical applications	Warehouses

Building air tightness	Low air tightness
Fresh air & Free cooling	Medium fresh air rate Free cooling possible
Pressure drop in the return ductwork	Medium < 150 Pa
Building pressure control	NO control
Typical applications	Existing hypermarkets and supermarkets (old buildings with high leakage rates)



## POWER EXHAUST FAN

1 → 2: ESP “Supply” in eLencal.

Power exhaust axial fans with gravity exhaust dampers provide exhaust air pressure relief when high levels of outside air are being introduced in the building with good air tightness.

It is interlocked to run when return air dampers are being closed and supply air blower is in operation. The power exhaust fan runs when outdoor air dampers are at least 50% open (adjustable by set point). It is also overload protected. A gravity exhaust damper is supplied with this option to prevent air from entering the unit when fan is off.

Building air tightness	Medium
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	Medium 50 Pa to 150 Pa
Building pressure control	Low control
Typical applications	Light commercial, petrol stations...

## EXTRACTION ROOFCURB

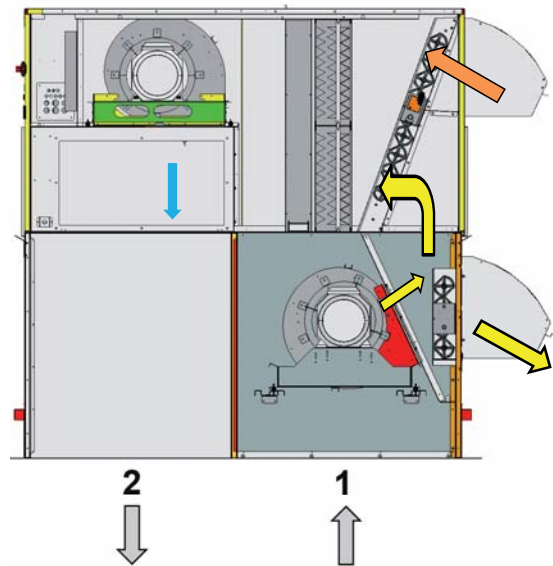
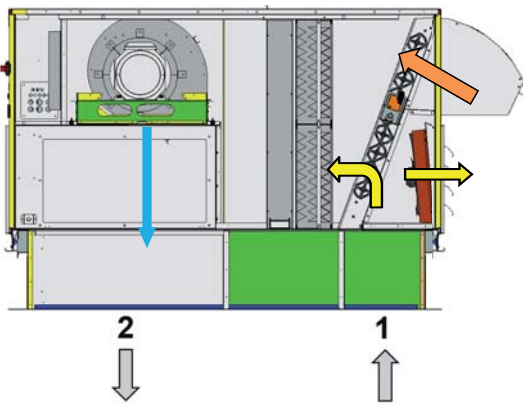
1 → 3: ESP Return in eLencal

3 → 2: ESP Supply in eLencal

Where system balancing is critical and return ductwork pressure drop is high, it is recommended to use extraction fan such as the one located in the extraction roofcurb.

A centrifugal fan installed with a 3rd damper (1 inside the Roofcurb + 2 inside the rooftop), is able to extract up to 300Pa with the nominal air flow of the unit. This roof curb can be used in either horizontal or downflow applications.

Building air tightness	High
Fresh air & Free cooling	High fresh air rate Free cooling
Pressure drop in the return ductwork	High > 150 Pa
Building pressure control	Pressure balance possible
Typical applications	Theatres, cinemas, data centres, new air tight buildings with long return ductworks



## INDOOR AIR QUALITY

### FILTERS

According to the EN 13779 the filtration level should be in accordance with the application and the environment.

Outdoor air quality	Indoor air quality		
	IDA2	IDA3	IDA4
	Medium	Moderate	Low
ODA1	F8	F7	F7
ODA2	F6/F8	F6/F7	G4/F6
ODA3	F8	F7	F6
ODA4	F6/F8	F6/F7	G4/F6
ODA5	F6/F9	F6/F7	G4/F6

The outdoor air is categorized in 5 levels, from ODA 1 where the air is pure except for temporary pollution such as pollen, up to ODA 5 with high concentrations of both gases and particles. The indoor air is also categorized in 4 levels. For rooftop applications :

IDA2: Offices, University, Retirement houses, Hotel lobbies, Museums, Pools

IDA3: Commercial buildings, cinemas, Theatres, Restaurants, Bars, Sport halls...

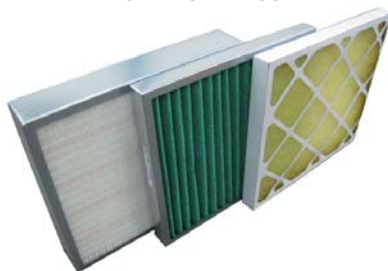
IDA4: Low Air Quality such as Industrial Buildings

When units are installed in an environment where it is expected that filters will be changed more frequently than usual, it is advisable that the end user includes metallic frame with washable or replaceable filter media.

#### **BALTIC™ Options:**

- G4 50 mm metallic frame with 90% gravimetric efficiency and high filtration area for low pressure drop synthetic media.
- G4 50 mm metallic frame with 90% gravimetric efficiency and replaceable media.
- G4 50 mm + F7 100 mm with 90% opacimetric efficiency and low pressure drop synthetic media.

With the new 100 mm F7 filter, the pressure drop is reduced by up to 50% compared to the previous 50 mm version. Lower pressure drop gives more available pressure for the customer and lower fan running costs. It also takes 4 times longer to get plugged with dirt reducing maintenance costs.



### DOUBLE SKIN

Where insulation protection against damages or when surface cleaning is required, double skin on insulated panels should be considered.

As standard the BALTIC™ is fitted with double skin doors and corner posts. The double skin option provides double skin panelling on all insulated surfaces including the roof. This will protect the insulation material, allow cleaning and prevent any insulation particles to be carried away by the passing air stream.

ENERGY RECOVERY

**eRECOVERY™ : HEAT RECOVERY ON FOOD REFRIGERATION**

eRecovery™ is the most advanced heat transfer and recovery solution to recover free heat produced by food refrigeration systems.

50% of supermarket total annual energy consumption is used to cool chilled and frozen food in display cases and cold rooms. Most supermarket applications with food refrigeration systems reject thermal energy to the ambient environment through air cooled condensers.

- With eRecovery™, free thermal energy is transferred to the sales area through a hot water coil located in the rooftop before the thermodynamic heating coil.
- eRecovery™ provides more than just preheating, as it is designed to cover up to 100% of the heating needs.
- It is also the most flexible heat recovery solution on the market as when heating demand is high, BALTIC™ can always supply additional thermodynamic and auxiliary heating.

**Freeze protection on eRecovery™ coil**

**From 8°C supply air temperature:**

The fresh air damper is closed ► 100% return air  
The 3 way valve is forced to open fully.

**From 6°C supply air temperature:**

Unit is stopped completely: no ventilation and no cooling and 3 way valve is still open.  
The Low Supply Air Temperature alarm is "ON"

In addition to that, the 3 ways is also opened at 10% (adjustable) if the outdoor air temperature falls below a pre set value. As this heat recovery hot water coil is located just after the fresh air intake it is highly recommended to use glycolated water in the circuit to prevent risks of freezing.

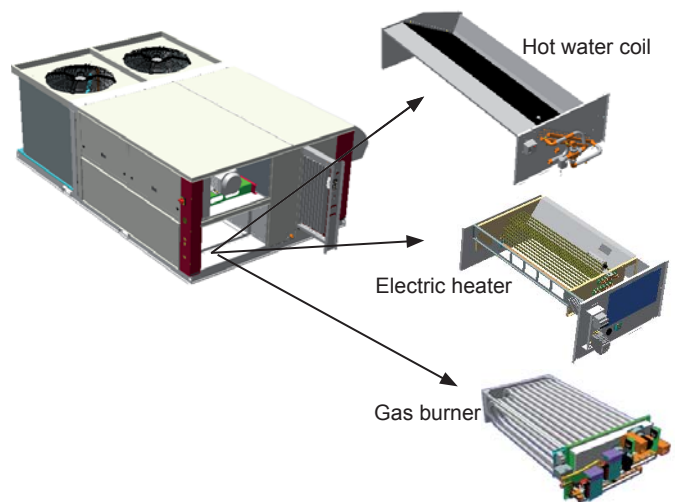
**ENERGY RECOVERY ON EXHAUST AIR**

Built around a EUROVENT certified plate heat exchanger equipped with bypass damper, the heat recovery module is fully controlled by the CLIMATIC™ 60.

It has been designed to handle free-cooling (when heat recovery shouldn't apply) and the exchanger is protected against freezing of the exhaust air.

This module is fitted as a standard with G4 filters on the fresh air section. This will protect the exchanger against outdoor dust and increase the global filtration capacity of the machine.

AUXILIARY HEATING OPTIONS



**ELECTRIC HEATER**

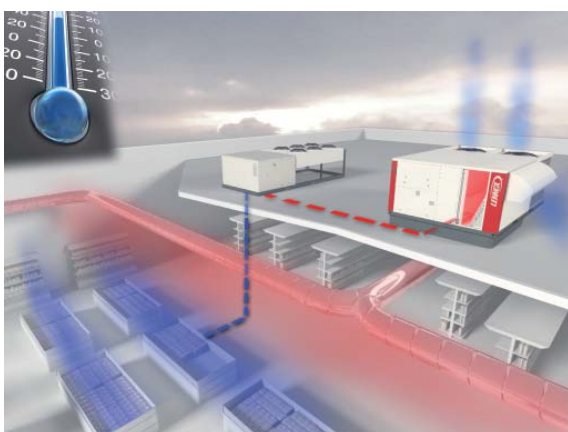
The auxiliary electric heater is made of shielded resistance heaters, which are smooth 6 W/cm<sup>2</sup> resistances. The heater is protected against high temperature with a thermal overload protection set at 90°C 150mm after the heating elements. For any rooftop unit size, two sizes of electric heater are available as option, S (standard) and H (high).

**C Box: from 024 to 042**

Standard heat 18 kW 2 Stages  
High heat 36 kW modulating (Triac)

**D & E Box: from 045 to 085**

Standard heat 27 kW 2 Stages  
High heat 54 kW modulating (Triac)



Capacity of the high heat heater can be limited electronically to an exact value through the CLIMATIC™ 60. To reduce installation time insure reliability, electric heaters are always factory fitted, fully wired and tested, prior to shipment.

**ELECTRIC PRE-HEATER**

The electric pre-heater is located before the main thermodynamic coil.

This option is designed to authorize heat pump operation with low mixed air temperature.(low outdoor temperature with units running with a high fresh air rate in winter)

**C Box: from 024 to 042**

- Standard heat 18kW modulating
- High heat 36kW modulating

**D Box: from 045 to 065**

- Standard heat 24kW modulating
- High heat 48kW modulating

**E Box: from 075 to 085**

- Standard heat 36kW modulating
- High heat 72kW modulating

**HOT WATER COIL**

Hot water coils provide auxiliary heating with a coil located after the thermodynamic coil and offer full modulation heating control through the use of a 3 way valve. The hot water coil, connections and valves are all pressure tested at 15 bars.

**Freeze protection on hot water coil**

***From 8°C supply air temperature:***

- The fresh air damper is closed ► 100% return air
- The 3 way valve is forced to open fully.

***From 6°C supply air temperature:***

- Unit is stopped completely: no ventilation and no cooling and 3 way valve is still open.
- The low supply air temperature alarm is “ON”

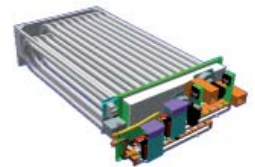
In any case the 3 way valve will be forced to open fully if the freeze protection thermostat located on the surface of the hot water coil reached the low temperature limit.(around 2°C adjustable mechanically)

In addition to that, the 3 ways is can be forced to open by 10% (adjustable) if the outdoor air temperature falls below a pre set value.

Hot water coils are always factory fitted, wired and fully tested, prior to shipment.

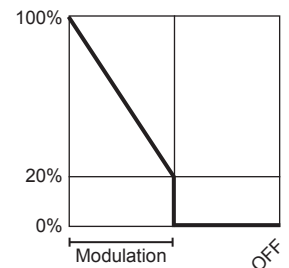
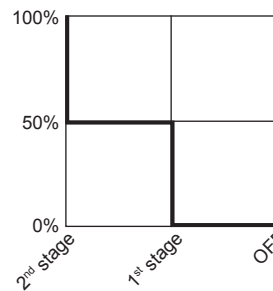
**GAS BURNER**

All BALTIC™ BAG and BAM units are fitted with a gas burner. It is a safe and reliable atmospheric gas burner made of aluminized steel tube heat exchanger designed to offer maximum heat transfer and 93% efficiency (PCI%).



It runs with natural gas 20 mbar and an operating range of 13-26 mbar.

The standard gas module offers 2 stages of control which helps in improving space comfort by avoiding large supply air temperature deviations. Where more capacity control is required a modulating version is available with high heat burner models. With the modulating gas burner the air flow rate in the burner is controlled as the gas flow is being reduced maintaining the burner to its highest efficiency level.



If required, an expansion device can be provided with the unit allowing it to operate with gas pressures of up to 300 mbar. A "propane gas" option at 37 mbar is also available. Gas fired rooftop cannot be installed inside a technical room.

ELECTRICAL OPTIONS

**FIRE-STAT**

It is a thermostat that provides a signal to switch off the unit, close the fresh air damper and open the return damper when the temperature in the return air stream is above an adjustable set point (Factory setting: 70°C).

**SMOKE DETECTOR**

Located downstream of the filter, the optical head of the smoke detector can detect any type of smoke. When this occurs the unit will stop operating, the return air damper will be fully closed and the fresh air damper will fully open while sending an alarm signal to the unit.

In accordance with the European norm, it is also compliant with the French regulation on public buildings.

**ENERGY METER**

The energy meter is now available on new BALTIC™. It measures and displays the following parameters:

- Average, total and maximum current, voltage and frequency for each phase.
- Active & reactive power
- Power factor (Cosφ)
- Total active & reactive energy consumption in Wh

Values for energy, current and absorbed power can be reset with password.

Some of these data will be collected by CLIMATIC™ 60 and made available in the BMS tables for ModBus, BACnet and Trend protocols (not available for LonWorks).

- Active & reactive power measurements (steps of 100W & kvar)
- Power factor (Cosφ)
- Active and reactive energy measurement (kWh & kvarh)
- Possibility to initialize the energy meter through password



CONTROL OPTIONS

**DC60™ MULTI-ROOFTOP COMFORT DISPLAY**



This is a remote controller for non-technical customer. It is designed to fit aesthetically inside a room and be very easy to use. It has a 24V supply to be connected to the rooftop and can be installed at maximum 150 meters away from the unit.

The graphical display gives information such as running mode of the unit, status of the fan, set point, % of fresh air,

outside air temperature. It is a “multi-rooftop” display that can be connected to a maximum of 8 rooftops.

Customer can set for each unit the temperature set point for a given time zone, switch the unit “On” or “Off” and adjust the clock. DC60 can display fault codes with a reset possibility, ambient, supply and outdoor temperature, fresh air damper position (%), time zone and operating mode pictogram, heating or cooling status. It is also able to display supply fan airflow rate (0-33-66-100%) and component status for compressors, defrost, condenser fans and auxiliary heaters.

**DS60™ SERVICE DISPLAY**

This new plug and play service display and controller allows service personal to set up to read and modify all unit parameters (Unit settings, operating time and number of compressor starts, low and high pressure reading, airflow rate of supply fan, and read the history of last 32 faults...).

This controller has been designed to be very user friendly, with 6 different keys and graphic display. It includes scrolling menus and full text (no codes) explanation. It is available in English or another alternate language.





### DRY CONTACT BOARD

This board has been developed for any customer who wants to take over the control of the unit using Digital or analogue input signal.

With this dry contact board option the customer can set:

- 4 digital inputs (On/Off, clear faults, various component unloading, heating priority modifications, thermostat orders...)
- 4 digital Outputs (alarms reporting, components status, scheduling time zone and operating mode status, cooling, heating, defrost and auxiliary heating status...)
- Up to 4 analogue inputs (external temperature humidity probes, fresh air input signal, force fan speed and temperature setpoint offset).
- 1 analogue output (Humidifier)

Note that CLIMATIC™ 60 controller always stays in charge of all safety algorithms, defrost operation and free cooling. This option is required to control the rooftop unit with a “universal thermostat”

### COMMUNICATION INTERFACES AND SUPERVISION:

The CLIMATIC™ ModBus interface is required to connect the unit to a BMS using "ModBus protocol". No other hardware than this board is required to have ModBus communication. One board required per rooftop. The ModBus interface is available in two versions to be connected with RS485 or TCP/IP depending on site requirements.

This board is also mandatory for any connection between one or several BALTIC™ units and LennoxADALINK, ADALINK service 3G or LennoxVision supervision solutions. One BMS interface required per rooftop.

### LonWorks® INTERFACE

This board is a LonWorks® interface, needed for any BMS with “Lon protocol” and RS485 connection to communicate with the New BALTIC™. No other hardware than this board is required to have LonWorks® dialog. One board required per rooftop. Variable list is available in the control IOM.

### BACnet® INTERFACE

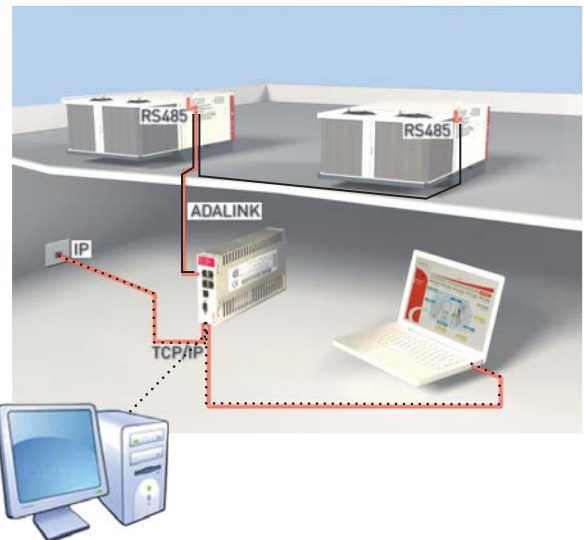
The CLIMATIC™ BACnet® interface is required to connect the unit to a BMS using BACnet® protocol. No other hardware than this board is required to have BACnet® communication. One board required per rooftop. The BACnet® interface is available in two versions to be connected with RS485 or TCP/IP depending on site requirements.

### ADALINK™

Adalink™ is Lennox’s simplest solution for HVAC installation supervision to better control the system and improve reliability and energy efficiency. One ADALINK™ can control up to 32 Lennox units on the same site (Chillers, rooftop or any other unit using CLIMATIC™ 50 controller and above). It displays a site picture with the status of each unit and allows the user to change set points, access alarm history and plot charts. It is the ideal tool to save time and money on maintenance with an expert mode giving access to all the parameters and set point of the unit.



- Easy local management of important settings
- Possibility to create macro commands to simplify setting and better control the installation
- Easy scheduling by unit or by zone with a smart user friendly drag and drop system
- Preventive maintenance to reduce downtime and improve comfort and energy efficiency at all time.
- Remote connection via LAN or 3G
- Site maintenance planning



ADALINK™ can also act as a real gateway to the unit, as it can be used locally or via LAN network with ModBus TCP/IP protocol.

Any BMS can read and write information in the rooftops units using ADALINK™ network. Both systems can run at the same time.

**BAC** Cooling only  
**BAG** Cooling only with gas fired heating

**BAH** Heat pump  
**BAM** Heat pump rooftop with gas fired heating

BALTIC™		024	030	038	042	
<b>Casing</b>		<b>C BOX</b>				
<b>Nominal airflow rate</b>	m <sup>3</sup> /h	4200	5700	6300	6900	
<b>Cooling mode (BAC - BAG)</b>						
Gross cooling capacity <sup>(1)</sup>	kW	23,8	30.0	38.2	40.7	
Net cooling capacity	kW	23.4	29.1	37.1	39.5	
Absorbed power - BAC units	kW	7.1	9.7	12.3	14.1	
Full load amps <sup>(1)</sup>	A	20	29	34	37	
Direct start up amps ratio Id/Ia		5.4	3.0	2.9	3.3	
Gross EER - BAC units <sup>(2)</sup>		3,61	3.51	3.48	3.27	
Net EER - BAC units <sup>(3)</sup>		3.28	3.02	3.01	2.80	
<b>Heating mode (BAH - BAM)</b>						
Net heating capacity <sup>(1)</sup>	kW	20.7	26.3	34.9	38.0	
Power input - BAH units	kW	5.58	7.27	10.24	11.46	
Gross COP - BAH units <sup>(2)</sup>		4.04	4.12	3.80	3.74	
Net global COP - BAH units <sup>(3)</sup>		3.72	3.61	3.40	3.31	
<b>Part load operation - (BAH - BAM) <sup>(4)</sup></b>						
Capacity load	%					
Net cooling capacity at part load	kW					
Absorbed power at part load (BAH units)	kW					
EER net cooling capacity at part load						
<b>Heating - Gas fired</b>						
Heating capacity	S <sup>(5)</sup>	kW	18.6	18.6	18.6	18.6
	H <sup>(5)</sup>		42.8	42.8	42.8	42.8
Power input	S <sup>(5)</sup>	kW	20	20	20	20
	H <sup>(5)</sup>		46	46	46	46
Thermal efficiency	%	93	93	93	93	
Gas flow (for natural gas at 20 mbar and 15 °C)	S <sup>(5)</sup>	m <sup>3</sup> /h	1.9	1.9	1.9	1.9
	H <sup>(5)</sup>		4.5	4.5	4.5	4.5
<b>Refrigeration circuit</b>						
Number of circuits		1	1	1	1	
Compressor assembly		Single	Tandem			
Expansion valve number and type		1 x Electronic expansion valve				
Refrigerant charge	kg	6.1	6.1	8.1	8.1	
Cooling and heating modes						
<b>Ventilation data</b>						
Minimum airflow	m <sup>3</sup> /h	3600	4600	5100	5500	
Nominal airflow rate		4200	5700	6300	6900	
Maximum airflow		5600	6800	8400	8400	
Maximum external static pressure <sup>(6)</sup>	Pa	800				
<b>Indoor fan (centrifugal fan - BAC - BAH)</b>						
Fan type		AT 15-11				
Motor size/Absorbed power <sup>(1)</sup>	kW	1.5/0.55	2.2/1.07	2.2/1.32	3.0/1.68	
Rotation speed	RPM	565	674	703	757	

(1) All data are at Eurovent conditions (400V/3Ph/50Hz at nominal airflow rate).

**Cooling :**

- Outdoor temperature = 35°C DB
- Entering coil temperature 27°C DB / 19°C WB

**Heating :**

- Outdoor temperature = 7°C DB / 6°C WB
- Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan

(3) Net EER = Net cooling capacity/Total absorbed power  
 Net COP = Net heating capacity/Total absorbed power

(4) Part load values according to ambient conditions, detailed in the standard 340/360 ANSI/ARI document.

Airconditioning : DB outdoor temp : 29,7 °C / DB indoor temp. : 26,7 °C / WB indoor temp. : 19,4 °C

(5) S = Standard heat / H = High heat

(6) At nominal airflow rate

(7) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

**BAC** Cooling only  
**BAG** Cooling only with gas fired heating

**BAH** Heat pump  
**BAM** Heat pump rooftop with gas fired heating

BALTIC™		024	030	038	042
<b>Indoor fan (centrifugal fan - BAG - BAM S)</b>					
Fan type		AT 15-11			
Motor size/Absorbed power (gas - S) <sup>(1)</sup>	kW	1.5/0.67	2.2/1.38	3.0/1.70	3.0/2.15
Rotation speed	RPM	644	791	834	891
<b>Outdoor fan (axial fan)</b>					
Number		1			
Motor power	kW	0.74	0.74	0.86	0.86
<b>Filter (standard)</b>					
Efficiency / Filter class		80-85% / G3			
Number of filters		4	4	4	4
Filter size	mmxmm	500 x 530 x 50			
<b>Acoustic data (100 Pa)</b>					
Outdoor sound power Standard unit <sup>(1)</sup>	dB(A)	80	80	81	82
Outdoor sound power Low noise unit <sup>(1)</sup>		77	77	78	79
Indoor blower outlet sound power Standard unit <sup>(1)</sup>		71	76	78	80
Outdoor sound power Gas unit <sup>(1)</sup>		80	81	81	82
Indoor blower outlet sound power Gas unit		72	78	79	81
<b>Operating limits - Cooling mode</b>					
Maxi. outdoor temperature Indoor 27 °C DB / 19°C WB <sup>(7)</sup>	°C	48			
Maxi. outdoor temperature with unloading		-	50		
Mini. outdoor temperature Indoor 20°C DB		-5			
Maxi. entering indoor coil temperature Outdoor 38°C DB		35			
Mini. entering indoor coil temperature Outdoor 35°C DB		18			
<b>Operating limits - Heating mode</b>					
Mini. outdoor temperature Indoor 20 °C DB <sup>(7)</sup>	°C	-12			
Mini. entering indoor coil temperature Outdoor 7°C DB		5			
<b>Construction</b>					
Casing material		Precoated galvanised steel			
Casing minimum thickness	cm	0,1			
Painting		RAL 9002			
Insulation class		M0			
<b>Dimensions</b>					
Length (Standard/Gas)	mm	2283	2283	2283	2283
Height	mm	1240	1240	1240	1240
Width without fresh air hood	mm	2250	2250	2250	2250
Weight - Standard unit (BAC)	kg	696	711	726	726
Weight - Gas unit (BAG S)	kg	739	754	769	769
Weight - Gas unit (BAG H)	kg	758	773	788	788

(1) All data are at Eurovent conditions (400V/3Ph/50Hz at nominal airflow rate).

- Cooling :**
- Outdoor temperature = 35°C DB
  - Entering coil temperature 27°C DB / 19°C WB
- Heating :**
- Outdoor temperature = 7°C DB / 6°C WB
  - Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan

(3) Net EER = Net cooling capacity/Total absorbed power  
 Net COP = Net heating capacity/Total absorbed power

(4) Part load values according to ambient conditions, detailed in the standard 340/360 ANSI/ARI document.

Airconditioning : DB outdoor temp : 29,7 °C / DB indoor temp. : 26,7 °C / WB indoor temp. : 19,4 °C

(5) S = Standard heat / H = High heat

(6) At nominal airflow rate

(7) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

**BAC** Cooling only  
**BAG** Cooling only with gas fired heating

**BAH** Heat pump  
**BAM** Heat pump rooftop with gas fired heating

BALTIC™		045	052	057	065	075	085	
<b>Casing</b>		<b>D BOX</b>				<b>E BOX</b>		
<b>Nominal airflow rate</b>	m <sup>3</sup> /h	7100	8300	9900	11100	13500	14500	
<b>Cooling mode (BAC - BAG)</b>								
Gross cooling capacity <sup>(1)</sup>	kW	44,8	51,1	57,1	65,2	76,5	83,5	
Net cooling capacity	kW	43,9	49,8	55,2	62,5	74,1	80,7	
Absorbed power - BAC units	kW	14,1	16,6	18,2	22,3	24,7	28,5	
Full load amps <sup>(1)</sup>	A	38	48	56	60	68	79	
Direct start up amps ratio Id/Ia		3,4	2,2	2,0	2	1,9	2,1	
Gross EER - BAC units <sup>(2)</sup>		3,46	3,45	3,64	3,45	3,54	3,37	
Net EER - BAC units <sup>(3)</sup>		3,11	3,01	3,03	2,81	3,0	2,83	
<b>Heating mode (BAH - BAM)</b>								
Net heating capacity <sup>(1)</sup>	kW	40,8	46,3	54,4	62,3	73,5	80,1	
Absorbed power - BAH units	kW	11,9	13,5	15,9	19,3	21,6	25,0	
Gross COP - BAH units <sup>(2)</sup>		3,71	3,80	3,91	3,75	3,85	3,62	
Net global COP - BAH units <sup>(3)</sup>		3,42	3,41	3,41	3,22	3,41	3,20	
<b>Part load operation - (BAH - BAM) <sup>(4)</sup></b>								
Capacity load	%							
Net cooling capacity at part load	kW							
Absorbed power at part load (BAH units)	kW							
EER net cooling capacity at part load								
<b>Heating - Gas fired</b>								
Heating capacity	S <sup>(5)</sup>	kW	30,7	30,7	30,7	30,7	55,8	55,8
	H <sup>(5)</sup>		55,8	55,8	55,8	55,8	112	112
Power input	S <sup>(5)</sup>	kW	33	33	33	33	60	60
	H <sup>(5)</sup>		60	60	60	60	120	120
Thermal efficiency	%	93	93	93	93	92	92	
Gas flow (for natural gas at 20 mbar and 15 °C)	S <sup>(5)</sup>	m <sup>3</sup> /h	3,2	3,2	3,2	3,2	5,7	5,7
	H <sup>(5)</sup>		5,7	5,7	5,7	5,7	11,5	11,5
<b>Refrigeration circuit</b>								
Number of circuits		2	2	2	2	2	2	
Compressor assembly		2 x Single	Tandem + Single	Tandem				
Expansion valve number and type		2 x Electronic expansion valve						
Refrigerant charge	kg	11,5	11,6	15,0	15,2	21,0	21,0	
Cooling and heating modes								
<b>Ventilation data</b>								
Minimum airflow	m <sup>3</sup> /h	5700	6700	7900	8900	10500	10500	
Nominal airflow rate		7100	8300	9900	11100	13500	14500	
Maximum airflow		9700	11200	13100	13100	17000	19000	
Maximum external static pressure <sup>(6)</sup>	Pa	800						
<b>Indoor fan (centrifugal fan - BAC - BAH)</b>								
Fan type		ADH 355 L				AT 15-11 G2L		
Motor size/Absorbed power <sup>(1)</sup>	kW	2.2/1.19	3.0/1.71	4.0/2.55	5.5/3.46	5.5/3.12	7.5/3.75	
Rotation speed	RPM	658	727	809	886	758	805	

(1) All data are at Eurovent conditions (400V/3Ph/50Hz at nominal airflow rate).

**Cooling :**

- Outdoor temperature = 35°C DB
- Entering coil temperature 27°C DB / 19°C WB

**Heating :**

- Outdoor temperature = 7°C DB / 6°C WB
- Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan

(3) Net EER = Net cooling capacity/Total absorbed power  
 Net COP = Net heating capacity/Total absorbed power

(4) Part load values according to ambient conditions, detailed in the standard 340/360 ANSI/ARI document.

