

# Application guide



FLEXY  
85 - 230 kW

FCM - FHM      Rooftop units  
FGM - FDM





# FLEXY™ II

## APPLICATION GUIDE

Ref : FLEXY-AGU-0512-E

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Our company's products comply with European standards.

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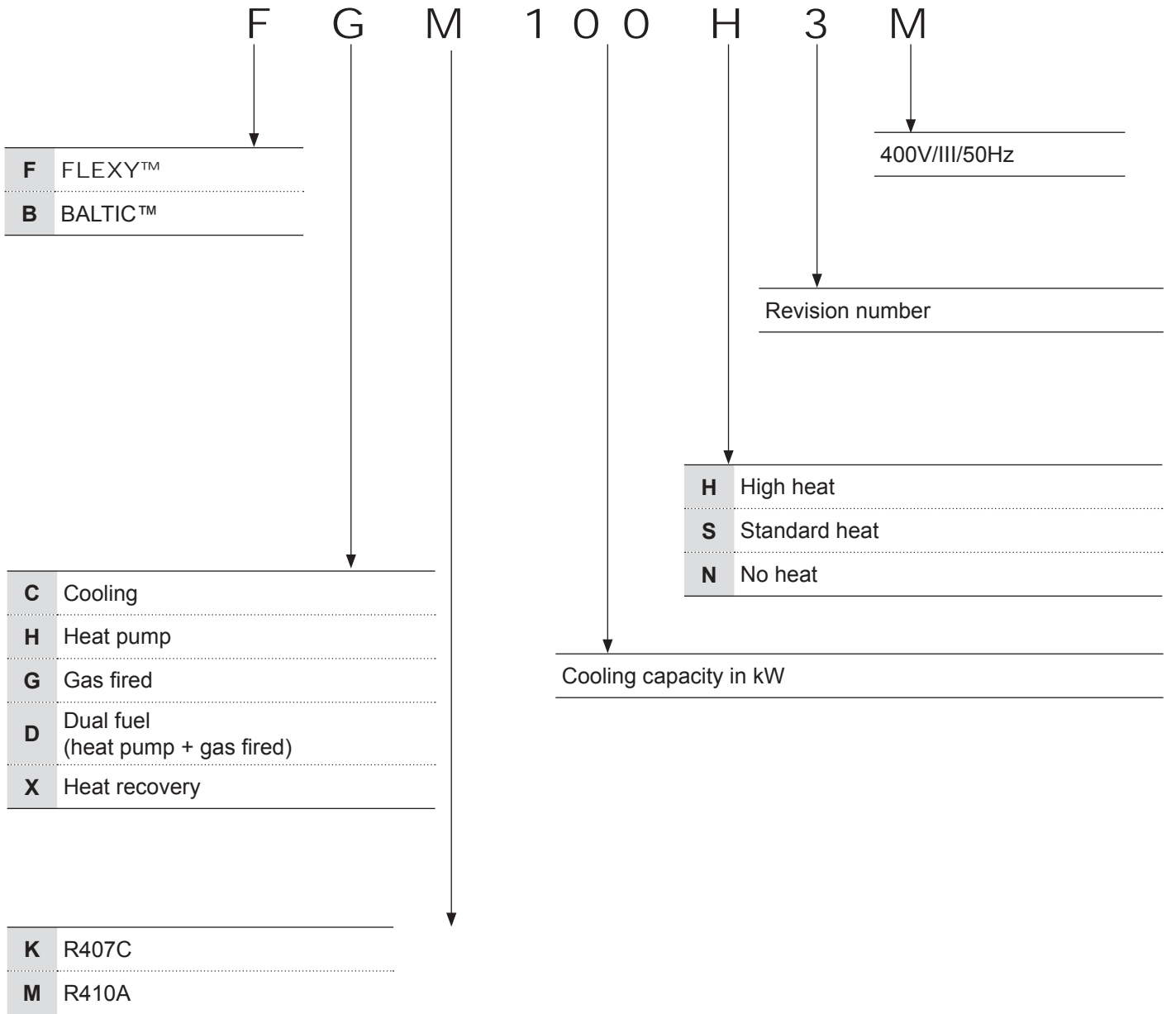
Product designed and manufactured under quality management systems certified ISO 9001 and ISO 14001.



Version 2008 Version 2004

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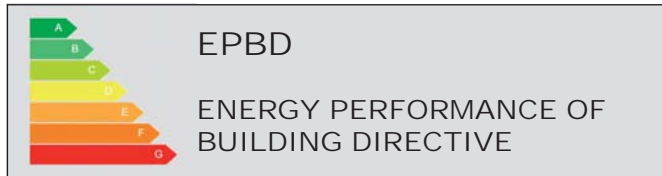
**EXAMPLE :**



## 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, FLEXY™ is Eurovent certified.*



## LENNOX : THE BEST LIFE CYCLE COST IN THE MARKET

**LENNOX 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 FLEXY™ 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 plug-fan (on Flexy EC) 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



design.

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

GENERAL DESCRIPTION

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



FLEXY™ 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 85 kW up to 230 kW in 3 different Box sizes.

FLEXY™ is available in two configurations: Flexy EC which is equipped with Electronic Commutation plug-fan and with electronic expansion valves for applications where energy consumption matter. For other applications, the former configuration with thermostatic expansion valves and constant speed motor connected to the fan by pulley and belt has been maintained.

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

**GUARANTIED SUSTAINABLE PERFORMANCE WITH eDRIVE™ (standard on FLEXY EC)**

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

**ADVANCED REFRIGERATION CIRCUIT**

FLEXY™ features high efficiency, environmentally friendly refrigeration circuits

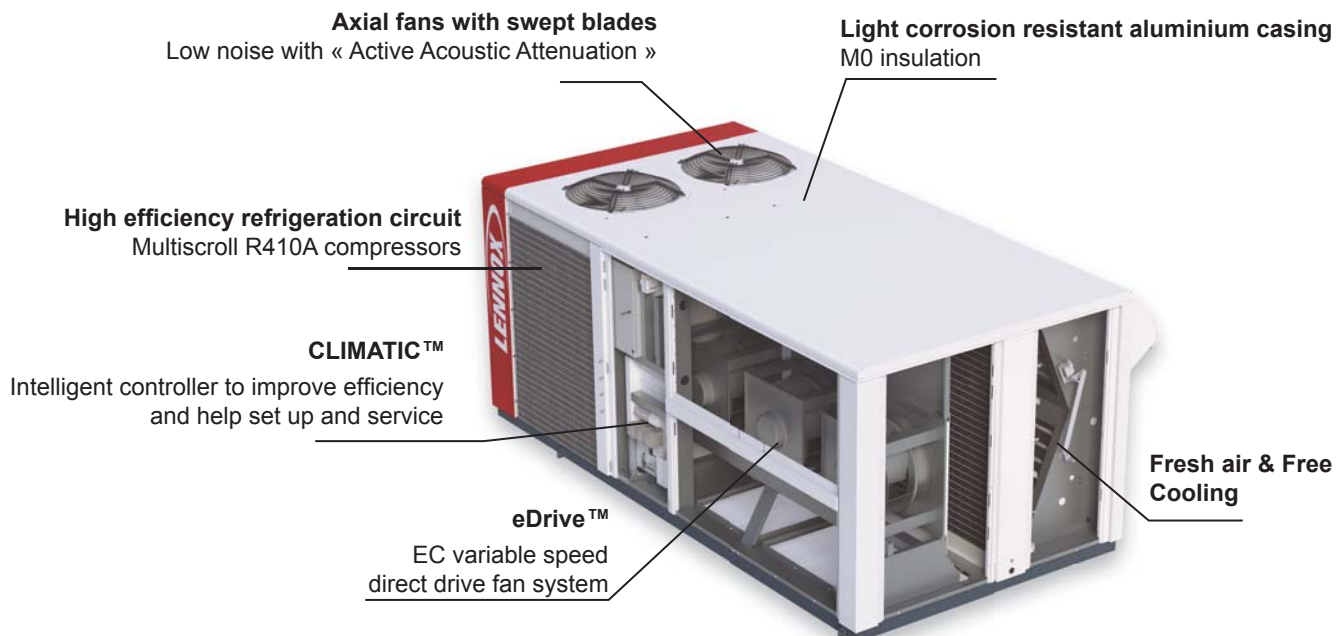
The refrigeration circuit is fitted with multiscroll R410A compressors, electronic expansion valves and optimized heat exchange surface area. It includes advanced condenser fan design and allows Dynamic and alternate defrost.

**FRESH AIR & FREE COOLING**

Fresh air management and Free Cooling are standard features of new FLEXY™ 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



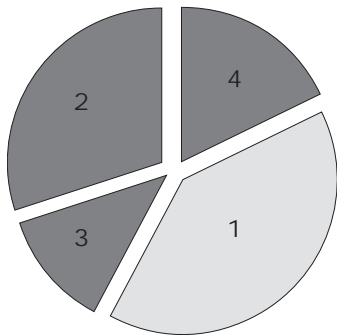
## eDRIVE™ VENTILATION

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



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

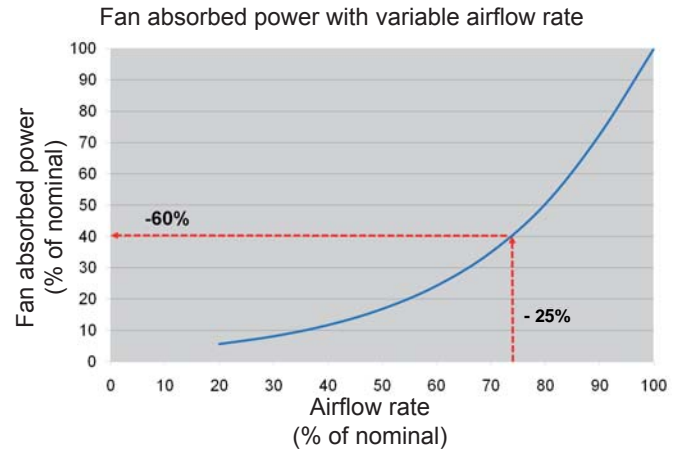
With a rooftop, the blower fan motor is one of the major contributors to annual energy consumption. Fans usually run 97% of the year at full speed to circulate the air inside the building. 42% of the annual energy consumption of an air conditioner is due to the fan motor, which can be more than compressors.



1	Annual compressor consumption	40 %
2	Annual consumption of other electrical systems	18 %
3	Remaining annual fan motor consumption	12 %
4	Energy savings thanks to eDrive™	30 %

### VARIABLE SPEED DRIVE

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



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.

- FLEXY™ 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™

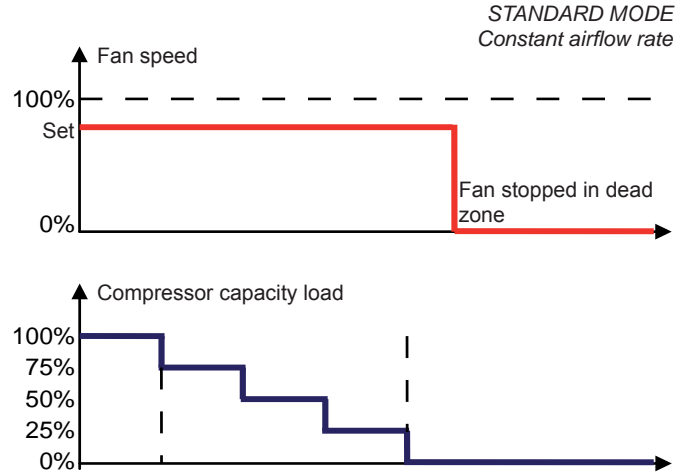
CLIMATIC™ 60 and eFlow™ manage airflow rate passing through the unit following 3 possible strategies.

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

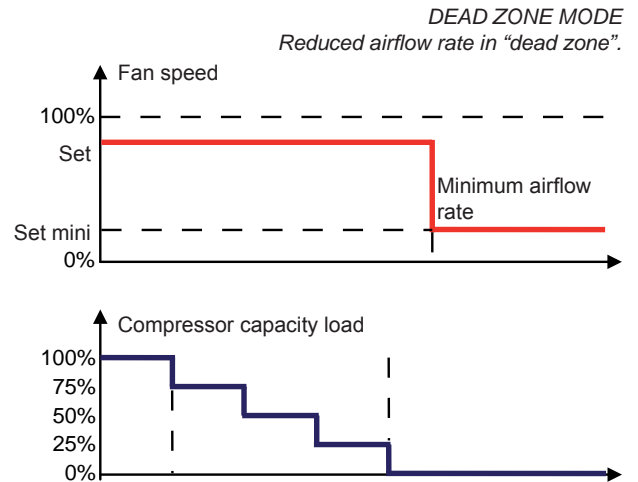
In this case the airflow rate is set to the required value during start up but does not change with the building load or when the unit goes into “dead zone”. In this case On/Off fan control is still available during dead zones.



### 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.

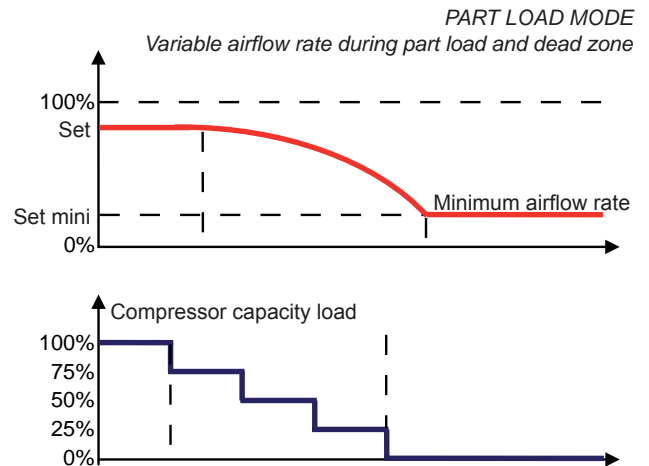


### PART LOAD MODE

#### 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.







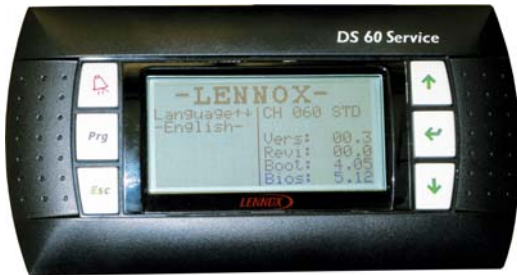
**eDRIVE™  
START-UP AND SERVICE  
MADE EASY**

FLEXY™ 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 (on FLEXY EC models).



- 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.



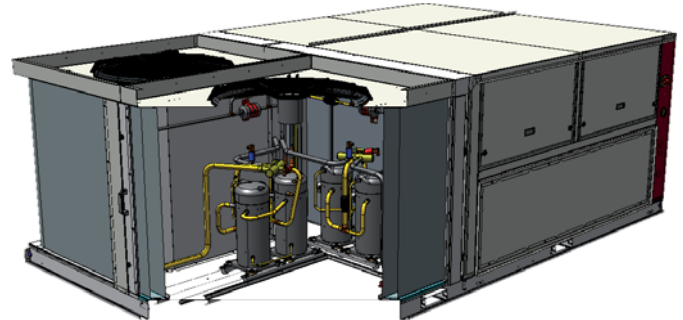
- Constant airflow rate and dirty filters.  
On top of all the above control strategies eDrive™ with eFlow™ airflow measurement system, gives the possibility to maintain airflow rate as the filters are getting dirty. If enabled, this new standard feature will maintain the airflow rate, normally reduced 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.

FLEXY™ features high efficiency, environmentally friendly refrigeration circuits with multiscroll R410A compressors, electronic expansion valves (on FLEXY EC models) and optimized heat exchange surface area.



**SAVING ENERGY WITH ADVANCED REFRIGERATION CIRCUIT DESIGN**

**R410A refrigerant**

Efficient systems such as FLEXY™ 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, FLEXY™ 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.

**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 FLEXY™ units.

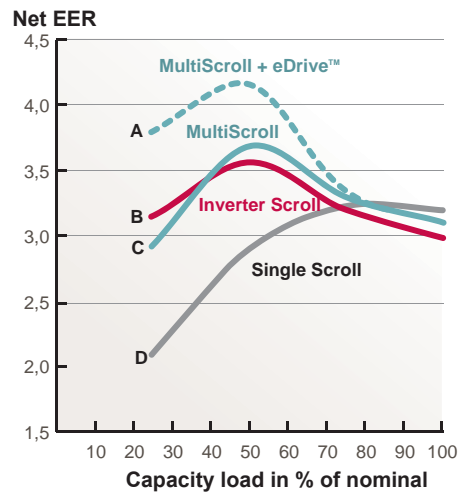
**High efficiency multiscroll technology**

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.

FLEXY™ provides high 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™
- B Inverter scroll
- C Multiscroll
- D Single scroll

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

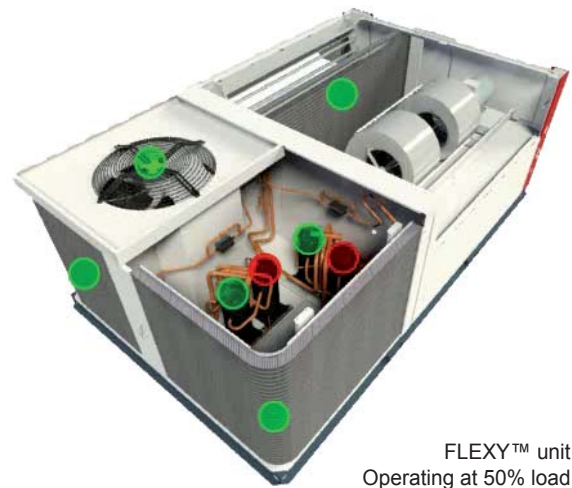
Multiscroll™ compressor technology with electronic expansion valves allows energy consumption reduction when compared to “inverter” solutions:

- 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 FLEXY™ 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, FLEXY™ can operate and supply cooling operating one compressor with outdoor temperatures reaching 50°C



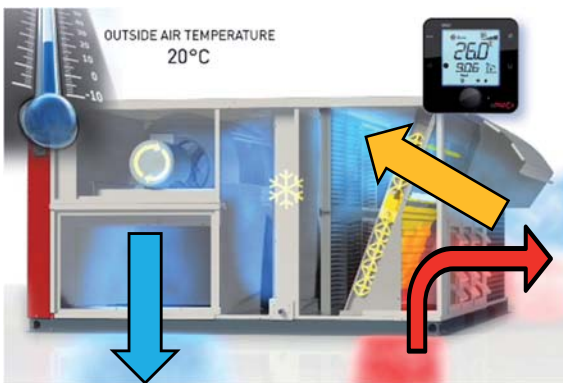
- With its simple ON/OFF part load management, multiscroll compressor assembly is simpler and more reliable than inverter compressors: Speed variation on compressors implies complex oil management, and expensive heavy external inverter drive with fragile electronics.

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



FLEXY™ unit  
Operating at 50% load

## 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 CO<sub>2</sub> level and comfort.

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

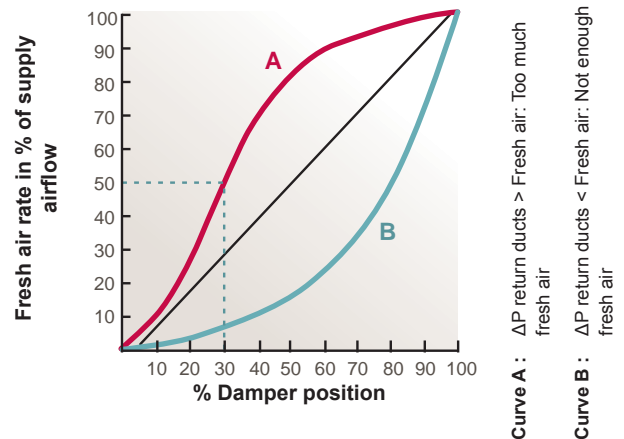


### SAVING ENERGY WITH FRESH AIR & FREE COOLING

- 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.

With Indoor air quality and running cost of a building being more important to our customer, FLEXY™ can manage the percentage of fresh air more accurately.



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.

FLEXY™ 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 FLEXY™ rooftop range. It inherits more than 20 years of technology and field operating experience from its predecessors CLIMATIC™ control platforms.

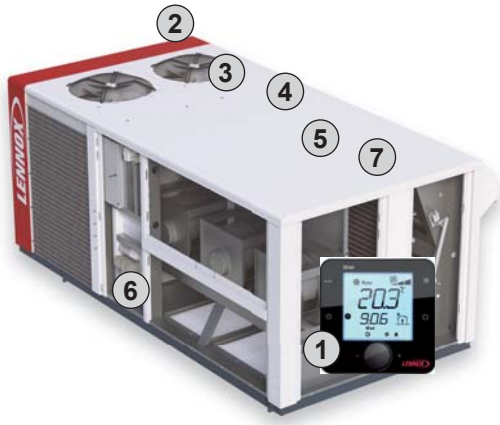
CLIMATIC™ 60 controller intelligently improves efficiency and helps set up and service operations to guarantee long lasting performance.



### 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 service display and Bus) refrigerant leak detection or compressor operating time equalization and protection against excessive short cycling.

### 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 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:

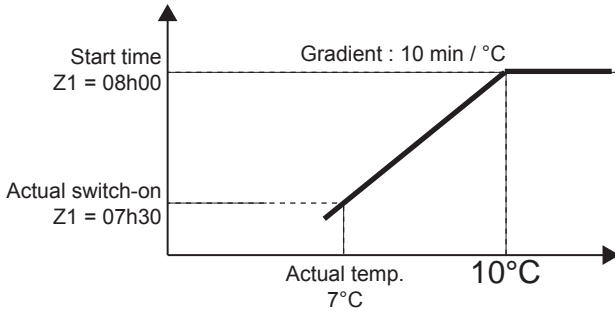
This unique feature on the market, allows the user to program the priority between the different heating elements (thermodynamic, electric pre-heaters or auxiliary heating). This is particularly interesting on dual fuel units or units with electrical pre-heaters. This feature maximizes energy efficiency 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 FLEXY™ 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.

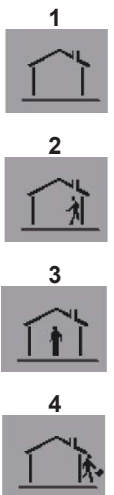
**Faults and alarms**

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 service display 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:

- Unoccupied mode (icon 1)
- Day mode (icon 2)
- Day additional mode 1 (icon 3)
- Day additional mode 2 (icon 4)



## 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, FLEXY™ 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.

To insure a very high level of anticorrosion protection, while making the rooftop lighter, FLEXY™ is build with an Aluminium casing. To improve the resistance to corrosion of the Aluminium, FLEXY™ is painted with a RAL9002 powdered polyester paint, UV resistant. These standard features allow LENNOX to offer a 10 year warranty against corrosion\*.

Further resistance is provided on the FLEXY™ range through the use of anticorrosion fixings (A2 Anticorrosion) as standard.

\* Please refer to warranty conditions.

### TRANSPORT AND HANDLING

To facilitate handling and to minimize risk of damage to the units, from site lifting and positioning, LENNOX has equipped the FLEXY™ 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 transport and handling, the units are wrapped in a retractable plastic protection.



### GRID ON CONDENSER COILS:

Condenser coils are fitted as standard with protection grid which protects against vandalism or handling damages.

## 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, FLEXY™ 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

### Main disconnect switch

The main switch is used as an emergency cut off.

It is mandatory to guarantee a proper accessibility to this switch. Specific footbridges must be installed if the machine environment is requiring it.

Main disconnect switch is lockable to increase safety around the rooftop unit.

Switching off the unit with the disconnect switch will reset all.

Disconnect switch will be sized accordingly to the options picked with the unit.

## AIRFLOW CONFIGURATION AND ECONOMIZER

All FLEXY™ 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, FLEXY™ rooftops are shipped with downflow configuration and with 150 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 FLEXY™ rooftop by providing variable speed drive and airflow rate measurement capability as standard

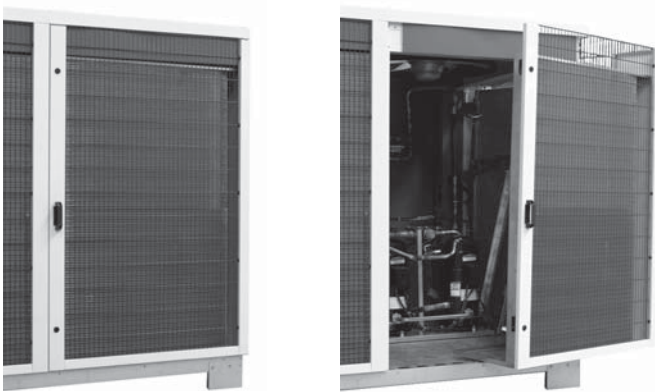
The installer can easily and quickly measure and adjust the airflow within a 20% window without moving the mounted fan motors. The variable speed fan with direct transmission provides flexibility and peace of mind for commissioning.

FLEXY™ units equipped with belt and pulley are provided with an adjustable pulley that gives possibility to adjust the airflow within a 20% window without moving the mounted fan motors.

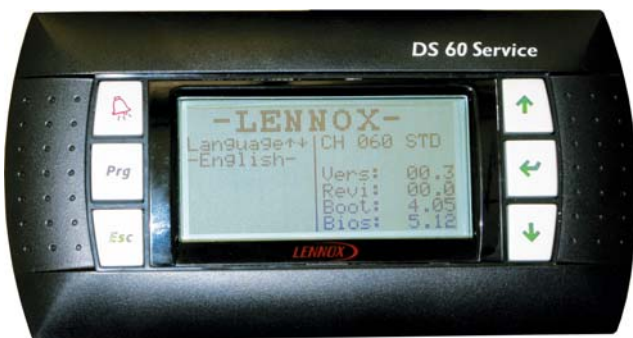
## EASY ACCESS TO ALL COMPONENTS

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

On sizes 085 to 170, 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 FLEXY™, 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).

### eDRIVE™ VENTILATION SYSTEM

FLEXY™ EC is fitted with a plug-fan 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 FLEXY™ 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 250 Pa).

### REMOVABLE ALUMINIUM DRAIN PAN

All FLEXY™ units are equipped with a sloped removable drain pan in Aluminium 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 +F7 100 mm).

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



## REFRIGERATION OPTIONS

### Low Noise Option

As rooftops are often installed in a noise sensitive area, Lennox (R) proposes a low noise option on FLEXY™. To achieve low noise level, FLEXY™ receives a quieter fan, a compressor jacket and is fully equipped with acoustic isolation in the refrigerating box.

### Electronic expansion valves and refrigerant leak detection

FLEXY™ EC is equipped as standard with electronic expansion valves and refrigerant leak detection. For FLEXY™ configurations with thermostatic expansion valves, it is possible to upgrade to electronic expansion valves and refrigerant leak detection.

### Anti corrosion protection

When the units are installed in potentially aggressive environments, which can often be the case for example in coastal environments, it is often a requirement that the coils are specially treated to protect them against the corrosive effects.

LenGuard™ anti-corrosion treatment is available for condensers, evaporators and hot water coil.

## FRESH AIR OPTIONS

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

### Advanced control pack

Where a higher level of controllability is required to make the FLEXY™ 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.

### IAQ Kit : Germicidal light package

This kit is made of UV-C lights, safety locks and sight glass to protect maintenance technicians, a F6 Filter and an anti-microbiocidal treatment on evaporator coil and condensate drain pan.

The Germicidal Lights are installed in front of the air conditioner evaporator coil and kills biofilm microorganisms on the coil surface. As an effective weapon against mold and bacteria, the UV light comes in contact with a contaminant and penetrates the cell. In few seconds, it damages the cell's DNA, preventing growth and ultimately killing the cell.

The UV lights sterilize the surface of the cooling coil. In addition UV lights prevent from unwanted odors.

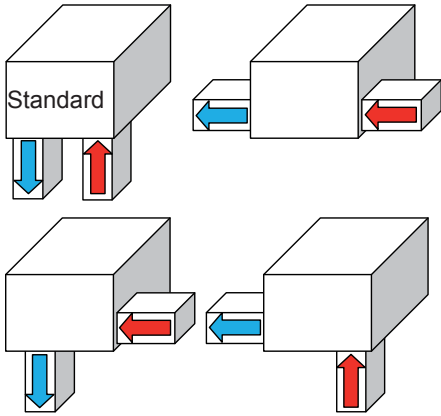
By the destruction of microorganism, the UV light keep clean the coil and allow constant air pressure drop on the coil, so less energy consumption.

**Note:** never expose your eyes to UV-C rays even during a few seconds.

## AIRFLOW CONFIGURATIONS AND ROOFCURBS

### Basic airflow configurations

Unless specified otherwise when ordered, FLEXY™ 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.



### Drive kits up to 600 Pa

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 plug-fans (FLEXY™ EC) or motors and drives that can provide up to 600 Pa at nominal airflow rate.

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 FLEXY™ 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 airflow.

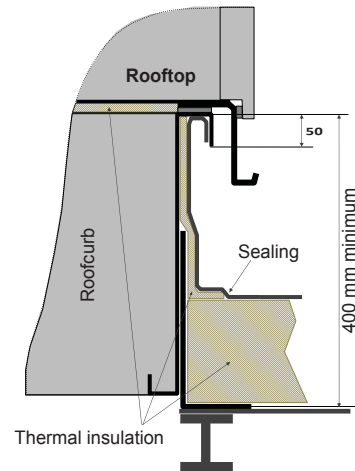
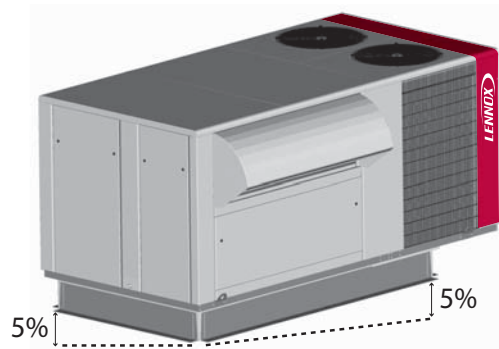
Note that in order to minimize energy consumption and reliability, it is highly recommended not to oversize the drive kits of the Rooftop during the selection.

### 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.

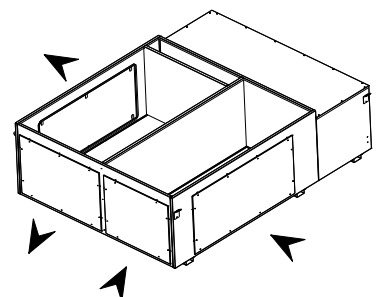
The adjustable roofcurb are made of galvanized steel with 2.5mm thick mounting flanges. This adjustable roofcurb is designed to be installed on roofs with slopes up to 4 to 5% in all directions enabling the FLEXY™ to be compatible with most roof profiles. Downflow roof curbs are the easiest and cheapest 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 (LENNOX units selection tool) corresponds 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 :**

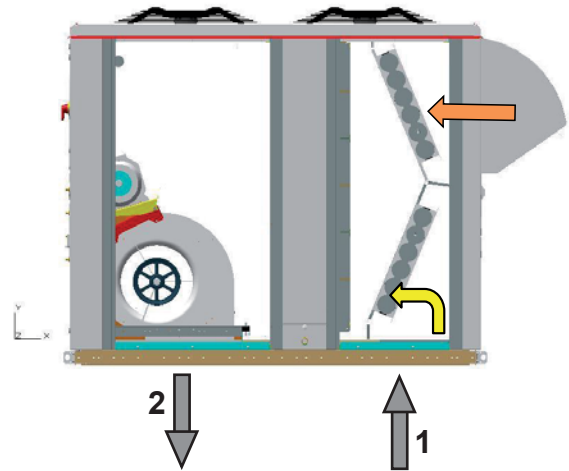
With an eLencal ESP = 350 Pa and a return ductwork pressure drop of 150 Pa → Remaining available static pressure for the supply ductwork = 200Pa

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.
- FLEXY™ with eDrive™ includes constant airflow operation that can control and limit the airflow as the pressure drop reduces.



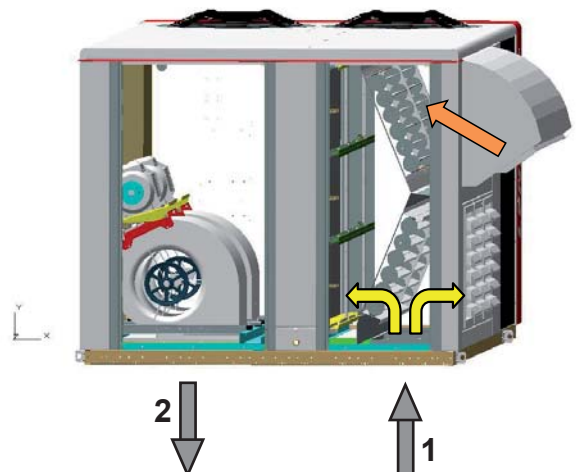
GRAVITY EXHAUST DAMPER

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

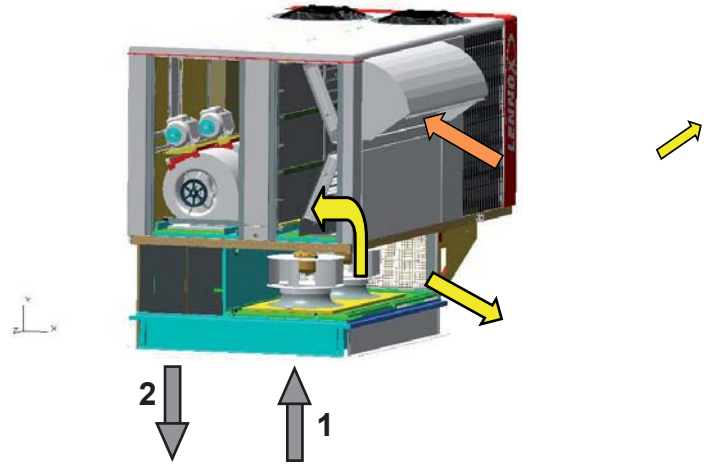
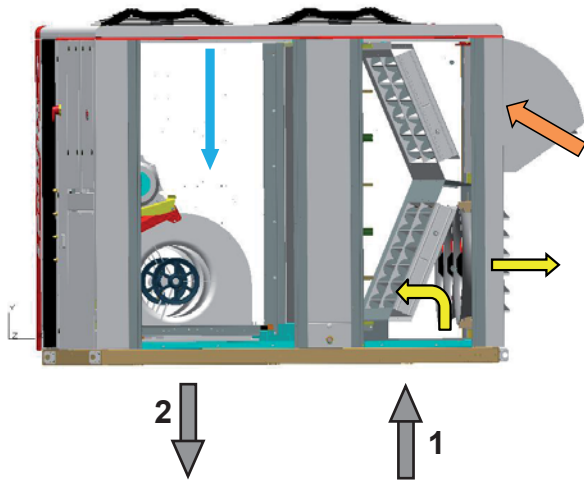
1 → 3: ESP Return in eLencal

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 plug fan installed with a 3rd damper (1 inside the Roofcurb + 2 inside the rooftop), is able to extract up to 300Pa with the nominal airflow 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

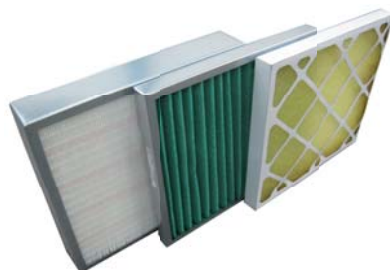
The outdoor air is categorized in 5 levels, from ODA 1 where the air is pure except for temporary pollution such as pollen, up to ODA 5 with high concentrations of both gases and particles. The indoor air is also categorized in 4 levels. For rooftop applications :

- 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.

