



PRODUCTS
CATALOGUE
2023





FOR OVER 20 YEARS
WE HAVE BEEN
DEVELOPING
PRODUCTS AND SYSTEMS
FOR HEAT RECOVERY AND
AIR HANDLING TO ENSURE
COMFORTABLE AND
SAFE ENVIRONMENTS

SINCE 15 YEARS WE ARE
PIONEERS IN THE
INNOVATION
OF HEAT RECOVERY WITH
INTEGRATED HEAT PUMP
(DOUBLE HEAT RECOVERY).

**IN ORDER TO BRING THE
AIR COMFORT TO THE
MAXIMUM EFFICIENCY.**



Since 1996 LMF Clima designs and manufactures Air Handling Units specializing, over the years, in the heat recovery with very high efficiency.

Anticipating the evolution of the market in terms of energy efficiency, in 2004 LMF introduces a new range of heat recovery units with integrated heat pump (with double heat recovery), extending the range to larger air-handling units in the following years.

LMF presently sell their products to over 30 European and world markets, where the brand is acknowledged as a reference for the market sector thanks to their technological leadership.



Since 1980 Ferraro Group means QUALITY and SERVICE for the customers in the heating, air-conditioning and air-handling markets.

Today Ferraro Group operates with 3 Business Units:



B.U. CLIMA: manufacturing of heat recovery units and air-handling units;



B.U. PIPING: production of copper, steel and aluminium pipes;



B.U. TANKS, production of carbon steel and stainless steel tanks.

Certified Quality Systems, qualified operators and constant controls guarantee consistency with the highest manufacturing standards. Investments into innovative quality control systems are one of the company's founding

engagements, which translate into an elevated certified rating by the main operators of the market. The group employs around 200 people in 2 production facilities (Italy and Czech Republic).



The four main features of LMF Clima leadership and success.



LMF Clima designs and manufactures the units in Italy, in order to have a direct control on the production and on the quality of the materials and components used for the production of the units.

Since 20 years LMF CLIMA means technology and “Made in Italy” production, for a real and guaranteed production. Italian innovation, quality, flexibility and professionalism. V



INNOVATION

LMF Clima stands for INNOVATION since over 20 years.

Since 2004 LMF, anticipating the evolution of the market of ventilation with heat recovery, promotes the maximum efficiency with the double heat recovery with integrated heat pump circuit. A team of engineers and specialized technicians, with decade-long specific experience, is the founding hub for the capacity to perceive, design and realize new product and system solutions, in line with the norms and market trends.



QUALITY

LMF Clima stands for QUALITY since over 20 years.

QUALITY and certification of the production processes and RELIABILITY of the components used for LMF products, in order to guarantee the highest customer satisfaction.



FLEXIBILITY

LMF Clima stands for FLEXIBILITY since over 20 years.

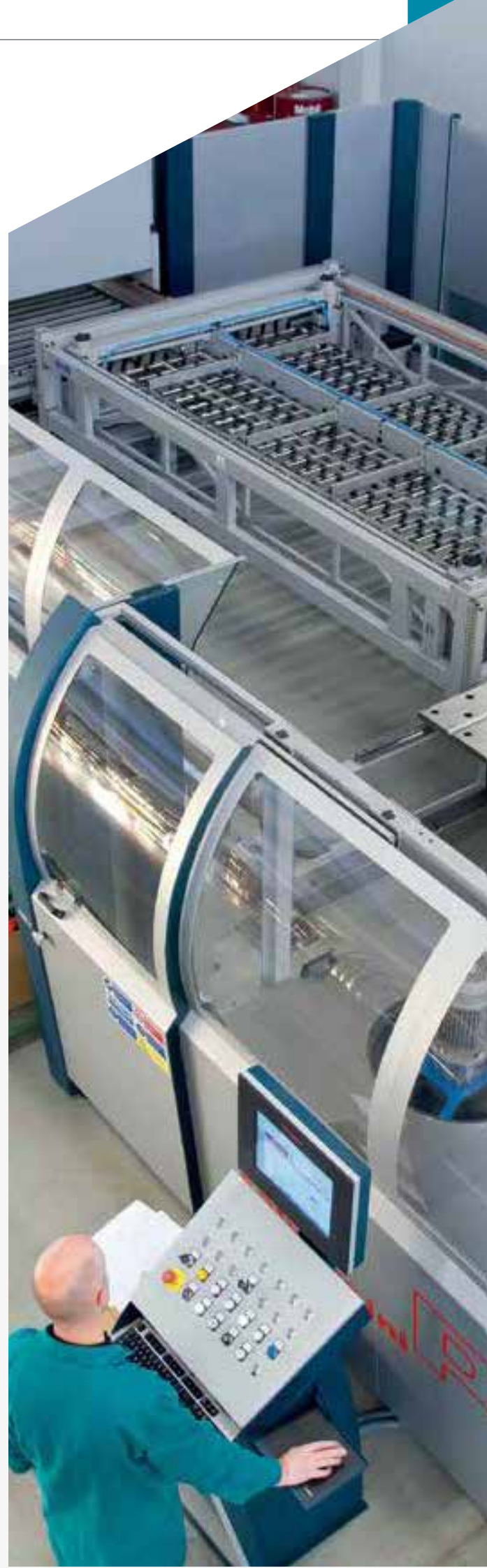
LMF listens to the requirements of all customers and markets, managing them with the pace and smartness of a solid, experienced partner.



PROFESSIONALISM

LMF Clima stands for PROFESSIONALISM since over 20 years.

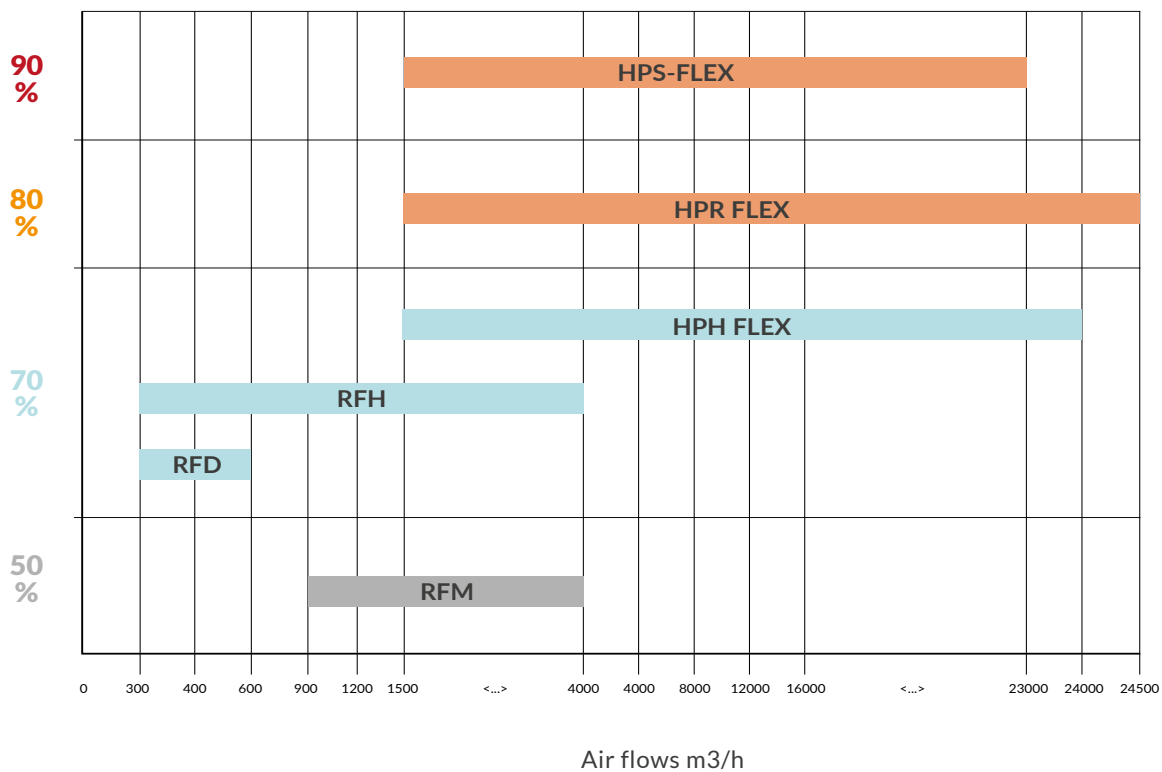
In LMF each collaborator is chosen non only considering the skills and technical capacity, but also in consideration of the passion for the product which he or she contributes to create, produce and sell.



Complete range of "ABSOLUTE HEAT RECOVERY", (with heat pump) and heat recovery for every application

A wide and complete range of heat recovery and air handling units. LMF Clima offers a choice of 50 models, with either plate or rotary heat recovery unit, single or double recovery (with integrated heat pump), from 100 m³/h to 25.000 m³/h in order to cover each and every requirements for the commercial, industrial and non-residential applications.

ABSOLUTE HEAT RECOVERY: RANGE OF AIR FLOWS AND EFFICIENCIES



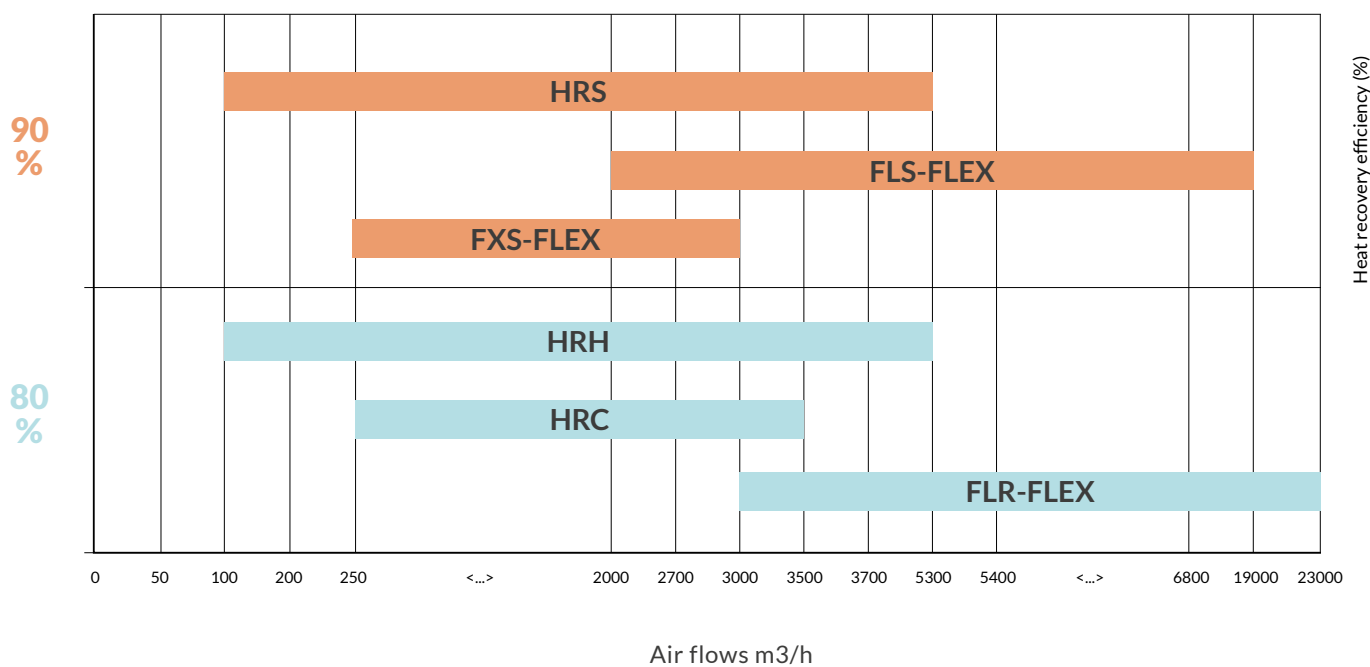
RF RANGE



HP-FLEX RANGE



HEAT RECOVERY: RANGE OF AIR FLOWS AND EFFICIENCIES



from 100 m³/h
to 25.000 m³/h

PRODUCT RANGE

A wide and complete range of heat recovery and air handling units. LMF Clima offers a choice of 50 models, with either plate or rotary heat recovery unit, single or double recovery (with integrated heat pump), from 100 m³/h to 25.000 m³/h in order to cover each and every requirements for the commercial, industrial and non-residential applications.

From 100 m³/h to 25.000 m³/h
to satisfy every installation requirement

The -FLEX product ranges are Eurovent certified.
Visit the site:
www.eurovent-certification.com



ABSOLUTE HEAT RECOVERY (with heat pump)

pag. 14



HPS-FLEX

Heat recovery unit with modulating heat pump circuit very high efficiency plate heat recovery from 1.500 to 23.000 m³/h

pag. 18



HPR-FLEX

Heat recovery unit with modulating heat pump circuit high efficiency rotary heat recovery from 1.500 to 24.500 m³/h

pag. 22



HPH-FLEX

Heat recovery unit with modulating heat pump circuit high efficiency plate heat recovery from 1.500 to 24.000 m³/h

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RFH

Heat recovery unit with modulating heat pump circuit high efficiency plate heat recovery from 300 to 4.000 m³/h

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RFD

Heat recovery unit with modulating heat pump circuit and summer dehumidification high efficiency from 300 to 600 m³/h

pag. 34



RFM

Heat recovery unit with on/off heat pump circuit plate heat recovery from 900 to 4.000 m³/h

HEAT RECOVERY UNIT

HRS

Heat recovery unit
with 90% efficiency
from 100
to 5.300 m³/h



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FLEX

Air handling unit

from 1000
a 20.000 m³/h



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HRH

Heat recovery unit
with 80% efficiency
from 100
to 5.300 m³/h



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The -FLEX product family (with thermal break profiles and rock wool insulation) has been expanded with the introduction of the FXS-FLEX range.

HRC

Heat recovery unit
with 80% efficiency
from 250
to 3.500 m³/h



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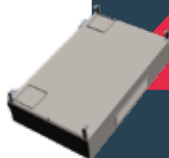
pag. 68

FXS-FLEX

Heat recovery unit with
90% efficiency
from 250
a 3.000 m³/h

HVS

Highly efficient heat
recovery unit
from 200
a 1.100 m³/h



pag. 50

The H product family has been expanded with the introduction of the HVS range.

FLS-FLEX

Heat recovery unit
with 90% efficiency
from 2.000
to 19.000 m³/h



pag. 54

LMF SEVIO

Remote management and
control



pag. 72

FLR-FLEX

Heat recovery unit with
80% efficiency
from 3.000
to 23.000 m³/h



pag. 58

KVIR-P

Air sanitation modules
with plasma technology and
antivirus filter
from 400 to 16.000 m³/h



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ABSOLUTE HEAT RECOVERY

(with heat pump)

MAIN FEATURES

These are independent units destined to changing the air at neutral temperatures (that is at the same temperatures present inside the room to be treated, in both summer and winter) and to the thermal treatment of the air. According to the external ambient conditions (external air and room extract air) the units may even cover - partially or totally - the winter/summer thermal loads, depending on the characteristics of the building and its use.



COMPLIANT
ERP 2018



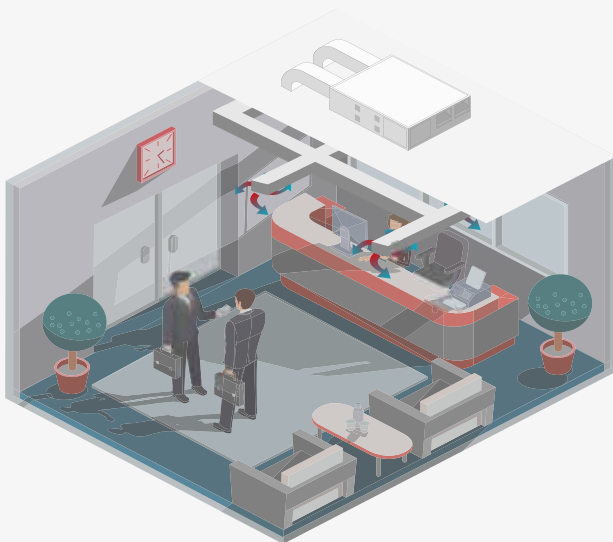
PLUG&PLAY



EC FANS



HP



HPS-FLEX

Heat recovery unit
with modulating
heat pump circuit
very high efficiency
plate heat recovery

from 1.500 to 23.000 m³/h



HPR-FLEX

Heat recovery unit
with modulating
heat pump circuit
high efficiency
rotary heat recovery

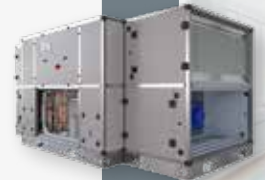
from 1.500 to 24.500 m³/h



HPH-FLEX

Heat recovery unit
with modulating
heat pump circuit
high efficiency plate heat
recovery

from 1.500 to 24.000 m³/h



RFH

Heat recovery unit
with modulating
heat pump circuit
high efficiency
plate heat recovery

from 300 to 4.000 m³/h



RFD

Heat recovery unit with
modulating heat pump circuit
and summer dehumidification
high efficiency

from 300 to 600 m³/h



RFM

Heat recovery unit with on/off
heat pump circuit
plate heat recovery

from 900 to 4.000 m³/h





90%



80%



70%



70%



70%



50%

RECOVERY EFFICIENCY



WHY CHOOSE THIS RANGE

- It neutralizes the thermal loads associated with the fresh air, supplying an air flow to the room at average temperature conditions, thanks to the double heat transfer taking place between the external air and the exhaust air.

1
- It guarantees a sensible energy saving thanks to the adoption of a double heat recovery system (plate or rotary type) with integrated heat pump.

2
- It is easy to match with the new Kvir-P modules (with plasma technology and anti-virus filters) for the sanitation of treated air.

3

What do we mean by "ABSOLUTE HEAT RECOVERY"

LMF offers a complete range of heat pump recovery units, RF and HP-FLEX ranges, which are an innovative solution compared to the traditional solution used in heat recovery. In a standard heat recovery unit, the energy in the extracted air is only "passively" recovered, even in the case of a very high efficiency recuperator (i.e. the range HRS).

In the ranges of absolute heat recovery units, the energy of the extracted air not fully recovered passing inside the passive exchanger (cross-flow), it is "absolutely" recovered by the evaporating coil (in winter operation) of the heat pump circuit, thus reaching levels of "absolute" recovery efficiency compared to a standard recuperator.

The RF- and HP- product range were designed by LMF on the basis of the concept of "absolute recovery", therefore a first energy recovery on the extracted air carried out by the first recuperator (static or rotary), and a second recovery carried out by means of a heat pump circuit (thermodynamic recovery).

This allows to obtain the maximum result, in terms of efficiency and the supply of primary air at neutral temperature, with the minimum possible energy intake, thus reducing the heat pump circuit and general energy absorptions, with an easier and cost-effective solution compared to other possible systems like AHU-external condensing unit.

ABSOLUTE HEAT RECOVERY



RFH 24

air flow
2.000 mc/h

external
temperature

-5°C

HIGH EFFICIENCY
TRADITIONAL
HEAT RECOVERY



HRH 30

INLET
temperature

22°C

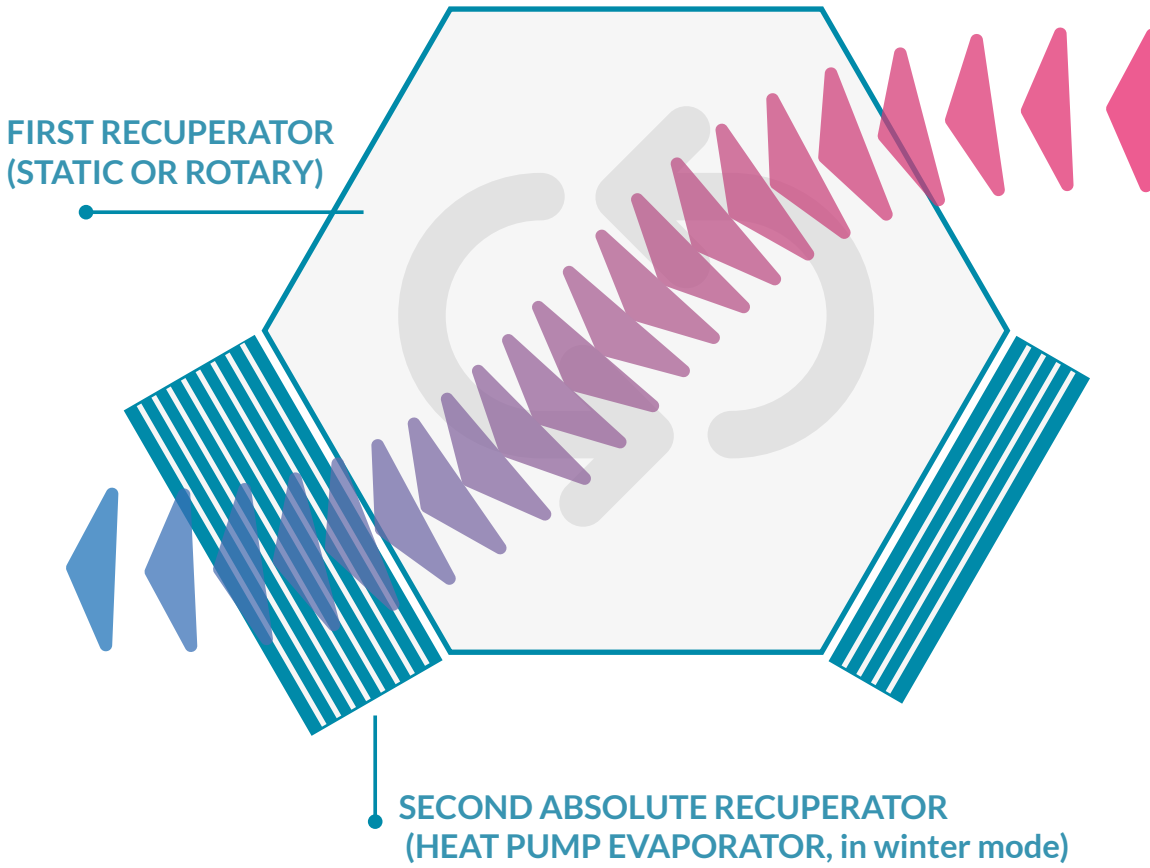
Heat pump total power input: 2,8 kW

room
temperature

20°C

INLET
temperature

17°C



ABSOLUTE HEAT RECOVERY

HPS-FLEX 205



external temperature

-5°C

air flow
17.000 mc/h

INLET temperature
22 °C

Heat pump total power input: 4,4 kW

room temperature

20 °C

HIGH EFFICIENCY TRADITIONAL HEAT RECOVERY

FLS-FLFLEX 205



INLET temperature
17 °C

HPS-FLEX



Heat recovery unit
WITH HIGH EFFICIENCY
MODULATING HEAT
PUMP CIRCUIT AND
COUNTER-FLOW HEAT RECOVERY
from 1.500 to 23.000 m³/h

The high efficiency recovery units with integrated heat pump circuit have been designed and created for commercial and industrial applications and combine the need for air recirculation with maximum energy saving, thanks to the adoption of very high efficiency components. By their very nature, they are units that are generally well suited for use within traditional heating/cooling systems, even if, under certain environmental conditions, they can be used completely autonomously.



