

DATASHEET

SAFEMATE ECO+ SERIES MICROBIOLOGICAL SAFETY CABINETS



- Low energy consumption DC motor blower
- State of the art microprocessor control system.
- Large digital display, high resolution
- Air and aerosol-tight sliding sash, electrically operated by finger touch
- Alarms for low air flow and wrong front window position
- Sloped front and back wall for the most comfortable access
- Lateral windows
- Front access for filter maintenance and service
- C-shaped support stand for the easiest *one-man installation* procedure
- Easy retrofit option kits

Safemate ECO+ Cabinets are supplied in four different sizes (0.9, 1.2, 1.5 and 1.8).

These last generation Microbiological Safety Cabinets Class II type A2, have been certified according to the most stringent safety standards (EN12469-2000).

The internal design, the air flow aerodynamics and monitoring, the built-in safety devices and the very accurate manufacturing, guarantees the highest performances at the most stringent safety levels, as specified by EN12469 standard and have been certified by the most prestigious European certification bodies for Safety Cabinets.

Certified intrinsic biological safety, combined with impressively competitive prices, gives the end user a state-of-the-art cabinet accessible to every budget, that only experienced European design and accurate quality manufacturing, can provide.

The ECO+ series evolves from our best seller series with a more eco-friendly approach: the new DC Motorblowers provide high efficiency while consuming less energy and the airflows has been designed in order to reduce noise pollution, while assuring the high level of operator, product and environment protection required by the EN12469-2000 standards.

Main specifications

- Microprocessor controlled DC motor blower, with volumetric sensor for exhausted air flow monitoring
- State of the art Microprocessor control system offering:
 - Large screen monitor.
 - Automatic control of preset airflow volumes.
 - Sliding sash window with smart control.
 - Permanent monitoring of HEPA filters life span.
 - Alarms. Multilevel alarms, with redundancy functions.
 - Permanent display of working conditions.
 - Highest air flow stability both in case of transitional disturbances or to progressive filter clogging
 - Continuous monitoring of front barrier air flow for the highest operator safety
 - Low barrier alarm
 - Power failure alarm
- Volt-free contact for remote monitoring of exhaust fan.
- Automatic reset of initial conditions in case of power failure
- C-shaped support stand for the easiest *one-man installation* procedure



Mechanical and functional specifications

- 5° Sloped front design for the highest operational comfort. Sloped back side of the working chamber for the best down flow distribution (cabinet carcass EN12298 tested and certified for air tightness)
- Utilities inlets from the top of the cabinet.
- Stainless Steel internal surfaces with SB finishing (including spillage tray). Solid or perforated work surface (30cm sectors) and special designed front grill in stainless steel (AISI304 or AISI316)
- Electrically operated sliding multilayer safety glass window
- Comfortable 20cm front opening
- Easy to install retrofit options.
- Comfortable lateral side windows
- Exposed exhaust HEPA filter for easy visual integrity check.
- H14 class High Efficiency Particulate Air filters with 99.999% efficiency on .3micron particles (most penetrating particle diameter) (Efficiency $\geq 99.995\%$ on 0.1-0.2 micron particles MPPS as per EN1822-1)
- ISO 3 (ISO14644-1) internal cleanliness level
- Both exhaust and Main Filters are equipped with a micromesh membrane located downstream which acts as airspeed equalizer expansion plenum, as well as a clear indicator of filter damages.
- Filter change and maintenance from the front of the cabinet.
- Exhaust transitions easily installable.

- Key operated. The key can be removed when the unit is in SAFE mode, in order to avoid unwanted operation. In case of power failure, the cabinet is re-set to original working conditions.
- Self-calibration cycle performed when cabinet is switched on.
- High speed rinse and set up cycle performed, before reaching the SAFE operating mode.
- Visual display of SAFE conditions. Pre-warning before actual alarm conditions are reached (visual and acoustic alarms)
- Soft touch control with keys for standard service utilities. Interconnected UV and fluorescent lights.
- Exhaust and recirculating flow rates ensure 25 air changes/min in the working area (30%/70% split)
- Front barrier air speed $\geq 0.5\text{m}/\text{sec}$
- Aperture protection Factor (Apf) $\geq 1.5 \times 10^5$
- Cleanability Index CC grade. (EN12296 tested and certified)
- Light intensity on work surface $> 1200\text{ lux}$.
- Noise level $\leq 56\text{dB(A)}$ 1.2 Model (ISO11201)
- Work surface displacement (vibration) $< 0.005\text{mm RMS}$ between 20Hz and 20,000Hz (ISO5349 tested and certified)
- Max power (for all power point) 3Amps.
- Microprocessor equipped with analogical watchdog.
- *BS version with dual exhaust HEPA filter (second filter is inside the main unit, both exhaust filters are DOP testable)*
- *Class I version available on request*

ADVANCED FEATURES

- Active front window belts tension control system. This mechanism interrupts the unrolling of the suspension belts supporting the front window in case of a jam or of the presence of obstacles to the window movements. This avoids the risks of the glass falling suddenly and reduces the risk of pinching during the window's movement.
- ECO Mode: this operational mode allows the reduction of power consumption and noise level while keeping the inner working area sterile. When engaged the front sash will be lowered to a few centimeters from the working surface and the motorblower will slow down. The reduced opening will allow the lower airflow to keep the front barrier active. Working is not allowed when in ECO Mode.