Airconditioning : DB outdoor temp : 29,7 °C / DB indoor temp. : 26,7 °C / WB indoor temp. : 19,4 °C

(5) S = Standard heat / H = High heat

(6) At nominal airflow rate

(7) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

**BAC** Cooling only  
**BAG** Cooling only with gas fired heating

**BAH** Heat pump  
**BAM** Heat pump rooftop with gas fired heating

BALTIC™		045	052	057	065	075	085
<b>Indoor fan (centrifugal fan - BAG - BAM S units)</b>							
Fan type		ADH 355 L				AT 15-11 G2L	
Motor size/Absorbed power (gas - S) <sup>(1)</sup>	kW	3,0/1.47	4,0/2.15	5,5/3.20	5,5/4.38	7,5/4.01	7,5/4.89
Rotation speed	RPM	750	840	942	1039	906	963
<b>Outdoor fan (axial fan)</b>							
Number		2					
Motor power	kW	1,48	1,48	1,72	1,72	2,9	2,9
<b>Filter (standard)</b>							
Efficiency / Filter class		80-85% / G3					
Number of filters		6	6	6	6	8	8
Filter size	mmxmm	500 x 530 x 50					
<b>Acoustic data (100 Pa)</b>							
Outdoor sound power Standard unit <sup>(1)</sup>	dB(A)	83	83	84	84	83	84
Outdoor sound power Low noise unit <sup>(1)</sup>		80	80	81	82	80	81
Indoor blower outlet sound power Standard unit <sup>(1)</sup>		74	77	81	83	83	84
Outdoor sound power Gas unit <sup>(1)</sup>		83	83	84	84	84	85
Indoor blower outlet sound power Gas unit		75	78	82	84	84	86
<b>Operating limits - Cooling mode</b>							
Maxi. outdoor temperature Indoor 27 °C DB / 19°C WB <sup>(7)</sup>	°C	48					
Maxi. outdoor temperature with unloading		-	50				
Mini. outdoor temperature Indoor 20°C DB		-5					
Maxi. entering indoor coil temperature Outdoor 38°C DB		35					
Mini. entering indoor coil temperature Outdoor 35°C DB		18					
<b>Operating limits - Heating mode</b>							
Mini. outdoor temperature Indoor 20 °C DB <sup>(7)</sup>	°C	-12					
Mini. entering indoor coil temperature Outdoor 7°C DB		5					
<b>Construction</b>							
Casing material		Precoated galvanised steel					
Casing minimum thickness	cm	0,1					
Painting		RAL 9002					
Insulation class		M0					
<b>Dimensions</b>							
Length (Standard/Gas)	mm	2783	2783	2783	2783	3663	3663
Height	mm	1240	1240	1240	1240	1240	1240
Width without fresh air hood	mm	2250	2250	2250	2250	2250	2250
Weight - Standard unit (BAC)	kg	937	952	967	982	1150	1150
Weight - Gas unit (BAG S)	kg	970	985	1000	1015	1225	1225
Weight - Gas unit (BAG H)	kg	992	1007	1022	1037	1285	1285

(1) All data are at Eurovent conditions (400V/3Ph/50Hz at nominal airflow rate).

**Cooling :**

- Outdoor temperature = 35°C DB
- Entering coil temperature 27°C DB / 19°C WB

**Heating :**

- Outdoor temperature = 7°C DB / 6°C WB
- Indoor temperature = 20°C DB

(2) Including compressor + outdoor axial fan + indoor centrifugal fan

(3) Net EER = Net cooling capacity/Total absorbed power  
 Net COP = Net heating capacity/Total absorbed power

(4) Part load values according to ambient conditions, detailed in the standard

340/360 ANSI/ARI document.

Airconditioning : DB outdoor temp : 29,7 °C / DB indoor temp. : 26,7 °C / WB indoor temp. : 19,4 °C

(5) S = Standard heat / H = High heat

(6) At nominal airflow rate

(7) Cooling and heating operating limits are given for steady operation with specific temperature conditions.

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

HEAT PUMP  
COOLING CAPACITY AND ABSORBED POWER

**024**

BAH-BAM 024		25°C			30°C			35°C			40°C			45°C			48°C					
Airflow	Rate	IDWB	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	
		Entering air temperature																				
Minimum	3600	16	21	23,0	15,6	4,5	22,2	15,2	5,1	21,2	14,7	5,6	19,9	14,3	6,3	18,5	13,7	7,0	17,5	13,3	7,4	
			24	23,1	19,4	4,5	22,3	19,0	5,1	21,3	18,6	5,7	20,1	18,1	6,3	18,7	17,4	7,0	17,7	17,0	7,5	
			27	23,3	23,0	4,6	22,5	22,5	5,1	21,7	21,7	5,7	20,8	20,8	6,4	19,5	19,5	7,1	18,7	18,7	7,6	
		30	24,4	24,4	4,6	23,8	23,8	5,2	23,0	23,0	5,8	22,0	22,0	6,5	20,7	20,7	7,2	19,8	19,8	7,7		
		19	24	25,0	15,4	4,7	24,1	15,0	5,2	23,0	14,5	5,8	21,7	14,0	6,4	20,1	13,5	7,2	19,1	13,1	7,6	
			27	25,2	19,2	4,7	24,3	18,8	5,2	23,2	18,4	5,8	21,8	17,9	6,4	20,3	17,3	7,2	19,3	16,9	7,6	
	30		25,4	22,8	4,7	24,5	22,5	5,2	23,4	22,2	5,8	22,0	21,7	6,5	20,7	20,7	7,2	19,8	19,8	7,7		
	22	16	27	25,7	25,7	4,7	25,1	25,1	5,3	24,3	24,3	5,9	23,2	23,2	6,6	21,8	21,8	7,3	20,9	20,9	7,8	
			30	27,2	15,2	4,8	26,2	14,7	5,4	25,0	14,3	6,0	23,5	13,8	6,6	21,9	13,3	7,3	20,8	13,0	7,8	
			33	27,4	19,0	4,8	26,4	18,6	5,4	25,1	18,2	6,0	23,7	17,7	6,6	22,1	17,2	7,4	21,0	16,8	7,9	
		19	27	27,6	22,5	4,9	26,5	22,3	5,4	25,3	21,9	6,0	23,9	21,5	6,7	22,3	20,9	7,4	21,2	20,4	7,9	
			30	27,8	25,8	4,9	26,8	25,7	5,4	25,6	25,5	6,0	24,4	24,4	6,7	23,1	23,1	7,5	22,1	22,1	8,0	
33			21	23,7	16,8	4,6	22,8	16,4	5,1	21,7	15,9	5,7	20,5	15,4	6,3	19,0	14,8	7,0	18,0	14,4	7,5	
Nominal	4200	16	24	23,8	21,0	4,6	23,0	20,7	5,1	21,9	20,3	5,7	20,7	19,7	6,3	19,2	19,0	7,0	18,3	18,3	7,5	
			27	24,2	24,2	4,6	23,6	23,6	5,2	22,8	22,8	5,8	21,7	21,7	6,4	20,4	20,4	7,2	19,5	19,5	7,7	
			30	25,6	25,6	4,7	25,0	25,0	5,3	24,1	24,1	5,9	23,0	23,0	6,6	21,6	21,6	7,3	20,7	20,7	7,8	
		19	24	25,7	16,6	4,7	24,8	16,1	5,3	23,6	15,7	5,8	22,2	15,2	6,5	20,6	14,7	7,2	19,6	14,3	7,7	
			27	25,9	20,8	4,7	25,0	20,5	5,3	23,8	20,1	5,9	22,4	19,6	6,5	20,8	18,9	7,2	19,8	18,4	7,7	
			30	26,1	24,9	4,8	25,2	24,7	5,3	24,1	24,1	5,9	23,0	23,0	6,5	21,6	21,6	7,3	20,7	20,7	7,8	
	22	16	33	27,1	27,1	4,8	26,4	26,4	5,4	25,4	25,4	6,0	24,3	24,3	6,7	22,8	22,8	7,4	21,9	21,9	8,0	
			30	27,9	16,3	4,9	26,9	15,9	5,4	25,6	15,4	6,0	24,1	15,0	6,7	22,4	14,5	7,4	21,3	14,2	7,9	
			33	28,1	20,6	4,9	27,1	20,3	5,4	25,8	19,9	6,0	24,3	19,4	6,7	22,6	18,8	7,4	21,5	18,4	7,9	
		19	30	28,3	24,7	4,9	27,3	24,4	5,5	26,0	24,1	6,0	24,5	23,6	6,7	22,9	22,9	7,4	21,9	21,9	7,9	
			33	28,6	28,5	4,9	27,8	27,8	5,5	26,8	26,8	6,1	25,6	25,6	6,8	24,1	24,1	7,6	23,1	23,1	8,1	
			36	24,8	19,1	4,7	23,8	18,8	5,2	22,6	18,3	5,8	21,2	17,8	6,4	19,6	17,2	7,1	18,6	16,7	7,5	
Maximum	5600	16	24	25,1	24,4	4,7	24,0	24,0	5,2	23,1	23,1	5,8	21,9	21,9	6,5	20,4	20,4	7,2	19,5	19,5	7,7	
			27	26,4	26,4	4,8	25,6	25,6	5,3	24,5	24,6	5,9	23,3	23,3	6,6	21,8	21,8	7,3	20,8	20,8	7,8	
			30	28,0	28,0	4,9	27,1	27,1	5,4	26,0	26,0	6,0	24,7	24,7	6,7	23,2	23,1	7,5	22,1	22,1	8,0	
		19	24	26,9	18,8	4,8	25,9	18,5	5,3	24,6	18,1	5,9	23,1	17,6	6,6	21,4	17,0	7,3	20,3	16,6	7,8	
			27	27,2	24,3	4,8	26,1	24,0	5,4	24,8	23,5	5,9	23,3	23,0	6,6	21,8	21,8	7,3	20,8	20,8	7,8	
			30	27,9	27,9	4,9	27,1	27,1	5,4	26,0	26,0	6,0	24,7	24,7	6,7	23,2	23,2	7,5	22,1	22,1	8,0	
	22	16	33	29,6	29,6	5,0	28,7	28,7	5,6	27,5	27,5	6,2	26,2	26,2	6,9	24,6	24,6	7,7	23,5	23,5	8,2	
			30	29,2	18,6	5,0	28,0	18,2	5,5	26,6	17,8	6,1	25,0	17,4	6,8	23,2	16,9	7,5	22,1	16,5	8,0	
			33	29,5	24,1	5,0	28,3	23,7	5,5	26,9	23,3	6,1	25,3	22,8	6,8	23,5	22,2	7,5	22,3	21,7	8,0	
		19	30	29,7	29,3	5,0	28,7	28,7	5,6	27,5	27,5	6,2	26,2	26,2	6,9	24,6	24,6	7,7	23,5	23,5	8,2	
			33	31,2	31,2	5,1	30,3	30,3	5,7	29,1	29,1	6,3	27,7	27,7	7,1	-	-	-	-	-	-	-

HEATING CAPACITY AND ABSORBED POWER

BAH-BAM 024		20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C																				
Airflow	Rate	Dry bulb		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA																			
		Minimum		3600		Entering air temperature-outdoor air temperature																														
8°C	28,5																			3,9	25,7	3,6	23,2	3,4	21,7	3,3	20,8	3,2	18,7	3,0						
11°C	28,1																			4,2	25,3	3,9	22,7	3,7	21,2	3,6	20,3	3,5	18,2	3,3	16,4	3,1	14,7	2,9		
14°C	27,7																			4,5	24,8	4,2	22,2	4,0	20,8	3,8	19,9	3,7	17,8	3,5	15,9	3,3	14,2	3,1		
17°C	27,3																			4,8	24,5	4,5	21,9	4,3	20,4	4,1	19,5	4,0	17,4	3,8	15,5	3,6	13,8	3,4		
20°C	27,0																			5,1	24,1	4,8	21,5	4,5	20,1	4,4	19,1	4,3	17,0	4,0	15,1	3,8	13,4	3,6		
23°C	26,8																			5,3	23,9	5,1	21,2	4,8	19,8	4,6	18,8	4,5	16,7	4,3	14,8	4,1	13,1	3,9		
26°C	26,5																			5,6	23,7	5,3	21,0	5,0	19,5	4,8	18,6	4,7	16,4	4,5	14,5	4,3	12,8	4,1		
Nominal	4200																			8°C	28,9	3,7	26,1	3,5	23,5	3,3	22,1	3,1	21,1	3,1						
																				11°C	28,4	4,0	25,6	3,7	23,0	3,5	21,5	3,4	20,6	3,3	18,5	3,1	16,6	2,9		
																				14°C	28,0	4,2	25,1	4,0	22,5	3,8	21,1	3,6	20,2	3,6	18,0	3,4	16,1	3,2	14,5	3,0
																				17°C	27,6	4,5	24,8	4,3	22,1	4,1	20,7	3,9	19,7	3,8	17,6	3,6	15,7	3,4	14,0	3,3
		20°C	27,3	4,8	24,4	4,6	21,8	4,3	20,3	4,2	19,4	4,1	17,2	3,9	15,3	3,7	13,6	3,5																		
		23°C	27,0	5,1	24,1	4,8	21,5	4,6	20,0	4,4	19,0	4,4	16,9	4,1	14,9	3,9	13,2	3,8																		
Maximum	5600	26°C	26,8	5,3	23,9	5,1	21,2	4,8	19,7	4,7	18,8	4,6	16,6	4,4	14,6	4,2	12,9	4,0																		
		8°C	29,6	3,3	26,8	3,2																														
		11°C	29,1	3,6	26,2	3,4	23,6	3,2	22,1	3,1	21,2	3,0																								
		14°C	28,6	3,9	25,7	3,7	23,0	3,5	21,6	3,4	20,6	3,3	18,4	3,1	16,5	3,0	14,8	2,8																		
		17°C	28,2	4,1	25,3	3,9	22,6	3,7	21,1	3,6	20,2	3,6	18,0	3,4	16,0	3,2	14,3	3,1																		
		20°C	27,8	4,4	24,9	4,2	22,2	4,0	20,7	3,9	19,7	3,8	17,5	3,7	15,6	3,5	13,8	3,4																		
23°C	27,4	4,7	24,5	4,5	21,8	4,3	20,3	4,2	19,3	4,1	17,1	3,9	15,1	3,8	13,4	3,7																				
26°C	27,2	5,0	24,2	4,8	21,5	4,6	20,0	4,5	19,0	4,4	16,8	4,2	14,8	4,1	13,0	4,0																				

PT	Gross total cooling / heating capacity in kW	Control absorbed power		<b>0,1 kW</b>
PS	Sensible cooling capacity in kW	Supply fan absorbed power		BAC/BAH <b>0,55 kW</b>
PA	Compressor absorbed power			BAG/BAM <b>0,67 kW</b>
IDWB	Indoor wet bulb	Condensing fan absorbed power (all)		<b>0,74 kW</b>
IDDB	Indoor dry bulb	Data according to Eurovent standard conditions		<b>XXX</b>

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

HEAT PUMP  
COOLING CAPACITY AND ABSORBED POWER

**030**

BAH-BAM 030		25°C			30°C			35°C			40°C			45°C			48°C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
Minimum airflow	4600	IDWB	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		Nominal airflow rate	5700	Entering air temperature	16	21	26,2	17,9	5,8	27,8	19,2	6,7	26,3	18,5	7,7	24,4	17,8	8,7	22,2	16,8	9,7	20,6	16,1	10,2	24	29,1	24,5	5,8	28,0	23,9	6,7	26,5	23,3	7,7	24,6	22,4	8,7	22,4	21,2	9,7	20,9	20,4	10,2	27	29,3	29,0	5,8	28,4	28,4	6,8	27,2	27,2	7,8	25,6	25,6	8,9	23,6	23,6	9,9	22,3	22,3	10,4	30	30,8	30,8	5,9	30,0	30,0	6,8	28,7	28,7	7,8	27,1	27,1	8,9	25,1	25,1	9,9	23,7	23,7	10,4	19	24	31,5	19,6	5,9	30,2	18,9	6,8	28,6	18,3	7,8	26,6	17,6	8,8	24,2	16,7	9,8	22,6	16,1	10,4	27	31,7	24,3	5,9	30,5	23,8	6,8	28,8	23,1	7,8	26,9	22,3	8,8	24,5	21,3	9,8	22,9	20,5	10,4	30	32,0	28,9	5,9	30,7	28,4	6,8	29,1	27,8	7,8	27,2	26,9	8,8	25,1	25,1	9,9	23,7	23,7	10,5	33	32,6	32,6	5,9	31,7	31,7	6,8	30,4	30,4	7,8	28,7	28,7	8,9	26,7	26,7	10,0	25,2	25,2	10,5	22	27	34,2	19,3	6,0	32,8	18,6	6,9	31,1	18,0	7,9	29,0	17,3	8,9	26,5	16,6	9,9	24,8	16,0	10,5	30	34,5	24,1	6,0	33,1	23,5	6,9	31,4	22,9	7,9	29,3	22,1	8,9	26,8	21,2	10,0	25,1	20,6	10,6	33	34,8	28,7	6,1	33,4	28,2	6,9	31,7	27,6	7,9	29,6	26,8	8,9	27,2	25,8	10,0	25,5	25,0	10,6	36	35,1	33,0	6,1	33,8	32,6	6,9	32,2	32,2	7,9	30,5	30,5	9,0	28,4	28,4	10,0				16	21	30,1	21,8	5,9	28,9	21,2	6,7	27,3	20,6	7,7	25,3	19,8	8,8	22,9	18,8	9,8	21,3	18,0	10,3	24	30,4	27,4	5,9	29,2	26,9	6,8	27,6	26,1	7,7	25,6	25,2	8,8	23,5	23,5	9,9	22,1	22,1	10,4	27	31,3	31,3	5,9	30,3	30,3	6,8	29,0	29,0	7,8	27,2	27,2	8,9	25,1	25,1	9,9	23,6	23,6	10,4	30	33,1	33,1	6,0	32,1	32,1	6,9	30,7	30,7	7,9	28,9	28,9	8,9	26,7	26,7	10,0	25,2	25,2	10,5	19	24	32,8	21,5	6,0	31,4	21,0	6,8	29,7	20,3	7,8	27,6	19,6	8,8	25,1	18,7	9,9	23,4	18,0	10,5	27	33,1	27,3	6,0	31,7	26,7	6,9	30,0	26,1	7,8	27,9	25,2	8,9	25,4	24,0	9,9	23,8	23,2	10,5	30	33,4	32,8	6,0	32,1	32,1	6,9	30,7	30,7	7,9	28,9	28,9	8,9	26,8	26,8	10,0	25,3	25,3	10,5	33	35,0	35,0	6,0	34,0	34,0	6,9	32,5	32,5	7,9	30,7	30,7	9,0	28,5	28,5	10,0				22	27	35,7	21,2	6,1	34,2	20,6	6,9	32,3	20,0	7,9	30,0	19,4	8,9	27,4	18,6	10,0	25,7	18,0	10,6	30	36,0	27,0	6,1	34,5	26,5	7,0	32,6	25,9	7,9	30,4	25,1	8,9	27,8	24,1	10,0	26,1	23,3	10,6	33	36,4	32,7	6,1	34,9	32,2	7,0	33,0	31,6	7,9	30,8	30,7	9,0	28,5	28,5	10,0				36	37,1	37,1	6,1	36,0	36,0	7,0	34,5	34,5	8,0	32,6	32,6	9,0	30,3	30,3	10,1				Maximum airflow	6800	Entering air temperature	16	21	31,0	23,6	5,9	29,7	23,0	6,8	27,9	22,4	7,7	25,8	21,5	8,8	23,3	20,4	9,9	21,7	19,6	10,4	24	31,4	30,1	5,9	30,0	29,5	6,8	28,5	28,4	7,8	26,6	26,6	8,9	24,4	24,4	9,9	22,8	22,8	10,4	27	32,9	32,9	6,0	31,8	31,8	6,9	30,3	30,3	7,9	28,4	28,4	8,9	26,1	26,2	10,0	24,6	24,6	10,5	30	34,9	34,9	6,1	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				19	24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,1	29,9	29,9	10,1				22	27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3	36,3	8,1	34,3	34,3	9,1				
16	21					30,1	21,8	5,9	28,9	21,2	6,7	27,3	20,6	7,7	25,3	19,8	8,8	22,9	18,8	9,8	21,3	18,0	10,3	24	30,4	27,4	5,9	29,2	26,9	6,8	27,6	26,1	7,7	25,6	25,2	8,8	23,5	23,5	9,9	22,1	22,1	10,4	27	31,3	31,3	5,9	30,3	30,3	6,8	29,0	29,0	7,8	27,2	27,2	8,9	25,1	25,1	9,9	23,6	23,6	10,4	30	33,1	33,1	6,0	32,1	32,1	6,9	30,7	30,7	7,9	28,9	28,9	8,9	26,7	26,7	10,0	25,2	25,2	10,5	19		24	32,8	21,5	6,0	31,4	21,0	6,8	29,7	20,3	7,8	27,6	19,6	8,8	25,1	18,7	9,9	23,4	18,0	10,5	27	33,1	27,3	6,0	31,7	26,7	6,9	30,0	26,1	7,8	27,9	25,2	8,9	25,4	24,0	9,9	23,8	23,2	10,5	30	33,4	32,8	6,0	32,1	32,1	6,9	30,7	30,7	7,9	28,9	28,9	8,9	26,8	26,8	10,0	25,3	25,3	10,5	33	35,0	35,0	6,0	34,0	34,0	6,9	32,5	32,5	7,9	30,7	30,7	9,0	28,5	28,5	10,0					22	27	35,7	21,2	6,1	34,2	20,6	6,9	32,3	20,0	7,9	30,0	19,4	8,9	27,4	18,6	10,0	25,7	18,0	10,6	30	36,0	27,0	6,1	34,5	26,5	7,0	32,6	25,9	7,9	30,4	25,1	8,9	27,8	24,1	10,0	26,1	23,3	10,6	33	36,4	32,7	6,1	34,9	32,2	7,0	33,0	31,6	7,9	30,8	30,7	9,0	28,5	28,5	10,0				36	37,1	37,1	6,1	36,0	36,0	7,0	34,5	34,5	8,0	32,6	32,6	9,0	30,3	30,3	10,1					Maximum airflow	6800	Entering air temperature	16	21	31,0	23,6	5,9	29,7	23,0	6,8	27,9	22,4	7,7	25,8	21,5	8,8	23,3	20,4	9,9	21,7	19,6	10,4	24	31,4	30,1	5,9	30,0	29,5	6,8	28,5	28,4	7,8	26,6	26,6	8,9	24,4	24,4	9,9	22,8	22,8	10,4	27	32,9	32,9	6,0	31,8	31,8	6,9	30,3	30,3	7,9	28,4	28,4	8,9	26,1	26,2	10,0	24,6	24,6	10,5	30	34,9	34,9	6,1	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0		28,0	10,0				19	24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,1		29,9	29,9	10,1				22	27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3	36,3	8,1	34,3	34,3					9,1																																																																																																																																																																																																																																			
	19					24	32,8	21,5	6,0	31,4	21,0	6,8	29,7	20,3	7,8	27,6	19,6	8,8	25,1	18,7	9,9	23,4	18,0	10,5	27	33,1	27,3	6,0	31,7	26,7	6,9	30,0	26,1	7,8	27,9	25,2	8,9	25,4	24,0	9,9	23,8	23,2	10,5	30	33,4	32,8	6,0	32,1	32,1	6,9	30,7	30,7	7,9	28,9	28,9	8,9	26,8	26,8	10,0	25,3	25,3	10,5	33	35,0	35,0	6,0	34,0	34,0	6,9	32,5	32,5	7,9	30,7	30,7	9,0	28,5	28,5	10,0						22	27	35,7	21,2	6,1	34,2	20,6	6,9	32,3	20,0	7,9	30,0	19,4	8,9	27,4	18,6	10,0	25,7	18,0	10,6	30	36,0	27,0	6,1	34,5	26,5	7,0	32,6	25,9	7,9	30,4	25,1	8,9	27,8	24,1	10,0	26,1	23,3	10,6	33	36,4	32,7	6,1	34,9	32,2	7,0	33,0	31,6	7,9	30,8	30,7	9,0	28,5	28,5	10,0				36	37,1	37,1	6,1	36,0	36,0	7,0	34,5	34,5	8,0	32,6	32,6	9,0	30,3	30,3	10,1						Maximum airflow	6800	Entering air temperature	16	21	31,0	23,6	5,9	29,7	23,0	6,8	27,9	22,4	7,7	25,8	21,5	8,8	23,3	20,4	9,9	21,7	19,6	10,4	24	31,4	30,1	5,9	30,0	29,5	6,8	28,5	28,4	7,8	26,6	26,6	8,9	24,4	24,4	9,9	22,8	22,8	10,4	27	32,9	32,9	6,0	31,8	31,8	6,9	30,3	30,3	7,9	28,4	28,4	8,9	26,1	26,2	10,0	24,6	24,6	10,5	30	34,9	34,9	6,1	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3		9,0					28,0	28,0	10,0				19	24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0		34,2	34,2	8,0	32,2	32,2		9,1	29,9	29,9	10,1				22	27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0		38,0	7,1	36,3	36,3	8,1	34,3		34,3	9,1																																																																																																																																																																																																																																																																																																											
					22	27	35,7	21,2	6,1	34,2	20,6	6,9	32,3	20,0	7,9	30,0	19,4	8,9	27,4	18,6	10,0	25,7	18,0	10,6	30	36,0	27,0	6,1	34,5	26,5	7,0	32,6	25,9	7,9	30,4	25,1	8,9	27,8	24,1	10,0	26,1	23,3	10,6	33	36,4	32,7	6,1	34,9	32,2	7,0	33,0	31,6	7,9	30,8	30,7	9,0	28,5	28,5	10,0				36	37,1	37,1	6,1	36,0	36,0	7,0	34,5	34,5	8,0	32,6	32,6	9,0	30,3	30,3	10,1					Maximum airflow		6800	Entering air temperature	16	21	31,0	23,6	5,9	29,7	23,0	6,8	27,9	22,4	7,7	25,8	21,5	8,8	23,3	20,4	9,9	21,7	19,6	10,4	24	31,4	30,1	5,9	30,0	29,5	6,8	28,5	28,4	7,8	26,6	26,6	8,9	24,4	24,4	9,9	22,8	22,8	10,4	27	32,9	32,9	6,0	31,8	31,8	6,9	30,3	30,3	7,9	28,4	28,4	8,9	26,1	26,2	10,0	24,6	24,6	10,5	30	34,9	34,9	6,1	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0		10,0								19	24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0	34,2	34,2	8,0	32,2					32,2	9,1	29,9	29,9	10,1					22	27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3	36,3	8,1		34,3	34,3	9,1																																																																																																																																																																																																																																																																																																																																																																																								
Maximum airflow						6800	Entering air temperature	16	21	31,0	23,6	5,9	29,7	23,0	6,8	27,9	22,4	7,7	25,8	21,5	8,8	23,3	20,4	9,9	21,7	19,6	10,4	24	31,4	30,1	5,9	30,0	29,5	6,8	28,5	28,4	7,8	26,6	26,6	8,9	24,4	24,4	9,9	22,8	22,8	10,4	27	32,9	32,9	6,0	31,8	31,8	6,9	30,3	30,3	7,9	28,4	28,4	8,9	26,1	26,2	10,0	24,6	24,6	10,5	30	34,9	34,9	6,1	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0									19	24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,1	29,9	29,9					10,1					22	27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3				36,3	8,1	34,3	34,3	9,1																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	19								24	33,8	23,3	6,0	32,3	22,8	6,9	30,4	22,2	7,8	28,2	21,4	8,9	25,6	20,5	10,0	23,8	19,7	10,6	27	34,2	30,0	6,0	32,7	29,5	6,9	30,8	28,8	7,9	28,6	27,8	8,9	26,1	26,1	9,9	24,5	24,5	10,5	30	34,9	34,9	6,0	33,8	33,8	6,9	32,2	32,2	7,9	30,3	30,3	9,0	28,0	28,0	10,0				33	37,0	37,0	6,1	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,1	29,9	29,9	10,1								22		27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3	36,3	8,1	34,3	34,3	9,1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					22				27	36,8	22,9	6,1	35,1	22,4	7,0	33,1	21,8	7,9	30,7	21,2	9,0	28,0	20,4	10,1	26,2	19,8	10,7	30	37,1	29,8	6,1	35,5	29,3	7,0	33,5	28,6	7,9	31,2	27,8	9,0	28,5	26,7	10,1				33	37,6	36,5	6,2	35,8	35,8	7,0	34,2	34,2	8,0	32,2	32,2	9,0	29,9	29,9	10,1				36	39,2	39,2	6,2	38,0	38,0	7,1	36,3	36,3	8,1	34,3	34,3	9,1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

HEATING CAPACITY AND ABSORBED POWER

BAH-BAM 030		20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C																																																																																																																																																																																																																																
Minimum airflow	4600	Dry bulb		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA																																																																																																																																																																																																																															
		Nominal airflow rate	5700	Entering air temperature-outdoor air temperature	8°C	36,0	5,1	32,8	5,0	29,7	5,0	28,0	5,0	26,9	5,0	24,1	5,1				11°C	35,1	5,3	31,8	5,2	28,8	5,1	27,0	5,1	25,8	5,0	23,1	5,0	20,4	5,1	18,0	5,2	14°C	34,3	5,5	31,0	5,3	27,9	5,2	26,1	5,2	25,0	5,1	22,2	5,0	19,5	5,0	17,0	5,0	17°C	33,7	5,8	30,4	5,6	27,3	5,4	25,5	5,3	24,3	5,3	21,4	5,1	18,7	5,0	16,2	5,0	20°C	33,3	6,2	30,0	5,9	26,8	5,7	24,9	5,6	23,7	5,5	20,9	5,3	18,1	5,1	15,6	5,0	23°C	33,0	6,7	29,7	6,4	26,4	6,1	24,6	5,9	23,4	5,8	20,5	5,6	17,7	5,3	15,1	5,1	26°C	32,9	7,4	29,5	7,0	26,3	6,7	24,4	6,5	23,2	6,3	20,2	6,0	17,4	5,7	14,8	5,3	Maximum airflow	6800	8°C	37,2	5,0	34,0	4,9	30,9	4,9	29,1	4,9	27,9	5,0						11°C	36,1	5,1	32,9	5,0	29,7	5,0	27,9	5,0	26,8	5,0	23,9	5,0	21,3	5,1			14°C	35,2	5,2	31,9	5,1	28,8	5,1	26,9	5,0	25,7	5,0	22,9	5,0	20,2	5,0	17,6	5,1	17°C	34,5	5,5	31,1	5,3	27,9	5,2	26,1	5,1	24,9	5,1	22,0	5,0	19,3	5,0	16,7	5,0	20°C	33,9	5,8	30,5	5,6	27,3	5,4	25,4	5,3	24,2	5,3	21,3	5,2	18,5	5,1	15,9	5,0	23°C	33,5	6,2	30,1	5,9	26,8	5,7	24,9	5,6	23,7	5,5	20,7	5,4	17,9	5,2	15,3	5,1	26°C	33,2	6,7	29,8	6,4	26,5	6,2	24,6	6,0	23,3	5,9	20,3	5,7	17,5	5,4
Maximum airflow	6800				8°C	37,2	5,0	34,0	4,9	30,9	4,9	29,1	4,9	27,9	5,0						11°C	36,1	5,1	32,9	5,0	29,7	5,0	27,9	5,0	26,8	5,0	23,9	5,0	21,3	5,1			14°C	35,2	5,2	31,9	5,1	28,8	5,1	26,9	5,0	25,7	5,0	22,9	5,0	20,2	5,0	17,6	5,1	17°C	34,5	5,5	31,1	5,3	27,9	5,2	26,1	5,1	24,9	5,1	22,0	5,0	19,3	5,0	16,7	5,0	20°C	33,9	5,8	30,5	5,6	27,3	5,4	25,4	5,3	24,2	5,3	21,3	5,2	18,5	5,1	15,9	5,0	23°C	33,5	6,2	30,1	5,9	26,8	5,7	24,9	5,6	23,7	5,5	20,7	5,4	17,9	5,2	15,3	5,1	26°C	33,2	6,7	29,8	6,4	26,5	6,2	24,6	6,0	23,3	5,9	20,3	5,7	17,5	5,4	14,8	5,2																																																																																																																						

PT	Gross total cooling / heating capacity in kW	Control absorbed power	<b>0,1 kW</b>
PS	Sensible cooling capacity in kW	Supply fan absorbed power	BAC/BAH <b>1,07 kW</b>
PA	Compressor absorbed power		BAG/BAM <b>1,38 kW</b>
IDWB	Indoor wet bulb	Condensing fan absorbed power (all)	<b>0,74 kW</b>
IDDB	Indoor dry bulb	Data according to Eurovent standard conditions	<b>XXX</b>

