

TIEN PHAT EPH. supply products, services and clean air solutions for industrial factory, hospital and indoor air quality for public buildings. The main product as:

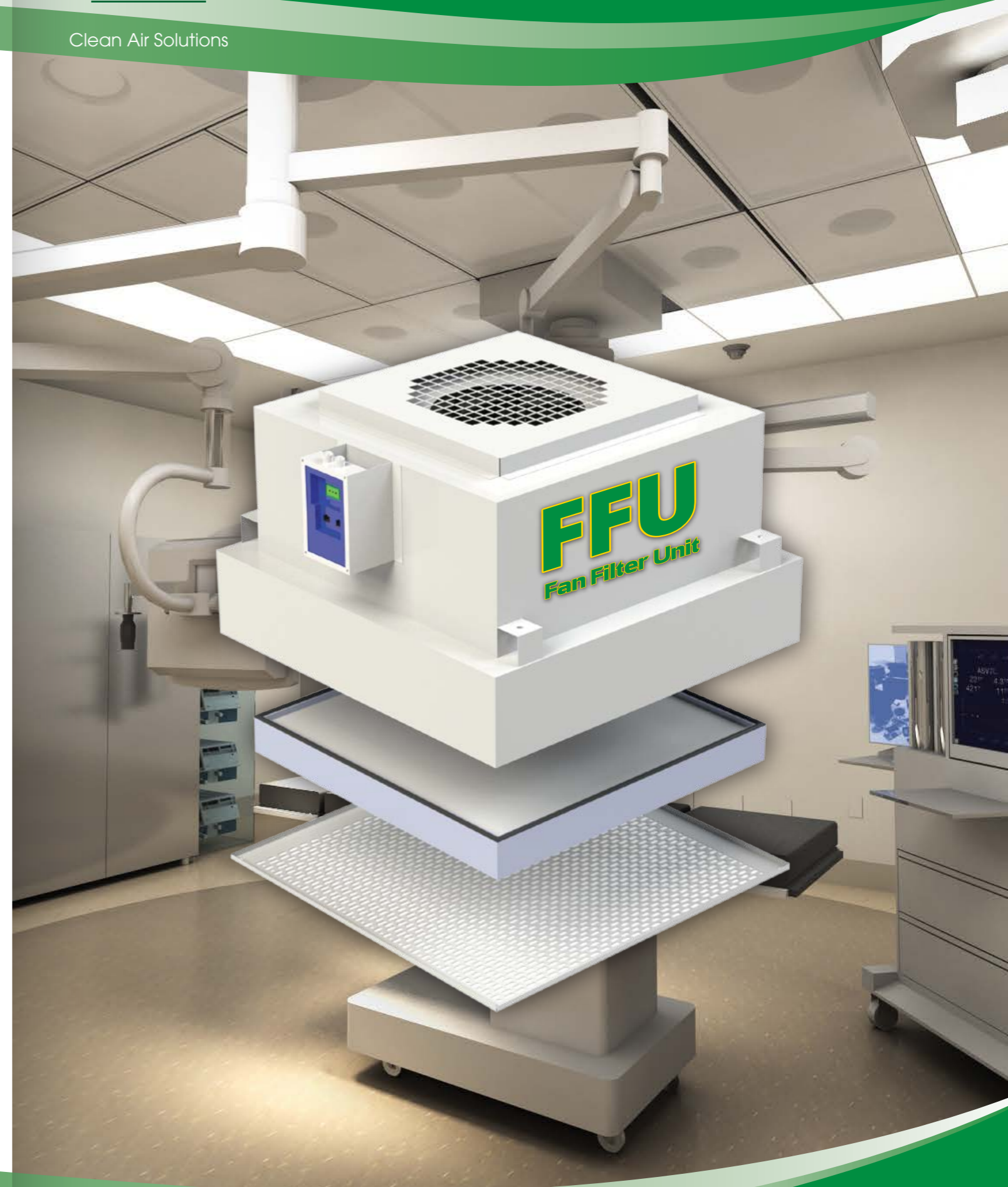
- Air filters, EPA/HEPA/ULPA filters.
- Filter housings, FFU and Containment systems.
- Air cleaners/Air Purifiers for clean air control.
- Dust and Mist collector systems.
- Industrial molecular filtration and AMC control.
- Electrostatic Precipitator (ESP).
- Pressure gauges, Blowers, Explosion protection equipments and Vacuum pumps.
- Explosion/Fire fight system: Explosion vent, Isolation valve, Extinguishing system.

