MITSUBISHI ELECTRIC
HYDRONICS & IT COOLING SYSTEMS S.p.A.

COMFORT

ROOFTOP UNITS

WSM3 G07

AIR COOLED ROOFTOP UNITS FROM 80 TO 180 kW

EUROVENT CERTIFIED PERFORMANCE
www.eurovent-certification.com

ErP COMPLIANT 2021

melcohit.com

CLIMAVENETA®

WSM3 G07

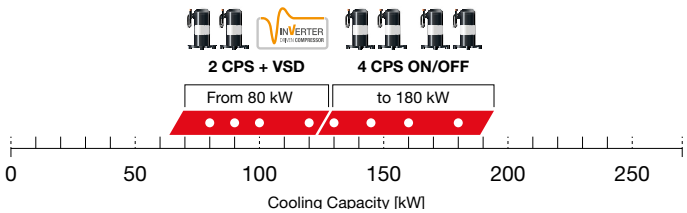
HIGHEST QUALITY IN EVERY SINGLE DETAIL

- **Packaged** air source rooftop unit, **fully configurable**, available for **heating / cooling** (WSM3) or cooling only (WSM3-T) mode.
- Suitable for the air conditioning of **medium / large volume environments.**
- **WSM3 is a complete solution** for: heating, cooling, air filtration, humidification and dehumidification, and air renewal.

RANGE OVERVIEW

- 2 versions, heat pump and cooling only unit
- 8 sizes in 2 frames
- From 16.000 to 33000 m³/h

WSM3-G07 0262-0402



WSM3-G07 0444-0604

Sizes 262 to 402

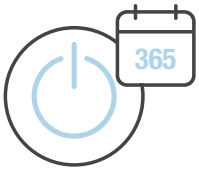
UP TO EER	UP TO SEER	UP TO COP	UP TO SCOP
2,9	5,3	3,8	3,7

Sizes 444 to 604

UP TO EER	UP TO SEER	UP TO COP	UP TO SCOP
3,2	4,6	3,3	3,4

(1) **EER / SEER**: Outdoor 35°C 50% R.H. / Indorr 27°C 47% R.H. / Mix 0%. [EN 14511 - En 14825]
(2) **COP / SCOP**: Outdoor 7°C 87% R.H. /Indorr 20°C 50% R.H / Mix 0%. [EN 14511 - En 14825]
(3) ESP for standard configuration (optional accessories not included/ calculated)
(4) The official values will be confirmed after the end of the internal tests

RELIABILITY AND CONTINUOUS OPERATION

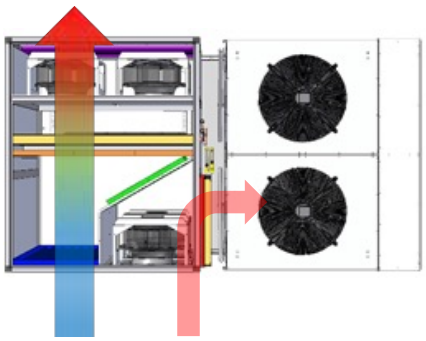


Ensuring continuous and efficient unit operation in any condition or situation is a fundamental preliminary requirement to guarantee a wide range application framework. The rooftop unit is able to independently manage additional air treatment resources, and take advantage of any favourable weather conditions. Moreover, it must also deal with critical operating conditions that could reduce the capacity delivered.

NEW OPTIMIZED FOOTPRINT

WSM3 IS CHARACTERIZED BY A NEW DESIGN

The new structure optimizes the footprint and the weight of each single size, showing great results with reduction of 12% for the MF version and up to 30% for HR/F and HR/B configuration!



FREE THERMODYNAMIC HEAT RECOVERY

Thanks to the new design, all the configurations with return fans are always able to discharge the exhaust air towards the external coils, increasing the overall efficiency of the unit in both cooling and heating mode.