**FLEXY™ 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 50 mm with 90% opacimetric efficiency and low pressure drop synthetic media.



**DOUBLE SKIN**

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

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.

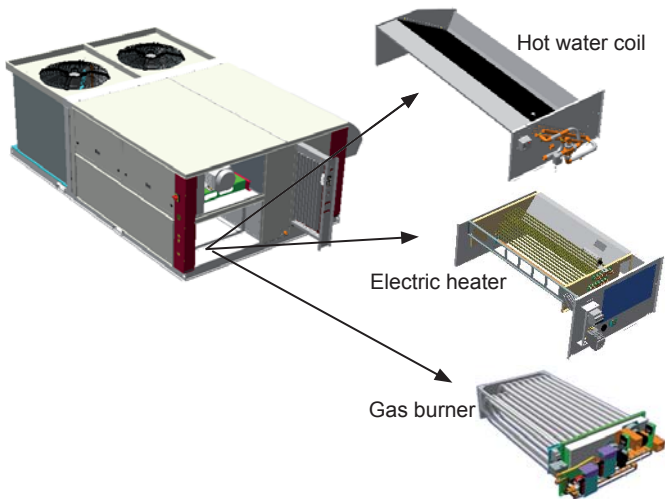
ENERGY RECOVERY

**ENERGY RECOVERY ON EXHAUST AIR**

To match LENNOX commitment to a greener planet and to generate energy savings, FLEXY™ can be equipped with the new hybrid rotary wheel exchanger fully controlled by the CLIMATIC™ 60. The new hybrid rotary wheel will generate very high sensible but also latent transfer.

It has been designed to handle free-cooling (when the recovery shouldn't apply) by stopping the wheel and the exchanger is protected against freezing of the exhaust air. This module is fitted as standard with G3 filters on the fresh air section and return air section. This will protect the exchanger against outdoor dust and increase the global filtration capacity of the machine.

AUXILIARY HEATING OPTIONS



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.

**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.

**ELECTRIC HEATER**

The auxiliary electric heater is made of shielded resistance heaters, which are smooth 6 W/cm2 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).

**F Box: 85 to 120 Kw**

- Standard heat : 30 kW, 2 stages
- Medium heat : 54 kW, fully modulating (Triac)
- High heat : 72 kW, fully modulating (Triac)

**G Box: 150 and 170 kW**

- Standard heat : 45 kW, 2 stages
- Medium heat : 72 kW, fully modulating (Triac)
- High heat : 108 kW, fully modulating (Triac)

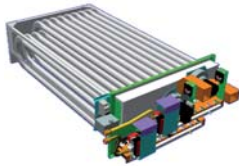
**H Box: 200 and 230 kW**

- Standard heat : 72 kW, 2 stages
- Medium heat : 108 kW, fully modulating (Triac)
- High heat : 162 kW, fully modulating (Triac)

## GAS BURNER

FLEXY™ FDM and FGM 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 92% 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 airflow 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.

### F Box: 85 to 120 Kw

Standard heat : 60 kW  
High heat : 120 kW

### G Box: 150 and 170 kW

Standard heat : 120 kW  
High heat : 180 kW

### H Box: 200 and 230 kW

Standard heat : 180 kW  
High heat : 240 kW

## 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 FLEXY™. 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 30 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.

Customer can set 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.

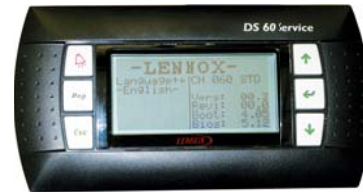
DC60™ comfort display is equipped with a temperature sensor that can be used as room temperature sensor.

**DM60™ MULTI-ROOFTOP DISPLAY**



This display gives access to more functionality than the DC60™ and allows managing up to 8 rooftops on a single Bus-wire. Customer will be able to change the operating time zone and mode. The rooftops can be connected to operate on a Master/ Slave principle. Installation up to 1000m from the unit.

**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 FLEXY™ units and Lennox ADALINK, 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 FLEXY™. 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

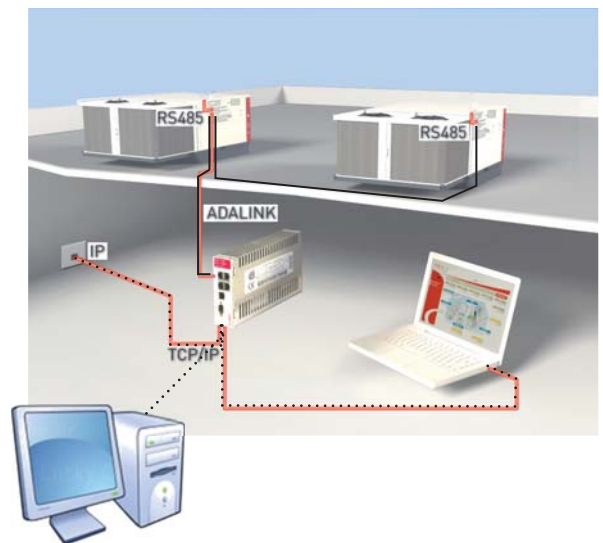
The CLIMATIC™ BACnet® interface is required to connect the unit to a BMS using BACnet® protocol. No other hardware than this board is required to have BACnet® communication. One board required per rooftop. The BACnet® interface is available in two versions to be connected with RS485 or TCP/IP depending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

**FCM** Cooling only**FGM** Cooling only with gas fired heating**FHM** Heat pump**FDM** Heat pump rooftop with gas fired heating

FLEXY™			85	100	120
<b>Casing</b>			<b>F BOX</b>		
Nominal airflow rate	m <sup>3</sup> /h		15000	18500	20500
<b>Cooling mode (FCM - FGM)</b>					
Gross cooling capacity <sup>(1)</sup>		kW	85,2	105	119
Absorbed power	FCM	kW	29,0	38,3	44,5
	FGM	kW	29,8	39,5	46,4
Full load amps <sup>(1)</sup>		A	68,0	75,6	89,4
Direct start up amps ratio Id/Ia			3,0	4,0	3,0
Gross EER <sup>(2)</sup>		FCM	2,94	2,74	2,68
Global net EER <sup>(3)</sup>		FCM	2,86	2,64	2,57
		FGM	2,78	2,56	2,47
<b>Cooling mode (FHM - FDM)</b>					
Gross cooling capacity <sup>(1)</sup>		kW	84,4	103	117
Absorbed power	FHM	kW	29,6	39,3	45,7
	FDM	kW	30,4	40,5	47,6
Gross EER <sup>(2)</sup>		FHM	2,85	2,63	2,57
Global net EER <sup>(3)</sup>		FHM	2,77	2,53	2,46
		FDM	2,70	2,45	2,37
<b>Heating mode (FHM - FDM)</b>					
Net heating capacity		FHM	82,9	103	117
Absorbed power		FHM	26,3	33,4	37,7
		FDM	27,1	34,6	39,6
Gross COP <sup>(2)</sup>		FHM	3,06	2,98	2,97
Global net COP <sup>(3)</sup>		FHM	3,16	3,10	3,10
		FDM	3,06	2,99	2,95
<b>Part load operation - (FHM - FDM)</b>					
Capacity load	%		55%	60%	50%
Gross cooling capacity COP at part load <sup>(4)</sup>			3,10	3,10	3,00
Gross heating capacity COP at part load <sup>(4)</sup>			2,95	3,10	3,10
<b>Heating - Gas fired</b>					
Heating capacity	S <sup>(5)</sup>	kW	55,2	55,2	55,2
	H <sup>(5)</sup>	kW	110,4	110,4	110,4
Power input	S <sup>(5)</sup>	kW	60	60	60
	H <sup>(5)</sup>	kW	120	120	120
Thermal efficiency		%	92	92	92
Gas flow (for natural gas at 20 mbar and 15 °C)	S <sup>(5)</sup>	m <sup>3</sup> /h	6,3	6,3	6,3
	H <sup>(5)</sup>	m <sup>3</sup> /h	12,5	12,5	12,5
<b>Refrigeration circuit</b>					
Number of circuits			2	2	2
Compressor type and number			2 x scroll	2 x scroll	2 x scroll
Expansion valve number			2	2	2
Refrigerant charge per circuit	FCM-FGM	kg	10,5 + 10,5	10,5 + 10,6	10,6 + 10,6
	FHM-FDM	kg	10,5 + 10,5	10,5 + 10,6	10,6 + 10,6
<b>Coils</b>					
Indoor coil : Face area/number of rows/fin per inch	m <sup>2</sup> /nr/FPI		2,4 / 4 /14	2,4 / 4 /14	2,4 / 4 / 14
Outdoor coil : Face area/number of rows/fin per inch			4,4 / 3 /16	4,4 / 3 / 16	4,4 / 3 / 16
<b>Ventilation data</b>					
Nominal airflow rate	m <sup>3</sup> /h		15000	18500	20500
Minimum airflow rate	m <sup>3</sup> /h		12000	14000	15000
Maximum airflow rate	m <sup>3</sup> /h		23000	23000	23000
External static pressure / Maximum <sup>(6)</sup>	Pa		150 / 600	150 / 600	150 / 600

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

**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 COP = Net cooling capacity/Total absorbed power

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

**Cooling :**

- Outdoor temperature = 29,7 °C DB
- Indoor temperature : 26,7 °C DB / 19,4 °C WB

**Heating :**

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

(6) At nominal airflow rate

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

**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FDM** Heat pump rooftop with gas fired heating

FLEXY™		85	100	120
<b>Indoor fan (centrifugal fan - FCM - FHM)</b>				
Number x Fan type		1 x AT 15-15 G2L		
Mechanical power input <sup>(1)</sup>	kW	1 x 3	1 x 5,5	1 x 5,5
Rotation speed	RPM	744	811	853
<b>Indoor fan (centrifugal fan - FGM - FDM)</b>				
Number x Fan type		2 x ADH 355 L		
Mechanical power input <sup>(1)</sup>	kW	2 x 2,2	2 x 3	2 x 4
Rotation speed (S/H)	RPM	859 / 895	949 / 980	1022 / 1050
<b>Outdoor fan (axial fan)</b>				
Number		2	2	2
Nominal airflow rate	m³/h	2 x 15000	2 x 15000	2 x 15000
Motor power	kW	1,8	2,3	2,3
Rotation speed	RPM	900	720	720
<b>Filter (standard)</b>				
Efficiency / Filter class		80-85% / G3		
Number of filters		8		
Filter size	mm	625 x 500 x 50		
<b>Acoustic data (150 Pa)</b>				
Outdoor sound power Standard unit <sup>(1)</sup>	dB(A)	87	88	87
Outdoor sound power Low noise unit <sup>(1)</sup>		82	82	82
Indoor blower outlet sound power FCM - FHM		85	90	89
Indoor blower outlet sound power FGM - FDM		84	87	89
Indoor blower outlet sound power FCM - FHM (FLEXY EC)		76	78	80
Indoor blower outlet sound power FGM - FDM (FLEXY EC)		78	80	82
<b>Operating limits - Cooling mode</b>				
Maxi. outdoor temperature Indoor 27 °C DB / 19 °C WB <sup>(7)</sup>	°C	46	44	44
Maxi. outdoor temperature with unloading		50	50	44
Mini. outdoor temperature Indoor 20 °C DB <sup>(8)</sup>		10	10	10
Maxi. outdoor temperature DB/WB with 100% fresh air		38	38	38
<b>Operating limits - Heating mode</b>				
Mini. outdoor temperature Indoor 20 °C DB <sup>(7)</sup>	°C	-14	-12	-12
Mini. outdoor temperature with unloading		-15	-15	-12
Mini. entering indoor coil temperature Outdoor 7 °C DB		7	7	7
<b>Construction</b>				
Casing material		Aluminium		
Painting		Polyester / RAL 9002		
Insulation class		M0		
<b>Dimensions</b>				
Length	mm	3348	3348	3348
Height	mm	1510	1510	1510
Width with/without fresh air hood <sup>(9)</sup>	mm	2290 / 2705	2290 / 2705	2290 / 2705
Weight - Standard unit (FCM)	kg	990	1065	1142
Weight - Gas unit (S/H) <sup>(5)</sup>	kg	1097 / 1167	1172 / 1242	1149 / 1319

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

**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

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

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

(8) Below this value, "Low ambient kit" option is required

(9) Down return air and down supply air configurations

**FCM** Cooling only

**FGM** Cooling only with gas fired heating

**FHM** Heat pump

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

FLEXY™			150	170	200	230
<b>Casing</b>			<b>G BOX</b>		<b>H BOX</b>	
<b>Nominal airflow rate</b>	m <sup>3</sup> /h		26000	30000	35000	39000
<b>Cooling mode (FCM - FGM)</b>						
Gross cooling capacity <sup>(1)</sup>		kW	148	170	197	234
Absorbed power	FCM	kW	52,4	65,9	65,9	88,1
	FGM	kW	53,8	67,5	67,7	90,8
Full load amps <sup>(1)</sup>		A	114,3	138,5	149,7	178,1
Direct start up amps ratio Id/Ia			2,0	2,0	2,0	2,1
Gross EER <sup>(2)</sup>		FCM	2,83	2,58	2,99	2,66
Global net EER <sup>(3)</sup>		FCM	2,73	2,47	2,88	2,56
		FGM	2,66	2,42	2,80	2,48
<b>Cooling mode (FHM - FDM)</b>						
Gross cooling capacity <sup>(1)</sup>		kW	146	168	195	230
Absorbed power	FHM	kW	53,4	67,3	67,8	89,7
	FDM	kW	54,8	68,9	69,6	92,4
Gross EER <sup>(2)</sup>		FHM	2,74	2,50	2,88	2,56
Global net EER <sup>(3)</sup>		FHM	2,64	2,39	2,78	2,47
		FDM	2,58	2,34	2,70	2,39
<b>Heating mode (FHM - FDM)</b>						
Net heating capacity		FHM	142	168	188	226
Absorbed power		FHM	46,0	56,4	58,2	74,4
		FDM	47,4	58,0	60,0	77,1
Gross COP <sup>(2)</sup>		FHM	2,99	2,86	3,12	2,92
Global net COP <sup>(3)</sup>		FHM	3,10	2,98	3,24	3,04
		FDM	3,00	2,90	3,14	2,94
<b>Part load operation - (FHM - FDM)</b>						
Capacity load	%		(33%) + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
Gross cooling capacity COP at part load <sup>(4)</sup>			3,80	3,70	3,70	3,60
Gross heating capacity COP at part load <sup>(4)</sup>			3,50	3,50	3,50	3,40
<b>Heating - Gas fired</b>						
Heating capacity	S <sup>(5)</sup>	kW	110,4	110,4	165,6	165,6
	H <sup>(5)</sup>		165,6	165,6	220,8	220,8
Power input	S <sup>(5)</sup>	kW	120	120	180	180
	H <sup>(5)</sup>		180	180	240	240
Thermal efficiency		%	92	92	92	92
Gas flow (for natural gas at 20 mbar and 15 °C)	S <sup>(5)</sup>	m <sup>3</sup> /h	12,5	12,5	18,8	18,8
	H <sup>(5)</sup>		18,8	18,8	25	25
<b>Refrigeration circuit</b>						
Number of circuits			2	2	2	2
Compressor type and number			3 x scroll	4 x scroll	4 x scroll	4 x scroll
Expansion valve number			2	2	2	2
Refrigerant charge per circuit	FCM-FGM	kg	15,8 + 16	16 + 16	22 + 22	23,5 + 23,5
	FHM-FDM		15,8 + 16	16 + 16	21 + 21	22,5 + 22,5
<b>Coils</b>						
Indoor coil : Face area/number of rows/fin per inch		m <sup>2</sup> /nr/FPI	3,8 / 4 / 14	3,8 / 4 / 14	4,6 / 4 / 14	4,6 / 4 / 14
Outdoor coil : Face area/number of rows/fin per inch			6,8 / 3 / 16	6,8 / 3 / 16	8,8 / 3 / 16	8,8 / 3 / 16
<b>Ventilation data</b>						
Nominal airflow rate		m <sup>3</sup> /h	26000	30000	35000	39000
Minimum airflow rate		m <sup>3</sup> /h	18000	21000	24000	27000
Maximum airflow rate		m <sup>3</sup> /h	35000	35000	43000	43000
External static pressure / Maximum <sup>(6)</sup>		Pa	150 / 600	150 / 600	150 / 600	150 / 600

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

**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 COP = Net cooling capacity/Total absorbed power

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

**Cooling :**

- Outdoor temperature = 29,7 °C DB
- Indoor temperature : 26,7 °C DB / 19,4 °C WB

**Heating :**

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

(6) At nominal airflow rate

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

**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FDM** Heat pump rooftop with gas fired heating

FLEXY™		150	170	200	230
<b>Indoor fan (centrifugal fan - FCM - FHM)</b>					
Number x Fan type		2 x AT 18/18 S		2 x ADH 500 L	
Mechanical power input <sup>(1)</sup>	kW	2 x 3	2 x 4	2 x 4	2 x 5,5
Rotation speed	RPM	632	692	613	658
<b>Indoor fan (centrifugal fan - FGM - FDM)</b>					
Number x Fan type		2 x ADH 450 L		2 x ADH 500 L	
Mechanical power input <sup>(1)</sup>	kW	2 x 4	2 x 5,5	2 x 5,5	2 x 7,5
Rotation speed (S/H)	RPM	728/755	794/817	702/724	759/779
<b>Outdoor fan (axial fan)</b>					
Number		2	2	4	4
Nominal airflow rate	m³/h	2 x 23000	2 x 23000	4 x 15000	4 x 15000
Motor power	kW	3,2	3,2	4,6	4,6
Rotation speed	RPM	920	920	720	720
<b>Filter (standard)</b>					
Efficiency / Filter class		80-85% / G3			
Number of filters		12	12	10 + 5	10 + 5
Filter size	mm	625 x 500 x 50		500 x 500 + 800 x 500	
<b>Acoustic data (150 Pa)</b>					
Outdoor sound power Standard unit <sup>(1)</sup>	dB(A)	92	92	88	89
Outdoor sound power Low noise unit <sup>(1)</sup>		84	86	85	85
Indoor blower outlet sound power FCM - FHM		91	94	86	88
Indoor blower outlet sound power FGM - FDM		88	90	88	90
Indoor blower outlet sound power FCM - FHM (FLEXY EC)		79	82	85	87
Indoor blower outlet sound power FGM - FDM (FLEXY EC)		81	84	87	89
<b>Operating limits - Cooling mode</b>					
Maxi. outdoor temperature Indoor 27 °C DB / 19°C WB <sup>(9)</sup>	°C	44	46	46	44
Maxi. outdoor temperature with unloading		50	50	50	50
Mini. outdoor temperature Indoor 20°C DB <sup>(8)</sup>		10	10	10	10
Maxi. outdoor temperature DB/WB with 100% fresh air		38	38	38	38
<b>Operating limits - Heating mode</b>					
Mini. outdoor temperature Indoor 20 °C DB <sup>(7)</sup>	°C	-12	-12	-14	-12
Mini. outdoor temperature with unloading		-15	-15	-15	-15
Mini. entering indoor coil temperature Outdoor 7°C DB		7	7	7	7
<b>Construction</b>					
Casing material	Aluminium				
Painting	Polyester / RAL 9002				
Insulation class	M0				
<b>Dimensions</b>					
Length	mm	4385	4385	5530	5530
Height	mm	1830	1830	2130	2130
Width with/without fresh air hood <sup>(10)</sup>	mm	2290 / 2705	2290 / 2705	2290 / 2705	2290 / 2705
Weight - Standard unit (FCM)	kg	1442	1505	1752	2052
Weight - Gas unit (S/H) <sup>(10)</sup>	kg	1683 / 1706	1746 / 1769	2016 / 2056	2316 / 2356

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

**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

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

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

(8) Below this value, "Low ambient kit" option is required

(9) Down return air and down supply air configurations

**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FDM** Heat pump rooftop with gas fired heating

FLEXY™		85	100	120	150	170	200	230	
Nominal airflow rate	m³/h	15000	18500	20500	26000	30000	35000	39000	
<b>Heating - electric</b>									
Type of modulation	m³/h	Staged on S / Triac on M & H							
Available heating capacity	S <sup>(2)</sup>	kW	30	30	30	45	45	72	72
	M <sup>(2)</sup>	kW	54	54	54	72	72	108	108
	H <sup>(2)</sup>	kW	72	72	72	108	108	162	162
Amps S / M / H	A	42/75/99			62/99/149		99/149/196		
<b>Heating - hot water coil</b>									
Available heating capacity <sup>(1)</sup>	S <sup>(2)</sup>	kW	112	124	130	140	149	177	199
	H <sup>(2)</sup>	kW	175	197	209	251	272	296	313
<b>Gas modulating</b>									
Modulation range	H	%	40-100			20-100			
<b>High efficiency supply fan</b>									
Number of fans			2	2	2	3	3	3	3
Type			EC PLUG FAN						
Electrical power at nominal conditions		kW	2,1	2,8	3,3	3,7	4,7	5,1	6,0
Maxi. available pressure (FCM - FHM units)		Pa	600	600	600	600	550	550	450
<b>Axial exhaust fan</b>									
Number of fans			3	3	3	3	3	3	3
<b>Centrifugal exhaust fan</b>									
Number of fans			2	2	2	2	2	3	3
Type			PLUG FAN						
<b>UV light</b>									
Type			UV-C						
Electrical Power		W	2 x 75			4 x 75			
Light Power		W	2 x 25			4 x 25			
Efficiency (3)		%	98	98	99	99	99	98	98
<b>Heat recovery module</b>									
Type of exchanger			Wheel exchanger						
Protection against frosting on exhaust air			Air differential pressure switch 20 to 300 Pa						
Lenght		mm	2146			2330		2516	
Height		mm	1796			2170		2418	
Width with/without fresh air hood <sup>(3)</sup>		mm	1422/1055			1518/1055		1676/623	
Weight		kg	525			635		730	
Wheel diameter		mm	1500			1800		2050	
Number of filters - Fresh air / Return air		mm	3/3			8/8		10/10	
<b>Filter G4 and G4+F7</b>									
Efficiency (gravimetric) / class EN779 / Eurovent G4			90% / G4 / EU4						
Efficiency (opacimetric) / class EN779 / Eurovent F7			85% / F7 / EU7						
Number of filters			8	8	8	12	12	10+5	10+5
Filter size		mm	625 x 500 x 50			625x500x50		500x500+800x800	
Fire class			M1						
<b>Dynamic defrost</b>									
Axial fan number			2	2	2	2	2	4	4
Motor power (total)		kW	1,8	1,8	2,0	4,6	4,6	4,1	4,1

(1) Conditions : entering water temperature 90°C, leaving water temperature 70°C, entering air temperature 20°C, S = standart heat, H = high heat

(2) not available with FG and FD versions

(3) Bacteria elimination rate after 2 seconds of UV-C exposure

**PERFORMANCES AT PART LOAD OPERATION (\*)**

**Eurovent conditions**

(\*) Part load data according to ANSI/ARI Standard 340/360 conditions

Cooling mode : Outdoor temperature = 29,7 °C DB / Indoor temperature : 26,7 °C DB / 19,4 °C WB

Heating mode : Outdoor temperature = 7 °C DB / Indoor temperature = 6 °C WB / 20 °C DB

		FHM 085 N2M	FHM 100 N2M	FHM 120 N2M
<b>Cooling mode</b>	FULL LOAD (100%)	45% + 55%	40% + 60%	50% + 50%
	Gross cooling capacity	<b>84,4</b> kW	<b>103</b>	<b>117</b>
	Electrical power	29,6 kW	39,3	45,7
	Gross COP	<b>2,8</b>	<b>2,6</b>	<b>2,6</b>
	PART LOAD 1 (*)	55%	60%	50%
	Gross cooling capacity	<b>48,4</b> kW	<b>65,5</b>	<b>67,2</b>
	Electrical power	15,4 kW	20,8	22,1
	Gross COP	<b>3,1</b>	<b>3,1</b>	<b>3,0</b>
	α	0,15	0,27	0,15
	β	0,04	0,06	-0,03
<b>Heating mode</b>	FULL LOAD (100%)	45% + 55%	40% + 60%	50% + 50%
	Net heating capacity	<b>82,9</b> kW	<b>103</b>	<b>117</b>
	Electrical power	26,3 kW	33,4	37,7
	Net COP	<b>3,2</b>	<b>3,1</b>	<b>3,1</b>
	PART LOAD 1 (*)	55%	60%	50%
	Net heating capacity	<b>46,4</b> kW	<b>61,8</b>	<b>64,0</b>
	Electrical power	15,7 kW	20,1	20,9
	Net COP	<b>3,0</b>	<b>3,1</b>	<b>3,1</b>
	α	0,12	0,20	0,09
	β	0,19	0,20	0,11

		FHM 150 N2M	FHM 170 N2M	FHM 200 N2M	FHM 230 N2M
<b>Cooling mode</b>	FULL LOAD (100%)	33% + (33% + 33%)	(27%+23%) + (27%+23%)	(25%+25%) + (25%+25%)	(25%+25%) + (25%+25%)
	Gross cooling capacity	<b>146</b> kW	<b>168</b>	<b>195</b>	<b>230</b>
	Electrical power	53,4 kW	67,3	67,8	89,7
	Gross COP	<b>2,7</b>	<b>2,5</b>	<b>2,9</b>	<b>2,6</b>
	PART LOAD 1 (*)	33% + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
	Gross cooling capacity	<b>122</b> kW	<b>116</b>	<b>132</b>	<b>166</b>
	Electrical power	31,8 kW	31,2	35,4	45,5
	Gross COP	<b>3,8</b>	<b>3,7</b>	<b>3,7</b>	<b>3,6</b>
	α	0,66	0,38	0,36	0,44
	β	0,19	-0,07	0,04	0,01
	PART LOAD 2 (*)	33%	23%	25%	25%
	Gross cooling capacity	<b>60,8</b> kW	<b>55,5</b>	<b>66,3</b>	<b>82,9</b>
	Electrical power	18,1 kW	17,7	21,7	28,2
	Gross COP	<b>3,4</b>	<b>3,1</b>	<b>3,1</b>	<b>2,9</b>
	α	-0,17	-0,34	-0,32	-0,28
	β	-0,32	-0,47	-0,36	-0,37
<b>Heating mode</b>	FULL LOAD (100%)	33% + (33% + 33%)	(25%+25%)+ (25%+25%)	(25%+25%)+ (25%+25%)	(25%+25%)+ (25%+25%)
	Net heating capacity	<b>142</b> kW	<b>168</b>	<b>188</b>	<b>226</b>
	Electrical power	46,0 kW	56,4	58,2	74,4
	Net COP	<b>3,1</b>	<b>3,0</b>	<b>3,1</b>	<b>2,9</b>
	PART LOAD 1 (*)	33% + (33%)	(27%) + (23%)	(25%) + (25%)	(25%) + (25%)
	Net heating capacity	<b>106,8</b> kW	<b>101,5</b>	<b>115,5</b>	<b>145,6</b>
	Electrical power	30,1 kW	28,9	33,3	25,8
	Net COP	<b>3,5</b>	<b>3,5</b>	<b>3,5</b>	<b>3,4</b>
	α	0,50	0,21	0,23	0,29
	β	0,31	0,02	0,14	-0,31
	PART LOAD 2(*)	33%	25%	25%	25%
	Net heating capacity	<b>55,6</b> kW	<b>51,1</b>	<b>61,8</b>	<b>78,4</b>
	Electrical power	17,3 kW	16,6	20,6	26,9
	Net COP	<b>3,2</b>	<b>3,1</b>	<b>3,0</b>	<b>2,9</b>
	α	-0,22	-0,39	-0,34	-0,31
	β	-0,25	-0,41	-0,29	-0,28

## ENERGY RECOVERY MODULE

### Heating and cooling modes

Conditions :  
 27°C / 47% HR  
 35°C / 50 % HR

Fresh air %			Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m <sup>3</sup> /h)	<b>15000</b>	<b>18500</b>	<b>20500</b>	<b>26000</b>	<b>30000</b>	<b>35000</b>	<b>39000</b>
20%	Total cooling capacity	kW	97,46	118,02	133,10	167,31	191,01	223,59	260,50
	Standard cooling capacity	kW	83,89	101,78	115,33	144,24	164,86	192,47	226,37
	Heat recovery cooling capacity	kW	13,57	16,24	17,77	23,07	26,15	31,12	34,14
	Total cooling absorbed power	kW	28,99	39,06	45,18	51,54	64,89	67,42	89,39
	Standard cooling absorbed power	kW	28,90	38,80	44,82	50,95	64,40	66,79	88,48
	Heat recovery cooling absorbed power	kW	0,09	0,26	0,36	0,60	0,49	0,64	0,90
	Net EER		3,36	3,02	2,95	3,25	2,94	3,32	2,91
	Efficiency	%	85%	83%	82%	82%	81%	83%	82%
60%	Total cooling capacity	kW	122,70	147,19	164,44	208,65	236,79	278,53	320,65
	Standard cooling capacity	kW	87,38	106,31	120,38	150,56	172,09	200,96	236,57
	Heat recovery cooling capacity	kW	35,31	40,88	44,06	58,09	64,71	77,57	84,07
	Total cooling absorbed power	kW	29,72	40,11	46,58	52,87	66,81	69,26	92,14
	Standard cooling absorbed power	kW	29,20	39,32	45,51	51,52	65,22	67,55	89,87
	Heat recovery cooling absorbed power	kW	0,53	0,79	1,07	1,35	1,59	1,71	2,28
	Net EER		4,13	3,67	3,53	3,95	3,54	4,02	3,48
	Efficiency	%	71%	67%	65%	67%	64%	67%	65%
90%	Total cooling capacity	kW	137,85	163,90	181,84	232,46	261,81	310,02	353,97
	Standard cooling capacity	kW	90,61	110,43	125,05	156,29	178,53	208,78	245,69
	Heat recovery cooling capacity	kW	47,24	53,47	56,80	76,16	83,28	101,23	108,28
	Total cooling absorbed power	kW	30,34	40,78	47,79	54,19	68,40	70,97	94,61
	Standard cooling absorbed power	kW	29,48	39,77	46,16	52,05	65,97	68,26	91,12
	Heat recovery cooling absorbed power	kW	0,86	1,00	1,64	2,13	2,43	2,71	3,48
	Net EER		4,54	4,02	3,80	4,29	3,83	4,37	3,74
	Efficiency	%	63%	58%	55%	59%	55%	58%	55%
100%	Total cooling capacity	kW	142,05	168,72	187,16	239,79	268,30	319,65	362,72
	Standard cooling capacity	kW	91,64	111,83	126,57	158,49	180,81	211,51	248,90
	Heat recovery cooling capacity	kW	50,42	56,89	60,58	81,30	87,49	108,14	113,82
	Total cooling absorbed power	kW	30,61	41,13	48,20	54,37	68,95	71,61	95,47
	Standard cooling absorbed power	kW	29,58	39,94	46,37	52,24	66,23	68,51	91,57
	Heat recovery cooling absorbed power	kW	1,04	1,19	1,83	2,13	2,72	3,10	3,90
	Net EER		4,64	4,10	3,88	4,41	3,89	4,46	3,80
	Efficiency	%	61%	55%	52%	56%	52%	55%	52%



## ENERGY RECOVERY MODULE Heating and cooling modes

Conditions :  
20°C / 70% HR / 7°C

Fresh air %			Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m <sup>3</sup> /h)	<b>15000</b>	<b>18500</b>	<b>20500</b>	<b>26000</b>	<b>30000</b>	<b>35000</b>	<b>39000</b>
20%	Total cooling capacity	kW	98,22	121,56	135,49	168,67	197,46	223,59	264,96
	Standard cooling capacity	kW	82,57	102,88	115,09	142,11	167,41	187,76	225,73
	Heat recovery cooling capacity	kW	15,65	18,67	20,40	26,56	30,05	35,83	39,24
	Total cooling absorbed power	kW	25,48	32,72	37,88	43,65	53,26	57,13	73,04
	Standard cooling absorbed power	kW	25,39	32,47	37,52	43,06	52,76	56,50	72,14
	Heat recovery cooling absorbed power	kW	0,09	0,26	0,36	0,60	0,49	0,64	0,90
	Net EER		3,85	3,71	3,58	3,86	3,71	3,91	3,63
	Efficiency	%	87%	85%	84%	86%	84%	85%	84%
60%	Total cooling capacity	kW	123,69	150,38	163,31	209,64	242,57	277,92	323,75
	Standard cooling capacity	kW	83,59	104,24	113,72	144,00	169,74	190,35	229,10
	Heat recovery cooling capacity	kW	40,10	46,14	49,60	65,63	72,83	87,57	94,64
	Total cooling absorbed power	kW	25,11	32,14	41,11	42,96	52,35	56,27	71,82
	Standard cooling absorbed power	kW	24,58	31,35	40,04	41,61	50,77	54,56	69,54
	Heat recovery cooling absorbed power	kW	0,53	0,79	1,07	1,35	1,59	1,71	2,28
	Net EER		4,93	4,68	3,97	4,88	4,63	4,94	4,51
	Efficiency	%	72%	68%	65%	68%	65%	67%	65%
90%	Total cooling capacity	kW	137,64	165,02	175,57	230,78	264,18	305,81	352,45
	Standard cooling capacity	kW	84,59	105,41	112,49	145,79	171,70	192,96	232,21
	Heat recovery cooling capacity	kW	53,05	59,60	63,08	84,99	92,48	112,84	120,24
	Total cooling absorbed power	kW	24,61	31,24	44,19	41,99	50,91	55,31	70,09
	Standard cooling absorbed power	kW	23,74	30,24	42,56	40,12	48,76	52,60	67,01
	Heat recovery cooling absorbed power	kW	0,86	1,00	1,64	1,87	2,15	2,71	3,07
	Net EER		5,59	5,28	3,97	5,50	5,19	5,53	5,03
	Efficiency	%	63%	58%	55%	58%	54%	57%	54%
100%	Total cooling capacity	kW	141,41	168,97	179,09	236,91	269,19	313,76	359,29
	Standard cooling capacity	kW	84,99	105,79	112,05	146,51	172,45	193,66	233,44
	Heat recovery cooling capacity	kW	56,42	63,18	67,04	90,40	96,74	120,10	125,85
	Total cooling absorbed power	kW	24,48	30,84	45,38	41,72	50,50	54,59	69,62
	Standard cooling absorbed power	kW	23,45	29,83	43,55	39,58	48,07	51,89	66,14
	Heat recovery cooling absorbed power	kW	1,04	1,00	1,83	2,13	2,43	2,71	3,48
	Net EER		5,78	5,48	3,95	5,68	5,33	5,75	5,16
	Efficiency	%	60%	55%	51%	55%	51%	54%	51%