TIEN PHAT EPH

Address : 156/6 BINH THOI P14, Q11 TPHCM

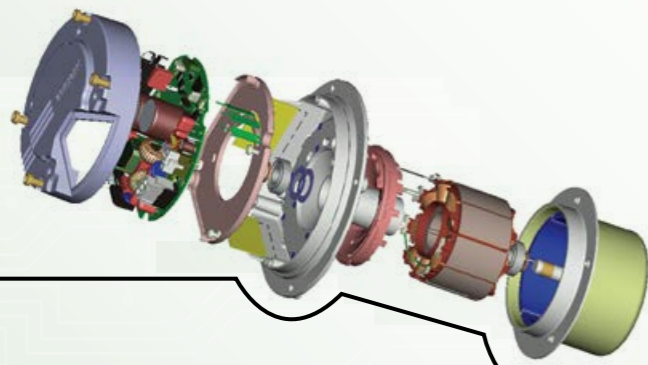
Tel 0775172639

Email



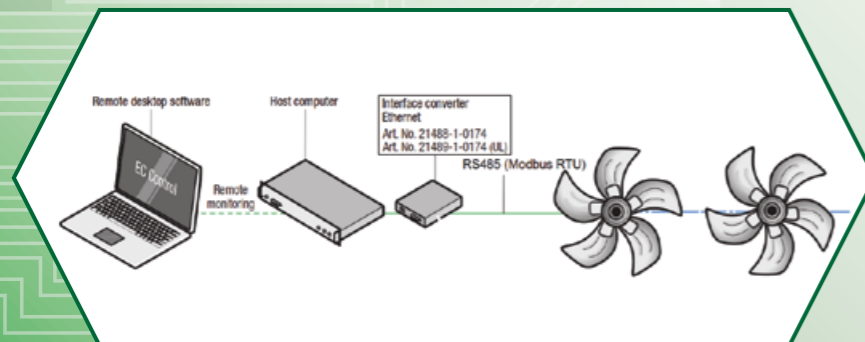
1. EBM-PAPST CENTRIFUGAL FANS AND MOTOR. MADE IN GERMANY

- Premium efficiency with EC motor, green technology.
- Good vibration and noise behavior (excellent with EC fan).
- ModBus/BMS connection with EC fan.
- Bearing life: minimum 40,000 hours (5 years, 24/24, 40°C).
- External Rotor Motor → Excellent cooling capacity → Long service life.
- Thermal overload protection (TOP).
- Vibration test: compliance with DIN IEC 68, Part 2-4.
- Balancing compliance with DIN ISO 1940 and G6.3.
- Shock load: compliance with DIN IEC 68 part 2-27.



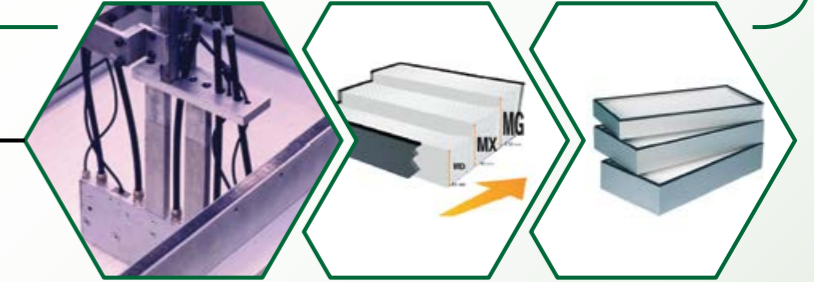
3. CONTROLLER

- AC Series motors can adjust air flow with continuous speed control to adjust air flow rating.
- EbmBus EC motor can be controlled locally or remotely, independently operated and controlled; or a group of EC Series can be operated and controlled together as a system.
- Especially ModBus EC motor of FFU can be controlled and monitored by software (BMS) and computer to save energy consumption.



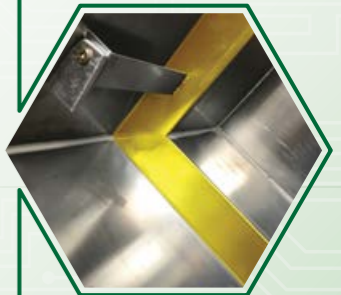
2. CAMFIL HEPA/ULPA FILTER. MADE IN GERMANY/MALAYSIA

- 100% individual MPPS test report for HEPA/ULPA filter according to EN1822.
- Low initial pressure drop not exceed 65 Pa \pm 15% for Megalam MG14 type.
- Frame: Anodized extrude aluminum.
- Gasket: Endless polyurethane.
- Media: Ultra fine glass fiber or PTFE media for special very low VOCs components media adopts and lower pressure drop requirement.
- Fire ratings: UL 900 on request.