HOSPITALS



SCHOOLS



SHOPPING CENTRES

40°C

23.000
m³/h

-20°C

1.500
m³/h

HEAT PUMP



PLATES



EFFICIENCY



DEHUMIDIFY

EC
FANSINVERTER
COMPRESSORS

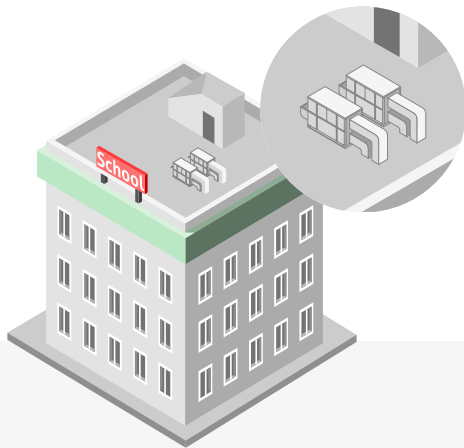
PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATION

R410A

ADVANTAGES

- Very high recovery efficiency
- Reduced energy consumption
- Separate flow plate recovery unit suitable for hospital use
- Integration with the most common supervision systems
- Easy to install



HPS-FLEX OPERATION

The units in the HPS range recirculate the air in the environments to be treated, recovering up to 90% of the air exhaust and containing the additional energy supply to reach the air intake temperature in the environment.

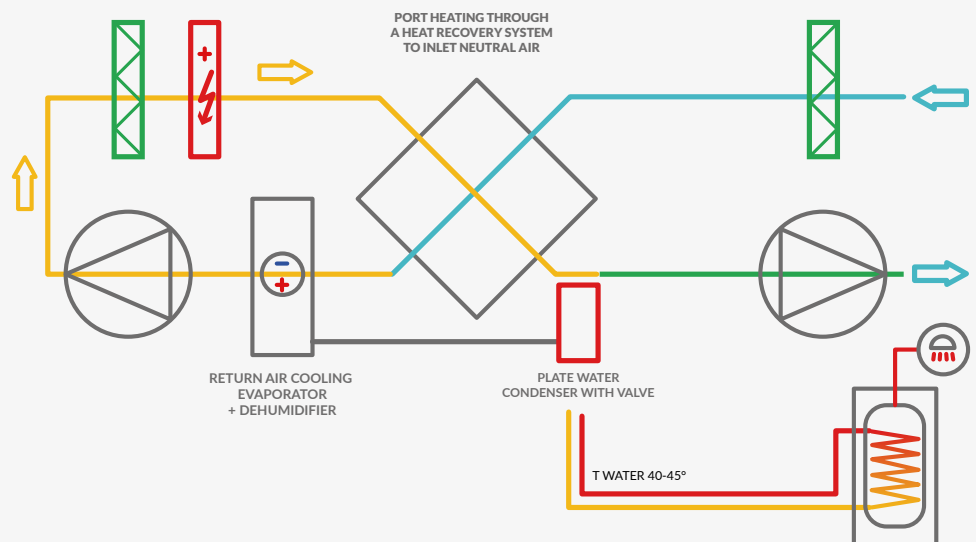
An additional kit is used to dehumidify the ambient air in summer.

KIT SUMMER DEHUMIDIFIER (AVAILABLE FOR SIZES 35/50/80/92 RIGHT VERSIONS)

KIT COMPOSITION:

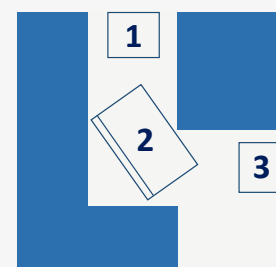
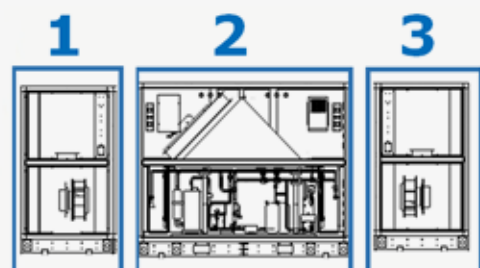
- 3 modulating damper
- Plate water condenser with valve
- Humidity sensor

Outside air goes through a heat recovery system before entering the building. The heat recovery system has the function of post heating the air after going through the dehumidifying process. During the dehumidifying process the unit produces warm water (with a temperature of 45°C) for free use (e.g. boiler DHW).



MODULARITY

The new configuration of the HP units, into 3 sections at the time of installation, allows easier handling and the installation of additional accessories on site (e.g. silencers, additional filters, coils).



TECHNICAL SPECIFICATIONS

- Supporting structure in extruded aluminium profiles, panels (th. 42 mm), sandwich type, with special sealing gaskets; external finish RAL 9002; thermoacoustic insulation in high density 0 class rockwool.
- Filter sections on recirculation air in efficiency class ISO ePM1 50% and ISO ePM10 50% on return air.
- Fan sections with backward curved blade plug-fans, directly coupled to EC brushless electronic motors.
- Static air-to-air flow recovery unit with high efficiency countercurrent flows, Eurovent certified, equipped with aluminium exchange plates complete with bypass damper for free-cooling and modulating servomotor
- Thermodynamic recovery section created with R410A reversible refrigerant circuit, consisting of: EC twin rotary brushless hermetic compressor(s) with dedicated inverter, Cu/Al finned tube evaporator/condenser, electronic expansion valve, cycle reversing valve, high pressure switch, high and low pressure transducers, liquid separators and receivers.
- Electrical panel complete with on-board machine display and microprocessor to manage the temperature set-point in supply, based on operating logics designed to maximise energy savings and environmental comfort, thanks to the modulation of cooling capacity and air flow guaranteed by the inverter technology. The unit is prepared for connection via RS485 to supervision systems based on Modbus RTU/Modbus RTU/RS 485/Modbus TCP/IP protocol; Bacnet TCP; Webserver.

ACCESSORIES

| | |
|--|-----------------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| Electric pre-heater | SKEp |
| Modulating electric reheater | SKEr |
| Ball siphon kit | BTS |
| Hot water preheater coil with valve | SKWp V33 |
| Hot water reheater coil with valve | SKWr V33 |
| Heating/cooling coil section | CCS V33 |
| Twin damper with modulating servomotors | SKR2 |
| F9 (ISO ePM1 85%) fresh air filter | FC9 |
| Air Filter pressure switch | PSTD |
| Differential pressure sensor – constant airflow | DPSa |
| Differential pressure sensor – constant pressure | DPSp |
| CO2 sensor | AQS |
| Twin sound attenuator | SILm/SILf |
| Room winter temp. Speed-up kit | MRE/MRW |
| Dehumidification kit | DEU |
| Flexible connection | GAT |
| Rain Hood | CFA A/ CFA B |
| Roof cover | TPR/ TPRs/ TPRc |

MODELS

| HPS-FLEX | | | 35 | 50 | 80 | 92 | 144 | 205 | 250 |
|---------------------------|-----|-------------------|------|------|------|------|-------|-------|-------|
| Airflow | Nom | m ³ /h | 2800 | 4500 | 6200 | 8100 | 11000 | 14000 | 17500 |
| Available static pressure | Nom | Pa | 250 | | | | | | |
| sound power at 1 m | Nom | dB(A) | 65 | 68 | 74 | 78 | 73 | 78 | 76 |

Summer dehumidification kit available (DEU)

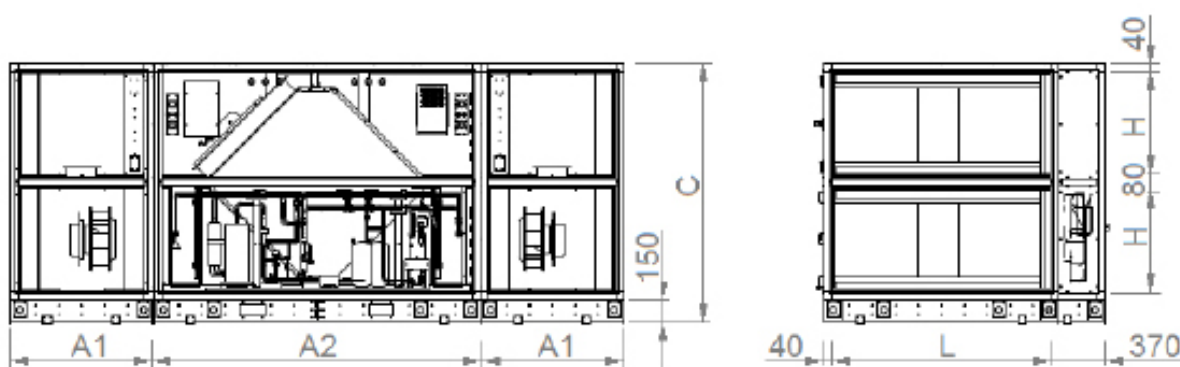
(A) Input temperature $\leq 20^{\circ}\text{C}$; balanced air flow rates

(B) Input temperature $\geq 22^{\circ}\text{C}$; balanced air flow rates

(1) outdoor air at -10°C 90% RH, ambient air at 22°C 50% RH; nominal air flow rate

(2) outdoor air at 32°C 50% RH, ambient air at 26°C 50% RH; nominal air flow rate

(3) with ventilation regulation signals and heat pump at the maximum permissible value



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/hps-flex or by scanning the QR code with your smartphone



HPR-FLEX



Heat recovery unit
WITH MODULATING HEAT PUMP
CIRCUIT AND A ROTARY
HEAT RECOVERY
from 1.500 to 24.500 m³/h

The high efficiency heat recovery units with integrated HPR refrigerant circuit have been designed and created for commercial and industrial applications and combine the need for air recirculation with maximum energy saving, thanks to the adoption of very high efficiency components. By their very nature, they are units that are generally well suited for use within traditional heating/cooling systems, even if, under certain environmental conditions, they can be used completely autonomously.



HEAT PUMP



ROTARY



EFFICIENCY

EC
FANSINVERTER
COMPRESSORS

PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATION

R410A

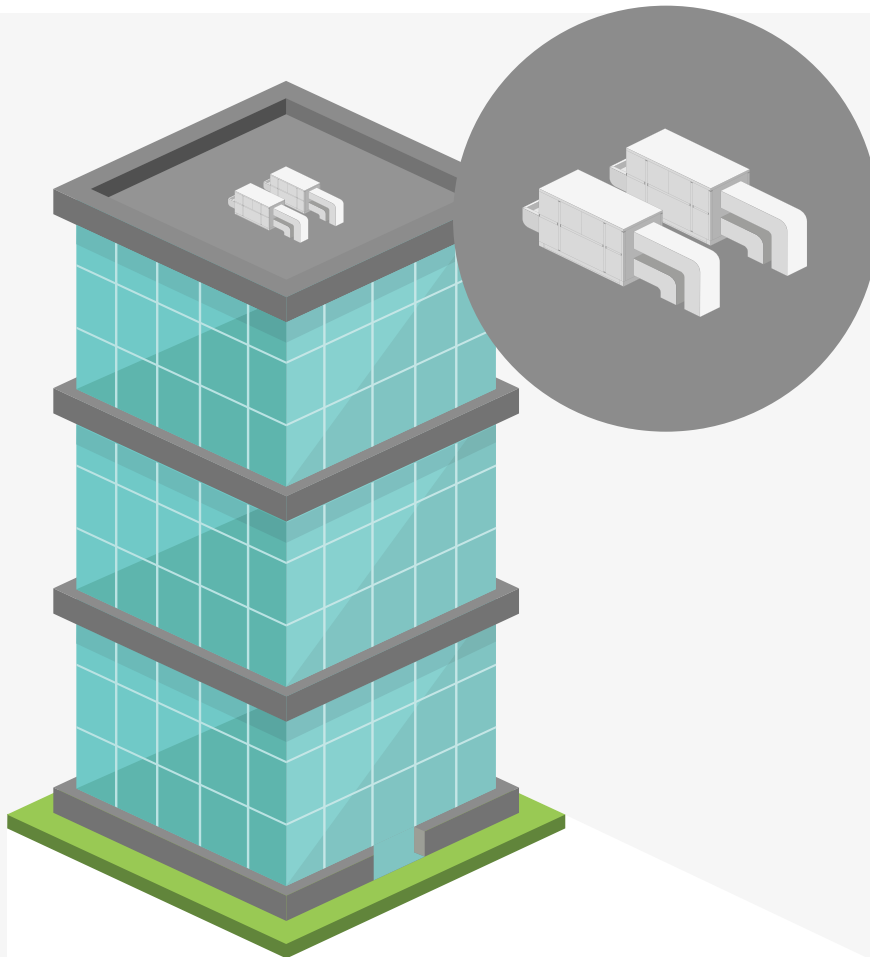
ADVANTAGES

- High recovery efficiency
- Reduced energy consumption
- Humidity recovery with the rotary wheel
- Integration with the most popular supervision systems
- Easy to install

HPR-FLEX OPERATION

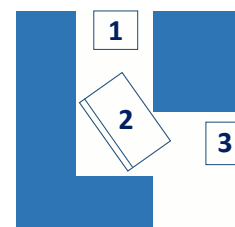
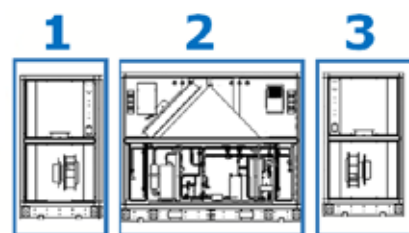
The units of the HPR range recirculate the air in the environments to be treated, recovering up to 80% of the air exhaust together with humidity recovery thanks to enthalpy heat recovery.

The double recovery allows reduction of the energy consumption necessary to reach the temperature of the air introduced into the environment.



MODULARITY

The new configuration of the HP units, into 3 sections at the time of installation, allows easier handling and the installation of additional accessories on site (e.g. silencers, additional filters, coils).



TECHNICAL SPECIFICATIONS

- Supporting structure in extruded aluminium profiles, panels (th. 42 mm), sandwich type, with special sealing gaskets; external finish RAL 9002; thermoacoustic insulation in high density 0 class rockwool.
- Filter sections on recirculation air in efficiency class ISO ePM1 50% and ISO PM10 50% on return air.
- Fan sections with plug fans with backward blades, directly coupled to EC brushless electronic motors.
- Storage type heat recovery unit with high efficiency (> 75%) enthalpy rotor in hygroscopic aluminium with motor with fixed speed gearbox and belt drive.
- Dynamic recovery section created with R410A reversible refrigerant circuit, consisting of: EC twin rotary brushless hermetic compressor(s) with dedicated inverter, Cu/Al finned tube evaporator/condenser, electronic expansion valve, cycle reversing valve, high pressure switch, high and low pressure transducers, liquid separators and receivers.
- Electrical panel complete with on-board machine display and microprocessor to manage the fixed-point thermoregulation in delivery, based on operating logics designed to maximise energy savings and environmental comfort, thanks to the modulation of cooling capacity and air flow guaranteed by the inverter technology. The unit is prepared for connection via RS485 to supervision systems based on Modbus RTU/Modbus RTU/RS 485/Modbus TCP/IP protocol; Bacnet TCP; Webserver.

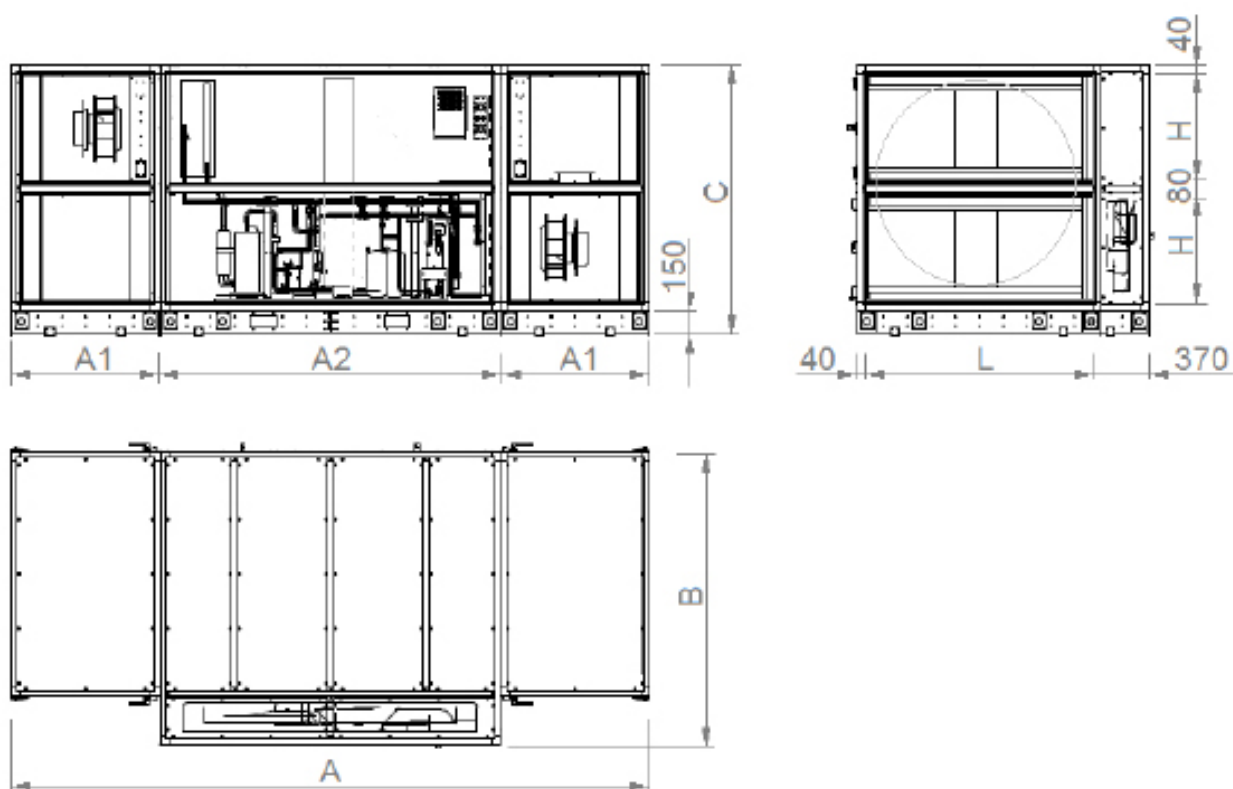
ACCESSORIES

| | |
|--|-----------------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| Modulating electric preheater | SKEp |
| Modulating electric reheater | SKEr |
| Ball siphon kit | BTS |
| Hot water preheater coil with valve | SKWp V33 |
| Hot water reheating coil with valve | SKWr V33 |
| Heating/cooling coil section | CCS V33 |
| Twin damper with modulating servomotors | SKR2 |
| F9 (ISO ePM1 85%) fresh air filter | FC9 |
| Air filter pressure switch | PSTD |
| Differential pressure sensor - constant airflow | DPSa |
| Differential pressure sensor - constant pressure | DPSp |
| CO2 sensor | AQS |
| Twin sound attenuator | SILm/SILf |
| Room winter temp. Speed-up kit | MRE/MRW |
| Flexible connection | GAT |
| Rain Hood | CFA A/ CFA B |
| Roof cover | TPR/ TPRs/ TPRc |

MODELS

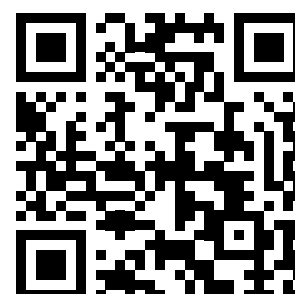
| HPR-FLEX | | | 35 | 50 | 80 | 92 | 144 | 205 | 250 |
|---------------------------|-----|-------------------|------|------|------|------|-------|-------|-------|
| Airflow | Min | m ³ /h | 3000 | 5200 | 7300 | 9500 | 13000 | 18000 | 22000 |
| Available static pressure | Nom | Pa | 250 | | | | | | |
| Sound power at 1m | Nom | dB(A) | 64 | 70 | 77 | 82 | 78 | 83 | 81 |

(A) Input temperature ≤ 20°C; balanced air flow rates



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/hpr-flex or by scanning the QR code with your smartphone



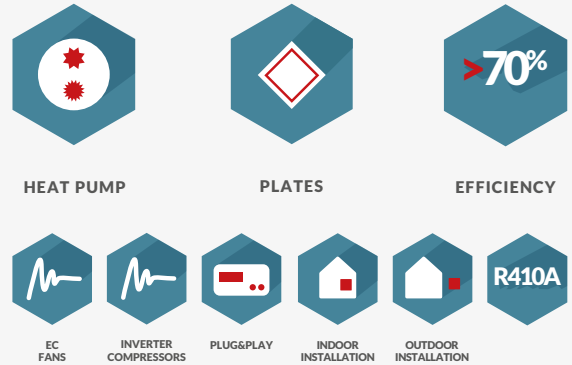
HPH-FLEX



Heat recovery unit
WITH HIGH EFFICIENCY,
MODULATING HEAT
PUMP CIRCUIT AND PLATE
HEAT RECOVERY
from 1.500 to 24.000 m³/h

The high efficiency heat recovery units with integrated HPH refrigerant circuit have been designed and created for commercial and industrial applications and combine the need for air recirculation with maximum energy saving, thanks to the adoption of high efficiency components.