WIDER OPERATING LIMITS

Up to 54°C in summer, down to -17°C in winter, both in partial loads.

INVERTER TECHNOLOGY

The inverter technology adapts in a timely manner to the real demands of the system, always guaranteeing maximum comfort with the minimum power consumption.

Efficiency

Initial investment

Footprint

Future plant demands

Units work at partial load the most of the time, and it is precisely under these conditions that inverter technology can make a difference compared to fixed speed solutions. Performances and noise emissions are highly improved with VSD technology, thanks to the continuous and accurate regulation in any load condition.

HIGHER ENERGY EFFICIENCY

Significant efficiency improvements compared to traditional fixed speed rooftop unit, up to 21% in cooling and 7% in heating.

REDUCED SOUND POWER LEVELS

In part load conditions, the variable speed units produce far less noise compared to fixed speed units, thanks to the VSD technology.

ABSENCE OF IN-RUSH CURRENTS

The unit never exceeds the nominal current, not even when starting up. Moreover, there is no need for additional equipment to reduce in-rush currents (star/delta commuters or soft starters).

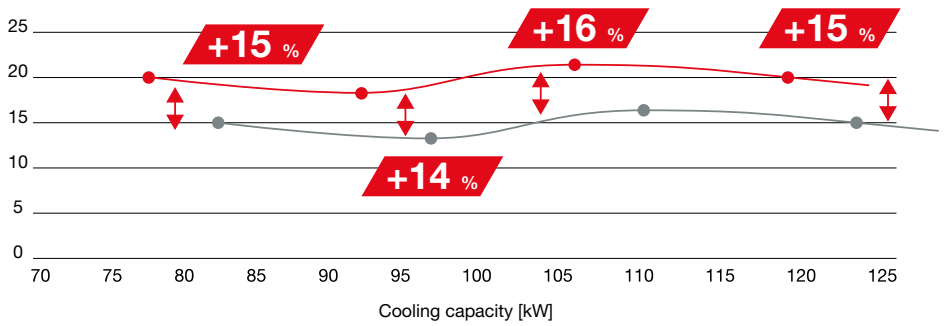
The new WSM3 showcases the latest variable speed technology:

1. Perfectly achieves the cooling and the heating loads of the plant in any condition.
2. Offers stepless and accurate capacity control.
3. Ensures premium efficiency values, thus cutting operating costs.

COOLING

SEER [EN 14825]

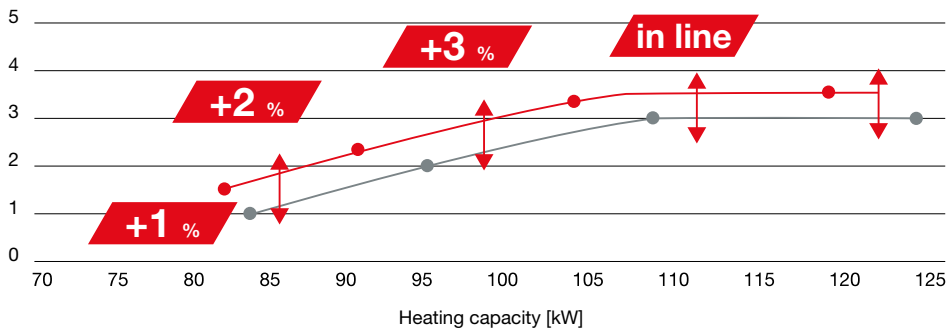
- WSM3-G07
- Fixed speed efficiency RT



HEATING

SCOP [EN 14825]

- WSM3-G07
- Fixed speed efficiency RT



HUGE BENEFITS FOR EVERY KIND OF APPLICATION

WSM3 is an autonomous rooftop unit dedicated to air handling and air renewal in comfort applications and public spaces.

Thanks to different layouts and a cooling range from 80 to 180 kW, the new range meets the requirements of both medium volume spaces and big buildings.