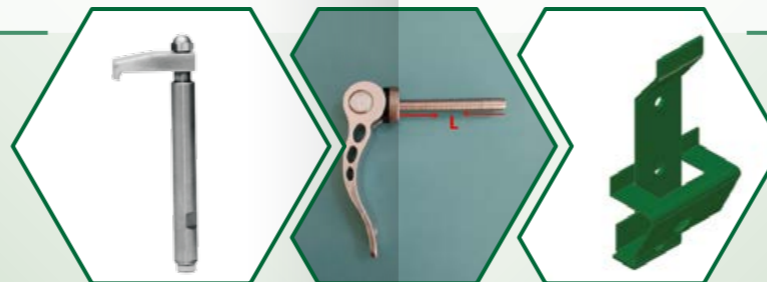
4. NO RISK OF LEAKAGE WITH STRONG CONSTRUCTION HOUSING

Housing is made from 04 profile sides that folding to aim the plane surface and stronger. Housing is fully welded to ensure reliable tightness and bring clean air to the point. Internal/external smooth painting housing body and diffuser grid.



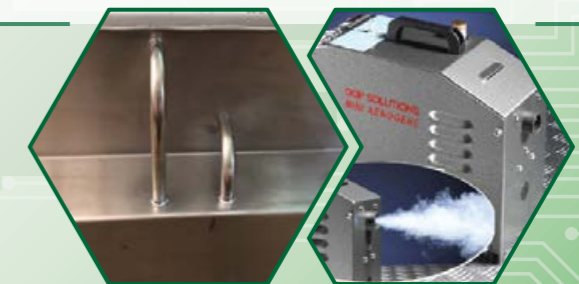
5. QUICK CLAMP & PRE-POSITIONING FILTER HANDLE RETAINER

Lever clamping make air tight & free leak for all air filter depth. Filter is pre-positioned by unique retainer, no need a third hand or second person.



6. DOP AND DP TEST PORT

DOP/DP ports for DOP test & measuring pressure drop across the installed air filter.



AIRFIL-FFU FOR OPERATING ROOM

1. Low noise

Extremely low noise level from 41-43 dBA

- Meet the Environmental Protection Agency's (EPA) that recommended level for continuous background noise in hospitals is 45 decibels (dB) for operating room – OR.
- Don't use any insulation foam: FFU & special EC fan will be designed with special conditions to meet level below 45 dBA. No need insulation foam to absorb noise → saving energy.



2. Automatically control airflow to meet operating room requirements and others in hospital.

- Fan speed increase automatically flowing ΔP of filter. Control speed's motor when ΔP of HEPA have change from clean to dirty.
- Control constant airflow service for many working condition:
 - Resting mode
 - Preparing surgery mode
 - Surgery mode
 - Disinfection and extraction mode
 - Night - day mode

3. Intelligent controller and extremely saving energy

- Feedback status normal or failure operating of motor by status contact and RS485 interface lines.
- Monitoring and alarm continuously value different pressure of HEPA filter.
- Individual control at local room and combine with group controller: EC motor can be controlled locally or remotely, independently operated and controlled; or a group of EC Series can be operated and controlled together as a system.
- Especially ModBus EC motor of FFU can be controlled and monitored by software (BMS) and computer to save energy consumption.