CONTROL PANEL

Controls are located in the front part of the cabinet and include the control keyboard and LCD display.

The microprocessor will take care of regulating the motorblower to keep the airflows at the calibrated setpoints, based on the feedback data received from the vane anemometer installed in the exhaust path of the cabinet.

Access control is provided with a key for ON/OFF switching for users and a numeric password to access calibration and service menus.

The following parameters are monitored:

- Laminar vertical flow speed;
- Front barrier inflow speed;
- Audible/visual alarms for insufficient airflows, blower malfunction, front window position;
- UV exposure remaining time;
- Hour counters for: cabinet, HEPA filters, UV lamp.

The following controls are available:

- Cabinet ON/OFF switch;
- White light ON/OFF;
- Internal sockets ON/OFF;
- Combustible gas solenoid safety valve OPEN/CLOSE;
- UV light timer setting.
- ECO Mode activation

The electronic board provides a volt-free connector to switch on/off an external blower or for alarms remotization.

STANDARD UTILITIES

Utilities are located on the back wall of the working area. Connectors for the utilities are located on the top of the cabinet towards the back.

Vacuum tap provisioning. On the back wall, right side.
Gas tap provisioning. On the back wall, right side.
Electrical sockets. On the back wall.
DOP sampling port. Below the work surface, left side.
UV lamp installed on the back wall. Programmable activation time and exposure duration (up to 60min)

OPTIONALS ACCESSORIES

Description	Part No.
Adjustable Stand for Safemate ECO+ 0.9	AS1L310
Adjustable Stand for Safemate ECO+ 1.2	AS1L410
Adjustable Stand for Safemate ECO+ 1.5	AS1L510
Adjustable Stand for Safemate ECO+ 1.8	AS1L610
Fixed Stand for Safemate ECO+ 0.9	AS1L300
Fixed Stand for Safemate ECO+ 1.2	AS1L400
Fixed Stand for Safemate ECO+ 1.5	AS1L500
Fixed Stand for Safemate ECO+ 1.8	AS1L600
Castor kit (4 pivoting, bracking, retractable castors)	AZ1L010
2 Drawers file cabinet	AC10000

OPTIONAL UTILITIES

Combustible gas terminal with solenoid valve or inert gas tap terminals
Additional sockets
RS232 data transmission kit (Software not included)
Passive transition adapter for external ducting.
Active extraction kit for ducting with remote motorblower.

TECHNICAL SPECIFICATIONS

MODEL	SAFEMATE ECO+ 0.9	SAFEMATE ECO+ 1.2	SAFEMATE ECO+ 1.5	SAFEMATE ECO+ 1.8
Part No. w/o work surface	LDM320N	LDM420N	LDM520N	LDM620N
<i>Part No. solid work surface</i>	AZ9M030	AZ9M040	AZ9M050	AZ9M060
<i>Part No. perforated work surface</i>	AZ9M031	AZ9M041	AZ9M051	AZ9M061
External size(lxpxh) mm	1074x795x1450	1380x795x1450	1685x795x1450	1990x795x1450
Work area size (lxpxh) mm	924x600x700	1230x600x700	1530x600x700	1840x600x700
Front Aperture (mm)	195			
Weight (Kg)	206	240	272	340
HEPA filters efficiency	> 99,995% @ MPPS (test MPPS according to EN1822.1 – H14)			
Internal cleanliness	ISO 3 (according to ISO14644-1)			
Downflow/Exhaust Ratio	70%/30%			
Exhaust air volume	≈300 m ³ /h	≈400 m ³ /h	≈500 m ³ /h	≈600 m ³ /h
Motorblower(s)	DC Electronically controlled centrifugal blower with speed autoregulation based on filter clogging status. IP55 protection level			
Power supply	230V 50/60Hz			
Power (W) (Fan&Lights)	200	325	400	625
LAF speed (m/s)	0.38 +/- 0.02 m/s			
Internal Sockets	2			
Lighting	1200 lux Standard: fluorescent light (white) – Optional: LED (white)			
Sound pressure level	<49 dB(A)	<50 dB(A)	<54 dB(A)	<58 dB(A)