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

HEAT PUMP  
COOLING CAPACITY AND ABSORBED POWER

**038**

BAH-BAM 038		25°C			30°C			35°C			40°C			45°C			45°C					
Minimum airflow	5100	IDWB	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	
		Nominal airflow rate	6300	16	21	31,9	21,0	7,4	34,4	22,7	8,7	33,0	22,1	9,7	31,4	21,4	10,9	29,5	20,5	12,0	28,3	20,0
24	36,0				28,5	7,8	34,9	28,0	8,7	33,6	27,3	9,8	31,9	26,6	10,9	30,0	25,6	12,1	28,7	24,9	12,7	
27	36,6				33,6	7,8	35,4	33,1	8,8	34,0	32,5	9,8	32,3	31,6	10,9	30,3	30,3	12,2	29,1	29,0	12,9	
30	37,8				37,8	7,8	36,8	36,8	8,8	35,5	35,5	9,9	33,9	33,9	11,1	32,0	32,0	12,3	30,7	30,7	13,1	
19	24				38,8	23,2	8,0	37,6	22,6	8,9	36,0	21,9	10,0	34,2	21,2	11,1	32,1	20,4	12,3	30,7	19,8	13,0
27	39,4				28,5	8,0	38,1	27,9	9,0	36,5	27,2	10,0	34,6	26,4	11,1	32,4	25,5	12,3	31,0	24,8	13,0	
30	39,9			33,5	8,1	38,5	33,0	9,0	36,9	32,3	10,0	34,9	31,4	11,2	32,7	30,4	12,4	31,3	29,6	13,1		
33	40,3			38,4	8,1	38,9	37,9	9,0	37,2	37,2	10,1	35,6	35,6	11,3	33,6	33,6	12,5	32,3	32,3	13,3		
22	27			42,3	23,0	8,2	40,8	22,3	9,2	39,0	21,6	10,2	36,9	20,8	11,4	34,6	20,1	12,6	33,1	19,5	13,4	
30	42,8			28,2	8,3	41,2	27,5	9,2	39,4	26,8	10,3	37,3	26,0	11,4	34,9	25,1	12,6	33,4	24,5	13,4		
33	43,2			33,1	8,3	41,6	32,5	9,3	39,7	31,9	10,3	37,6	31,0	11,5	35,2	30,0	12,7	33,6	29,3	13,4		
36	43,5			37,9	8,3	41,9	37,3	9,3	40,0	36,6	10,3	37,8	35,8	11,5	35,3	34,6	12,7	33,9	33,9	13,6		
Maximum airflow	8400	16	21	37,5	25,7	7,9	36,3	25,1	8,8	34,8	24,5	9,9	33,0	23,7	11,0	30,9	22,9	12,2	29,5	22,2	12,8	
			24	38,1	32,0	7,9	36,9	31,4	8,9	35,3	30,7	9,9	33,4	29,8	11,0	31,3	28,8	12,2	29,9	28,0	12,9	
			27	38,7	38,1	8,0	37,4	37,3	8,9	36,0	35,9	10,0	34,3	34,3	11,2	32,3	32,3	12,4	31,0	31,0	13,1	
			30	40,6	40,6	8,1	39,4	39,4	9,1	37,9	37,9	10,2	36,1	36,1	11,3	34,1	34,1	12,6	32,7	32,7	13,3	
			19	24	40,9	25,5	8,1	39,4	24,9	9,1	37,7	24,2	10,1	35,7	23,5	11,3	33,4	22,6	12,4	31,8	22,0	13,2
			27	41,5	31,8	8,2	40,0	31,2	9,1	38,2	30,5	10,2	36,1	29,6	11,3	33,7	28,6	12,5	32,2	27,8	13,2	
		30	41,9	38,0	8,2	40,4	37,3	9,2	38,5	36,6	10,2	36,4	35,6	11,3	34,1	34,1	12,6	32,7	32,7	13,3		
		33	42,8	42,8	8,3	41,5	41,5	9,2	39,8	39,9	10,3	38,0	38,0	11,5	35,8	35,8	12,8	34,3	34,3	13,6		
		22	27	44,3	25,1	8,4	42,6	24,4	9,3	40,7	23,8	10,4	38,4	23,1	11,5	35,9	22,2	12,8	34,2	21,7	13,5	
		30	44,8	31,4	8,4	43,1	30,8	9,4	41,0	30,0	10,4	38,7	29,2	11,6	36,2	28,2	12,8	34,5	27,5	13,6		
		33	45,2	37,5	8,5	43,4	36,9	9,4	41,4	36,1	10,5	39,0	35,2	11,6	36,4	34,0	12,9	34,7	33,1	13,6		
		36	45,5	43,3	8,5	43,7	42,7	9,4	41,9	41,9	10,5	39,9	39,9	11,8	37,6	37,6	13,0	36,0	36,0	13,8		
Entering air temperature	16	21	39,9	29,2	8,1	38,4	28,7	9,0	36,5	28,0	10,0	34,3	27,1	11,1	31,9	26,1	12,3	30,3	25,4	13,0		
		24	40,5	37,3	8,1	38,9	36,6	9,0	37,0	35,8	10,1	34,8	34,7	11,2	32,6	32,6	12,4	31,2	31,2	13,2		
		27	41,8	41,8	8,2	40,4	40,4	9,2	38,7	38,7	10,2	36,7	36,7	11,4	34,4	34,4	12,7	32,9	32,9	13,4		
		30	44,0	44,0	8,4	42,5	42,5	9,4	40,8	40,8	10,5	38,7	38,7	11,6	36,3	36,3	12,9	34,8	34,8	13,7		
		19	24	43,3	28,8	8,3	41,5	28,2	9,3	39,4	27,6	10,3	37,0	26,8	11,4	34,3	25,8	12,7	32,6	25,1	13,4	
		27	43,8	37,0	8,4	41,9	36,3	9,3	39,8	35,5	10,3	37,4	34,4	11,5	34,7	33,1	12,7	32,9	32,2	13,5		
	30	44,1	44,1	8,4	42,6	42,6	9,4	40,8	40,8	10,4	38,7	38,7	11,6	36,3	36,3	12,9	34,7	34,8	13,6			
	33	46,3	46,3	8,6	44,7	44,7	9,6	42,8	42,8	10,7	40,6	40,6	11,9	38,2	38,1	13,1	36,5	36,5	13,9			
	22	27	46,6	28,2	8,6	44,6	27,6	9,5	42,2	27,0	10,6	39,6	26,3	11,7	36,8	25,4	13,0	34,9	24,8	13,8		
	30	47,1	36,4	8,6	45,0	35,8	9,6	42,6	35,0	10,6	40,0	34,0	11,8	37,0	32,8	13,1	35,2	31,9	13,9			
	33	47,4	44,5	8,6	45,3	43,7	9,6	42,9	42,8	10,6	40,7	40,8	11,9	38,2	38,2	13,1	36,6	36,6	13,9			
	36	48,7	48,7	8,8	47,0	47,0	9,8	44,9	44,9	10,9	42,6	42,6	12,1	40,0	40,0	13,4						

HEATING CAPACITY AND ABSORBED POWER

BAH-BAM 038		20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C			
Minimum airflow	5100	Dry bulb		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA		
		Nominal airflow rate	6300	Entering air temperature-outdoor air temperature	8°C	47,5	8,0	42,5	7,6	37,9	7,2	35,3	6,9	33,7	6,8	30,1	6,4	26,9	6,1
11°C	46,9				8,3	41,8	7,9	37,2	7,4	34,7	7,2	33,1	7,0	29,5	6,6	26,3	6,3	23,6	6,0
14°C	46,3				8,8	41,2	8,3	36,7	7,8	34,2	7,5	32,6	7,3	29,0	6,9	25,8	6,5	23,1	6,2
17°C	45,8				9,2	40,7	8,7	36,2	8,2	33,7	7,9	32,1	7,7	28,5	7,2	25,4	6,8	22,7	6,4
20°C	45,3				9,8	40,3	9,2	35,8	8,6	33,3	8,3	31,7	8,1	28,2	7,6	25,1	7,1	22,4	6,7
23°C	44,9				10,5	40,0	9,9	35,5	9,2	33,0	8,8	31,4	8,6	27,9	8,0	24,8	7,5	22,2	7,0
26°C	44,6				11,4	39,7	10,7	35,2	9,9	32,8	9,5	31,2	9,2	27,7	8,6	24,6	8,0	22,0	7,4
8°C	48,5				7,5	43,4	7,2	38,7	6,8	36,1	6,6	34,5	6,5	30,7	6,2				
11°C	47,8				7,8	42,6	7,4	38,0	7,0	35,4	6,8	33,8	6,7	30,1	6,4	26,8	6,1	24,0	5,9
14°C	47,1				8,2	42,0	7,7	37,4	7,3	34,8	7,1	33,2	6,9	29,5	6,6	26,2	6,3	23,5	6,0
17°C	46,5				8,6	41,4	8,1	36,8	7,7	34,3	7,4	32,7	7,2	29,0	6,9	25,8	6,5	23,0	6,2
20°C	46,0				9,0	41,0	8,5	36,3	8,1	33,8	7,8	32,2	7,6	28,5	7,2	25,4	6,8	22,6	6,5
23°C	45,6	9,6	40,5	9,1	35,9	8,5	33,4	8,2	31,8	8,0	28,2	7,6	25,0	7,2	22,3	6,8			
26°C	45,2	10,3	40,2	9,7	35,6	9,1	33,1	8,8	31,5	8,6	27,9	8,1	24,8	7,6	22,1	7,2			
Maximum airflow	8400	Entering air temperature-outdoor air temperature	8°C	50,0	7,0	44,6	6,7	39,8	6,5	37,1	6,3	35,4	6,3						
			11°C	49,1	7,3	43,8	7,0	39,0	6,7	36,3	6,5	34,6	6,4	30,8	6,2	27,4	6,0		
			14°C	48,3	7,5	43,1	7,2	38,3	6,9	35,6	6,7	33,9	6,6	30,1	6,4	26,7	6,2	23,8	6,1
			17°C	47,6	7,9	42,4	7,5	37,6	7,2	35,0	7,0	33,3	6,9	29,5	6,6	26,1	6,4	23,2	6,3
			20°C	47,0	8,2	41,8	7,9	37,0	7,5	34,4	7,3	32,7	7,2	28,9	6,9	25,6	6,7	22,7	6,5
			23°C	46,4	8,7	41,2	8,3	36,5	7,9	33,9	7,7	32,2	7,6	28,4	7,3	25,1	7,0	22,3	6,8
26°C	46,0	9,3	40,8	8,8	36,1	8,4	33,5	8,2	31,8	8,0	28,1	7,7	24,8	7,4	21,9	7,2			

PT	Gross total cooling / heating capacity in kW	Control absorbed power		0,1 kW	
PS	Sensible cooling capacity in kW	Supply fan absorbed power		BAC/BAH 1,32 kW	
PA	Compressor absorbed power			BAG/BAM 1,70 kW	
IDWB	Indoor wet bulb	Condensing fan absorbed power (all)		0,86 kW	
IDDB	Indoor dry bulb	Data according to Eurovent standard conditions			XXX







**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

HEAT PUMP  
COOLING CAPACITY AND ABSORBED POWER

052

BAH-BAM 052		25°C			30°C			35°C			40°C			45°C			48°C						
Minimum airflow	6700	IDWB	IDDB	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA		
																						Entering air temperature	
Nominal airflow rate	8300	16	21	47,6	30,6	10,1	46,0	29,9	11,6	43,9	29,1	13,2	41,2	28,2	14,9	38,0	27,0	16,6	35,8	26,1	17,5		

HEATING CAPACITY AND ABSORBED POWER

BAH-BAM 052		20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C					
Minimum airflow	6700	Dry bulb		Dry bulb		Dry bulb		Dry bulb		Dry bulb		Dry bulb		Dry bulb		Dry bulb					
		Entering air temperature-outdoor air temperature																			
Nominal airflow rate	8300	8°C	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA			

<b>PT</b>	Gross total cooling / heating capacity in kW	Control absorbed power	<b>0,1 kW</b>
<b>PS</b>	Sensible cooling capacity in kW	Supply fan absorbed power	BAC/BAH <b>1,71 kW</b>
<b>PA</b>	Compressor absorbed power		BAG/BAM <b>2,15 kW</b>
<b>IDWB</b>	Indoor wet bulb	Condensing fan absorbed power (all)	<b>1,48 kW</b>
<b>IDDB</b>	Indoor dry bulb	Data according to Eurovent standard conditions	<b>XXX</b>

BAH Heat pump

BAM Heat pump rooftop with gas fired heating

HEAT PUMP COOLING CAPACITY AND ABSORBED POWER

057

Table with columns for air flow (Minimum, Nominal, Maximum) and temperature (25°C to 48°C). Rows include PT, PS, PA values for various air temperatures and flow rates.

HEATING CAPACITY AND ABSORBED POWER

Table with columns for air flow (Minimum, Nominal, Maximum) and temperature (20°C to -10°C). Rows include PT, PA values for various air temperatures and flow rates.

Summary table with columns for PT, PS, PA, IDWB, IDDB and rows for Control absorbed power, Supply fan absorbed power, Condensing fan absorbed power, and Data according to Eurovent standard conditions.







**BAC** Cooling only unit

**BAH** Heat pump rooftop

RETURN AIR AT 0°C

Casing		Δ water temperature (°C)											
		90 - 70				80 - 60				70 - 50			
		Airflow	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature
	m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h
C BOX	3600	53	43	41	2,3	46	32	35	2,0	38	23	29	1,7
	4200	58	52	38	2,6	50	38	33	2,2	42	27	28	1,8
	5600	69	72	34	3,0	59	53	29	2,6	50	38	25	2,2
	4600	61	57	37	2,7	53	43	32	2,3	44	30	27	1,9
	5700	69	73	34	3,1	60	54	29	2,6	50	38	24	2,2
	6800	76	89	31	3,4	66	66	27	2,9	55	46	22	2,4
	5100	65	65	35	2,9	56	48	30	2,5	47	34	26	2,1
	6300	73	82	32	3,2	63	61	28	2,8	53	43	23	2,3
	8400	85	111	28	3,8	73	82	24	3,2	62	58	20	2,7
	5500	68	70	34	3,0	58	52	29	2,6	49	37	25	2,1
6900	77	90	31	3,4	66	67	27	2,9	56	47	22	2,4	
8400	85	111	28	3,8	73	82	24	3,2	62	58	20	2,7	
D BOX	5700	86	25	42	3,8	74	19	36	3,3	63	13	30	2,7
	7100	99	32	38	4,3	85	24	33	3,7	72	17	28	3,1
	9700	118	46	34	5,2	102	34	29	4,5	86	25	24	3,7
	6700	95	30	39	4,2	82	23	34	3,6	69	16	29	3,0
	8300	108	38	36	4,8	93	29	31	4,1	79	21	26	3,4
	11200	128	53	32	5,6	110	40	27	4,8	93	29	23	4,0
	7900	105	36	37	4,6	91	27	32	4,0	76	20	27	3,3
	9900	120	47	33	5,3	103	35	29	4,5	87	25	24	3,8
	13100	139	63	29	6,1	120	47	25	5,3	101	34	21	4,4
	8900	113	42	35	5,0	97	31	30	4,3	82	22	25	3,6
11100	127	53	32	5,6	110	40	27	4,8	92	28	23	4,0	
13100	139	63	29	6,1	120	47	25	5,3	101	34	21	4,4	
E BOX	10500	178	89	47	7,8	154	67	41	6,8	131	49	34	5,7
	13500	208	121	43	9,2	180	91	37	7,9	152	66	31	6,6
	17000	238	157	39	10,5	206	119	34	9,0	174	85	28	7,6
	10500	178	89	47	7,8	154	67	41	6,8	131	49	34	5,7
	14500	217	131	41	9,6	188	99	36	8,2	159	71	30	6,9
19000	254	178	37	11,2	220	134	32	9,6	186	97	27	8,1	

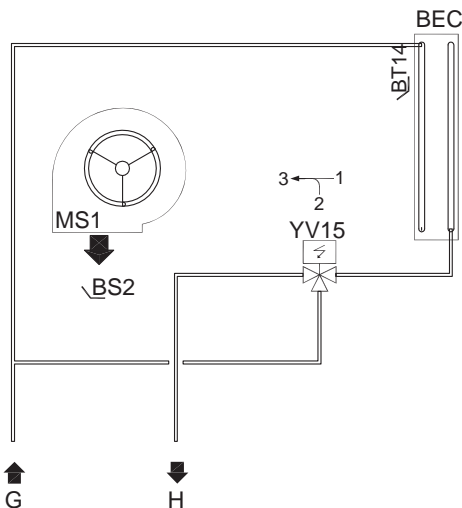
(1) Pressure drop = internal coil + 3 way valve  
All data calculated for water without glycol

Note : 10 kPa=1mCe

Correction factor to get data for 82 - 71 from 90 - 70

SIZE	Heating capacity	Pressure drop	Water flow rate
	kW	kPa	kg/s
024 -> 042	0,97	3,06	1,76
045 -> 065	0,97	3,05	1,75
075 - 085	0,96	3,00 / 3,04*	1,74

\* For return air 20°C / for return air 10°C



**Legend**

- MS1** Blower fan
- BS2** Supply air temperature
- BEC** Hot water coil
- BT14** Antifreeze thermostat
- YV15** 3-way valve
- G** Water inlet
- H** Water outlet

Size	G - H	Connection
024 -> 042	1/2"	Male
045 -> 085	1"	



**BAC** Cooling only unit

**BAH** Heat pump rooftop

RETURN AIR AT 10°C

Casing		Δ water temperature (°C)											
		90 - 70				80 - 60				70 - 50			
		Airflow	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature
m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h	kW	kPa	°C	m <sup>3</sup> /h	
C BOX	3600	45	32	36	2,0	38	22	30	1,7	31	15	25	1,3
	4200	50	38	34	2,2	42	27	29	1,8	34	18	23	1,5
	5600	59	53	30	2,6	49	37	25	2,2	40	25	21	1,7
	4600	52	42	33	2,3	44	30	27	1,9	36	20	22	1,6
	5700	59	54	30	2,6	50	38	25	2,2	40	25	20	1,8
	6800	65	66	28	2,9	55	46	23	2,4	45	31	19	1,9
	5100	56	48	31	2,5	47	34	26	2,1	38	22	21	1,7
	6300	63	60	29	2,8	53	43	24	2,3	43	28	19	1,9
	8400	73	82	25	3,2	62	58	21	2,7	50	38	17	2,2
	5500	58	52	30	2,6	49	37	26	2,1	40	24	21	1,7
D BOX	6900	66	67	27	2,9	55	47	23	2,4	45	31	19	2,0
	8400	73	82	25	3,2	62	58	21	2,7	50	38	17	2,2
	5700	74	18	37	3,3	62	13	31	2,7	51	9	26	2,2
	7100	84	24	34	3,7	71	17	29	3,1	58	12	23	2,5
	9700	101	34	30	4,5	85	24	25	3,7	69	16	21	3,0
	6700	81	22	35	3,6	69	16	29	3,0	56	11	24	2,4
	8300	93	29	32	4,1	78	21	27	3,4	64	14	22	2,8
	11200	110	40	28	4,8	93	29	24	4,1	75	19	19	3,3
	7900	90	27	33	4,0	76	19	28	3,3	62	13	22	2,7
	9900	103	35	30	4,5	86	25	25	3,8	70	17	20	3,1
	13100	120	47	26	5,3	101	34	22	4,4	82	22	18	3,6
	8900	96	31	31	4,3	81	22	26	3,6	66	15	21	2,9
E BOX	11100	109	39	28	4,8	92	28	24	4,0	75	19	19	3,3
	13100	120	47	26	5,3	101	34	22	4,4	82	22	18	3,6
	10500	152	66	42	6,7	129	48	35	5,7	106	33	29	4,6
	13500	178	90	38	7,9	151	65	32	6,6	124	44	26	5,4
	17000	205	117	35	9,0	173	84	29	7,6	142	57	24	6,2
	10500	152	66	42	6,7	129	48	35	5,7	106	33	29	4,6
	14500	186	97	37	8,2	158	70	31	6,9	129	48	26	5,6
19000	218	132	33	9,6	184	95	28	8,1	151	65	23	6,6	

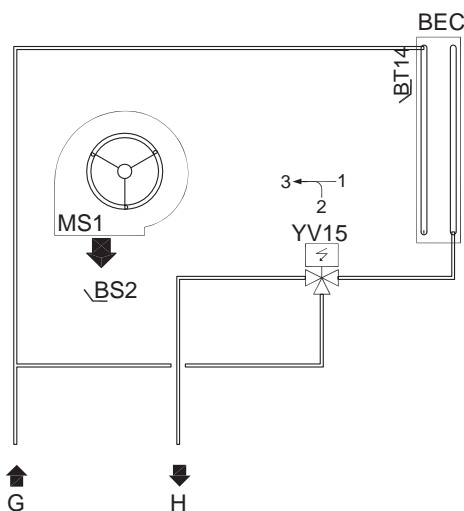
(1) Pressure drop = internal coil + 3 way valve  
All data calculated for water without glycol

Note : 10 kPa=1mCe

Correction factor to get data for 82 - 71 from 90 - 70

SIZE	Heating capacity	Pressure drop	Water flow rate
	kW	kPa	kg/s
024 -> 042	0,97	3,06	1,76
045 -> 065	0,97	3,05	1,75
075 - 085	0,96	3,00 / 3,04*	1,74

\* For return air 20°C / for return air 10°C



**Legend**

- MS1** Blower fan
- BS2** Supply air temperature
- BEC** Hot water coil
- BT14** Antifreeze thermostat
- YV15** 3-way valve
- G** Water inlet
- H** Water outlet

Size	G - H	Connection
024 -> 042	1/2"	Male
045 -> 085	1"	

**BAC** Cooling only unit

**BAH** Heat pump rooftop

RETURN AIR AT 20°C

Casing	Airflow	Δ water temperature (°C)											
		90 - 70				80 - 60				70 - 50			
		Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate
m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	
C BOX	3600	38	22	31	1,7	31	15	25	1,4	24	9	20	1,0
	4200	41	27	29	1,8	34	18	24	1,5	26	11	18	1,1
	5600	49	37	26	2,2	40	25	21	1,8	31	15	16	1,3
	4600	44	30	28	1,9	36	20	23	1,6	28	12	18	1,2
	5700	50	38	26	2,2	40	25	21	1,8	31	15	16	1,4
	6800	55	46	24	2,4	45	31	19	2,0	34	18	15	1,5
	5100	47	34	27	2,1	38	22	22	1,7	29	13	17	1,3
	6300	53	43	25	2,3	43	28	20	1,9	33	17	15	1,4
	8400	61	58	22	2,7	50	38	18	2,2	38	23	14	1,7
	5500	49	37	26	2,1	40	24	21	1,7	31	14	16	1,3
D BOX	6900	55	47	24	2,4	45	31	19	2,0	35	18	15	1,5
	8400	61	58	22	2,7	50	38	18	2,2	38	23	14	1,7
	5700	62	13	32	2,7	51	9	26	2,2	39	5	20	1,7
	7100	71	17	30	3,1	58	11	24	2,5	45	7	19	2,0
	9700	85	24	26	3,7	69	16	21	3,0	54	10	16	2,3
	6700	68	16	30	3,0	56	11	25	2,4	43	7	19	1,9
	8300	78	20	28	3,4	63	14	23	2,8	49	8	18	2,1
	11200	92	28	24	4,1	75	19	20	3,3	58	12	15	2,5
	7900	75	19	28	3,3	62	13	23	2,7	48	8	18	2,1
	9900	86	25	26	3,8	70	17	21	3,1	54	10	16	2,4
	13100	100	33	23	4,4	82	22	18	3,6	63	14	14	2,7
	8900	81	22	27	3,6	66	15	22	2,9	51	9	17	2,2
E BOX	11100	92	28	24	4,0	75	19	20	3,3	58	11	15	2,5
	13100	100	33	23	4,4	82	22	18	3,6	63	14	14	2,7
	10500	128	47	36	5,6	105	32	30	4,6	82	20	23	3,6
	13500	150	64	33	6,6	123	43	27	5,4	96	27	21	4,2
	17000	172	83	30	7,6	141	57	25	6,2	110	35	19	4,8
	10500	128	47	36	5,6	105	32	30	4,6	82	20	23	3,6
	14500	156	69	32	6,9	128	47	26	5,6	100	29	21	4,4
19000	183	94	29	8,1	150	64	23	6,6	117	39	18	5,1	

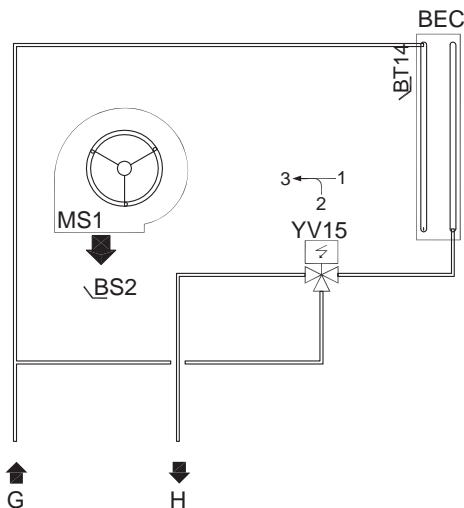
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024 -> 042	0,97	3,06	1,76
045 -> 065	0,97	3,05	1,75
075 - 085	0,96	3,00 / 3,04*	1,74

\* For return air 20°C / for return air 10°C



**Legend**

- MS1** Blower fan
- BS2** Supply air temperature
- BEC** Hot water coil
- BT14** Antifreeze thermostat
- YV15** 3-way valve
- G** Water inlet
- H** Water outlet

Size	G - H	Connection
024 -> 042	1/2"	Male
045 -> 065	1"	

**BAC** Cooling only unit

**BAH** Heat pump rooftop

HEAT RECOVERY ON FOOD REFRIGERATION

RETURN AIR AT 0°C

30% GLYCOL WATER

Casing		Δ water temperature (°C)											
		45 - 40				40 - 35				35 - 30			
		Airflow	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature
m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	
C BOX	3600	35	76	27	6.55	31	59	24	5.71	26	44	20	4,88
	4200	39	94	26	7.29	34	73	22	6.36	29	54	19	5,43
	5600	47	136	23	8.84	41	106	20	7.71	35	78	17	6,58
	4600	42	106	25	7.76	36	82	22	6.77	31	61	19	5,78
	5700	48	140	23	8.96	42	108	20	7.8	36	80	17	6,65
	6800	54	174	22	10.03	47	135	19	8.74	40	100	16	7,45
	5100	45	121	24	8.32	39	94	21	7.26	33	70	18	6,19
	6300	51	159	23	9.56	45	122	20	8.33	38	91	17	7,10
	8400	61	225	20	11.45	53	173	18	9.97	45	128	15	8,48
	5500	47	133	24	8.74	41	103	21	7.62	35	77	18	6,50
	6900	54	177	22	10.13	47	137	19	8.82	40	101	16	7,52
8400	61	225	20	11.45	53	173	18	9.97	45	128	15	8,48	
D BOX	5700	56	136	27	10,43	49	108	24	9,14	42	82	20	7,85
	7100	65	182	25	12,16	57	143	22	10,64	49	109	19	9,13
	9700	80	269	23	14,95	70	212	20	13,08	60	160	17	11,21
	6700	63	169	26	11,68	55	133	23	10,23	47	101	19	8,78
	8300	72	221	24	13,49	63	174	21	11,81	54	132	18	10,13
	11200	88	320	22	16,38	77	251	19	14,33	66	190	16	12,27
	7900	70	208	25	13,06	61	164	21	11,43	53	125	18	9,81
	9900	81	276	23	15,14	71	217	20	13,25	61	164	17	11,35
	13100	97	385	20	18,06	85	302	18	15,79	72	228	15	13,52
	8900	76	242	24	14,13	66	190	21	12,37	57	144	18	10,60
	11100	87	316	22	16,29	76	249	19	14,25	65	188	16	12,20
13100	97	385	20	18,06	85	302	18	15,79	72	228	15	13,52	
E BOX	10500	91	92	24	17,01	80	71	21	14,83	68	53	18	12,66
	13500	108	126	22	20,03	94	97	19	17,45	80	72	16	14,88
	17000	124	166	20	23,14	108	128	18	20,15	92	95	15	17,15
	10500	91	92	24	17,01	80	71	21	14,83	68	53	18	12,66
	14500	113	137	21	20,96	98	106	19	18,26	83	79	16	15,56
19000	133	189	19	24,75	116	146	17	21,54	98	108	14	18,33	

**BAC** Cooling only unit

**BAH** Heat pump rooftop

## HEAT RECOVERY ON FOOD REFRIGERATION

RETURN AIR AT 10°C

30% GLYCOL WATER

Casing		Δ water temperature (°C)											
		45 - 40				40 - 35				35 - 30			
		Airflow	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature
m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	
C BOX	3600	26	43	21	4,84	22	30	17	4,03	17	20	14	3,22
	4200	29	52	20	5,39	24	37	16	4,48	19	24	13	3,58
	5600	35	76	18	6,54	29	54	15	5,43	23	35	12	4,32
	4600	31	59	19	5,73	26	42	16	4,77	20	27	13	3,80
	5700	35	78	18	6,61	29	55	15	5,49	23	36	12	4,37
	6800	40	97	17	7,41	33	68	14	6,15	26	44	11	4,89
	5100	33	68	19	6,15	27	48	15	5,11	22	31	12	4,07
	6300	38	88	17	7,06	31	62	14	5,86	25	40	11	4,66
	8400	45	125	16	8,46	38	88	13	7,01	30	57	10	5,56
	5500	35	74	18	6,46	29	52	15	5,37	23	34	12	4,27
6900	40	99	17	7,48	33	69	14	6,21	26	45	11	4,93	
8400	45	125	16	8,46	38	88	13	7,01	30	57	10	5,56	
D BOX	5700	42	78	21	7,75	35	56	18	6,49	28	38	14	5,23
	7100	48	104	20	9,03	41	75	16	7,55	33	51	13	6,08
	9700	60	153	18	11,11	50	111	15	9,28	40	74	12	7,45
	6700	47	96	20	8,68	39	70	17	7,26	31	47	13	5,84
	8300	54	126	19	10,03	45	91	16	8,38	36	61	12	6,73
	11200	65	182	17	12,18	55	131	14	10,16	44	88	11	8,15
	7900	52	119	19	9,71	44	86	16	8,11	35	58	13	6,52
	9900	60	157	18	11,25	50	113	15	9,40	40	76	12	7,54
	13100	72	219	16	13,42	60	158	13	11,20	48	105	11	8,97
	8900	56	138	18	10,50	47	100	15	8,78	38	67	12	7,05
11100	65	180	17	12,11	54	130	14	10,11	43	87	11	8,11	
13100	72	219	16	13,42	60	158	13	11,20	48	105	11	8,97	
E BOX	10500	67	51	18	12,57	56	36	15	10,45	45	24	12	8,32
	13500	79	70	17	14,80	66	50	14	12,28	52	32	11	9,77
	17000	92	93	15	17,10	76	65	13	14,17	60	42	10	11,25
	10500	67	51	18	12,57	56	36	15	10,45	45	24	12	8,32
	14500	83	77	16	15,49	69	54	14	12,85	55	35	11	10,21
19000	98	106	15	18,29	81	74	12	15,15	64	48	10	12,02	

**BAC** Cooling only unit

**BAH** Heat pump rooftop

HEAT RECOVERY ON FOOD REFRIGERATION

RETURN AIR AT 20°C

30% GLYCOL WATER

Casing		Δ water temperature (°C)											
		45 - 40				40 - 35				35 - 30			
		Airflow	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature	Water flow rate	Heating capacity	Pressure drop <sup>(1)</sup>	Δ air temperature
m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	kW	kPa	°C	m³/h	
C BOX	3600	17	19	14	3,20	13	11	11	2,41	9	5	7	1,62
	4200	19	24	14	3,56	14	14	10	2,68	10	6	7	1,79
	5600	23	34	12	4,32	17	20	9	3,24	12	9	6	2,16
	4600	20	27	13	3,79	15	15	10	2,85	10	7	7	1,90
	5700	23	35	12	4,37	18	20	9	3,27	12	9	6	2,18
	6800	26	43	11	4,89	20	25	9	3,66	13	12	6	2,43
	5100	22	30	13	4,06	16	18	10	3,05	11	8	6	2,03
	6300	25	40	12	4,66	19	23	9	3,49	12	11	6	2,32
	8400	30	56	11	5,57	22	32	8	4,16	15	15	5	2,75
	5500	23	33	12	4,27	17	19	9	3,20	11	9	6	2,13
	6900	26	44	11	4,93	20	25	9	3,69	13	12	6	2,45
8400	30	56	11	5,57	22	32	8	4,16	15	15	5	2,75	
D BOX	5700	28	36	14	5,18	21	22	11	3,95	15	11	8	2,71
	7100	32	48	14	6,03	25	29	10	4,58	17	15	7	3,14
	9700	40	71	12	7,41	30	43	9	5,62	20	21	6	3,82
	6700	31	45	14	5,80	24	27	10	4,41	16	14	7	3,02
	8300	36	59	13	6,69	27	36	10	5,08	19	18	7	3,47
	11200	44	85	12	8,12	33	51	9	6,15	22	25	6	4,18
	7900	35	55	13	6,48	26	33	10	4,92	18	17	7	3,36
	9900	40	73	12	7,51	31	44	9	5,69	21	22	6	3,87
	13100	48	102	11	8,95	36	61	8	6,77	25	30	6	4,59
	8900	38	64	13	7,00	28	39	9	5,31	19	19	6	3,62
	11100	43	84	12	8,07	33	50	9	6,11	22	25	6	4,15
13100	48	102	11	8,95	36	61	8	6,77	25	30	6	4,59	
E BOX	10500	45	23	13	8,31	33	14	9	6,23	22	6	6	4,16
	13500	52	32	12	9,77	39	18	9	7,31	26	9	6	4,85
	17000	60	42	11	11,27	45	24	8	8,41	30	11	5	5,56
	10500	45	23	13	8,31	33	14	9	6,23	22	6	6	4,16
	14500	55	35	11	10,22	41	20	8	7,64	27	9	6	5,07
19000	65	47	10	12,05	48	27	8	8,98	32	12	5	5,93	

**BAC** Cooling only unit

**BAH** Heat pump rooftop

### AUXILIARY ELECTRIC HEATER

SIZE	Heating capacity kW	Amps A	Nr of stages	Temperature rise at nominal airflow rate			
				A:	°C	B:	°C
024	18	25	2 (A : B)	A:	6	B:	13
	36	50	0-100%	50% →	13	100% →	25
030	18	25	2 (A : B)	A:	5	B:	9
	36	50	0-100%	50% →	9	100% →	19
038	18	25	2 (A : B)	A:	4	B:	8
	36	50	0-100%	50% →	8	100% →	17
042	18	25	2 (A : B)	A:	4	B:	8
	36	50	0-100%	50% →	8	100% →	15
045	27	37,6	2 (A : B)	A:	6	B:	11
	54	75,2	0-100%	50% →	11	100% →	23
052	27	37,6	2 (A : B)	A:	5	B:	10
	54	75,2	0-100%	50% →	10	100% →	19
057	27	37,6	2 (A : B)	A:	4	B:	8
	54	75,2	0-100%	50% →	8	100% →	16
065	27	37,6	2 (A : B)	A:	4	B:	7
	54	75,2	0-100%	50% →	7	100% →	14
075	27	37,6	2 (A : B)	A:	3	B:	6
	54	75,2	0-100%	50% →	6	100% →	12
085	27	37,6	2 (A : B)	A:	3	B:	6
	54	75,2	0-100%	50% →	6	100% →	11

### ELECTRIC PRE-HEATER

SIZE	Heating capacity kW	Amps A	Nr of stages	Temperature rise at nominal airflow rate			
				50% →	°C	100% →	°C
024	18	25	0-100%	50% →	6	100% →	13
	36	50		50% →	13	100% →	25
030	18	25		50% →	5	100% →	9
	36	50		50% →	9	100% →	19
038	18	25		50% →	4	100% →	8
	36	50		50% →	8	100% →	17
042	18	25		50% →	4	100% →	8
	36	50		50% →	8	100% →	15
045	24	33,3		50% →	5	100% →	10
	48	66,7		50% →	10	100% →	20
052	24	33,3		50% →	4	100% →	9
	48	66,7		50% →	9	100% →	17
057	24	33,3		50% →	4	100% →	7
	48	66,7		50% →	7	100% →	14
065	24	33,3		50% →	3	100% →	6
	48	66,7		50% →	6	100% →	13
075	36	50		50% →	4	100% →	8
	72	100		50% →	8	100% →	16
085	36	50		50% →	4	100% →	7
	72	100		50% →	7	100% →	15



The use of electric pre-heater allows heat pump operation with mixed air temperatures below 5 °C on the indoor coil. It impacts overall COP of the unit.