By their very nature, they are units that are generally well suited for use within traditional heating/cooling systems, even if, under certain environmental conditions, they can be used completely autonomously.

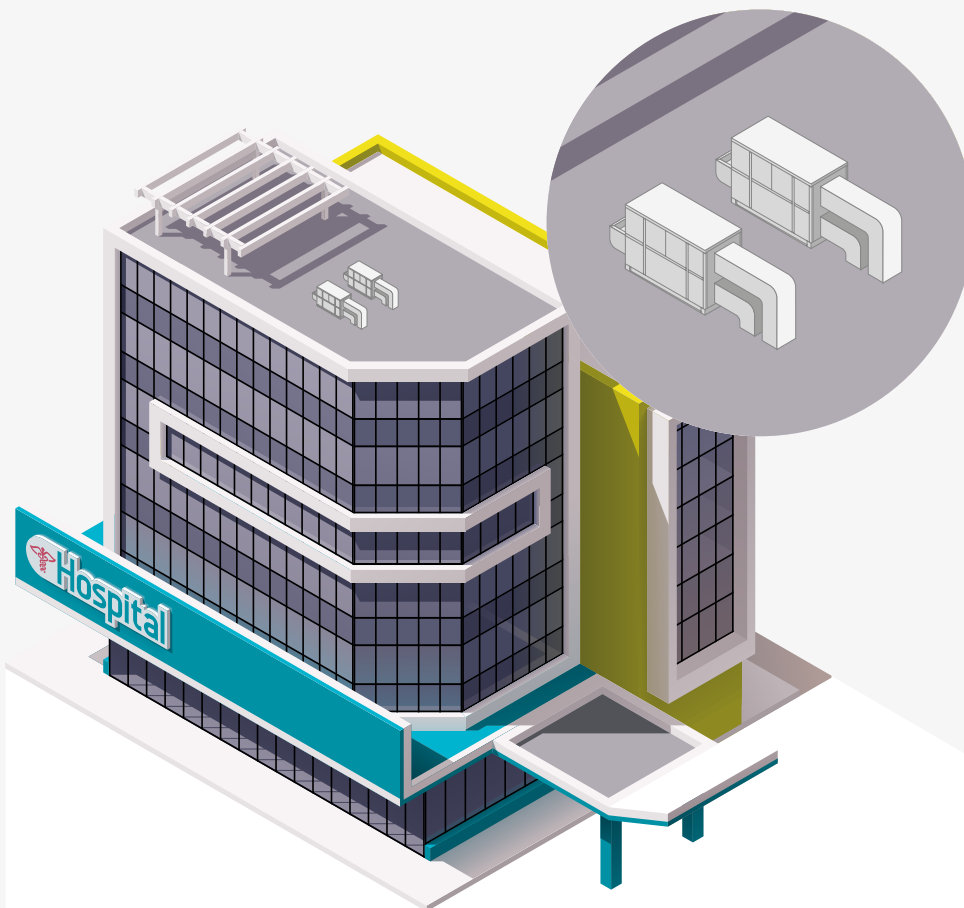


ADVANTAGES

- High recovery efficiency
- Reduced energy consumption
- Separate flow plate recovery unit suitable for hospital use
- Integration with the most common supervision systems
- Easy to install

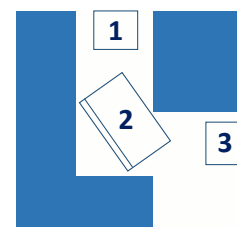
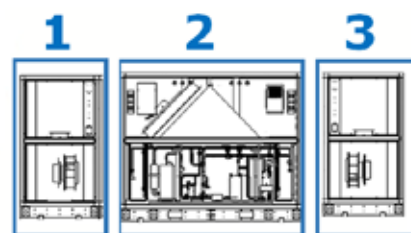
HPH OPERATION

The units in the HPH range recirculate the air in the environments to be treated, recovering up to 70% of the air exhaust and containing the additional energy supply to reach the air intake temperature in the environment.



MODULARITY

The new configuration of the HP units, into 3 sections at the time of installation, allows easier handling and the installation of additional accessories on site (e.g. silencers, additional filters, coils).



TECHNICAL SPECIFICATIONS

- Supporting structure in extruded aluminium profiles, panels (th. 42 mm), sandwich type, with special sealing gaskets; external finish RAL 9002; thermoacoustic insulation in high density 0 class rockwool.
- High efficiency static heat recovery (> 70%) of the cross-flow air-air type with aluminium plates, integrated with a total motorised by-pass system; aluminium condensate collection tank, with a 1" double side discharge.
- Dynamic recovery section created with R410A reversiblerefrigerant circuit, consisting of: EC twin rotary brushless hermetic compressor(s) with dedicated inverter, Cu/Al finned tube evaporator/condenser, electronic expansion valve, cycle reversing valve, high pressure switch, high and low pressure transducers, liquid separators and receivers.
- Compact filters th. 98 mm on the air recovered from the environment, in efficiency class ISO ePM10 50% (according to ISO 16890: 2017), extractable from both sides and compact filters th. 98 mm on the recirculation air, in efficiency class ISO ePM1 50% (according to ISO 16890: 2017), extractable from both sides.
- Centrifugal fans with free impeller with backward curved blades directly coupled to an EC motor equipped with built-in control electronics, extractable from both sides.
- Electrical panel complete with on-board machine display and microprocessor to manage the fixed-point thermoregulation in delivery, based on operating logics designed to maximise energy savings and environmental comfort, thanks to the modulation of cooling capacity and air flow guaranteed by the inverter technology. The unit is prepared for connection via RS485 to supervision systems based on Modbus RTU/ Modbus RTU/RS 485/Modbus TCP/IP protocol; Bacnet TCP; Webserver.

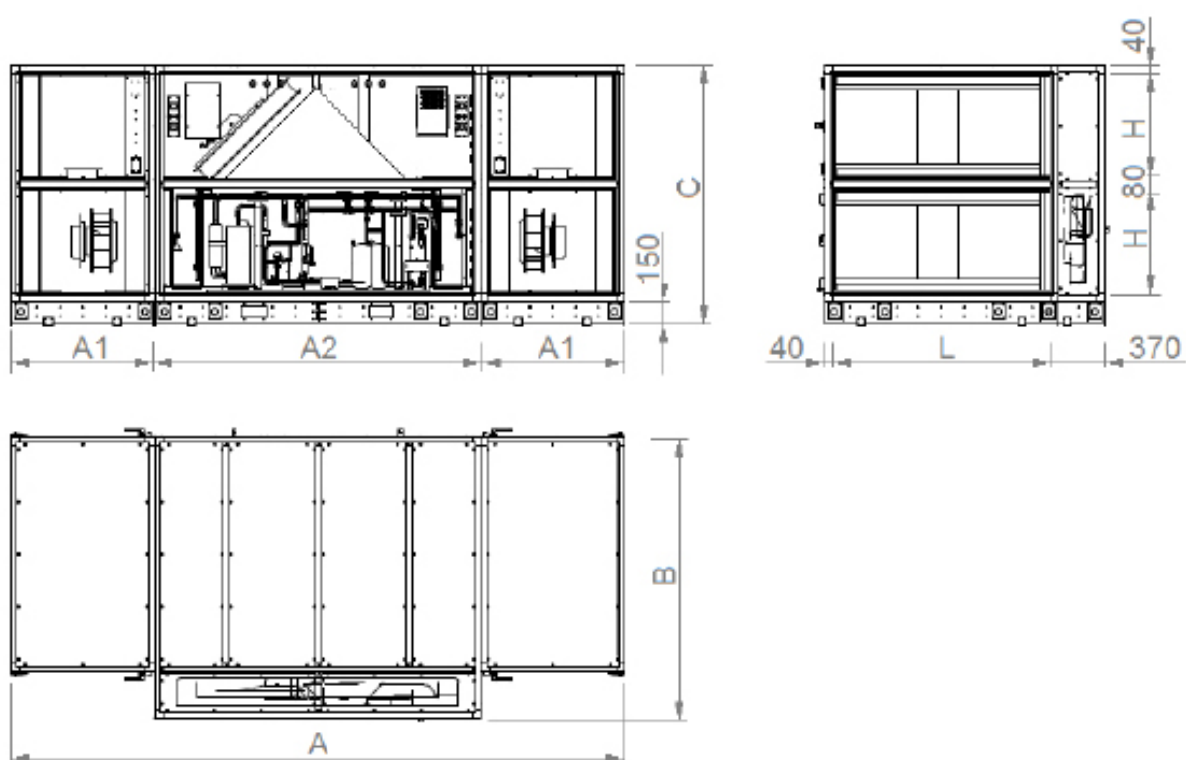
ACCESSORIES

| | |
|--|-----------------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| Electric pre-heater | SKEp |
| Modulating electric reheater | SKEr |
| Ball Siphon kit | BTS |
| Hot water preheater coil with valve | SKWp V33 |
| Hot water reheating coil with valve | SKWr V33 |
| Heating/cooling coil section | CCS V33 |
| Twin damper with modulating servomotors | SKR2 |
| F9 (ISO ePM1 85%) fresh air filter | FC9 |
| Air filter pressure switch | PSTD |
| Differential pressure sensor - constant airflow | DPSa |
| Differential pressure sensor - constant pressure | DPSp |
| CO2 sensor | AQS |
| Twin sound attenuator | SILm/SILf |
| Room winter temp. Speed-up kit | MRE/MRW |
| Flexible connection | GAT |
| Rain Hood | CFA A/ CFA B |
| Roof cover | TPR/ TPRs/ TPRc |

MODELS

| HPH-FLEX | | | 35 | 50 | 80 | 92 | 144 | 205 | 250 |
|---------------------------|-----|-------------------|------|------|------|------|-------|-------|-------|
| Airflow | Nom | m ³ /h | 3000 | 5200 | 7300 | 9500 | 13000 | 17000 | 21000 |
| Available static pressure | Nom | Pa | 250 | | | | | | |
| Radiated sound power | Nom | dB(A) | 64 | 70 | 77 | 82 | 78 | 82 | 80 |

(A) Input temperature ≤ 20°C; balanced air flow rates



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/hph-flex or by scanning the QR code with your smartphone

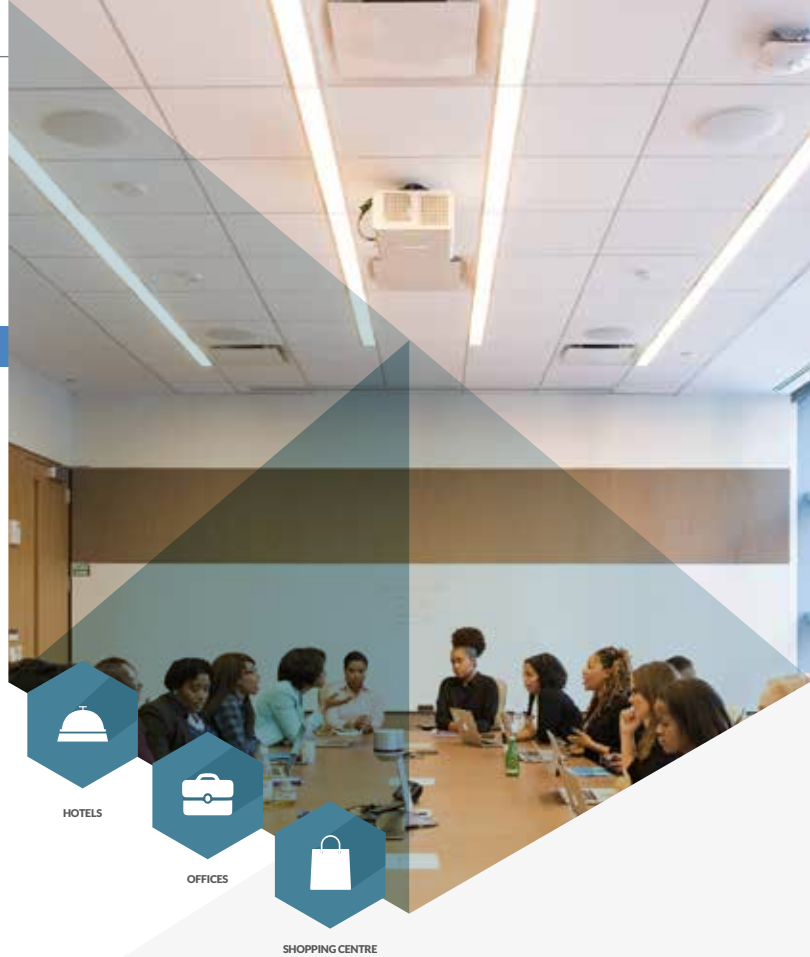


RFH

High efficiency heat recovery unit WITH MODULATING HEAT PUMP CIRCUIT and PLATE RECOVERY UNIT from 300 to 4.000 m³/h

The new RFH heat recovery units dedicated to exchange the air (with the possibility of varying the flow rate) and to its heat treatment (with the possibility of controlling the supply temperature in the rooms) have been designed and developed in order to reconcile many typical needs of both tertiary and commercial applications.

The RFH series consists of 4 sizes in a horizontal configuration only, for air flow rates ranging from 300 to 4000 m³/h.



HEAT PUMP



PLATES



EFFICIENCY



EC FANS



INVERTER COMPRESSORS



PLUG&PLAY



INDOOR INSTALLATION



OUTDOOR INSTALLATION



R410A

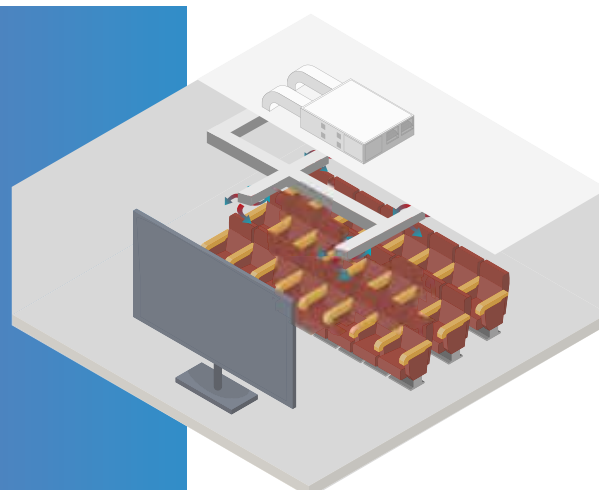
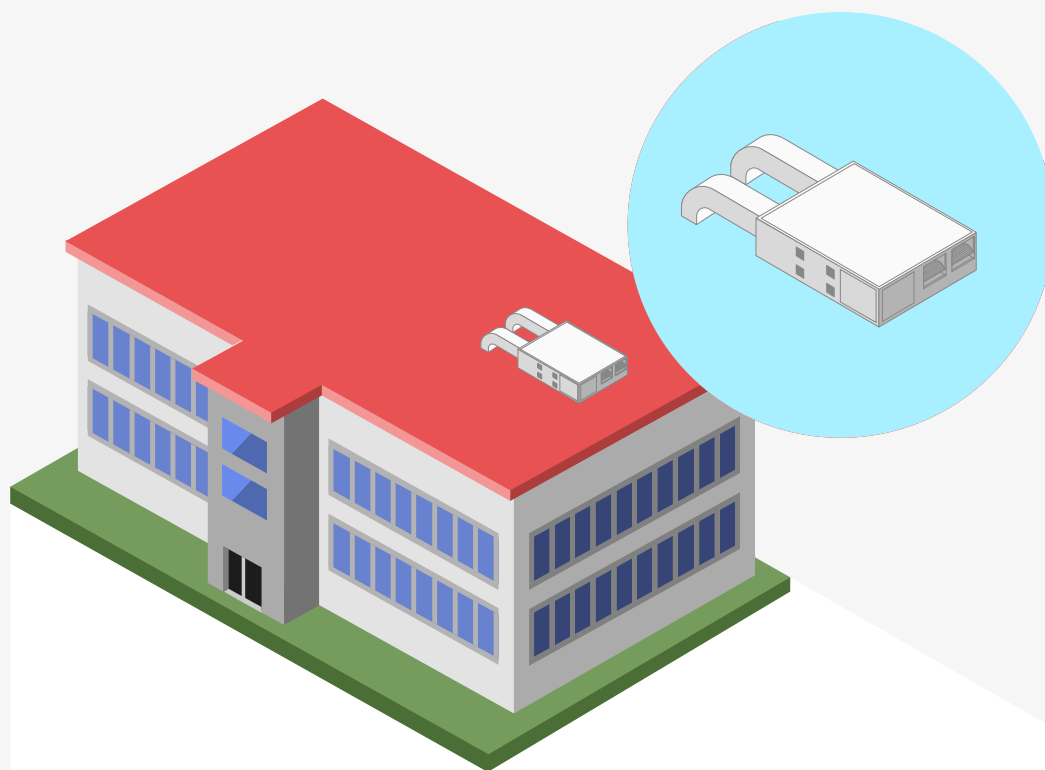
ADVANTAGES

- High recovery efficiency
- Reduced energy consumption
- Indoor installation (in false ceiling) and outdoor installation (with roof)
- Integration with the most common supervision systems
- Compactness and ease of installation
- Integration of "ALL-IN-ONE" functions (air recirculation and heat treatment)

RFH OPERATION

The units in the RFH range recover the air in the areas to be treated. They recover 70% of the expelled air temperature with integration of an existing heating and cooling system.

The internal loads of the returned air are neutralised thanks to the integration of the modulating refrigerant circuit.



TECHNICAL SPECIFICATIONS

- Supporting frame in RAL 9002 pre-painted galvanised sheet metal;
- Double-shell closing panels with a thickness of 20 mm, in pre-painted galvanised sheet metal RAL 9002 outside and galvanised inside; hinged at the bottom for easy access to the internal components.
- Non-flammable thermoacoustic insulation in mineral wool with a density of 100 kg/m³.
- High efficiency static heat recovery unit (>70% under nominal conditions) of the cross-flow air-air type with aluminium exchange plates with additional sealing; lower condensate collection tank, extended to the entire area dedicated to heat treatment.
- Compact filters th. 96 mm with synthetic/fibre glass support in 3 non-intertwined layers. On external air intake, efficiency element and ISO ePM1 50%; on ambient air intake, 50% ISO ePM2.5 efficiency element.
- Lower or lateral access, centrifugal electric fans for inlet and exhaust with double intake forward blades equipped with EC motor and built-in control electronics.
- Refrigerant circuit, variable capacity, with continuous heat pump (R410A) consisting of hermetic rotary compressor equipped with EC motor and specific control driver, summer evaporating coil/winter condenser and summer condensing coil/winter evaporator with 7 rows (with hydrophilic treatment) with copper pipes and aluminium fins, bidirectional electronic expansion valve, liquid receiver, 4-way valve for reverse cycle, safety valve, high and low pressure transducers, high pressure switch, freon filter, double liquid light.
- Microprocessor regulation for automatic management of the inlet temperature, of the free-cooling (through optional kit), of hot/cold switching and defrosting of the recovery unit and of the winter evaporator; control panel with display for setting of the parameters and for displaying of the probe and set-point values with remote control up to 200 m from the unit.
- Possibility of connection to a supervision system based on Modbus/RS485 protocol, Modbus TCP/IP, BACNet TCP and Web server.

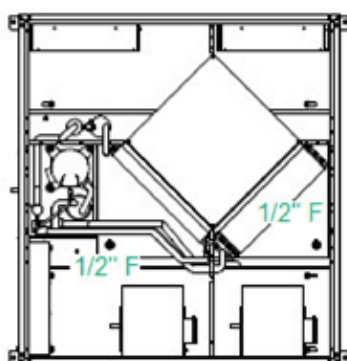
ACCESSORIES

| | |
|--|--------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| CO2 Sensor | AQS |
| Adjusting damper | SKR |
| On/Off Damper actuator | SSE |
| Additional electric PRE heater | SKE 1 |
| Additional electric POST heater | SKE 2 |
| External by-pass kit | BPL |
| Water coil module | SAF |
| ISO ePM1 85% (ex F9) class compact filter | FC9 |
| Air filter pressure switch | PSTD |
| Flexible connection | GAT |
| Roof cover | TPR |
| External hood | CFA |
| PD2 support feet | PD2 |

MODELS

| RFH | | | 5 | 13 | 24 | 36 |
|---------------------------|-----|-------------------|-----|------|------|------|
| Air flow available | Nom | m ³ /h | 500 | 1300 | 2400 | 3600 |
| Available static pressure | Nom | Pa | 150 | 200 | 200 | 200 |
| Radiated sound power | Nom | dB(A) | 62 | 69 | 71 | 73 |

(A) input temperature ≤ 24°C; balanced air flow rates



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/rfh or by scanning the QR code with your smartphone



RFD

High efficiency heat recovery unit WITH MODULATING HEAT PUMP CIRCUIT AND SUMMER DEHUMIDIFICATION from 300 to 600 m³/h

The new RFD 500 heat recovery units have been designed and developed to satisfy both the exchange of air (with possibility of variation in flow rate) and its heat treatment (with the possibility of controlling the supply temperature in the rooms) and for dehumidifying, during the summer season, those rooms already equipped with water sensible cooling systems.