INDUSTRIAL BUILDINGS

WAREHOUSES

SUPERMARKET & SHOPPING MALLS

CINEMAS AND THEATRES

CONGRESS ROOM

SPORT ARENAS

WHY R32?

The new WSM3 G07 has been specifically designed to work with R32, in order to provide customers a concrete greener alternative to traditional refrigerants.

WSM3-G07 with R32 refrigerant in key is the company's path towards the creation of a greener future.

The reduced GWP level of this refrigerant gas tackles both direct and indirect global warming, offering customers a concrete forward-looking solution for buildings and a greener alternative to traditional refrigerants.

R 32

Low GWP
-66% GWP vs R410A

REDUCED ENVIRONMENTAL IMPACT

- **0 ODP** - Ozone Depletion Potential
- **One-third OWP** that R410A
- F-Gas phasedown compliant

RELIABILITY

- **Easy to handle,** reuse, and recycle
- **Low toxicity,** low flammability
- A single component refrigerant

PERFORMANCE & ENVELOPE

- Ideal for the next generation equipment
- Requires **less refrigerant volume per kW**
- **High refrigeration** and thermal conductivity
- **Low pressure drops**
- **Affordable** and readily available

TECHNOLOGICAL CHOICES

Absence in-rush currents, quiet operation, unrivaled efficiency and extreme flexibility comes from a definite choice: cutting-edge technologies.

EC AXIAL FANS

EC external fans continuously adjust the fans' speed according to the condensing / evaporating pressure, in order to reduce the energy consumption and the overall noise of the unit.

EC PLUG FANS

Supply and exhaust (when selected) plug fans with brushless **EC motors,** to ensure the best efficiencies and the highest energy savings. They constantly manage airflow or constant pressure controls, as well as the variable airflow operation.

EXTERNAL HEAT EXCHANGER

Copper-aluminium direct expansion coil, with a **single gas circuit** to exchange the energy between the refrigerant and outdoor air. The heat pump unit version is equipped with **electrical heaters** to prevent ice formation during the defrosting cycle.

WSM3 G07 from 0262 to 0402

CONTROL PANEL

BUILT IN electric board, 2 dedicated microprocessors for the optimized management of the ventilation and the coooling/heating demand. The software is **fully developed and manufactured by MEHITS.**

SANDWICH PANELS

Air treatment section has 25/42 mm sandwich panels externally painted (RAL 7035), with polyurethane in the middle to guarantee **high thermal insulation.**

SCROLL COMPRESSORS (1 + i)

INVERTER TECHNOLOGY

Single gas circuit with 2 scroll hermetic compressors, **1 + i operation:** one ON/OFF compressor **and one inverter driven.**

Together with **electronic lamination valves,** this solution achieves the highest efficiencies with relevant energy and cost savings.

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WSM3 G07 from 0444 to 0604

EC PLUG FANS

Supply and exhaust (when selected) plug fans with brushless **EC motors,** to ensure the best efficiencies and highest energy savings. They constantly manage airflow or constant pressure controls, as well as the variable airflow operation.

OUTDOOR AXIAL FANS

External axial fans controlled by an auto-transformer manage the airflow at 3 fixed levels according to the condensing / evaporating pressure. This solution offers an accurate control of the unit operation and a relevant decrease of the overall unit noise.

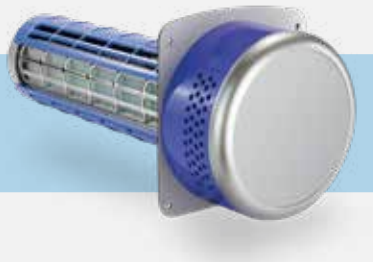
SCROLL COMPRESSORS

2 independent gas circuits with **2 scroll hermetic tandem compressors per circuit.**

Together with **electronic lamination valves,** they work with proportional + integral control logic in order to a get **precise control of the cooling / heating capacity** according to the building's demand.