## ENERGY RECOVERY MODULE Heating and cooling modes

Conditions :  
20°C / 70% HR / -7°C

Fresh air %			Size						
			085	100	120	150	170	200	230
	Nominal airflow rate	(m <sup>3</sup> /h)	<b>15000</b>	<b>18500</b>	<b>20500</b>	<b>26000</b>	<b>30000</b>	<b>35000</b>	<b>39000</b>
20%	Total cooling capacity	kW	90,60	111,13	123,57	155,15	181,04	206,49	240,14
	Standard cooling capacity	kW	59,35	73,89	82,90	102,16	121,13	134,97	161,87
	Heat recovery cooling capacity	kW	31,26	37,24	40,67	52,99	59,91	71,52	78,27
	Total cooling absorbed power	kW	22,61	29,15	32,64	39,06	47,56	51,29	65,00
	Standard cooling absorbed power	kW	22,52	28,89	32,28	38,46	47,07	50,66	64,09
	Heat recovery cooling absorbed power	kW	0,09	0,26	0,36	0,60	0,49	0,64	0,90
	Net EER		4,01	3,81	3,79	3,97	3,81	4,03	3,69
	Efficiency	%	88%	86%	85%	87%	85%	86%	85%
60%	Total cooling capacity	kW	140,13	166,76	182,82	234,39	267,52	311,40	352,56
	Standard cooling capacity	kW	60,50	75,37	84,71	104,34	123,45	137,96	165,35
	Heat recovery cooling capacity	kW	79,63	91,39	98,11	130,04	144,07	173,43	187,21
	Total cooling absorbed power	kW	21,49	27,56	30,70	36,98	44,55	48,58	61,01
	Standard cooling absorbed power	kW	20,96	26,77	29,81	35,62	43,24	46,87	59,13
	Heat recovery cooling absorbed power	kW	0,53	0,79	0,89	1,35	1,31	1,71	1,89
	Net EER		6,52	6,05	5,95	6,34	6,01	6,41	5,78
	Efficiency	%	72%	68%	65%	68%	65%	67%	65%
90%	Total cooling capacity	kW	166,39	194,21	210,79	273,82	307,53	362,97	405,87
	Standard cooling capacity	kW	61,56	76,75	86,66	106,28	125,57	140,61	169,27
	Heat recovery cooling capacity	kW	104,83	117,45	124,13	167,54	181,96	222,35	236,60
	Total cooling absorbed power	kW	20,32	25,97	29,08	34,82	41,85	45,81	57,84
	Standard cooling absorbed power	kW	19,46	24,81	27,64	32,95	39,70	43,35	54,77
	Heat recovery cooling absorbed power	kW	0,86	1,16	1,45	1,87	2,15	2,46	3,07
	Net EER		8,19	7,48	7,25	7,86	7,35	7,92	7,02
	Efficiency	%	63%	58%	55%	58%	54%	57%	54%
100%	Total cooling capacity	kW	173,31	201,35	219,14	284,97	316,33	377,86	417,99
	Standard cooling capacity	kW	61,97	77,03	87,40	107,01	126,25	141,53	170,70
	Heat recovery cooling capacity	kW	111,33	124,31	131,73	177,95	190,07	236,33	247,29
	Total cooling absorbed power	kW	19,97	25,15	28,54	34,17	40,97	44,84	56,87
	Standard cooling absorbed power	kW	18,94	24,15	26,90	32,03	38,54	42,13	53,39
	Heat recovery cooling absorbed power	kW	1,04	1,00	1,64	2,13	2,43	2,71	3,48
	Net EER		8,67	8,01	7,68	8,34	7,72	8,43	7,35
	Efficiency	%	60%	55%	51%	55%	51%	54%	51%

**FCM** Cooling only

**FHM** Heat pump

**FHM 085**

COOLING CAPACITY AND ABSORBED POWER

FHM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C					
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA			
Minimum airflow 12 000 m³/h	Entering air temperature	16°C	21°C	80,2	53,1	19,1	77,2	51,4	21,2	73,8	49,8	23,5	69,9	48,1	26,1	66,4	46,7	28,4		
			24°C	80,8	65,2	19,1	77,9	63,7	21,2	74,4	62,1	23,5	70,5	60,3	26,1	67,0	58,7	28,4		
			27°C	81,6	77,0	19,2	78,6	75,6	21,2	75,2	74,1	23,6	71,5	71,5	26,2	68,5	68,5	28,6		
		19°C	30°C	84,5	84,5	19,3	82,0	82,0	21,4	79,0	79,0	23,8	75,5	75,5	26,5	72,4	72,4	28,9		
			24°C	87,4	52,6	19,6	84,0	50,8	21,6	80,2	49,1	23,9	75,9	47,4	26,5	72,1	46,0	28,8		
			27°C	88,1	64,8	19,6	84,8	63,2	21,7	81,0	61,6	24,0	76,7	59,8	26,6	72,9	58,2	28,9		
		22°C	30°C	88,9	76,6	19,7	85,6	75,2	21,8	81,8	73,6	24,1	77,5	71,9	26,7	73,8	70,2	29,0		
			33°C	89,9	88,0	19,8	86,8	86,8	21,8	83,6	83,6	24,2	79,9	79,9	26,9	76,6	76,6	29,2		
			36°C	97,6	87,2	20,3	93,9	86,0	22,4	89,8	84,7	24,7	85,1	83,0	27,3	81,0	81,0	29,7		
Nominal airflow 15 000 m³/h	Entering air temperature	16°C	21°C	83,7	58,5	19,4	80,6	56,9	21,4	76,9	55,3	23,7	72,8	53,6	26,3	69,1	52,1	28,6		
			24°C	84,6	73,1	19,4	81,4	71,6	21,5	77,7	69,9	23,8	73,6	67,9	26,3	69,9	66,2	28,6		
			27°C	85,8	85,8	19,5	83,1	83,1	21,6	80,0	80,0	23,9	76,3	76,3	26,6	73,1	73,1	28,9		
		19°C	30°C	90,6	90,6	19,9	87,8	87,8	21,9	84,5	84,5	24,3	80,7	80,7	26,9	77,3	77,3	29,3		
			24°C	91,0	57,9	19,9	87,5	56,2	21,9	83,5	54,6	24,2	78,9	52,9	26,7	75,0	51,4	29,0		
			27°C	91,9	72,7	19,9	88,4	71,1	22,0	84,4	69,4	24,3	79,9	67,5	26,8	75,9	65,8	29,1		
		22°C	30°C	93,0	87,1	20,0	89,4	85,6	22,1	85,4	83,9	24,3	80,9	80,9	26,9	77,4	77,4	29,3		
			33°C	95,9	95,9	20,2	92,9	92,9	22,3	89,3	89,3	24,7	85,3	85,3	27,3	81,7	81,7	29,7		
			36°C	98,6	57,3	20,4	94,7	55,5	22,4	90,3	53,8	24,7	85,4	52,1	27,3	81,1	50,7	29,6		
		Maximum airflow 23 000 m³/h	Entering air temperature	16°C	21°C	89,7	71,1	19,8	85,9	69,6	21,8	81,7	67,9	24,0	76,9	66,0	26,6	72,8	64,2	28,9
					24°C	90,9	90,9	19,9	87,5	87,5	21,9	83,7	83,7	24,2	79,4	79,4	26,8	75,6	75,6	29,1
					27°C	96,2	96,2	20,2	92,7	92,7	22,3	88,7	88,7	24,6	84,2	84,2	27,2	80,3	80,3	29,5
19°C	30°C			101,9	101,9	20,7	98,2	98,2	22,7	94,1	94,1	25,0	89,5	89,5	27,7	85,4	85,4	30,0		
	24°C			97,2	70,3	20,3	93,1	68,7	22,3	88,5	67,1	24,6	83,4	65,3	27,1	79,0	63,7	29,4		
	27°C			98,6	91,9	20,4	94,5	90,2	22,4	89,9	88,2	24,7	84,5	84,5	27,2	80,5	80,5	29,6		
22°C	30°C			102,1	102,1	20,7	98,3	98,3	22,7	94,1	94,1	25,0	89,4	89,4	27,7	85,3	85,3	30,0		
	33°C			107,8	107,8	21,1	104,0	104,0	23,2	99,6	99,6	25,5	-	-	-	-	-	-		
	36°C			105,1	69,4	20,9	100,6	67,8	22,9	95,6	66,3	25,2	90,2	64,6	27,8	85,4	63,1	30,1		
22°C	30°C			106,6	91,4	21,0	102,1	89,7	23,0	97,1	87,9	25,3	91,6	85,7	27,9	86,9	83,8	30,2		
	33°C			108,1	108,1	21,2	104,2	104,2	23,2	99,7	99,7	25,5	-	-	-	-	-	-		
	36°C			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

HEATING CAPACITY AND ABSORBED POWER

FHM	Outdoor air temp.	20°C		15°C		10°C		7°C		5°C		0°C		-5°C		-10°C		-12°C		
		PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	PT	PA	
Minimum airflow 12 000 m³/h	Entering air temperature Dry bulb	8°C	111,8	20,7	100,1	19,6	89,3	18,5	83,2	17,9	79,3	17,5	70,1	16,6	61,7	15,7	54,2	15,0	51,4	14,7
		11°C	110,5	21,9	98,9	20,7	88,2	19,6	82,2	19,0	78,4	18,5	69,4	17,6	61,2	16,7	53,8	15,9	51,1	15,6
		14°C	109,1	23,2	97,7	22,0	87,2	20,8	81,3	20,1	77,5	19,7	68,6	18,6	60,6	17,7	53,4	16,9	50,8	16,6
		17°C	107,7	24,7	96,5	23,3	86,1	22,0	80,3	21,3	76,6	20,9	67,9	19,8	60,0	18,8	53,0	17,9	50,4	17,6
		20°C	106,2	26,2	95,2	24,8	85,0	23,4	79,3	22,6	75,6	22,1	67,1	21,0	59,4	19,9	52,5	19,0	50,0	18,7
		23°C	104,8	28,0	93,9	26,4	83,9	24,9	78,2	24,0	74,7	23,5	66,3	22,2	58,8	21,1	52,0	20,1	49,6	19,8
26°C	103,3	29,9	92,6	28,1	82,7	26,5	77,2	25,5	73,7	24,9	65,5	23,5	58,1	22,3	51,5	21,2	49,2	20,9		
Nominal airflow 15 000 m³/h	Entering air temperature Dry bulb	8°C	113,6	19,3	101,7	18,3	90,6	17,3	84,4	16,8	80,4	16,4	71,0	15,6	62,5	14,8	-	-	-	-
		11°C	112,2	20,3	100,5	19,3	89,6	18,3	83,5	17,7	79,5	17,4	70,3	16,5	61,9	15,7	54,4	15,0	51,6	14,8
		14°C	110,8	21,5	99,3	20,4	88,6	19,4	82,5	18,8	78,7	18,4	69,6	17,5	61,4	16,7	54,0	15,9	51,3	15,7
		17°C	109,4	22,8	98,0	21,6	87,5	20,5	81,5	19,9	77,8	19,5	68,9	18,5	60,8	17,7	53,6	16,9	50,9	16,7
		20°C	108,0	24,1	96,8	22,9	86,4	21,7	80,5	21,0	76,8	20,6	68,1	19,6	60,2	18,7	53,1	18,0	50,5	17,7
		23°C	106,6	25,6	95,5	24,3	85,3	23,0	79,5	22,3	75,9	21,8	67,3	20,7	59,6	19,8	52,6	19,0	50,1	18,7
26°C	105,1	27,2	94,2	25,8	84,1	24,4	78,5	23,6	74,9	23,1	66,5	22,0	58,9	20,9	52,2	20,1	49,7	19,8		
Maximum airflow 23 000 m³/h	Entering air temperature Dry bulb	8°C	116,7	17,1	104,3	16,3	92,8	15,6	86,2	15,1	82,0	14,9	-	-	-	-	-	-	-	-
		11°C	115,4	18,0	103,2	17,2	91,8	16,4	85,3	16,0	81,2	15,7	71,4	15,0	62,5	14,4	-	-	-	-
		14°C	114,1	19,0	102,0	18,1	90,7	17,4	84,4	16,9	80,3	16,6	70,7	16,0	62,0	15,4	54,1	14,9	51,2	14,7
		17°C	112,7	20,0	100,8	19,2	89,7	18,4	83,4	17,9	79,4	17,6	70,0	16,9	61,4	16,4	53,7	15,9	50,8	15,8
		20°C	111,3	21,2	99,5	20,3	88,6	19,4	82,5	19,0	78,5	18,7	69,3	18,0	60,9	17,4	53,3	17,0	50,5	16,9
		23°C	109,9	22,4	98,3	21,5	87,5	20,6	81,5	20,1	77,6	19,8	68,5	19,1	60,2	18,6	52,8	18,2	50,1	18,1
26°C	108,4	23,7	97,0	22,7	86,4	21,8	80,5	21,3	76,6	21,0	67,7	20,3	59,6	19,8	52,4	19,4	49,7	19,3		

**PT** : Gross total cooling/heating capacity in kW

**PS** : Sensible heating capacity in kW

**PA** : Compressor absorbed power

**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>3,17</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	<b>1,8</b>
				FC/FD <b>4,0</b>

**FCM** Cooling only

**FHM** Heat pump

**FCM 085**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow 12 000 m <sup>3</sup> /h	16°C	21°C	80,6	52,8	18,6	77,8	51,3	20,7	74,5	49,7	22,9	70,8	48,1	25,5	67,4	46,7	27,7
		24°C	81,2	64,6	18,6	78,4	63,2	20,7	75,2	61,7	23,0	71,4	60,0	25,5	68,1	58,4	27,8
		27°C	82,1	76,1	18,7	79,3	74,9	20,8	76,0	73,4	23,1	72,3	71,6	25,6	69,0	69,0	27,8
		30°C	84,6	84,6	18,8	82,2	82,2	20,9	79,3	79,3	23,3	75,9	75,9	25,9	72,9	72,9	28,2
	19°C	24°C	87,8	52,2	19,1	84,6	50,6	21,2	81,0	49,0	23,4	76,9	47,4	25,9	73,3	46,0	28,2
		27°C	88,5	64,2	19,2	85,3	62,7	21,2	81,7	61,1	23,5	77,6	59,4	26,0	73,9	57,9	28,2
		30°C	89,4	75,7	19,2	86,2	74,4	21,3	82,6	72,9	23,5	78,4	71,1	26,0	74,8	69,5	28,3
		33°C	90,5	86,8	19,3	87,3	85,7	21,3	83,8	83,8	23,6	80,2	80,2	26,2	77,0	77,0	28,5
	22°C	27°C	95,4	51,6	19,7	91,8	49,8	21,7	87,8	48,1	23,9	83,4	46,6	26,5	79,4	45,3	28,7
		30°C	96,0	63,6	19,7	92,5	62,0	21,7	88,5	60,4	24,0	84,0	58,7	26,5	80,1	57,3	28,8
		33°C	97,0	75,0	19,8	93,4	73,6	21,8	89,4	72,1	24,1	84,9	70,5	26,6	81,0	69,0	28,9
		36°C	98,1	85,9	19,9	94,5	84,8	21,9	90,5	83,5	24,1	86,0	81,9	26,7	82,1	80,3	29,0
Nominal airflow 15 000 m <sup>3</sup> /h	16°C	21°C	84,3	58,2	18,9	81,3	56,7	20,9	77,8	55,1	23,2	73,8	53,4	25,7	70,3	52,0	27,9
		24°C	85,1	72,4	19,0	82,1	70,9	21,0	78,6	69,3	23,3	74,6	67,4	25,7	71,1	65,7	28,0
		27°C	86,0	86,0	19,0	83,4	83,4	21,1	80,4	80,4	23,4	76,9	76,9	25,9	73,7	73,7	28,2
		30°C	90,8	90,8	19,4	88,1	88,1	21,4	84,9	84,9	23,7	81,2	81,2	26,3	77,9	77,9	28,6
	19°C	24°C	91,7	57,6	19,4	88,3	55,9	21,4	84,4	54,3	23,7	80,0	52,7	26,2	76,2	51,3	28,4
		27°C	92,5	72,0	19,5	89,1	70,4	21,5	<b>85,2</b>	<b>68,7</b>	<b>23,7</b>	80,8	66,9	26,2	77,0	65,3	28,5
		30°C	93,5	86,0	19,6	90,1	84,5	21,6	86,2	82,9	23,8	81,9	80,9	26,3	78,0	78,0	28,5
		33°C	96,0	96,0	19,7	93,1	93,1	21,8	89,6	89,6	24,1	85,7	85,7	26,7	82,3	82,3	29,0
	22°C	27°C	99,3	56,8	20,0	95,5	55,1	22,0	91,3	53,5	24,2	86,6	51,8	26,7	82,5	50,5	29,0
		30°C	100,2	71,4	20,0	96,4	69,7	22,0	92,1	68,1	24,3	87,4	66,3	26,8	83,3	64,7	29,0
		33°C	101,2	85,4	20,1	97,4	83,9	22,1	93,2	82,3	24,4	88,4	80,4	26,9	84,3	78,7	29,1
		36°C	102,5	99,0	20,2	98,7	97,7	22,2	94,6	94,6	24,5	90,5	90,5	27,1	86,8	86,8	29,4
Maximum airflow 23 000 m <sup>3</sup> /h	16°C	21°C	90,6	70,5	19,3	86,9	68,9	21,3	82,7	67,2	23,5	78,1	65,3	26,0	74,0	63,5	28,2
		24°C	91,8	90,9	19,4	88,0	88,0	21,4	84,3	84,3	23,6	80,2	80,2	26,2	76,5	76,5	28,5
		27°C	96,5	96,5	19,8	93,1	93,1	21,8	89,3	89,3	24,0	85,0	85,0	26,6	81,2	81,2	28,9
		30°C	102,1	102,1	20,2	98,6	98,6	22,2	94,6	94,6	24,5	90,1	90,1	27,0	86,2	86,2	29,4
	19°C	24°C	98,2	69,8	19,9	94,1	68,2	21,9	89,6	66,5	24,1	84,6	64,7	26,5	80,3	63,0	28,8
		27°C	99,4	90,8	20,0	95,4	89,0	22,0	90,9	86,9	24,2	85,9	84,6	26,6	81,4	81,4	28,9
		30°C	102,3	102,3	20,2	98,7	98,7	22,2	94,7	94,7	24,5	90,1	90,1	27,0	86,1	86,1	29,3
		33°C	108,0	108,0	20,6	104,3	104,3	22,7	-	-	-	-	-	-	-	-	-
	22°C	27°C	106,1	68,9	20,5	101,7	67,3	22,4	96,8	65,7	24,7	91,5	63,9	27,2	86,8	62,4	29,4
		30°C	107,4	90,4	20,6	103,0	88,6	22,5	98,1	86,6	24,8	92,7	84,4	27,3	-	-	-
		33°C	108,4	108,4	20,7	104,6	104,6	22,7	-	-	-	-	-	-	-	-	-
		36°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**PT** : Gross total cooling/heating capacity in kW  
**PS** : Sensible heating capacity in kW  
**PA** : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>3,17</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	FC/FD <b>4,0</b>
				<b>1,8</b>



**FCM** Cooling only

**FHM** Heat pump

**FCM 100**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow 14 000 m³/h	16°C	21°C	98,9	64,1	24,3	95,2	62,1	26,9	91,0	60,1	29,9	86,2	57,9	33,1	81,9	56,0	36,0
		24°C	99,8	78,3	24,3	96,1	76,7	27,0	91,9	74,8	29,9	87,0	72,6	33,2	82,7	70,6	36,1
		27°C	100,9	92,6	24,4	97,2	91,3	27,1	92,9	89,6	30,0	88,1	87,4	33,3	84,0	84,0	36,3
		30°C	103,2	103,2	24,6	100,2	100,2	27,3	96,6	96,6	30,4	92,3	92,3	33,8	88,4	88,4	36,8
	19°C	24°C	107,8	64,3	25,0	103,6	62,0	27,7	98,9	59,8	30,6	93,6	57,4	33,9	88,9	55,5	36,8
		27°C	108,7	78,0	25,1	104,5	76,0	27,7	99,7	74,0	30,7	94,4	71,7	34,0	89,7	69,6	36,9
		30°C	109,8	91,6	25,2	105,6	90,1	27,8	100,8	88,3	30,8	95,4	86,0	34,1	90,6	83,9	37,1
		33°C	111,1	105,3	25,3	106,9	104,2	27,9	102,1	102,1	30,9	97,4	97,4	34,3	93,2	93,2	37,4
	22°C	27°C	117,1	65,4	25,9	112,4	62,8	28,5	107,2	60,2	31,4	101,3	57,7	34,7	96,2	55,6	37,8
		30°C	118,0	78,2	25,9	113,3	76,0	28,6	108,0	73,8	31,5	102,1	71,4	34,8	97,0	69,2	37,9
		33°C	119,1	91,0	26,0	114,4	89,2	28,7	109,0	87,3	31,6	103,1	85,1	35,0	98,0	83,0	38,0
		36°C	120,4	103,6	26,1	115,7	102,4	28,8	110,3	100,9	31,7	104,3	98,8	35,1	99,1	96,8	38,2
Nominal airflow 18 500 m³/h	16°C	21°C	104,7	73,0	24,8	100,6	71,1	27,4	95,9	69,0	30,3	90,6	66,7	33,6	86,0	64,7	36,5
		24°C	105,9	90,9	24,9	101,7	89,1	27,5	97,0	87,0	30,4	91,7	84,6	33,7	87,1	82,3	36,6
		27°C	106,9	106,9	25,0	103,5	103,5	27,7	99,5	99,5	30,7	94,8	94,8	34,0	90,5	90,5	37,0
		30°C	112,7	112,7	25,5	109,1	109,1	28,2	104,9	104,9	31,2	99,9	99,9	34,6	95,5	95,5	37,7
	19°C	24°C	113,8	73,1	25,6	109,1	70,9	28,2	103,9	68,6	31,1	98,1	66,2	34,4	93,1	64,1	37,3
		27°C	114,9	90,4	25,7	110,3	88,5	28,3	<b>105,0</b>	<b>86,3</b>	<b>31,2</b>	99,2	83,7	34,5	94,1	81,4	37,5
		30°C	116,3	107,9	25,8	111,6	106,2	28,4	106,3	104,1	31,3	100,4	100,4	34,6	95,9	95,9	37,7
		33°C	119,2	119,2	26,1	115,3	115,3	28,8	110,7	110,7	31,8	105,4	105,4	35,2	100,7	100,7	38,4
	22°C	27°C	123,2	74,0	26,4	118,1	71,5	29,0	112,3	69,0	31,9	106,0	66,4	35,3	100,5	64,2	38,3
		30°C	124,4	90,6	26,5	119,2	88,4	29,1	113,4	86,1	32,1	107,1	83,5	35,4	101,6	81,1	38,5
		33°C	125,7	107,3	26,6	120,5	105,4	29,2	114,7	103,3	32,2	108,3	100,7	35,6	102,8	98,2	38,6
		36°C	127,3	124,0	26,8	121,5	121,5	29,4	116,6	116,6	32,4	111,0	111,0	35,9	106,0	106,0	39,1
Maximum airflow 23 000 m³/h	16°C	21°C	108,7	79,5	25,1	104,2	77,6	27,7	99,0	75,5	30,6	93,3	73,2	33,8	88,3	71,0	36,7
		24°C	110,1	100,8	25,3	105,5	99,0	27,8	100,4	96,8	30,7	94,6	94,1	34,0	89,8	89,8	36,9
		27°C	113,6	113,6	25,5	109,6	109,6	28,2	105,0	105,0	31,2	99,6	99,6	34,5	94,9	94,9	37,6
		30°C	120,1	120,1	26,1	115,9	115,9	28,8	111,0	111,0	31,8	105,4	105,4	35,2	100,5	100,5	38,4
	19°C	24°C	117,9	79,3	25,9	112,8	77,2	28,5	107,2	75,0	31,4	100,9	72,5	34,7	95,5	70,4	37,7
		27°C	119,3	100,3	26,1	114,2	98,3	28,6	108,5	96,0	31,5	102,2	93,3	34,8	96,8	90,7	37,9
		30°C	120,7	120,7	26,2	116,3	116,3	28,8	111,3	111,3	31,8	105,6	105,6	35,2	100,6	100,6	38,4
		33°C	126,9	126,9	26,7	122,3	122,3	29,4	117,1	117,1	32,4	111,2	111,2	35,9	106,0	106,0	39,1
	22°C	27°C	127,6	79,9	26,8	121,9	77,6	29,4	115,7	75,2	32,3	108,9	72,6	35,6	103,1	70,4	38,8
		30°C	129,0	100,3	26,9	123,3	98,2	29,5	117,1	95,8	32,4	110,3	93,0	35,8	104,4	90,5	38,9
		33°C	130,6	120,9	27,0	124,9	119,0	29,7	118,6	116,6	32,6	111,7	111,7	36,0	106,4	106,4	39,2
		36°C	133,8	133,8	27,3	128,9	128,9	30,0	123,3	123,3	33,1	-	-	-	-	-	-

**PT** : Gross total cooling/heating capacity in kW  
**PS** : Sensible heating capacity in kW  
**PA** : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>4,97</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	<b>1,8</b>
			FC/FD	<b>6,15</b>



**FCM** Cooling only

**FHM** Heat pump

**FCM 120**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow 15 000 m³/h	16°C	21°C	112,0	72,2	28,0	107,7	70,1	31,1	102,8	68,0	34,4	97,2	65,6	38,2	92,3	63,5	41,7
		24°C	113,1	88,1	28,1	108,8	86,1	31,1	103,8	83,8	34,5	98,1	81,2	38,3	93,0	78,7	41,8
		27°C	114,3	104,2	28,2	109,9	102,2	31,2	104,8	99,8	34,6	99,0	96,8	38,4	94,3	94,3	42,0
		30°C	116,4	116,4	28,4	113,0	113,0	31,6	108,7	108,7	35,1	103,7	103,7	39,0	99,1	99,1	42,7
	19°C	24°C	121,8	72,2	29,0	117,0	70,2	32,0	111,5	68,1	35,4	105,3	65,8	39,2	99,9	63,8	42,7
		27°C	123,1	87,5	29,1	118,2	85,5	32,1	112,6	83,3	35,5	106,3	80,8	39,3	100,8	78,5	42,9
		30°C	124,4	102,9	29,2	119,4	101,0	32,2	113,7	98,7	35,6	107,3	96,0	39,5	101,7	93,4	43,0
		33°C	125,7	118,4	29,3	120,6	116,5	32,4	114,9	114,2	35,7	109,3	109,3	39,8	104,3	104,3	43,5
	22°C	27°C	132,1	73,3	30,0	126,7	71,2	33,0	120,6	69,2	36,4	113,9	67,0	40,4	107,9	65,0	44,0
		30°C	133,5	87,6	30,1	128,0	85,7	33,2	121,8	83,7	36,6	115,0	81,3	40,5	109,0	79,2	44,2
		33°C	134,9	102,0	30,3	129,3	100,3	33,3	123,1	98,2	36,7	116,1	95,8	40,7	110,0	93,4	44,4
		36°C	136,4	116,5	30,4	130,7	114,9	33,4	124,3	112,9	36,9	117,3	110,3	40,9	111,2	107,7	44,6
Nominal airflow 20 500 m³/h	16°C	21°C	119,2	82,4	28,8	114,3	80,2	31,7	108,8	77,9	35,1	102,6	75,3	38,8	97,1	73,0	42,3
		24°C	120,7	103,8	28,9	115,7	101,5	31,9	110,1	98,8	35,2	103,8	95,6	39,0	98,3	92,6	42,5
		27°C	122,0	122,0	29,0	117,9	117,9	32,1	113,0	113,0	35,5	107,3	107,3	39,5	102,1	102,1	43,1
		30°C	128,3	128,3	29,6	124,0	124,0	32,7	119,0	119,0	36,2	113,1	113,1	40,2	107,8	107,8	44,0
	19°C	24°C	129,2	81,1	29,7	123,8	79,1	32,7	117,6	76,9	36,1	110,8	74,5	39,9	104,9	72,4	43,5
		27°C	130,8	102,1	29,9	125,3	99,9	32,9	119,1	97,4	36,2	112,2	94,5	40,1	106,2	91,8	43,7
		30°C	132,5	123,3	30,0	126,9	121,0	33,0	120,6	118,2	36,4	113,5	113,5	40,3	108,0	108,0	44,0
		33°C	135,8	135,8	30,4	131,1	131,1	33,5	125,6	125,6	37,0	119,3	119,3	41,1	113,7	113,7	44,9
	22°C	27°C	139,7	80,7	30,7	133,7	78,8	33,8	127,0	76,8	37,2	119,5	74,7	41,2	113,1	72,7	44,9
		30°C	141,5	101,0	30,9	135,3	99,0	33,9	128,5	96,8	37,4	121,0	94,2	41,4	114,5	91,7	45,1
		33°C	143,2	121,4	31,1	137,0	119,4	34,1	130,1	116,9	37,6	122,5	113,9	41,6	116,0	111,0	45,3
		36°C	145,1	142,1	31,3	138,2	138,2	34,3	132,3	132,3	37,9	125,5	125,5	42,0	119,6	119,6	45,9
Maximum airflow 23 000 m³/h	16°C	21°C	121,7	86,9	29,0	116,6	84,7	31,9	110,7	82,3	35,3	104,2	79,6	39,1	98,5	77,0	42,6
		24°C	123,4	110,8	29,1	118,1	108,3	32,1	112,2	105,4	35,4	105,6	102,0	39,2	99,8	98,7	42,7
		27°C	126,1	126,1	29,4	121,6	121,6	32,4	116,3	116,3	35,9	110,2	110,2	39,8	104,7	104,7	43,5
		30°C	132,8	132,8	30,0	128,1	128,1	33,1	122,7	122,7	36,7	116,4	116,4	40,7	110,8	110,8	44,5
	19°C	24°C	131,8	85,0	30,0	126,1	83,0	32,9	119,6	80,8	36,3	112,5	78,4	40,2	106,4	76,1	43,8
		27°C	133,6	108,6	30,1	127,8	106,3	33,1	121,2	103,7	36,5	114,0	100,6	40,4	107,8	97,6	44,0
		30°C	135,4	132,6	30,3	128,9	128,9	33,3	123,2	123,2	36,7	116,7	116,7	40,8	110,9	110,9	44,5
		33°C	140,5	140,5	30,8	135,4	135,4	34,0	129,5	129,5	37,5	122,8	122,8	41,6	116,9	116,9	45,5
	22°C	27°C	142,4	84,0	31,0	136,1	82,2	34,0	129,0	80,2	37,5	121,3	78,0	41,5	114,7	76,0	45,2
		30°C	144,3	107,0	31,2	137,9	105,0	34,2	130,8	102,6	37,7	123,0	99,8	41,7	116,2	97,2	45,5
		33°C	146,2	130,3	31,4	139,7	128,1	34,4	132,5	125,4	37,9	124,6	122,0	41,9	117,2	117,2	45,6
		36°C	148,3	148,3	31,6	142,8	142,8	34,8	136,5	136,5	38,4	129,4	129,4	42,6	-	-	-

**PT** : Gross total cooling/heating capacity in kW  
**PS** : Sensible heating capacity in kW  
**PA** : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>5,99</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	FC/FD <b>7,87</b>
				<b>2,0</b>