HOTELS



OFFICES



SHOPPING CENTRES



HEAT PUMP



PLATES



EFFICIENCY



DEHUMIDIFY



EC FANS



INVERTER COMPRESSORS



PLUG&PLAY



INDOOR INSTALLATION



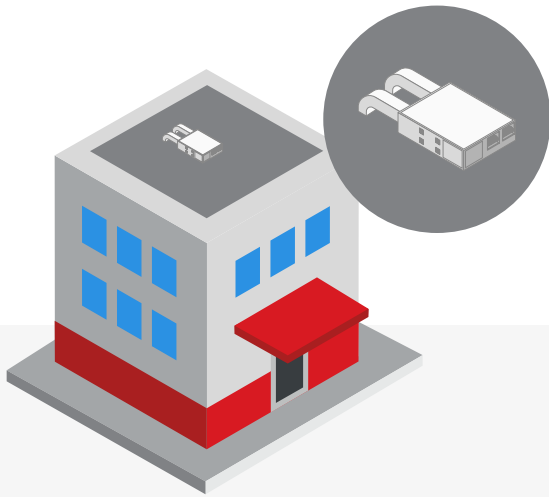
OUTDOOR INSTALLATION



R410A

ADVANTAGES

- High recovery efficiency
- Reduced energy consumption
- Indoor installation (in false ceiling) and outdoor installation (with roof)
- Integration with the most common supervision systems
- Compactness and ease of installation
- "ALL-IN-ONE" functions integration (Air recirculation, heat treatment and dehumidification)



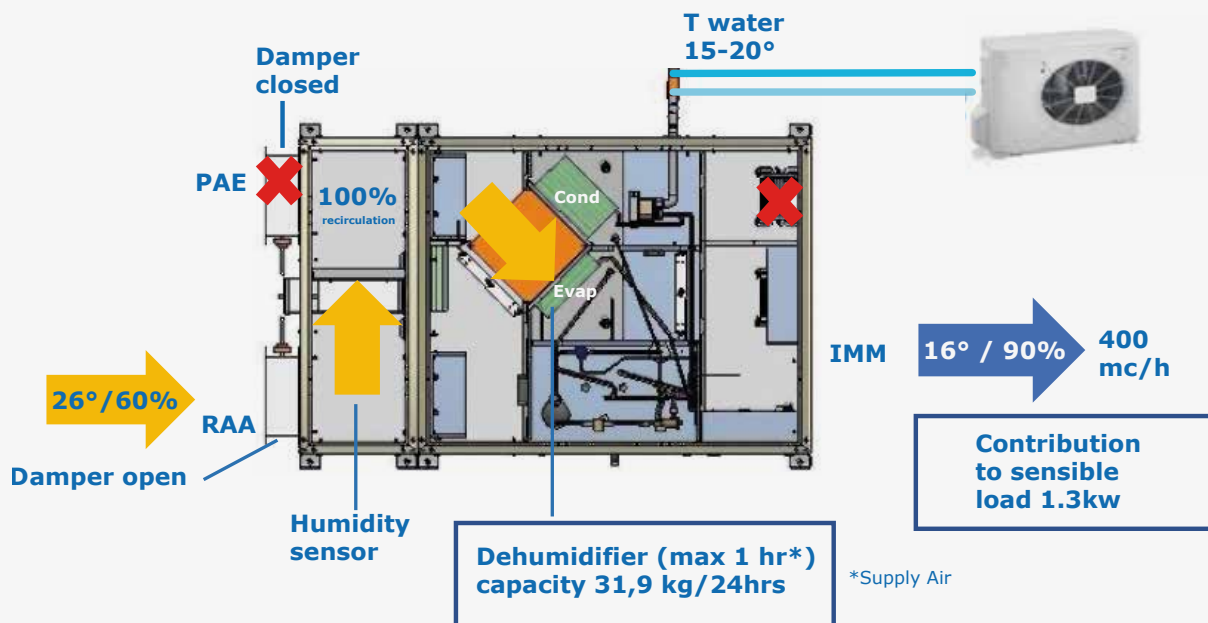
RFD OPERATION

The units in the RFD range recover the air in the areas to be treated. They recover 70% of the exhaust air temperature with integration of an existing heating and cooling system. The internal loads of the returned air are neutralised thanks to the integration of the modulating refrigerant circuit. Combined with a water cooling system, it performs the function of summer dehumidification with a system of motorised dampers and a water plate condenser. All controlled by on-board electronics.

SUMMER DEHUMIDIFIER FUNCTION

Outside air introduced into the building is cooler if compared to the return air, thus contributing to reduce the cooling sensitive load.

During the dehumidifying process the unit produces warm water (with a temperature of 45°C) for free use (e.g. boiler DHW).



TECHNICAL SPECIFICATIONS

- Load-bearing frame in RAL 9002 pre-painted galvanised sheet metal;
- Double-shell closing panels with a thickness of 20 mm, in pre-painted galvanised sheet metal RAL 9002 outside and galvanised inside; hinged at the bottom for easy access to the internal components.
- Non-flammable thermoacoustic insulation in mineral wool with a density of 100 kg/m³.
- High efficiency static heat recovery unit of cross-flow type with aluminium plates with additional sealing; lower condensate collection tank, extended to the entire area dedicated to heat treatment.
- Compact filters th. 96 mm with synthetic/fibre glass support in 3 non-intertwined layers. On external air intake, efficiency element ISO ePM1 50%, on ambient air intake, 50% ISO ePM2.5 efficiency element.
- Centrifugal electric fans for inlet and exhaust with double intake forward blades equipped with EC motor and built-in control electronics.
- Refrigerant circuit, variable capacity, with continuous heat pump (R410A) consisting of hermetic rotary compressor equipped with EC motor and specific control driver, summer evaporating coil/winter condenser with 3 rows and summer condensing coil/winter evaporator with 7 rows (with hydrophilic treatment) with copper pipes and continuous aluminium fins, bidirectional electronic expansion valve, liquid receiver, 4-way valve for reverse cycle, safety valve, high and low pressure transducers, high pressure switch, freon filter, double liquid light.
- Summer environment dehumidification system (with heat loss on the hydraulic circuit) consisting of a three-servo drive damper module (for full recirculation operation), humidity sensor, water plate sensor, external diverter valve with actuator and consent flow switch (actuator valve, flow switch, water temperature sensor and hydraulic fittings supplied separately to be mounted and wired).
- Internal electrical panel for management of all the power commands; temperature probes on the returned air circuit, outside air, inlet air and vent air; microprocessor regulation for automatic management of the inlet temperature and of the ambient humidity, of the hot/cold switching and of the defrost of the recovery unit and of the winter evaporator; control panel with display for setting of the parameters and for displaying of the probe and set-point values with remote control up to 200 m from the unit. Possibility of connection to a supervision system through at least one of the following protocols: Modbus RTU on RS485, Modbus TCP/IP on Ethernet network, BACnet TCP/IP with B-AAC profile on Ethernet network, Wen Server with trend on Ethernet network.

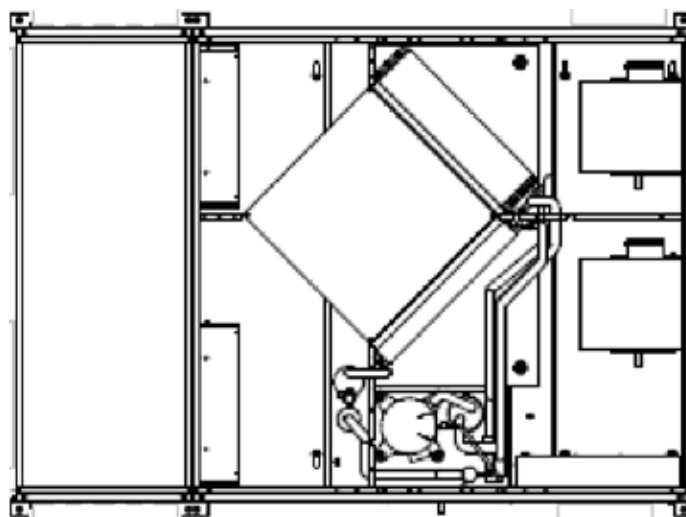
ACCESSORIES

| | |
|--|--------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| Air quality sensor | AQS |
| Additional electric PRE heater | SKE 1 |
| Additional electrical POST heater | SKE 2 |
| ISO EPM1 85% (ex F9) class compact filter | FC9 |
| Air filter pressure switch | PSTD |
| Flexible connection | GAT |
| PD2 support feet | PD2 |

MODELS

| RFD | | | 500 |
|---------------------------|-----|-------------------|-----|
| Airflow | Nom | m ³ /h | 500 |
| Available static pressure | Nom | Pa | 150 |
| Radiated sound power | Nom | dB(A) | 62 |

(A) input temperature ≤ 24°C; balanced air flow rates



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/rfd or by scanning the QR code with your smartphone



RFM

Heat recovery unit WITH REFRIGERANT CIRCUIT BUILT-IN ON/OFF AND PLATE RECOVERY UNIT from 900 to 4.000 m³/h

The RFM heat recovery units dedicated to exchange of air and to its heat treatment (with the possibility to control the ambient input temperature) have been designed and developed in order to reconcile the many typical needs of both commercial and tertiary applications.

The RFM series is based on six sizes, for air flow rates ranging from 900 to 4000 m³/h.



CLINICS



OFFICES



SUPERMARKETS



HEAT PUMP



PLATES



EFFICIENCY



PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATION

R410A

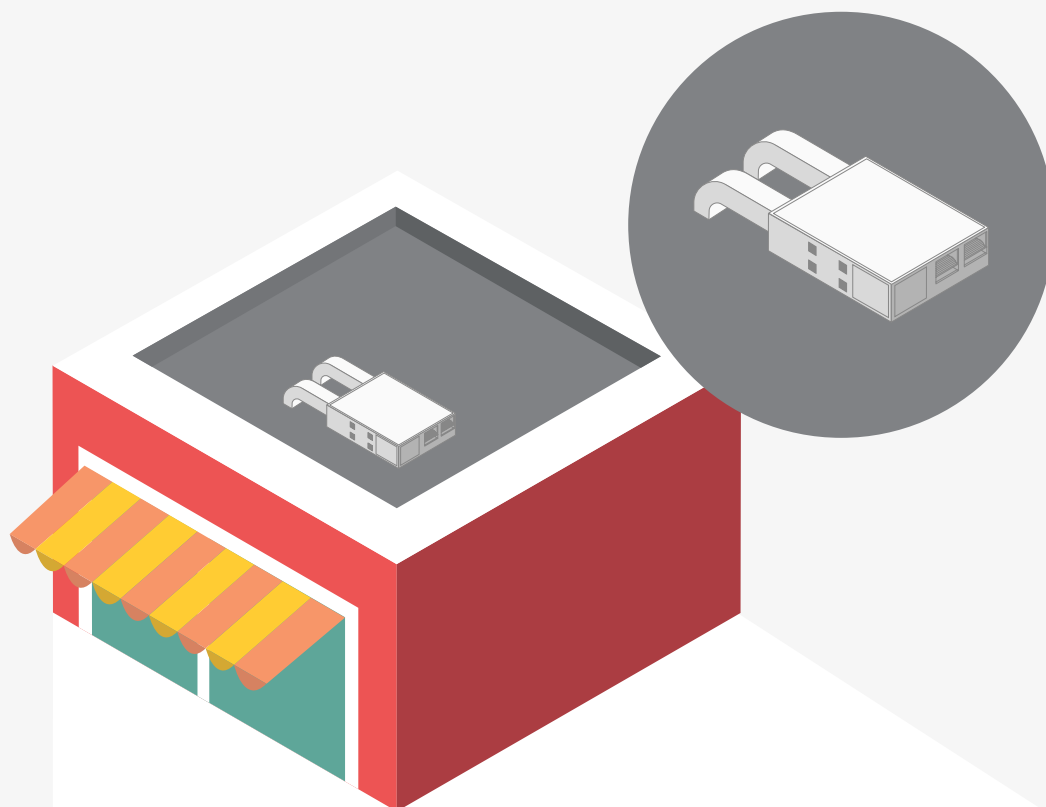
ADVANTAGES

- Reduced energy consumption
- Indoor installation (in false ceiling) and outdoor installation (with cover)
- Integration with the most popular supervision systems
- Compactness and ease of installation
- Integration of "ALL-IN-ONE" functions (air recirculation and heat treatment)

RFM OPERATION

The units of the RFM range recirculate the air in the rooms, particularly where the presence of smokers is permitted, recovering up to 50% of the exhaust air and neutralising

the thermal loads associated with the recirculation air. All this process is performed by integrating the unit with other heating/cooling systems.



TECHNICAL SPECIFICATIONS

- Supporting frame made of sheet metal and double-shell infill panels in pre-painted sheet metal completely removable with mineral wool thermal-acoustic insulation with a minimum thickness of 20 mm.
- Static heat recovery unit of cross-flow air-air type with condensate collection tank.
- Synthetic cell filters in G4 class
- Centrifugal electric fans with forward blades with double intake at 1 speed, possibly equipped with constant flow inverter motors.
- Refrigerant circuit with heat pump (R410A) consisting of condenser made of copper tubes and fins in hermetic scroll compressor, evaporating coil and aluminium coil, bi-directional thermostatic valve, liquid separator and receiver, 4-way valve for reverse cycle, safety valve, high and low pressure switches, freon filter and liquid light.
- Internal electrical panel for the management of all powercommands; temperature and defrost probes for winter evaporator.
- Microprocessor regulation, for automatic management of the room temperature, of hot/cold switching and defrost cycles; display for parametric setting and display of probe and set-point values with remote control up to 30 m from the unit.

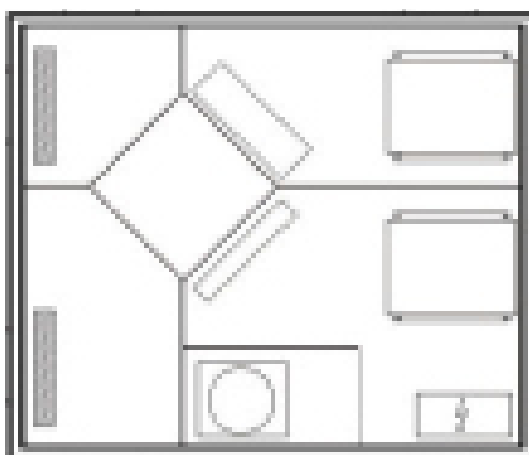
ACCESSORIES

| | |
|--|--------|
| Sanitation module with UVC plasma and antivirus filter | Kvir-P |
| Additional electric heater | SKE |
| ISO ePM2,5 50% (ex M6) class compact filter | FC6 |
| ISO ePM1 50 % (ex F7) class compact filter | FC7 |
| Inverter driven fan motors | DDE |
| Roof cover | TPR |
| Adjusting damper | SKR |
| Flexible joint | GAT |
| External hood | CFA |
| Air filter pressure switch | PSTD |
| On/off damper actuator | SSE |

MODELS

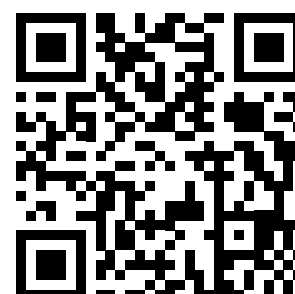
| RFM | | 14 | 19 | 25 | 30 | 40 | 50 |
|----------------------------|-------------------|----------|------|------|------------|------|------|
| Airflow | m ³ /h | 900 | 1400 | 2000 | 2600 | 3300 | 4000 |
| Sound pressure at 1 m | dB(A) | 55 | 52 | 59 | 58 | 58 | 62 |
| Total max current absorbed | A | 14,6 | 21,6 | 36,3 | 22,6 | 26,9 | 24,8 |
| Electrical power supply | V-Ph-Hz | 230-1-50 | | | 400-3+N-50 | | |

(1) External air 32°C 50% RH, return air 26°C 50% RH



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/rfm or by scanning the QR code with your smartphone



HRS

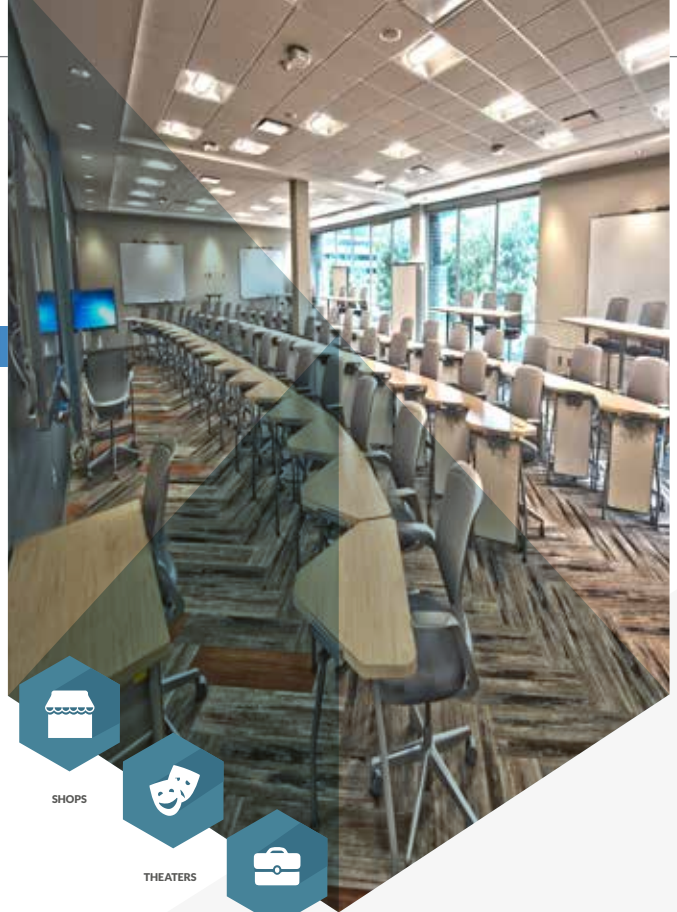
Heat recovery unit WITH VERY HIGH EFFICIENCY HEAT RECOVERY from 100 to 5,300 m³/h

Ventilation unit designed and built for non-residential applications, enables to combine the need for air renewal with maximum energy savings.

Equipped with counter-flow heat recovery unit with aluminium plates.

By its nature, these units are generally integrated with traditional heating/air conditioning systems, even if, fitted by the appropriate accessories, these can be used autonomously.

The production series is available in both horizontal and vertical configurations, divided into six sizes, for air flows ranging from 100 to 5,300 m³/h.



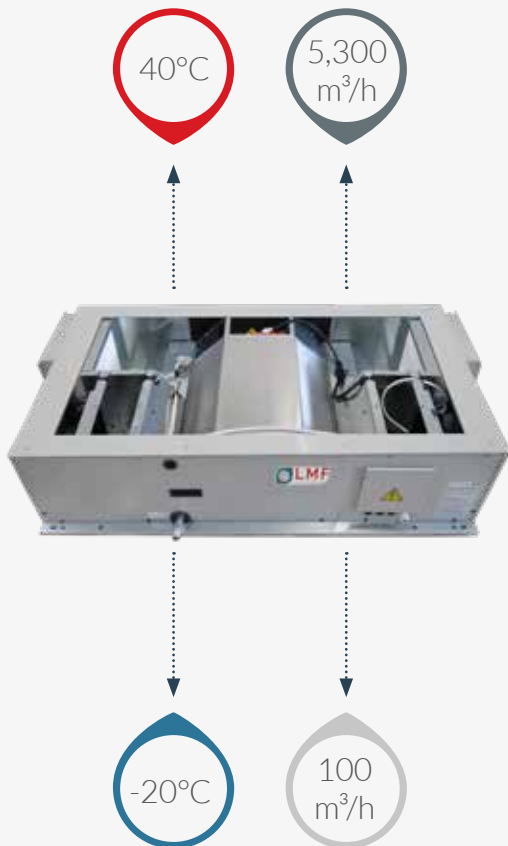
SHOPS



THEATERS



OFFICES



COMPLIANT
ERP 2018



PLATES



EFFICIENCY
>90%



FANS
EC



PLUG&PLAY



INDOOR
INSTALLATION



OUTDOOR
INSTALLATION



HORIZONTAL
ORIENTATION



VERTICAL
ORIENTATION

SIZE HRS 50

The HRS range is including the size 50, which is able to reach up to 5,300 m³/h

TECHNICAL SPECIFICATIONS AND ACCESSORIES

- Self-supporting structure with sandwich panels th. 25 mm in internally galvanised sheet and pre-painted externally in RAL 9002 finish
- Non-flammable thermal and acoustic insulation in mineral wool
- Static heat recovery unit with very high efficiency (> 90%) of the counter flow air-to-air type with aluminium exchange plates fitted with additional sealing, integrated with an already motorised by-pass system. Aluminium condensate collection tank, with 1/2" M drain (lateral for horizontal unit, lower for vertical unit)
- Compact filters with synthetic media (external layer) and fiberglass (internal layer) and galvanised steel frame, efficiency class ePM10 50% on room return and ePM1 50% on outdoor air intake, removable at the bottom and side.
- Centrifugal fans with free-running impeller with backward curved blades directly coupled to EC technology electric motors. Impeller in fiberglass-reinforced plastic for sizes 05 and 10, in aluminium for larger sizes
- Recessed type electrical panel with electronic adjustment and remote user interface for complete control of all the key functions and specifically:
 - manual control of the EC fans
 - automatic control of the fans (for pressure, temperature or air quality)
 - modulating control of the water valve (mixed use)
 - electric heater management (pre and post)
 - recovery unit defrosting management
 - free-cooling on/off management
 - post-ventilation
 - weekly programming
 - alarm management and clogged filter warning
 - remote on/off
 - remote summer/Winter
 - fan management via fire alarm digital input
 - BMS via Modbus protocol and RS485 connection

| | |
|---|---------------|
| Sanitation modules with plasma technology and anti-virus filter | KVir-P |
| Electric heater for pre or post heating | SKE |
| External module with water coil | CCS-H / CCS-V |
| External module with R410A direct expansion coil | CDX-H / CDX-V |
| Face/top/bottom air damper (only with PLM) | SKR1 |
| Side air damper (only with PLM) | SKR2 |
| ON/OFF damper actuator | SSE |
| Modulating 3-way valve with actuator | V33 |
| Filter differential pressure switch | PSTD |
| Differential pressure transducer | DPS |
| Ductable CO2 probe | AQS |
| Roof cover for base unit (horizontal versions) | TPR-H |
| Roof cover for base unit (vertical versions) | TPR-V |
| Roof cover for CCS module (horizontal versions) | TPR-CH |
| Roof cover for CCS module (vertical versions) | TPR-CV |
| Flexible connection – upper/lower (only with PLM) | GAT 1 |
| Flexible connection – side (only with PLM) | GAT 2 |
| Round adapter for circular ducts – upper/lower (only with PLM) | BCC 1 |
| Round adapter for circular ducts – side (only with PLM) | BCC 2 |
| Plenum with multiple connections | PLM |
| Touch Screen remote control panel | TMC |

