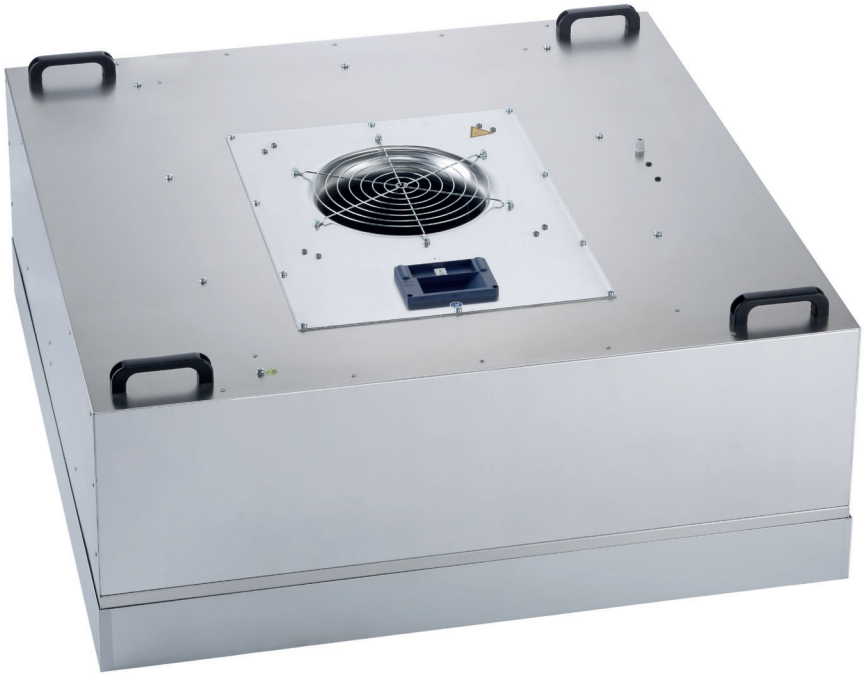
TECHNICAL DATA FFU EC REGULAR ALN & ALN MR

STANDARD FFU



AFPRO®
Filtration Group®

Product description

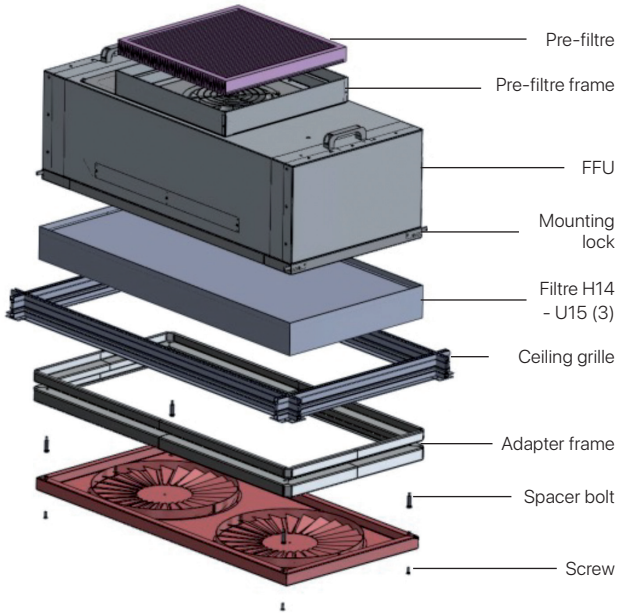
Construction

The Fan Filter Units are operated with a uniform volume flow, which, due to its very large outflow area, enables a uniform air distribution with low flow speeds. The filter fan units can be individually and continuously speed controlled via a network data bus system. The FFU-s can be installed both as individual devices (island solutions) and in clean room ceilings. Fan filter units suck in air from a ceiling plenum and convey it through the latest generation of EC fans with a highly efficient 3D fan wheel "Ergonom" to save energy and reduce noise. The air is filtered by a high efficiently particulate airfilter (HEPA) of class H14 or U15. The sterile air is blown into the cleanroom.

Housing

The housing is made of natural aluminum and has smooth surfaces. All edges and openings are to be laser cut. The self-supporting housing must be lined with non-flammable sound insulation elements in accordance with class A2 according to DIN 4102.