**FCM** Cooling only

**FHM** Heat pump

**FCM 150**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
Minimum airflow 18 000 m³/h	16°C	21°C	136,5	88,7	32,0	131,8	85,9	35,5	126,2	83,1	39,4	119,8	80,2	43,8	114,2	77,7	47,6
		24°C	137,6	108,0	32,0	132,9	105,4	35,6	127,3	102,7	39,5	121,0	99,6	43,9	115,3	96,9	47,7
		27°C	139,0	126,6	32,1	134,2	124,3	35,7	128,6	121,7	39,6	122,3	118,6	43,9	116,6	115,7	47,8
		30°C	142,2	142,2	32,2	138,3	138,3	35,9	133,5	133,5	39,9	127,8	127,8	44,4	122,7	122,7	48,4
	19°C	24°C	148,9	87,8	32,8	143,5	84,8	36,4	137,3	81,9	40,2	130,3	79,0	44,6	124,1	76,6	48,4
		27°C	150,0	107,2	32,9	144,6	104,5	36,4	138,4	101,8	40,3	131,4	98,8	44,7	125,2	96,2	48,5
		30°C	151,4	125,8	33,0	146,0	123,5	36,5	139,8	120,9	40,4	132,8	118,0	44,8	126,6	115,2	48,6
		33°C	152,9	143,6	33,1	147,6	141,7	36,6	141,4	139,4	40,5	135,2	135,2	45,0	129,8	129,8	49,0
	22°C	27°C	161,8	86,5	33,8	155,7	83,4	37,3	148,9	80,4	41,2	141,3	77,6	45,5	134,6	75,3	49,4
		30°C	162,9	106,0	33,9	156,9	103,2	37,4	150,1	100,5	41,3	142,4	97,6	45,6	135,8	95,1	49,5
		33°C	164,3	124,5	34,0	158,3	122,1	37,5	151,5	119,6	41,4	143,8	116,8	45,7	137,1	114,3	49,7
		36°C	165,9	142,0	34,1	159,9	140,1	37,6	153,1	138,0	41,5	145,4	135,3	45,9	138,8	132,8	49,8
Nominal airflow 26 000 m³/h	16°C	21°C	147,1	103,8	32,8	141,6	101,1	36,3	135,3	98,3	40,1	128,2	95,3	44,4	122,0	92,7	48,2
		24°C	148,6	129,9	32,9	143,1	127,2	36,4	136,8	124,3	40,2	129,7	120,9	44,5	123,5	117,7	48,3
		27°C	151,1	151,1	33,1	146,5	146,5	36,6	141,0	141,0	40,6	134,7	134,7	45,0	129,1	129,1	48,8
		30°C	159,5	159,5	33,7	154,6	154,6	37,3	148,9	148,9	41,2	142,3	142,3	45,6	136,4	136,4	49,5
	19°C	24°C	159,8	102,4	33,7	153,6	99,7	37,1	146,7	96,9	41,0	139,0	94,0	45,2	132,2	91,5	49,1
		27°C	161,3	129,1	33,8	155,2	126,4	37,3	148,2	123,5	41,1	140,5	120,2	45,4	133,8	117,3	49,2
		30°C	163,1	154,9	33,9	156,9	152,4	37,4	150,0	149,4	41,2	142,7	142,7	45,6	136,7	136,7	49,5
		33°C	168,8	168,8	34,4	163,5	163,5	37,9	157,4	157,4	41,9	150,3	150,3	46,3	144,1	144,1	50,3
	22°C	27°C	173,0	100,7	34,6	166,2	97,9	38,1	158,6	95,2	41,9	150,3	92,5	46,2	143,0	90,2	50,1
		30°C	174,5	127,7	34,8	167,8	125,0	38,2	160,2	122,2	42,1	151,8	119,2	46,4	144,6	116,5	50,3
		33°C	176,3	153,8	34,9	169,6	151,3	38,4	162,0	148,5	42,2	153,6	145,3	46,5	146,4	142,2	50,5
		36°C	178,5	178,5	35,1	172,7	172,7	38,6	166,1	166,1	42,6	158,7	158,7	47,1	-	-	-
Maximum airflow 35 000 m³/h	16°C	21°C	154,5	118,3	33,3	148,2	115,7	36,7	141,1	112,9	40,5	133,2	109,7	44,7	126,3	106,8	48,6
		24°C	156,5	152,0	33,4	150,2	149,2	36,9	143,4	143,4	40,7	136,3	136,3	45,0	130,0	130,0	49,0
		27°C	163,8	163,8	33,9	158,1	158,1	37,4	151,6	151,6	41,3	144,3	144,3	45,7	137,8	137,8	49,7
		30°C	173,2	173,2	34,6	167,3	167,3	38,2	160,5	160,5	42,1	152,8	152,8	46,5	146,1	146,1	50,5
	19°C	24°C	167,5	116,7	34,2	160,6	114,2	37,6	152,8	111,5	41,4	144,3	108,6	45,7	136,8	105,9	49,6
		27°C	169,5	151,4	34,4	162,6	148,7	37,8	154,8	145,5	41,6	146,3	141,8	45,9	138,9	138,3	49,8
		30°C	173,7	173,7	34,7	167,6	167,6	38,2	160,7	160,7	42,1	152,9	152,9	46,5	146,1	146,1	50,5
		33°C	183,2	183,2	35,4	176,9	176,9	39,0	169,7	169,7	42,9	-	-	-	-	-	-
	22°C	27°C	181,1	114,6	35,2	173,5	112,2	38,6	165,1	109,8	42,5	155,9	107,1	46,8	148,0	104,8	50,8
		30°C	183,1	150,2	35,4	175,5	147,6	38,8	167,1	144,6	42,7	158,0	141,3	47,0	150,0	138,1	51,0
		33°C	185,4	185,1	35,6	177,4	177,4	39,0	170,0	170,0	42,9	-	-	-	-	-	-
		36°C	193,6	193,6	36,2	-	-	-	-	-	-	-	-	-	-	-	-

**PT** : Gross total cooling/heating capacity in kW  
**PS** : Sensible heating capacity in kW  
**PA** : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>6,40</b>
	FC/FD	<b>0,5</b>		FC/FD <b>7,81</b>
			Outdoor fan absorbed power (kW)	<b>4,6</b>



**FCM** Cooling only

**FHM** Heat pump

**FCM 170**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Minimum airflow 21 000 m³/h	16°C	21°C	157,8	102,3	40,2	152,3	98,9	44,8	145,7	95,5	49,8	138,1	92,0	55,2	131,2	89,0
24°C			159,1	124,6	40,3	153,6	121,5	44,9	147,0	118,2	49,9	139,3	114,5	55,3	132,3	111,2	60,0
27°C			160,7	146,0	40,4	155,2	143,3	45,0	148,5	140,1	50,0	140,8	136,4	55,4	133,8	132,8	60,1
30°C			163,6	163,6	40,6	159,2	159,2	45,3	153,6	153,6	50,4	146,7	146,7	56,1	140,2	140,2	61,0
19°C		24°C	171,8	101,2	41,4	165,5	97,6	45,9	158,1	94,1	50,9	149,6	90,6	56,3	142,1	87,7	61,1
		27°C	173,1	123,7	41,5	166,8	120,4	46,1	159,4	117,0	51,0	150,8	113,4	56,5	143,2	110,2	61,3
		30°C	174,8	145,0	41,7	168,4	142,2	46,2	160,9	139,0	51,1	152,4	135,3	56,6	144,7	131,9	61,4
		33°C	176,8	165,4	41,8	170,4	163,0	46,3	162,8	160,2	51,3	155,5	155,5	57,0	148,4	148,4	61,9
22°C		27°C	186,4	99,8	42,7	179,3	95,9	47,2	171,1	92,3	52,1	161,8	88,9	57,6	153,5	86,1	62,5
		30°C	187,7	122,2	42,8	180,6	118,7	47,3	172,3	115,3	52,3	163,0	111,8	57,8	154,7	108,8	62,7
		33°C	189,4	143,3	42,9	182,2	140,4	47,5	173,9	137,3	52,4	164,5	133,8	58,0	156,2	130,6	62,9
		36°C	191,5	163,2	43,1	184,2	160,9	47,6	175,9	158,2	52,6	166,4	154,8	58,1	158,1	151,6	63,1
Nominal airflow 30 000 m³/h	16°C	21°C	169,5	118,4	41,3	163,1	115,2	45,7	155,5	111,9	50,6	146,9	108,4	56,0	139,2	105,2	60,7
		24°C	171,3	148,4	41,4	164,8	145,3	45,9	157,3	141,8	50,8	148,6	137,7	56,2	140,8	133,9	60,9
		27°C	174,3	174,3	41,7	168,9	168,9	46,3	162,1	162,1	51,3	154,1	154,1	56,8	146,8	146,8	61,7
		30°C	182,5	182,5	42,4	177,0	177,0	47,0	170,3	170,3	52,1	162,3	162,3	57,7	155,0	155,0	62,7
	19°C	24°C	183,9	116,7	42,5	176,6	113,4	46,9	168,3	110,2	51,8	158,8	106,8	57,3	150,4	103,8	62,1
		27°C	185,7	147,2	42,7	178,4	144,1	47,1	170,0	140,6	52,0	160,5	136,7	57,5	152,1	133,1	62,3
		30°C	187,9	176,9	42,8	180,5	173,9	47,3	172,0	170,3	52,2	163,9	163,9	57,8	156,0	156,0	62,7
		33°C	193,6	193,6	43,4	187,4	187,4	48,0	180,0	180,0	53,0	171,2	171,2	58,7	163,3	163,3	63,7
	22°C	27°C	198,8	114,6	43,8	190,7	111,2	48,2	181,5	108,1	53,2	171,2	104,8	58,7	162,2	102,1	63,6
		30°C	200,7	145,4	43,9	192,5	142,2	48,4	183,3	138,9	53,4	172,9	135,3	58,9	163,9	131,9	63,9
		33°C	202,9	175,2	44,1	194,7	172,2	48,6	185,4	168,9	53,6	175,0	164,9	59,1	165,9	161,0	64,1
		36°C	205,4	203,8	44,3	197,7	197,7	49,0	189,5	189,5	54,0	180,1	180,1	59,7	171,6	171,6	64,9
Maximum airflow 35 000 m³/h	16°C	21°C	174,1	126,3	41,6	167,1	123,2	46,0	159,0	120,0	50,9	149,9	116,4	56,3	141,7	113,1	61,0
		24°C	176,2	160,6	41,8	169,2	157,5	46,2	161,0	153,8	51,1	151,8	149,4	56,5	144,2	144,2	61,4
		27°C	181,2	181,2	42,2	175,1	175,1	46,8	167,8	167,8	51,8	159,2	159,2	57,3	151,3	151,3	62,3
		30°C	190,5	190,5	43,0	184,5	184,5	47,6	177,2	177,2	52,7	168,6	168,6	58,4	160,8	160,8	63,4
	19°C	24°C	188,7	124,3	42,9	180,8	121,3	47,3	171,9	118,2	52,2	161,9	114,8	57,6	153,1	111,7	62,5
		27°C	190,8	159,4	43,1	182,9	156,3	47,5	173,9	152,7	52,4	163,9	148,6	57,9	155,0	144,7	62,7
		30°C	193,2	193,2	43,3	186,4	186,4	47,8	178,3	178,3	52,8	169,0	169,0	58,4	160,6	160,6	63,5
		33°C	201,7	201,7	44,0	194,9	194,9	48,6	186,9	186,9	53,7	177,5	177,5	59,4	169,1	169,1	64,6
	22°C	27°C	203,8	121,9	44,2	195,1	118,9	48,6	185,4	115,9	53,6	174,5	112,8	59,1	165,1	110,1	64,1
		30°C	205,9	157,5	44,4	197,2	154,5	48,8	187,4	151,1	53,8	176,5	147,3	59,4	167,0	143,7	64,4
		33°C	208,4	192,1	44,6	199,6	189,1	49,1	189,8	185,5	54,0	178,7	178,7	59,6	169,7	169,7	64,7
		36°C	212,8	212,8	45,0	205,3	205,3	49,6	196,5	196,5	54,8	186,4	186,4	60,6	-	-	-

**PT** : Gross total cooling/heating capacity in kW  
**PS** : Sensible heating capacity in kW  
**PA** : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>8,99</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	FC/FD <b>10,56</b>
				<b>4,6</b>



**FCM** Cooling only

**FHM** Heat pump

**FCM 200**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Minimum airflow 24 000 m <sup>3</sup> /h	16°C	21°C	180,9	117,6	40,9	174,7	113,9	45,4	167,4	110,2	50,4	159,1	106,4	55,9	151,6	103,2
24°C			182,4	143,5	40,9	176,1	140,1	45,5	168,8	136,4	50,5	160,5	132,4	56,0	153,0	128,8	60,9
27°C			184,2	168,3	41,0	177,9	165,3	45,6	170,6	161,8	50,6	162,2	157,7	56,1	154,7	153,8	61,0
30°C			188,4	188,4	41,2	183,1	183,1	45,9	176,8	176,8	51,0	169,4	169,4	56,7	162,7	162,7	61,8
19°C		24°C	197,3	116,4	42,0	190,2	112,5	46,5	182,0	108,7	51,4	172,9	104,9	56,9	164,8	101,8	61,8
		27°C	198,8	142,5	42,1	191,6	138,9	46,6	183,5	135,2	51,5	174,3	131,3	57,0	166,2	127,9	61,9
		30°C	200,6	167,3	42,2	193,4	164,2	46,7	185,2	160,7	51,7	176,0	156,7	57,2	167,9	153,1	62,1
		33°C	202,7	191,0	42,3	195,5	188,4	46,9	187,3	185,3	51,8	179,1	179,1	57,5	171,9	171,9	62,5
22°C		27°C	214,3	114,7	43,2	206,4	110,6	47,7	197,4	106,7	52,6	187,3	103,0	58,1	178,6	100,1	63,1
		30°C	215,8	140,7	43,3	207,8	137,0	47,8	198,8	133,4	52,7	188,8	129,6	58,3	180,0	126,4	63,2
		33°C	217,6	165,3	43,4	209,6	162,2	47,9	200,6	158,8	52,9	190,5	155,1	58,4	181,7	151,7	63,4
		36°C	219,7	188,6	43,6	211,7	186,0	48,1	202,7	183,1	53,0	192,6	179,5	58,6	183,8	176,1	63,6
Nominal airflow 35 000 m <sup>3</sup> /h	16°C	21°C	194,9	137,7	41,9	187,7	134,2	46,4	179,4	130,6	51,3	170,0	126,7	56,7	161,8	123,3	61,5
		24°C	197,1	173,1	42,0	189,8	169,6	46,5	181,5	165,7	51,4	172,1	161,2	56,9	163,9	157,1	61,7
		27°C	200,8	200,8	42,3	194,5	194,5	46,8	187,2	187,2	51,9	178,8	178,8	57,4	171,3	171,3	62,4
		30°C	211,9	211,9	43,0	205,3	205,3	47,6	197,7	197,7	52,7	188,9	188,9	58,3	181,2	181,2	63,3
	19°C	24°C	211,8	135,9	43,1	203,7	132,3	47,5	194,5	128,8	52,4	184,3	125,0	57,8	175,4	121,8	62,7
		27°C	213,9	172,0	43,2	205,8	168,4	47,6	196,6	164,6	52,5	186,4	160,3	58,0	177,5	156,5	62,9
		30°C	216,3	207,0	43,4	208,2	203,6	47,8	198,4	198,4	52,7	189,4	189,4	58,3	181,4	181,4	63,2
		33°C	224,1	224,1	43,9	216,9	216,9	48,5	208,7	208,7	53,5	199,4	199,4	59,2	191,2	191,2	64,2
	22°C	27°C	229,3	133,5	44,3	220,3	129,9	48,7	210,3	126,4	53,6	199,3	122,9	59,1	189,7	120,0	64,0
		30°C	231,4	170,0	44,4	222,5	166,5	48,9	212,4	162,8	53,8	201,4	158,8	59,3	191,8	155,3	64,2
		33°C	233,9	205,3	44,6	224,9	202,0	49,1	214,8	198,2	54,0	203,8	193,9	59,5	194,1	189,8	64,5
		36°C	236,9	236,9	44,9	229,1	229,1	49,4	220,3	220,3	54,5	210,4	210,4	60,2	201,7	201,7	65,2
Maximum airflow 43 000 m <sup>3</sup> /h	16°C	21°C	201,7	150,6	42,3	193,7	147,2	46,7	184,7	143,6	51,6	174,6	139,6	57,0	165,8	135,9	61,9
		24°C	204,3	192,9	42,5	196,3	189,2	46,9	187,2	185,0	51,8	177,4	177,4	57,3	169,4	169,4	62,3
		27°C	212,3	212,3	43,0	205,1	205,1	47,5	196,8	196,8	52,5	187,4	187,4	58,1	179,2	179,2	63,1
		30°C	224,5	224,5	43,9	216,9	216,9	48,4	208,3	208,3	53,4	198,7	198,7	59,1	190,1	190,1	64,2
	19°C	24°C	218,9	148,5	43,5	210,0	145,2	47,9	200,1	141,7	52,8	189,2	138,0	58,3	179,7	134,7	63,2
		27°C	221,5	191,9	43,7	212,6	188,3	48,1	202,7	184,3	53,0	191,8	179,6	58,5	182,2	175,3	63,4
		30°C	225,3	225,3	44,0	217,4	217,4	48,5	208,6	208,6	53,5	198,6	198,6	59,1	189,9	189,9	64,2
		33°C	237,2	237,2	44,8	229,1	229,1	49,4	219,9	219,9	54,4	209,6	209,6	60,1	200,7	200,7	65,2
	22°C	27°C	236,7	145,7	44,8	227,1	142,5	49,2	216,3	139,3	54,1	204,5	135,9	59,6	194,4	132,9	64,7
		30°C	239,4	189,9	45,0	229,6	186,5	49,4	218,9	182,8	54,3	207,1	178,5	59,9	196,9	174,6	64,9
		33°C	242,3	233,2	45,2	232,5	229,6	49,6	220,9	220,9	54,5	210,4	210,4	60,2	201,2	201,2	65,3
		36°C	250,6	250,6	45,8	241,8	241,8	50,4	-	-	-	-	-	-	-	-	-

**PT** : Gross total cooling/heating capacity in kW

**PS** : Sensible heating capacity in kW

**PA** : Compressor absorbed power

**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>8,95</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	<b>4,1</b>
				FC/FD <b>10,81</b>



**FCM** Cooling only

**FHM** Heat pump

**FCM 230**

COOLING CAPACITY AND ABSORBED POWER

FCM	Outdoor air temperature		25°C			30°C			35°C			40°C			45°C		
	Wet bulb	Dry bulb	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA	PT	PS	PA
	Entering air temperature Minimum airflow 27 000 m³/h Nominal airflow 39 000 m³/h Maximum airflow 43 000 m³/h	16°C	21°C	216,4	140,4	55,9	208,5	135,3	61,9	199,4	130,2	68,6	189,0	125,0	76,1	179,9	120,8
24°C			218,3	169,0	56,0	210,3	164,3	62,1	201,1	159,4	68,7	190,7	154,2	76,3	181,5	149,5	83,1
27°C			220,3	196,5	56,2	212,3	192,4	62,2	203,0	187,7	68,9	192,5	182,4	76,5	183,2	177,5	83,3
19°C		30°C	223,1	223,1	56,5	216,4	216,4	62,7	208,4	208,4	69,6	199,1	199,1	77,4	190,8	190,8	84,5
		24°C	236,0	137,3	57,8	226,9	132,1	63,8	216,6	127,1	70,5	205,1	122,2	78,0	195,0	118,1	84,9
		27°C	237,9	166,5	58,0	228,8	161,9	64,0	218,4	157,1	70,7	206,8	152,1	78,3	196,7	147,7	85,2
22°C		30°C	240,1	194,5	58,2	230,9	190,4	64,2	220,5	185,9	70,9	208,8	180,9	78,5	198,6	176,4	85,5
		33°C	242,6	221,1	58,4	233,3	217,7	64,4	222,7	213,7	71,1	211,0	208,8	78,8	201,9	201,9	86,2
		27°C	256,4	134,4	59,8	246,1	129,2	65,8	234,7	124,4	72,5	222,0	119,7	80,3	211,0	115,9	87,3
16°C		30°C	258,5	164,1	60,0	248,2	159,5	66,0	236,6	154,9	72,8	223,9	150,2	80,5	212,8	146,2	87,7
		33°C	260,8	192,2	60,2	250,4	188,3	66,3	238,8	184,2	73,0	226,0	179,6	80,8	214,8	175,4	88,0
		36°C	263,4	218,9	60,5	252,9	215,8	66,5	241,2	212,1	73,3	228,3	207,8	81,1	217,1	203,6	88,3
19°C		21°C	234,3	164,6	57,7	224,8	159,4	63,6	214,0	154,2	70,1	202,0	148,6	77,6	191,6	143,9	84,4
		24°C	236,8	203,4	57,9	227,2	198,3	63,8	216,3	192,8	70,4	204,3	186,7	77,9	193,8	181,1	84,7
		27°C	238,8	238,8	58,1	230,5	230,5	64,2	220,9	220,9	71,0	210,1	210,1	78,7	200,6	200,6	85,8
22°C		30°C	250,8	250,8	59,2	242,3	242,3	65,4	232,5	232,5	72,3	221,5	221,5	80,2	211,7	211,7	87,5
		24°C	254,4	160,4	59,6	243,7	155,4	65,5	231,7	150,5	72,1	218,6	145,4	79,7	207,2	141,0	86,7
		27°C	257,0	200,4	59,9	246,2	195,5	65,8	<b>234,2</b>	<b>190,3</b>	<b>72,4</b>	221,0	184,6	80,1	209,6	179,5	87,1
16°C		30°C	259,8	239,1	60,2	249,0	234,5	66,1	236,9	229,2	72,8	223,6	223,0	80,4	212,3	212,3	87,6
		33°C	266,0	266,0	60,8	256,5	256,5	67,0	245,6	245,6	73,9	233,6	233,6	81,9	223,0	223,0	89,3
		27°C	275,3	156,4	61,7	263,4	151,7	67,6	250,4	147,1	74,3	236,1	142,5	82,1	223,8	138,6	89,4
19°C		30°C	278,1	197,3	61,9	266,1	192,7	67,9	253,0	188,0	74,7	238,6	182,8	82,5	226,2	178,2	89,8
		33°C	281,1	236,8	62,2	269,0	232,5	68,2	255,8	227,7	75,0	241,3	222,2	82,9	228,9	217,0	90,2
		36°C	284,3	275,0	62,5	272,2	271,2	68,5	259,3	259,3	75,6	246,2	246,2	83,7	234,9	234,9	91,2
22°C		21°C	238,6	170,6	58,0	228,5	165,5	63,9	217,2	160,2	70,4	204,7	154,6	77,9	193,9	149,7	84,8
		24°C	241,3	212,8	58,3	231,2	207,6	64,2	219,8	201,9	70,7	207,2	195,4	78,2	196,3	189,6	85,1
		27°C	245,5	245,5	58,7	236,6	236,6	64,7	226,5	226,5	71,5	215,1	215,1	79,3	205,0	205,0	86,5
16°C		30°C	258,2	258,2	59,9	249,1	249,1	66,1	238,7	238,7	73,0	227,1	227,1	81,0	216,9	216,9	88,4
		24°C	258,9	166,1	60,0	247,6	161,2	65,9	235,1	156,3	72,5	221,5	151,2	80,2	209,7	146,8	87,2
		27°C	261,7	209,6	60,3	250,4	204,6	66,2	237,8	199,4	72,9	224,1	193,4	80,5	212,2	188,1	87,6
19°C		30°C	264,8	252,0	60,6	253,4	247,2	66,5	240,1	240,1	73,2	227,7	227,7	81,1	216,8	216,8	88,4
		33°C	273,5	273,5	61,5	263,3	263,3	67,6	251,9	251,9	74,6	239,3	239,3	82,7	228,3	228,3	90,3
		27°C	280,0	161,7	62,1	267,6	157,1	68,0	253,9	152,7	74,8	239,1	148,1	82,6	226,4	144,2	89,9
22°C		30°C	283,0	206,3	62,4	270,5	201,7	68,4	256,8	196,9	75,1	241,9	191,6	83,0	229,1	186,8	90,4
		33°C	286,2	249,6	62,7	273,6	245,2	68,7	259,8	240,2	75,5	244,8	234,3	83,4	232,0	228,8	90,8
		36°C	289,3	289,3	63,1	278,1	278,1	69,3	265,7	265,7	76,3	252,0	252,0	84,5	240,2	240,2	92,3

PT : Gross total cooling/heating capacity in kW  
 PS : Sensible heating capacity in kW  
 PA : Compressor absorbed power  
**xxx** : Data according to Eurovent standard conditions

Controller absorbed power (kW)	FC/FH	<b>0,3</b>	Supply fan absorbed power (kW)	FC/FH <b>11,34</b>
	FC/FD	<b>0,5</b>	Outdoor fan absorbed power (kW)	FC/FD <b>14,01</b>
				<b>4,1</b>



**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FDM** Heat pump rooftop with gas fired heating

Return air at 20°C

SIZE	Type <sup>(1)</sup>	Airflow rate m <sup>3</sup> /h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h
85	S	12000	100	47	25	4	81	32	20	4	63	20	16	3
	H		153	39	38	7	125	27	31	6	98	16	24	4
	S	15000	112	59	22	5	91	40	18	4	70	24	14	3
	H		175	51	35	8	143	34	28	6	111	21	22	5
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
H		222	81	29	10	182	55	24	8	140	33	18	6	
100	S	14000	108	55	23	5	88	38	19	4	68	23	15	3
	H		168	47	36	7	137	32	29	6	107	20	23	5
	S	18500	124	73	20	5	101	49	16	4	78	30	13	3
	H		197	64	32	9	161	44	26	7	125	27	20	5
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
H		222	81	29	10	182	55	24	8	140	33	18	6	
120	S	15000	112	59	22	5	91	40	18	4	70	24	14	3
	H		175	51	35	8	143	34	28	6	111	21	22	5
	S	20500	130	80	29	6	106	54	15	5	82	33	12	4
	H		209	72	30	9	171	49	25	8	132	30	19	6
	S	23000	138	89	18	6	112	60	15	5	86	36	11	4
H		222	81	29	10	182	55	24	8	140	33	18	6	
150	S	18000	117	20	19	5	94	13	16	4	71	7	12	3
	H		202	29	33	9	166	20	27	7	129	12	21	6
	S	26000	140	28	16	6	112	18	13	5	84	10	10	4
	H		251	44	29	11	206	30	24	9	160	18	18	7
	S	35000	160	37	14	7	128	24	11	6	96	13	8	4
H		296	61	25	13	242	41	21	11	188	25	16	8	
170	S	21000	126	23	18	6	101	15	14	4	76	9	11	3
	H		222	35	31	10	182	24	26	8	142	15	20	6
	S	30000	149	32	15	7	120	21	12	5	90	12	9	4
	H		272	52	27	12	223	35	22	10	173	21	17	8
	S	35000	160	37	14	7	128	24	11	6	96	13	8	4
H		296	61	25	13	242	41	21	11	188	25	16	8	
200	S	24000	147	16	18	6	118	10	15	5	90	6	11	4
	H		239	46	30	11	196	31	24	9	153	20	19	7
	S	35000	177	23	15	8	143	15	12	6	108	9	9	5
	H		296	67	25	13	243	47	21	11	169	29	16	8
	S	43000	196	28	14	9	158	18	11	7	119	10	8	5
H		330	86	23	15	271	58	19	12	210	36	15	9	
230	S	27000	156	18	17	7	126	12	14	6	96	7	11	4
	H		256	52	28	11	210	36	23	9	164	22	18	7
	S	39000	199	35	24	8	151	16	12	7	114	10	9	5
	H		313	77	24	14	257	53	20	11	200	40	15	9
	S	43000	196	28	14	9	158	18	11	7	119	10	8	5
H		330	86	23	15	271	58	19	12	210	36	15	9	

(1) S Standard heat H High heat

(2) Pressure drop = Internal coil + 3-way valve

Water without glycol

Reminder : 10 kPa=1mCe = 1mH<sub>2</sub>O

FCM Cooling only

FHM Heat pump

Return air at 10°C

SIZE	Type <sup>(1)</sup>	Airflow rate m³/h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m³/h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m³/h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m³/h
<b>85</b>	S	12000	120	68	29	5	101	47	24	4	82	33	20	4
	H		183	56	44	8	155	53	37	7	127	27	30	6
	S	15000	134	84	26	6	113	61	22	5	92	41	18	4
	H		210	72	40	9	177	52	34	8	145	35	28	6
	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
<b>100</b>	S	14000	130	79	27	6	109	57	22	5	89	38	18	4
	H		201	67	41	9	170	48	35	7	139	33	29	6
	S	18500	149	103	23	7	125	74	20	6	102	50	16	4
	H		236	92	37	10	200	66	31	9	163	45	25	7
	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
<b>120</b>	S	15000	134	84	26	6	113	61	22	5	92	41	18	4
	H		210	72	40	9	177	52	34	8	145	35	28	6
	S	20500	156	114	22	7	132	82	19	6	107	55	15	5
	H		250	102	35	11	211	74	30	9	172	50	24	8
	S	23000	165	126	21	7	139	91	17	6	113	61	14	5
	H		266	115	33	12	225	83	28	10	183	56	23	8
<b>150</b>	S	18000	141	28	23	6	118	20	19	5	169	41	17	7
	H		242	41	39	11	205	30	33	9	347	83	24	15
	S	26000	169	41	19	7	141	28	16	6	112	18	12	5
	H		301	63	33	13	255	46	28	11	208	31	23	9
	S	35000	193	54	16	9	160	37	13	7	128	24	11	6
	H		355	87	29	16	300	63	25	13	245	42	20	11
<b>170</b>	S	21000	152	34	21	7	127	23	17	6	102	15	14	4
	H		266	49	36	12	225	36	31	10	184	24	25	8
	S	30000	180	47	17	8	150	33	14	7	114	21	12	5
	H		326	74	31	14	276	53	26	12	225	36	22	10
	S	35000	193	54	16	9	160	37	13	7	128	24	11	6
	H		355	87	29	16	300	63	25	13	245	42	20	11
<b>200</b>	S	24000	177	23	21	8	148	16	18	6	119	10	14	5
	H		286	65	34	13	243	47	29	11	199	32	24	9
	S	35000	214	32	18	9	179	23	15	8	151	16	11	7
	H		354	99	29	16	300	71	25	13	245	49	20	11
	S	43000	236	40	16	10	197	28	13	9	158	18	11	7
	H		395	122	26	17	334	88	22	15	273	60	18	12
<b>230</b>	S	27000	188	25	20	8	157	18	17	7	126	12	14	6
	H		306	74	33	13	260	54	28	11	213	37	23	9
	S	39000	225	36	17	10	188	26	14	8	151	16	11	7
	H		375	110	28	17	318	80	23	14	260	54	19	11
	S	43000	236	40	16	10	197	28	13	9	158	18	11	7
	H		395	122	26	17	334	88	22	15	273	60	18	12

(1)	<b>S</b> Standard heat	<b>H</b> High heat
(2)	Pressure drop = Internal coil + 3-way valve	
Water without glycol		
Reminder : 10 kPa=1mCe = 1mH <sub>2</sub> O		

**FCM** Cooling only  
**FHM** Heat pump

Return air at 0°C

SIZE	Type <sup>(1)</sup>	Airflow rate m <sup>3</sup> /h	Δ water temperature											
			90-70				80-60				70-50			
			Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h	Heating capacity kW	Pressure drop <sup>(2)</sup> kPa	Δ Air temperature	Water flow rate m <sup>3</sup> /h
85	S	12000	140	92	32	6	121	70	28	5	102	50	24	4
	H		215	76	50	9	186	58	43	8	158	42	36	7
	S	15000	157	115	29	7	136	87	25	6	114	62	21	5
	H		246	99	45	11	213	75	39	9	180	54	33	8
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
H		312	158	38	14	270	119	33	12	227	85	27	10	
100	S	14000	152	107	30	7	131	81	26	6	110	58	22	5
	H		236	91	47	10	204	69	41	9	173	50	34	8
	S	18500	175	141	26	8	150	106	23	7	127	76	19	6
	H		277	125	42	12	240	95	36	11	202	68	30	9
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
H		312	158	38	14	270	119	33	12	227	85	27	10	
120	S	15000	157	115	29	7	136	87	25	6	114	62	21	5
	H		246	99	45	11	213	75	39	9	180	54	33	8
	S	20500	183	154	25	8	158	117	21	7	133	83	18	6
	H		294	140	40	13	254	106	34	11	214	76	29	9
	S	23000	193	171	23	9	167	129	20	7	140	92	17	6
H		312	158	38	14	270	119	33	12	227	85	27	10	
150	S	18000	166	40	26	7	142	29	22	6	118	20	18	5
	H		284	56	44	13	246	42	38	11	208	31	32	9
	S	26000	199	57	21	9	170	42	18	7	141	29	15	6
	H		353	86	38	16	306	65	33	13	258	47	28	11
	S	35000	227	74	18	10	194	54	15	9	161	37	13	7
H		416	118	33	18	360	89	29	16	304	64	24	13	
170	S	21000	180	47	24	8	154	34	20	7	128	24	17	6
	H		312	67	41	14	270	51	36	12	228	37	30	10
	S	30000	212	65	20	9	181	47	17	8	150	32	14	7
	H		383	100	35	17	331	76	31	15	279	55	26	12
	S	35000	227	74	18	10	194	54	15	9	161	37	13	7
H		416	118	33	18	360	89	29	16	304	64	24	13	
200	S	24000	208	31	24	9	178	23	21	8	149	16	17	7
	H		335	88	39	15	291	67	34	13	246	49	29	11
	S	35000	251	45	20	11	216	33	17	9	180	23	14	8
	H		414	134	33	18	359	101	28	16	304	74	24	13
	S	43000	277	54	18	12	238	40	15	10	198	28	13	9
H		462	165	30	20	401	126	26	18	339	91	22	15	
230	S	27000	221	35	23	10	189	26	20	8	158	18	16	7
	H		359	101	37	16	311	77	32	14	263	56	27	12
	S	39000	265	50	19	12	227	37	16	10	189	26	13	8
	H		439	150	31	19	381	114	27	17	322	82	23	14
	S	43000	277	54	18	12	238	40	15	10	198	28	13	9
H		462	165	30	20	401	126	26	18	339	91	22	15	

(1) S	Standard heat	H	High heat
(2) Pressure drop = Internal coil + 3-way valve			
Water without glycol			
Reminder : 10 kPa=1mCe = 1mH <sub>2</sub> O			

Size	Airflow m³/h	Gas Burner						Electric Heater				
		Type	Power input	Heating Capacity	Pabs Elec	Nb Of Stages	Modulation Option	Available Capacity	Type of Modulation	Stages	Temp. Rise	
		-	kW	kW	kW			kW	-		°C	
85	15000	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,9 5,7	
		M							54	0-100%	50%--> 100%-->	5,2 10,3
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	6,9 13,8	
100	18500	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,3 4,6	
		M							54	0-100%	50%--> 100%-->	4,2 8,4
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	5,6 11,2	
120	20500	S	60	55,2	0,16	2		30	2 stages	Stage 1: Stage 2:	2,1 4,2	
		M							54	0-100%	50%--> 100%-->	3,8 7,6
		H	120	110,4	0,25	2	20%-->100%	72	0-100%	50%--> 100%-->	5,0 10,1	
150	26000	S	120	110,4	0,25	2		45	2 stages	Stage 1: Stage 2:	2,5 5,0	
		M							72	0-100%	50%--> 100%-->	4,0 7,9
		H	180	165,6	0,25	2	20%-->100%	108	0-100%	50%--> 100%-->	6,0 11,9	
170	30000	S	120	110,4	0,25	2		45	2 stages	Stage 1: Stage 2:	2,2 4,3	
		M							72	0-100%	50%--> 100%-->	3,4 6,9
		H	180	165,6	0,25	2	20%-->100%	108	0-100%	50%--> 100%-->	5,2 10,3	
200	35000	S	180	165,6	0,25	2		72	2 stages	Stage 1: Stage 2:	2,9 5,9	
		M							108	0-100%	50%--> 100%-->	4,4 8,8
		H	240	220,8	0,25	2	20%-->100%	162	0-100%	50%--> 100%-->	6,6 13,3	
230	39000	S	180	165,6	0,25	2		72	2 stages	Stage 1: Stage 2:	2,6 5,3	
		M							108	0-100%	50%--> 100%-->	4,0 7,9
		H	240	220,8	0,25	2	20%-->100%	162	0-100%	50%--> 100%-->	6,0 11,9	

**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FGM** Heat pump rooftop with gas fired heating

F085	F100	F120	150		200		250		300		350		400		450		500		550		600																																																																																													
			Airflow	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI																																																																																										
<b>85 - 120 STD</b>																																																																																																																		
			12000	K1	1*2.2	1.5	K2	1*3.0	1.8	K3	1*3.0	2.1	K3	1*3.0	2.4	K4	1*4.0	2.7	K5	1*4.0	3.1	K6	1*7.5	3.2	K8	2*5.5	3.7	K7	1*5.5	3.7	K7	1*5.5	3.9	K7	1*5.5	3.9	K7	1*5.5	4.1	K7	1*5.5	4.2	K7	1*5.5	4.4	K7	1*5.5	4.4	K7	1*5.5	4.6	K7	1*5.5	4.6	K7	1*5.5	4.4	K7	1*5.5	4.4	K7	1*5.5	4.8	K11	1*7.5	5.1	K11	1*7.5	5.3	K12	1*7.5	5.2	K11	1*7.5	5.6	K11	1*7.5	6.0	K11	1*7.5	6.4	K15	2*5.5	7.3	K15	2*5.5	7.7	K15	2*5.5	8.0	K15	2*5.5	8.4	K15	2*5.5	8.8	K15	2*5.5	9.1	K15	2*5.5	9.4	K15	2*5.5	9.8	K15	2*5.5	10.0	K17	2*7.5	10.4	K17	2*7.5	10.4