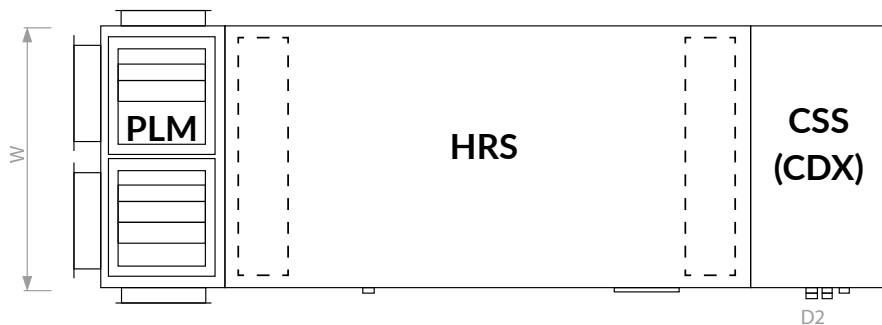
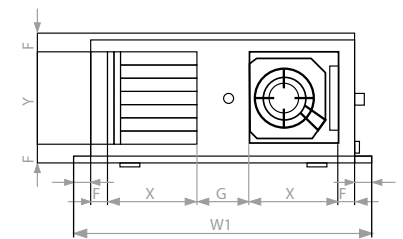
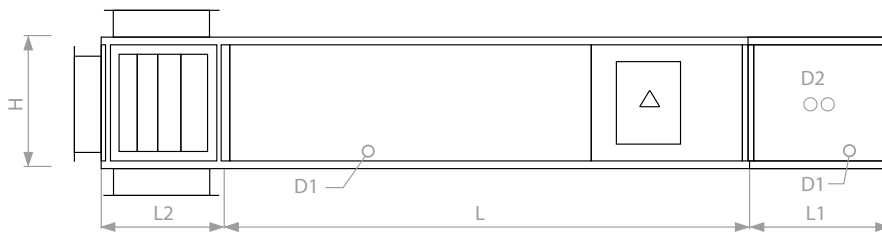
MODELS AND TECHNICAL DATA

| HRS | | 05 | 10 | 15 | 20 | 30 | 40 | 50 |
|----------------------------|-------------------|-----|-----|------|------|------|------|------|
| Nominal airflow | m ³ /h | 380 | 720 | 1130 | 1710 | 2460 | 3300 | 4500 |
| Useful static pressure (1) | Pa | 300 | 205 | 220 | 250 | 220 | 270 | 470 |
| Sound pressure level at 1m | dB(A) | 54 | 53 | 51 | 59 | 59 | 60 | 64 |

(1) referred to nominal flow rate

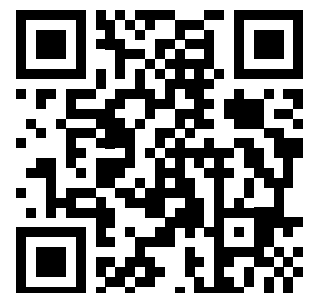
(2) inlet air at 28°C/60%UR; water in/out 7°/12°C

(3) inlet air at 13°C; water in/out 45°/40°C



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/hrs or by scanning the QR code with your smartphone





HRH

Heat recovery unit WITH HIGH EFFICIENCY HEAT RECOVERY from 100 to 5,300 m³/h

Ventilation unit designed and built for non-residential applications, enables to combine the need for air renewal with energy savings.

Equipped with aluminium plate heat recovery unit, fans with EC motors and integrated motorised by-pass system for free-cooling operation.

The series, both in horizontal and vertical configuration, is divided into six sizes, for air flows ranging from 100 to 5,300 m³/h.



SCHOOLS



THEATERS



OFFICES

COMPLIANT
ERP 2018

PLATES



EFFICIENCY

FANS
EC

PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATIONHORIZONTAL
ORIENTATIONVERTICAL
ORIENTATION

SIZE HRH 50

The HRH range is including the size 50, which is able to reach up to 5,300 m³/h

TECHNICAL SPECIFICATIONS AND ACCESSORIES

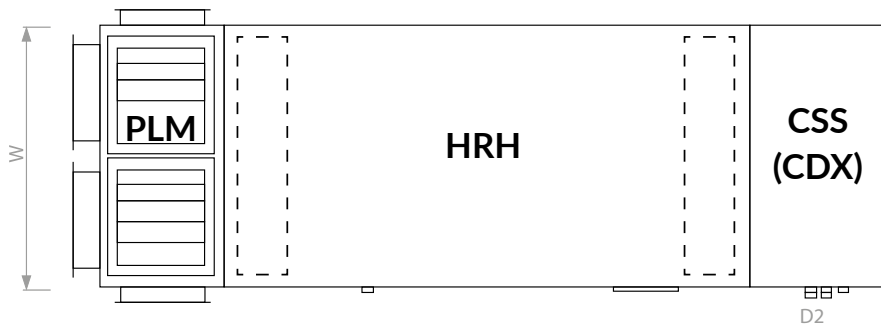
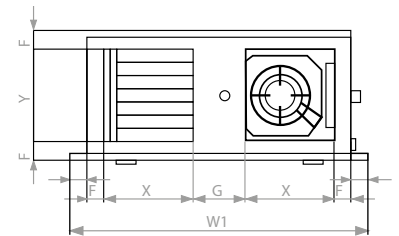
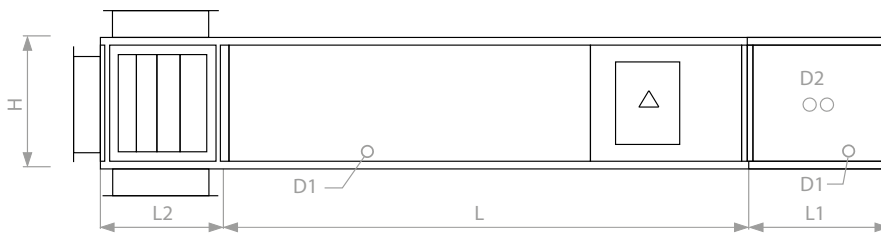
- Self-supporting structure with sandwich panels th. 25 mm in internally galvanised sheet and pre-painted externally in RAL 9002 finish.
- Non-flammable thermal and acoustic insulation in mineral wool
- Static heat recovery unit with high efficiency (> 75%) of the counter flow air-to-air type with aluminium exchange plates fitted with additional sealing, integrated with an already motorised by-pass system. Aluminium condensate collection tank, with 1/2" M drain (lateral for horizontal unit, lower for vertical unit)
- Compact filters with synthetic media (external layer) and fiberglass (internal layer) and galvanised steel frame, efficiency class ePM10 50% on room return and ePM1 50% on outdoor air intake, removable at the bottom and side.
- Centrifugal fans with free-running impeller with backward curved blades directly coupled to EC technology electric motors. Impeller in fiberglass-reinforced plastic for sizes 05 and 10, in aluminium for larger sizes
- Recessed type electrical panel with electronic adjustment and remote user interface for complete control of all the key functions and specifically:
 - manual control of the EC fans
 - automatic control of the fans (for air pressure, temperature or quality)
 - modulating control of the water valve (mixed use)
 - electric heater management (pre and post)
 - recovery unit defrosting management
 - free-cooling on/off management
 - post-ventilation
 - weekly programming
 - alarm management and clogged filter warning
 - remote on/off
 - remote summer/Winter
 - fan management via fire alarm digital input.
 - BMS via Modbus protocol and RS485 connection.

| | |
|---|--------|
| Sanitation modules with plasma technology and anti-virus filter | KVir-P |
| Electric heater for pre or post heating | SKE |
| External module with water coil (change-over use) | CCS |
| External module with R410A direct expansion coil | CDX |
| Face/top/bottom air damper (only with PLM) | SKR1 |
| Side air damper (only with PLM) | SKR2 |
| ON/OFF damper actuator | SSE |
| Modulating 3-way valve with actuator | V33 |
| Filter differential pressure switch | PSTD |
| Differential pressure transducer | DPS |
| Ductable CO2 probe | AQS |
| Roof cover for base unit (horizontal versions) | TPR-H |
| Roof cover for base unit (vertical versions) | TPR-V |
| Roof cover for CCS module (horizontal versions) | TPR-CH |
| Roof cover for CCS module (vertical versions) | TPR-CV |
| Flexible connection – upper/lower (only with PLM) | GAT 1 |
| Flexible connection – side (only with PLM) | GAT 2 |
| Round adapter for circular ducts – upper/lower (only with PLM) | BCC 1 |
| Round adapter for circular ducts – side (only with PLM) | BCC 2 |
| Plenum with multiple connections | PLM |
| Touch Screen remote control panel | TMC |

MODELS AND TECHNICAL DATA

| HRH | | 05 | 10 | 15 | 20 | 30 | 40 | 50 |
|----------------------------|-------------------|-----|-----|------|------|------|------|------|
| Nominal airflow | m ³ /h | 380 | 720 | 1130 | 1710 | 2460 | 3300 | 4500 |
| Useful static pressure (1) | Pa | 340 | 230 | 360 | 270 | 430 | 320 | 510 |
| Sound pressure level at 1m | dB(A) | 54 | 53 | 55 | 59 | 61 | 60 | 64 |

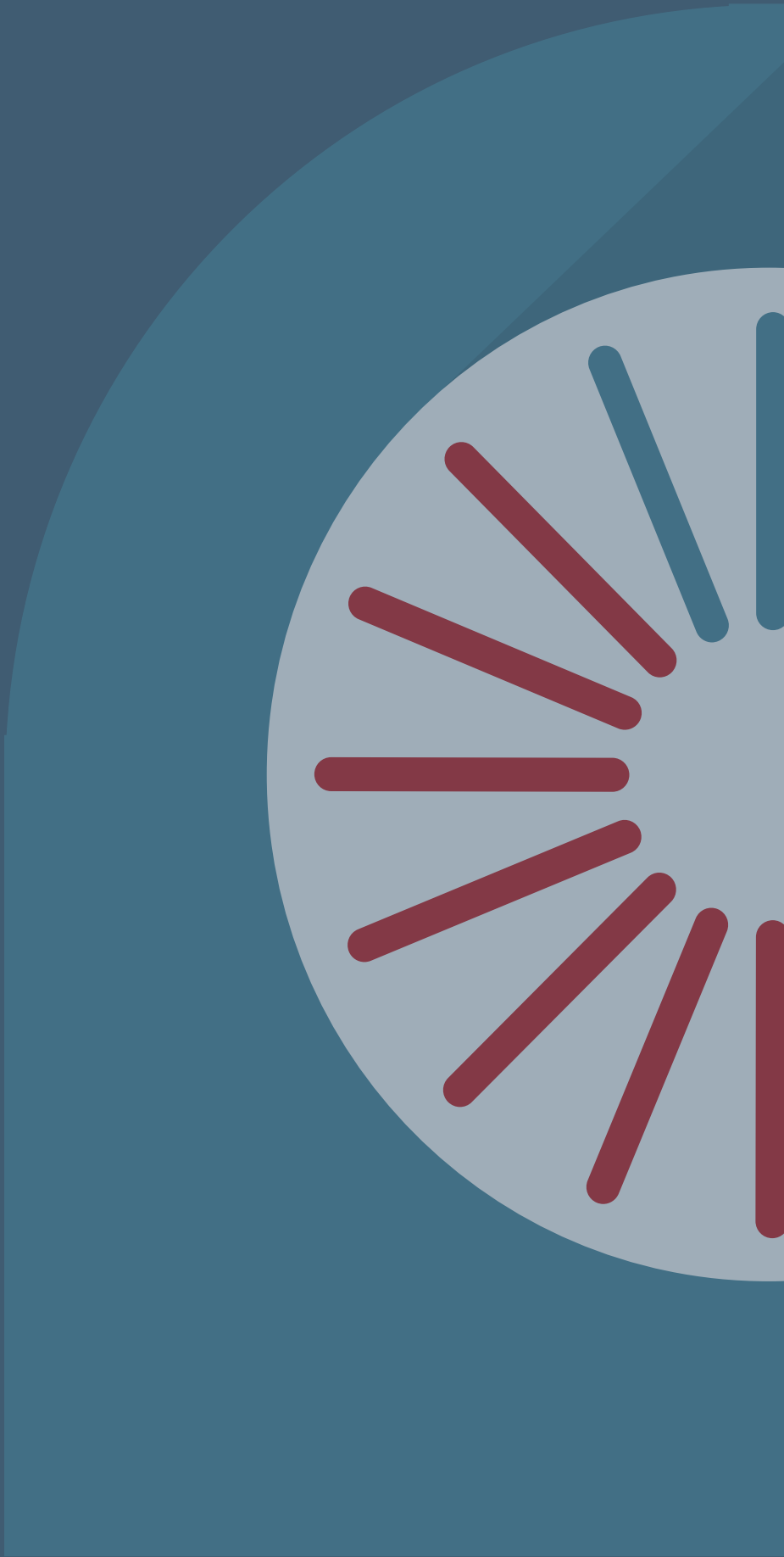
(1) referred to nominal flow rate



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/hrh or by scanning the QR code with your smartphone





HRC

Heat recovery unit
WITH HIGH EFFICIENCY
HEAT RECOVERY
FLEXIBILITY AND VERSATILITY
DURING INSTALLATION
from 250 to 3,500 m³/h

Ventilation unit designed and built for non-residential applications, it enables to combine the need for air renewal with energy savings and maximum flexibility and versatility during installation, thanks to the 90° adjustable air intakes by moving the closing panels.

Equipped with aluminium plate heat recovery unit, fans with EC motors and integrated motorised by-pass system for free-cooling operation.

The series, fitted with a simple kit for vertical configuration, is divided into seven sizes, for air flows ranging from 250 to 3,500 m³/h.



COMPLIANT
ERP 2018



PLATES



EFFICIENCY
>80%



ADJUSTABLE
BY 90°



FANS
EC



PLUG&PLAY



INDOOR
INSTALLATION



HORIZONTAL
ORIENTATION



VERTICAL
ORIENTATION

ADVANTAGES

Flexibility even on site. HRC is designed to provide maximum flexibility and adaptability during installation. The air intakes can be adjusted by 90°, electric and water coils can also be inserted, also while on-site.

TECHNICAL SPECIFICATIONS AND ACCESSORIES

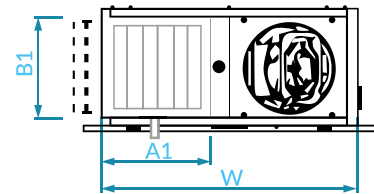
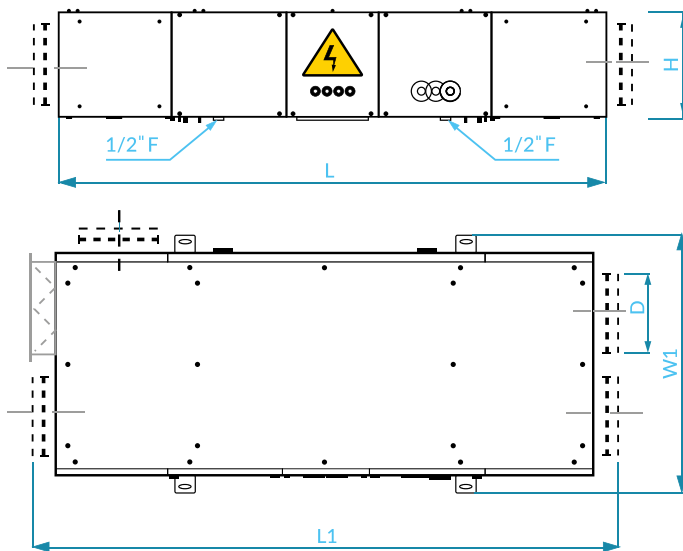
- Internal galvanised sheet supporting structure with 25 nominal mm thick sandwich panels in internally galvanised sheet and pre-painted externally in RAL 9002 finish; lower cross bars in galvanised steel for anchoring to the ceiling
- Non-flammable thermal and acoustic insulation in mineral wool
- Static heat recovery unit with high efficiency of the counter flow air-to-air type with aluminium exchange plates fitted with additional sealing, integrated with an already motorised by-pass system. Aluminium condensate collection tank with 1/2" F dual bottom drain
- Compact filters with synthetic media (external layer) and fiberglass (internal layer) and galvanised steel frame, efficiency class ePM10 50% on room intake and ePM1 50% on outdoor air intake, removable at the bottom. Each filtering station is already equipped with a control pressure switch wired to the panel and suitable for housing two filters in sequence
- Centrifugal fans with free-running impeller with backward blades directly coupled to EC technology electric motors
- Set-up for electric heating element
- Set-up for post-heating electric heating element or for water coil.
- Recessed type electrical panel with electronic adjustment and remote user interface for complete control of all the key functions and specifically :
 - manual control of the EC fans
 - automatic control of the fans (for pressure, temperature or air quality)
 - modulating control of the water valve (mixed use)
 - electric heater management (pre and post)
 - recovery unit defrosting management
 - free-cooling on/off management
 - post-ventilation
 - weekly programming
 - alarm management and clogged filter warning
 - remote on/off
 - remote summer/Winter
 - fan and damper management via fire alarm digital input
 - BMS via Modbus protocol and RS485 connection.

| | |
|---|--------|
| Sanitation modules with plasma technology and anti-virus filter | KVir-P |
| Electric pre-heater | SKEp |
| Electric post-heater | SKEr |
| Internal water coil | BTW |
| Modulating 3-way valve | V33 |
| On/off exclusion motorised damper | SKR |
| Flexible connection | GAT |
| Round fitting | BCC |
| Conversion kit in vertical configuration | KTV |
| Pressure transducer | DPS |
| CO2 sensor | AQS |
| Pre-filter on outdoor air intake | PF |
| High efficiency post-filter | FC9 |
| Touch Screen remote control panel | TMC |

MODELS AND TECHNICAL DATA

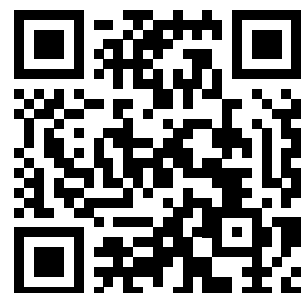
| HRC | | 500 | 1000 | 1500 | 2000 | 2300 | 3000 | 4000 |
|----------------------------|-------------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| Nominal airflow | m ³ /h | 450 | 800 | 1300 | 1700 | 2100 | 2600 | 3400 |
| Useful static pressure (1) | Pa | 285 | 175 | 260 | 190 | 210 | 325 | 215 |
| Sound pressure level at 1m | dB(A) | 70 | 68 | 73 | 74 | 77 | 78 | 75 |
| Max. absorbed power | W | 330 | 340 | 920 | 920 | 1600 | 2000 | 2000 |

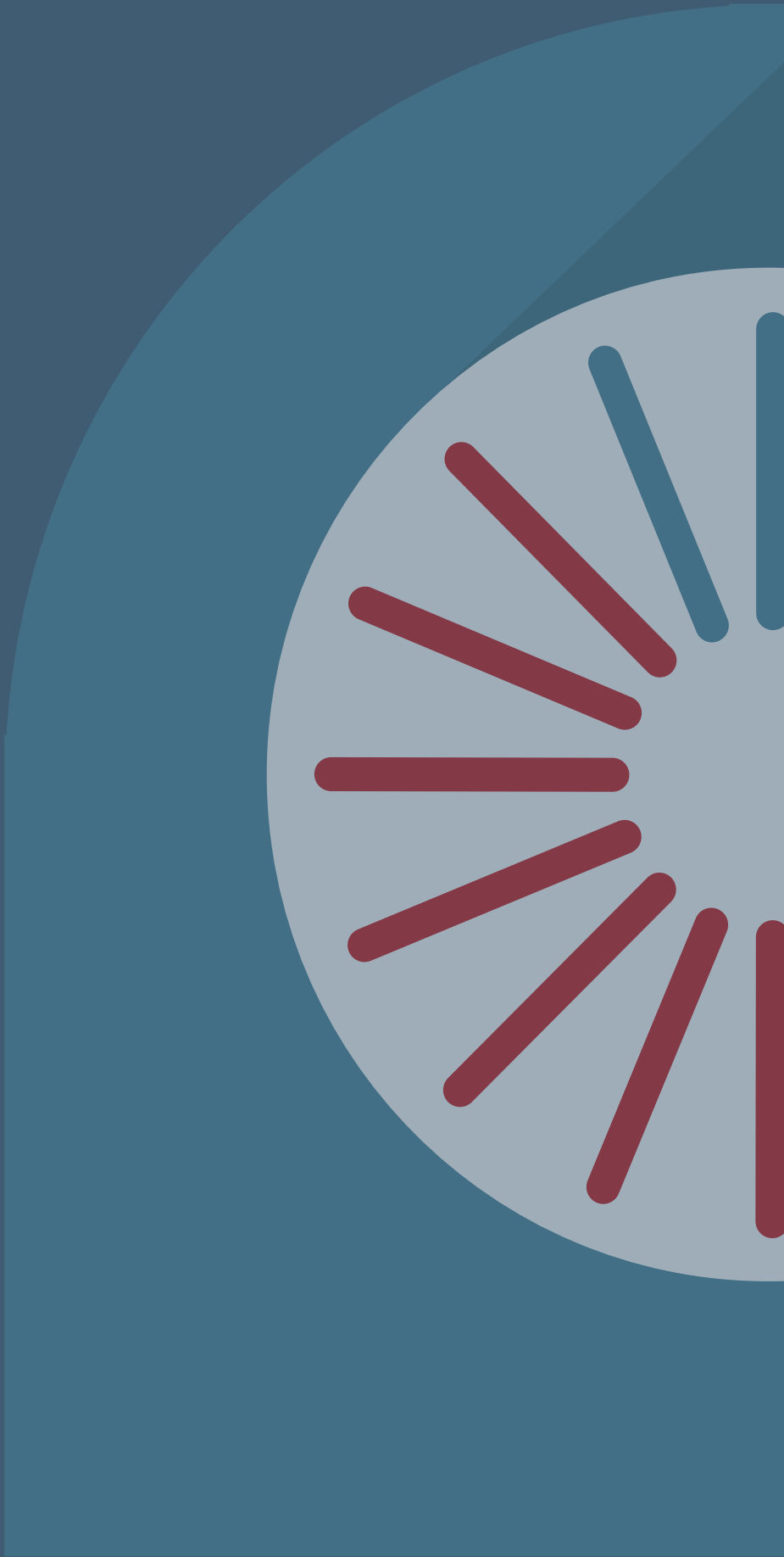
(1) referred to nominal flow rate



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/hrc or by scanning the QR code with your smartphone