SOLUTIONS FOR PERFECT AIR SANITIZATION

ACTIVE SANITIZATION SYSTEM WITH PHOTOCATALYTIC OXIDATION



The active sanitizing system features a special UV-C lamp which uses the Photocatalytic oxidation process to reduce the microbial load airborne (such as bacteria, molds, allergens, odors, organic and volatile compounds, ultra-fine powders), in order to make your environment a healthier place.

SUPERMARKETS AND FOOD CHAINS	It has been proven that the use of this tecnology not only increases air quality, but also increases the duraton of food freshness because the bacteriologlcal load in the air is reduced.
HOTELS, GYMS & RESTAURANTS	Reduction of smells and contaminants, giving the perception of healthler air in the rooms.
OFFICE BUILDINGS	Reduction of bacteria, allergens, and odors.

KEY BENEFITS

HEALTHIER AND CLEANER AIR

Ionization process for capturing and breaking down molecules of toxic VOCs, which can cause allergic phenomena or respiratory tract diseases.

ODOUR REDUCTION

Smoke, chemicals, kitchen fumes, etc.

REDUCED MAINTENANCE

Quick and easy cleaning of the honeycomb structure with a simple jet of compressed air.

REDUCTION OF THE BACTERIAL LOAD

95-99%

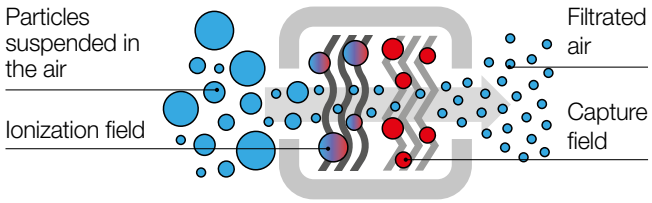
Reduction of the bacterial load and germs present in the air up to 95-99%.

ELECTRONIC FILTERS

Electronic filters based on the electrostatic precipitation process are used to purify the air in the rooms. Their working principle involves using electricity to catch dust, pollen, and other airborne particles prior to them entering your building.

OPERATING PRINCIPLE

The dirty air passes through the layer of ionizers, which emit charged ions. These charged ions attract the solid dirt particles contained in the air which are then captured by the collection plate.
The extra electrostatic charged particles drive the dirty particles towards the collector, allowing clean fresh air to enter your home.

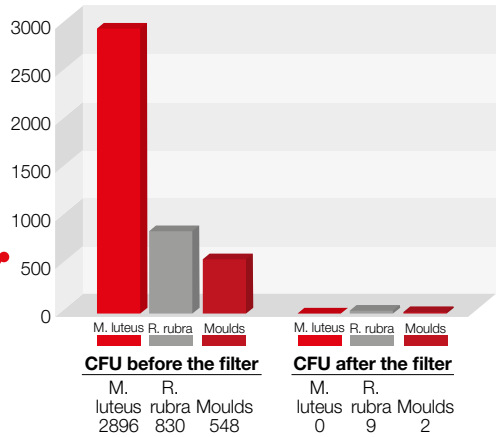


SINGLE-PASS EFFECT OF ELECTROSTATIC FILTER

The concentration of bacteria commonly present in a given air environment have been measured before and after the electrostatic filters.

The efficiency of bacteria removal is between 98-99% for:

- Airborne bacteria, such as Micrococcus luteus;
- Yeast, such as Rhodotorula rubra;
- Bacillus Anthracis;
- Molds and germs present in the natual spectrum of air



Measurement of the bacterian load in the air bafore and after the electrostatic filter.

HEAT RECOVERY TECHNOLOGIES

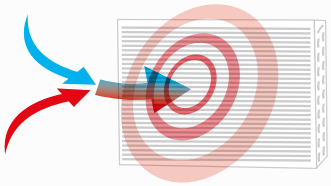
Four heat recovery technologies designed to precisely and reliably transfer the energy contained in the exhaust air to the refrigerant circuit, thus increasing the unit's overall efficiency.