F085	F100	F120	150		200		250		300		350		400		450		500		550		600																																																																																				
			Airflow	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI	Kit	P	HMPI																																																																																	
<b>85 - 120 GAS S</b>																																																																																																									
			12000	K1	2*2.2	1.8	K2	2*2.2	2.1	K2	2*2.2	2.5	K3	2*3.0	2.8	K3	2*3.0	3.1	K4	2*3.0	3.5	K5	2*3.0	3.9	K5	2*3.0	4.2	K5	2*3.0	4.6	K6	2*4.0	4.9	K6	2*4.0	5.2	K6	2*4.0	5.4	K6	2*4.0	5.7	K6	2*4.0	5.9	K6	2*4.0	6.2	K6	2*4.0	6.4	K6	2*4.0	6.8	K6	2*4.0	7.1	K6	2*4.0	7.2	K6	2*4.0	7.0	K8	2*5.5	7.8	K8	2*5.5	8.2	K8	2*5.5	8.6	K8	2*5.5	9.0	K8	2*5.5	9.4	K8	2*5.5	9.8	K8	2*5.5	10.2	K10	2*5.5	10.5	K10	2*5.5	10.9	K10	2*5.5	11.3	K10	2*5.5	11.7	K10	2*5.5	12.1	K11	2*7.5	12.5	K11	2*7.5	12.5

P: Fan motor power in kW      **HMPI**: Heat Motor Power Input





**FCM** Cooling only

**FGM** Cooling only with gas fired heating

**FHM** Heat pump

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

airflow	150		200		250		300		350		400		450		500		550		600	
	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P
12000	LP	1,6	LP	2,1	LP	2,6	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	LP	6,0
13000	LP	1,8	LP	2,3	LP	2,8	LP	3,2	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	LP	6,2
14000	LP	1,9	LP	2,4	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,3	LP	5,8	LP	6,3
15000	LP	2,1	LP	2,6	LP	3,1	LP	3,6	LP	4,0	LP	4,5	LP	5,0	LP	5,5	LP	6,0	LP	6,5
16000	LP	2,2	LP	2,7	LP	3,2	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	LP	6,2	LP	6,7
17000	LP	2,4	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	LP	5,9	LP	6,4	LP	6,8
18000	LP	2,6	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	LP	6,1	LP	6,6	LP	7,1
19000	LP	2,9	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	LP	5,8	LP	6,3	LP	6,8	LP	7,3
20000	LP	3,1	LP	3,6	LP	4,1	LP	4,6	LP	5,1	LP	5,6	LP	6,1	LP	6,6	LP	7,1	LP	7,5
21000	LP	3,4	LP	3,9	LP	4,4	LP	4,9	LP	5,4	LP	5,9	LP	6,4	LP	6,8	LP	7,3	LP	7,8
22000	LP	3,7	LP	4,2	LP	4,7	LP	5,2	LP	5,7	LP	6,2	LP	6,6	LP	7,1	LP	7,6	LP	8,1
23000	LP	4,0	LP	4,5	LP	5,0	LP	5,5	LP	6,0	LP	6,5	LP	6,9	LP	7,4	LP	7,9	LP	no kit

airflow	150		200		250		300		350		400		450		500		550		600	
	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P
18000	LP	2,4	LP	3,2	LP	3,9	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,6	LP	8,3	LP	9,1
19000	LP	2,6	LP	3,3	LP	4,1	LP	4,8	LP	5,5	LP	6,3	LP	7,0	LP	7,7	LP	8,5	LP	9,2
20000	LP	2,7	LP	3,4	LP	4,2	LP	4,9	LP	5,7	LP	6,4	LP	7,1	LP	7,9	LP	8,6	LP	9,3
21000	LP	2,8	LP	3,6	LP	4,3	LP	5,1	LP	5,8	LP	6,6	LP	7,3	LP	8,0	LP	8,7	LP	9,5
22000	LP	3,0	LP	3,8	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,4	LP	8,2	LP	8,9	LP	9,6
23000	LP	3,2	LP	3,9	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,6	LP	8,3	LP	9,1	LP	9,8
24000	LP	3,3	LP	4,1	LP	4,8	LP	5,6	LP	6,3	LP	7,1	LP	7,8	LP	8,5	LP	9,3	LP	10,0
25000	LP	3,5	LP	4,3	LP	5,0	LP	5,8	LP	6,5	LP	7,3	LP	8,0	LP	8,7	LP	9,4	LP	10,2
26000	LP	3,7	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	LP	8,9	LP	9,6	LP	10,4
27000	LP	4,0	LP	4,7	LP	5,5	LP	6,2	LP	6,9	LP	7,7	LP	8,4	LP	9,1	LP	9,9	LP	10,6
28000	LP	4,2	LP	4,9	LP	5,7	LP	6,4	LP	7,2	LP	7,9	LP	8,6	LP	9,4	LP	10,1	LP	10,8
29000	LP	4,4	LP	5,2	LP	5,9	LP	6,7	LP	7,4	LP	8,2	LP	8,9	LP	9,6	LP	10,3	LP	11,1
30000	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,7	LP	8,4	LP	9,1	LP	9,9	LP	10,6	LP	11,3
31000	LP	5,0	LP	5,7	LP	6,5	LP	7,2	LP	7,9	LP	8,7	LP	9,4	LP	10,1	LP	10,9	LP	11,6
32000	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	LP	8,9	LP	9,7	LP	10,4	LP	11,1	LP	11,8
33000	LP	5,5	LP	6,3	LP	7,0	LP	7,8	LP	8,5	LP	9,2	LP	10,0	LP	10,7	LP	11,4	LP	12,1
34000	LP	5,8	LP	6,6	LP	7,3	LP	8,1	LP	8,8	LP	9,5	LP	10,3	LP	11,0	LP	11,7	LP	no kit
35000	LP	6,1	LP	6,9	LP	7,6	LP	8,4	LP	9,1	LP	9,8	LP	10,6	LP	11,3	LP	12,0	LP	no kit

airflow	150		200		250		300		350		400		450		500		550		600	
	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P	KIT	P
24000	LP	3,3	LP	4,1	LP	4,8	LP	5,6	LP	6,3	LP	7,1	LP	7,8	LP	8,5	LP	9,3	LP	10,0
25000	LP	3,5	LP	4,3	LP	5,0	LP	5,8	LP	6,5	LP	7,3	LP	8,0	LP	8,7	LP	9,4	LP	10,2
26000	LP	3,7	LP	4,5	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	LP	8,9	LP	9,6	LP	10,4
27000	LP	4,0	LP	4,7	LP	5,5	LP	6,2	LP	6,9	LP	7,7	LP	8,4	LP	9,1	LP	9,9	LP	10,6
28000	LP	4,2	LP	4,9	LP	5,7	LP	6,4	LP	7,2	LP	7,9	LP	8,6	LP	9,4	LP	10,1	LP	10,8
29000	LP	4,4	LP	5,2	LP	5,9	LP	6,7	LP	7,4	LP	8,2	LP	8,9	LP	9,6	LP	10,3	LP	11,1
30000	LP	4,7	LP	5,4	LP	6,2	LP	6,9	LP	7,7	LP	8,4	LP	9,1	LP	9,9	LP	10,6	LP	11,3
31000	LP	5,0	LP	5,7	LP	6,5	LP	7,2	LP	7,9	LP	8,7	LP	9,4	LP	10,1	LP	10,9	LP	11,6
32000	LP	5,2	LP	6,0	LP	6,7	LP	7,5	LP	8,2	LP	8,9	LP	9,7	LP	10,4	LP	11,1	LP	11,8
33000	LP	5,5	LP	6,3	LP	7,0	LP	7,8	LP	8,5	LP	9,2	LP	10,0	LP	10,7	LP	11,4	LP	12,1
34000	LP	5,8	LP	6,6	LP	7,3	LP	8,1	LP	8,8	LP	9,5	LP	10,3	LP	11,0	LP	11,7	LP	no kit
43000	HP	9,1	HP	9,8	HP	10,6	HP	11,3	HP	11,3	HP	12,0	HP	12,0	HP	12,0	HP	12,0	HP	No kit

P : Fan motor power in kW

P : Pressure

LP Low Pressure

HP High Pressure





## OUTDOOR NOISE LEVEL - STANDARD

ESP : 150 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	66	73	77	80	83	80	73	66	87	56
100	66	74	77	79	84	82	75	67	88	57
120	48	67	72	78	82	83	77	67	87	56
150	50	71	78	84	89	87	80	71	92	61
170	52	72	78	84	89	87	81	73	92	61
200	51	67	75	82	84	83	75	66	88	57
230	53	67	74	81	84	86	78	66	89	58

ESP : 500 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	66	74	78	80	84	80	75	68	88	57
100	66	74	78	80	84	82	76	69	88	57
120	52	69	76	79	83	83	78	70	88	57
150	53	72	79	84	89	87	81	72	92	61
170	53	72	79	83	89	87	82	73	92	61
200	58	69	76	83	84	83	76	67	89	58
230	59	70	76	82	85	86	79	68	90	59

## OUTDOOR NOISE LEVEL - LOW NOISE

ESP : 150 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	47	69	72	76	78	74	68	63	82	51
100	49	69	70	75	76	76	73	67	82	51
120	48	64	71	76	77	75	73	67	82	51
150	50	68	74	78	77	79	76	68	84	53
170	52	68	74	79	79	81	78	71	86	55
200	51	67	75	80	82	76	73	66	85	54
230	53	68	75	79	82	77	74	66	85	54

ESP : 500 Pa

Spectrum per octave band

FC/FH FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power dB(A) (1)	Sound pressure at 10 meters dB(A) (2)
85	51	71	75	78	79	75	72	67	84	51
100	45	69	70	76	76	76	72	66	82	53
120	45	65	72	77	77	76	75	68	83	52
150	53	69	75	78	78	79	77	69	85	54
170	53	70	75	79	80	81	79	72	86	55
200	58	70	76	81	82	76	74	68	86	55
230	59	70	76	81	82	77	75	68	87	56

(1) total outdoor POWER levels

(2) Global Outdoor Sound PRESSURE Levels 10 m

## INDOOR NOISE LEVEL - STANDARD & LOW NOISE

ESP : 150 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	49	64	72	77	80	81	78	71	81	85
100	52	67	75	82	84	85	83	76	85	90
120	51	66	74	81	82	84	82	75	84	89
150	55	67	77	84	85	86	84	75	86	91
170	57	69	79	87	88	89	87	79	89	94
200	60	72	76	80	80	80	75	68	82	86
230	62	74	77	82	82	82	78	71	85	88

ESP : 500 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	50	69	74	81	80	81	80	73	82	87
100	49	68	75	83	82	83	82	76	84	89
120	50	69	76	84	84	85	84	77	86	90
150	58	73	81	85	86	87	86	77	88	92
170	59	74	82	87	89	89	88	80	90	95
200	68	79	81	86	84	82	80	73	87	91
230	69	80	83	87	85	84	81	75	88	92

## INDOOR NOISE LEVEL - STANDARD & LOW NOISE

ESP : 150 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	55	71	72	77	78	78	75	69	81	84
100	56	73	74	79	82	82	79	73	84	87
120	58	75	77	81	84	84	81	75	86	89
150	60	75	76	82	84	79	76	70	84	88
170	61	77	79	84	86	81	78	72	86	90
200	65	75	78	83	81	81	77	70	84	88
230	67	77	80	85	83	83	79	72	86	90

ESP : 500 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	62	79	83	82	84	82	80	74	86	90
100	62	78	84	83	85	84	82	76	87	91
120	63	79	86	84	87	85	84	78	89	93
150	68	82	88	86	89	85	82	76	90	94
170	68	82	88	87	91	86	83	77	91	95
200	71	82	85	88	86	84	82	75	89	93
230	71	82	86	89	88	85	83	77	90	94

## INDOOR NOISE LEVEL - HIGH EFFICIENCY &amp; LOW NOISE

ESP : 150 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	49	64	69	69	71	65	60	58	71	76
100	51	66	71	71	73	67	62	60	73	78
120	53	68	74	73	76	70	64	63	75	80
150	52	67	72	72	74	68	63	61	74	79
170	55	70	75	75	77	71	66	64	77	82
200	57	72	78	78	80	74	68	67	80	85
230	60	75	80	80	82	76	71	69	82	87

ESP : 500 Pa

Spectrum per octave band

FC/FH	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	58	73	78	78	80	74	69	67	80	85
100	59	74	79	79	81	75	70	68	81	86
120	60	75	80	80	82	76	71	70	82	87
150	60	75	80	80	82	76	71	70	82	87
170	62	77	82	82	84	78	73	71	84	89
200	62	77	83	82	85	79	73	72	84	89
230	63	78	83	83	85	79	74	73	85	90

## INDOOR NOISE LEVEL - HIGH EFFICIENCY &amp; LOW NOISE

ESP : 150 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	51	66	71	71	73	67	62	60	73	78
100	53	68	73	73	75	69	64	62	75	80
120	55	70	76	75	78	72	66	65	77	82
150	54	69	74	74	76	70	65	63	76	81
170	57	72	77	77	79	73	68	66	79	84
200	59	74	80	80	82	76	70	69	82	87
230	62	77	82	82	84	78	73	71	84	89

ESP : 500 Pa

Spectrum per octave band

FG/FD	63	125	250	500	1000	2000	4000	8000	Sound power return dB(A)	Sound power supply dB(A)
85	60	75	80	80	82	76	71	69	82	87
100	61	76	81	81	83	77	72	70	83	88
120	62	77	82	82	84	78	73	72	84	89
150	62	77	82	82	84	78	73	72	84	89
170	64	79	84	84	86	80	75	73	86	91
200	64	79	85	84	87	81	75	74	86	91
230	65	80	85	85	87	81	76	75	87	92

**FCM** Cooling only  
**FGM** Cooling only with gas fired heating

**FHM** Heat pump  
**FDM** Heat pump rooftop with gas fired heating

Size	Airflow rate	Economiser	Filters		Hot water coil	
	m³/h		G4	F7	S	H
85	12000	12	1	75	9	15
	15000	19	7	105	13	22
	23000	45	28	199	26	44
100	14000	17	5	94	11	19
	18500	29	15	143	18	31
	23000	45	28	199	26	44
120	15000	19	7	105	13	22
	20500	36	21	167	21	37
	23000	45	28	199	26	44
150	18000	6	1	75	6	10
	26000	12	12	130	12	19
	35000	22	29	204	19	33
170	21000	8	5	94	8	14
	30000	16	19	161	15	25
	35000	22	29	204	19	33
200	24000	12	3	88	7	11
	35000	26	18	154	13	22
	43000	39	31	211	19	31
230	27000	15	7	105	8	14
	39000	32	24	182	16	26
	43000	39	31	211	19	31

Size	Airflow rate	Electric heater			Heating gas fired	Adjustable roofcurb	Multidirectional roofcurb	Heat recovery module Fresh air
	m³/h	S	M	H	H			
85	12000	3	5	6	14	17	22	164
	15000	6	7	7	23	27	33	204
	23000	7	9	11	53	63	73	313
100	14000	6	7	8	20	23	30	191
	18500	8	10	11	34	41	51	252
	23000	11	14	16	53	63	78	313
120	15000	7	8	9	23	27	35	204
	20500	10	12	13	42	50	62	279
	23000	12	15	17	53	63	78	313
150	18000	4	5	7	16	30	35	170
	26000	9	10	13	33	62	72	245
	35000	15	18	23	59	112	131	329
170	21000	8	9	10	21	40	49	198
	30000	10	13	15	44	82	95	282
	35000	17	19	21	59	112	131	329
200	24000	16	15	14	21	53	67	173
	35000	22	21	20	44	112	133	252
	43000	24	26	29	66	169	195	310
230	27000	18	18	17	26	67	84	195
	39000	24	24	25	55	139	163	281
	43000	24	26	29	66	169	195	310

		085			100			120			
		PA kW	FLA A	SUA A	PA kW	FLA A	SUA A	PA kW	FLA A	SUA A	
<b>FCM/FHM</b>											
<b>Basic FCM / FHM</b>		37,3	66,5	208,0	46,8	79,4	265,1	54,8	90,4	276,1	
With (not cumulative):											
- Compressors		31,8	56,3	199,4	37,2	61,8	250,4	45,2	72,9	261,4	
- Transformer		0,2	0,5	0,5	0,2	0,5	0,5	0,2	0,5	0,5	
- Indoor supply kit standard		3,5	6,4	44,8	6,2	11,3	71,2	6,2	11,3	71,2	
- Outdoor fan standard		1,8	3,3	6,1	3,2	5,7	11,0	3,2	5,7	11,0	
Indoor supply kit		Standard		5,5	8,6	8,6	5,5	8,6	8,6	8,6	
High Efficiency (FLEXY EC)		High		8,0	12,4	12,4	8,0	12,4	12,4	12,4	
Outdoor fan Low noise version		3,2	5,7	22,0	3,2	5,7	22,0	3,2	5,7	22,0	
<b>ELECTRICAL</b>											
Electric heater		S	30,0	41,2	41,2	30,0	41,2	41,2	30,0	41,2	41,2
		M	54,0	74,2	74,2	54,0	74,2	74,2	54,0	74,2	74,2
		H	72,0	99,0	99,0	72,0	99,0	99,0	72,0	99,0	99,0
<b>KITS</b>											
In addition of standard indoor supply kit values (Grey background cells show base kit value)		K1	-1,0	-1,7	-10,5	-3,6	-6,6	-36,9	-3,6	-6,6	-36,9
		K2	0,0	0,0	0,0	-2,7	-4,9	-26,4	-2,7	-4,9	-26,4
		K3	0,0	0,0	0,0	-2,7	-4,9	-26,4	-2,7	-4,9	-26,4
		K4	1,1	2,5	20,2	-1,6	-2,4	-6,2	-1,6	-2,4	-6,2
		K5	1,1	2,5	20,2	-1,6	-2,4	-6,2	-1,6	-2,4	-6,2
		K6	4,9	9,0	53,8	2,2	4,1	27,4	2,2	4,1	27,4
		K7	2,7	4,9	26,4	0,0	0,0	0,0	0,0	0,0	0,0
		K8	8,9	16,2	97,6	6,2	11,3	71,2	6,2	11,3	71,2
		K9	-1,0	-1,7	-10,5	-3,6	-6,6	-36,9	-3,6	-6,6	-36,9
		K10	2,7	4,9	26,4	0,0	0,0	0,0	0,0	0,0	0,0
		K11	4,9	9,0	53,8	2,2	4,1	27,4	2,2	4,1	27,4
		K12	4,9	9,0	53,8	2,2	4,1	27,4	2,2	4,1	27,4
		K13	1,1	2,5	20,2	-1,6	-2,4	-6,2	-1,6	-2,4	-6,2
		K14	2,7	4,9	26,4	0,0	0,0	0,0	0,0	0,0	0,0
		K15	8,9	16,2	97,6	6,2	11,3	71,2	6,2	11,3	71,2
		K16	4,9	9,0	53,8	2,2	4,1	27,4	2,2	4,1	27,4
		K17	13,4	24,4	152,3	10,7	19,5	125,9	10,7	19,5	125,9
		K18	5,7	11,4	85,1	3,1	6,5	58,8	3,1	6,5	58,8
<b>FGM/FDM</b>											
<b>Basic FGM / FDM</b>		39,0	69,9	211,4	47,8	81,3	267,0	61,1	102,1	287,8	
With (not cumulative):											
- Compressors		31,8	56,3	199,4	37,2	61,8	250,4	45,2	72,9	261,4	
- Transformer		0,2	0,5	0,5	0,2	0,5	0,5	0,2	0,5	0,5	
- Transformer Gas S		0,2	0,4	0,4	0,2	0,4	0,4	0,2	0,4	0,4	
- Indoor supply kit standard		5,1	9,4	68,6	7,0	12,8	89,6	12,4	22,6	142,4	
- Outdoor fan standard		1,8	3,3	6,1	3,2	5,7	11,0	3,2	5,7	11,0	
Transformer Gas H		0,3	0,6	0,6	0,3	0,6	0,6	0,3	0,6	0,6	
Indoor supply kit		Standard		5,5	8,6	8,6	5,5	8,6	8,6	8,6	
High Efficiency (FLEXY EC)		High		8,0	12,4	12,4	8,0	12,4	12,4	12,4	
Outdoor fan Low noise version		3,2	5,7	22,0	3,2	5,7	22,0	3,2	5,7	22,0	
<b>KITS</b>											
In addition of standard indoor supply kit values (Grey background cells show base kit value)		K1	0,0	0,0	0,0	-1,9	-3,4	-21,0	-7,3	-13,2	-73,8
		K2	0,0	0,0	0,0	-1,9	-3,4	-21,0	-7,3	-13,2	-73,8
		K3	1,9	3,4	21,0	0,0	0,0	0,0	-5,4	-9,8	-52,8
		K4	1,9	3,4	21,0	0,0	0,0	0,0	-5,4	-9,8	-52,8
		K5	1,9	3,4	21,0	0,0	0,0	0,0	-3,1	-4,8	-12,4
		K6	4,2	8,4	61,3	2,2	5,0	40,3	-3,1	-4,8	-12,4
		K7	4,2	8,4	61,3	2,2	5,0	40,3	0,0	0,0	0,0
		K8	7,3	13,2	73,8	5,4	9,8	52,8	-3,1	-4,8	-12,4
		K9	4,2	8,4	61,3	2,2	5,0	40,3	0,0	0,0	0,0
		K10	7,3	13,2	73,8	5,4	9,8	52,8	4,5	8,2	54,7
		K11	11,8	21,4	128,5	9,9	18,0	107,5	7,9	15,4	199,6
		K12	11,8	21,4	128,5	9,9	18,0	107,5	4,5	8,2	54,7
		K13	7,3	13,2	73,8	5,4	9,8	52,8	0,0	0,0	0,0
<b>EXTRACTION</b>											
Axial extraction fan		0,5	1,4	1,4	0,5	1,4	1,4	0,5	1,4	1,4	
Extraction plug-fan		4,4	8,6	34,0	4,4	8,6	34,0	4,4	8,6	34,0	
<b>ENERGY RECOVERY</b>											
Axial extraction fan		0,1	0,3	1,2	0,1	0,3	1,2	0,1	0,3	1,2	

PA Absorbed Power (kW)

S Standard heat

FLA Full load Amps (A)

M Medium heat

SUA Start Up Amps (A)

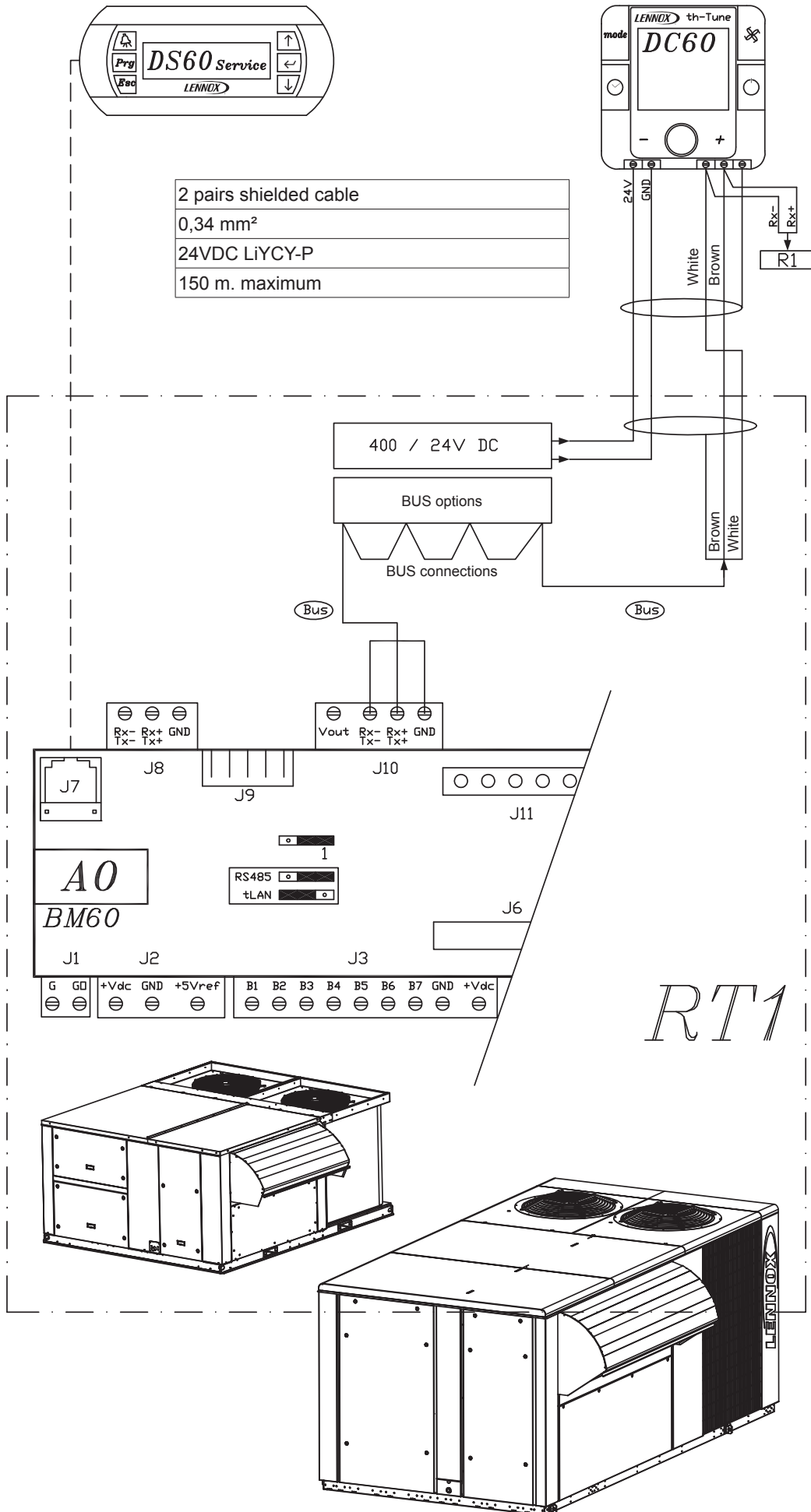
H High heat

		150			170			200			230		
		PA	FLA	SUA	PA	FLA	SUA	PA	FLA	SUA	PA	FLA	SUA
		kW	A	A	kW	A	A	kW	A	A	kW	A	A
<b>FCM/FHM</b>													
<b>Basic FCM / FHM</b>		63,6	115,9	259,0	77,8	140,8	283,9	84,7	153,5	296,6	109,4	180,6	369,2
With (not cumulative):													
- Compressors		51,6	92,6	235,7	63,6	112,5	255,7	68,8	123,5	266,6	90,4	145,8	334,3
- Transformer		0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8
- Indoor supply kit standard		7,0	12,8	89,6	9,2	17,8	129,9	9,2	17,8	129,9	12,4	22,6	142,4
- Outdoor fan standard		4,7	9,7	38,0	4,7	9,7	38,0	3,2	5,7	44,0	3,2	5,7	44,0
Indoor supply kit High Efficiency (FLEXY EC)	Standard	8,3	12,9	12,9	8,3	12,9	12,9	8,3	12,9	12,9	8,3	12,9	12,9
	High	12,0	18,6	18,6	12,0	18,6	18,6	12,0	18,6	18,6	12,0	18,6	18,6
Outdoor fan Low noise version		4,7	9,7	38,0	4,7	9,7	38,0	6,4	11,5	44,0	6,4	11,5	44,0
<b>ELECTRICAL</b>													
Electric heater	S	45,0	61,8	61,8	45,0	61,8	61,8	72,0	99,0	99,0	72,0	99,0	99,0
	M	72,0	99,0	99,0	72,0	99,0	99,0	108,0	148,5	148,5	108,0	148,5	148,5
	H	108,0	148,5	148,5	108,0	148,5	148,5	162,0	195,3	195,3	162,0	195,3	195,3
<b>KITS</b>													
In addition of standard indoor supply kit values (Grey background cells show base kit value)	K1	-3,4	-6,0	-42,0	-5,7	-11,0	-82,3	-2,2	-5,0	-40,3	-5,4	-9,8	-52,8
	K2	-1,9	-3,4	-21,0	-4,2	-8,4	-61,3	-2,2	-5,0	-40,3	-5,4	-9,8	-52,8
	K3	0,0	0,0	0,0	-2,2	-5,0	-40,3	0,0	0,0	0,0	-3,1	-4,8	-12,4
	K4	0,0	0,0	0,0	-2,2	-5,0	-40,3	3,1	4,8	12,4	0,0	0,0	0,0
	K5	2,2	5,0	40,3	0,0	0,0	0,0	3,1	4,8	12,4	0,0	0,0	0,0
	K6	2,2	5,0	40,3	0,0	0,0	0,0	7,6	13,0	67,2	4,5	8,2	54,7
	K7	2,2	5,0	40,3	0,0	0,0	0,0	3,1	4,8	12,4	0,0	0,0	0,0
	K8	5,4	9,8	52,8	3,1	4,8	12,4	0,0	0,0	0,0	-3,1	-4,8	-12,4
	K9	5,4	9,8	52,8	3,1	4,8	12,4	7,6	13,0	67,2	4,5	8,2	54,7
	K10	0,0	0,0	0,0	-2,2	-5,0	-40,3	11,0	20,2	212,1	7,9	15,4	199,6
	K11	2,2	5,0	40,3	0,0	0,0	0,0	15,1	26,6	211,9	11,9	21,8	199,5
	K12	9,9	18,0	107,5	7,6	13,0	67,2	7,6	13,0	67,2	4,5	8,2	54,7
	K13	5,4	9,8	52,8	3,1	4,8	12,4	15,1	26,6	211,9	11,9	21,8	199,5
	K14	9,9	18,0	107,5	7,6	13,0	67,2	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4
	K15	13,3	25,2	252,4	11,0	20,2	212,1	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4
	K16	9,9	18,0	107,5	7,6	13,0	67,2	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4
	K17	-7,0	-12,8	-89,6	-9,2	-17,8	-129,9	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4
	K18	-7,0	-12,8	-89,6	-9,2	-17,8	-129,9	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4
<b>FGM/FDM</b>													
<b>Basic FGM / FDM</b>		66,1	121,5	264,6	81,2	146,2	289,3	88,1	158,9	302,1	114,2	189,4	378,0
With (not cumulative):													
- Compressors		51,6	92,6	235,7	63,6	112,5	255,7	68,8	123,5		90,4	145,8	334,3
- Transformer		0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8	0,3	0,8	0,8
- Transformer Gas S		0,3	0,6	0,6	0,3	0,6	0,6	0,3	0,6	0,6	0,3	0,6	0,6
- Indoor supply kit standard		9,2	17,8	129,9	12,4	22,6	142,4	12,4	22,6	142,4	16,9	30,8	197,1
- Outdoor fan standard		4,7	9,7	38,0	4,7	9,7	38,0	3,2	5,7	44,0	3,2	5,7	44,0
Transformer Gas H		0,3	0,6	0,6	0,3	0,6	0,6	0,3	0,6	0,6	0,3	0,6	0,6
Indoor supply kit High Efficiency	Standard	8,3	12,9	12,9	8,3	12,9	12,9	8,3	12,9	12,9	8,3	12,9	12,9
	High	12,0	18,6	18,6	12,0	18,6	18,6	12,0	18,6	18,6	12,0	18,6	18,6
Outdoor fan Low noise version		4,7	9,7	38,0	4,7	9,7	38,0	6,4	11,5	44,0	6,4	11,5	44,0
<b>KITS</b>													
In addition of standard indoor supply kit values (Grey background cells show base kit value)	K1	-2,2	-5,0	-40,3	-5,4	-9,8	-52,8	-5,4	-9,8	-52,8	-9,9	-18,0	-107,5
	K2	0,0	0,0	0,0	-3,1	-4,8	-12,4	-3,1	-4,8	-12,4	-7,6	-13,0	-67,2
	K3	3,1	4,8	12,4	0,0	0,0	0,0	0,0	0,0	0,0	-4,5	-8,2	-54,7
	K4	3,1	4,8	12,4	0,0	0,0	0,0	0,0	0,0	0,0	-4,5	-8,2	-54,7
	K5	7,6	13,0	67,2	4,5	8,2	54,7	4,5	8,2	54,7	0,0	0,0	0,0
	K6	11,0	20,2	212,1	7,9	15,4	199,6	11,9	21,8	199,5	7,4	13,6	144,8
	K7	3,1	4,8	12,4	0,0	0,0	0,0	7,9	15,4	199,6	3,4	7,2	144,9
	K8	7,6	13,0	67,2	4,5	8,2	54,7	0,0	0,0	0,0	-4,5	-8,2	-54,7
	K9	11,0	20,2	212,1	7,9	15,4	199,6	4,5	8,2	54,7	0,0	0,0	0,0
	K10	15,1	26,6	211,9	11,9	21,8	199,5	7,9	15,4	199,6	3,4	7,2	144,9
	K11	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4	11,9	21,8	199,5	7,4	13,6	144,8
	K12	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4	-12,4	-22,6	-142,4	-16,9	-30,8	-197,1
	K13	-9,2	-17,8	-129,9	-12,4	-22,6	-142,4	-12,4	-22,6	-142,4	-16,9	-30,8	-197,1
<b>EXTRACTION</b>													
Axial extraction fan		1,4	2,7	2,7	1,4	2,7	2,7	1,4	2,7	2,7	1,4	2,7	2,7
Extraction plug-fan		4,4	8,6	34,0	4,4	8,6	34,0	6,6	12,9	51,0	6,6	12,9	51,0
<b>ENERGY RECOVERY</b>													
Axial extraction fan		0,2	0,6	2,3	0,2	0,6	2,3	0,2	0,6	2,3	0,2	0,6	2,3