Mounting handles are attached to the top of the device, which allow easy handling of the devices in the clean room. The device has 4 mounting bolts, which enable tool-free assembly from the clean room side.



The fan filter units essentially consist of the aluminum housing (untreated) , the fan with a highly efficient 3D fan wheel, the sound insulation and particulate filter with glass fiber media (H14-U15 made of glass fiber).

Controling device

The control electronics are integrated in the FFU housing and contained in the FFU position. An on-site assembly of the electronics is therefore not necessary.

The FFU-s can be controlled via a 0-10V input signal as well as via various bus systems (ebm-bus, Modbus). Corresponding control systems from simple speed regulators to PLC controls are available from AFPRO Filters.

Assembly

- The FFU is placed on top of an existing ceiling system on site.
- First the particulate filter is placed on the ceiling system, and the FFU on the particulate filter.
- Between the FFU and the filter there is the half-round seal, which represents an airtight connection.

Applications

Micro-eletronics | Pharma-ceuticals | Medical devices | Healthcare | Food & Beverage

Benefits

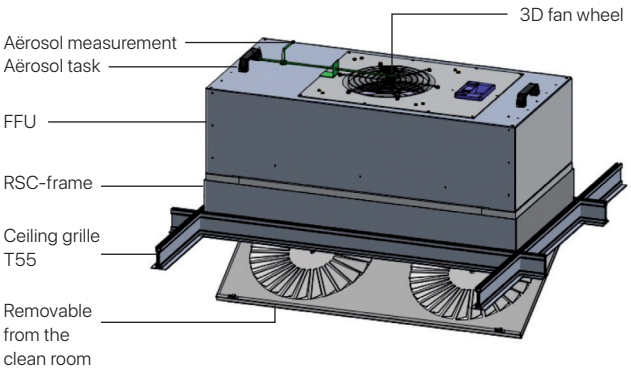
- Available in 7 standard sizes
- Lightweight aluminium housing
- Sound pressure level for one unit
  - Standard: (to confirm)
  - Silent: -7dB
- Low vibration loads
- Energy saving
- Suitable for all ISO cleanroomclasses
- Suitable for turbulent and laminar flow
- Suitable for a wide range of HEPA and ULPA filters
- Control electronic device integrated

Fan motor unit : Saving energy and reducing noise

The motor-fan unit consists of a high-quality direct current external rotor motor (EC motor) and has an integrated RS485 data bus interface.

The use of the latest EC drives with 3D impeller "Ergonom / Radical" to save energy and reduce noise results in an ecologically and economically excellent performance package that enables an overall efficiency of 55% at the operating point. The backward-curved blades are made of high-quality composite material and stand for high mechanical strength and resistance to environmental influences.

The use of composite materials allows the flow guidance to be optimally designed. This avoids flow breaks and turbulence in the flow channel, which leads to higher efficiency and extremely low noise emissions. The impeller is directly connected to the drive shaft of the motor, which increases the efficiency extremely and at the same time reduces the noise by up to 7dB compared to 3D aluminum impellers.



The motors are maintenance-free and are statically and dynamically balanced at the factory. The balance quality G = 6.3 according to DIN ISO 1940.

- The motor-fan unit can be changed from above (plenum) as well as from below (clean room / downstream side).
- The fan filter unit is connected via a 3-pin snap-in connector (phase; PE; neutral).
- The data bus signal for controlling the FFUs is transmitted to all devices via a CAT5 patch cable.

FFU Type description	Dimensions (WxHxD) mm	Airflow (m^3/h)	Weight (Kg) (-/- filter)
FFU-FG-EE-1-562/ST-0-10V	562x562x350	583	16
FFU-FG-EH-1-562/ST-0-10V	562x1162x350	1166	18
FFU-FG-HH-1-1162/ST-0-10V	1162x1162x350	2333	34
FFU-FG-EE-1-562/ST-MB	562x562x350	583	16
FFU-FG-EH-1-562/ST-MB	562x1162x350	1166	20
FFU-FG-HH-1-1162/ST-MB	1162x1162x350	2333	32
FFU-FG-EE-1-562/ST-EB	562x562x350	583	16
FFU-FG-EH-1-562/ST-EB	562x1162x350	1166	20
FFU-FG-HH-1-1162/ST-EB	1162x1162x350	2333	32
FFU-FG-EE-1-562/ST-L	562x562x350	583	16
FFU-FG-EH-1-562/ST-L	562x1162x350	1166	20
FFU-FG-HH-1-1162/ST-L	1162x1162x350	2333	32