4. Saving installation space, light weight and low vibration

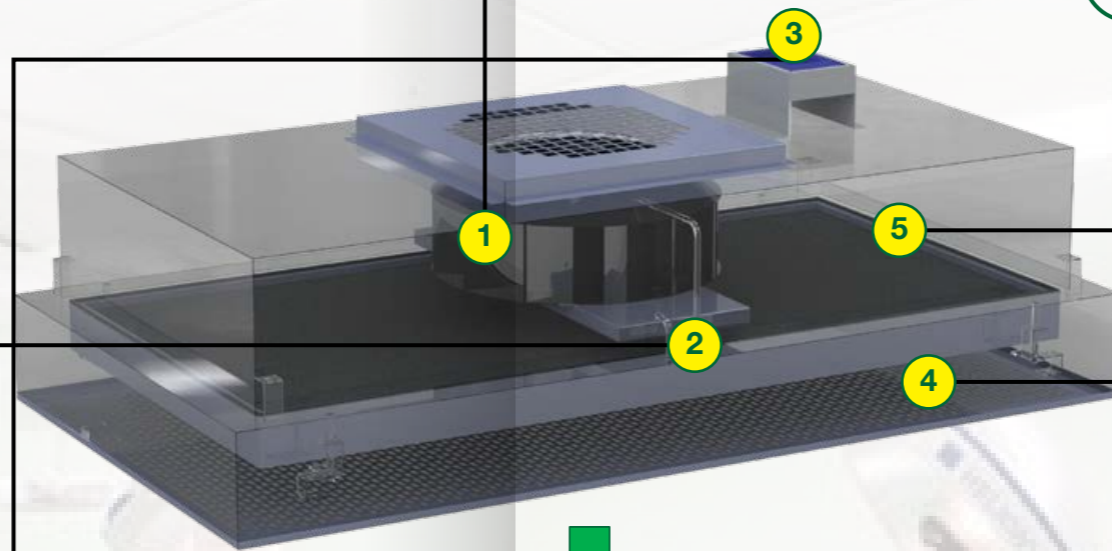
- Vertical arrangement and without insulation silencer housing for fan → lower space → lighter → easy installation.
- Fan run at special speed for low vibration.
- Only W1289xH680 ceiling for filter size 1219x610 or W989xH680 for filter size 914x610mm
- Space - saving and maintenance - free.

5. Premium main equipment

- Fan & EC motor will be equipped with the latest Germany technology and made in EUROPE or Germany.
- HEPA filters: Camfil premium Megalam product for low DP.
- Housing: SS430/SS304 or SS316 with fully continuous welding at corner to avoid leaking.
- Housing will be guaranty 100% DOP leak test at downstream. 10 years warranty.
- Upstream and downstream DOP test ports.

6. Optional equipment accessories

- Different pressure sensors for HEPA filters.
- Velocity sensor transmitter for monitor airflow.
- Running modes control device for fan.
- Different pressure controller.
- Manual 0-10V controller, Bluetooth interface adapter, Ethernet interface converter- RS485.
- EC Temperature controller.
- EC display LCD controller.
- Universal Gateway controller for connecting BMS.

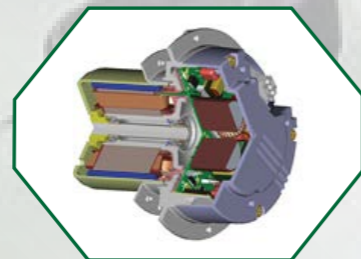


Size/Model (mm)	RPM	Power (W)	Filter Class	Pressure drop(Pa)	Flow rate (m³/h) /Velocity (m/s)	Noise (dBA)
AIRFIL-FFU 680x1290x500 /2x4SS430 -EC-RSR	537	25	H13	45	600/0.227	41.5
	540	25	H14	40		41.5
	593	30	H13	50	710/0.269	43.0
	595	36	H14	46		43.0
	684	40	H13	75	914/0.347	44.0
	685	42	H14	50		44.0
	741	70	H13	100	1020/0.387	46.7
	740	65	H14	55		46.5
	815	75	H13	125	1225/0.465	49.5
	815	70	H14	65		49.0

Parameter base on testing lab
 Filter: H13 size: 610*1219*66; media area 19.5m²; H14 size: 610*1219*110; media area 35.2m²