**PA** Absorbed Power (kW)  
**FLA** Full load Amps (A)  
**SUA** Start Up Amps (A)

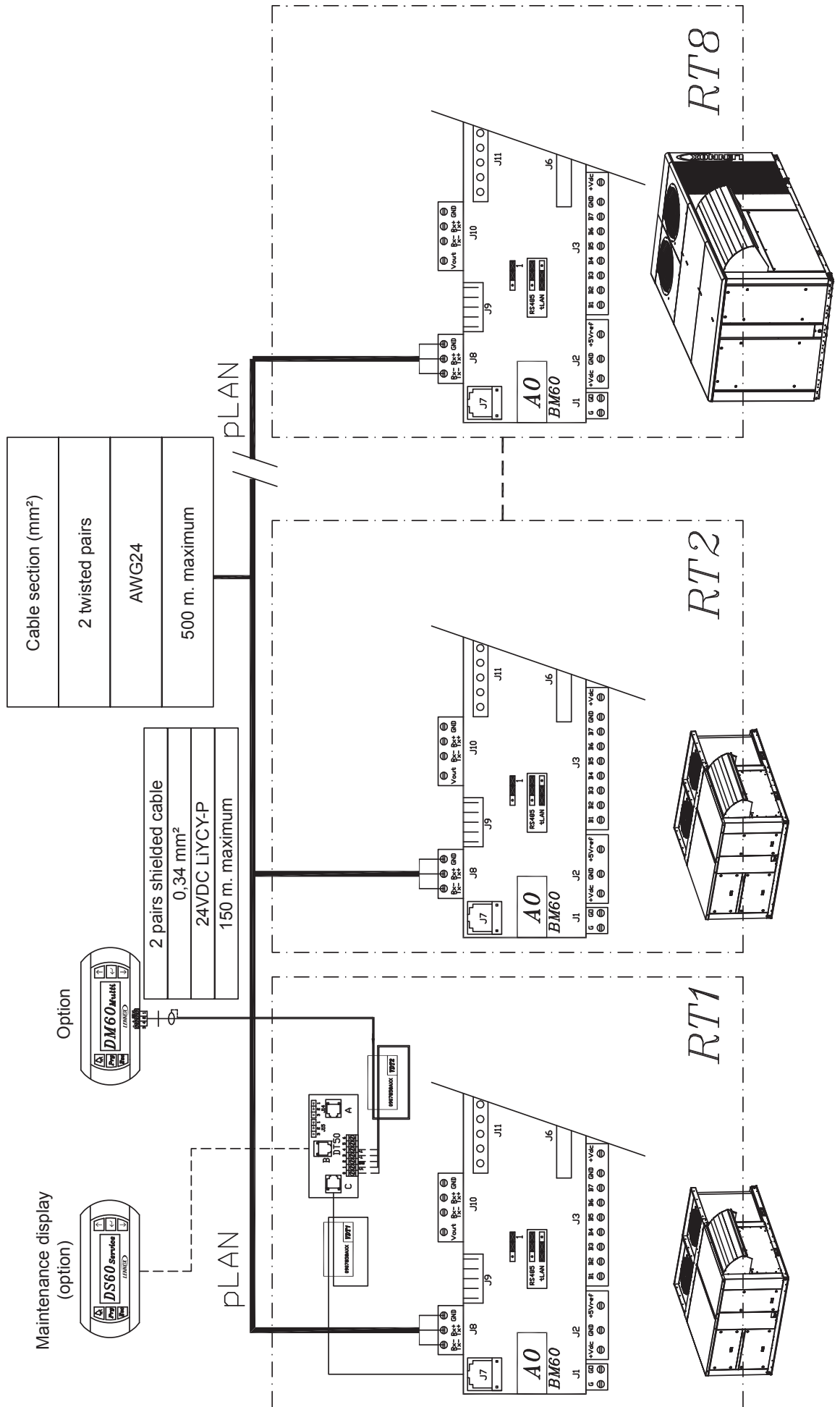
**S** Standard heat  
**M** Medium heat  
**H** High heat

DS 60 : SERVICE DISPLAY / DC 60 : COMFORT DISPLAY

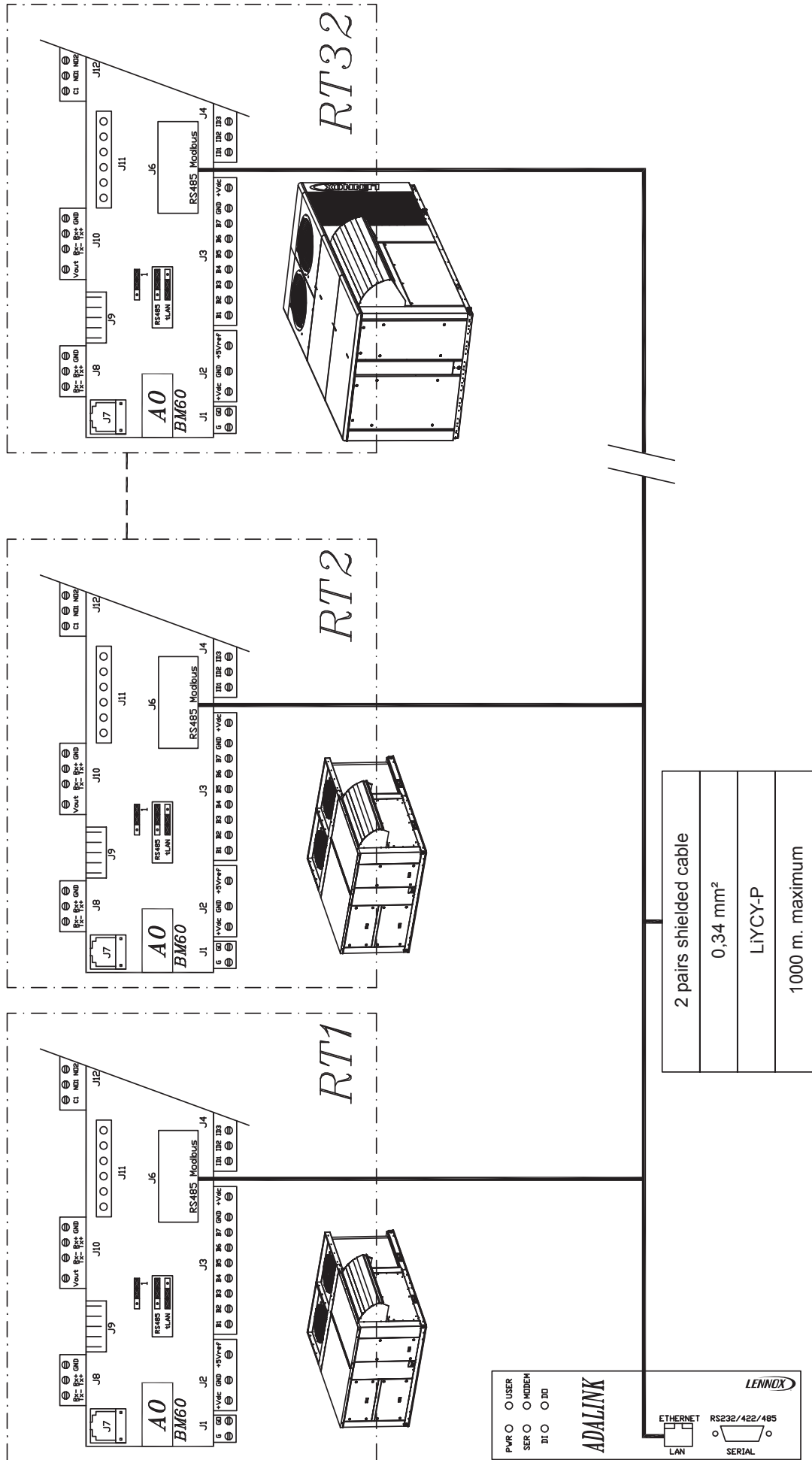




MASTER/SLAVE



ADALINK



The CLIMATIC™ 60 has free input / output on the main board BM60 and the expansion board BE60 to offer different possibilities to customize input / output for remote control of the unit.

Free customized inputs / outputs number depends on added options.

Without any option, expansion board BE60 is available with DCBO option.

Below, "not always available" means that some inputs/outputs could be used by options. Refer to the electrical wiring diagram or to the CLIMATIC 60 user manual.

## DIGITAL OUTPUTS (DRY CONTACTS NORMALLY OPENED):

Maximum 2 free output contacts on BM60

BM\_J14-NO7  
BM\_J15-NO12

Maximum 4 free output contacts on BE60

BE\_J5-NO1  
BE\_J6-NO2  
BE\_J7-NO3  
BE\_J8-NO4

Functions can be set among followings:

- 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-NO always available.

Alarme	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 temperature too low (freeze protection)
Smoke A	alarm, smoke détection
Power	On / OFF status
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, DayII mode activated
Sched. B	schedule, DayI mode activated
Sched. C	schedule, Day mode activated
Sched. D	schedule, Night mode 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 INPUTS (DRY CONTACTS):

Maximum 2 free input contacts on BM60

BM\_J4-ID4  
BM\_J4-ID7

Maximum 4 free input contacts on BE60

BE\_J4-ID1  
BE\_J4-ID2  
BE\_J4-ID3  
BE\_J4-ID4

Functions can be set among followings:

On/Off	Status of the request for 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 DayII mode
Sched. B	schedule, force the DayI mode
Sched. C	schedule, force the Day mode
Sched. D	schedule, force the Night mode
Sched.BMS	schedule, force the BMS mode

## - ANALOG INPUTS (NTC PROBE OR 4/20MA SIGNAL):

No analog input on BM60

maximum 4 free analog inputs on BE60

BE\_J9-B1  
BE\_J9-B2  
BE\_J10-B3  
BE\_J10-B4

Functions can be set among followings:

Ctn Amb. control, room temperature by NTC probe

Ctn GTC BMS, temperature (NTC) reading for BMS

HR. GTC BMS, relative humidity (4-20mA) reading for BMS

Sp Temp. shift of the setpoint (4mA=-5K, 20mA=+5K)

Csg. A.N fresh air set point, value (4mA=0%, 20mA=100%)

Csg. Vit. speed blower set point, value (4mA=low level, 20mA=nominal level)

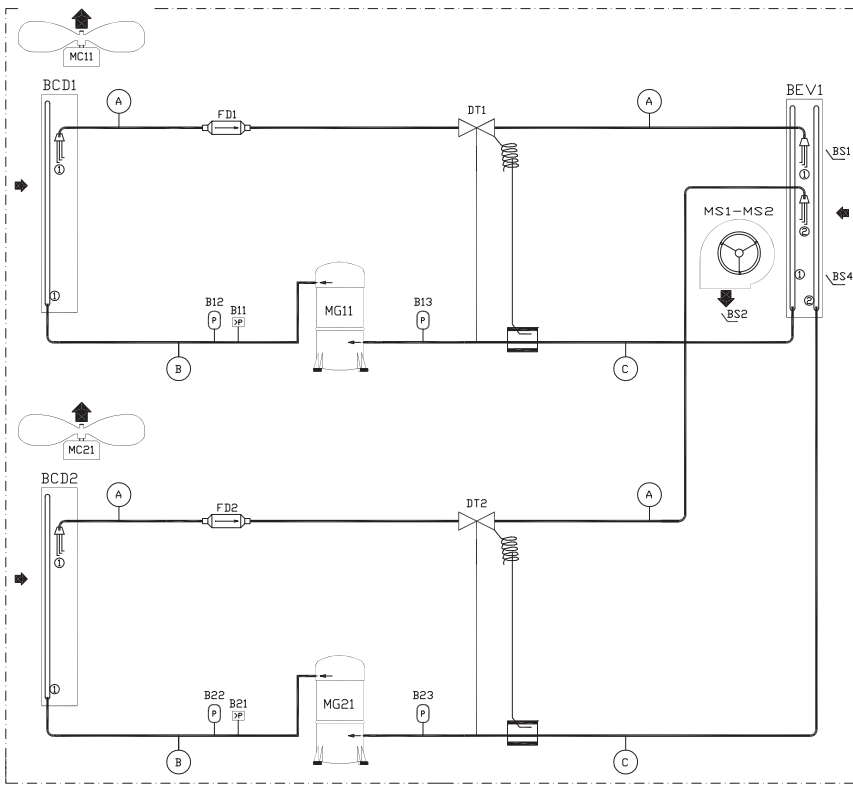
T. Ext. control, outside temperature by 4-20mA sensor

T. Amb. control, room temperature by 4-20mA sensor

HR. Ext. control, outside relative humidity by 4-20mA sensor

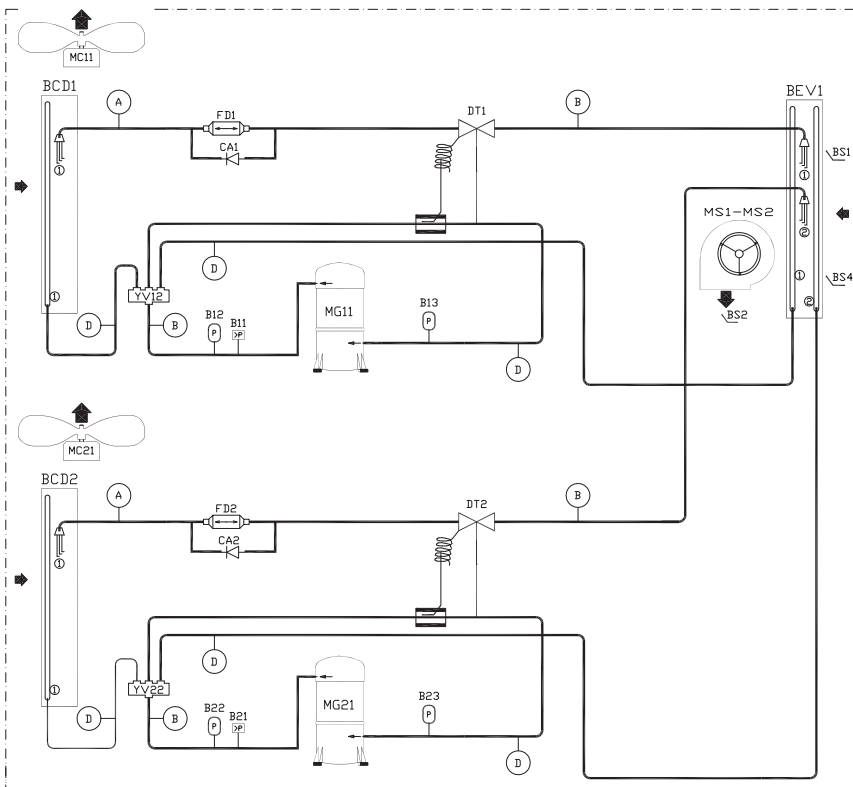
HR. Amb. control, room relative humidity by 4-20mA sensor

FC 085 - 100 - 120



FC 85/100/120	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 085 - 100 - 120

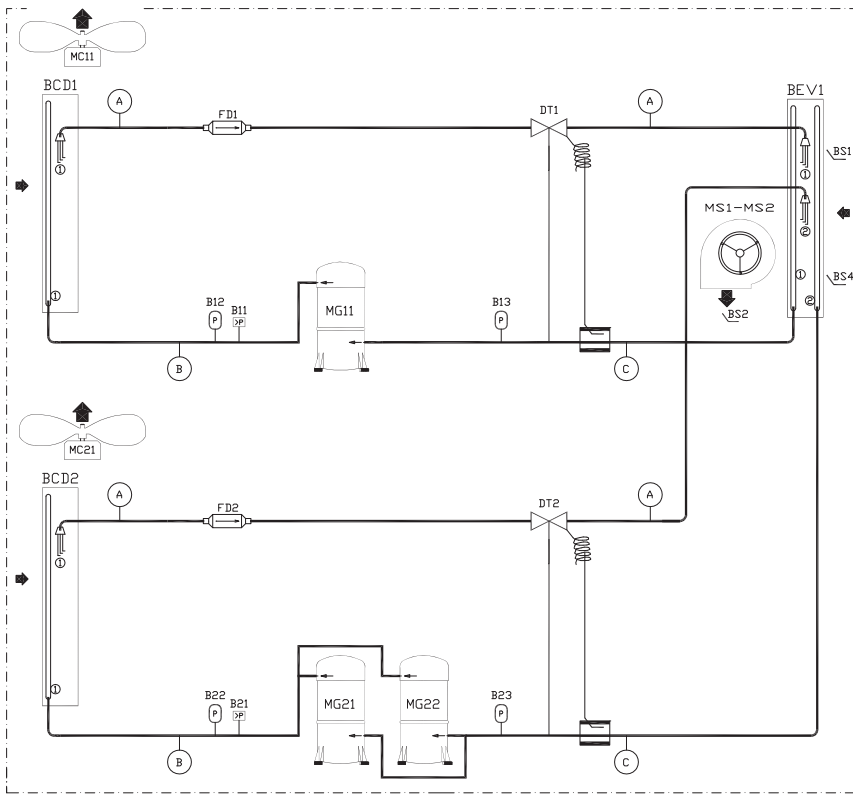


FH 85/100/120	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

<b>B11-B21</b>	High pressure switch
<b>B12-B22</b>	High pressure sensor
<b>B13-B23</b>	Low pressure sensor
<b>BCD1-BCD2</b>	Condenser coil
<b>BEV1</b>	Evaporator coil
<b>BS1</b>	External temperature probe
<b>BS2</b>	Blower temperature probe
<b>BS4</b>	Return regulation sensor

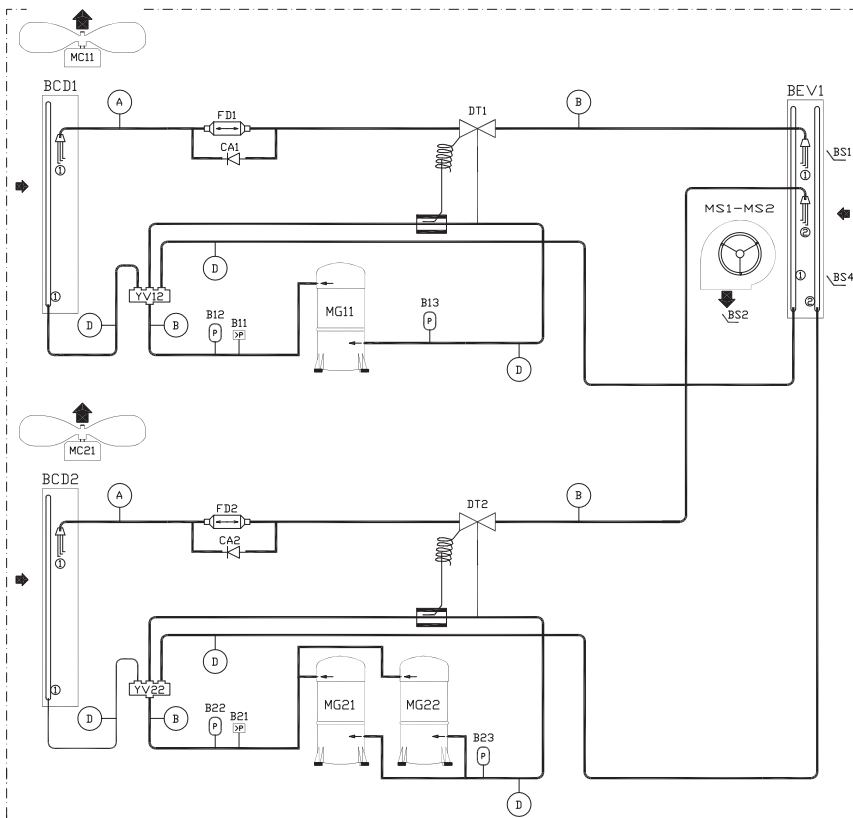
<b>CA1-CA2</b>	Check valve
<b>DT1-DT2</b>	Thermostatic expansion valve
<b>FD1-FD2</b>	Filter drier
<b>MC11-MC21</b>	Condenser fan motor
<b>MG11-MG21</b>	Compressor
<b>MS1-MS2</b>	Blower fan motor
<b>YV11-YV12</b>	Compressor cycle reversal valve

FC 150



FC 150	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 150

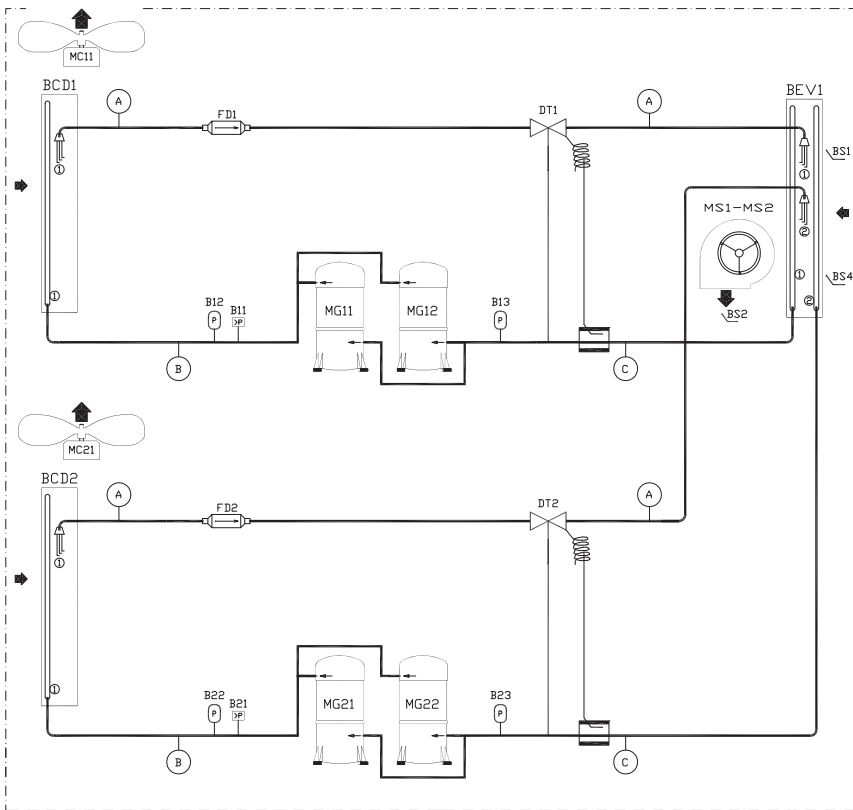


FH 150	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor

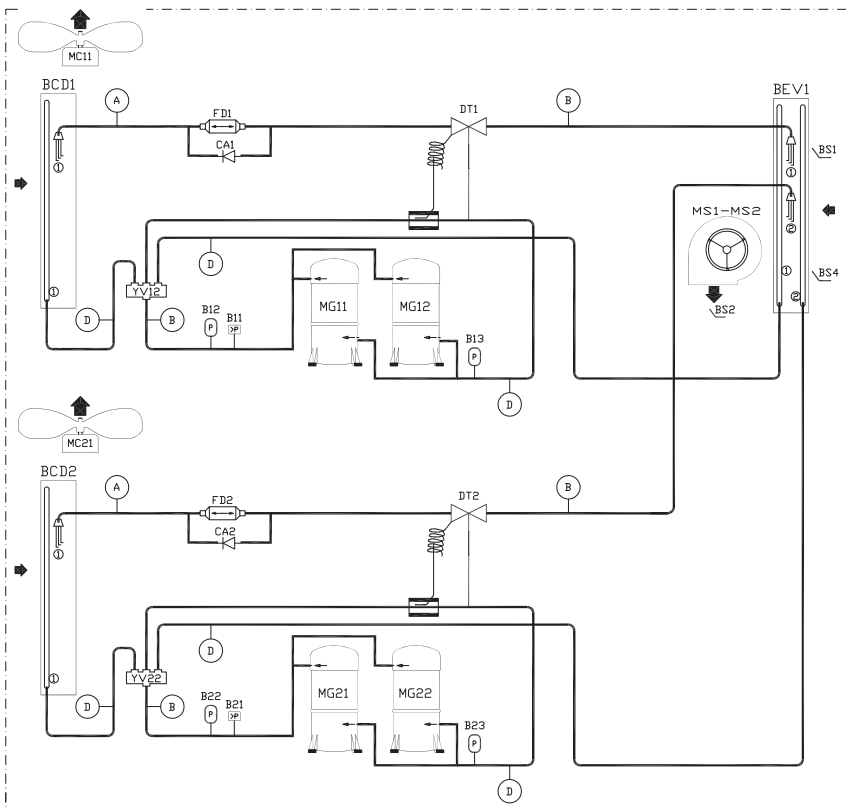
CA1-CA2	Check valve
DT1-DT2	Thermostatic expansion valve
FD1-FD2	Filter drier
MC11-MC21	Condenser fan motor
MG11-MG21 MG22	Compressor
MS1-MS2	Blower fan motor
-YV12-YV22	Compressor cycle reversal valve

FC 170



FC 170	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 170



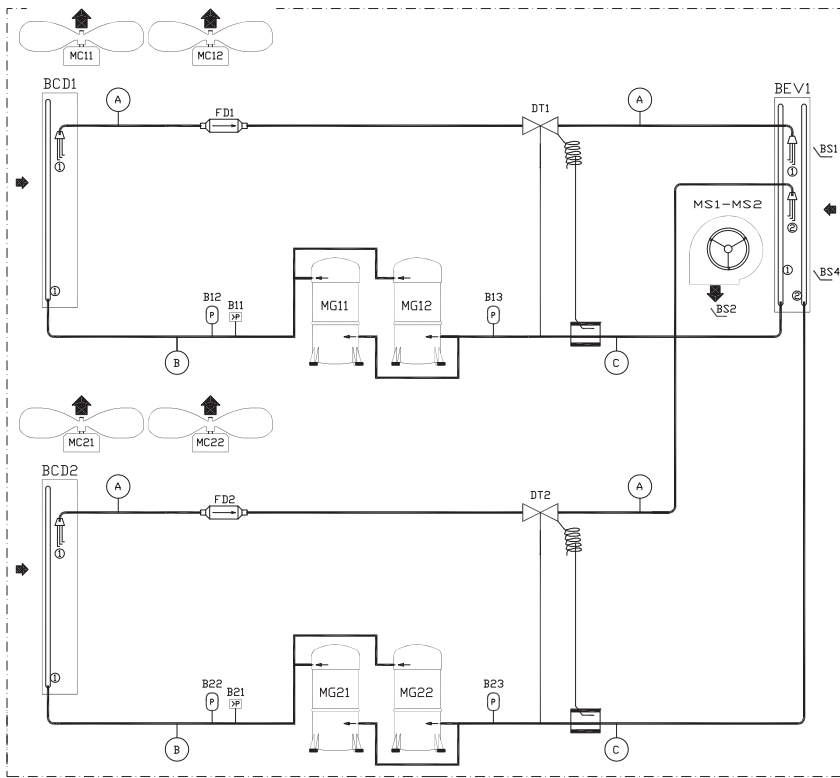
FH 170	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor

CA1-CA2	Check valve
DT1-DT2	Thermostatic expansion valve
FD1-FD2	Filter drier
MC11-MC21	Condenser fan motor
MG11-MG12 MG21-MG22	Compressor
MS1-MS2	Blower fan motor
-YV12-YV22	Compressor cycle reversal valve

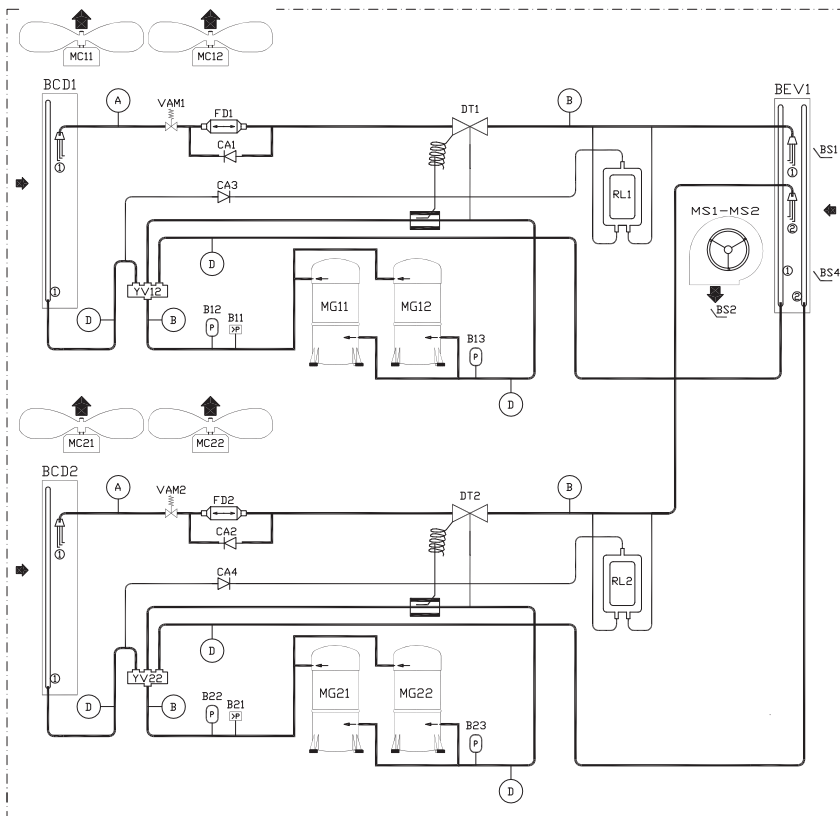


FC 200 - 230



FC 200 - 230	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 200 - 230



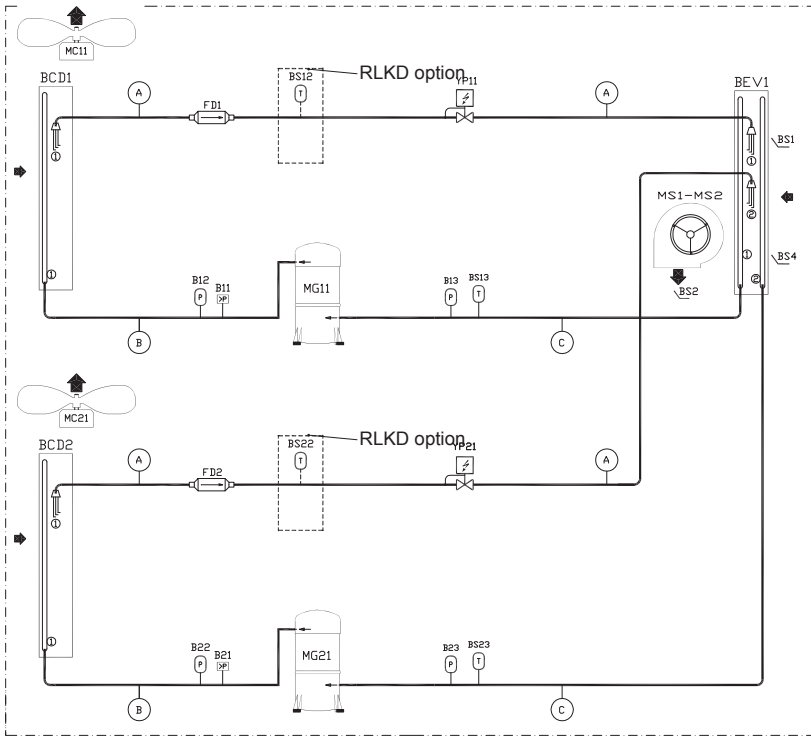
FH 200 - 230	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor

CA1-CA2	Check valve
DT1-DT2	Thermostatic expansion valve
FD1-FD2	Filter drier
MC11-MC12 MC21-MC22	Condenser fan motor
MG11-MG12 MG21-MG22	Compressor
MS1-MS2	Blower fan motor
-YV12-YV22	Compressor cycle reversal valve

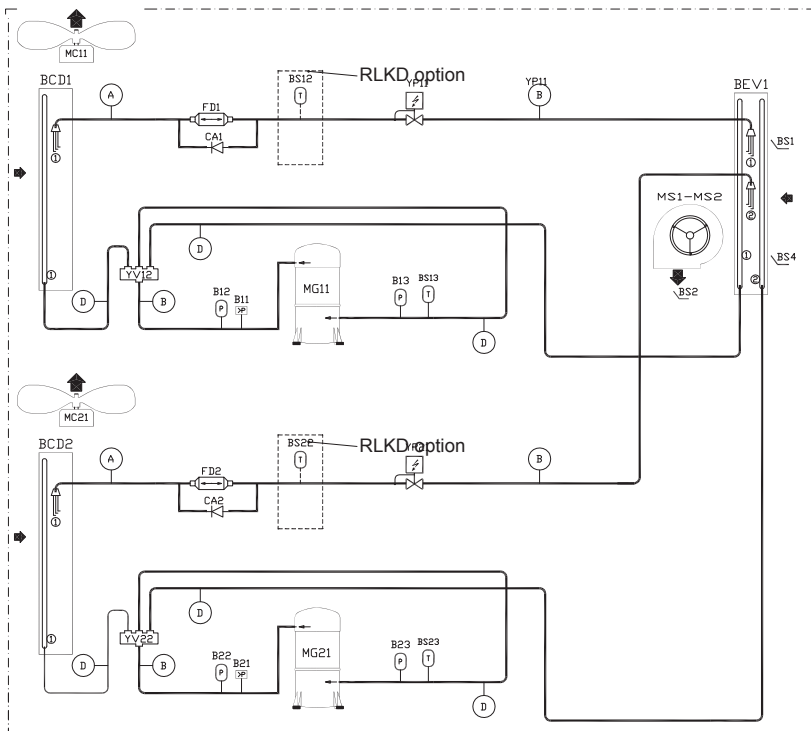
With electronic expansion valve

FC 085 - 100 - 120



FC 85/100/120	
<b>A</b>	7/8"
<b>B</b>	1" 1/8
<b>C</b>	1" 3/8

FH 085 - 100 - 120



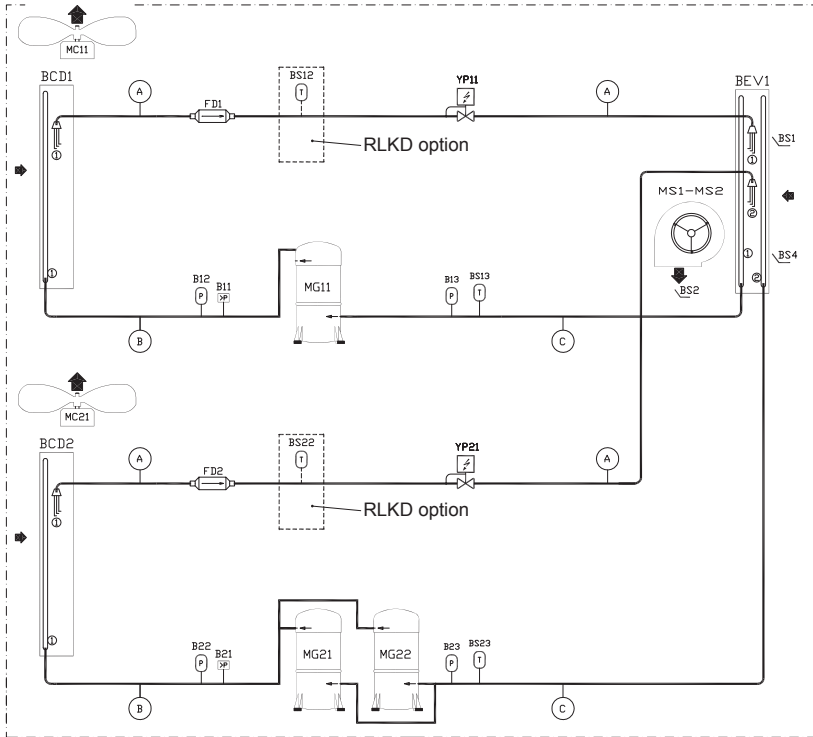
FH 85/100/120	
<b>A</b>	7/8"
<b>B</b>	1" 1/8
<b>C</b>	1" 3/8
<b>D</b>	1" 5/8