**BAC** Cooling only unit

**BAH** Heat pump rooftop

SIZE	Gas power input	Heating capacity	Electrical absorbed power	Number of stages
	kW	kW	kW	
024	20	18,6	0,1	2
	46	42,8	0,1	2
030	20	18,6	0,1	2
	46	42,8	0,1	2
038	20	18,6	0,1	2
	46	42,8	0,1	2
042	20	18,6	0,1	2
	46	42,8	0,1	2
045	33	30,7	0,1	2
	60	55,8	0,1	2
052	33	30,7	0,1	2
	60	55,8	0,1	2
057	33	30,7	0,1	2
	60	55,8	0,1	2
065	33	30,7	0,1	2
	60	55,8	0,1	2
075	60	55,8	0,1	2
	120	112	0,2	4
085	60	55,8	0,1	2
	120	112	0,2	4

**BAC** Cooling only

**BAH** Heat pump

<b>BAC &amp; BAH 024-030</b>	024	030	Airflow	150			200			250			300			350			400			450			
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	
				3600	K1	1*1.5	0,4	K1	1*1.5	0,5	K1	1*1.5	0,6	K1	1*1.5	0,7	K1	1*1.5	0,8	K1	1*1.5	0,9	No kit		
				3900	K1	1*1.5	0,5	K1	1*1.5	0,5	K1	1*1.5	0,6	K1	1*1.5	0,7	K1	1*1.5	0,9	K2	1*2.2	0,9	K2	1*2.2	1,0
				4200	K1	1*1.5	0,5	K1	1*1.5	0,6	K1	1*1.5	0,7	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,0	K2	1*2.2	1,1
				4500	K1	1*1.5	0,6	K1	1*1.5	0,7	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,0	K2	1*2.2	1,1	K2	1*2.2	1,2
				4800	K2	1*2.2	0,7	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,0	K2	1*2.2	1,1	K2	1*2.2	1,2	K2	1*2.2	1,3
				5100	K2	1*2.2	0,7	K2	1*2.2	0,8	K2	1*2.2	1,0	K2	1*2.2	1,1	K2	1*2.2	1,2	K2	1*2.2	1,3	K3	1*3.0	1,4
				5400	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,1	K2	1*2.2	1,2	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,6
				5700	K2	1*2.2	0,9	K2	1*2.2	1,1	K3	1*3.0	1,2	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,6	K3	1*3.0	1,7
				6000	K3	1*3.0	1,0	K3	1*3.0	1,2	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,6	K3	1*3.0	1,7	K3	1*3.0	1,8

<b>BAC &amp; BAH 024-030</b>	024	030	Airflow	500			550			600			650			700			750			800			
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	
				3600	No kit			No kit			No kit			No kit			No kit			No kit					
				3900	No kit			No kit			No kit			No kit			No kit			No kit					
				4200	K2	1*2.2	1,2	K2	1*2.2	1,4	No kit			No kit			No kit			No kit					
				4500	K2	1*2.2	1,3	K2	1*2.2	1,5	K2	1*2.2	1,6	K3	1*3.0	1,7	No kit			No kit			No kit		
				4800	K2	1*2.2	1,5	K3	1*3.0	1,6	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	2,0	K3	1*3.0	2,1	No kit		
				5100	K3	1*3.0	1,6	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	2,0	K3	1*3.0	2,1	K3	1*3.0	2,2	K3	1*3.0	2,4
				5400	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	2,0	K3	1*3.0	2,1	K3	1*3.0	2,2	K3	1*3.0	2,4	K3	1*3.0	2,5
				5700	K3	1*3.0	1,8	K3	1*3.0	2,0	K3	1*3.0	2,1	K3	1*3.0	2,3	K3	1*3.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,7
				6000	K3	1*3.0	2,0	K3	1*3.0	2,1	K3	1*3.0	2,3	K4	1*4.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,7	K4	1*4.0	2,8

<b>BAC &amp; BAH 038-042</b>	038	042	Airflow	150			200			250			300			350			400			450			
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	
				5100	K2	1*2.2	0,7	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,1	K2	1*2.2	1,2	K2	1*2.2	1,3	K3	1*3.0	1,4
				5400	K2	1*2.2	0,8	K2	1*2.2	0,9	K2	1*2.2	1,0	K2	1*2.2	1,2	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,5
				5700	K2	1*2.2	0,9	K2	1*2.2	1,0	K3	1*3.0	1,1	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,5	K3	1*3.0	1,7
				6000	K3	1*3.0	1,0	K3	1*3.0	1,1	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,5	K3	1*3.0	1,7	K3	1*3.0	1,8
				6300	K3	1*3.0	1,1	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,5	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	2,0
				6600	K3	1*3.0	1,3	K3	1*3.0	1,4	K3	1*3.0	1,5	K3	1*3.0	1,7	K3	1*3.0	1,8	K4	1*4.0	1,9	K4	1*4.0	2,1
				6900	K3	1*3.0	1,4	K3	1*3.0	1,6	K4	1*4.0	1,7	K4	1*4.0	1,8	K4	1*4.0	2,0	K4	1*4.0	2,1	K4	1*4.0	2,3
				7200	K4	1*4.0	1,6	K4	1*4.0	1,7	K4	1*4.0	1,8	K4	1*4.0	2,0	K4	1*4.0	2,1	K4	1*4.0	2,3	K4	1*4.0	2,4
				7500	K4	1*4.0	1,7	K4	1*4.0	1,9	K4	1*4.0	2,0	K4	1*4.0	2,2	K4	1*4.0	2,3	K4	1*4.0	2,5	K4	1*4.0	2,6

<b>BAC &amp; BAH 038-042</b>	038	042	Airflow	500			550			600			650			700			750			800			
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	
				5100	K3	1*3.0	1,5	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	1,9	K3	1*3.0	2,1	K3	1*3.0	2,2	K3	1*3.0	2,4
				5400	K3	1*3.0	1,7	K3	1*3.0	1,8	K3	1*3.0	1,9	K3	1*3.0	2,1	K3	1*3.0	2,2	K3	1*3.0	2,4	K3	1*3.0	2,5
				5700	K3	1*3.0	1,8	K3	1*3.0	1,9	K3	1*3.0	2,1	K3	1*3.0	2,2	K3	1*3.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,6
				6000	K3	1*3.0	1,9	K3	1*3.0	2,1	K3	1*3.0	2,2	K4	1*4.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,6	K4	1*4.0	2,8
				6300	K4	1*4.0	2,1	K4	1*4.0	2,2	K4	1*4.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,7	K4	1*4.0	2,8	K4	1*4.0	3,0
				6600	K4	1*4.0	2,2	K4	1*4.0	2,4	K4	1*4.0	2,5	K4	1*4.0	2,7	K4	1*4.0	2,8	K4	1*4.0	3,0	K4	1*4.0	3,2
				6900	K4	1*4.0	2,4	K4	1*4.0	2,6	K4	1*4.0	2,7	K4	1*4.0	2,9	K4	1*4.0	3,0	K4	1*4.0	3,2	K4	1*4.0	3,4
				7200	K4	1*4.0	2,6	K4	1*4.0	2,7	K4	1*4.0	2,9	K4	1*4.0	3,1	K4	1*4.0	3,2	K5	1*5.5	3,3	K5	1*5.5	3,5
				7500	K4	1*4.0	2,8	K4	1*4.0	2,9	K5	1*5.5	3,0	K5	1*5.5	3,2	K5	1*5.5	3,4	K5	1*5.5	3,5	K5	1*5.5	3,7

<b>P</b>	Fan motor power in kW	<b>HMPI</b>	Heat motor power input in kW
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**BAC** Cooling only

**BAH** Heat pump

075	085	Airflow	150			200			250			300			350			400			450		
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P
		BAC/ BAH 075-085																					
		10500	K1	1*5.5	1,5	K1	1*5.5	1,7	K1	1*5.5	2,0	K1	1*5.5	2,2	K1	1*5.5	2,5	K1	1*5.5	2,7	K1	1*5.5	3,0
		11000	K1	1*5.5	1,7	K1	1*5.5	1,9	K1	1*5.5	2,1	K1	1*5.5	2,4	K1	1*5.5	2,7	K1	1*5.5	2,9	K1	1*5.5	3,2
		11500	K1	1*5.5	1,8	K1	1*5.5	2,1	K1	1*5.5	2,3	K1	1*5.5	2,6	K1	1*5.5	2,9	K1	1*5.5	3,1	K1	1*5.5	3,4
		12000	K1	1*5.5	2,0	K1	1*5.5	2,3	K1	1*5.5	2,5	K1	1*5.5	2,8	K1	1*5.5	3,1	K1	1*5.5	3,3	K2	1*7.5	3,6
		12500	K1	1*5.5	2,2	K1	1*5.5	2,5	K1	1*5.5	2,7	K1	1*5.5	3,0	K2	1*7.5	3,2	K2	1*7.5	3,5	K2	1*7.5	3,8
		13000	K1	1*5.5	2,5	K1	1*5.5	2,7	K2	1*7.5	2,9	K2	1*7.5	3,2	K2	1*7.5	3,5	K2	1*7.5	3,8	K2	1*7.5	4,1
		13500	K2	1*7.5	2,6	K2	1*7.5	2,9	K2	1*7.5	3,2	K2	1*7.5	3,5	K2	1*7.5	3,7	K2	1*7.5	4,0	K2	1*7.5	4,3
		14000	K2	1*7.5	2,9	K2	1*7.5	3,2	K2	1*7.5	3,4	K2	1*7.5	3,7	K2	1*7.5	4,0	K2	1*7.5	4,3	K2	1*7.5	4,6
		14500	K2	1*7.5	3,1	K2	1*7.5	3,4	K2	1*7.5	3,7	K2	1*7.5	4,0	K2	1*7.5	4,3	K2	1*7.5	4,6	K2	1*7.5	4,6
		15000	K2	1*7.5	3,4	K2	1*7.5	3,7	K2	1*7.5	4,0	K2	1*7.5	4,3	K2	1*7.5	4,6	K2	1*7.5	4,6	K2	1*7.5	4,9
		15500	K2	1*7.5	3,7	K2	1*7.5	4,0	K2	1*7.5	4,3	K4	1*9.0	4,6	K4	1*9.0	4,6	K4	1*9.0	4,9	K4	1*9.0	5,2
		16000	K4	1*9.0	4,0	K4	1*9.0	4,3	K4	1*9.0	4,6	K4	1*9.0	4,6	K4	1*9.0	4,9	K4	1*9.0	5,2	K4	1*9.0	5,5
		16500	K4	1*9.0	4,3	K4	1*9.0	4,6	K4	1*9.0	4,6	K4	1*9.0	4,9	K4	1*9.0	5,2	K4	1*9.0	5,5	K4	1*9.0	5,8
		17000	K4	1*9.0	4,7	K4	1*9.0	4,7	K4	1*9.0	5,0	K4	1*9.0	5,3	K4	1*9.0	5,6	K4	1*9.0	5,9	K5	1*11.0	5,9
		17500	K4	1*9.0	4,7	K4	1*9.0	5,0	K4	1*9.0	5,3	K5	1*11.0	5,4	K5	1*11.0	5,7	K5	1*11.0	6,0	K5	1*11.0	6,3
		18000	K5	1*11.0	4,8	K5	1*11.0	5,1	K5	1*11.0	5,4	K5	1*11.0	5,7	K5	1*11.0	6,0	K5	1*11.0	6,3	K5	1*11.0	6,7
		18500	K5	1*11.0	5,2	K5	1*11.0	5,5	K5	1*11.0	5,8	K5	1*11.0	6,1	K5	1*11.0	6,4	K5	1*11.0	6,7	K5	1*11.0	7,1
		19000	K5	1*11.0	5,6	K5	1*11.0	5,9	K5	1*11.0	6,2	K5	1*11.0	6,5	K5	1*11.0	6,8	K5	1*11.0	7,2	K5	1*11.0	7,5

075	085	Airflow	500			550			600			650			700			750			800		
			m <sup>3</sup> /h	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P	HMPI	K	P
BAC/ BAH 075-085																							
		10500	K1	1*5.5	3,2	K1	1*5.5	3,5	K1	1*5.5	3,8	K1	1*5.5	4,1	K1	1*5.5	4,3	K2	1*7.5	4,6	K2	1*7.5	4,9
		11000	K1	1*5.5	3,5	K1	1*5.5	3,7	K1	1*5.5	4,0	K2	1*7.5	4,2	K2	1*7.5	4,5	K2	1*7.5	4,8	K2	1*7.5	4,8
		11500	K1	1*5.5	3,7	K2	1*7.5	3,9	K2	1*7.5	4,2	K2	1*7.5	4,5	K2	1*7.5	4,8	K2	1*7.5	4,7	K2	1*7.5	5,0
		12000	K2	1*7.5	3,9	K2	1*7.5	4,1	K2	1*7.5	4,4	K2	1*7.5	4,7	K2	1*7.5	4,7	K2	1*7.5	5,0	K2	1*7.5	5,3
		12500	K2	1*7.5	4,1	K2	1*7.5	4,4	K2	1*7.5	4,7	K2	1*7.5	4,7	K2	1*7.5	5,0	K2	1*7.5	5,3	K2	1*7.5	5,6
		13000	K2	1*7.5	4,4	K2	1*7.5	4,7	K2	1*7.5	4,6	K2	1*7.5	4,9	K2	1*7.5	5,2	K2	1*7.5	5,5	K2	1*7.5	5,8
		13500	K2	1*7.5	4,6	K2	1*7.5	4,6	K2	1*7.5	4,9	K2	1*7.5	5,2	K2	1*7.5	5,5	K2	1*7.5	5,8	K3	1*9.0	6,1
		14000	K2	1*7.5	4,6	K2	1*7.5	4,9	K2	1*7.5	5,2	K2	1*7.5	5,5	K3	1*9.0	5,8	K3	1*9.0	6,1	K3	1*9.0	6,4
		14500	K2	1*7.5	4,9	K2	1*7.5	5,2	K3	1*9.0	5,5	K3	1*9.0	5,8	K3	1*9.0	6,1	K3	1*9.0	6,4	K3	1*9.0	6,8
		15000	K4	1*9.0	5,2	K4	1*9.0	5,5	K3	1*9.0	5,8	K3	1*9.0	6,1	K3	1*9.0	6,4	K3	1*9.0	6,8	K3	1*9.0	7,1
		15500	K4	1*9.0	5,5	K4	1*9.0	5,8	K3	1*9.0	6,1	K3	1*9.0	6,5	K3	1*9.0	6,8	K3	1*9.0	7,1	K3	1*9.0	7,5
		16000	K4	1*9.0	5,8	K3	1*9.0	6,1	K3	1*9.0	6,5	K3	1*9.0	6,8	K5	1*11.0	6,8	K5	1*11.0	7,1	K5	1*11.0	7,5
		16500	K4	1*9.0	6,2	K5	1*11.0	6,2	K5	1*11.0	6,5	K5	1*11.0	6,8	K5	1*11.0	7,2	K5	1*11.0	7,5	K5	1*11.0	7,8
		17000	K5	1*11.0	6,2	K5	1*11.0	6,6	K5	1*11.0	6,9	K5	1*11.0	7,2	K5	1*11.0	7,6	K5	1*11.0	7,9	K5	1*11.0	8,2
		17500	K5	1*11.0	6,6	K5	1*11.0	6,9	K5	1*11.0	7,3	K5	1*11.0	7,6	K5	1*11.0	7,9	K5	1*11.0	8,3	K5	1*11.0	8,6
		18000	K5	1*11.0	7,0	K5	1*11.0	7,3	K5	1*11.0	7,7	K5	1*11.0	8,0	K5	1*11.0	8,4	K5	1*11.0	8,7			
		18500	K5	1*11.0	7,4	K5	1*11.0	7,7	K5	1*11.0	8,1	No kit			No kit			No kit			No kit		
		19000	No kit			No kit			No kit			No kit			No kit			No kit			No kit		

<b>P</b>	Fan motor power in kW	<b>HMPI</b>	Heat motor power input in kW
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**BAC** Cooling only

**BAG** Cooling only with gas fired heating

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

OUTDOOR NOISE LEVEL

100 PA

**STANDARD VERSION**

SIZE		Spectrum per Octave band (dBA)								Total sound power (dBA)	Sound pressure at 10 m. (dBA)
		63	125	250	500	1000	2000	4000	8000		
BAC / BAH	024	62,0	64,4	69,2	72,3	74,2	75,1	71,8	65,8	80,3	43,8
	030	62,1	64,6	69,4	72,7	74,9	75,1	71,0	65,9	80,5	47,5
	038	62,1	64,7	69,5	72,9	74,8	75,9	73,2	66,2	81,0	48,4
	042	62,2	64,9	69,7	73,1	75,4	76,8	74,3	67,4	81,7	50,0
	045	65,0	67,4	72,2	75,4	77,1	78,1	74,9	68,9	83,3	49,0
	052	65,0	67,6	72,3	75,5	77,5	78,1	74,5	68,9	83,4	51,0
	057	65,1	67,9	72,4	75,8	78,0	78,4	74,6	69,2	83,7	53,1
	065	65,1	68,3	72,6	76,1	78,3	79,2	76,3	69,8	84,3	54,6
	075	65,7	64,6	68,0	75,3	77,1	77,9	76,3	68,2	83,2	52,9
085	65,8	65,2	68,6	75,5	77,9	79,0	77,4	69,8	84,1	54,4	
BAG / BAM	024	62,1	64,5	69,2	72,3	74,2	75,1	71,9	65,8	80,3	46,5
	030	62,2	64,8	69,6	72,8	75,0	75,3	71,3	66,0	80,7	51,1
	038	62,2	65,0	69,7	73,0	75,0	76,1	73,4	66,4	81,2	52,1
	042	62,3	65,4	70,0	73,4	75,7	77,1	74,5	67,7	82,0	52,8
	045	65,0	67,6	72,2	75,4	77,2	78,1	74,9	68,9	83,3	50,4
	052	65,0	67,8	72,3	75,6	77,6	78,1	74,5	68,9	83,4	51,8
	057	65,1	68,3	72,5	76,0	78,2	78,4	74,6	69,3	83,8	53,5
	065	65,1	68,7	72,9	76,2	78,7	79,1	76,2	69,9	84,5	55,6
	075	65,8	65,5	68,8	75,5	77,4	78,2	76,6	68,6	83,5	54,8
085	65,8	66,7	69,8	76,0	78,4	79,4	77,7	70,3	84,5	54,6	

**LOW NOISE VERSION**

SIZE		Spectrum per Octave band (dBA)								Total sound power (dBA)	Sound pressure at 10 m. (dBA)
		63	125	250	500	1000	2000	4000	8000		
BAC / BAH	024	59,1	61,5	66,3	69,4	70,9	71,2	66,5	63,5	76,8	45,8
	030	59,2	61,8	66,7	70,1	71,7	72,0	67,7	63,7	77,5	46,5
	038	59,2	62,0	66,8	70,5	72,1	72,6	68,5	64,2	77,9	46,9
	042	59,3	62,4	67,2	70,9	72,7	73,3	69,5	66,0	78,7	47,7
	045	62,1	64,6	69,3	72,6	73,9	74,2	69,5	66,6	79,8	48,8
	052	62,1	64,9	69,4	72,9	74,2	74,7	70,2	66,6	80,2	49,2
	057	62,1	65,5	69,7	73,3	75,0	75,6	71,7	67,2	80,9	49,9
	065	62,1	66,1	70,1	73,8	75,8	76,6	73,3	68,1	81,8	50,8
	075	62,9	62,7	66,3	73,1	74,8	74,9	72,0	66,8	80,4	49,4
085	63,0	63,5	67,1	73,6	75,5	75,9	73,1	68,9	81,3	50,3	
BAG / BAM	024	59,2	61,6	66,4	69,5	71,0	71,3	66,6	63,5	76,8	45,8
	030	59,4	62,2	67,0	70,4	72,0	72,4	68,2	63,9	77,8	46,8
	038	59,5	62,6	67,3	70,7	72,5	73,1	69,1	64,5	78,4	47,4
	042	59,5	63,2	67,7	71,3	73,3	73,9	70,3	66,3	79,2	48,2
	045	62,1	64,8	69,3	72,7	73,9	74,3	69,6	66,6	79,9	48,9
	052	62,1	65,2	69,5	73,1	74,3	74,7	70,2	66,7	80,2	49,3
	057	62,1	66,1	69,9	73,6	75,3	75,6	71,7	67,2	81,1	50,1
	065	62,1	66,8	70,6	74,1	76,4	76,5	73,3	68,2	82,0	51,1
	075	63,0	63,9	67,4	73,5	75,3	75,5	72,7	67,3	81,0	50,0
085	62,9	65,6	68,7	74,3	76,3	76,5	74,0	69,4	82,1	51,1	

INDOOR NOISE LEVEL

100 PA

SIZE		Spectrum per Octave band (dBA)								Total sound power (dBA)	Sound pressure at 10 m. (dBA)
		63	125	250	500	1000	2000	4000	8000		
BAC / BAH	024	52,6	61,6	66,6	70,3	70,5	66,4	57,6	75,2	70,8	39,8
	030	57,6	66,0	72,7	75,1	76,2	73,0	65,4	80,8	76,3	45,3
	038	59,1	67,4	74,3	76,8	78,1	75,0	67,8	82,6	78,1	47,1
	042	61,2	69,1	76,0	78,7	80,1	77,2	70,4	84,6	80,0	49,0
	045	58,9	62,5	71,0	71,7	72,6	68,7	62,0	77,6	74,3	43,3
	052	63,2	65,5	73,3	74,7	76,1	72,8	65,9	80,8	77,5	46,5
	057	67,2	69,0	75,8	78,3	79,9	77,3	70,3	84,5	81,1	50,1
	065	69,9	71,8	77,6	80,8	82,3	80,3	73,1	87,0	83,5	52,5
	075	64,2	71,8	78,6	81,3	82,7	79,9	73,2	87,2	82,7	51,7
085	66,1	73,2	80,0	82,7	84,3	81,6	75,3	88,8	84,2	53,2	
BAG / BAM	024	66,2	70,1	75,3	77,2	77,3	74,8	66,6	82,8	77,8	46,8
	030	67,4	72,4	77,4	79,2	79,9	77,7	70,4	85,2	80,5	49,5
	038	68,0	73,5	78,1	79,5	80,9	78,9	71,8	86,0	81,6	50,6
	042	69,4	74,8	79,3	80,4	82,0	80,2	73,4	87,2	82,9	51,9
	045	70,7	72,0	74,4	76,3	75,8	73,2	66,9	82,1	78,6	47,6
	052	71,7	73,9	76,1	78,6	77,9	75,6	69,2	84,1	80,6	49,6
	057	73,0	76,0	78,1	81,5	80,4	78,4	72,1	86,6	83,0	52,0
	065	74,2	77,8	79,5	83,9	82,2	80,6	74,3	88,6	85,0	54,0
	075	73,3	78,1	82,4	83,4	84,8	83,3	76,6	90,2	85,9	54,9
085	71,0	75,9	80,4	81,4	82,9	81,4	74,8	88,2	84,0	53,0	

**BAC** Cooling only  
**BAG** Cooling only with gas fired heating

**BAH** Heat pump  
**BAM** Heat pump rooftop with gas fired heating

SIZE	Airflow rate m³/h	G4 filter (Pa)	G4 + F7 filter (Pa)	Hot water coil (Pa)	Electric heater		Electric pre-heater	
					S (Pa)	H (Pa)	S (Pa)	H (Pa)
O24	3600	2,7	23,1	26,8	8,0	12,0	13,4	16,4
	4200	3,6	31,5	35,0	9,3	14,0	18,2	22,3
	5600	6,5	56,0	56,9	12,4	18,7	32,4	39,7
O30	4600	4,4	37,8	40,9	10,2	15,3	21,9	26,8
	5700	6,7	58,0	58,6	12,7	19,0	33,6	41,1
	6800	9,5	82,6	78,7	15,1	22,7	47,8	58,5
O38	5100	5,4	46,4	48,7	11,3	17,0	26,9	32,9
	6300	8,2	70,9	69,3	14,0	21,0	41,0	50,2
	8400	14,5	126,0	112,8	18,7	28,0	72,9	89,2
O42	5500	6,2	54,0	55,2	12,2	18,3	31,3	38,3
	6900	9,8	85,0	80,6	15,3	23,0	49,2	60,2
	8400	14,5	126,0	112,8	18,7	28,0	72,9	89,2
O45	5700	3,0	25,8	19,9	12,7	19,0	12,8	16,5
	7100	4,6	40,0	28,7	15,8	23,7	19,8	25,7
	9700	8,6	74,7	47,3	21,6	32,3	37,0	47,9
O52	6700	4,1	35,6	26,1	14,9	22,3	17,7	22,9
	8300	6,3	54,7	37,0	18,4	27,7	27,1	35,1
	11200	11,5	99,5	59,3	24,9	37,3	49,4	63,9
O57	7900	5,7	49,5	34,1	17,6	26,3	24,6	31,8
	9900	9,0	77,8	48,9	22,0	33,0	38,6	49,9
	13100	15,7	136,2	76,1	29,1	43,7	67,5	87,4
O65	8900	7,3	62,9	41,3	19,8	29,7	31,2	40,3
	11100	11,3	97,8	58,5	24,7	37,0	48,5	62,8
	13100	15,7	136,2	76,1	29,1	43,7	67,5	87,4
O75	10500	5,7	49,2	36,3	23,3	35,0	22,3	27,4
	13500	9,4	81,4	54,0	30,0	45,0	36,8	45,2
	17000	14,9	129,0	77,5	37,8	56,7	58,4	71,7
O85	10500	5,7	49,2	36,3	23,3	35,0	22,3	27,4
	14500	10,8	93,8	60,4	32,2	48,3	42,5	52,2
	19000	18,6	161,1	92,7	42,2	63,3	72,9	89,6

SIZE	Airflow rate m³/h	Adjustable roofcurb (Pa)	Multi directional Roofcurb (Pa)	Heat recovery on exhaust air		eRecovery hot water coil on refrigeration (Pa)
				Fresh air (Pa)	Exhaust air <sup>(1)</sup> (Pa)	
O24	3600	8,0	12,5			26,0
	4200	10,9	17,0			33,5
	5600	19,4	30,2			53,6
O30	4600	13,1	20,4			38,8
	5700	20,1	31,3			55,2
	6800	28,5	44,5			73,7
O38	5100	16,1	25,0			46,0
	6300	24,5	38,2			65,0
	8400	43,6	67,9			104,2
O42	5500	18,7	29,1			52,1
	6900	29,4	45,8			75,5
	8400	43,6	67,9			104,2
O45	5700	10,0	16,3			23,4
	7100	15,6	25,3			33,5
	9700	29,0	47,2			55,9
O52	6700	13,9	22,5	AVAILABLE SOON		30,5
	8300	21,3	34,6			43,3
	11200	38,7	62,9			70,7
O57	7900	19,3	31,3			39,9
	9900	30,3	49,2			57,8
	13100	53,0	86,1			91,4
O65	8900	24,4	39,7			48,5
	11100	38,0	61,8			69,7
	13100	53,0	86,1			91,4
O75	10500	21,3	25,5			48,4
	13500	35,2	42,2			73,1
	17000	55,7	66,9			106,6
O85	10500	21,3	25,5			48,4
	14500	40,6	48,7	82,1		
	19000	69,6	83,6	127,9		

(1) : To be added to extraction fan external static pressure.