Fiberglass-reinforced impeller for lower noise



Electronically Commutated Motor with Integrated Electronics

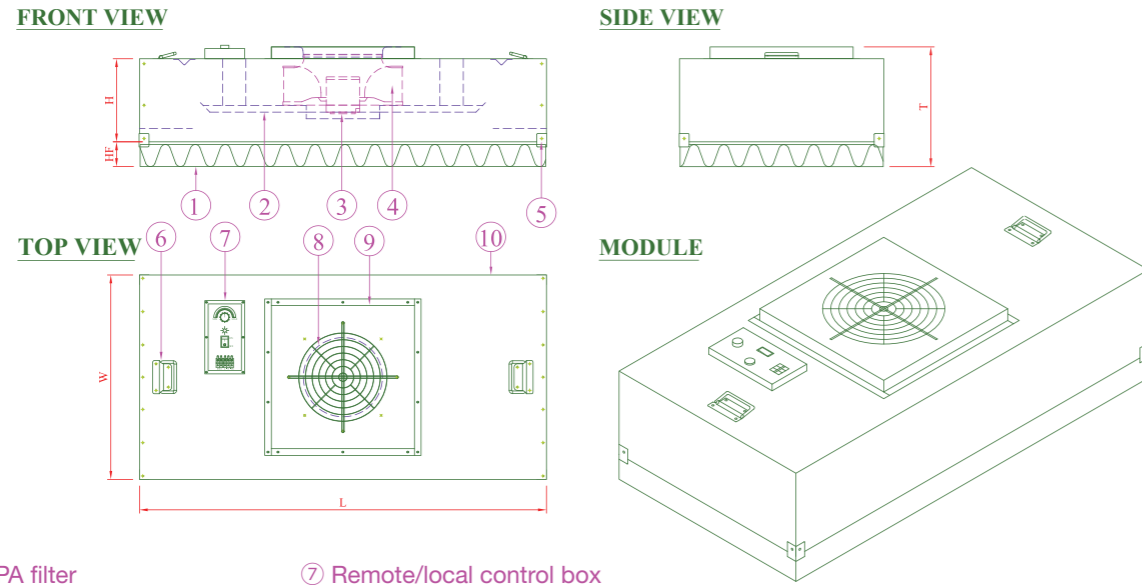


Individually scan-tested acc. EN 1822:2009



Integrated LCD display

SIZE/ DIMENSION



- ① HEPA/ULPA filter
 - ② Air distributed plates
 - ③ AC or EC external rotor motor
 - ④ Aluminum/Plastic centrifugal fan
 - ⑤ Holding plugs
 - ⑥ Lift hand
 - ⑦ Remote/local control box
 - ⑧ Griller and inlet cone
 - ⑨ Cone cover for ducting/ pre-filter as option
 - ⑩ Housing Aluminum Zinc coated steel/SS430/SS304
- Note: Size and some options can be made as customizer.

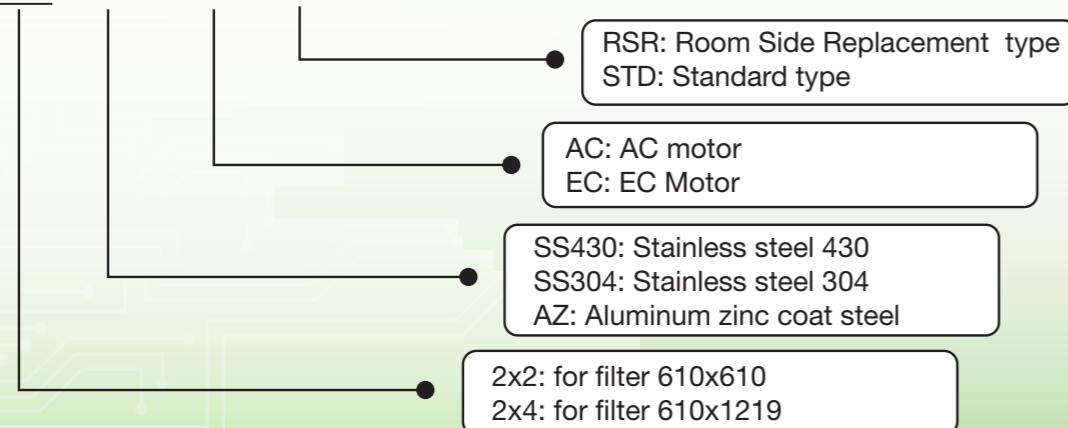
Type	Air filter sizes (mm)	Air flow (m ³ /h)	FFU-RSR size			FFU - STD size		
			L [mm]	W [mm]	H [mm]	L [mm]	W [mm]	H [mm]
2x2	610 x 610	603	680	680	400+ H _{fc}	615	615	250 + H _f
2x3	610 x 914	903	680	985	400+ H _{fc}	615	919	275 + H _f
2x4	610 x 1219	1205	680	1290	400+ H _{fc}	615	1224	300 + H _f
2x5	610 x 1524	1506	680	1594	425+ H _{fc}	615	1524	325 + H _f
3x4	914 x 1219	1804	980	1290	425+ H _{fc}	919	1224	325 + H _f
4x4	1219 x 1219	2407	1290	1290	425+ H _{fc}	1224	1224	325 + H _f

H_f : Height of Filter (66/90/110mm); H_{fc} is height of Fan Cone 60mm

OPTIONS FOR FFU:

Control unit position: Remote/ local; manual or control central. Filter sealing: PU gasket/ liquid gel.