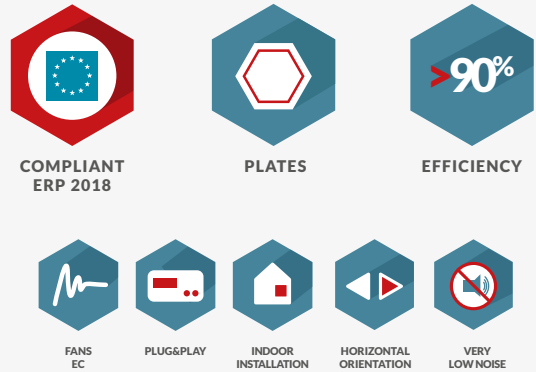
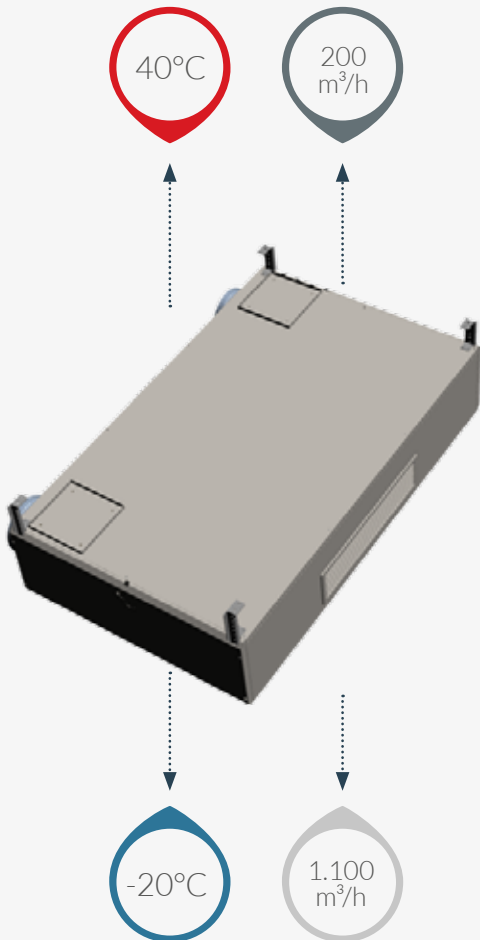


HVS

HEAT RECOVERY UNIT WITH VERY HIGH EFFICIENCY FOR HIGHLY CROWDED PREMISES

from 200 to 1,100 m³/h

The new HVS range has been designed for air renewal, with heat recovery, for highly crowded premises not yet equipped with a HRU system, such as school classrooms, bars, restaurants, offices, very quick and easy to install. HVS is equipped with a counter-flow aluminum plate exchanger, with very high efficiency, together with an innovative solution with noise-absorbing labyrinths to strongly reduce noise, especially when the unit are the unit is installed in rooms where the noise impact is important, such as schools, offices and restaurants . The series is divided into four sizes, for air flows ranging from 100 to 1,100 m³ / h, for counter ceiling installation in a horizontal configuration.



VERY LOW NOISE IN OPERATION
HVS is equipped with a unique and innovative system of noise-absorbing labyrinth baffles.

TECHNICAL SPECIFICATIONS AND ACCESSORIES

- Struttura autoportante con pannelli sandwich sp. 22 mm, rifiniti esternamente in RAL 9002 ed internamente in lamiera zincata, coibentati con lana di roccia ininfiammabile.
- Dispositivi interni antirumore a labirinto.
- Staffe di ancoraggio a soffitto in lamiera zincata di forte spessore, con forature per adeguare l'altezza d'installazione.
- Recuperatore di calore aria-aria in controcorrente ad alta efficienza (> 73% alle condizioni secche) in alluminio dotato di dispositivo motorizzato modulante di by-pass totale. Scarico del condensato inferiore nel pannello opposto al lancio dell'aria trattata in ambiente.
- Filtri compatti sp. 98 mm con media in sintetico/fibra di vetro, estraibili attraverso sportelli inferiori e con stato di intasamento controllato da pressostato differenziale. Su presa aria esterna, elemento ad efficienza ISO ePM1 60%; su ripresa aria ambiente, elemento ad efficienza ISO ePM10 60%. Su aria esterna possibilità di impiego di elemento filtrante opzionale ad efficienza ISO ePM1 85% (al posto dello standard).
- Raccordi circolari per collegamento alle prese di aria esterna e di espulsione, montabili posteriormente o superiormente a seconda del layout impiantistico.
- Bocchetta di immissione a doppio filare di alette singolarmente regolabili, con finitura RAL 9002.
- Elettroventilatori centrifughi di immissione ed espulsione del tipo a girante libera a pale rovesce dotati di motore EC ed elettronica di controllo integrata.
- Quadro elettrico interno per la gestione di tutti i comandi di potenza.
- Sonde di temperatura sul circuito aria di ripresa, aria esterna, aria immessa ed aria espulsa;
- regolazione a microprocessore per la gestione automatica: della temperatura di immissione, del free-cooling modulante, della commutazione caldo/freddo, gestione portata aria, rilevamento consumi, datalogger e dello sbrinamento del recuperatore;
- pannello di comando touch screen (optional) in grado di gestire fino a 16 unità collegate con RS485) per l'impostazione dei parametri e per la visualizzazione dei valori di sonda e di set-point remotabile fino a 100 m dall'unità
- Possibilità di connessione a sistema di supervisione tramite almeno uno dei seguenti protocolli:
 - Modbus RTU su RS485
 - Modbus TCP/IP su rete Ethernet
 - BACnet TCP/IP con profilo B-AAC su rete Ethernet
 - Web Server con trend su rete Ethernet

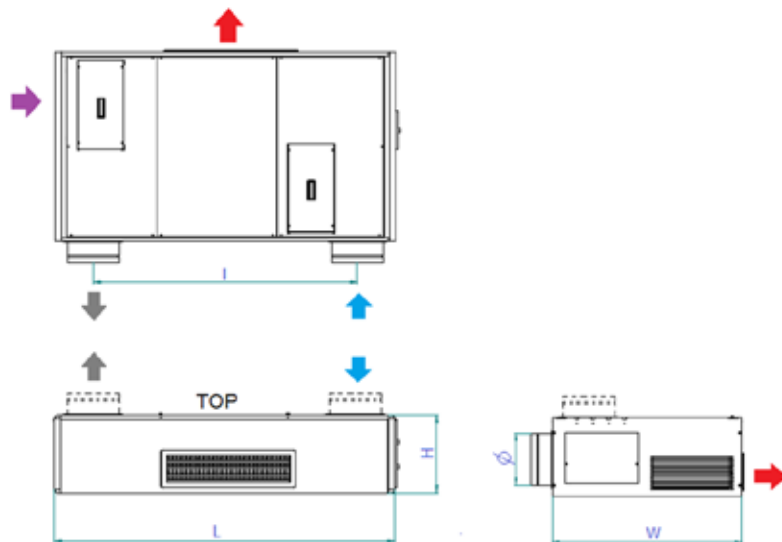
| | |
|---|--------|
| Sanitation modules with plasma technology and anti-virus filter | KVir-P |
| Electric pre-heater | SKEp |
| Electric post-heater | SKEr |
| Internal water coil | BTW |
| Modulating 3-way valve | V33 |
| On/off exclusion motorised damper | SKR |
| Flexible connection | GAT |
| Round fitting | BCC |
| Conversion kit in vertical configuration | KTV |
| Pressure transducer | DPS |
| CO2 sensor | AQS |
| Pre-filter on outdoor air intake | PF |
| High efficiency post-filter | FC9 |
| Touch Screen remote control panel< | TMC |

(1) con velocità terminale 0.2m/s, temperatura immissione 18°C, temperatura ambiente 20°C.

MODELS AND TECHNICAL DATA

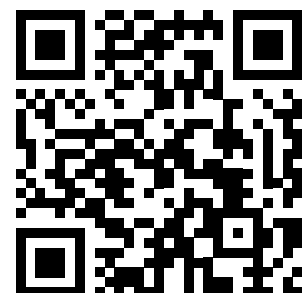
| HVS | | 045 | 055 | 070 | 105 |
|--|-------------------|-----|------|------|------|
| Air performance at 0 Pa external static pressure | | | | | |
| Nominal airflow | m ³ /h | 500 | 650 | 800 | 1100 |
| Useful static pressure (1) | m | 9.9 | 10.1 | 12.4 | 14.6 |
| Sound pressure level at 1m | dB(A) | 41 | 42 | 43 | 48 |
| Air performance at 50 Pa external static pressure | | | | | |
| Nominal airflow | m ³ /h | 450 | 550 | 70 | 1050 |
| Useful static pressure (1) | m | 8.9 | 8.5 | 10.8 | 14.0 |
| Sound pressure level at 1m | dB(A) | 40 | 40 | 41 | 45 |
| Air performance at 100 Pa external static pressure | | | | | |
| Nominal airflow | m ³ /h | 350 | 500 | 600 | 950 |
| Useful static pressure (1) | m | 6.8 | 7.7 | 9.2 | 12.5 |
| Sound pressure level at 1m | dB(A) | 39 | 38 | 39 | 43 |

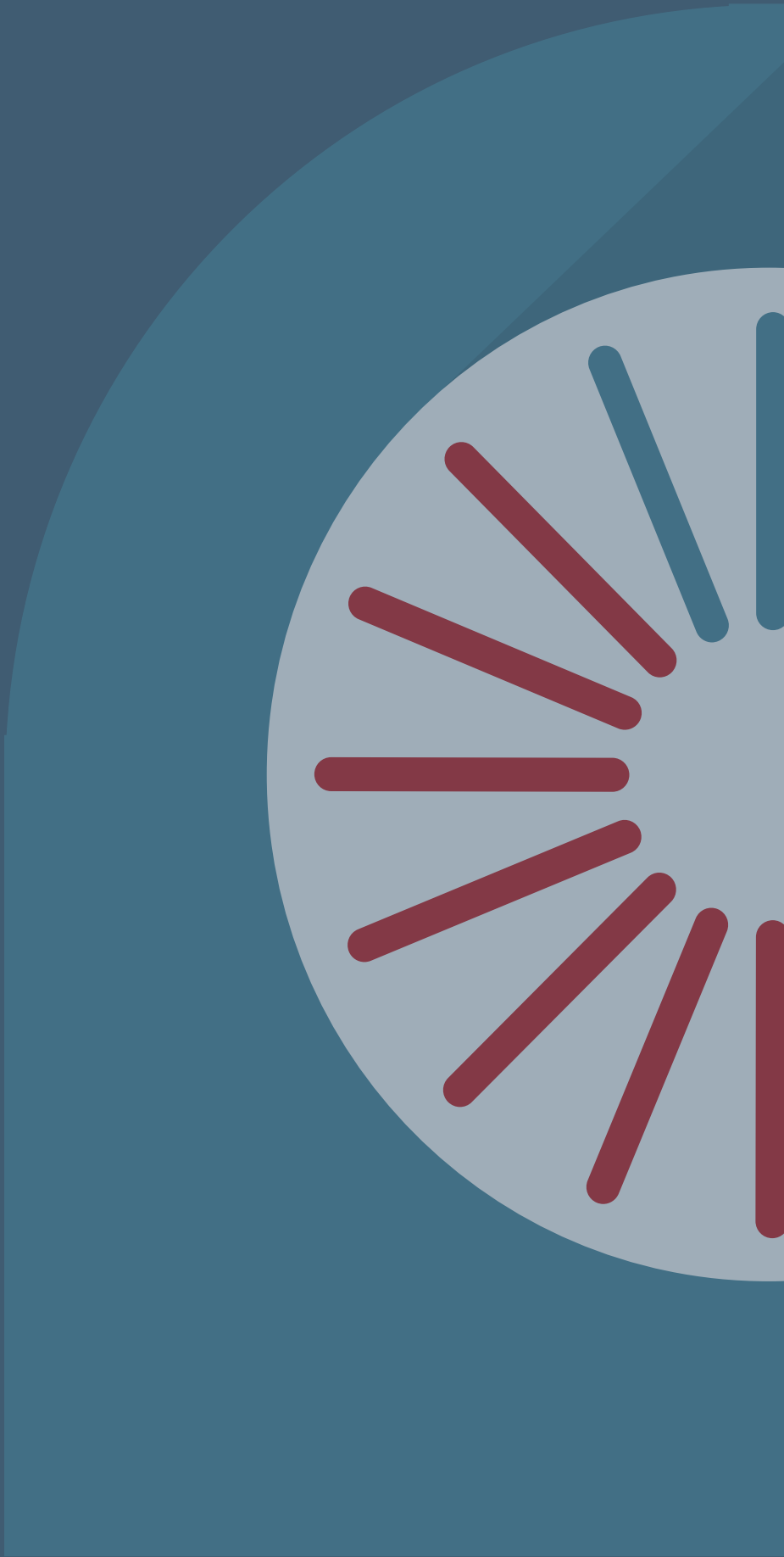
(1) referred to nominal flow rate



DATA SHEET

The technical characteristics of the range are available online on our website <https://www.lmfclima.it/en/hvs/> or by scanning the QR code with your smartphone





FLS-FLEX

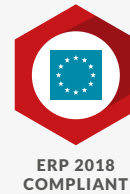


Heat recovery unit
WITH VERY HIGH EFFICIENCY
HEAT RECOVERY,
from 2,000 to 19,000 m³/h

Ventilation unit designed and built for non-residential applications, enables to combine the need for air renewal with energy savings.

Equipped with very high efficiency aluminium plate heat recovery unit, fans with EC motors and integrated motorised by-pass system for free-cooling operation, on frame with **thermal break profiles and mineral wool insulation**.

The series is divided into four sizes, for air flows ranging from 2,000 to 19,000 m³/h.



ERP 2018
COMPLIANT



PLATES



EFFICIENCY



FANS
EC



PLUG&PLAY



INDOOR
INSTALLATION



OUTDOOR
INSTALLATION

ADVANTAGES

FLS-FLEX range units are now fitted with a frame with thermal break profiles and mineral wool insulation, for better thermal performance. The range complies with ErP 2018 requirements, in a compact structure and able to guarantee a very high energy recovery thanks to the counter-current plate recovery unit, also making start-up easier thanks to the integrated regulation and tested before shipment.

The FLS-FLEX range is now equipped with an external module for summer dehumidification (DHS).

TECHNICAL SPECIFICATIONS AND ACCESSORIES

- Supporting frame in extruded aluminium profiles **with thermal break**
- Sandwich panels th. 42 mm in internally galvanised sheet and pre-painted externally in RAL 9002 finish.
- Non-flammable **thermal and acoustic insulation in high insulation mineral wool**
- Static heat recovery unit with very high efficiency of the counter flow air-to-air type with aluminium exchange plates fitted with additional sealing, integrated with an already motorised by-pass system. Aluminium condensate collection tank with 1" dual side drain.
- Rigid pocket filters with polystyrene frame with polyurethane seal and medium water-repellent fiberglass. Efficiency class ePM10 70% on room return and ePM1 50% on outdoor air intake.
- Centrifugal fans with free-running impeller with backward blades directly coupled to EC technology electric motors.
- Electrical panel complete with remote display and microprocessor to manage the thermoregulation at a fixed point in supply, based on operating logics designed to maximise energy savings and room comfort, by means of airflow modulation guaranteed by inverter technology. The unit is designed for connection via RS485 to supervision systems based on the Modbus RTU protocol.

| | |
|---|--------------------------|
| Summer water dehumidification external section | DHS V33 |
| Sanitation modules with plasma technology and anti-virus filter | KVir-P |
| Internal electric pre-heater | SKEp |
| Internal electric post-heater | SKEr |
| Water heating / cooling module | CSS V33 |
| 3 motorised dampers section | MS3 |
| Pair of external motorised dampers | SKR2 |
| External flexible connection | GAT |
| Pair of silencers | SILm / SILf |
| Pressure transducer | DPSa / DPSp |
| CO2 sensor | AQS |
| Pre-filter | PF |
| High efficiency filter | FT9 |
| External cap with mesh | CFA A / CFA B |
| Rain covers | TPR / TPRs / TPRc / TPRm |

MODELS AND TECHNICAL DATA

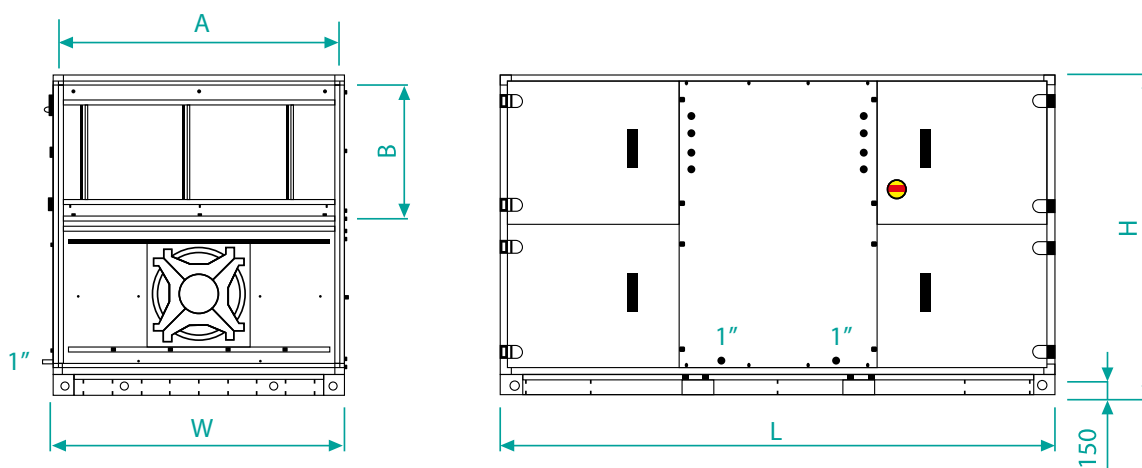
| FLS-FLEX | | 50 | 92 | 144 | 205 |
|----------------------------|-------------------|------|------|-------|-------|
| Nominal airflow | m ³ /h | 4200 | 7500 | 11000 | 14000 |
| Useful static pressure (1) | Pa | 350 | | | |
| Sound pressure level | dB(A) | 82 | 84 | 84 | 86 |
| Max. absorbed power | W | 4700 | 9500 | 9700 | 18800 |

(1) outdoor air/inlet circuit

(2) at nominal airflow, inlet air 28°C 60% RH, in/out water temperature 7/12°C

(3) at nominal airflow, inlet air 15°C, in/out water temperature 50/44°C

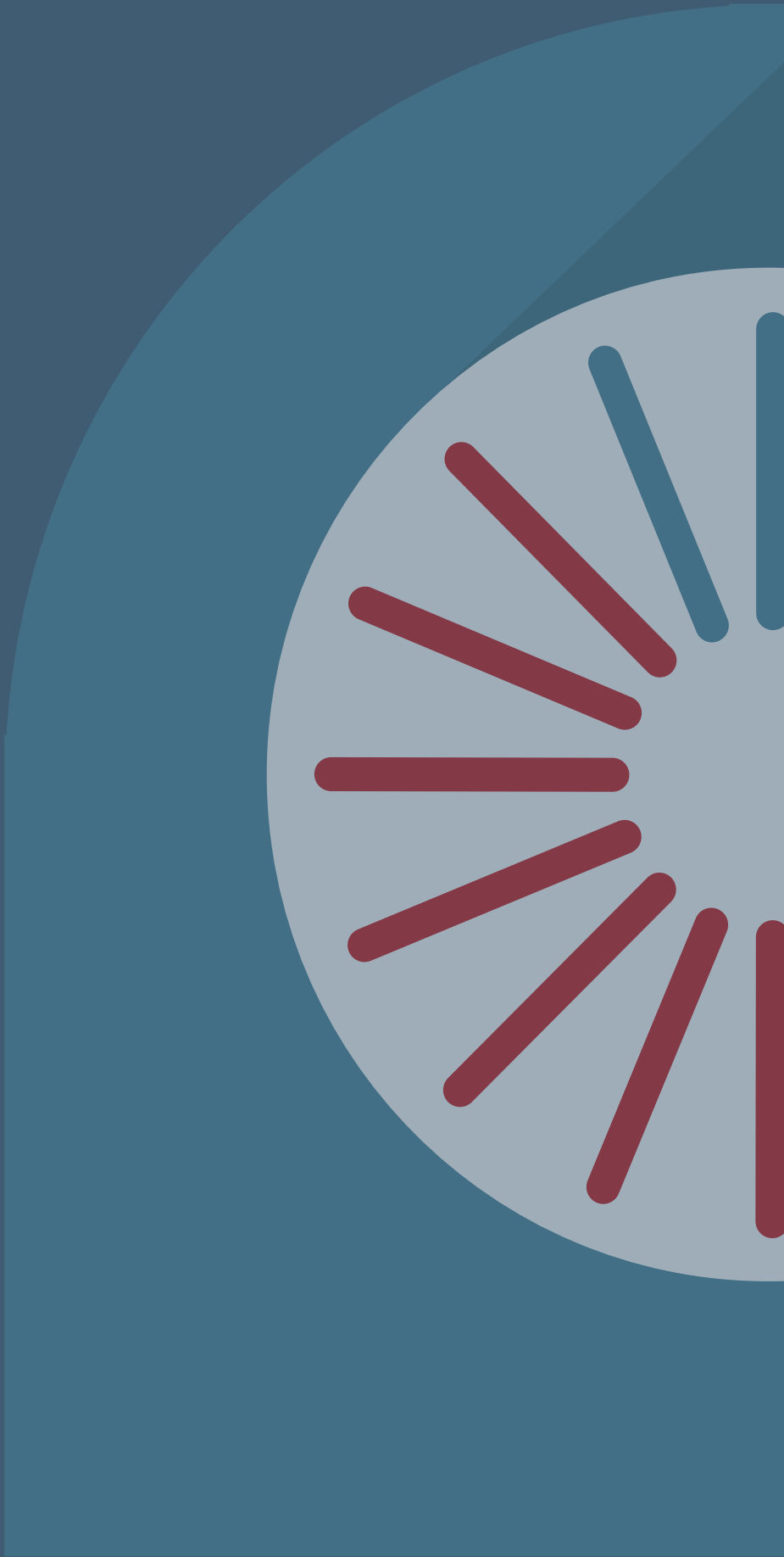
(4) air inlet 29°C 65% RH, in/out cold water temperature 7/12°C, in/out reheating water temperature 40/30°C



DATASHEET

The technical characteristics of the range are available online on our website <https://www.lmfclima.it/en/fls-flex/> or by scanning the QR code with your smartphone





FLR-FLEX



Heat recovery unit WITH ENTHALPY ROTARY RECOVERY UNIT from 3,000 to 23,000 m³/h

Ventilation unit designed and built for non-residential applications, enables to combine the need for air renewal with energy savings.