**BAC** Cooling only

**BAG** Cooling only with gas fired heating

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

SIZE	O24		O30		O38		O42		O45		O52		O57		O65		O75		O85	
	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A	Pa kW	FLA A
Base unit	11,1	19,6	15,0	26,8	18,5	31,8	21,3	37,1	20,9	36,3	24,9	43,9	29,6	52,4	34,5	60,8	39,4	68,3	45,3	79,6
	BAC		BAH																	
Direct start up intensity Id/la	5,4		3,0		2,9		3,3		3,4		2,2		2,0		2,0		1,9		2,1	
Base unit	11,2	19,8	15,1	27,0	19,5	33,7	21,4	37,3	21,9	38,2	26,1	45,9	31,3	56,4	34,6	61,0	41,6	72,6	45,4	79,8
	BAG		BAM																	
Direct start up intensity Id/la	5,3		3,0		2,8		3,3		3,2		2,1		1,9		2,0		1,8		2,0	
Standard indoor kit	1,87	3,6	2,65	4,9	2,65	4,9	3,57	6,6	2,65	4,9	3,57	6,6	4,66	8,4	6,34	12,2	6,34	12,2	8,47	16,3
	BAC		BAH																	
	1,87	3,6	2,65	4,9	3,57	6,6	3,57	6,6	3,57	6,6	4,66	8,4	6,34	12,2	6,34	12,2	6,34	12,2	8,47	16,3
Standard outdoor fan <sup>(1)</sup>	0,73	1,35	0,73	1,35	0,94	1,75	0,94	1,75	1,46	2,7	1,46	2,7	1,88	3,5	1,88	3,5	3,4	6,4	3,4	6,4
	BAC		BAH																	
Low noise outdoor fan	0,52	0,65	0,52	0,65	-0,13	-0,35	-0,13	-0,35	1,04	1,3	1,04	1,3	-0,26	-0,7	-0,26	-0,7	0,8	0,4	0,8	0,4
<b>KITS</b>																				
BAC BAH	K1	0	0	-0,78	-1,3	-0,78	-1,3	-1,7	-3	0	0	-0,92	-1,7	-2,01	-3,5	-3,69	-7,3	0	-2,13	-4,1
	K2	0,78	1,3	0	0	0	0	-0,92	-1,7	0,92	1,7	0	0	-1,09	-1,8	-2,77	-5,6	2,13	4,1	0
	K3	1,7	3	0,92	1,7	0,92	1,7	0	0	2,01	3,5	1,09	1,8	0	0	-1,68	-3,8	4,14	5,6	2,01
	K4	2,79	4,8	2,01	3,5	2,01	3,5	1,09	1,8	3,69	7,3	2,77	5,6	1,68	3,8	0	0	4,14	5,6	2,01
	K5	4,47	8,6	3,69	7,3	3,69	7,3	2,77	5,6	5,82	11,4	4,9	9,7	3,81	7,9	2,13	4,1	6,09	10,8	3,96
BAG BAM	K1	0	0	-0,78	-1,3	-1,7	-3	-1,7	-3	-0,92	-1,7	-2,01	-3,5	-3,69	-7,3	-3,69	-7,3	-2,13	-4,1	-2,13
	K2	0,78	1,3	0	0	-0,92	-1,7	-0,92	-1,7	0	0	-1,09	-1,8	-2,77	-5,6	-2,77	-5,6	0	0	0
	K3	1,7	3	0,92	1,7	0	0	0	0	1,09	1,8	0	0	-1,68	-3,8	-1,68	-3,8	2,01	1,5	2,01
	K4	2,79	4,8	2,01	3,5	1,09	1,8	1,09	1,8	2,77	5,6	1,68	3,8	0	0	0	0	2,01	1,5	2,01
	K5	4,47	8,6	3,69	7,3	2,77	5,6	2,77	5,6	4,9	9,7	3,81	7,9	2,13	4,1	2,13	4,1	3,96	6,7	3,96
<b>EXTRACTION</b>																				
Power exhaust fan	0,17	0,8	0,17	0,8	0,17	0,8	0,17	0,8	0,34	1,6	0,34	1,6	0,34	1,6	0,34	1,6	0,51	2,4	0,51	2,4
	BAC		BAH																	
Extraction roofcourb Standard kit	1,87	3,60	2,65	4,90	3,57	6,60	3,57	6,60	3,57	6,60	4,66	8,40	6,34	12,20	6,34	12,20	6,34	12,20	8,47	16,30
	BAC		BAH																	
Extraction roofcourb	K1	0,00	0,00	-0,78	-1,30	-1,70	-3,00	-1,70	-3,00	-0,92	-1,70	-2,01	-3,50	-3,69	-7,30	-3,69	-7,30	-1,68	-3,80	-3,81
	K2	0,78	1,30	0,00	0,00	-0,92	-1,70	-0,92	-1,70	0,00	0,00	-1,09	-1,80	-2,77	-5,60	-2,77	-5,60	0,00	-2,13	-4,10
	K3	1,70	3,00	0,92	1,70	0,00	0,00	0,00	0,00	1,09	1,80	0,00	0,00	-1,68	-3,80	-1,68	-3,80	2,13	4,10	0,00
	K4	2,79	4,80	2,01	3,50	1,09	1,80	1,09	1,80	2,77	5,60	1,68	3,80	0,00	0,00	0,00	0,00	4,14	5,60	2,01
	K5	4,47	8,60	3,69	7,30	2,77	5,60	2,77	5,60	4,90	9,70	3,81	7,90	2,13	4,10	2,13	4,10	6,09	10,80	3,96
<b>AUXILIARY HEATING</b>																				
Gas module	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,1	0,2	0,2
Electrical heater	S	18	26	18	26	18	26	18	26	27	39	27	39	27	39	27	39	27	39	27
	BAC		BAH																	
Electrical pre-heater	H	36	52	36	52	36	52	36	52	54	78	54	78	54	78	54	78	54	78	54
	BAC		BAH																	
Electrical pre-heater	S	18	26	18	26	18	26	18	26	24	35	24	35	24	35	24	35	24	35	24
	BAC		BAH																	
Electrical pre-heater	H	36	52	36	52	36	52	36	52	48	69	48	69	48	69	48	69	48	69	48
	BAC		BAH																	

**FLA** Full load amps

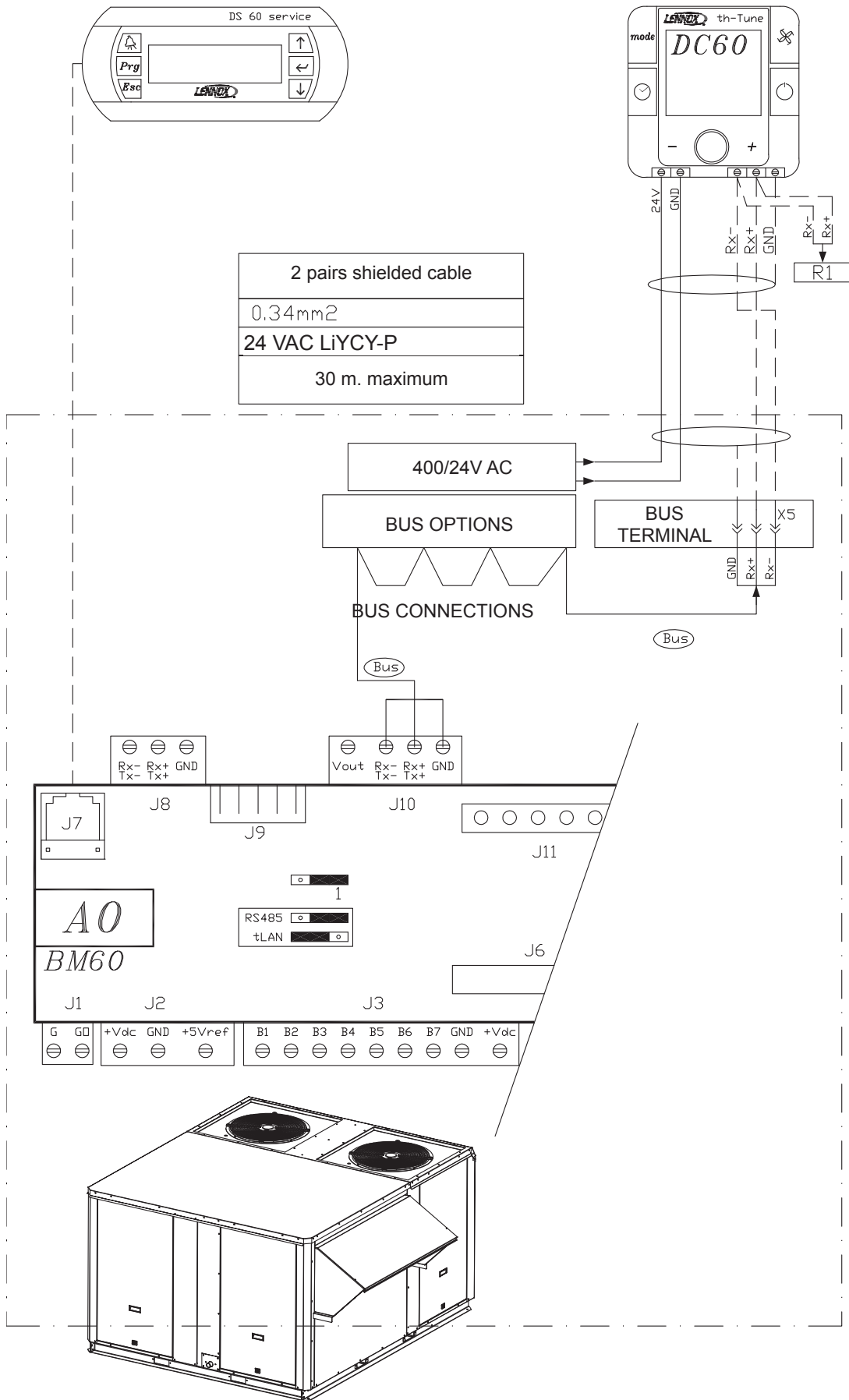
**Pa** Absorbed power

**(1):** Included in base unit data

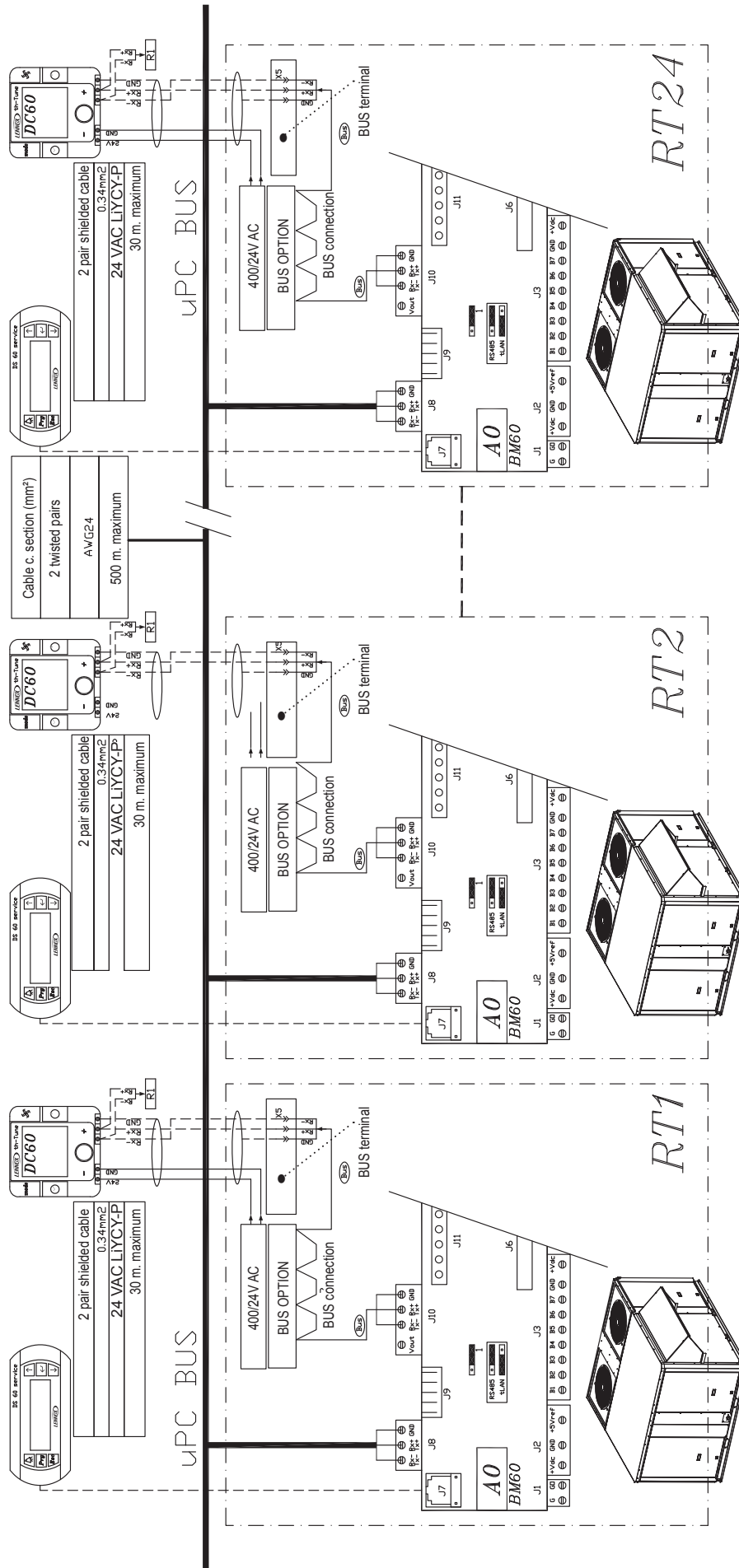
**S** Small  
**H** High



**DS 60 : Service display / DC 60 : Comfort display**



Master/Slave



## DIGITAL OUTPUT

### 2 relays on the BM60

BM_J14-NO7	Not available if (ELHS)(ELHH) 2 steps of electrical heaters or (BAG)(BAM) high gas burner
BM_J15-NO12	Not available if (C-Box) size 24 to 42.

### 4 relays on the BE60 (DCBO) Dry Contact Board option

BE-J5-NO1	Not available if (PEFA) exhaust fan
BE-J6-NO2	always available
BE-J7-NO3	always available
BE-J8-NO4	always available

Alarm	Alarm, General
Minor A	Alarm, Minor
Major A	Alarm, Major
Filter A	Alarm, Dirty filters or missing
Blower A	Alarm, Blower
Comp. A	Alarm, Circuit (Compressor)
Gas A	Alarm, Gas burner
Elec. A	Alarm, Electrical heaters
Frost. A	Alarm, Supply to low (Freeze protection)
Smoke A	Alarm, Smoke detection
Defrost	Circuit, Defrosting cycle requested or activated (Compressor)
Heating	Control, Heating mode activated
Dead Z.	Control, Dead zone mode activated
Cooling	Control, Cooling mode activated
by BMS	BMS, Activated by BMS
Sched. A	Schedule, Mode A activated
Sched. B	Schedule, Mode B activated
Sched. C	Schedule, Mode C activated
Sched. D	Schedule, Mode D activated
Sched.BMS	Schedule, Mode BMS activated
Sched.Z0	Schedule, Zone 0 activated
Sched.Z1	Schedule, Zone 1 activated
Sched.Z2	Schedule, Zone 2 activated
Sched.Z3	Schedule, Zone 3 activated
Sched.Z4	Schedule, Zone 4 activated
Sched.Z5	Schedule, Zone 5 activated
Sched.Z6	Schedule, Zone 6 activated

## DIGITAL INPUT

### 2 inputs on the BM60

BM-J4-ID4	Not available if (ELPS)(ELPH) electrical heaters on fresh air
BM-J4-ID7	Not available if (HRMO) static recovery module

### 4 inputs on the BE60 (DCBO) Dry Contact Board option

BE-J4-ID1	always available
BE-J4-ID2	always available
BE-J4-ID3	always available
BE-J4-ID4	always available

Note: These points are available by Dry Contact or by BMS request.

Power	Power of the unit (ON/OFF)
Reset AI	Reset, Alarm
Summer	Control, Unloaded heating mode
Winter	Control, Unloaded cooling mode
Low Fan	Blower, Force reduced flow (low speed)
High Fan	Blower Force nominal flow (high speed)
No F.A	Fresh Air, Force the damper to close (0%)
10% F.A	Fresh Air, Force the damper to minimum opening (10%)
20% F.A	Fresh Air, Force the damper to minimum opening (20%)
30% F.A	Fresh Air, Force the damper to minimum opening (30%)
40% F.A	Fresh Air, Force the damper to minimum opening (40%)
50% F.A	Fresh Air, Force the damper to minimum opening (50%)
All F.A	Fresh Air, Force the damper to full opening (100%)
No FreeC	Fresh Air, Unloaded Free-Cooling mode
No FreeH	Fresh Air, Unloaded Free-Heating mode
No Air.Q	Air Quality, Unloaded control
Defrost	Circuit, Defrosting cycle delayed (Compressor)
50% Cp.	Circuit, Unloaded immediately 50% of compressors running
No Comp.	Circuit, Unloaded all compressor
No HPump	Circuit, Unloaded all compressor in heat-pump mode
No Cp&Ht	Circuit and Heaters, Unloaded all
50% Ht.	Heaters, Unloaded immediately 50% of heaters running
No Heat.	Heaters, Unloaded all heaters
Prio.Ht.	Control, Force the Priority of the heaters vs Compressors
Tcb G	TCB, G
Tcb B	TCB, B
Tcb Y1	TCB, W1
Tcb Y2	TCB, W2
Tcb W1	TCB, Y1
Tcb W2	TCB, Y2
for BMS	BMS, input reading for BMS
Sched. A	Schedule, Force the Mode A
Sched. B	Schedule, Force the Mode B
Sched. C	Schedule, Force the Mode C
Sched. D	Schedule, Force the Mode D
Sched.BMS	Schedule, Force the Mode BMS

## ANALOG INPUT

0 input on the BM60

### 4 inputs on the BE60 (DCBO) Dry Contact Board option

BE-J9-B1	Not available if (CO2S) Air quality sensor. If (ADCP) Humidity sensor (Ntc BMS) isn't available
BE-J9-B2	Not available if (ADCP) Humidity sensor. If (CO2S) Air quality sensor (Ntc BMS) isn't available
BE-J10-B3	Not available if (RLKD) circuit leak detection
BE-J10-B4	If (RLKD) circuit leak detection only (Ntc BMS) is available

Ntc BMS	BMS, temperature (NTC) reading for BMS
Hr. BMS	BMS, relative humidity (4-20mA) reading for BMS
Sp Temp.	Control set point, swift of the value (4mA=-5K, 20mA=+5K)
Sp F.Air	Fresh air set point, value (4mA=0%, 20mA=100%)
Sp Speed	Speed blower set point, value (4mA=low level, 20mA=nominal level)
T. Out.	Control, outside temperature by 4-20mA sensor
T. Room	Control, room temperature by 4-20mA sensor
Hr. Out.	Control, outside relative humidity by 4-20mA sensor
Hr. Room	Control, room relative humidity by 4-20mA sensor

## Lennox Climatic 60 and BMS Modbus, Trend or BACnet.

### Specification of the Bus:

Type:

- . RS485

Speed : (Adjustable on CLIMATIC™ 50 via display DS50; Setting 3933)

- 1200
- 2400
- 4800
- 9600
- 19200

Parity: Fixed

- no parity (N)

Length: Fixed

- . 8 bits (8)

Stop bit: Fixed

- 2 bits (2)

### Spécification du protocole:

Mode: Fixed

- R.T.U. for Modbus

Address of slave: (Adjustable on Climatic 50 via display DS50; Setting 3931)

- 1
- to 200

Supported functions, for Modbus:

- Reading Bits : 1 or 2
- Reading Words : 3 or 4
- Writing simple Bit : 5
- Writing simple Word : 6

### Functionality 'Watchdog' on CLIMATIC™ 60.

The automat CLIMATIC™ 60 being passive on the bus it cannot detect any cut of communication with the BMS. From where in the event of cut of communication the rooftop would continue to function with the last adjustments emitted by the BMS. To avoid operation, penalizing the correct operation of the rooftop, the BMS must regularly write in the word 01h a value different from 0. The automat CLIMATIC™ 60 decreases the value of the word 01h of 5 units every 5 seconds.

If the BMS writes the value 1000 in the word 01h, in the event of cut of communication at the end of 16 minutes 40 seconds, the instructions emitted by the BMS are not taken more into account by the software of the automat CLIMATIC™ 60. I.e. the following points are not taken into account by the program of the automat CLIMATIC™ 60 if the word 01h is equal to 0

Points concerned with the word 01h

Words :

- . 02H / 03H / 04H / 05H / 06H / 07H / 08H

Bits :

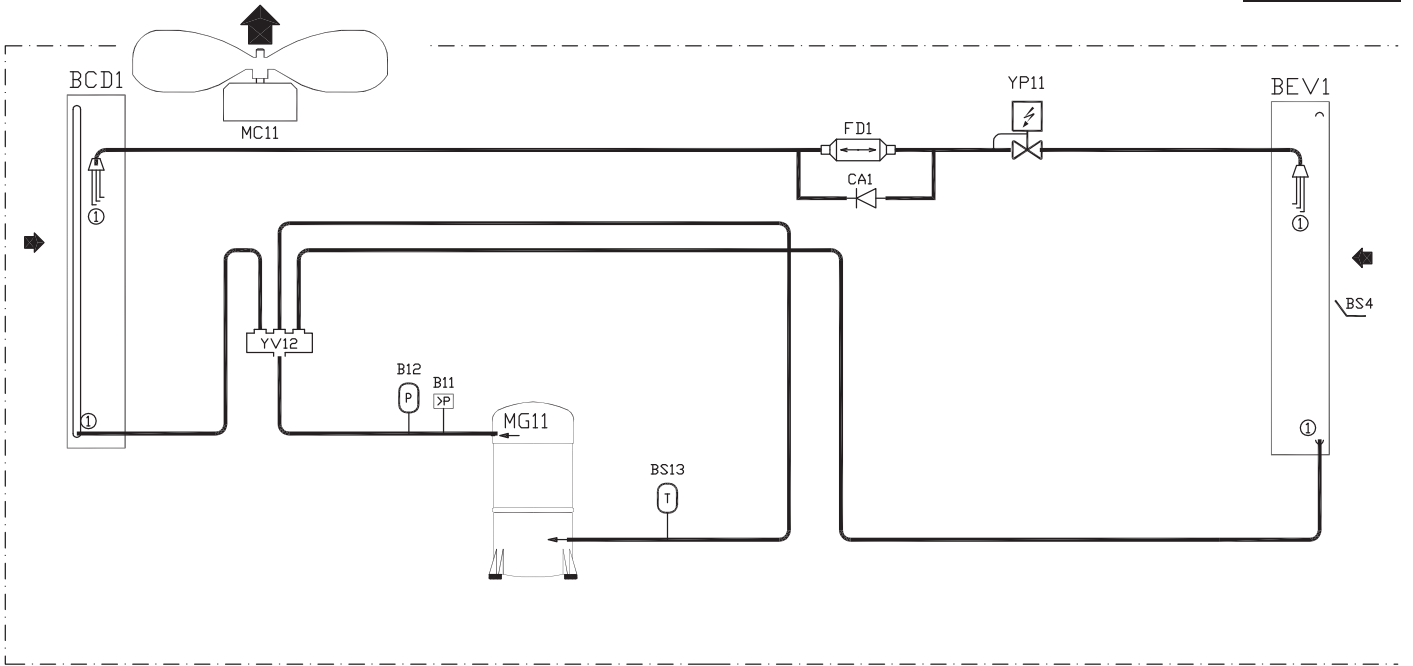
- 03H / 04H / 06H / 07H / 08H / 09H / 0AH / 0BH / 0CH / 0DH / 0EH

This functionality does not prohibit the writing of the bit or of the word, those are always readable on our display DS50 (show in mode BMS via the key 'Prg')

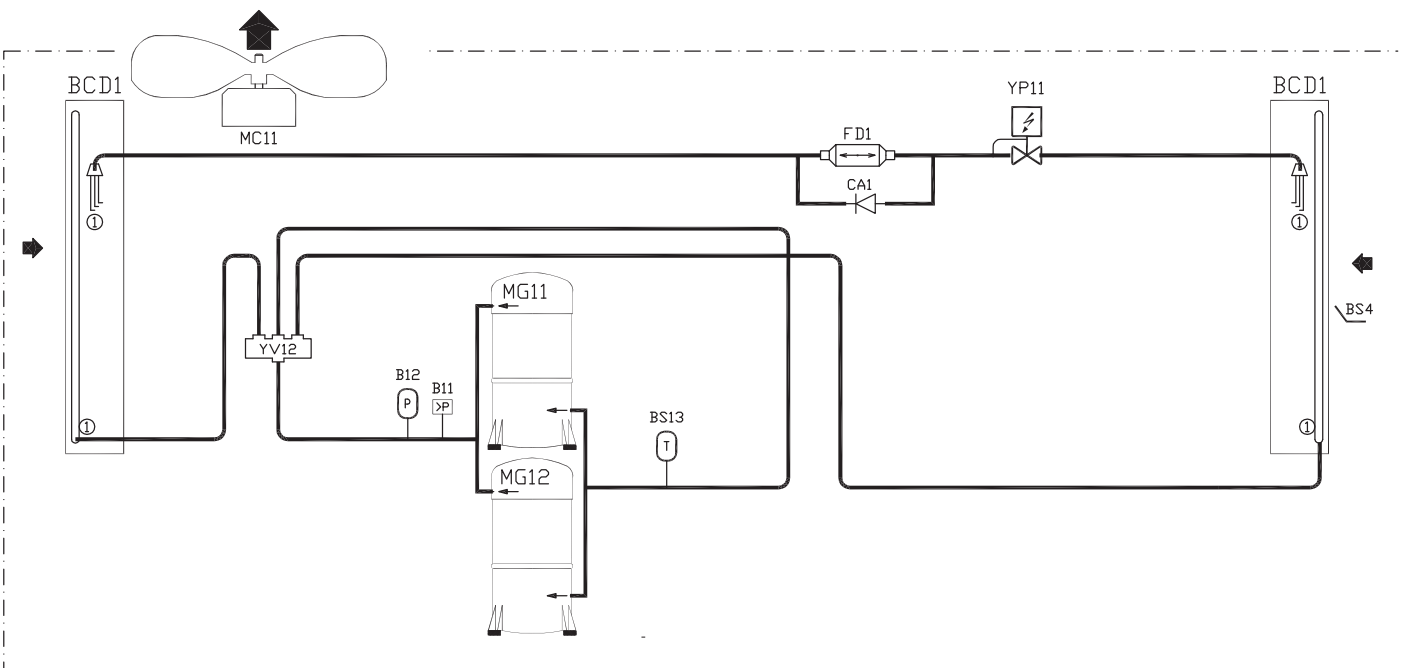
**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

024



030 - 038 - 042

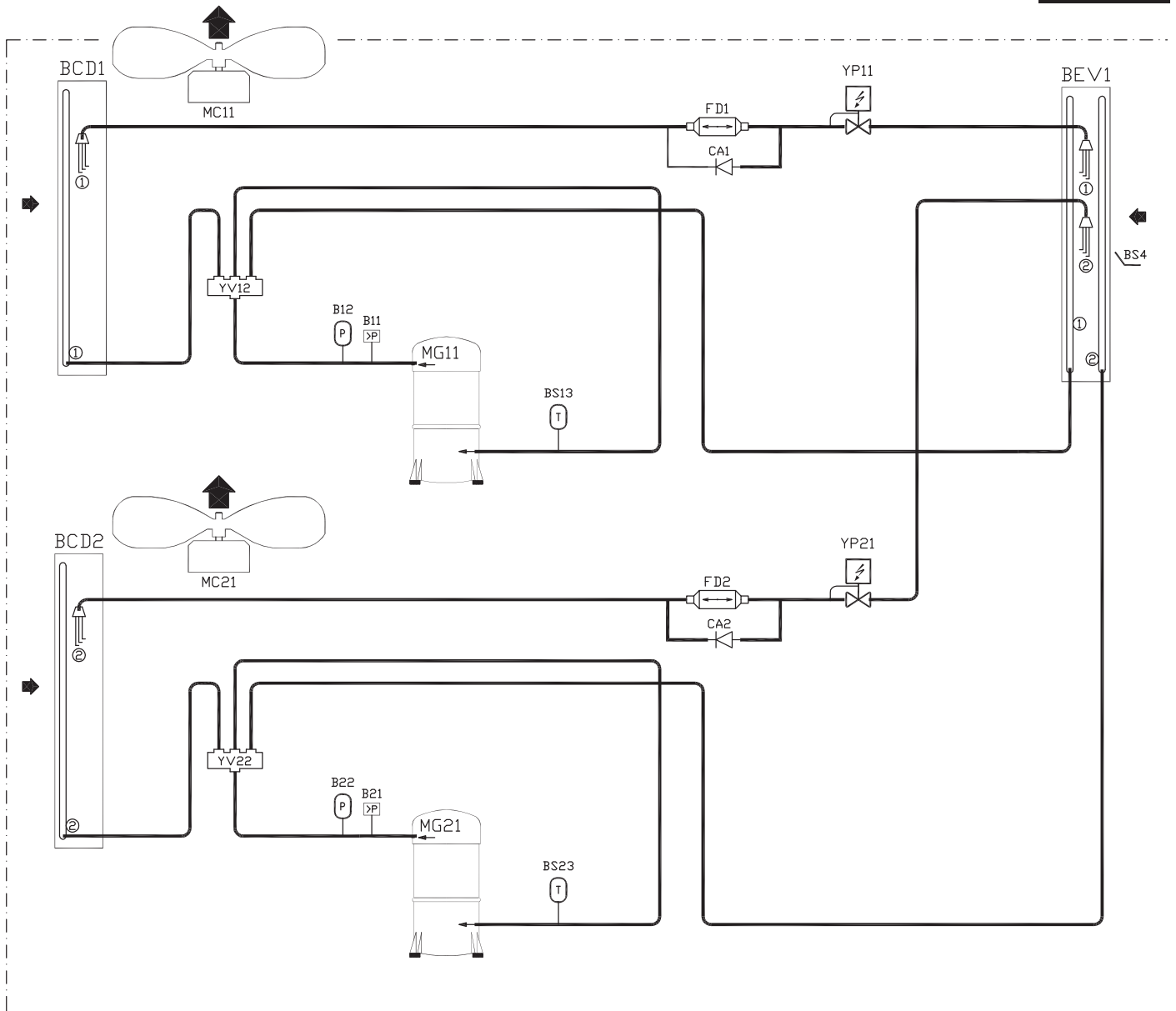


<b>MG 11/12/23/24</b>	Compressor	<b>YV 12/22</b>	4-way valve
<b>BCDn</b>	Outdoor coil	<b>CA 1/2</b>	Non return valve
<b>BEVn</b>	Indoor coil	<b>B 12/22</b>	High pressure transducer
<b>MC 11/21</b>	Outdoor axial fan	<b>B 11/21</b>	High pressure switch
<b>FDI</b>	Filter dryer	<b>BS 13/23</b>	Suction temperature sensor
<b>YP 11/21</b>	Electronic expansion valve	<b>BS4</b>	Return air temperature sensor