Options

- An aerosol test device, pre-filter frame with filter cell in classes ePM10, ePM2.5, ePM1 or AMC filters are available as options.
- The FFU can also be equipped with a top-mounted cooler (heater) for sensitive cooling. Powder-coated swirl plates (RAL 9010) can also be integrated.
- Depending on the installation situation (ceiling type or island solutions), various options are available.

Technical Data

Technical Data FFU-FG-EH

FFU Housing:	Aluminum, untreated
Dimension Width x Height:	562 x 1162 mm
Height without filter	350 mm
Height withHEPA filter	460 mm
Weight (without Filter):	20 kg
Weight (with Filter):	31 kg
Diff. Pressure b. max.0.45m/s	350 [Pa] without filter
Airflow @ 0,45 m/s:	1166 m³/h (from grid)
Motor impeller	3D impeller "Ergonom" / PU

EC-Motor: Modbus / 0-10V

Power/phase V/ph	200-277/1
Frequence Hz	50/60
Current A	2,2
Speed max rpm	2250
Working temperature °C	-25 / +60
Pressure drop @ 0,45m/s: Pa	100 (with H14 Standard-Filter)
Power consumption: W	500
Sound level dB(A)	46 (with H14 Filter)
External pressure drop Pa	470 (with H14 Filter)

EC-Motor: ebmbus (RS485 and FTT10A)

Power/Phase V/ph	200-277/1
Frequence Hz	50-60
Current A	1,8
Speed max rpm	2100
Working temperature °C	-25 / +40
Pressure drop @ 0,45m/s: Pa	100 (with H14 Standard-Filter)
Power consumption W	410
Sound level dB(A)	46 (with H14 Filter)
External pressure drop Pa	470 (with H14 Filter)

Technical Data FFU-FG-HH

FFU Housing:	Aluminum, untreated
Dimension Width x Height:	1162 x 1162 mm
Height without filter	350 mm
Height withHEPA filter	460 mm
Weight (without Filter):	34 kg
Weight (with Filter):	54 kg
Diff. Pressure b. max.0.45m/s	350 [Pa] without filter
Airflow @ 0,45 m/s:	2333 m³/h (from grid)
Motor impeller	3D impeller "Ergonom" / PU

EC-Motor : Modbus / 0-10V

Power/phase V/ph	200-277/1
Frequence Hz	50/60
Current A	2,2
Speed max 1/min	1450
Working temperature °C	-25 / +60
Pressure drop @ 0,45m/s: Pa	100 (with H14 Standard-Filter)
Power consumption: W	340
Sound level dB(A)	53 (with H14 Filter)
External pressure drop Pa	250 (with H14 Filter)

EC-Motor: ebmbus (RS485 and FTT10A)

Power/Phase V/ph	200-277/1
Frequence Hz	50-60
Current A	1,7
Speed max 1/min	1280
Working temperature °C	-25 / +40
Pressure drop @ 0,45m/s: Pa	100 (with H14 Standard-Filter)
Power consumption W	340
Sound level dB(A)	53 (with H14 Filter)
External pressure drop Pa	250 (with H14 Filter)

Technical data HEPA Filter for FFU-FG-EH

Filter type:	HEPA-filter
Length x width x height:	570x1170x104 [mm]
Filter frame:	anodized aluminum
Filter class:	H14 [EN1822]
Efficiency:	99.995%% [MPPS]
Nominal volume flow:	997 [m³ / h]
Initial pressure loss:	100 Pa [@ 0.45m / s face velocity]
Filter test:	ISO29463 (EN1822) with scan test