Fitted with high efficiency enthalpy rotary heat recovery unit and fans with EC motors, on frame with **thermal break profiles and mineral wool insulation**.

The series is divided into four sizes, for air flows ranging from 3,000 to 23,000 m³/h.



HOSPITALS



THEATERS



OFFICES

COMPLIANT
ERP 2018

ROTARY

EFFICIENCY
>80%FANS
EC

PLUG&PLAY

INDOOR
INSTALLATIONOUTDOOR
INSTALLATION

ADVANTAGES

FLR-FLEX range units are now fitted with a frame with thermal break profiles and mineral wool insulation, for better thermal performance. The range complies with ErP 2018 requirements, in a compact structure that makes it ideal for installation inside technical compartments, especially where a building renovation is required.

The FLR -FLEX range is now equipped with an external module for summer dehumidification (DHS).

TECHNICAL SPECIFICATIONS AND ACCESSORIES

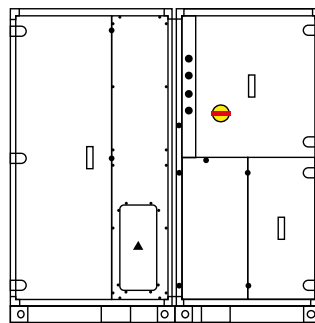
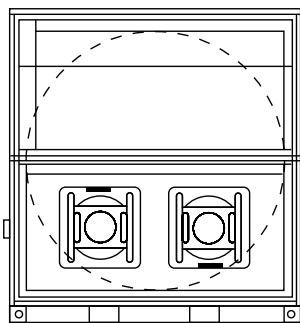
- Supporting frame in extruded thermal break **aluminium profiles**.
- Sandwich panels th. 42 mm in internally galvanised sheet and pre-painted externally in RAL 9002 finish.
- Non-flammable thermal **and acoustic insulation in high insulation mineral wool**.
- Enthalpy rotor type high efficiency heat recuperator unit with aluminium exchanger and galvanised steel frame. Transmission to the electric motor by means of an adjustable tension belt. Dual central and circumferential seal for the reduction of air leaks.
- Rigid pocket filters with polystyrene frame with polyurethane seal and medium water-repellent fiberglass. Efficiency class ePM10 70% on room return and ePM1 50% on outdoor air intake
- Centrifugal fans with free-running impeller with backward blades directly coupled to EC technology electric motors
- Recessed type electrical panel with electronic adjustment and remote user interface for complete control of all the key functions and specifically:
 - manual control of the EC fans
 - automatic control of the EC fans (for pressure or air quality)
 - water valve control
 - electric heater management
 - recovery unit defrosting management
 - free-cooling management (by stopping the rotor)
 - mixing/exhaust chamber management
 - post-ventilation
 - weekly programming
 - alarm management
 - remote on/off
 - Remote summer/Winter
 - timed activation via presence sensor
 - fan management via fire alarm digital input
 - BMS via Modbus protocol and RS485 connection

| | | | |
|---|---------|------------------------|--------------------------|
| Summer water dehumidification external section | DHS V33 | Pair of silencers | SILm / SILf |
| Sanitation modules with plasma technology and anti-virus filter | KVir-P | Pressure transducer | DPSa / DPSp |
| Internal electric pre-heater | SKEp | CO2 sensor | AQS |
| Internal electric post-heater | SKEr | Pre-filter | PF |
| Internal water heating coil | SKW V33 | High efficiency filter | FT9 |
| External water cooling module | CCS V33 | External cap with mesh | CFA / CFA B |
| 3 motorised dampers section | MS3 | Rain covers | TPR / TPRs / TPRc / TPRm |
| Pair of external motorised dampers | SKR2 | | |
| External flexible connection | GAT | | |

MODELS AND TECHNICAL DATA

| FLR-FLEX | | 50 | 92 | 144 | 205 |
|----------------------------|-------------------|-------------|-------------|--------------|--------------|
| Nominal airflow | m ³ /h | 4800 | 9000 | 13500 | 18000 |
| Useful static pressure (1) | Pa | 350 | | | |
| Sound pressure level | dB(A) | 84 | 88 | 86 | 90 |
| Max. absorbed power | W | 5000 | 10100 | 10200 | 19800 |

(1) outdoor air/inlet circuit



DATASHEET

The technical characteristics of the range are available online on our website www.lmfclima.it/en/flr-flex or by scanning the QR code with your smartphone





FLEX



Air-handling unit from 1,000 to 20,000 m³/h

The FLEX series air handling units are designed to allow maximum flexibility when selecting a machine, with units ranging from 1,000 to 100,000 m³/h of air flow in 34 models to cover the most varied dimensional plant requirements. The flexibility of the range enables to always find the correct balance between required performance and dimensional needs of the room, without neglecting the option of developing special machines with dimensions other than the standard ones in the catalogue. They have a supporting structure with double-chamber extruded aluminium profiles, **with thermal break execution and non-flammable, highly insulated mineral wool insulation**. The FLEX series control units are particularly adaptable to applications both in the civil field (schools, offices, residential buildings) and in the industrial and process fields (pharmaceutical, chemical, laboratories) and for specific applications (hospitals, etc.). The countless potential configurations allow the FLEX control units to be configured as AHU with supply only, extraction, supply and return combined with the use of high efficiency recovery units (plate and rotary) compliant with Erp 2018 regulations, with the use of all the components required for complete air treatment: water, gas, steam heat exchange coils, gas burners, humidification sections, filtration at various stages from medium to very high filtration efficiency. The advanced adjustment of the FLEX control units allows connection with the LMF Sevio system for a full access to the machine set and control parameters for monitoring (energy management) or technical assistance activities.



INDUSTRIES



SCHOOLS



TERTIARY SECTOR

20.000
m³/h



1,000
m³/h



COMPLIANT
ERP 2018



INDOOR
INSTALLATION



OUTDOOR
INSTALLATION

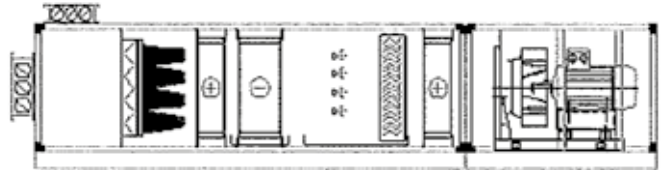


WEB CONTROL AND
MONITORING

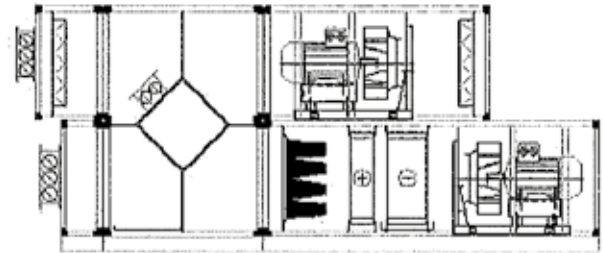
FLEX CENTRAL CONFIGURATIONS

Supply only AHU with P.A.E. damper, Coarse 50% filters + ePM1 50%, heating coil, steam humidification coil, fan:

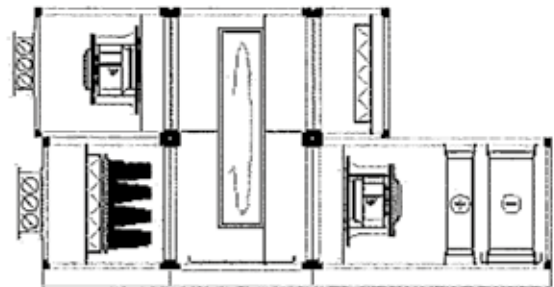
- Supply AHU with mixing chamber (recirculation and P.A.E.), Coarse 50% filters + ePM1 50%, heating coil, cooling coil, steam humidification, post-heating coil, plug-fan.



- AHU with plate heat recovery system (cross-flow or counter-flow), supply and return plug fans, Coarse 50% filtration or ePM10 50% in return and Coarse 50% + ePM1 50% in supply, heating coil, cooling coil.

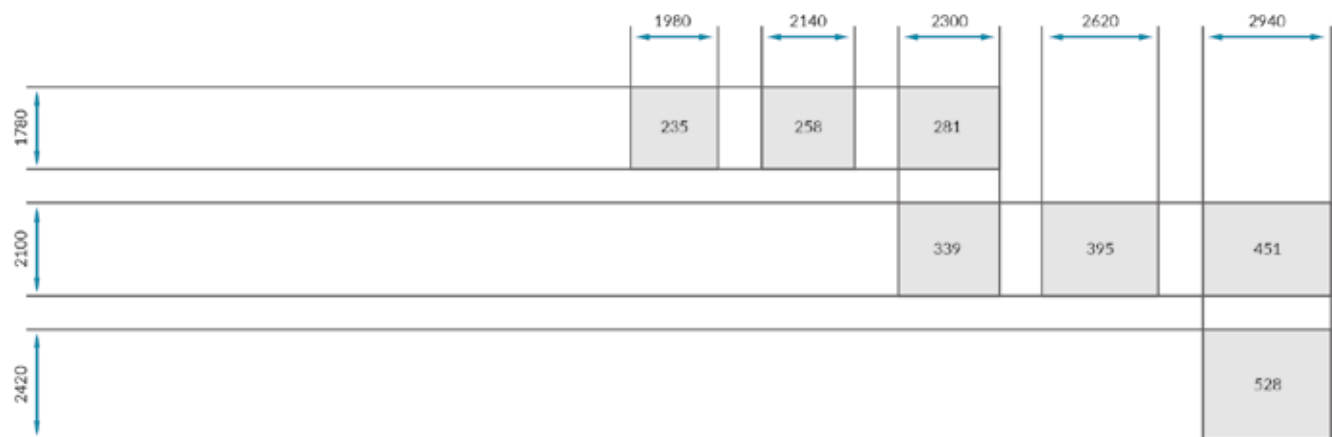
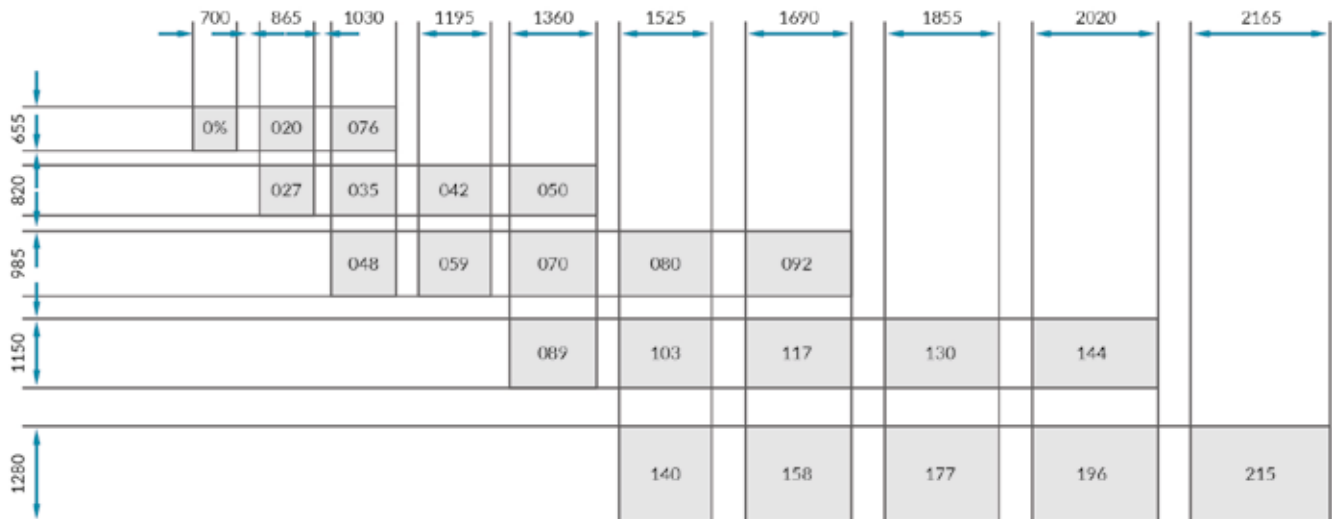


- AHU with rotary heat recovery system, EC type supply and return plug fans with 0-10v control and brushless motor, Coarse 50% filtration or ePM10 50% in return and Coarse 50% + ePM1 50% in supply, heating coil, cooling coil.



- Use of the best components available on the market in terms of fans, filtration, heat recovery units (plate and rotary) and adjustment

FLEX MODEL DIMENSIONS



MAIN COMPONENTS

COILS

All the heating and cooling sections are fitted with side removable coils.

The coils have standard copper pipes and aluminium fins, however they can be of different materials on request.

Copper/Copper and Copper/pre-painted aluminium are the most common non-standard combinations, however other specific executions are also available. Hot or heated water, steam and condensing coils (freon of any type) are available in heating. Cooled water or direct expansion coils (freon of any type) are available in cooling.

The cooling sections are equipped with a removable condensate collection tray in aluminium (standard) or stainless steel.

FANS

The fan section is the most crucial component for the correct operation of the unit. A variable number of fans with different characteristics are available for each model, in order to always achieve the best performance from the machine, optimising efficiencies and minimising noise.

RECOVERY UNITS

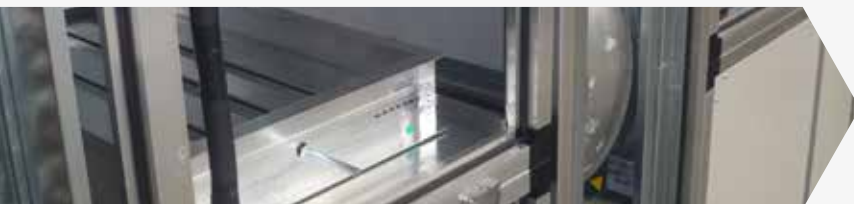
LMF has always paid particular attention to heat recovery. The FLEX series provides the option of using the main recovery systems on the market: cross-flow with aluminium plates, rotary hygroscopic aluminium, multiple coils with intermediate vector or heat pipes.



The coils are standard with copper tubes and aluminium fins, but they can be requested in copper/prepainted aluminium, copper/copper, or other special executions



EC Fans and Plug Fan



Extremely easy access to all internal components



Wide variability of filtration systems

AUTOMATION AND CONTROL

On request, LMF CLima is also able to provide plug&play solutions for its air handling units, using electrical panels to manage all functions of the selected machine and with the option of integrating with supervision systems operated with Modbus RTU control on RS485, Modbus TCP/IP on Ethernet network, BACnet TCP/IP with B-AAC profile on Ethernet network or Webserver with trend on Ethernet network. The panel contains both the power part and the Eliwell microprocessor. The LMF Sevio system is also available, for a full access to the set and control parameters for monitoring (energy management) or technical assistance activities.

GAS BURNERS

The standard configuration of the FLEX models requires the insertion of gas burners for heating. A combustion chamber is provided, the size of which depends on the size of the machine and the air flow. The chamber is equipped with a by-pass section. The burner is included, it is installed on the side, in a dedicated technical space of the section. It is shipped loose, not installed. The combustion fume exhaust section requires the customer to add pipes to remove the fumes.



The calibration dampers are with aluminium blades designed to minimise pressure loss, with nylon wheels and seal gasket



The humidification systems available are the most commonly used: steam, evaporating pad with or without recirculation pump, washer, water atomisation, ultrasonic, with high pressure micronized water



On request, refrigeration systems integrated into the handling unit are available. Sizing takes place according to the specific requests of the designer. Reversible air-air and air-water heat pump circuits are available



The safety microswitch mounted on the inspection door

FXS-FLEX

NEW 2022



Heat recovery unit
WITH VERY HIGH EFFICIENCY
HEAT RECOVERY,
FLEXIBILITY AND VERSATILITY
DURING INSTALLATION
from 250 to 3,000 m³/h

The FXS-FLEX series includes high efficiency heat recovery units for floor installation and high configuration flexibility. They are available in a vertical construction, and combine total freedom in the arrangement of air inlets/outlets in various positions (front/top/side), both a priori and on site. All this makes them an ideal product for internal installation in confined spaces or close to walls, with minimum obstruction.

The FXS-FLEX series comes in 5 models, with flow rates from 250 to 3,000 m³/h.

The FXS-FLEX range is equipped with an aluminium plate heat recovery unit, fans with EC motors and an integrated motorised by-pass system for free-cooling operation, in addition to the innovative KVir accessory for air sanitation with UV lamp and polyvinyl-amino matrix virus filter.

In the FXS-FLEX range, the KVir accessory can be installed fully integrated inside the unit.



COMPLIANT
ERP 2018



PLATES



EFFICIENCY



FANS
EC



PLUG&PLAY



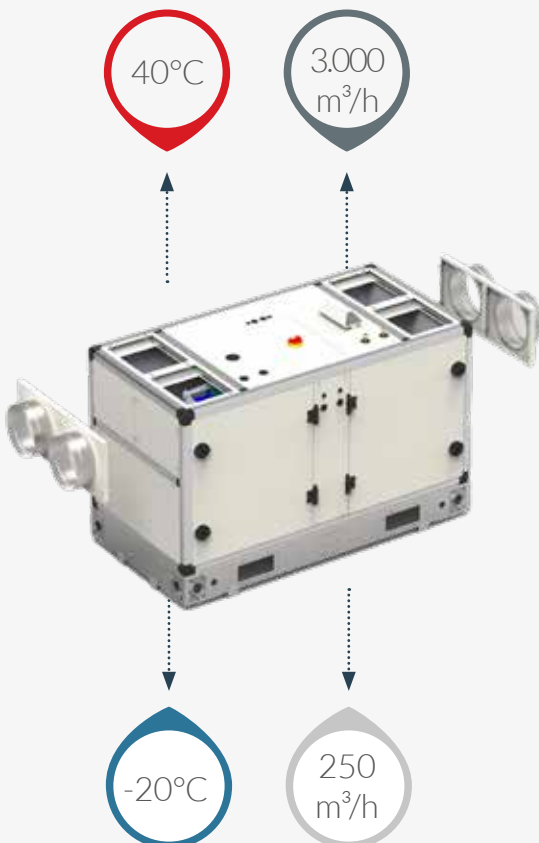
INDOOR
INSTALLATION



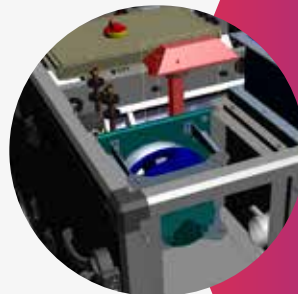
HORIZONTAL
ORIENTATION



VERTICAL
ORIENTATION



ADVANTAGES



Flexibility even on site. FXS-FLEX is designed to provide maximum flexibility and adaptability during installation. The air intakes can be adjusted by 90°, electric and water coils can also be inserted, also while on-site.

Moreover FXS-FLEX can integrate the Kvir sanitation system, fully inside the unit casing.