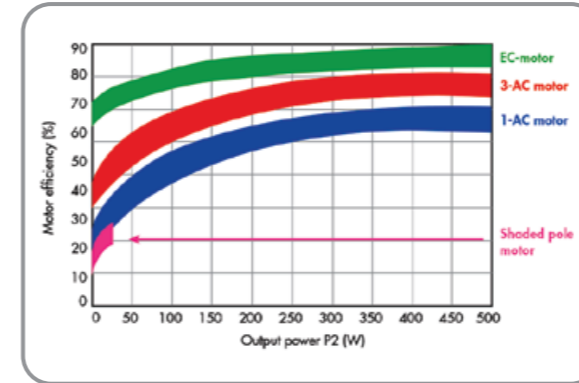
Model : 2x2SS430-EC-RSR



GENERAL EC-DC FFU SPECIFICATION

Manufacture Fan & motor: EBMPAPST, Made in Germany

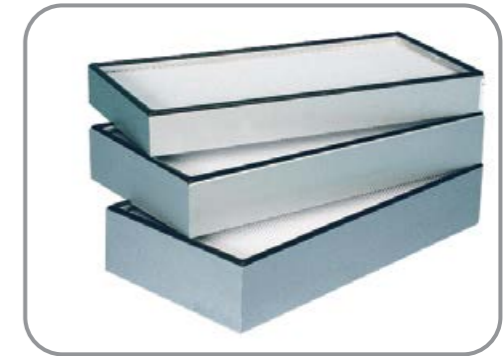
- Premium efficiency with EC motor, green technology.
- Good vibration and noise behavior (excellent with EC fan).
- ModBus/BMS connection with EC fan.
- Bearing life: minimum 40,000 hours (5 years, 24/24, 40°C).
- External Rotor Motor → Excellent cooling capacity → Long service life.
- Thermal overload protection (TOP).



- Vibration test: compliance with DIN IEC 68, Part 2-4.
- Balancing compliance with DIN ISO 1940 and G6.3.
- Shock load: compliance with DIN IEC 68 part 2-27.
- EbmBus EC motor can be controlled locally or remotely, independently operated and controlled; or a group of EC Series can be operated and controlled together as a system.

Camfil HEPA/ULPA filter. Made in Germany or Malaysia

- 100% individual MPPS test report, according to EN1822.
- Frame: Anodized extrude aluminum.
- Gasket: Endless polyurethane.
- Media: Glass fiber (or PTFE on request)
- Fire ratings: UL 900 on request.



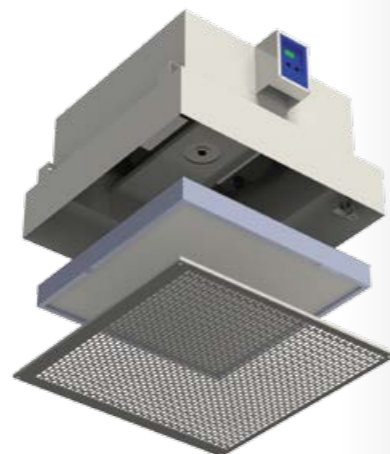
Size/Model (mm)	RPM	Power rating (W)	Filter Class	Pressure drop(Pa)	Flow rate (m ³ /h) /Velocity (m/s)	Noise (dBA)
680x1290x400 /2x4SS430-EC-RSR	690	38	H13	60	650/0.25	47.0
	690	38	H14	60		46.5
	700	40	H13	65	800/ 0.3	48.0
	706	43	H14	65		48.0
	795	70	H13	75	920/0.35	50.0
	799	75	H14	75		50.5
	850	80	H13	120	1208/0.45	58.0
	855	82	H14	100		58.5

Parameter base on testing lab

HEPA filter: H13 size: 610*1219*66; media area 19.5m² ; H14 size: 610*1219*110; media area 35.2m²

GENERAL AC- FFU SPECIFICATION

- Manufacture Fan & motor: EBMPAPST, Made in Germany
- Bearing life: minimum 40,000 hours (5 years, 24/24, 40°C).
- External Rotor Motor → Excellent cooling capacity → Long service life.
- Thermal overload protection (TOP).
- Vibration test: compliance with DIN IEC 68, Part 2-4.
- Balancing compliance with DIN ISO 1940 and G6.3.
- Shock load: compliance with DIN IEC 68 part 2-27.