<b>B11-B21</b>	High pressure switch
<b>B12-B22</b>	High pressure sensor
<b>B13-B23</b>	Low pressure sensor
<b>BCD1-BCD2</b>	Condenser coil
<b>BEV1</b>	Evaporator coil
<b>BS1</b>	External temperature probe
<b>BS2</b>	Blower temperature probe
<b>BS4</b>	Return regulation sensor
<b>BS12-BS22</b>	Liquid temperature probe

<b>BS13-BS23</b>	Suction temperature probe
<b>CA1-CA2</b>	Check valve
<b>FD1-FD2</b>	Filter drier
<b>MC11-MC21</b>	Condenser fan motor
<b>-MG11-MG21</b>	Compressor
<b>MS1-MS2</b>	Blower fan motor
<b>YP11-YP21</b>	Electronic expansion valve
<b>-YV12-YV22</b>	Compressor cycle reversal valve

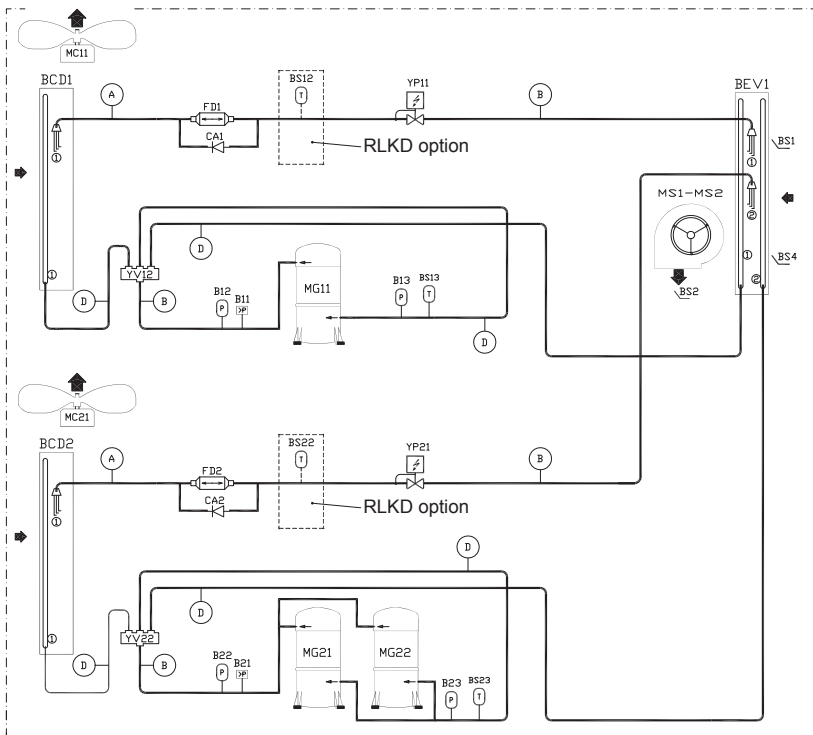
With electronic expansion valve

FC 150



FC 150	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 150



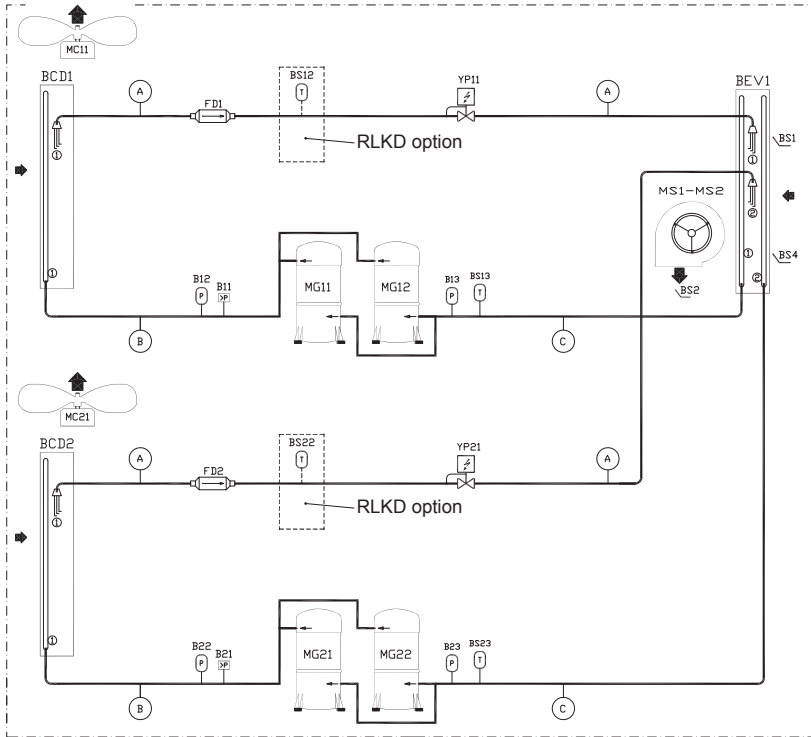
FH 150	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor
BS12-BS22	Liquid temperature probe

BS13-BS23	Suction temperature probe
CA1-CA2	Check valve
FD1-FD2	Filter drier
MC11-MC21	Condenser fan motor
MG11-MG21 MG22	Compressor
MS1-MS2	Blower fan motor
YP11-YP21	Electronic expansion valve
-YV12-YV22	Compressor cycle reversal valve

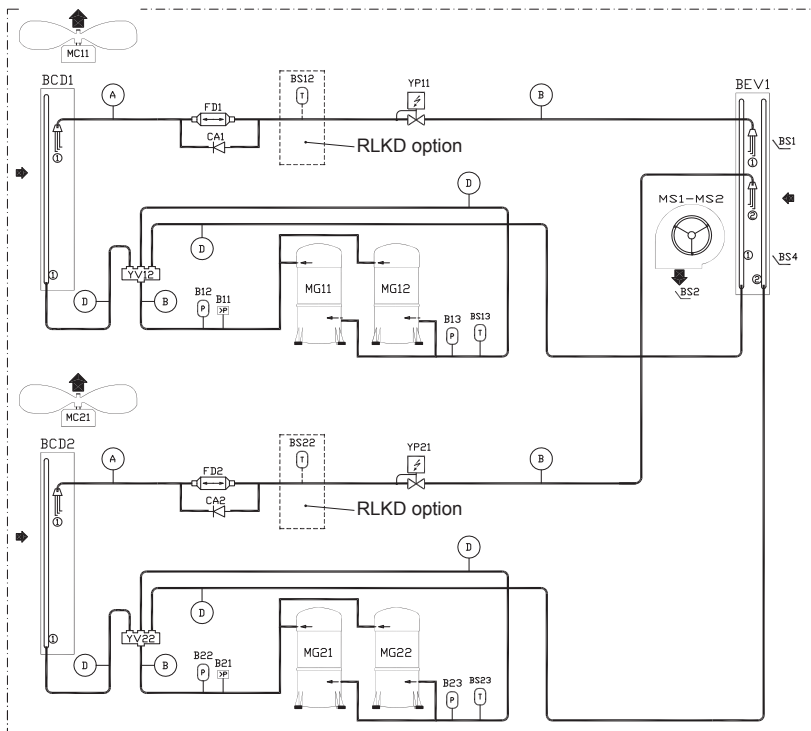
With electronic expansion valve

FC 170



FC 170	
A	7/8"
B	1" 1/8
C	1" 3/8

FH 170



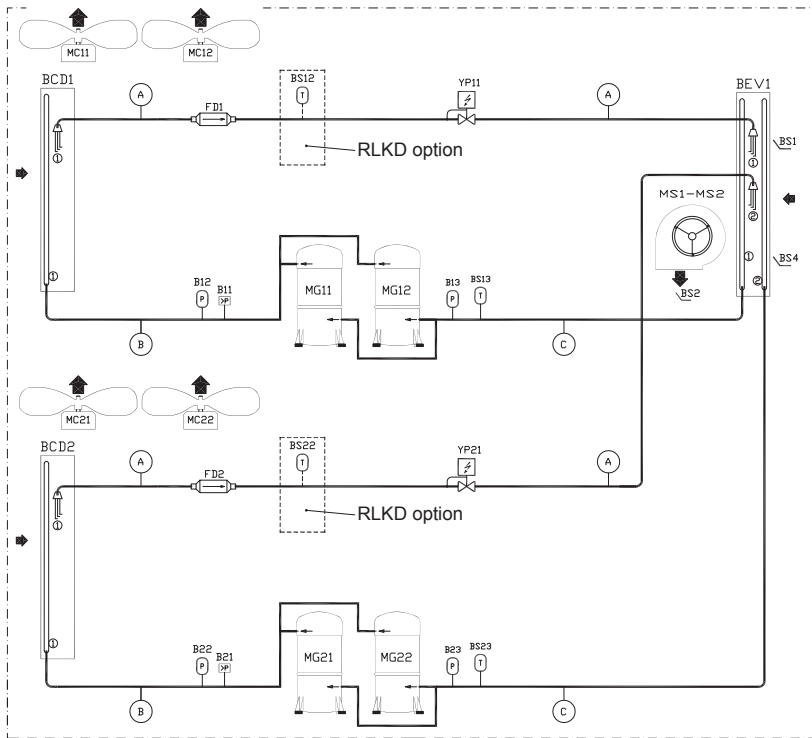
FH 170	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor
BS12-BS22	Liquid temperature probe

BS13-BS23	Suction temperature probe
CA1-CA2	Check valve
FD1-FD2	Filter drier
MC11-MC21	Condenser fan motor
MG11-MG12 MG21-MG22	Compressor
MS1-MS2	Blower fan motor
YP11-YP21	Electronic expansion valve
-YV12-YV22	Compressor cycle reversal valve

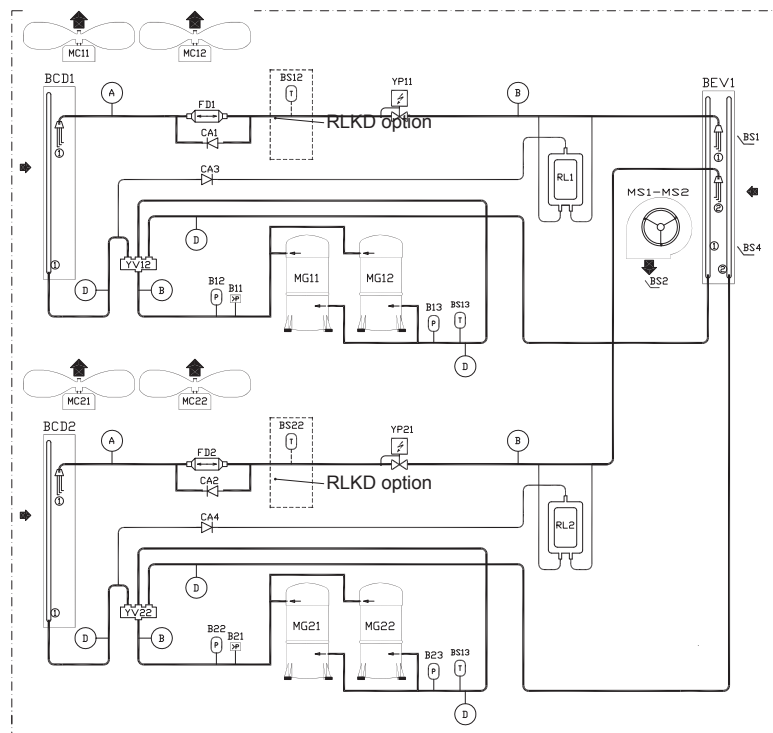
With electronic expansion valve

FC 200 - 230



FC 200 - 230	
A	7/8"
B	1" 1/8
C	1" 3/8

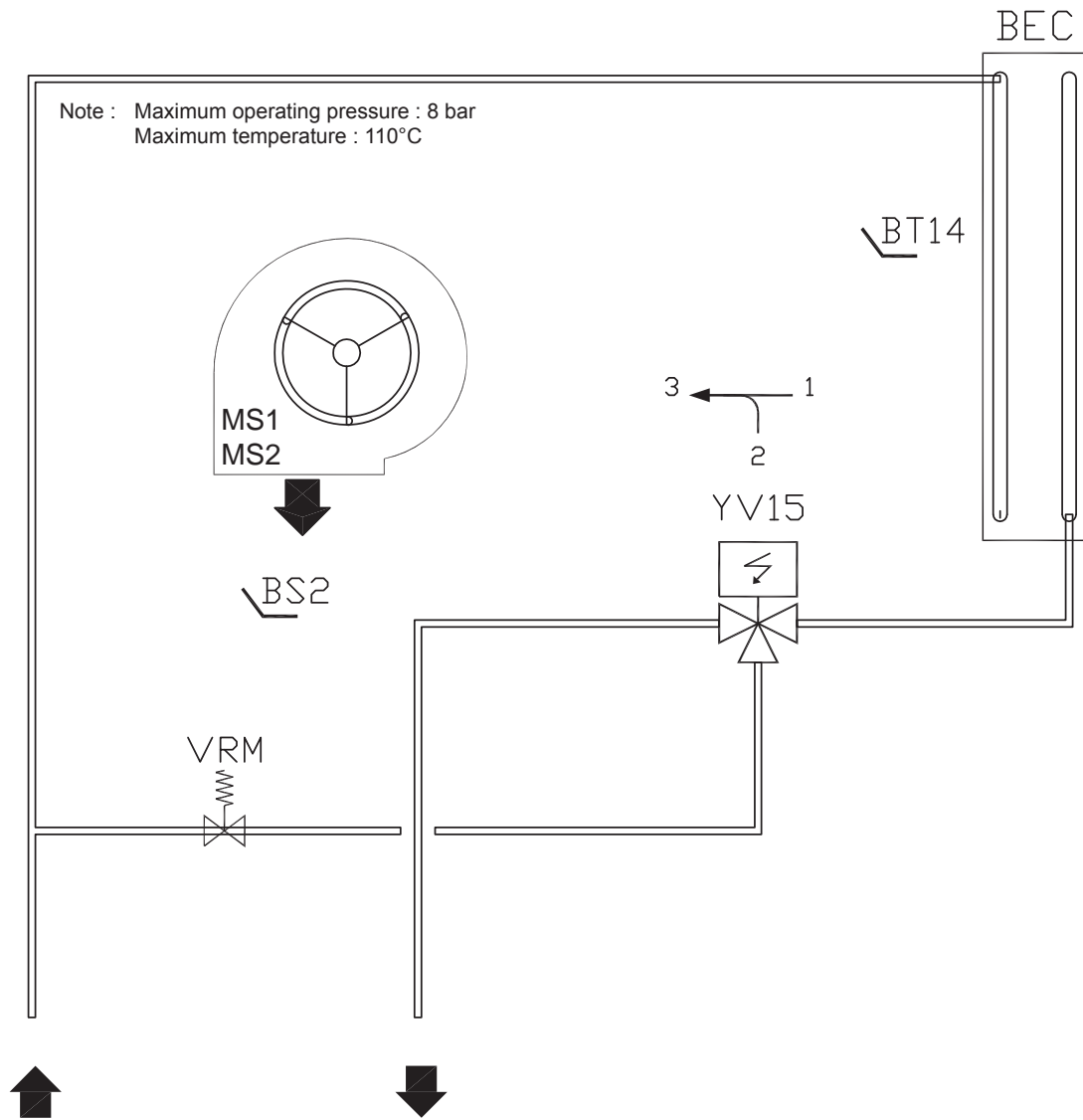
FH 200 - 230



FH 200 - 230	
A	7/8"
B	1" 1/8
C	1" 3/8
D	1" 5/8

B11-B21	High pressure switch
B12-B22	High pressure sensor
B13-B23	Low pressure sensor
BCD1-BCD2	Condenser coil
BEV1	Evaporator coil
BS1	External temperature probe
BS2	Blower temperature probe
BS4	Return regulation sensor
BS12-BS22	Liquid temperature probe

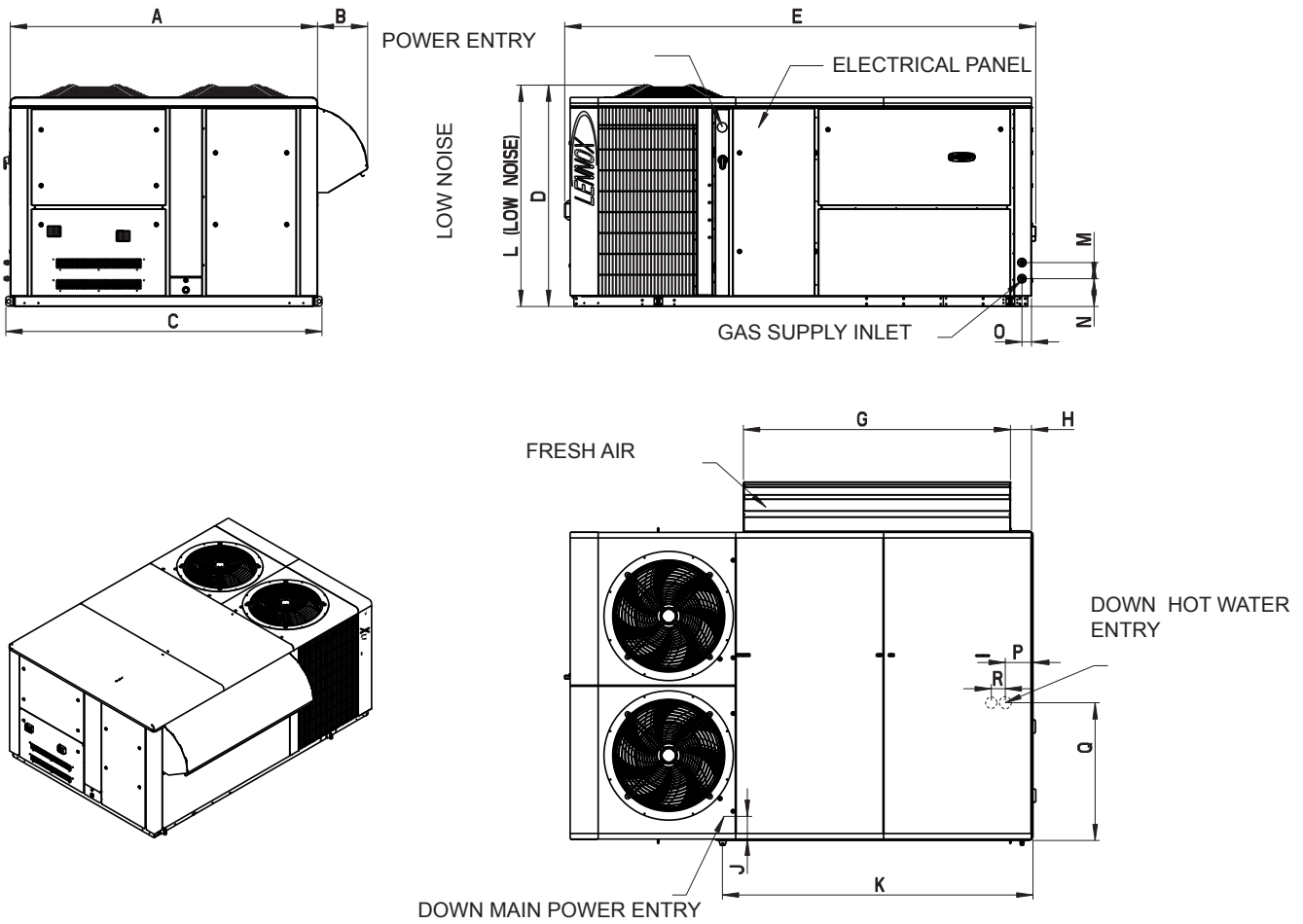
BS13-BS23	Suction temperature probe
CA1-CA2	Check valve
FD1-FD2	Filter drier
MC11-MC21 MC21-MC22	Condenser fan motor
MG11-MG12 MG21-MG22	Compressor
MS1-MS2	Blower fan motor
YP11-YP21	Electronic expansion valve
-YV12-YV22	Compressor cycle reversal valve



<b>UT</b>	Air treatment unit	<b>B51</b>	Compressor -MG1 low pressure safety switch
<b>UF</b>	Cooling unit	<b>DT</b>	Thermostatic holder
<b>BCD</b>	Condenser coil	<b>FD</b>	Dehumidifier filter
<b>BEV1</b>	Evaporator coil	<b>MC1</b>	Condenser -MC1 fan motor
<b>BT12</b>	Blower temperature probe	<b>MG1</b>	Compressor -MG1 contactor
<b>BTP1</b>	Compressor -MG1 accumulator	<b>MS1</b>	Blower fan motor MS1
<b>B41</b>	Compressor -MG1 high pressure safety switch	<b>VAM</b>	Manual check valve
<b>B42</b>	Compressor -MG2 high pressure safety switch		

Pipe diameters (DN)		
	1 row	2 rows
<b>F085</b>	25	32
<b>F100</b>	25	32
<b>F120</b>	25	32
<b>F150</b>	32	40
<b>F170</b>	32	40
<b>F200</b>	32	40
<b>F230</b>	32	40

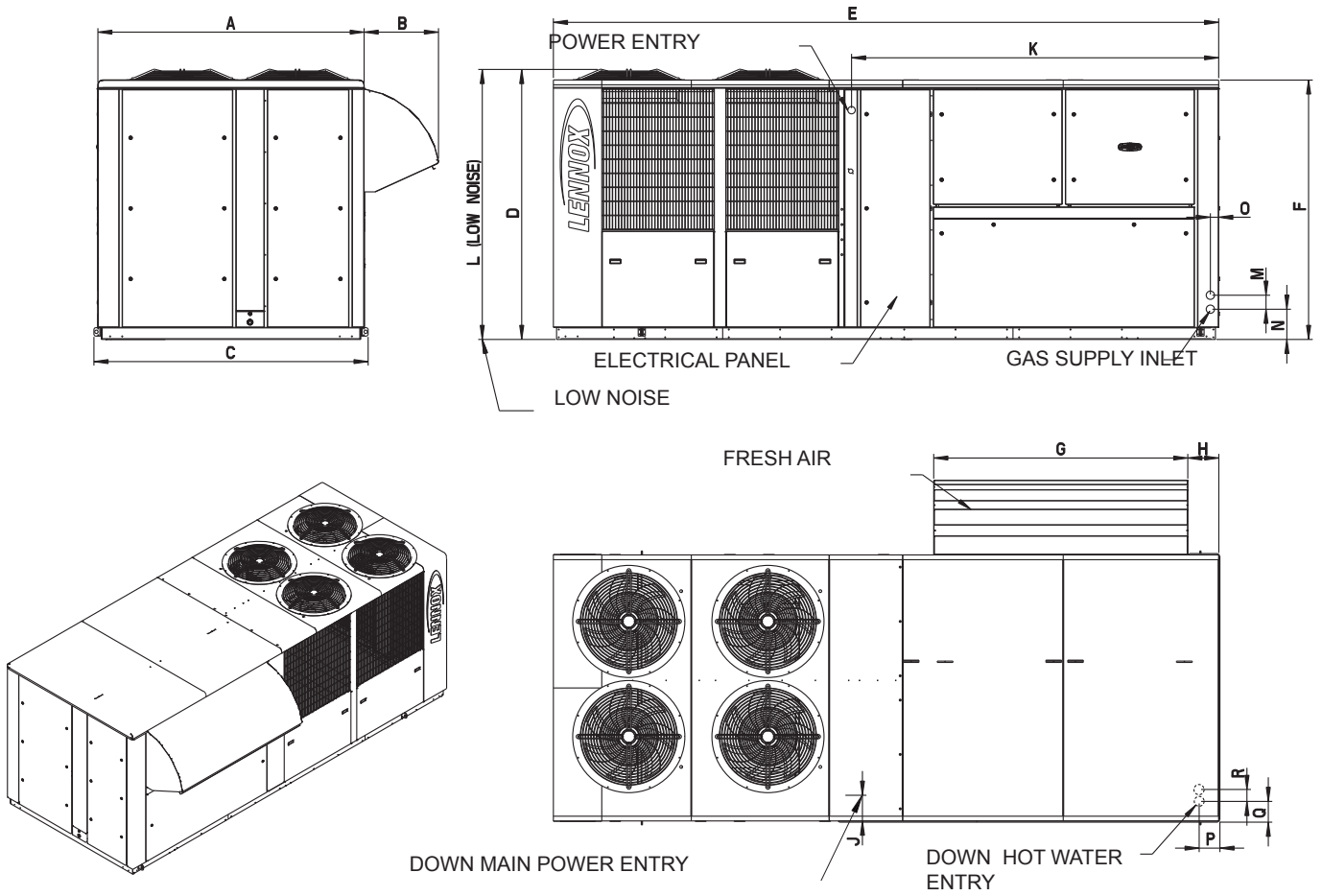
FC/FH FG/FD	85/100/120 150/170
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DIMENSIONS

	A	B	C	D	E	G	H	J	K	L	M	N	O	P	Q	R
<b>85-100-120</b>	2200	360	2285	1510	3350	1915	150	165	2222	1776	115	200	68	188	978	100
<b>150-170</b>	2200	450	2285	1834	4380	2100	255	165	2740	2095	115	200	68	187	978	100

FC/FH FG/FD	200/230
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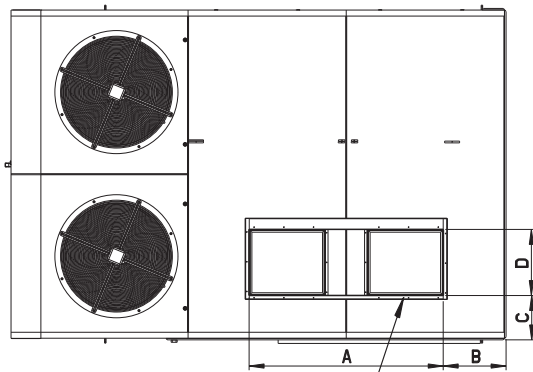
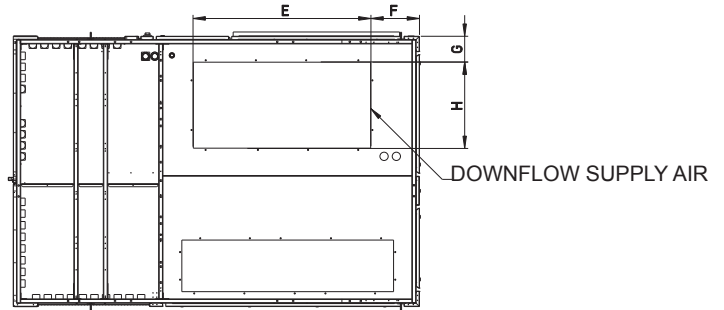
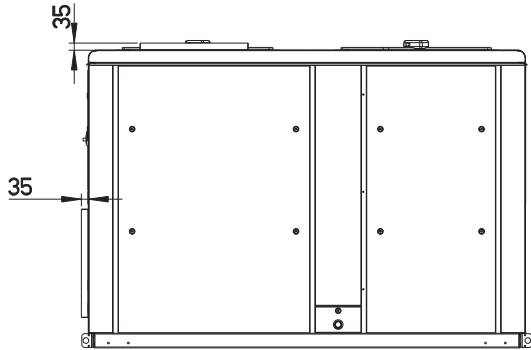


DIMENSIONS

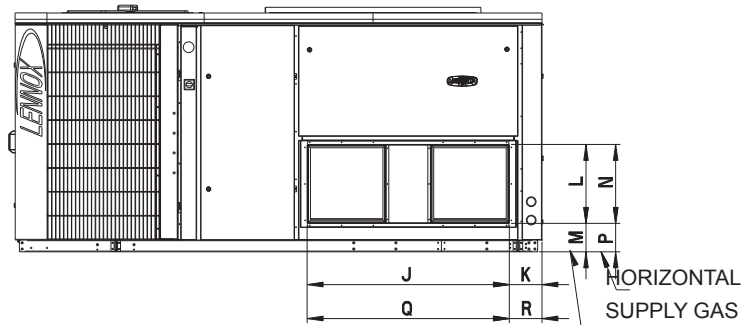
	A	B	C	D	E	G	H	J	K	L	M	N	O	P	Q	R
200-230	2200	615	2285	2134	5533	2100	255	165	3033	2395	115	250	68	161	161	100



FC/FH FG/FD	85/100/120 150/170
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UPFLOW SUPPLY AIR

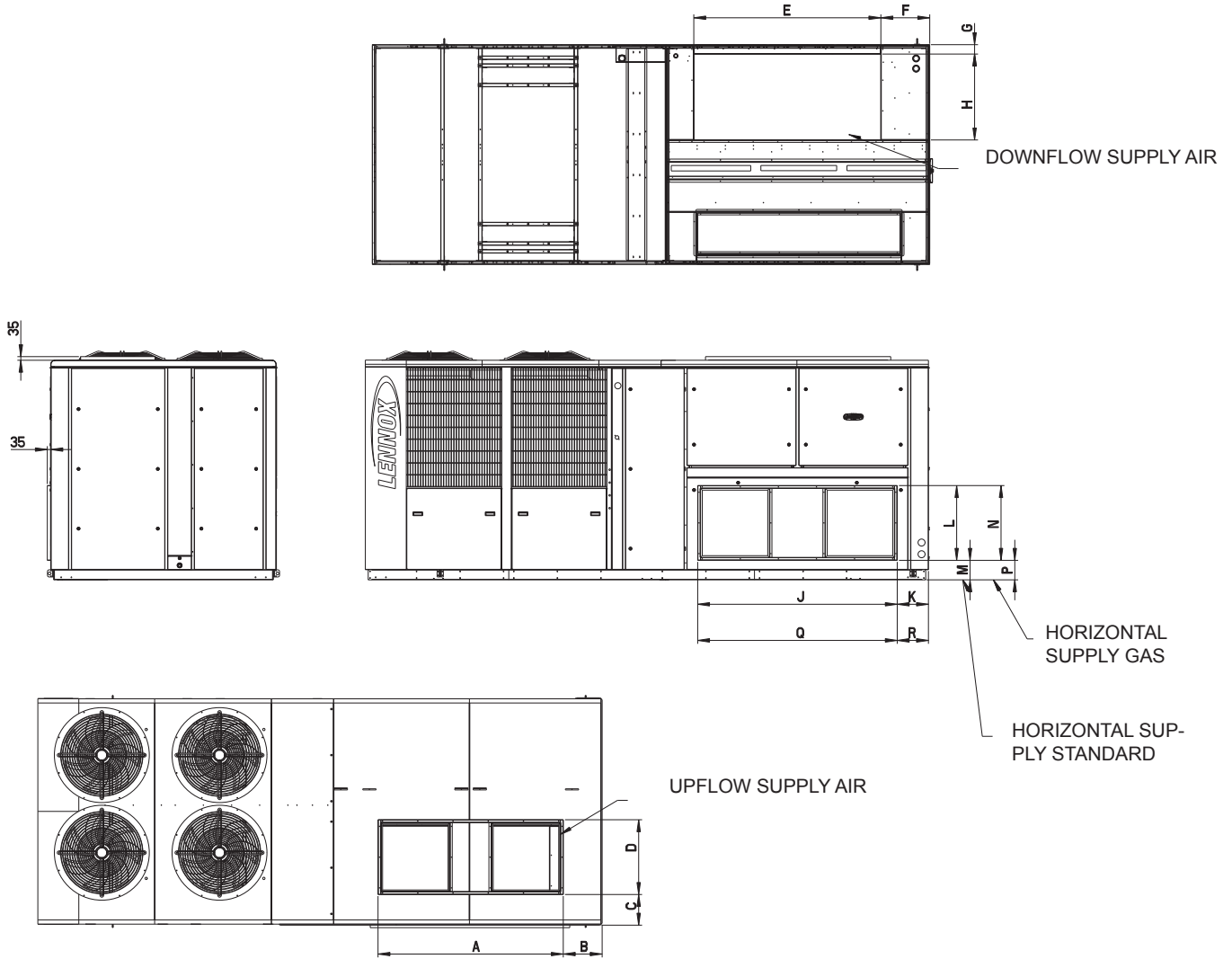


HORIZONTAL SUPPLY STANDARD

DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
<b>85-100-120</b>	1355	385	260	495	1430	410	210	700	1355	160	495	155	500	155	1090	410
<b>150-170</b>	1690	370	435	570	1540	505	210	700	1530	370	570	150	535	135	1440	545
Airflow configuration	Upflow supply				Downflow supply				Horizontal supply				Gas supply			