TECHNICAL SPECIFICATIONS AND ACCESSORIES

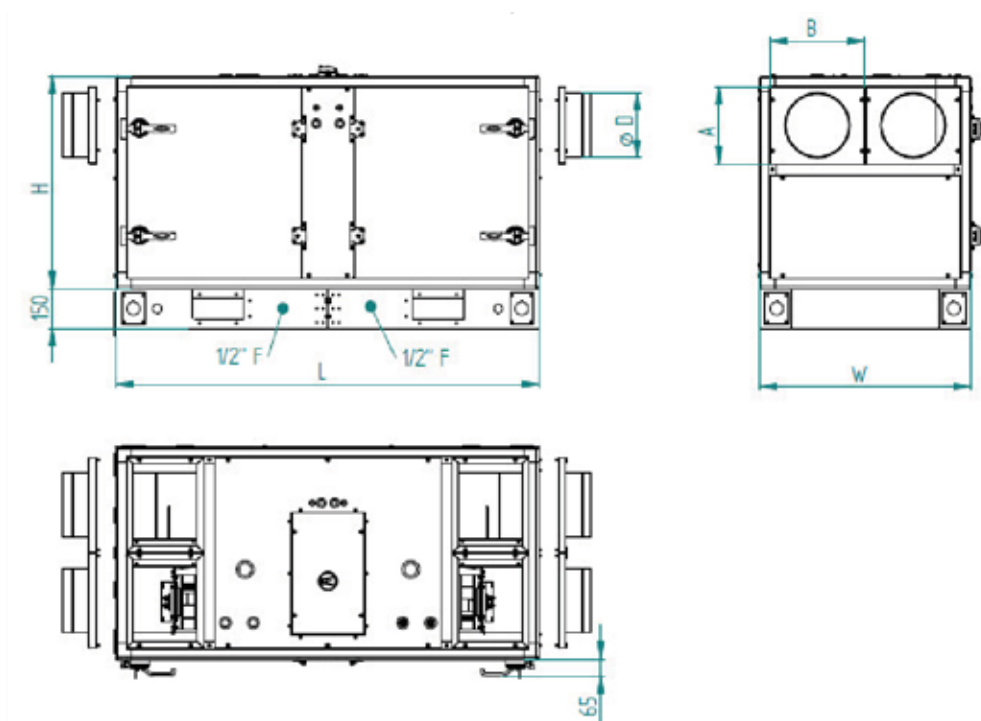
- Supporting frame in extruded thermal break **aluminium profiles**.
- Sandwich panels th. 42 mm in internally galvanised sheet and pre-painted externally in RAL 9002 finish.
- Non-flammable thermal **and acoustic insulation in high insulation mineral wool**.
- Enthalpy rotor type high efficiency heat recuperator unit with aluminium exchanger and galvanised steel frame. Transmission to the electric motor by means of an adjustable tension belt. Dual central and circumferential seal for the reduction of air leaks.
- Rigid pocket filters with polystyrene frame with polyurethane seal and medium water-repellent fiberglass. Efficiency class ePM10 70% on room return and ePM1 50% on outdoor air intake
- Centrifugal fans with free-running impeller with backward blades directly coupled to EC technology electric motors
- Recessed type electrical panel with electronic adjustment and remote user interface for complete control of all the key functions and specifically:
 - manual control of the EC fans
 - automatic control of the EC fans (for pressure or air quality)
 - water valve control
 - electric heater management
 - recovery unit defrosting management
 - free-cooling management (by stopping the rotor)
 - mixing/exhaust chamber management
 - post-ventilation
 - weekly programming
 - alarm management
 - remote on/off
 - Remote summer/Winter
 - timed activation via presence sensor
 - fan management via fire alarm digital input
 - BMS via Modbus protocol and RS485 connection

| | |
|---|------|
| Sanitation modules with plasma technology and anti-virus filter | KVir |
| Internal electric pre-heater | SKEp |
| Internal electric post-heater | SKEr |
| Internal electric post-heater | SKW |
| External water cooling module | SAF |
| Direct expansion external cooling module | SED |
| External flexible connection | GAT |
| Round fitting (for base unit) | BCC |
| Pressure sensor | DPS |
| CO2 sensor | AQS |
| Pre - filter | PF |
| High efficiency filter | FC9 |
| Touch screen remote control panel | TMC |

MODELS AND TECHNICAL DATA

| FXS-FLEX | | 500 | 750 | 1100 | 1700 | 2500 |
|----------------------------|-------------------|-----|-----|------|------|------|
| Nominal airflow | m ³ /h | 500 | 750 | 1100 | 1700 | 2500 |
| Useful static pressure (1) | Pa | 350 | 250 | 270 | 210 | 320 |
| Sound pressure level | dB(A) | 63 | 60 | 65 | 66 | 69 |
| Max. absorbed power | W | 330 | 340 | 680 | 920 | 2000 |

(1) outdoor air/inlet circuit



DATASHEET

The technical characteristics of the range are available online on our website <https://www.lmfclima.it/en/fxs-flex/> or by scanning the QR code with your smartphone

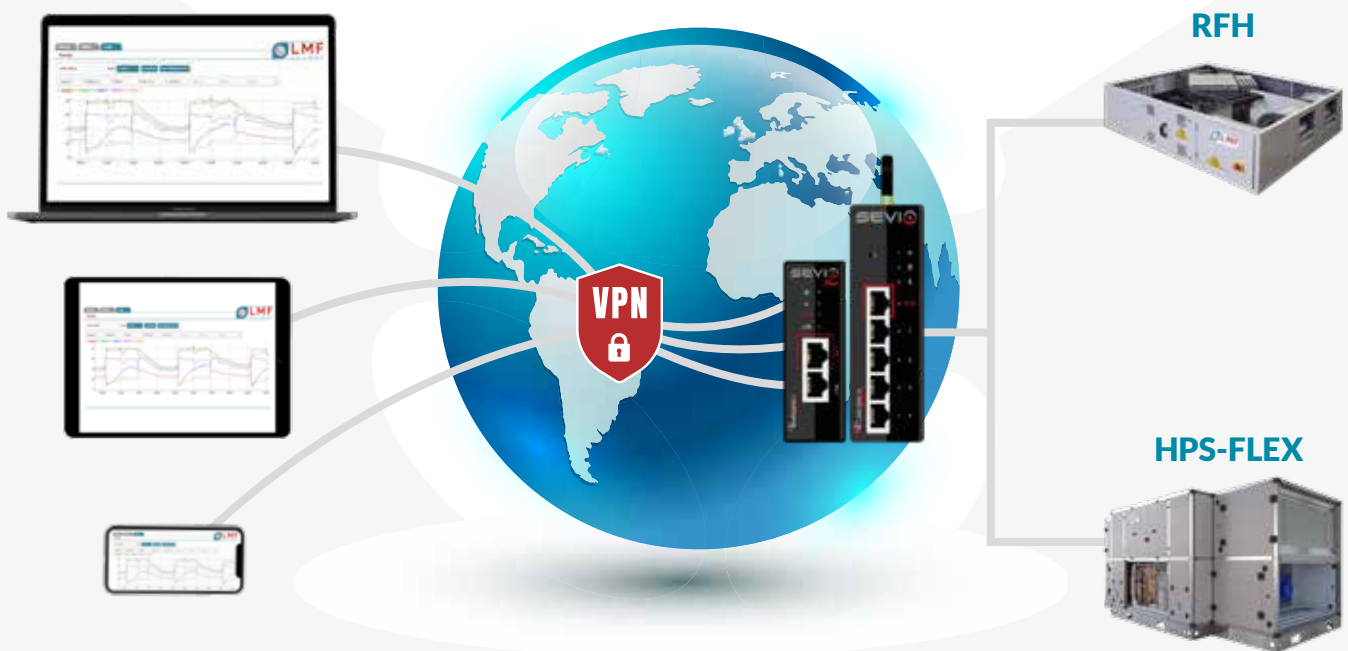




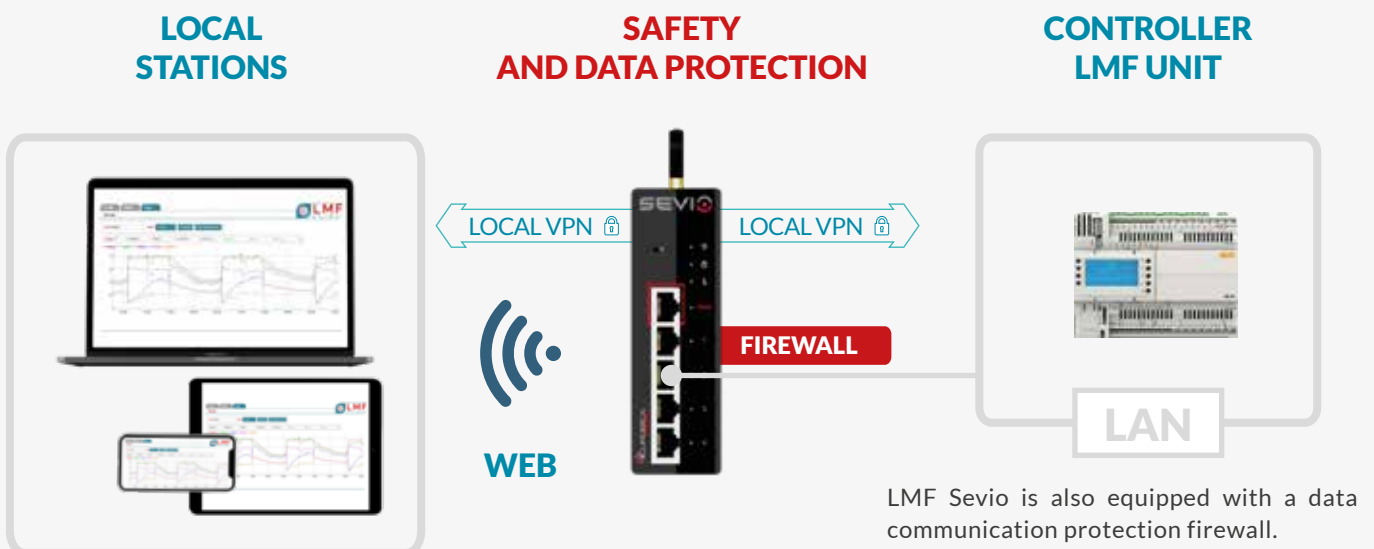
Remote management and control

The safe and easy system LMF Sevio

The LMF Sevio system enables full access to the FLEX range set and control parameters for monitoring (energy management) or technical assistance activities. Easy and quick installation, without the need to perform complex network configurations.



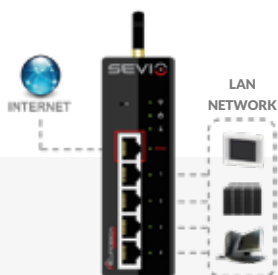
The Sevio LMF system uses a secure communication protocol thanks to the use of a VPN (virtual private network). VPNs use links that require authentication to ensure that only authorised users may access them using encryption systems.



LMF Sevio is also equipped with a data communication protection firewall.

TWO MODELS OF LMF SEVIO ROUTER AVAILABLE

1. LMF SEVIO BASIC



PRODUCT DESCRIPTION

- metal case: Steel S235JR
- dimensions 121 (H) x 40 (W) x 156 (D) mm
- acoustic warning SEVIO Router
- DIN bar assembly with 38 mm clip
- power supply 8-30 V DC with reverse polarity protection.
- 3,81 mm pitch connector with safety fixing.

WI-FI

- radio 2.4 GHz 802.11 b/g/n. standard RP-SMA antenna connector
- authenticated local access to the automation network via PC, tablet, smartphone, internet connectivity via VPN tunnel and isolation from the installation site network (WAN).
- Internet connection via Wi-Fi network of the installation site or via mobile hotspot
- additional Wi-Fi network (guest), isolated from the automation network, dedicated to internet access

FIREWALL

- complete isolation between the WAN installation site network and the LAN automation network
- no IP conflict between the WAN installation site network and the LAN automation network

LAN

- DHCP Server (modifiable from SEVIO Portal)
- 4 Ethernet ports RJ45 10/100/1000 Mbit/s with integrated switch
- internet connectivity via VPN tunnel
- auto adjustment of MDI/MDIX cables
- 253 devices reachable via additional switches

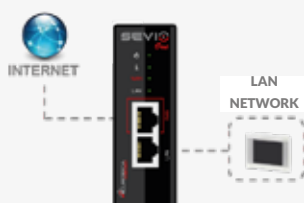
WAN

- DHCP client (default) or static IP modifiable from SEVIO Portal
- internet connection via customer network
- 1 Ethernet port RJ45 10/100/1000

USB 2.0

- mobile broadband modem connection
- USB flash drive connection (included in the package) for offline configuration.

2. LMF SEVIO ONE



PRODUCT DESCRIPTION

- Metal case: Steel S235JR
- Dimensions 90 (H) x 23 (W) x 150 (D) mm
- Power supply 8-30 V DC with reverse polarity protection.
- 3,81 mm pitch connector with safety fixing.

FIREWALL

- complete isolation between the WAN installation site network and the LAN automation network
- no IP conflict between the WAN installation site network and the LAN automation network

LAN

- DHCP Server (modifiable from SEVIO Portal)

- 4 Ethernet ports RJ45 10/100/1000 Mbit/s
- internet connectivity via VPN tunnel
- auto adjustment of MDI/MDIX cables
- 253 devices reachable via additional switches

WAN

- DHCP client (default) or static IP modifiable from SEVIO Portal
- internet connection via customer network
- 1 Ethernet port RJ45 10/100 Mbit/s

USB 2.0

- mobile broadband modem connection
- offline configuration via USB Flash Drive (included in the package).

Access to the Router Service only requires an Internet connection where the system is installed, using the computer network of the installation site or a mobile connection. Sevio Router is supplied pre-configured ready-to-use.

LMF SEVIO Portal: the control dashboard for remote management of the unit parameters

The Sevio system allows the control stations to reach all devices connected to the various Sevio Routers. Sevio Portal provides simultaneous access to multiple operators. Furthermore, each operator can use several control stations. The control services must communicate with the public IP vpn.sevio.it



KVIR-P

Air sanitation modules WITH PLASMA TECHNOLOGY AND ANTI-VIRUS FILTER from 400 to 16,000 m³/h

KVir-P modules are designed for easy installation, **even within an existing aeraulic system**, of a sanitising section of the treated air.

KVir sanitation modules use two technologies:

1. Photocatalysis with plasma UV. The innovative high intensity dual wavelength UV lamps generate plasma, i.e. a gaseous mixture charged with energy.
2. Antivirus post-filtration (ePM1 55%). The new T-abv filters block allergens, bacteria and viruses from the airflow.

The wide range of flow rates covers the most varied residential, tertiary and industrial applications.

The series is divided into six sizes, for air flows ranging from 400 to 16,000 m³/h.



FLEXIBILITY DURING INSTALLATION

Flexibility of insertion of the KVir-P module, even in an existing aeraulic system, thanks to a dedicated and autonomous controller.

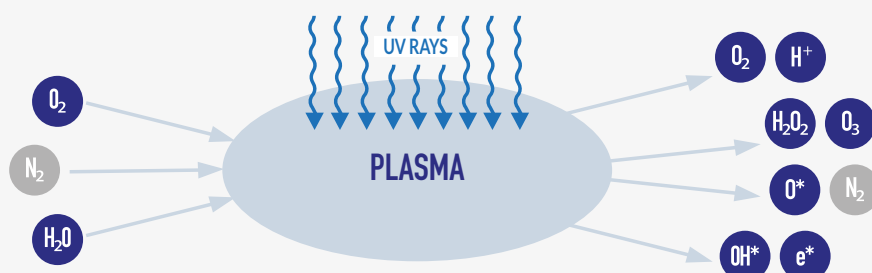
TECHNICAL SPECIFICATIONS AND ACCESSORIES

- UVC lamp, with very low energy consumption (<24W/lamp) and immersed in the air flow, contained in a sandwich box
- Containment structure with interior in AISI 304 stainless steel and exterior in pre-painted sheet metal, insulation with high density mineral wool
- Low voltage supply from a directly connected external heatsink module
- Easily removable assembly for standard maintenance and lamp(s) replacement operations at the end of the operating cycle (approximately 9000 hours).
- On-board controller for system management, with display, with the following features:
 - digital input for remote on/off (typically from the handling or ventilation unit to which it is paired)
 - visual (non-critical) maintenance alarm (lamp life low)
 - visual post-filter clogging alarm (if present), available as digital output (in common with lamp signal)
 - duty-cycle management that can be set by the user based on specific needs of the application.

PLASMA TECHNOLOGY DESCRIPTION

KVir-P is the new range of modules which can be installed in pre-treated inlet air ducts to sanitise/purify the air with plasma technology to reduce bacterial/viral loads for a quick and effective sanitation and disinfection.

This technology is based on the principle of plasma photocatalysis, an innovative process that uses light sources to purify the air, without adding / emitting chemical agents into the atmosphere.



KVir-P uses innovative high intensity dual wavelength UV lamps that generate plasma, i.e. a gaseous mixture charged with energy and containing O^+ , O^- , O_2 , O , O_3 , ionised O_2 , metastable excited O_2 and free electrons. Plasma has the following effects:

- It breaks the carbon molecular chains found in polluting compounds, with the result of eliminating odours;
- At the same time, the hydrogen atoms (generated by the splitting of moisture - H_2O - of the air, combined with free oxygen atoms - O_2), create free radicals suitable for the oxidation of contaminants (odours, viruses, bacteria, greases and other organic substances) and to disinfect air and surfaces.

The plasma created, unlike other sanitising technologies, acts with 5 different forms of technologies for purification:

1. photo-plasma
2. photocatalytic oxidation
3. UV sterilisation
4. production of negative ions
5. controlled ozone production to attack chemical and biological contaminants, in particular to destroy the cell membrane and the DNA of microorganisms such as viruses, bacteria, fungi with an efficiency greater than 99% in less than a minute and break the chemical bonds of the most common pollutants (e.g. nicotine, VOC, ammonia).

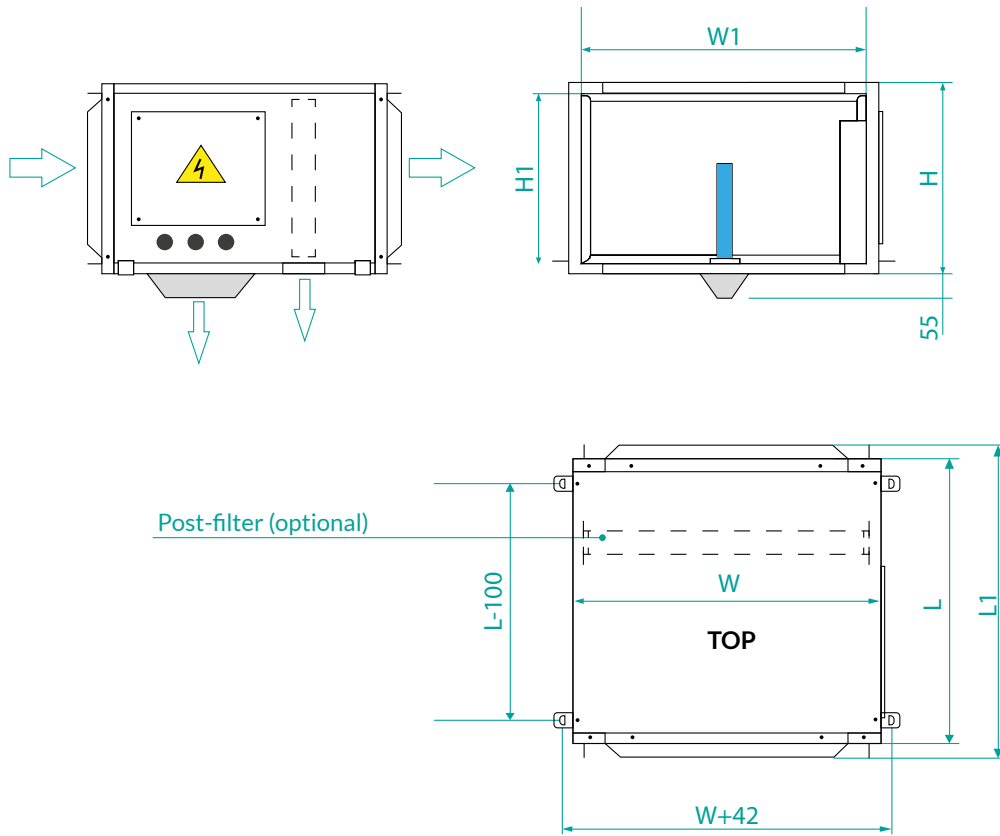
KVir-P also uses antivirus post-filtration technologies with new T-abv filters (ePM1 55%) that block allergens, bacteria and viruses from the air flow, thanks to a non-toxic polymeric substance applied to the surface of the individual fibres of the micro-glass filtration material. The pressure drop of these filters is negligible.

MODELS AND TECHNICAL DATA

| KVIR-P | | | 1000 | 2500 | 4000 | 6500 | 10000 | 16000 |
|-------------------------------------|---------|-------------------|------------|-------------|--------------|--------------|--------------|--------------|
| | nominal | | 750 | 1900 | 3100 | 4900 | 8200 | 12500 |
| Airflow | minimum | m ³ /h | 400 | 1000 | 2000 | 3000 | 5000 | 8000 |
| | maximum | | 1000 | 2500 | 4000 | 6500 | 10000 | 16000 |
| Air pressure drop (1) | | Pa | 10 / 90 | | | | | |
| ELECTRICAL ABSORPTION | | | | | | | | |
| Absorbed power (1) | | W | 15 / 50 | 20 / 110 | 2 x 20 / 200 | 2 x 24 / 300 | 3 x 24 / 500 | 3 x 24 / 700 |
| Power supply | | V-ph-Hz | 230-1-50 | | | | | |
| SANITISING CAPACITY | | | | | | | | |
| Average viral load reduction (2) | | % | > 98 | | | | | |
| Elimination of bacterial load (3) | | % | > 97 | | | | | |
| Average VOC reduction (4) | | % | 50 | | | | | |
| Optional post-filter efficiency (5) | | % | > 98 | | | | | |

- (1) without / with post-filter at nominal flow rate;
 (2) referred to hPIV-3 parainfluenza virus sample;
 (3) referred to airborne Enterobacter;
 (4) test substances: Toluene, Xylene, Butyl acetate;
 (5) referred to particles with a diameter of 10 nm;

DIMENSIONS AND WEIGHTS



| MODEL | | 1000 | 2500 | 4000 | 6500 | 10000 | 16000 |
|--------|----|------|------|------|------|-------|-------|
| L | mm | 600 | 600 | 600 | 600 | 600 | 600 |
| H | mm | 300 | 400 | 400 | 500 | 600 | 900 |
| W | mm | 450 | 650 | 1050 | 1400 | 1900 | 2000 |
| L1 | mm | 660 | 660 | 660 | 660 | 660 | 660 |
| H1 | mm | 258 | 358 | 358 | 458 | 558 | 858 |
| W1 | mm | 402 | 602 | 1002 | 1352 | 1852 | 1952 |
| Weight | kg | 11 | 14 | 19 | 24 | 35 | 45 |



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