Technical data HEPA Filter for FFU-FG-EH

Filter type:	HEPA-filter
Length x width x height:	1170x1170x104 [mm]
Filter frame:	anodized aluminum
Filter class:	H14 [EN1822]
Efficiency:	99.995%% [MPPS]
Nominal volume flow:	2105 [m³ / h]
Initial pressure loss:	100 Pa [@ 0.45m / s face velocity]
Filter test:	ISO29463 (EN1822) with scan test

Technical data HEPA filter for FFU-FG-EH fluid filter

Filter type:	HEPA-filter
Length x width x height:	535x1135x104 [mm]
Filter frame:	anodized aluminum
Filter class:	H14 [EN1822]
Efficiency:	99.995%% [MPPS]
Nominal volume flow:	984 [m³ / h]
Initial pressure loss:	100 Pa [@ 0.45m / s face velocity]
Filter test:	ISO29463 (EN1822) with scan test

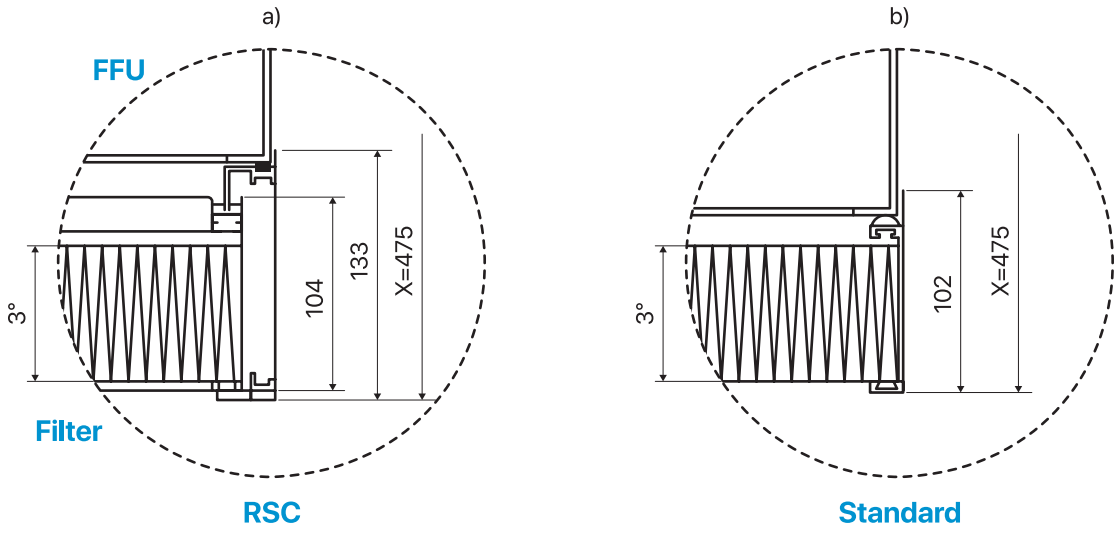
Technical data HEPA filter for FFU-FG-HH fluid seal

Filter type:	HEPA-filter
Length x width x height:	1135x1135x104 [mm]
Filter frame:	anodized aluminum
Filter class:	H14 [EN1822]
Efficiency:	99.995%% [MPPS]
Nominal volume flow:	2087 [m³ / h]
Initial pressure loss:	100 Pa [@ 0.45m / s face velocity]
Filter test:	ISO29463 (EN1822) with scan test

To protect the filter medium, the particulate filters are equipped on both sides with an additional protection grid. A PU gel seal (liquid) is used as a seal in the fluid channel for sealing against the filter replacement frame.

Type of mounting

Filter installation situation



FFU Installation methods

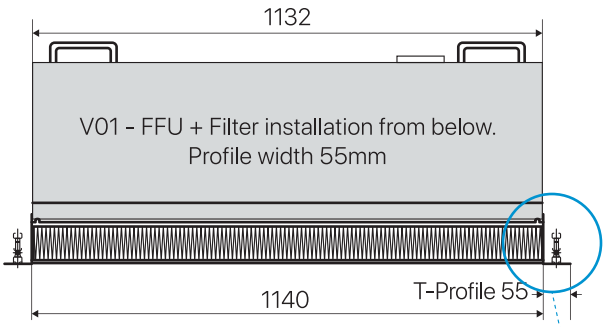
Depending on the installaton several possibilities are available from top or room side:

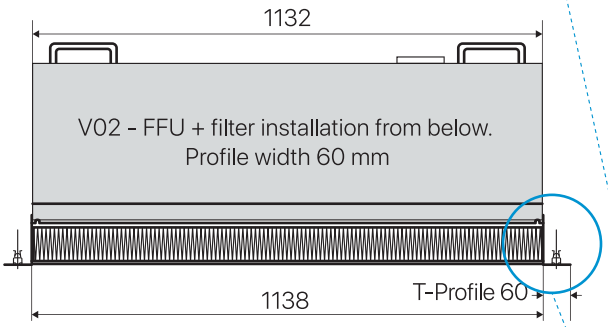
- Filter installation from cleanroom side with a profile of 55 or 60mm
- Filter installation from top side
- Filter installation from cleanroom side. FFU assembly possible without filter
- FFU installation with Room Side Change frame (RSC) from above and filter installation from cleanroom side (gel seal)

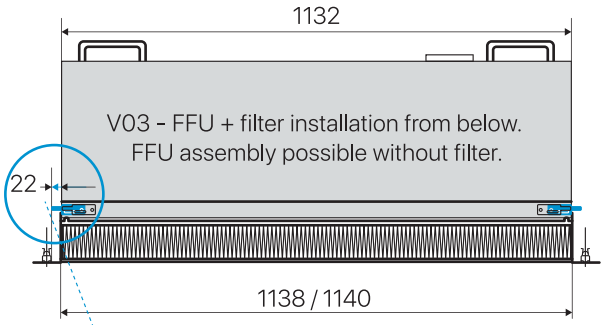
Type of mounting

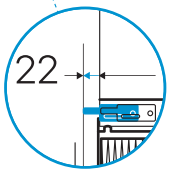
Achsmar3, ceiling system 1200x1200,
Note the respective profile type when placing an order!

ALN MR

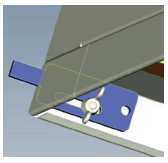




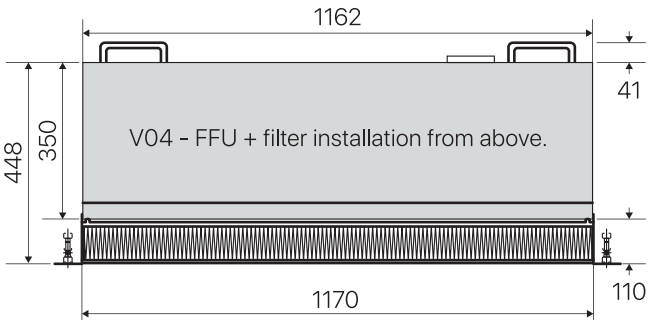


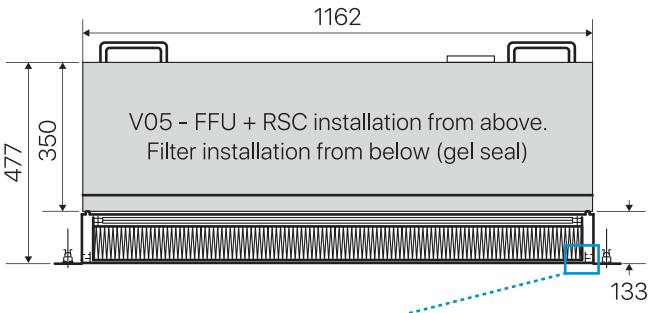


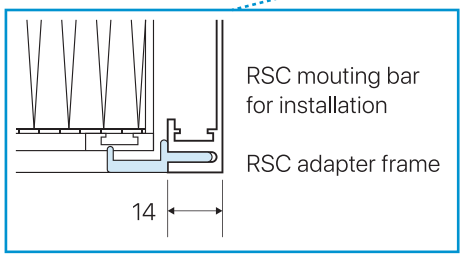
4x Assembly latch (MR)
(Overhang max. 22mm from
AK housing)



ALN







4 x L-Support bracket

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