AX-F THERMODYNAMIC HEAT RECOVERY

FOR MICRO AND MINI WSM3

Thermodynamic heat transfer is achieved by deviating the exhaust air though the outdoor section of the refrigerant circuit.

This increases efficiency by allowing the unit to work at a more advantageous condensing temperature than allowed by the outside conditions.



Smart and functional design

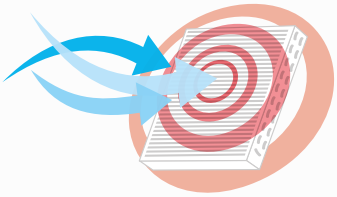
Advantageous average temperature on the outdoor coil

No additional pressure drops

HR-B REFRIGERANT BOOSTER

The WSM3 HR-B units are fitted with the exclusive Refrigerant Booster heat recovery system, which promptly and fully recovers heat from the exhaust air.

This recovered energy is transferred to the refrigerant circuit, which increases the capacity of the air handling coil while reducing the power absorbed by the compressor. The recovery system, made of a finned coil installed at the air exhaust damper, takes advantage of the favourable conditions of the exhaust air, both during summer and winter operation.



Quantifiable benefits

Compact footprint of the recovery system

Ideal for Mediterranean climate

TYPES OF HEAT RECOVERY		THERMODYNAMIC	REFRIGERANT BOOSTER	PLATE	ROTARY
Cooling capacity increase	% (1)	+2%	+12%	+10%	+45%
Thermal capacity increase	% (2)	+6%	+11%	+22%	+39%

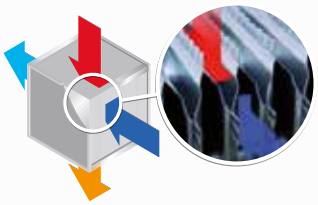
1 ▸ Average percentage values refer to WSM3/MF version (no heat recovery). Standard conditions for cooling: Outdoor 35°C 50% R.H. / Indoor 27°C 47% R.H. / Mix 50% - Nominal air flow.

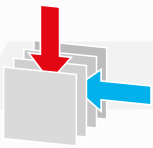
2 ▸ Average percentage values refer to WSM3/MF version (no heat recovery). Standard conditions for heating: Outdoor 7°C 87% R.H. / Indoor 20°C 50% R.H. / Mix 50% - Nominal air flow.

HR-P CROSS-FLOW HEAT RECOVERY

The WSM3 HR-P units feature the cross-flow heat recovery, which transfers the thermal energy contained in the exhaust air to the fresh airflow. The plate heat recovery system extends the operating limits of the unit, allowing it to work with higher flow rates of external air.

The units are equipped with by-pass dampers for free-cooling operation, to reduce system pressure drops and not-advantegeus heat exchange between fresh and exhaust air flow.





Complete airflow separation

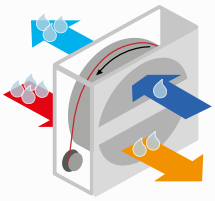
High operating reliability and safety

Quick and easy cleaning and maintenance

HR-E HEAT RECOVERY WITH ROTARY ENTHALPY WHEEL

The most efficient heat recovery technology in terms of efficiency is the rotary enthalpic recovery, which efficiency can reach up to 85%.

The key component is the enthalpic wheel which is made with alternately flat and wavy sheets treated with hygroscopic coating. Due to the large exchange surface compared to its volume, it ensures the recovery of latent and sensible heat, with a significant increase in the unit overall capacity.

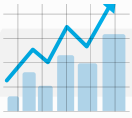


Summer mode

Winter mode

Latent heat recovery

Cooling capacity recovered



Quick return on the investment

AIR3000+ Touch THE TOUCH SCREEN ROOM THERMOSTAT FOR ROOFTOP UNITS

Air3000touch+ is the new user interface dedicated to the smart control of your ventilation and air conditioning system.