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

**045**

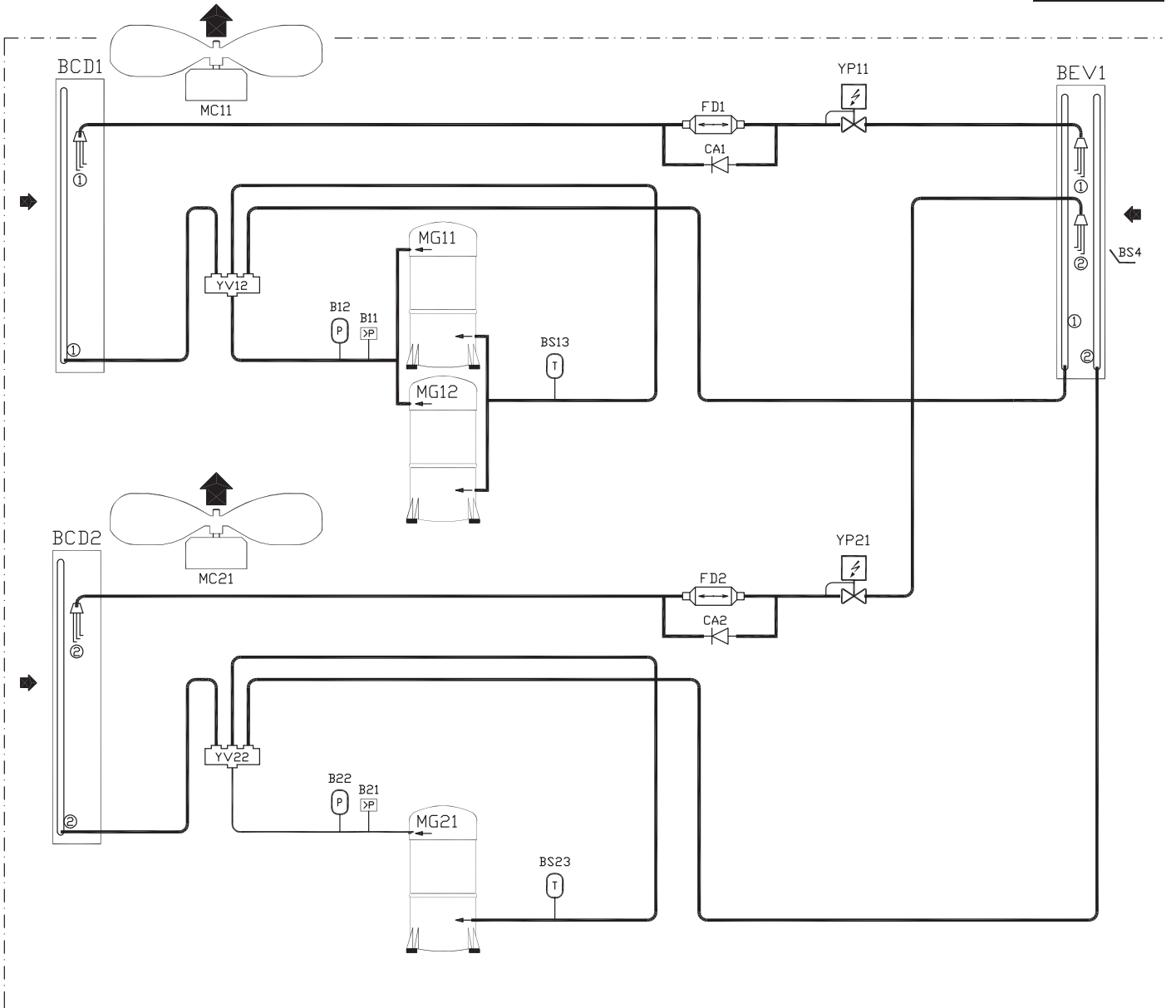


<b>MG 11/12/23/24</b>	Compressor	<b>YV 12/22</b>	4-way valve
<b>BCDn</b>	Outdoor coil	<b>CA 1/2</b>	Non return valve
<b>BEVn</b>	Indoor coil	<b>B 12/22</b>	High pressure transducer
<b>MC 11/21</b>	Outdoor axial fan	<b>B 11/21</b>	High pressure switch
<b>FDI</b>	Filter dryer	<b>BS 13/23</b>	Suction temperature sensor
<b>YP 11/21</b>	Electronic expansion valve	<b>BS4</b>	Return air temperature sensor

**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

052



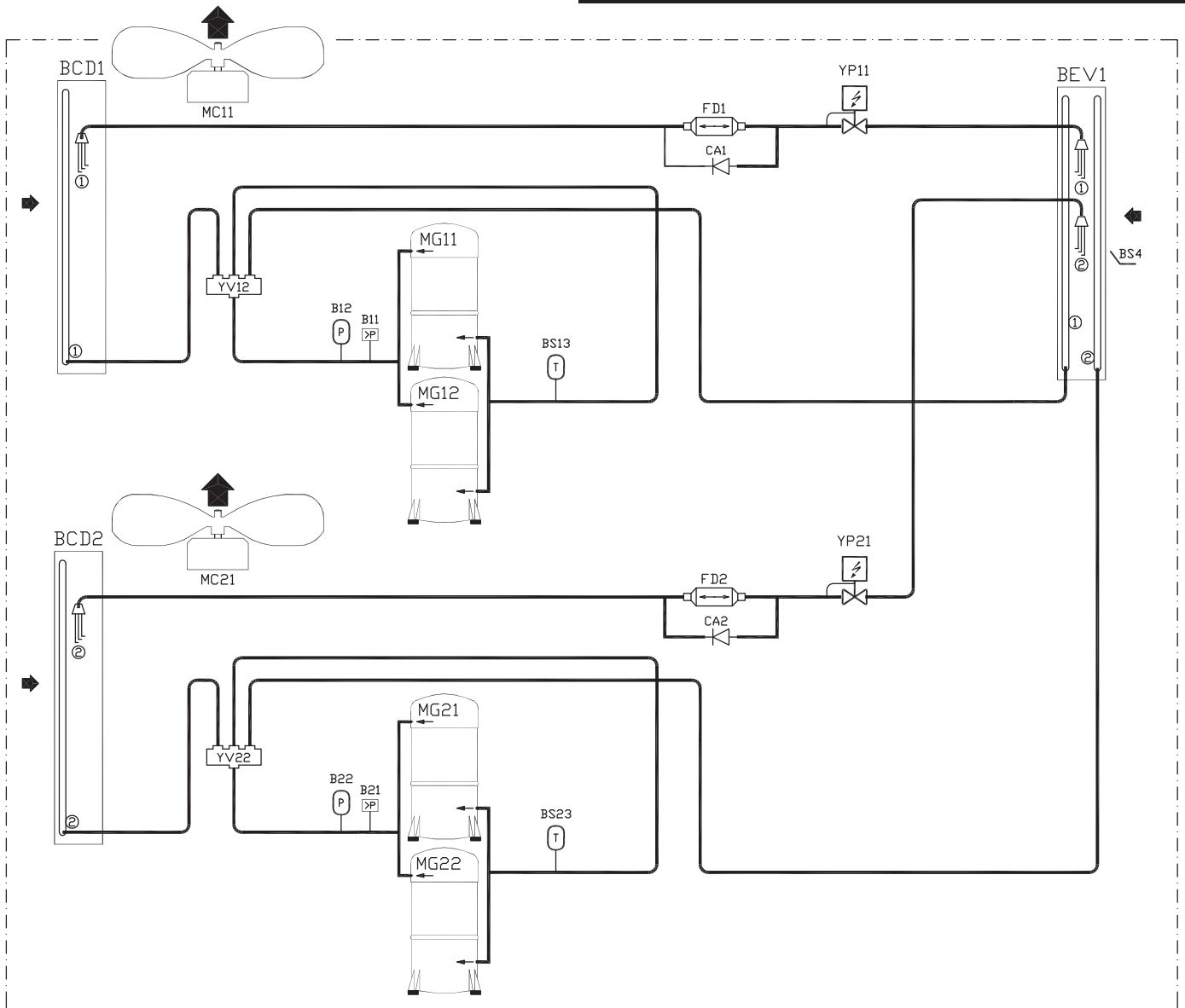
<b>MG 11/12/23/24</b>	Compressor	<b>YV 12/22</b>	4-way valve
<b>BCDn</b>	Outdoor coil	<b>CA 1/2</b>	Non return valve
<b>BEVn</b>	Indoor coil	<b>B 12/22</b>	High pressure transducer
<b>MC 11/21</b>	Outdoor axial fan	<b>B 11/21</b>	High pressure switch
<b>FDI</b>	Filter dryer	<b>BS 13/23</b>	Suction temperature sensor
<b>YP 11/21</b>	Electronic expansion valve	<b>BS4</b>	Return air temperature sensor



**BAH** Heat pump

**BAM** Heat pump rooftop with gas fired heating

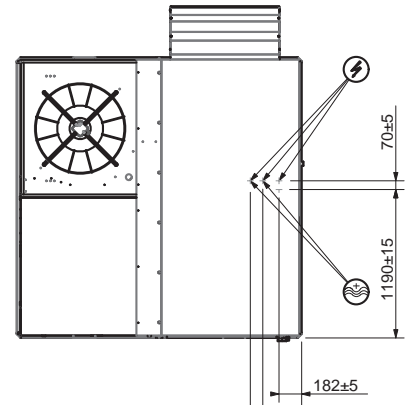
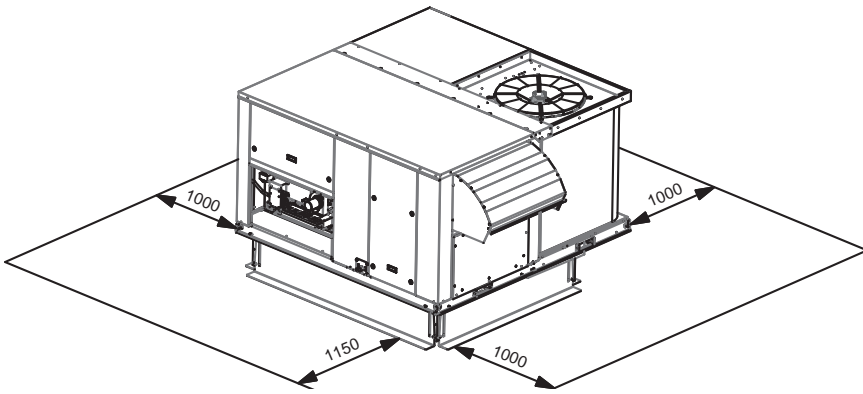
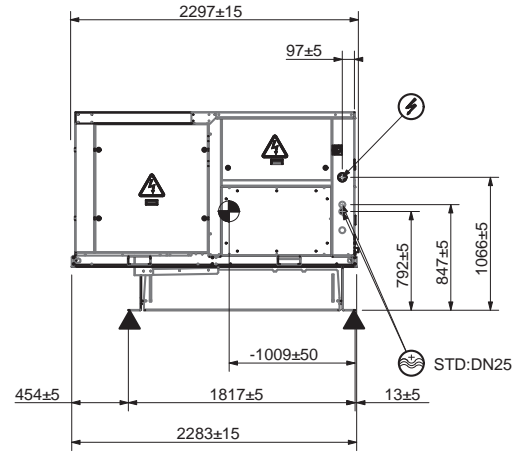
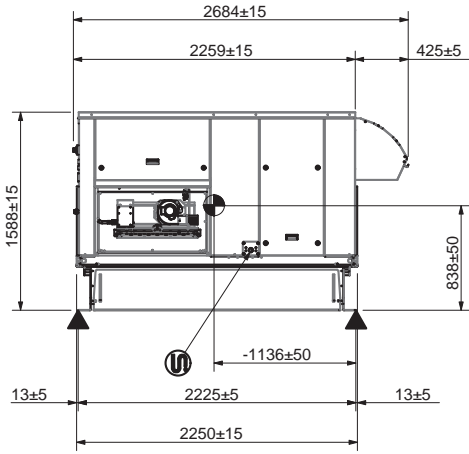
057 - 065 - 075 - 085



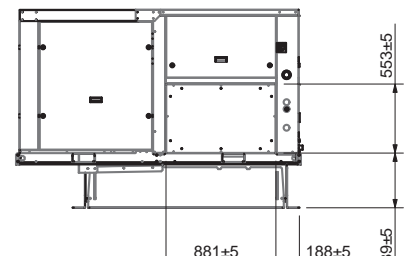
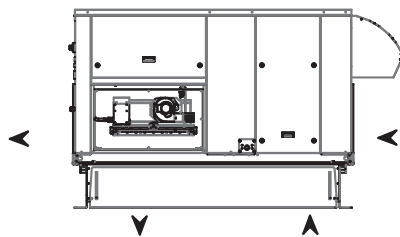
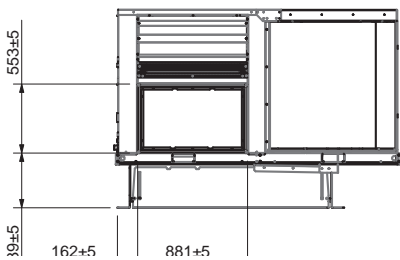
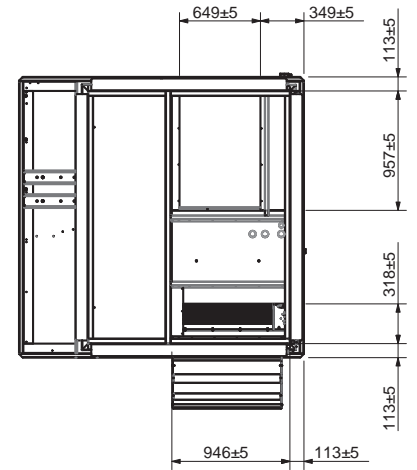
<b>MG 11/12/23/24</b>	Compressor	<b>YV 12/22</b>	4-way valve
<b>BCDn</b>	Outdoor coil	<b>CA 1/2</b>	Non return valve
<b>BEVn</b>	Indoor coil	<b>B 12/22</b>	High pressure transducer
<b>MC 11/21</b>	Outdoor axial fan	<b>B 11/21</b>	High pressure switch
<b>FDI</b>	Filter dryer	<b>BS 13/23</b>	Suction temperature sensor
<b>YP 11/21</b>	Electronic expansion valve	<b>BS4</b>	Return air temperature sensor

BASIC UNITS  
C BOX

024 - 032 - 038 - 042

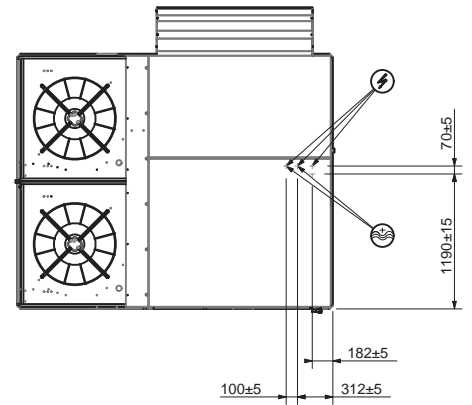
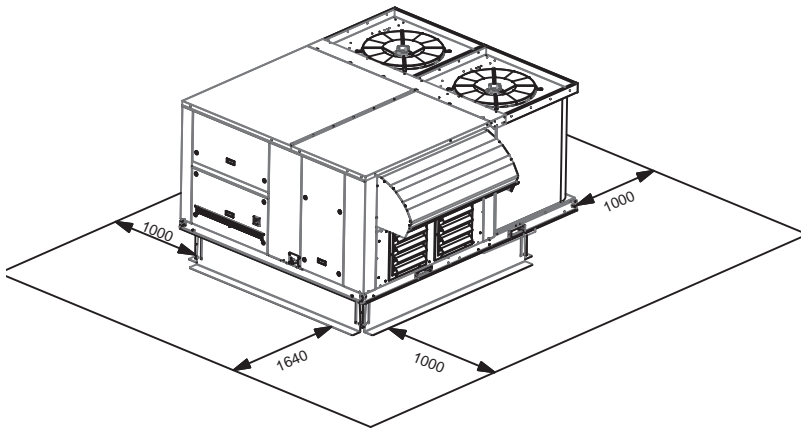
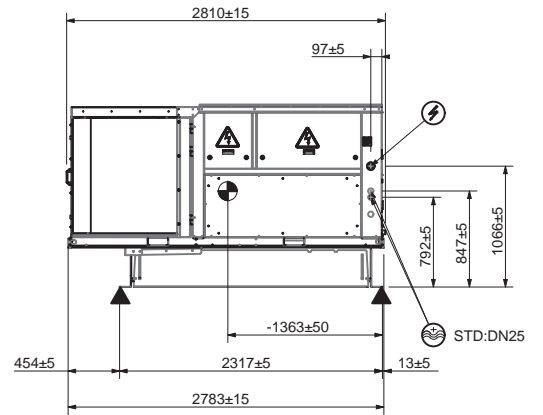
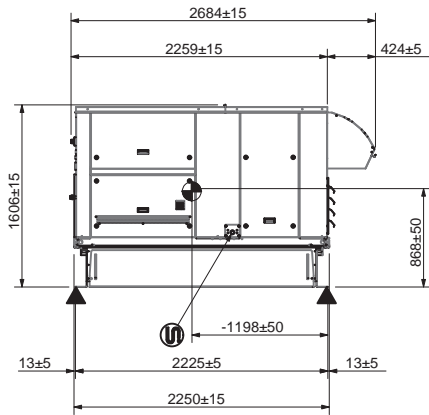


- Electrical connection
- Condensate draining
- Gas supplying
- Centre of gravity

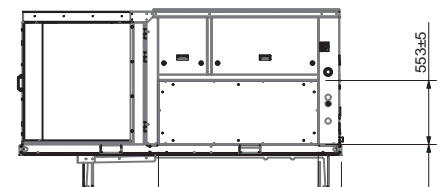
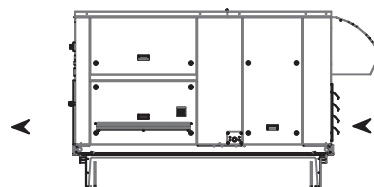
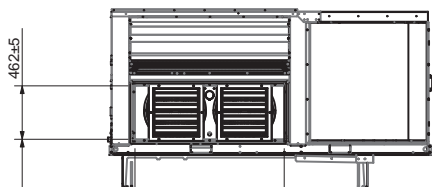
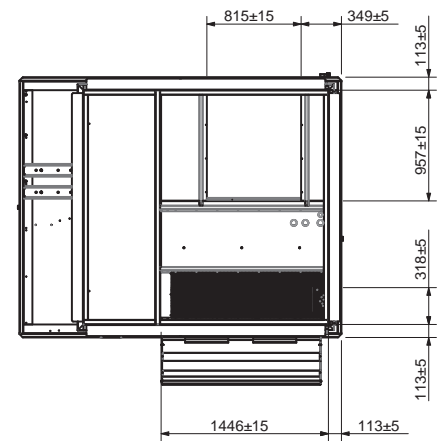


BASIC UNITS  
D BOX

045 - 052 - 047 - 065

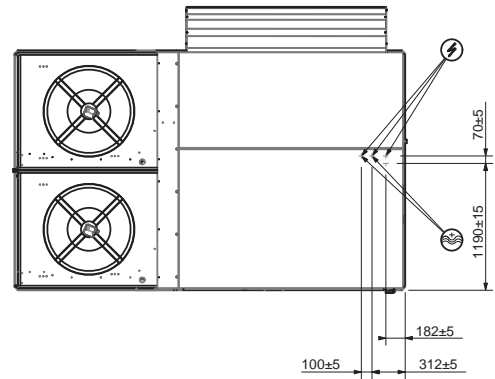
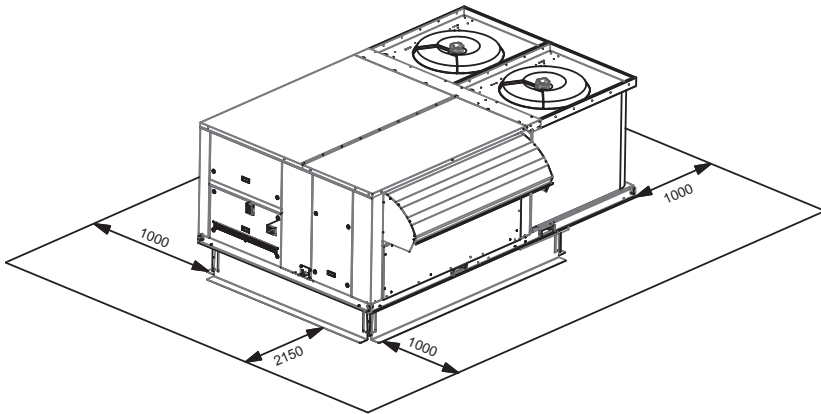
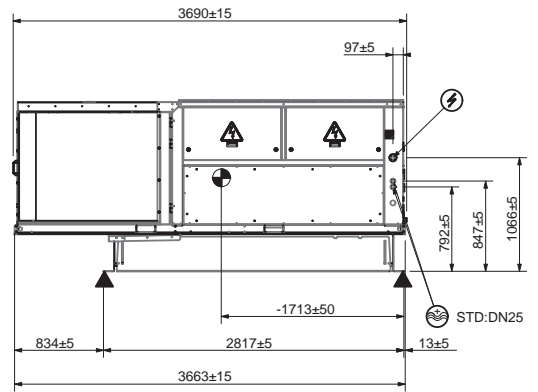
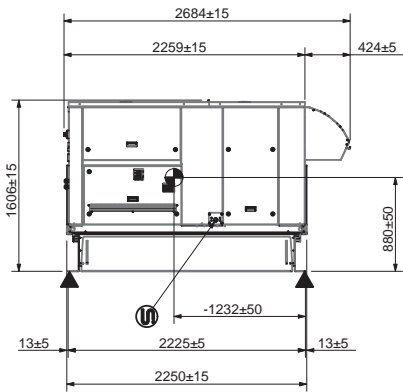






- Electrical connection
- Condensate draining
- Gas supplying
- Centre of gravity

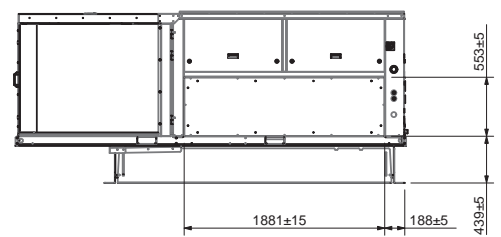
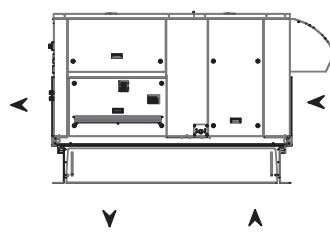
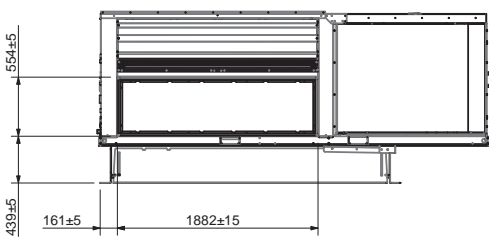
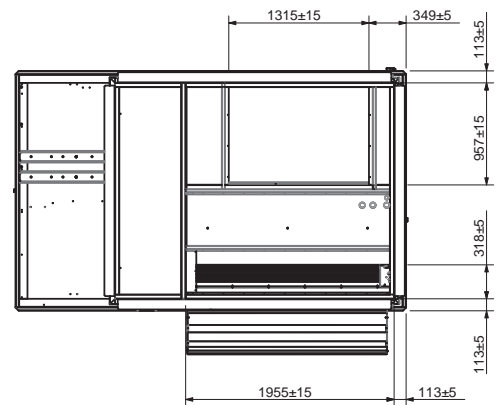


BASIC UNITS  
E BOX

075 - 085

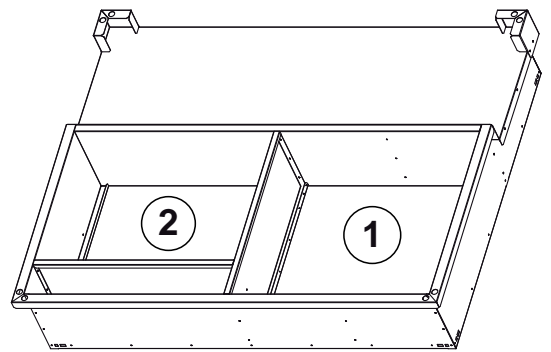
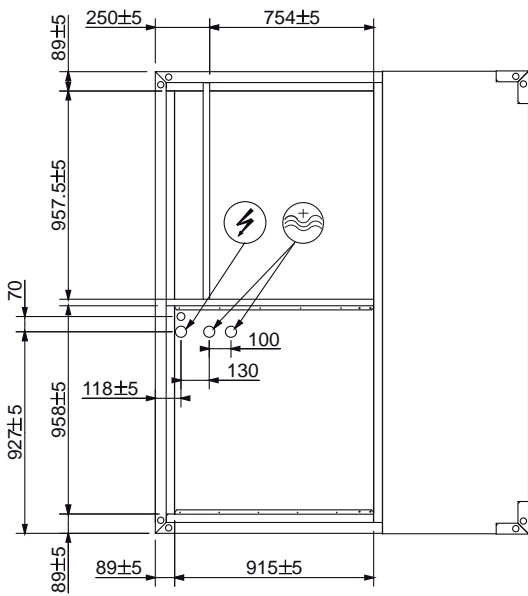
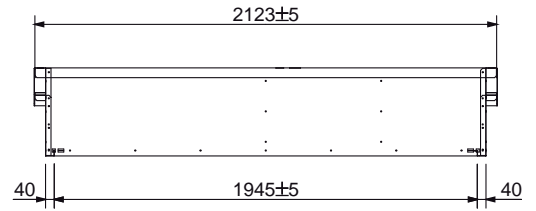
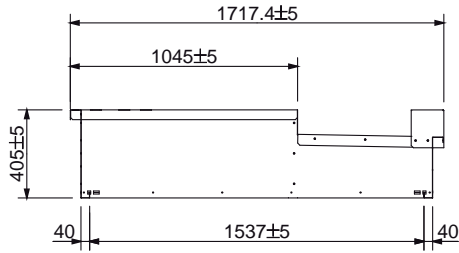


-  Electrical connection
-  Condensate draining
-  Gas supplying
-  Centre of gravity



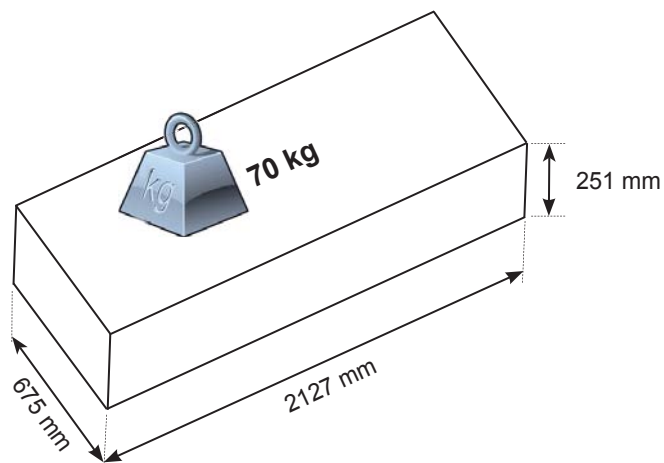
NON ADJUSTABLE ROOFCURB  
C BOX

024 - 032 - 038 - 042



- Electrical connection
- Hot water piping
- 1** Return air
- 2** Supply air

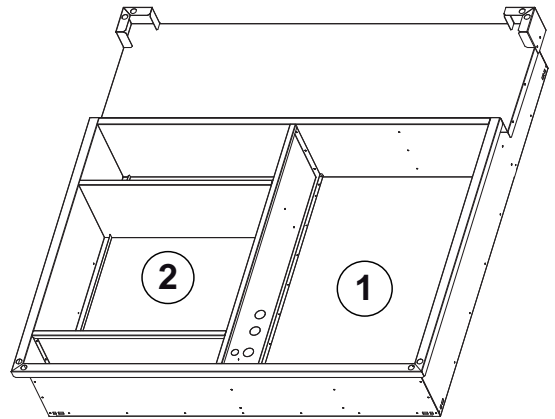
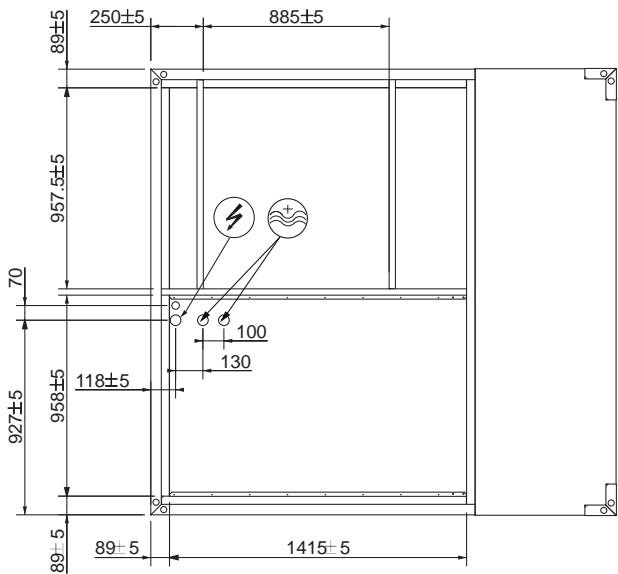
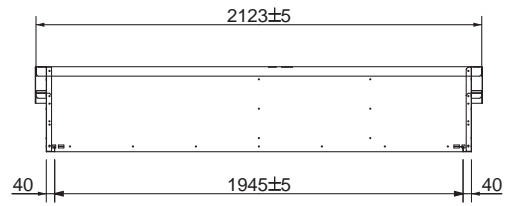
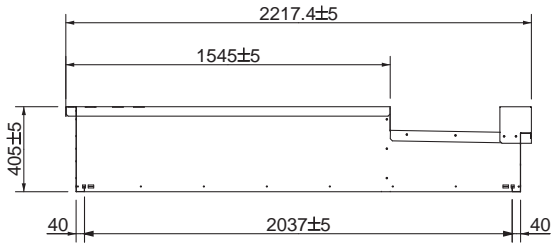
NON ADJUSTABLE ROOFCURB KIT  
DIMENSIONS AND WEIGHT FOR TRANSPORT