SPECIFICATION				
Type Actual size (mm)	2x2*-AC-RSR 680x680	2x3*-AC-RSR 680x984	2x4*-AC-RSR 680x1290	4x4*-AC-RSR 1290x1290
Airflow @0.45 m/s	600 m³/h	900 m³/h	1200 m³/h	2400m³/h
Filter size (mm)	610x610	610x914	610x1219	1219x1219
Materials (*)	Aluminum-Zinc Alloy coated steel sheet/ Stainless steel 430/304			
Controls	TRIAC controller/ 5-steps			
Centrifugal Fan	AC310/355		AC400	
Motor power (W)	120/180		375	
Fan & motor brand name	EBM-PAPST (Made in Germany)			
Total weight approx.	31 kg	35 kg	45kg	60kg

- Camfil HEPA/ULPA filters. Made in Germany or Malaysia
- 100% individual MPPS test report, according to EN1822.
 - Frame: Anodized extrude aluminum.
 - Gasket: Endless polyurethane.
 - Media: Glass fiber (or PTFE on request)
 - Fire ratings: UL 900 on request.

Size/Model (mm)	Voltage (V)	Current (A)	Filter Class	Pressure drop(Pa)	Flow rate (m³/h) /Velocity (m/s)	Noise (dBA)
680x1290x400 /2x4SS430-AC-RSR	110	0.4	H13	65	800/ 0.3	52.0
	110	0.4	H14	65		52.5
	120	0.6	H13	75	920/0.35	53.5
	120	0.6	H14	75		53.5
	140	0.8	H13	120	1208/0.45	61
	140	0.8	H14	100		60.0

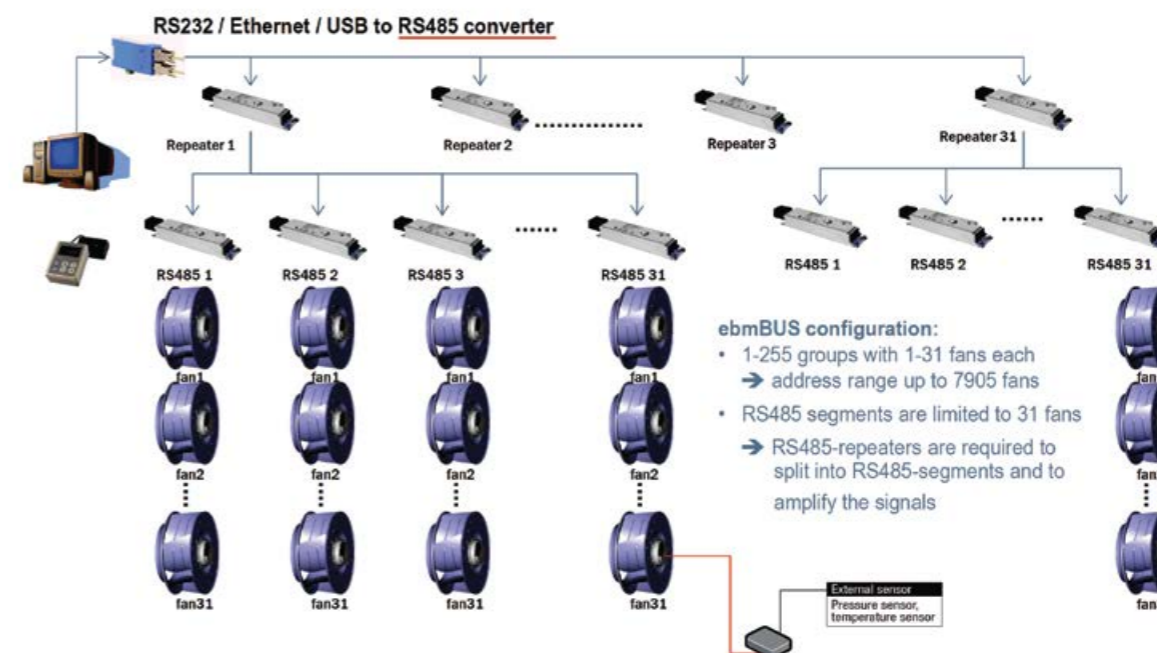
Parameter base on testing lab

HEPA filter: H13 size: 610*1219*66; media area 19.5m² ; H14 size: 610*1219*90; media area 27m²

Clean Room EC Control: Network setup using ebmBUS



ebmpapst



Features of control software Lisa:

- Individual of control and monitoring of max 7 905 fans.
- Group - oriented arrangement of the fans.
- Level 1: overview display for 10 floors.
- Level 2: Overview display for 255 groups.
- Level 3: Overview display for 31 fans with a group.
- Broadcast command for a group or all fans.
- Speed, temperature or pressure control.
- Alarm signal.