Designed to provide customers with the most easy and intuitive control experience, Air3000touch+ reports all functions and settings of the rooftop unit:

READY- TO-INSTALL TOUCH SCREEN
The smart thermostat can be easily installed in public spaces without any risk in terms of safety. Access to the menu is in fact protected by a password.

EASY AND INTUITIVE
Coloured touch screen with user-friendly icons to ensure the easiest possible use.

AUTONOMOUS CONTROL
Incorporated Temperature and Humidity probes detect the room requirements, automatically adjusting the control settings, with minimal intervention on the user side.

LAN MANAGEMENT

1 Connect Ethernet port of Air3000link+ and customize its IP address

1 Monitor and control the unit from the user-friendly Thermostat

AIR3000+ Link THE KEYBOARD IS IN YOUR POCKET

Based on the Wi-Fi technology, Air3000touch+ allows one to operate on the unit directly from a mobile device (smartphone, tablet, notebook).

Suitable for industrial environments
tolerates temperatures from -20 to +65°C

Wi-Fi communication
no internet connection needed

Ready to use
- Download and install MEHITS APP
- Create and register your profile
- Scan the QR code and connect to the unit

EASIER ON-SITE OPERATION

- Monitor each component while moving around the unit for maintenance.
- View and change all parameters with easy-to-understand screenshots and dedicated tooltips.
- Get devoted “help” messages for alarm reset and trouble shooting.

REAL-TIME GRAPHS AND TRENDS

- Monitor the immediate labor status of the compressors, heat exchangers, cooling circuits, air dampers, CO_2 probes, etc.…
- View the real-time graphs of the key operating variable trends.

DATA LOGGER FUNCTION

- View history of events and use the filter for a simple search.
- Enhance diagnostics with data and graphs of 10 minutes before and after each alarm.
- Download all the data for detailed analysis.

2 Connect Air3000link+ to LAN of customer through Ethernet cable

3 Monitor and control the unit from a LAN device (PC, laptop, mobile phone) with a simple web browser

“BY FAR THE BEST PROOF IS EXPERIENCE”

Sir Francis Bacon
British Philosopher (1561-1626)

Military Institute of Science & Technology

Dhaka - Bangladesh

Period: 2021 - 2022
Application type: Theatres
System type: Air to Air System
Cooling capacity: 576 kW
Installed Units: 4x WSM3-T/AR 0484

Logistics Hub - 193,000 sqm

Castelguglielmo - Italy

Period: 2019 - 2020
Application type: Offices, Logistics, Industrial Process
System type: Air to Air System
Cooling capacity: 4863 kW
Heating capacity: 4950 kW
Air flow: 925500 m^3/h
Installed Units: 9x WSM/HR-B/S A704,
18x WSM3/HR-B/S 0304, 6x WSM3/AR/S 0304,
1x WSM3/HR-E 0264, 2x WSM3/HR-E 0304,
1x WSM3/HR-E 0604, 1x WSM3/MF 0604

Bridgeman Baptist Church
Bridgeman Downs - Australia

Period: 2019
Application type: Institutions
System type: Air to Air System
Cooling capacity: 519 kW
Heating Capacity: 527 kW
Air flow: 87500m³/h
Installed Units: 1x WSM/MF A092, 4x WSM3/MF 0404

Pellicano Shopping Centre
Pellicano - Italy

Period: 2019
Application type: Shopping Centre
System type: Air to Air System
Cooling capacity: 576 kW
Heating Capacity: 585 kW
Air flow: 98500 m³/h
Installed Units: 2x WSM3/HR-B 0304, 3x WSM3/HR-B 0444, 1x NX-SL/K 0914, AR/S 0304, 1x WSM3/HR-E 0264, 2x WSM3/HR-E 0304, 1x WSM3/HR-E 0604, 1x WSM3/MF 0604

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