UNIT + ACCESSORIES ASSEMBLY DRAWINGS AVAILABLE IN e-Lencal

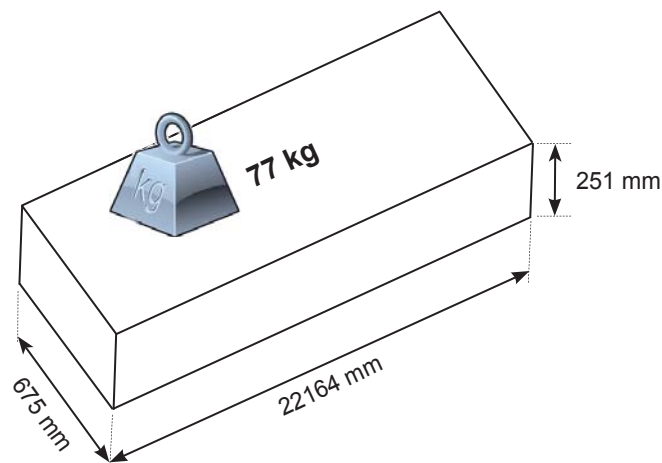
NON ADJUSTABLE ROOFCURB  
D BOX

045 - 052 - 057 - 065



- Electrical connection
- Hot water piping
- 1** Return air
- 2** Supply air

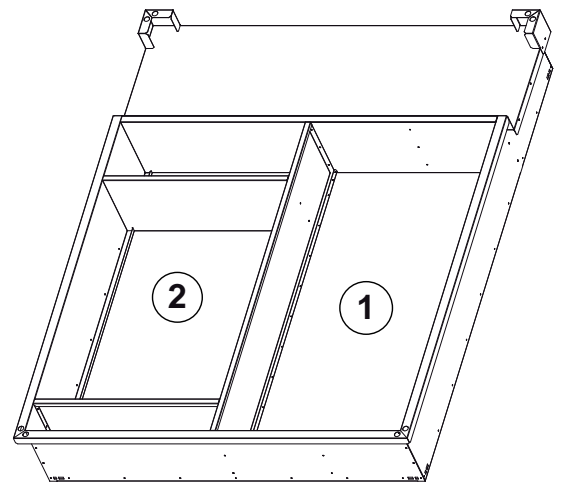
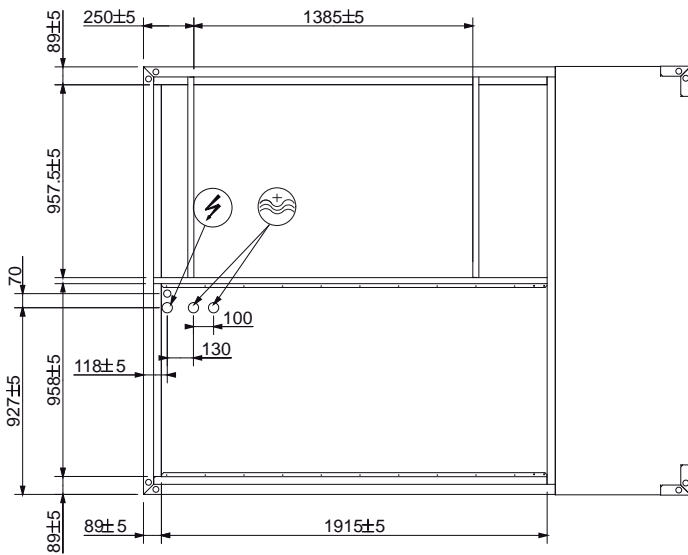
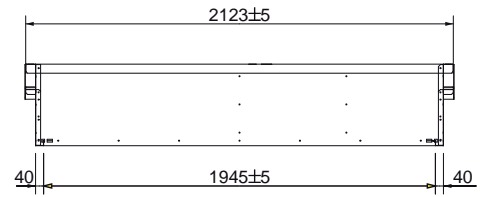
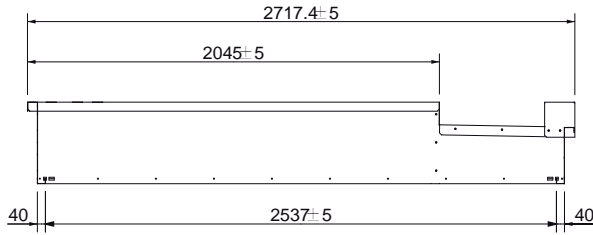
NON ADJUSTABLE ROOFCURB KIT  
DIMENSIONS AND WEIGHT FOR TRANSPORT





UNIT + ACCESSORIES ASSEMBLY DRAWINGS AVAILABLE IN e-Lencal

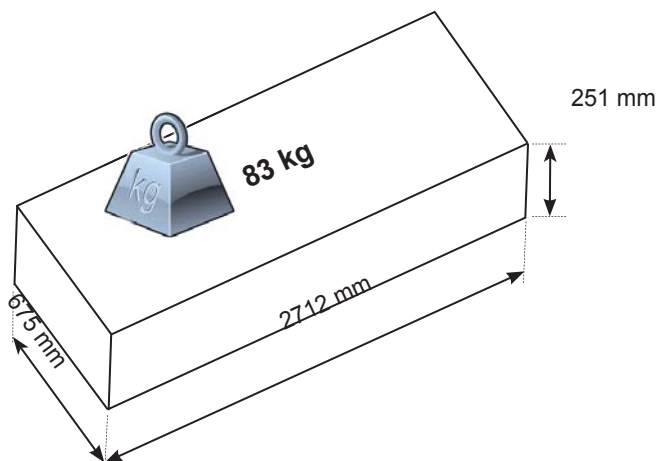
NON ADJUSTABLE ROOFCURB  
E BOX

075 - 085



-  Electrical connection
-  Hot water piping
- 1** Return air
- 2** Supply air

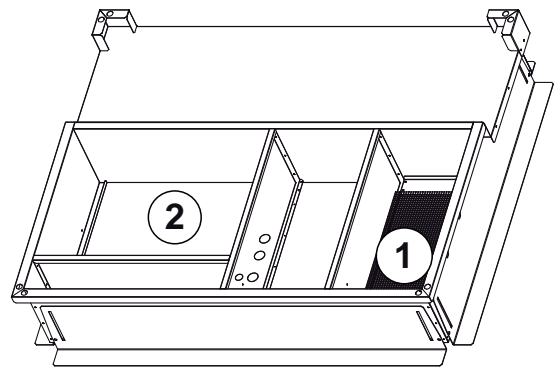
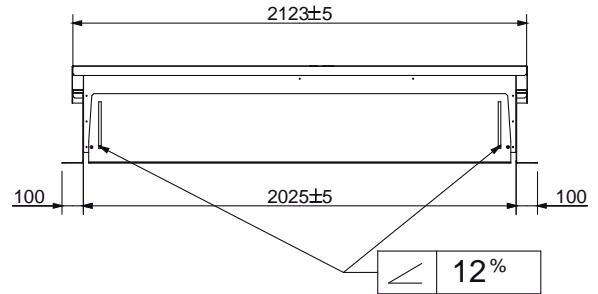
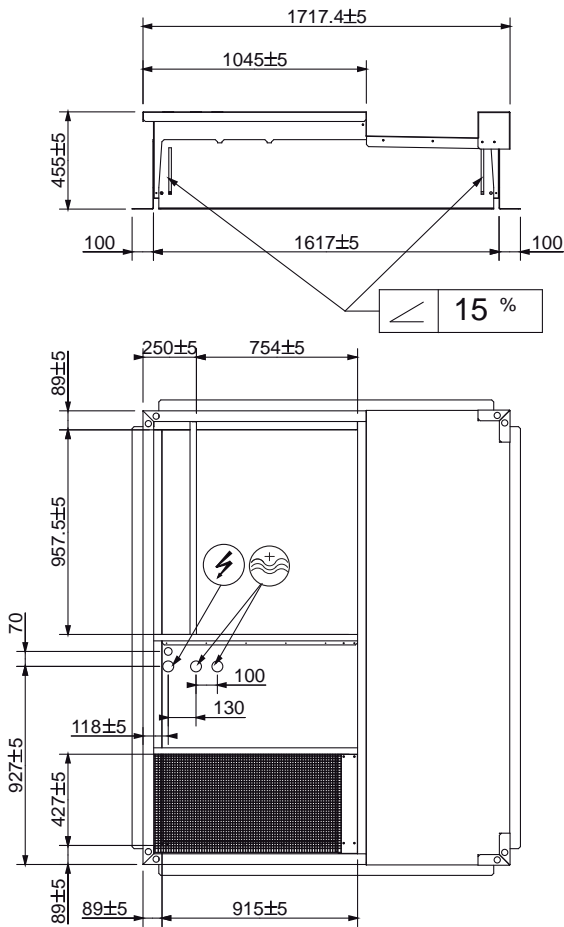
NON ADJUSTABLE ROOFCURB KIT  
DIMENSIONS AND WEIGHT FOR TRANSPORT



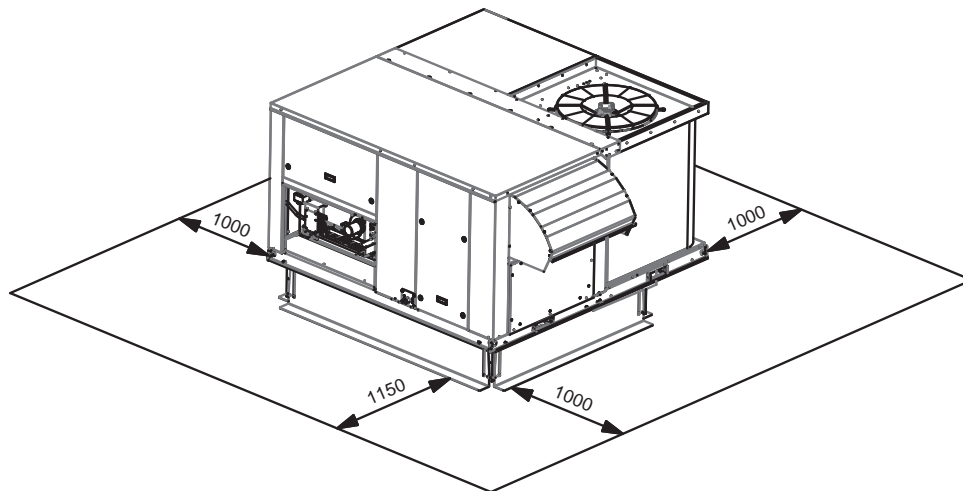
UNIT + ACCESSORIES ASSEMBLY DRAWINGS AVAILABLE IN e-Lencal

ADJUSTABLE ROOFCURB  
C BOX

024 - 030 - 038 - 042



- Electrical connection
- Hot water piping
- 1** Return air
- 2** Supply air

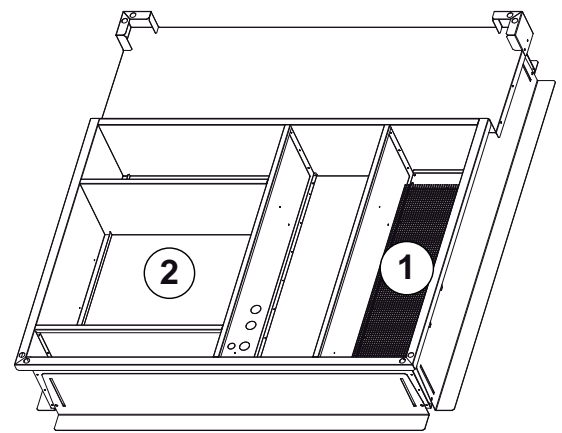
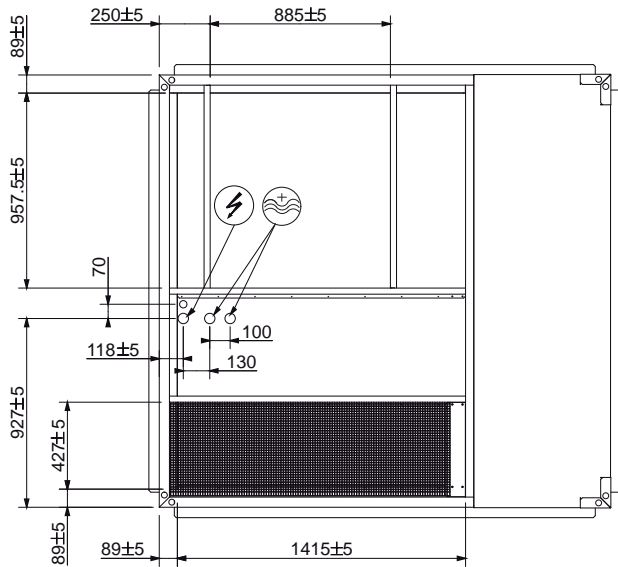
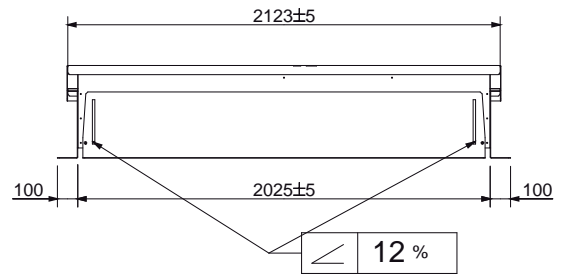
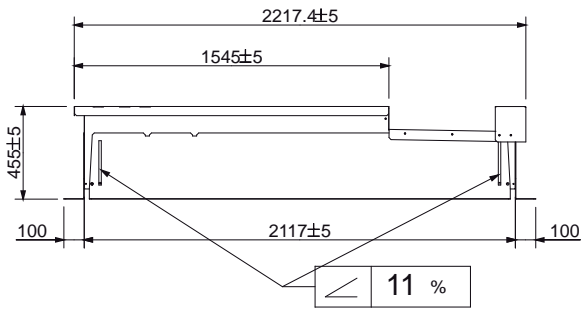


ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL

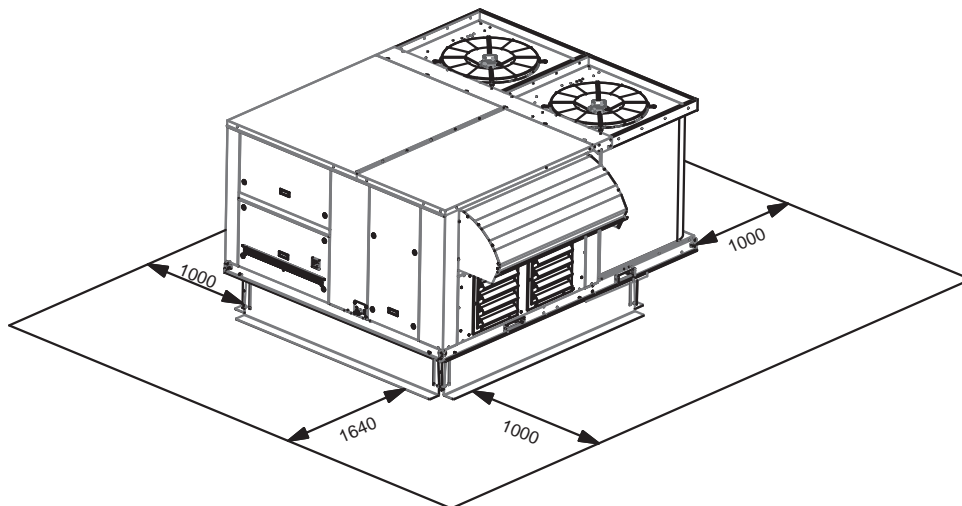


ADJUSTABLE ROOFCURB  
D BOX

045 -052 - 057 - 065



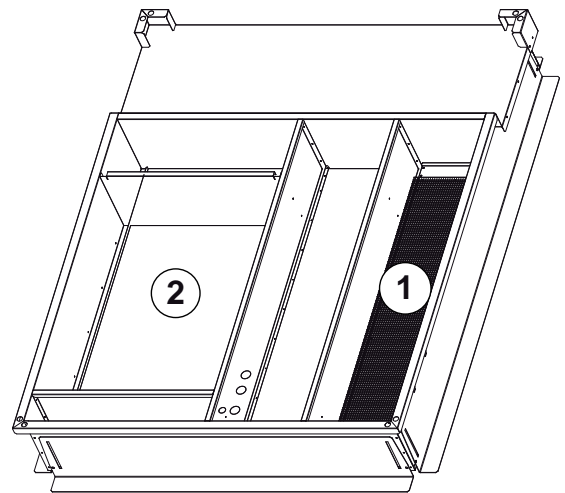
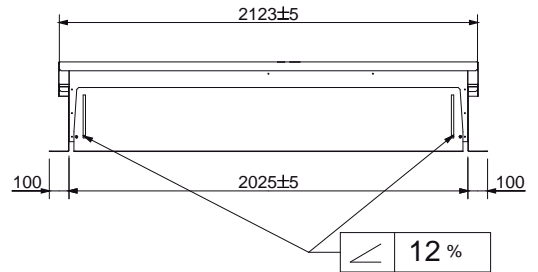
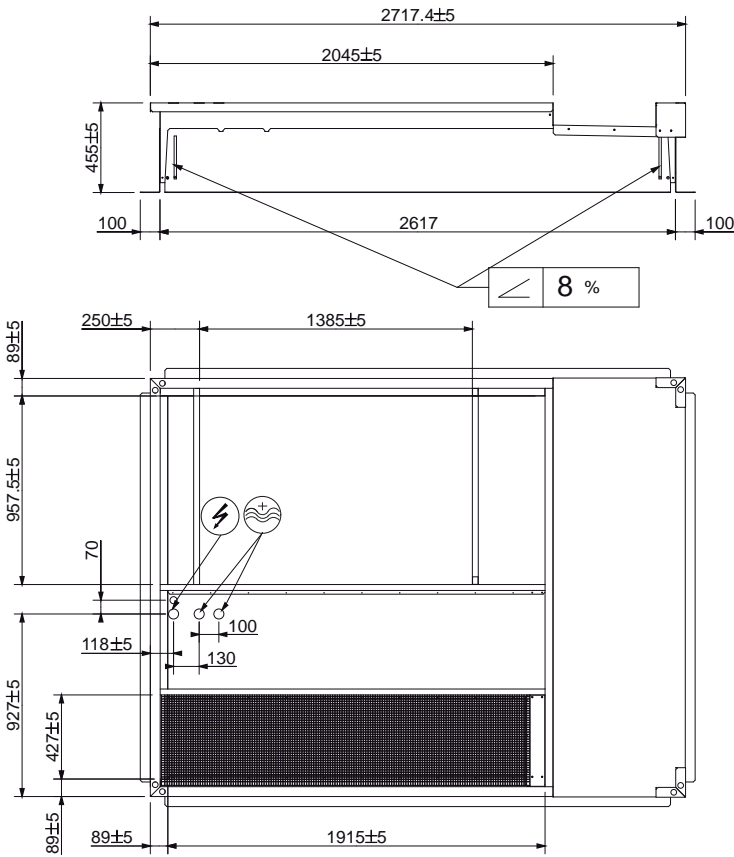
- Electrical connection
- Hot water piping
- 1** Return air
- 2** Supply air



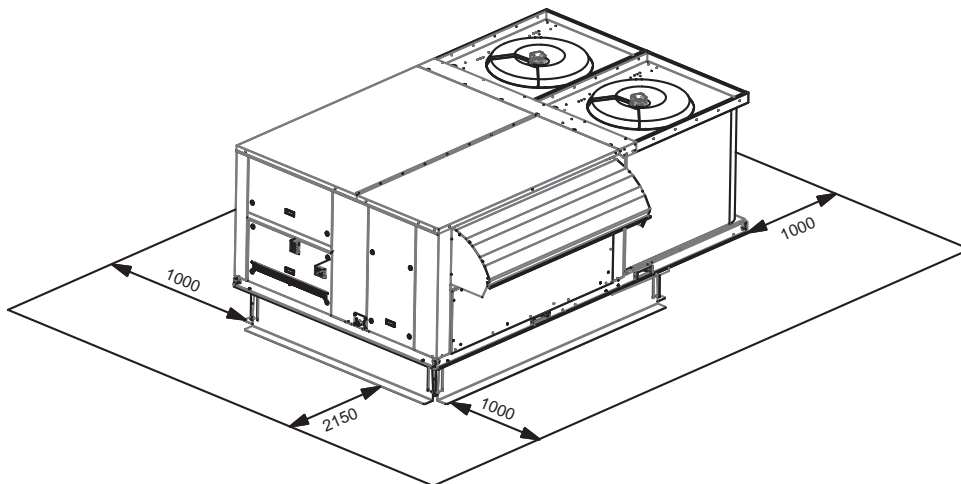
**ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL**

ADJUSTABLE ROOFCURB  
E BOX

075 - 085



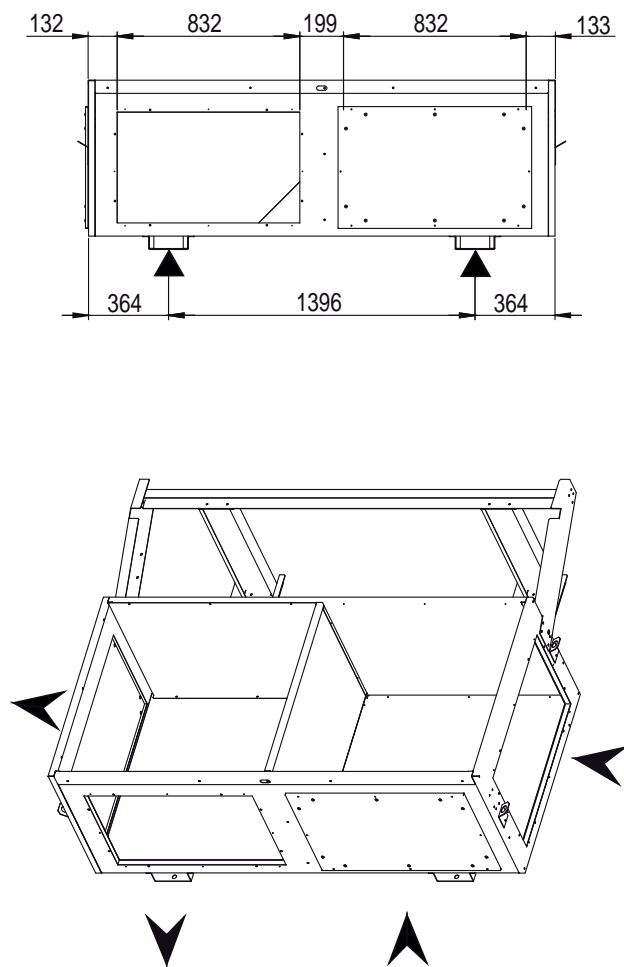
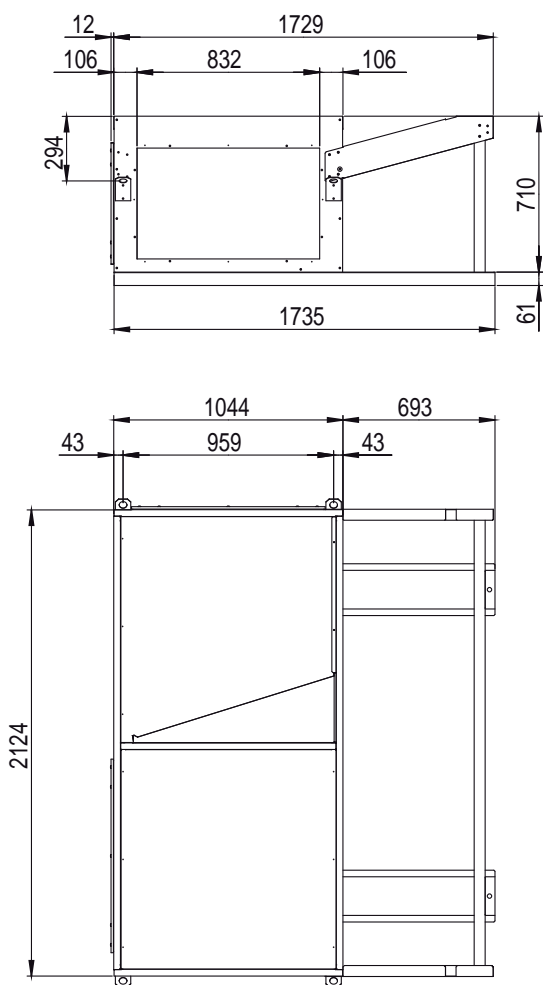
- Electrical connection
- Hot water piping
- 1** Return air
- 2** Supply air



ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL

MULTIDIRECTIONAL ROOFCURB  
C BOX

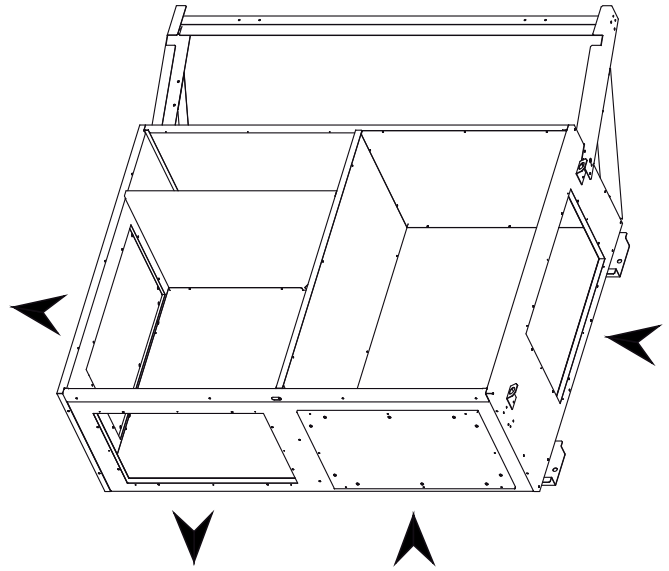
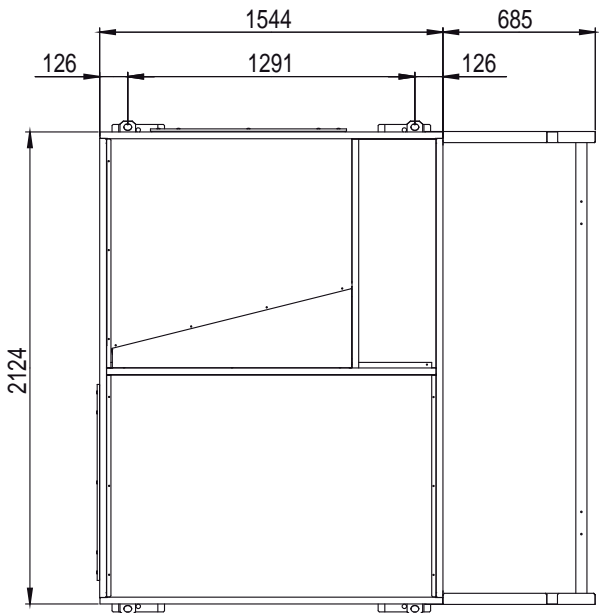
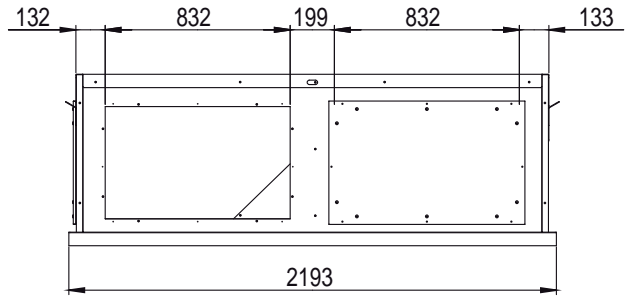
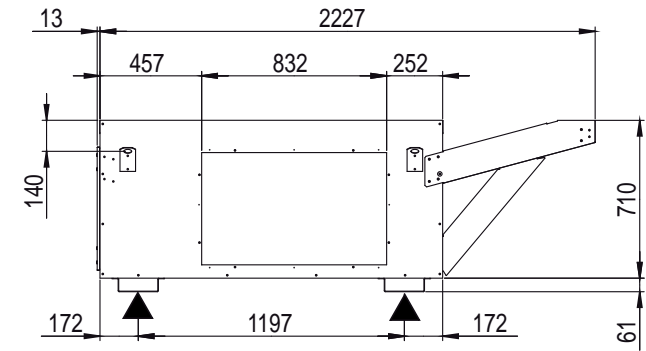
024 - 030 - 038 - 042



**ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL**

MULTIDIRECTIONAL ROOFCURB  
D BOX

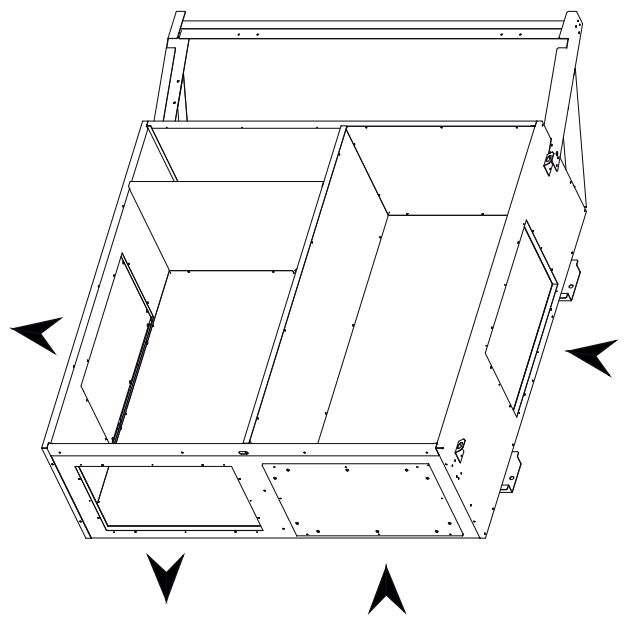
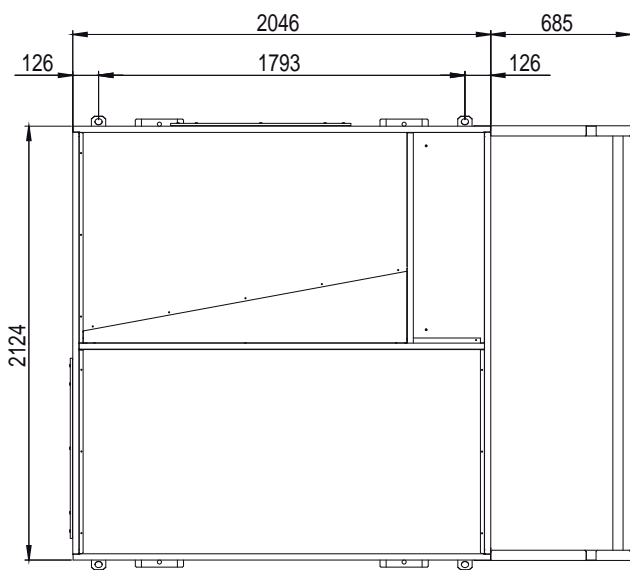
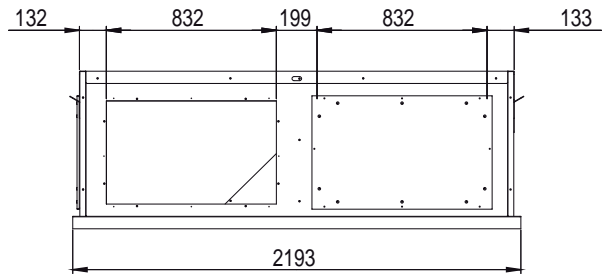
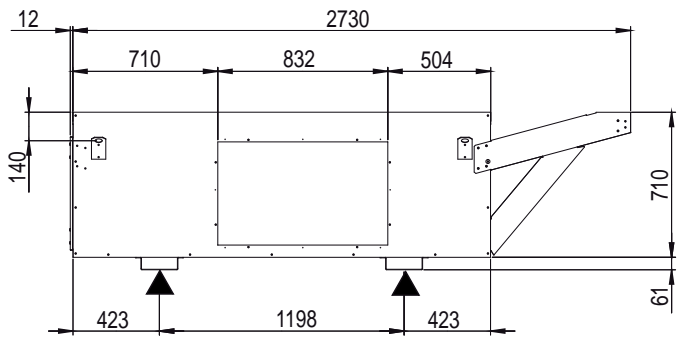
045 -052 - 057 - 065



**ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL**

MULTIDIRECTIONAL ROOFCURB  
E BOX

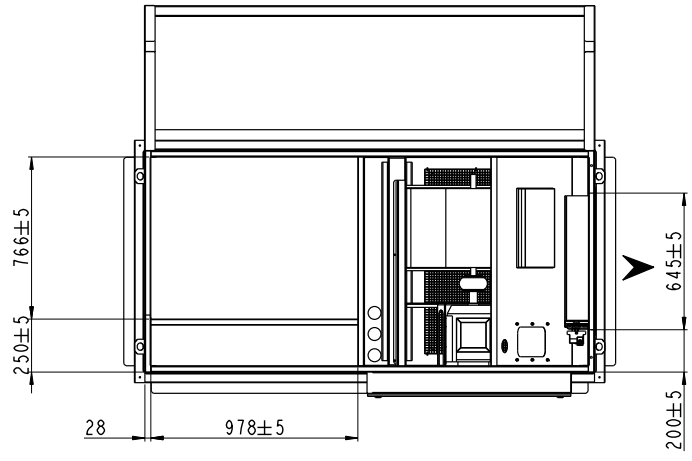
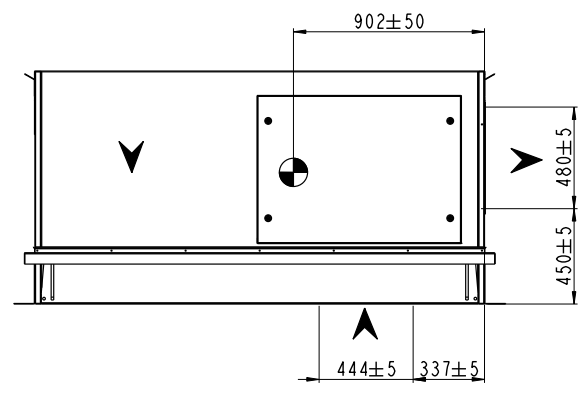
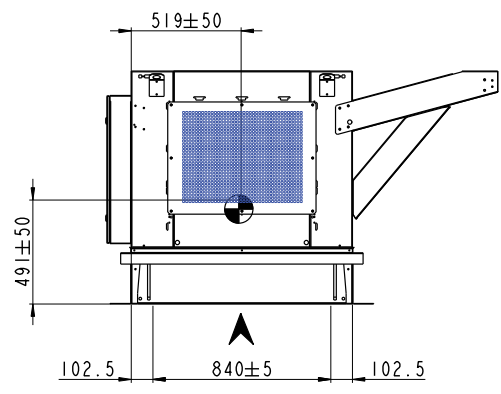
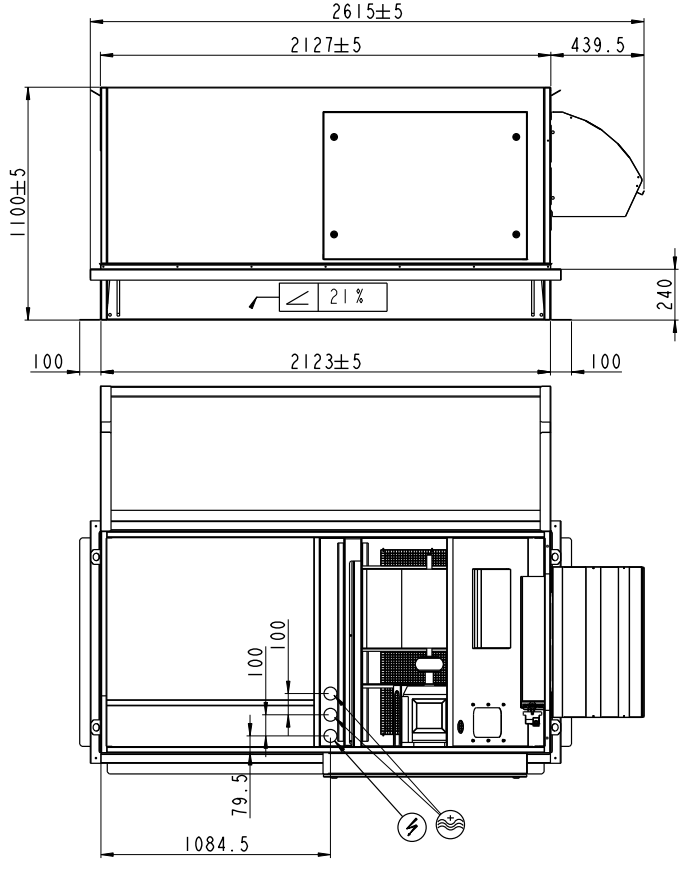
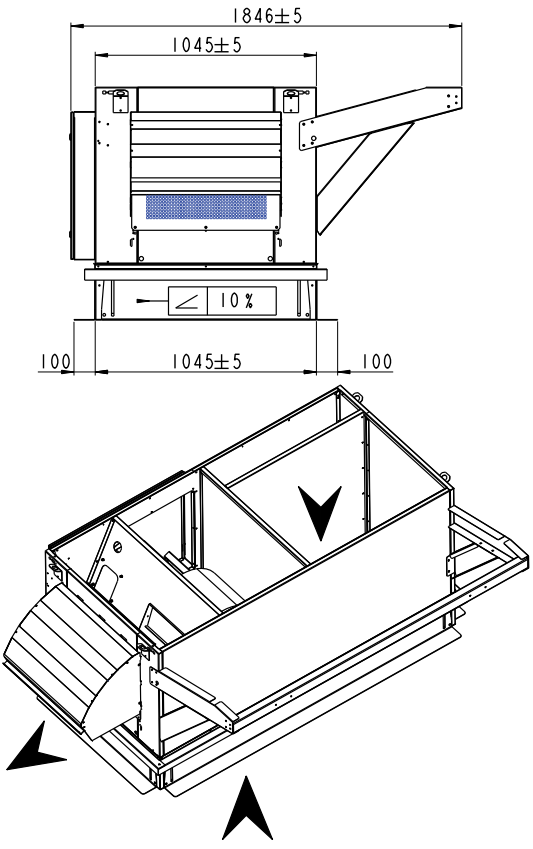
075 - 085



**ASSEMBLED UNIT + ACCESSORIES DRAWINGS AVAILABLE IN E-LENCAL**

VERTICAL EXHAUST ROOFCURB  
C BOX

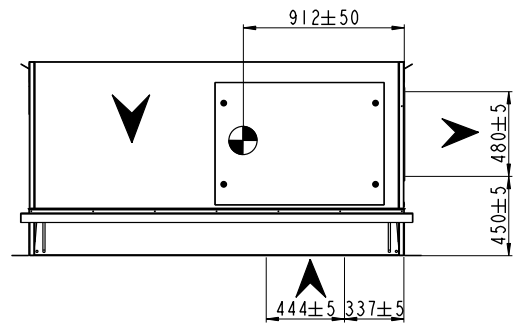
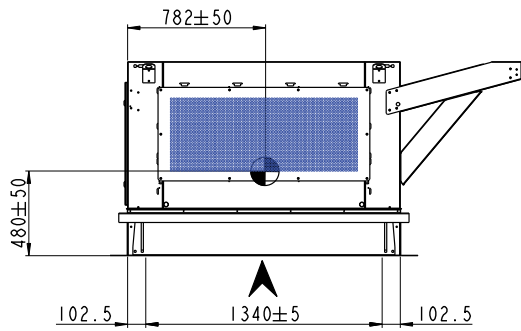
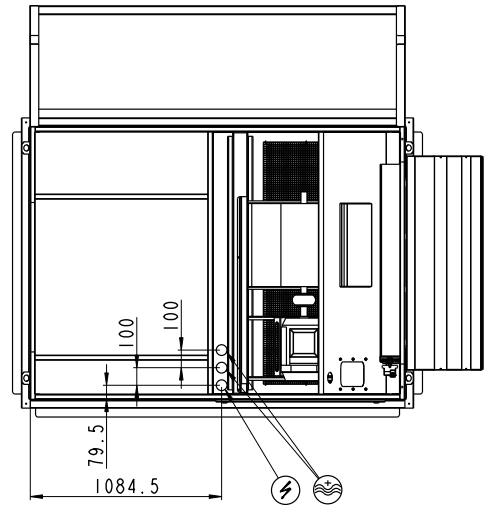
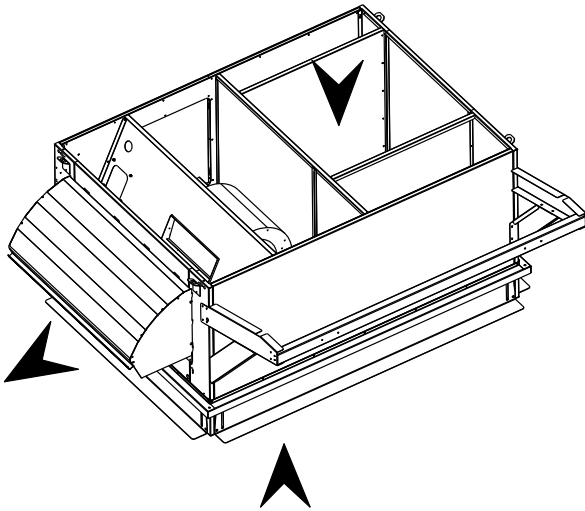
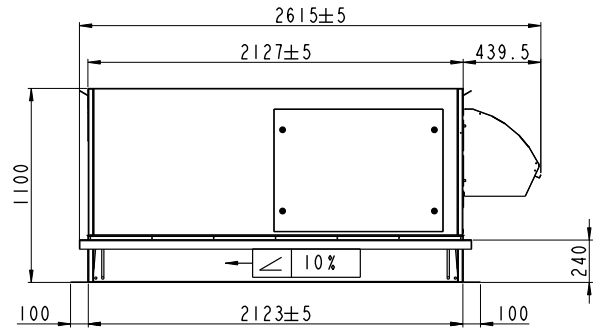
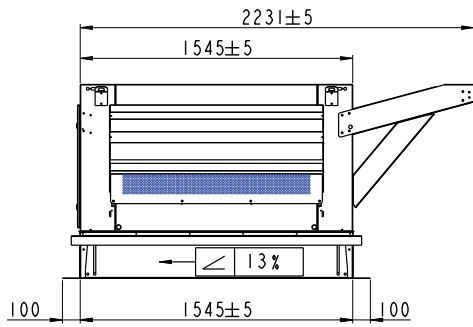
024 - 030 - 038 - 042



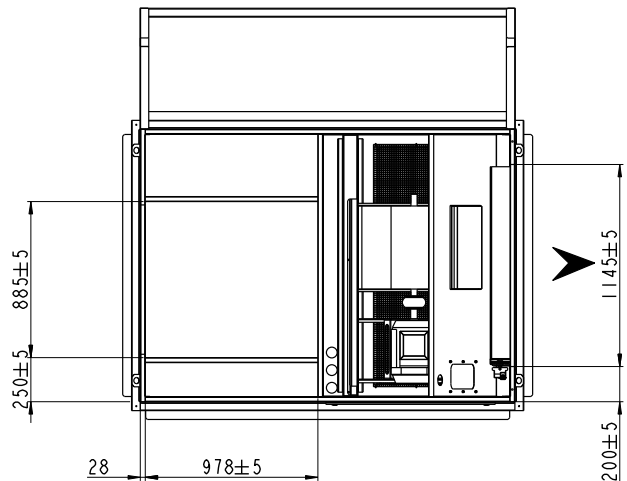
- Electrical connection
- Condensate drain
- Centre of gravity

VERTICAL EXHAUST ROOFCURB  
D BOX

045 -052 - 057 - 065

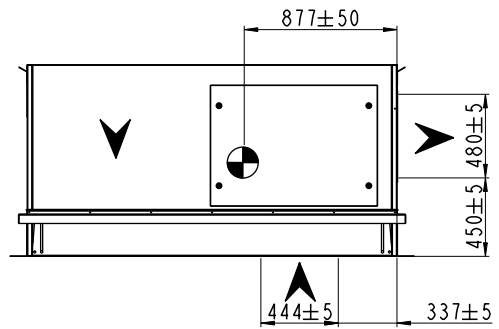
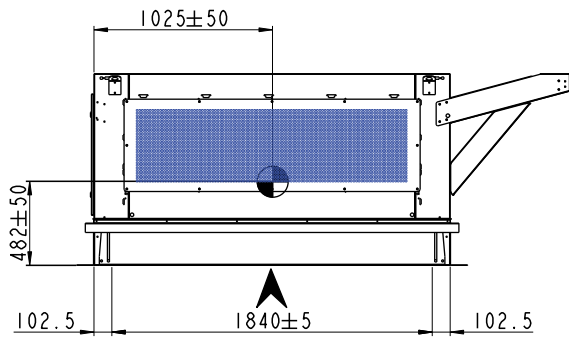
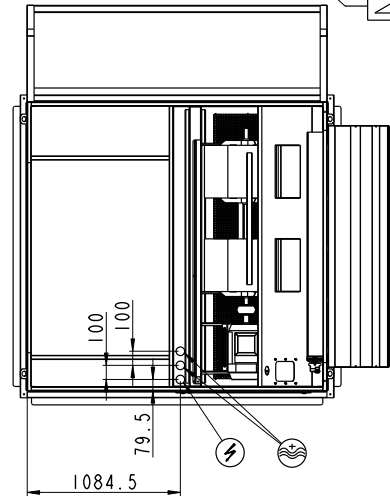
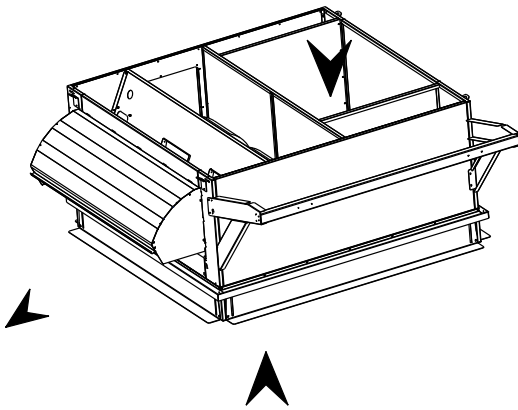
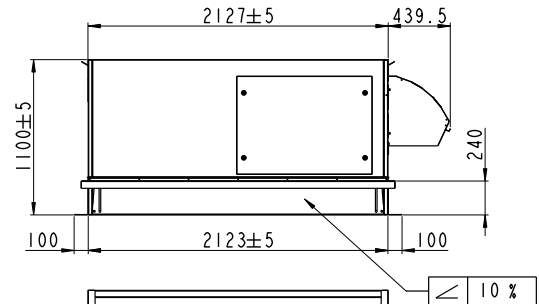
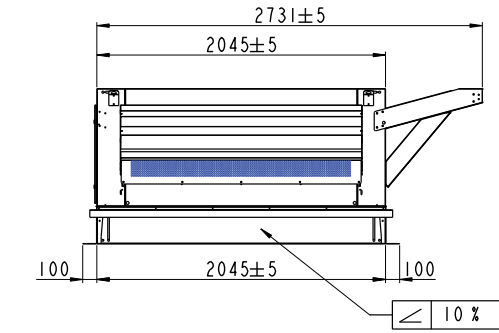


- Electrical connection
- Condensate drain
- Centre of gravity

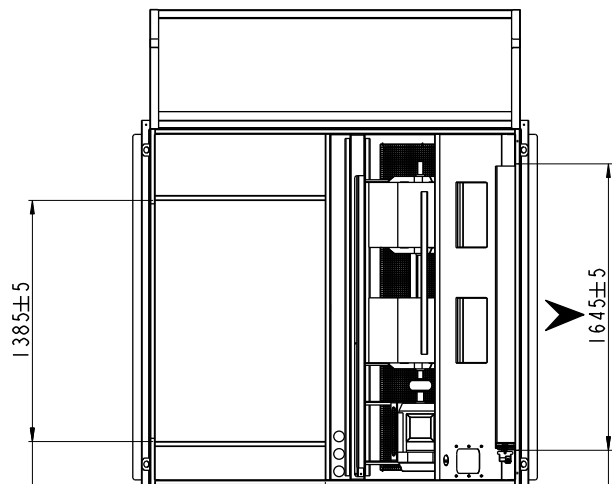


VERTICAL EXHAUST ROOFCURB  
E BOX

075 - 085



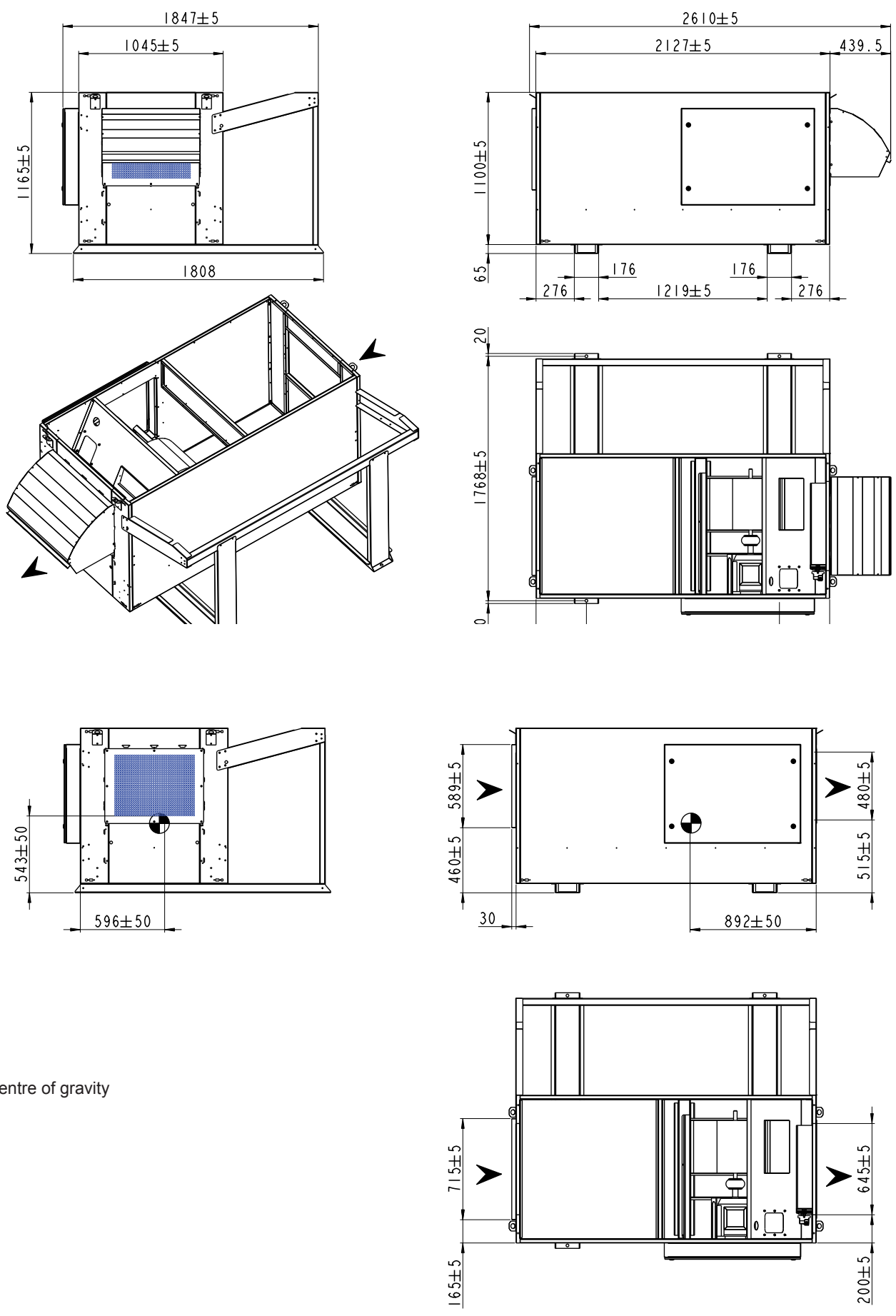
- Electrical connection
- Condensate drain
- Centre of gravity





HORIZONTAL EXHAUST ROOFCURB  
C BOX

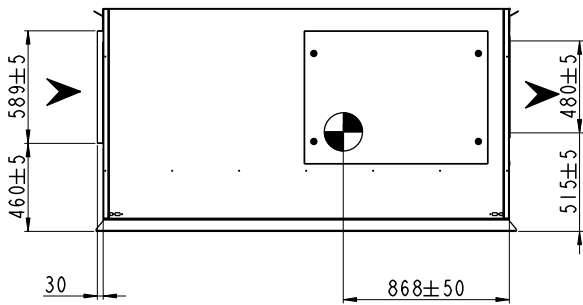
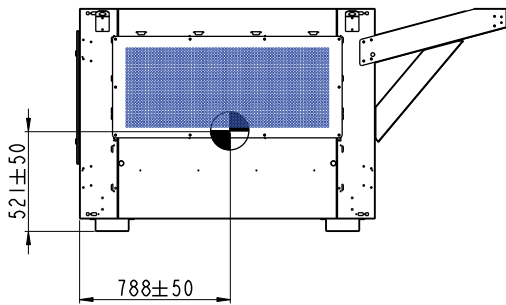
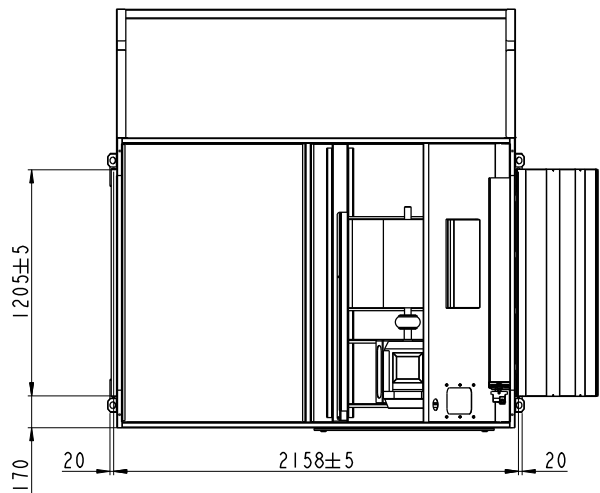
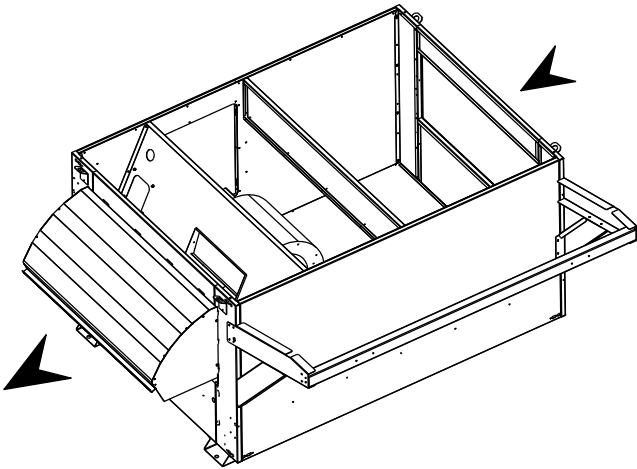
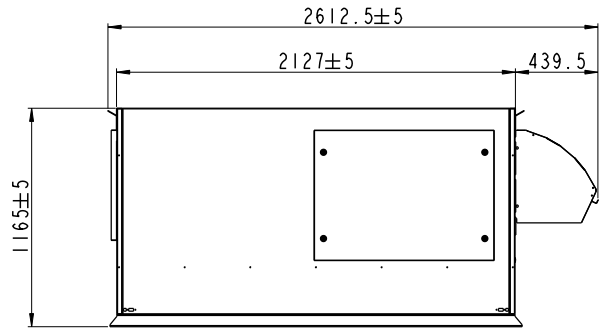
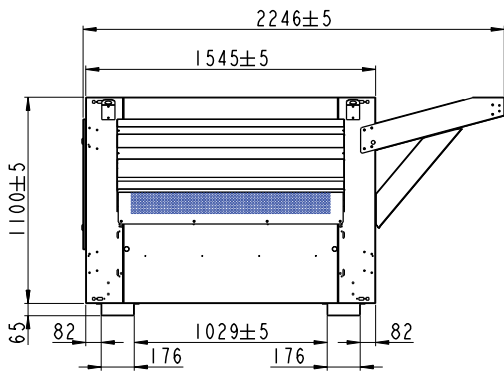
024 - 030 - 038 - 042



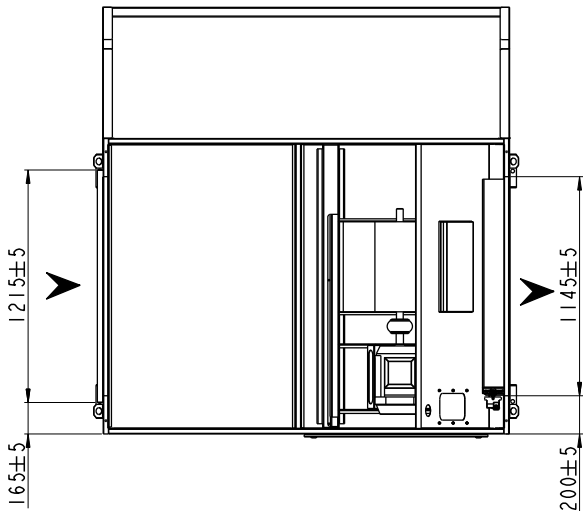
Centre of gravity

HORIZONTAL EXHAUST ROOFCURB  
D BOX

045 -052 - 057 - 065

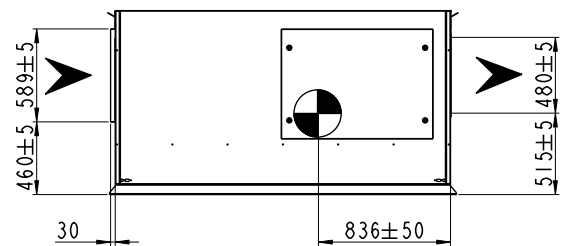
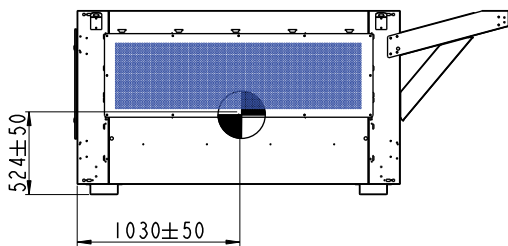
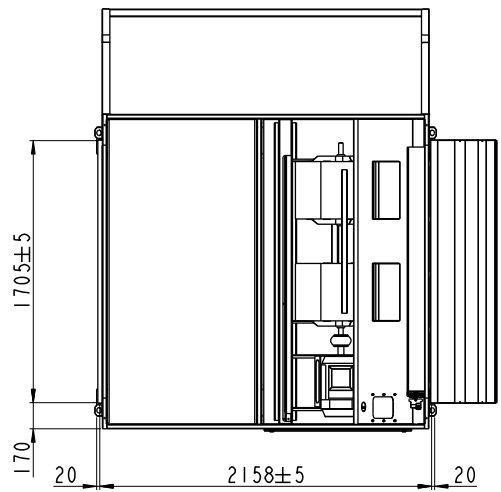
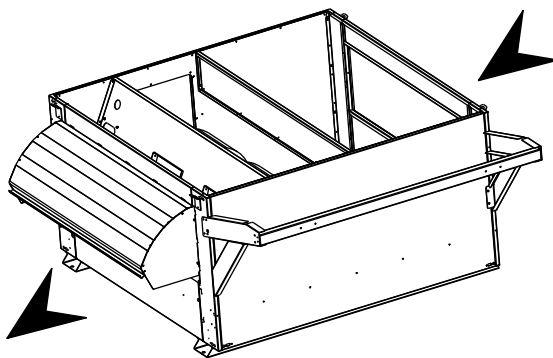
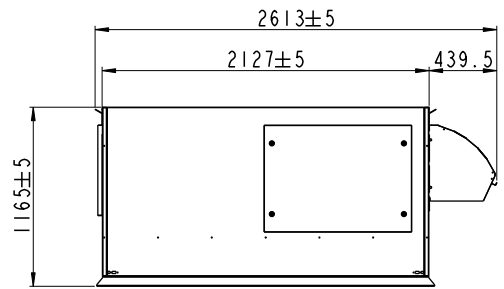
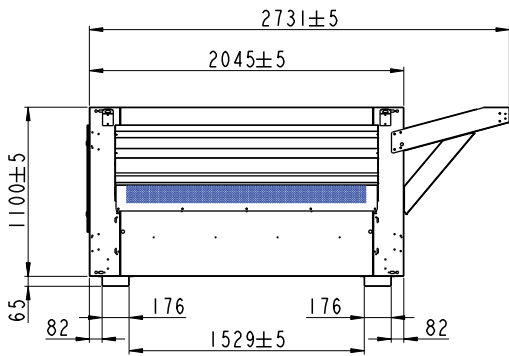


Centre of gravity

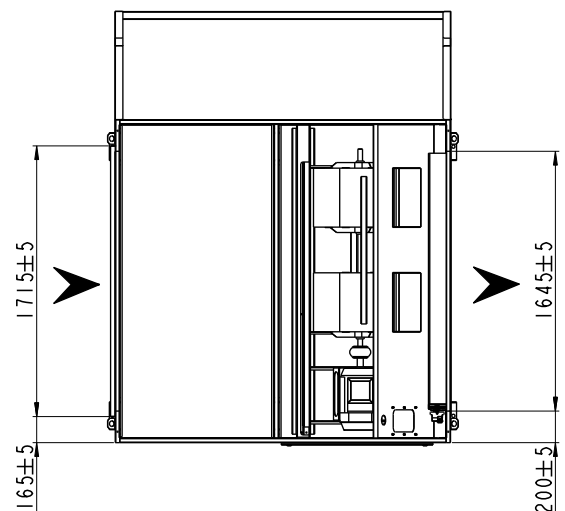


HORIZONTAL EXHAUST ROOFCURB  
E BOX

075 - 085



Centre of gravity



BALTIC™		024	030	038	042	045	052	057	065	075	085
<b>BASE</b>											
Base Unit	BAC	696	711	726	726	937	952	967	982	1150	1150
	BAH	701	716	731	731	947	962	977	992	1165	1165
	BAG (S)	739	754	769	769	970	985	1000	1015	1225	1225
	BAG (H)	758	773	788	788	992	1007	1022	1037	1285	1285
	BAM (S)	744	759	774	774	980	995	1010	1025	1235	1235
	BAM (H)	763	778	793	793	1002	1017	1032	1047	1295	1295
<b>Airflow configuration</b>											
Horizontal return - Horizontal supply		-12,1	-12,1	-12,1	-12,1	-18,9	-18,9	-18,9	-18,9	-23,2	-23,2
Horizontal return - Downflow supply		-7	-7	-7	-7	-10,3	-10,3	-10,3	-10,3	-13,6	-13,6
Downflown return - Horizontal supply		-5,1	-5,1	-5,1	-5,1	-8,6	-8,6	-8,6	-8,6	-9,6	-9,6
<b>Exhaust air options</b>											
Gravity Exhaust Damper		0,9	0,9	0,9	0,9	1,8	1,8	1,8	1,8	2,5	2,5
Power Exhaust Fan + Gravity Exhaust Damper		11,2	11,2	11,2	11,2	20,8	20,8	20,8	20,8	30,3	30,3
Vertical extraction roofcurb		272	272	272	272	295	295	295	295	440	440
Horizontal extraction roofcurb		218	218	218	218	241	241	241	241	358	358
Heat recovery module											
<b>Filtration option</b>											
G4 Metallic frame		3	3	3	3	4,5	4,5	4,5	4,5	6	6
G4 (50 mm)+ F7 (100 mm) Metallic frame		22,8	22,8	22,8	22,8	30,9	30,9	30,9	30,9	39	39
<b>Refrigeration option</b>											
Low noise		0	0	0	0	0	0	0	0	0	0
<b>Supply fan drive kits - Non GAZ units</b>											
K1		0	-5	-5	-8	0	-3	-6	-19	0	-8
K2		5	0	0	-3	3	0	-3	-16	8	0
K3		8	3	3	0	6	3	0	-13	19	11
K4		11	6	6	3	19	16	13	0	19	11
K5		24	19	19	16	27	24	21	8	35	27
<b>Supply fan drive kits - GAZ units</b>											
K1		0	-5	-8	-8	-3	-6	-19	-19	-8	-8
K2		5	0	-3	-3	0	-3	-16	-16	0	0
K3		8	3	0	0	3	0	-13	-13	11	11
K4		11	6	3	3	16	13	0	0	11	11
K5		24	19	16	16	24	21	8	8	27	27
<b>Heating options delta vs BAC or BAG</b>											
Electric heater	(S)	20,8	20,8	20,8	20,8	26,7	26,7	26,7	26,7	26,7	26,7
	(H)	25,4	25,4	25,4	25,4	32,5	32,5	32,5	32,5	32,5	32,5
Electric pre-heater (S)	(S)	37,4	37,4	37,4	37,4	45	45	45	45	62,3	62,3
	(H)	49,6	49,6	49,6	49,6	67,5	67,5	67,5	67,5	92,9	92,9
Hot water coil		36,2	36,2	36,2	36,2	54,9	54,9	54,9	54,9	86,4	86,4
eRecovery hot water coil on refrigeration		20,9	20,9	20,9	20,9	28,4	28,4	28,4	28,4	35,9	35,9
Modulating gas burner											
<b>Supply fan drive kits non GAZ units</b>											
Non adjustable, Non assembled roofcurb		65	65	65	65	70	70	70	70	87	87
Adjustable assembled roofcurb		139	139	139	139	156	156	156	156	195	195
Multidirectional horizontal flow roofcurb		174	174	174	174	209	209	209	209	239	239
Double skin		14	14	14	14	21,5	21,5	21,5	21,5	31,2	31,2





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