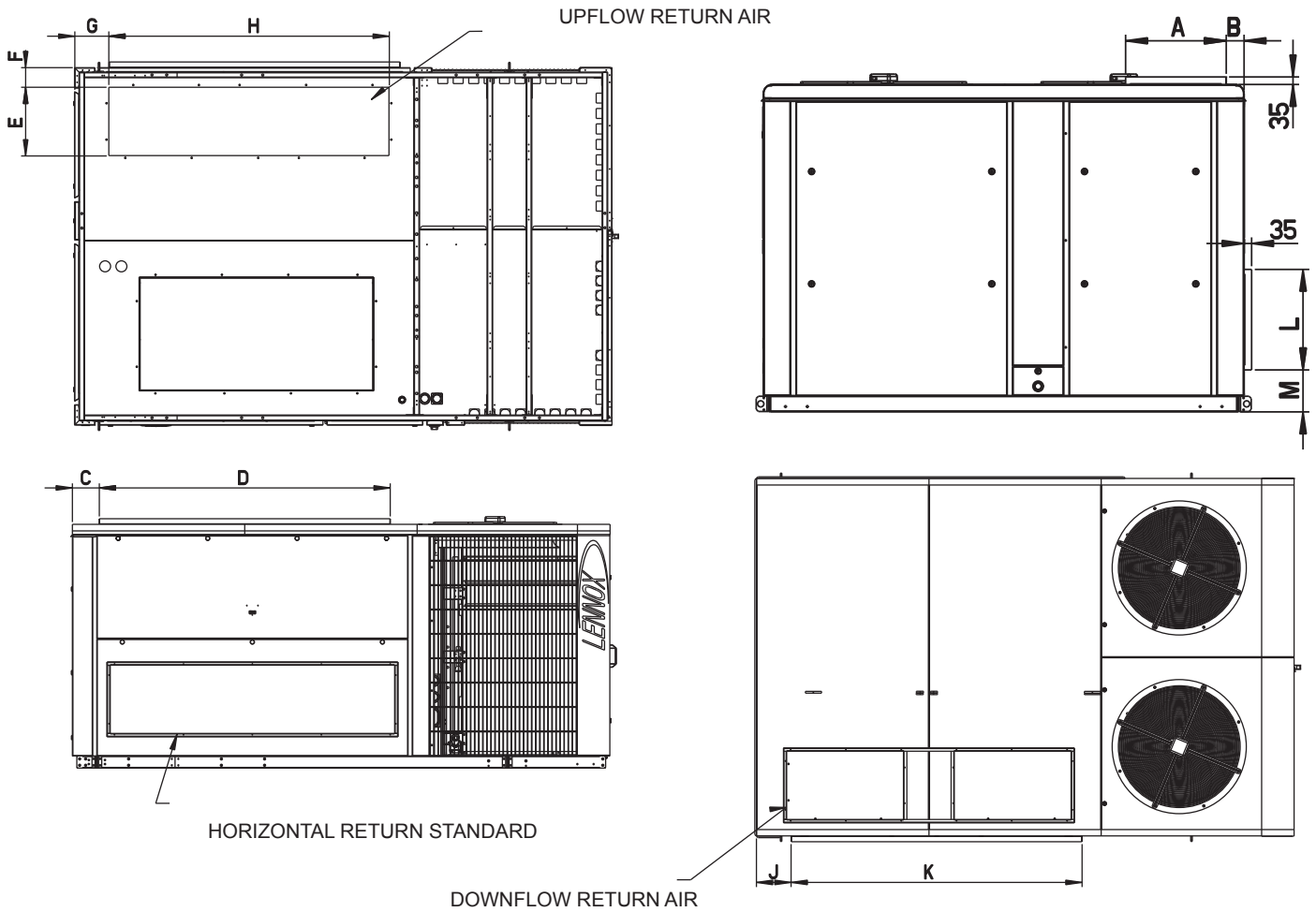
FC/FH FG/FD	200-230
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DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
<b>200-230</b>	2010	275	260	730	1827	505	120	840	2010	275	730	165	700	165	1700	500
Airflow configuration	Upflow supply			Downflow supply				Horizontal supply				Gas supply				

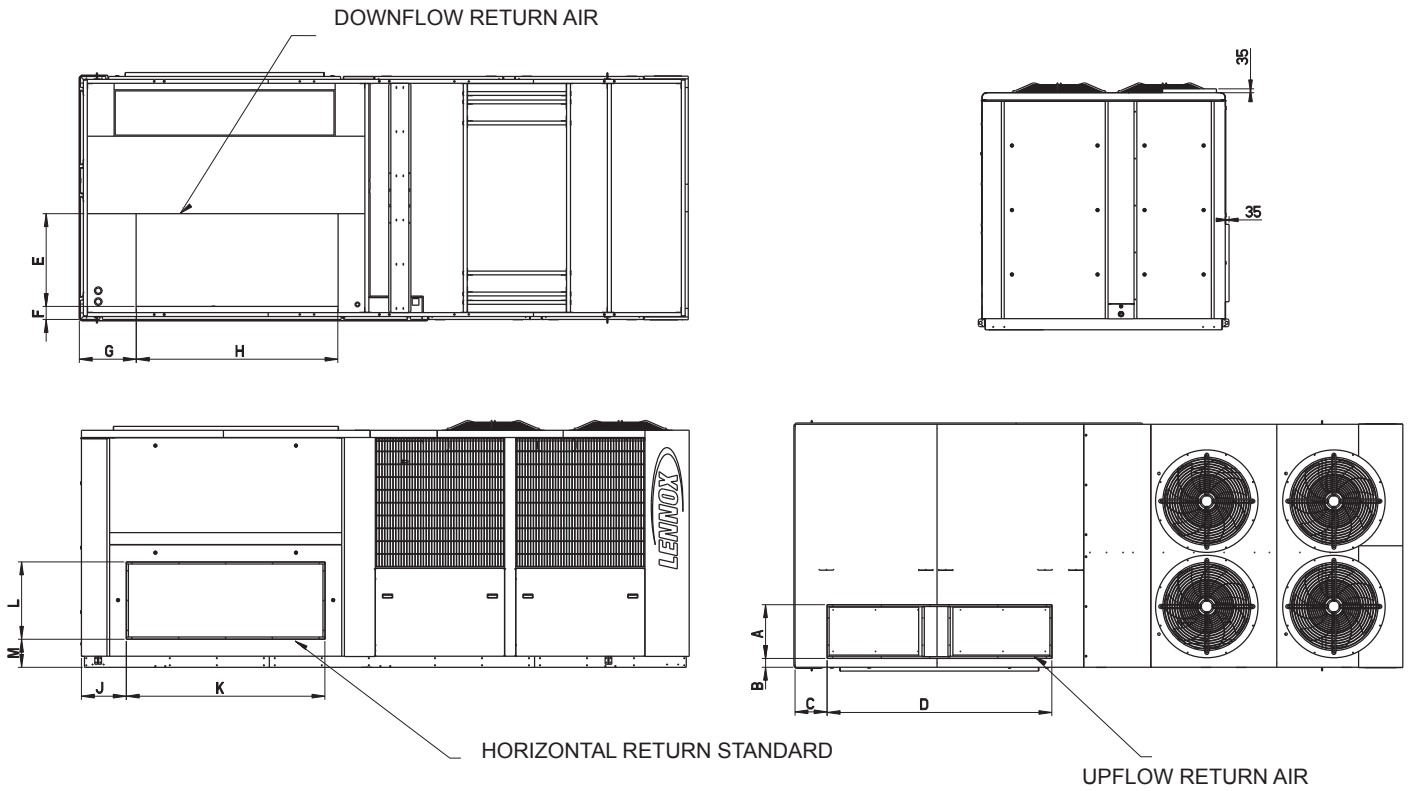
FC/FH FG/FD	85/100/120 150/170
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DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M
<b>85-100-120</b>	460	81	165	1790	420	120	200	1750	210	1790	460	185
<b>150-170</b>	490	80	287	2040	420	120	305	2000	405	1800	500	310
<b>Airflow configuration</b>	Upflow return				Downflow return				Horizontal return			

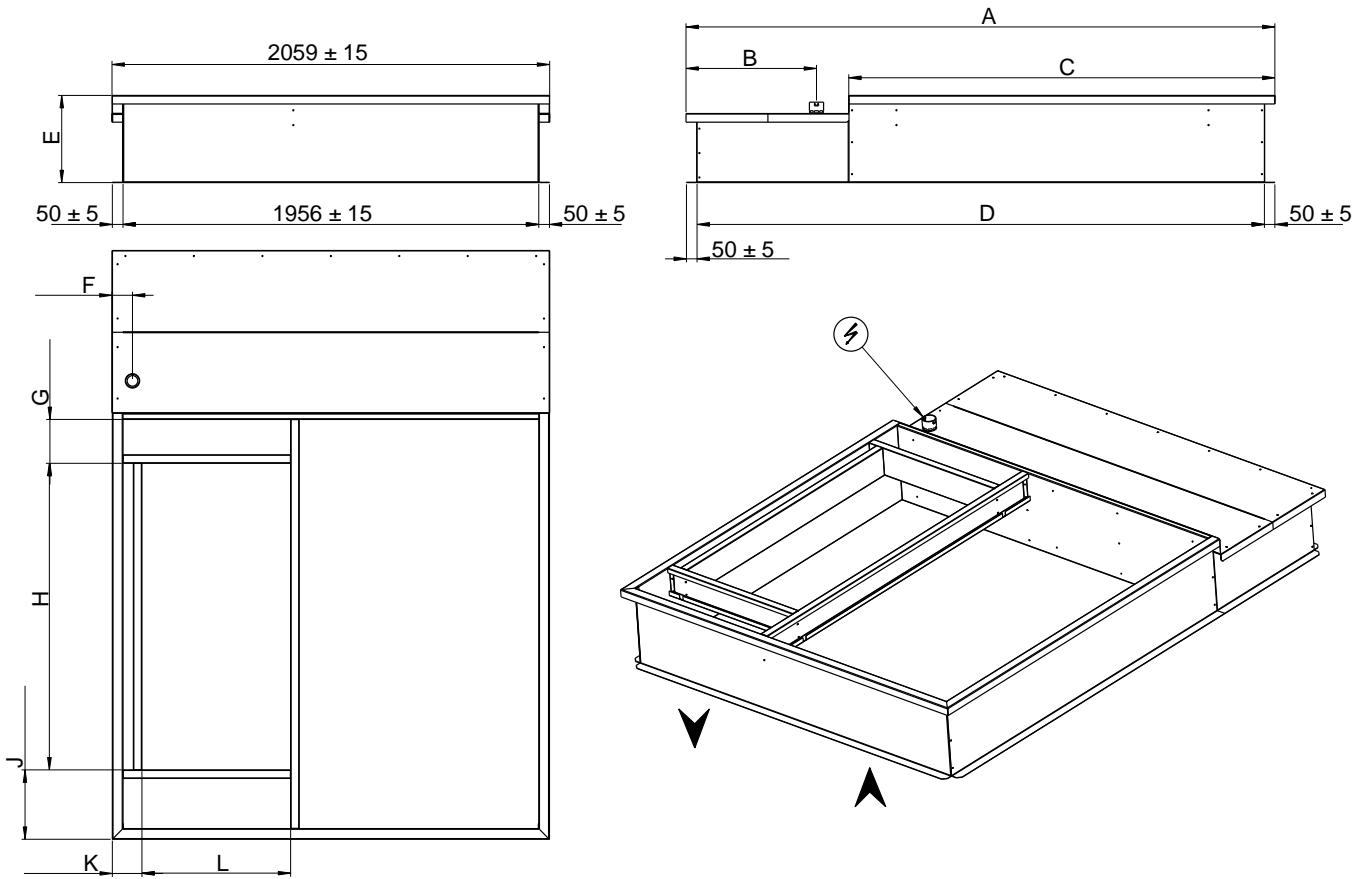
FC/FH FG/FD	200-230
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DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L	M
200-230	490	80	287	2040	420	120	305	2000	405	1800	700	305
Airflow configuration	Upflow return			Downflow return				Horizontal return				

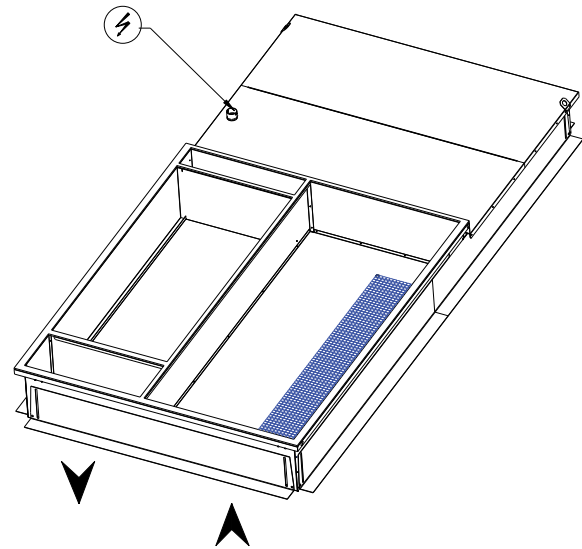
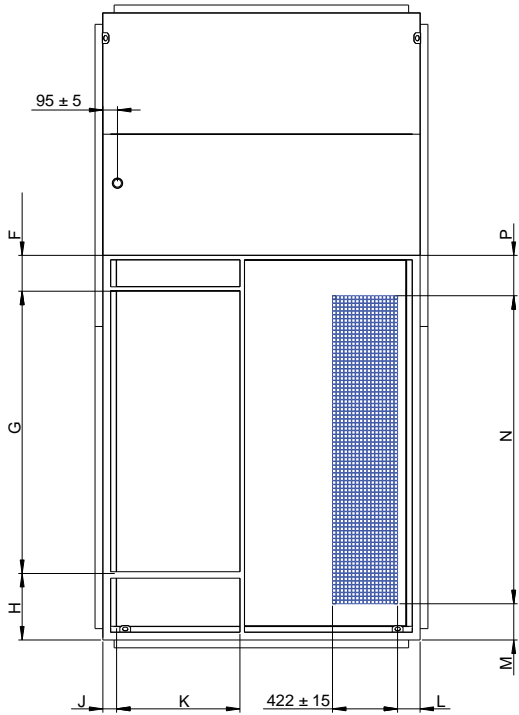
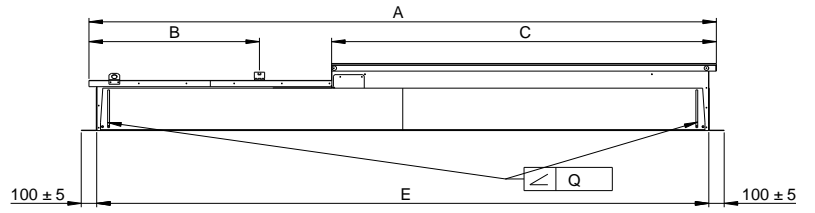
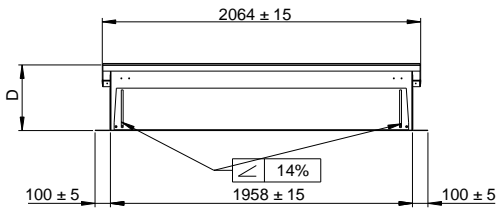
FC/FH  
FG/FD **ALL SIZES**



DIMENSIONS

	A	B	C	D	E	F	G	H	J	K	L
<b>85-100-120</b>	2771	614	2005	2669	410	96	207	1443	326	139	700
<b>150-170</b>	3466	800	2493	3365	410	95	491	1540	433	139	700
<b>200-230</b>	4066	1106	2493	3965	425	95	233	1830	432	89	800

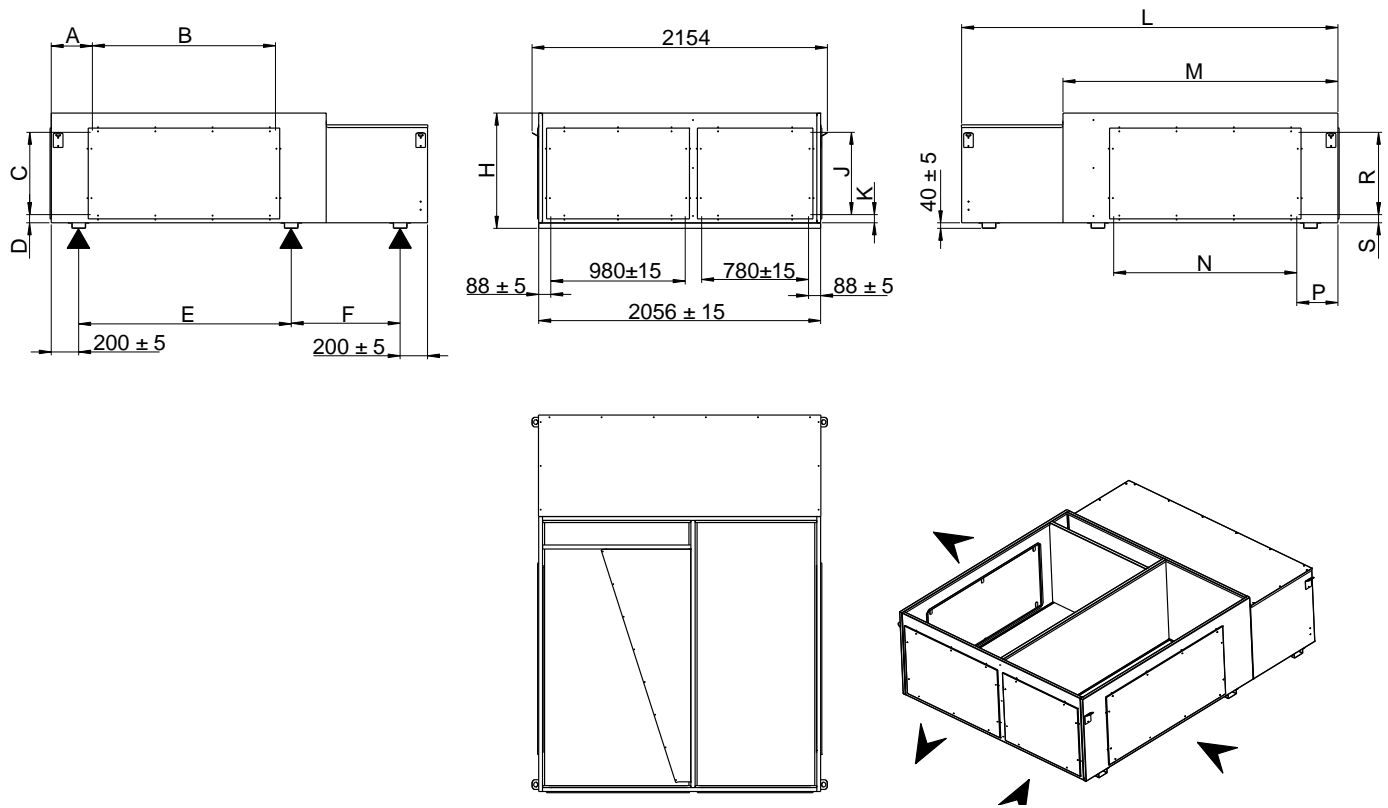
**FC/FH  
FG/FD**



**DIMENSIONS**

	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
<b>85-100-120</b>	2771	614	2006	400	2672	237	1443	326	140	700	145	131	1747	128	10 %
<b>150-170</b>	3467	800	2494	400	3368	520	1540	433	140	700	146	235	1997	230	8 %
<b>200-230</b>	4067	1105	2494	425	3968	232	1830	432	89	800	146	235	1997	262	6,6 %

**FC/FH  
FG/FD**

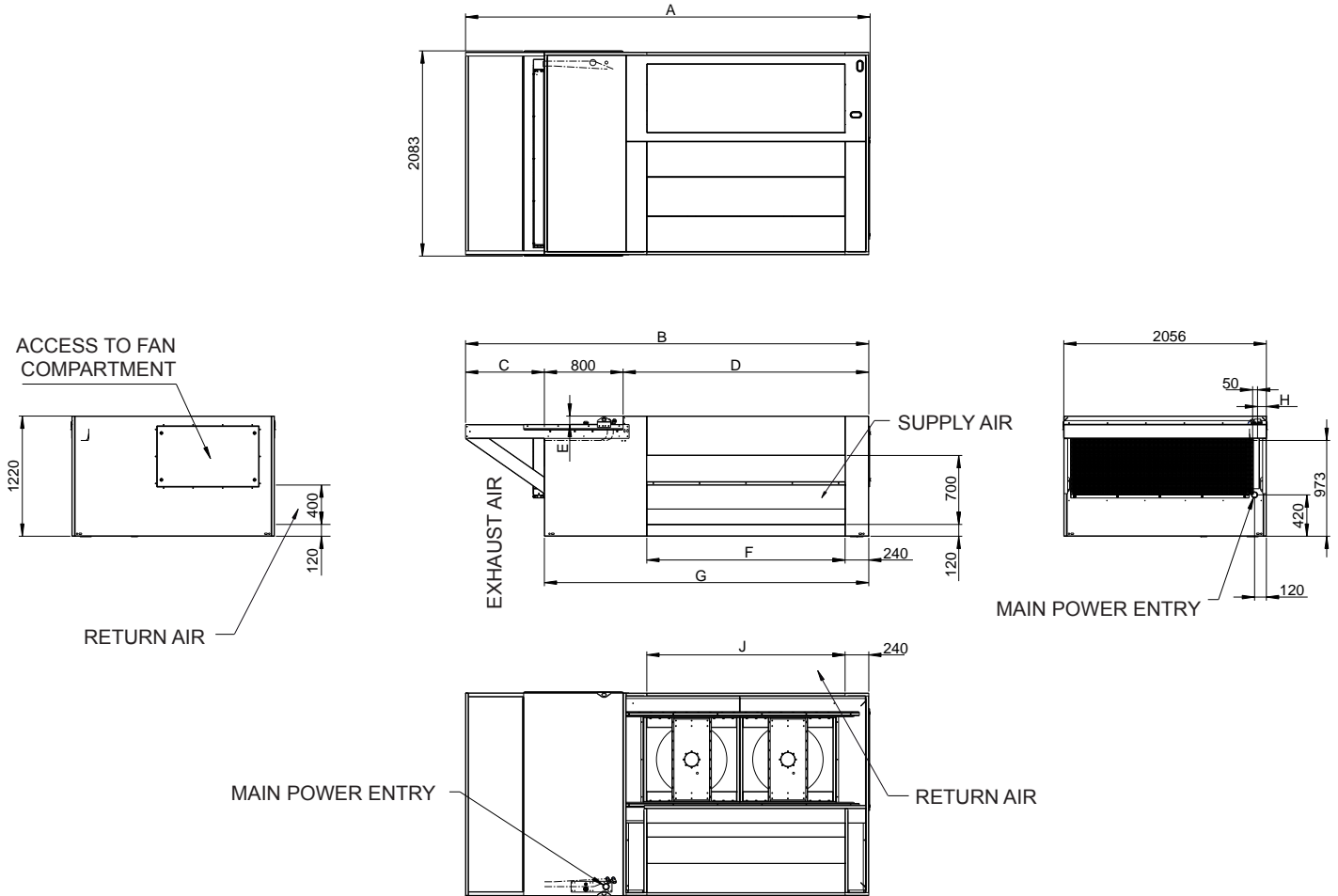


**DIMENSIONS**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>H</b>	<b>J</b>
<b>85-100-120</b>	300	1335	600	60	1550	794	840	600
<b>150-170</b>	229	1540	600	60	1799	1241	1140	900
<b>200-230</b>	322	1850	700	162	2093	1572	1340	1100

	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>	<b>P</b>	<b>R</b>	<b>S</b>
<b>85-100-120</b>	60	2744	2005	1335	300	600	60
<b>150-170</b>	60	3440	2493	1540	229	600	60
<b>200-230</b>	100	4067	2493	1850	332	700	160

**FC/FH  
FG/FD**

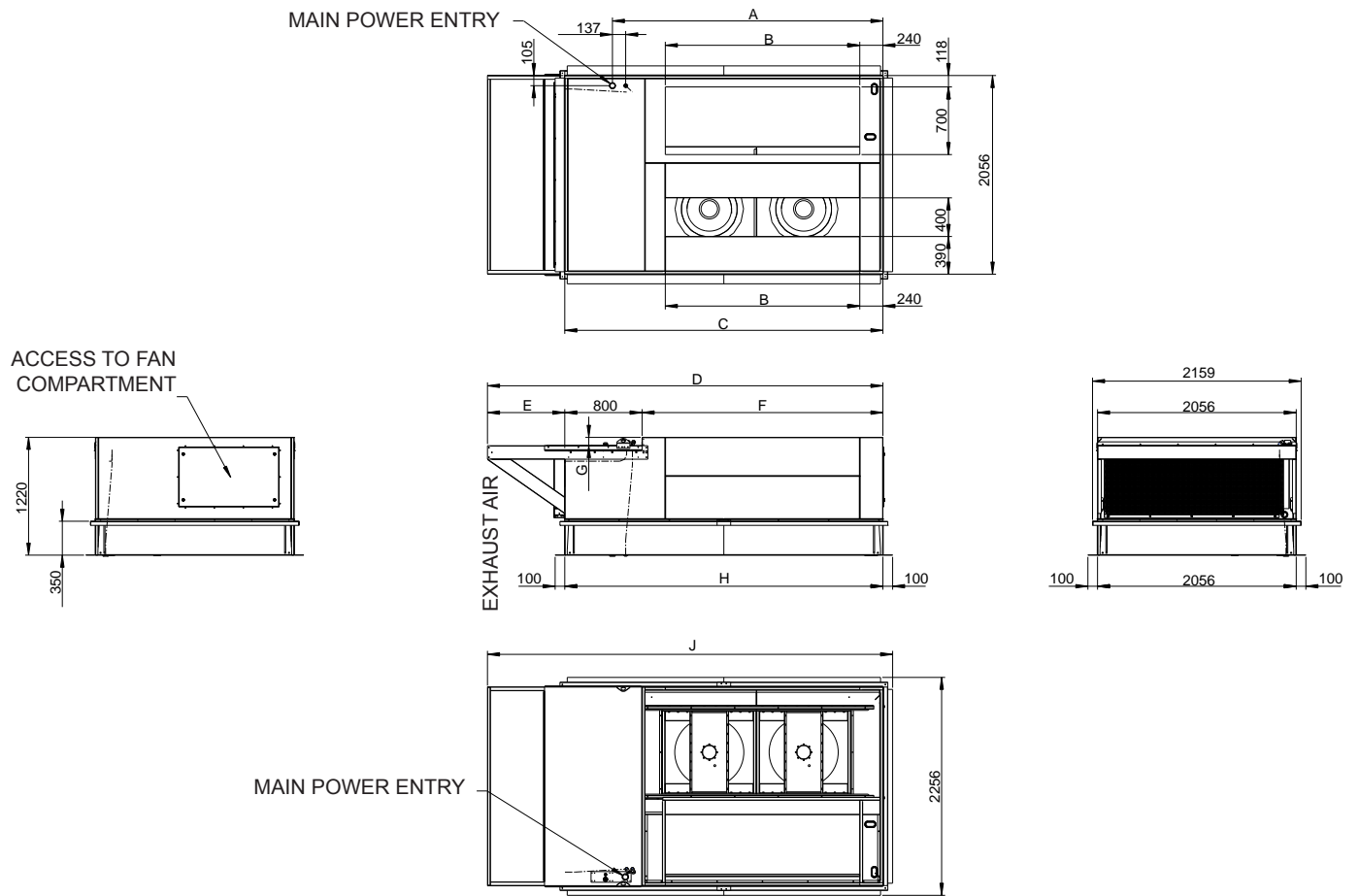


**DIMENSIONS**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>J</b>
<b>85-100-120</b>	3041	3016	-	2005	85	1525	2805	95	1525
<b>150-170</b>	4107	4093	800	2493	85	2013	3293	90	2013
<b>200-230</b>	4107	4093	800	2493	100	2013	3293	90	2013



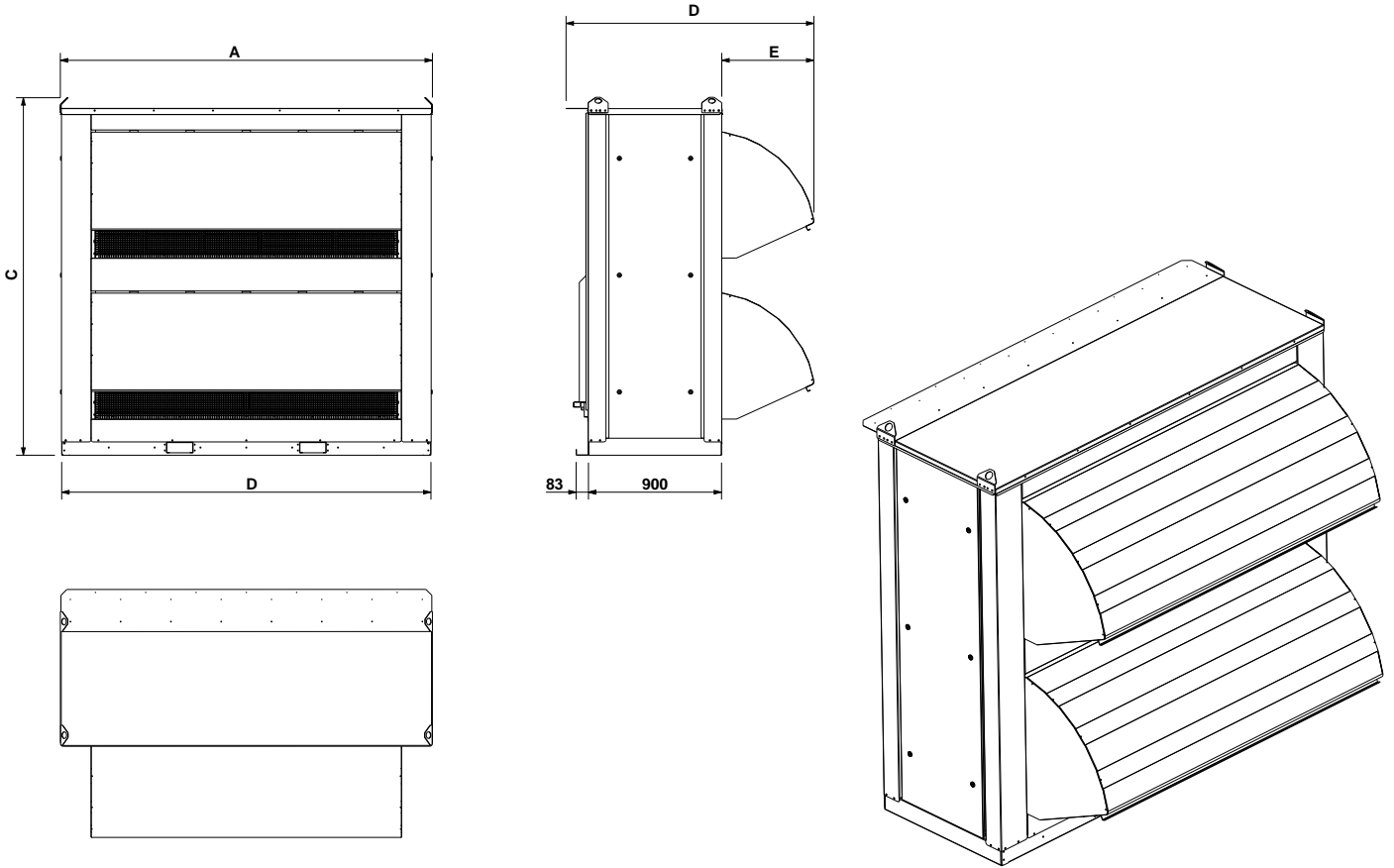
**FC/FH  
FG/FD**



**DIMENSIONS**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>J</b>
<b>85-100-120</b>	2312	1525	2805	3016	211	2005	85	2805	3127
<b>150-170</b>	2800	2013	3293	4093	800	2493	85	3293	4193
<b>200-230</b>	2800	2012	3293	4093	800	2493	100	3293	4193

FC/FH  
FG/FD



DIMENSIONS

	A	B	C	D	E
<b>85-100-120</b>	2146	2063	1796	1422	367
<b>150-170</b>	2330	2247	2170	1676	463
<b>200-230</b>	2516	2497	2418	1518	623

SIZE		85	100	120	150	170	200	230
Basic unit FCM	FCM	990	1065	1142	1442	1505	1752	2052
Basic unit FHM	FHM	1005	1080	1157	1472	1535	1782	2082
Basic unit FGM (S)	FGM (S)	1097	1172	1249	1683	1746	2016	2316
Basic unit FGM (H)	FGM (H)	1167	1242	1319	1706	1769	2056	2356
Basic unit FDM (S)	FDM (S)	1112	1187	1264	1713	1776	2046	2346
Basic unit FDM (H)	FDM (H)	1182	1257	1334	1736	1799	2086	2386
<b>Airflow configuration</b>								
Downflow return, horizontal supply		23	23	23	30	30	41	41
Horizontal return, horizontal supply		20	20	20	27	27	37	37
Horizontal return, downflow supply		5	5	5	7	7	9	9
Horizontal return, upflow supply		63	63	63	83	83	113	113
Upflow return, upflow supply		57	57	57	76	76	103	103
<b>Exhaust air options</b>								
Gravity exhaust damper for downflow return		14	14	14	19	19	21	21
Power exhaust fan axial + gravity exhaust damper downflow return		41	41	41	63	63	67	67
Extraction roofcurb vertical		499	499	499	547	547	729	729
Extraction roofcurb horizontal		474	474	474	557	557	711	711
Energy recovery module		525	525	525	635	635	730	730
<b>Filtration option</b>								
G4 metallic frame, washable filter		6	6	6	11	11	19	19
F7 Filters / G4 Prefilters		36	36	36	44	44	61	61
G4 Refilable filters		6	6	6	11	11	19	19
UV light		4	4	4	8	8	8	8
<b>Drive kits</b>								
<b>Drive kits</b> <b>Standard Units</b>  <b>Values to be added to basic units ones.</b>	K1	-2	-24	-24	-16	-30	-7	-40
	K2	0	-22	-22	-7	-22	-11	-45
	K3	0	-23	-23	0	-14	0	-34
	K4	8	-14	-14	-1	-15	33	-1
	K5	7	-15	-15	13	-1	32	-1
	K6	38	15	15	12	-3	64	31
	K7	21	-1	-1	6	-9	34	0
	K8	60	38	38	40	26	1	-33
	K9	-3	-25	-25	42	27	65	32
	K10	22	-1	-1	-2	-16	79	45
	K11	37	15	15	14	0	98	64
	K12	37	15	15	72	58	66	32
	K13	8	-14	-14	42	28	97	64
	K14	22	0	0	74	59		
	K15	60	38	38	111	97		
	K16	38	16	16	74	60		
	K17	92	70	70				
	K18	32	9	9				
<b>Drive kits</b> <b>Gas S &amp; H Units</b>  <b>Values to be added to basic units ones.</b>	K1	0	-5	-19	-7	-42	-44	-76
	K2	0	-5	-20	0	-35	-33	-65
	K3	5	0	-15	35	0	0	-32
	K4	13	8	-7	39	4	-1	-33
	K5	13	8	-7	71	36	31	-1
	K6	19	14	0	85	50	65	33
	K7	20	15	0	36	1	50	18
	K8	48	43	28	67	32	1	-32
	K9	20	15	0	85	50	32	0
	K10	52	46	32	99	64	46	14
	K11	84	78	64			64	32
	K12	80	75	60				
	K13	49	43	29				

<b>BASE</b>	<b>85</b>	<b>100</b>	<b>120</b>	<b>150</b>	<b>170</b>	<b>200</b>	<b>230</b>
<b><i>Heating options versus FCM or FGM</i></b>							
Electric heater (Standard heat) 2 steps	47	47	47	57	57	78	78
Electric heater (Medium heat) Modulating	64	64	64	78	78	103	103
Electric heater (High heat) Modulating	78	78	78	103	103	143	143
Hot water coil (Standard heat)	34	34	34	52	52	63	63
Hot water coil (High heat)	62	62	62	96	96	116	116
<b><i>Electric and safety options</i></b>							
Air sock control	1,5	1,5	1,5	1,5	1,5	1,5	1,5
<b><i>Other Options</i></b>							
Non adjustable non assembled roofcurb	94	94	94	108	108	128	128
Adjustable assembled roofcurb	158	158	158	184	184	222	222
Multi direction horizontalflow curb	237	237	237	332	332	395	395
Transition roofcurb	215	215	215	249	249	291	291
Refurbishment roofcurb	ND	ND	ND	ND	ND	ND	ND





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