Uniquom® Approved Controller

EC-FAN GATEWAY BACnet-MODBUS



The EC-FAN GATEWAY is a user - configurable BACnet protocol communications gateway that provides a bridging platform for information flow between BACnet and MODBUS protocols. This smart device is an easy-to-use controller that can be applied to managing HVAC applications, but above all a special accessory for the connectivity of all MODBUS-protocol ebm-papst fans to the most commonly used building management system, BACnet,.

CASE Study

FFU Noise level and control solution for operating room at Military Hospital 175



Hospital profile

Military Hospital 175 is the highest level Military Hospital in the south of Vietnam, It is tasked with care-taking roll for the healthcare of senior military, government and Communist Party Officers. It is a top-notch general hospital for the people in southern Vietnam.



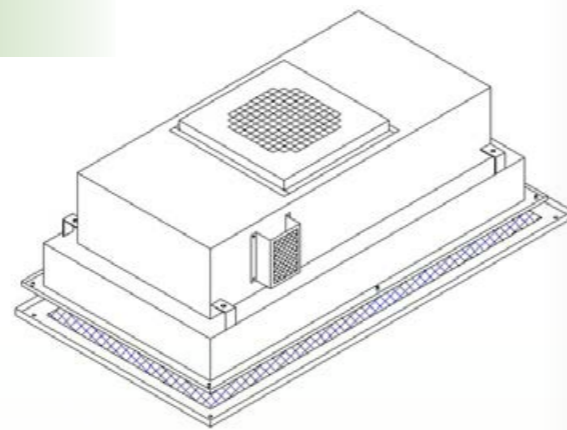
The situation

Consultant design Korean FFU medical Clean Unit on below:
Size: 1350x1350x550 or 700x2600x550 for HEPA 1219x610x150 (haft volume for insulation fan housing to reduce noise weight 142 kg/FFU)
Centrifugal sirocco fan, AC motor 400W is located

insulation housing. Controller requires monitoring and alarm continuously value different pressure of HEPA filter; for constant airflow, the motor must be increased spinning speed when pressure of HEPA filter increase.

AIR FILTECH JSC (27MEE) Solution

BPT FFU with size: 1289x680x450mm for Camfil Megalam HEPA size: 1219x610x110mm, H14 with special EC fan, made in Germany, full option ModBus, BMS, computer controller, extremely saving EC motor energy consumption at 60W/max250W and meet all above controller requirements.



THE RESULT:

1. With our solution, M&E contractor (buyer) saved more than 3 billion VND.
2. Saving energy for end user due to use green latest German EC motor.
3. Fan & motor use latest technology with ModBus, BMS, computer controller.
4. Saving installation space, light weight → easy for installation and reduce vibration.
5. More HEPA filter service life with higher media area for low pressure drop of Camfil filters.

All parties are happy for our solution and introduce to others. AIR FILTECH-FFU known as the latest technology with low noise FFU for operating room in Hospital.

BIBO Housing

Bag In-Bag Out safety housing is used exhaust contaminated toxic air (particles, micro-organisms, molecules), BIBO using plastic bag for safe replacement of HEPA filter.



Carbon filter

- Radio iodine trapping for radiotherapy treatment in Hospitals with practical accelerator (cyclotron).
- Treatment of odors and purification of gas pollutants. High-capacity active carbon cell. Ideal for absorbing odors and VOCs.



Camfil Air Purifier

Camfil City M & CC300 purifiers are compact and ready-to-use solution for controlling gases, odors and particles. Certified as effective against allergies by ECARF (European Center for Allergy Research Foundation).

City M

- Dimensions (mm): 340 x 720 x 345
- Airflow: 100-300 m³/h
- Purification area: 75 m² max.

CC300

- Dimensions (mm): 1052x316x364
- Airflow: 100-400 m³/h
- Purification area: 100 m² max.

CC2500

- Specially designed to eliminate corrosive gases, acids, VOCs, ozone, formaldehyde and fine particles. This air cleaner is designed to be customized for its final usage.
- Dimensions (mm) : 1000 x 2100 x 550
 - Airflow: max 2500 m³/h
 - Purification area: 250 m² max

