

Filter Fan Unit LIGHT Type LIGHT EC

Technical Concept



Product Description

Filter Fan Units (FFUs) from Exyte Technology are designed to provide clean air to individual workstations or entire cleanrooms. The FFU LIGHT is a reasonably priced solution and is suited for the use in turbulent airflow cleanroom areas with low requirements regarding the noise level.

Depending on the configuration of the filter coverage and of filter classes, cleanroom classes of ISO 5.0 to ISO 8.0 according DIN EN ISO 14644-1 can be reached.

This brochure provides information about the device design

- FFU LIGHT EC - FFU with EC-motor and advanced control and monitoring possibility.

The product FFU LIGHT EC is protected by patent.

Design and Function

The unit consists essentially of the housing **1**, the HEPA filter cell **2** and the compact fan unit **3** with impeller and motor **4** with inlet nozzle **5**.

The following additional accessories are available:

- Prefilter **9** for coarse particle filtration
- AMC-filter **10** for filtration of gaseous contaminants
- Cooling coil/heating coil **11**
- Air diffusor (perforated plate diffuser, swirl outlet) **8**

If necessary filter cell classes H13 to U17 can be used.

The FFU fans have sufficient reserve capacity to overcome any additional pressure loss due to e.g. raised floor, return air ducts, prefilter or cooling/heating coils.

The FFU LIGHT EC is driven by an electronically commutated external rotor motor.

Technical Data

Grid size ¹⁾	mm	1200×600	1 200 × 900	1 200 × 1 200			
Housing length							
Installation bearing rails	mm	1 132	1 132	1 132			
Housing width							
Installation bearing rails	mm	532	832	1 132			
Housing height	mm	350					
Housing material standard		Aluminium untreated					
Weight standard without filter	kg	16	19	21			
EC-Motor (IP20)							
Voltage/Phase	V/ph	200-277/1					
Frequency	Hz	50/60					
Nominal current	A	1,8–1,3					
Nominal power	W	370					
Rotation speed max.	1/min	300–1304					
Operation temp. min./max.	°C	0/+40					
Air velocity	m/s	0,30	0,45	0,30	0,45	0,30	0,45
Air volume flow	m ³ /h	778	1166	1166	1750	1555	2330
Differential pressure	Pa	80	120	80	120	80	120
Power consumption ²⁾	W	43	82	61	127	82	186
Sound power level pressure side ²⁾	dB (A)	52	58	56	63	60	69
Sound pressure level in the cleanroom ²⁾							
- 25 % coverage	dB (A)	54	61	57	64	60	68
- 50 % coverage	dB (A)	57	64	60	67	63	71
- 100 % coverage	dB (A)	61	67	63	70	66	75
External differential press. max. ³⁾	Pa	390	375	365	310	335	235

1) Special size upon request

2) with H14 filter cell without external differential pressure

3) without installed HEPA/ULPA filter

4) measured with phase angle control

Dimensions

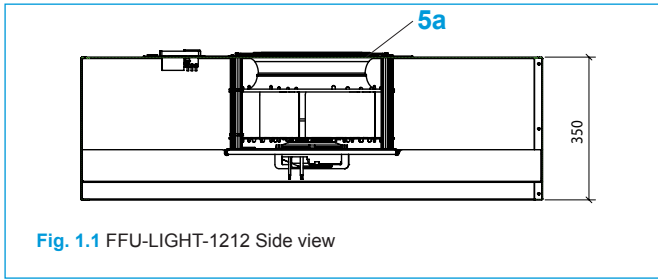


Fig. 1.1 FFU-LIGHT-1212 Side view

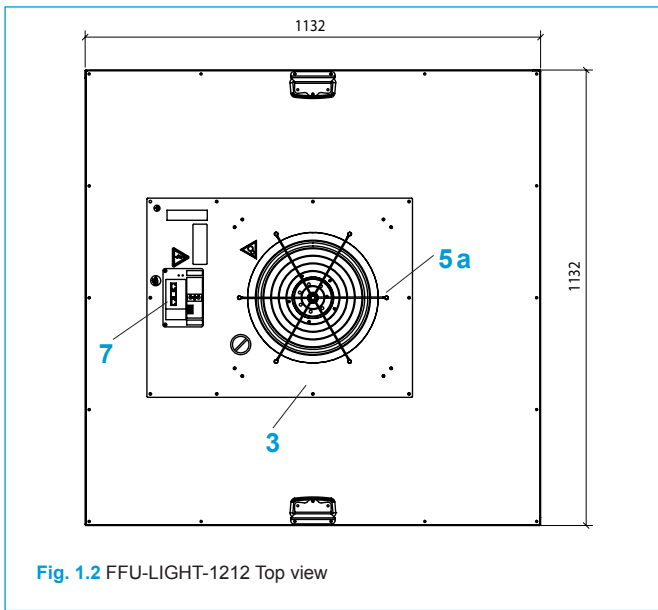


Fig. 1.2 FFU-LIGHT-1212 Top view

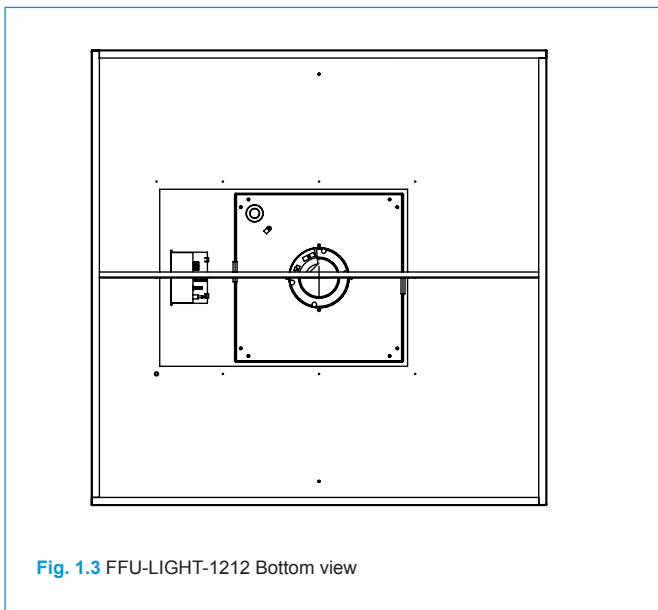


Fig. 1.3 FFU-LIGHT-1212 Bottom view

Device Installation

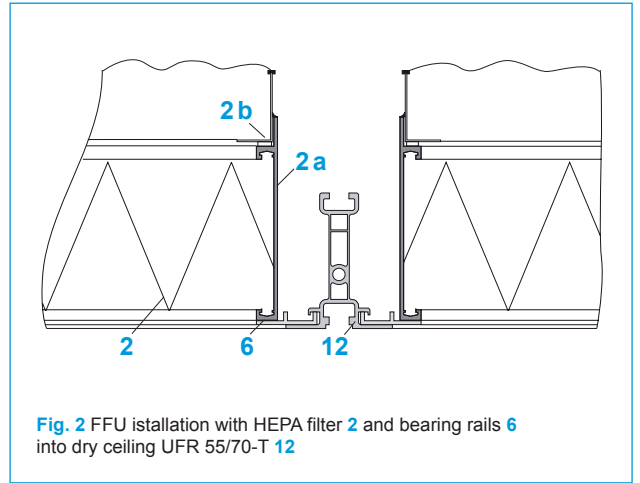


Fig. 2 FFU installation with HEPA filter 2 and bearing rails 6 into dry ceiling UFR 55/70-T 12

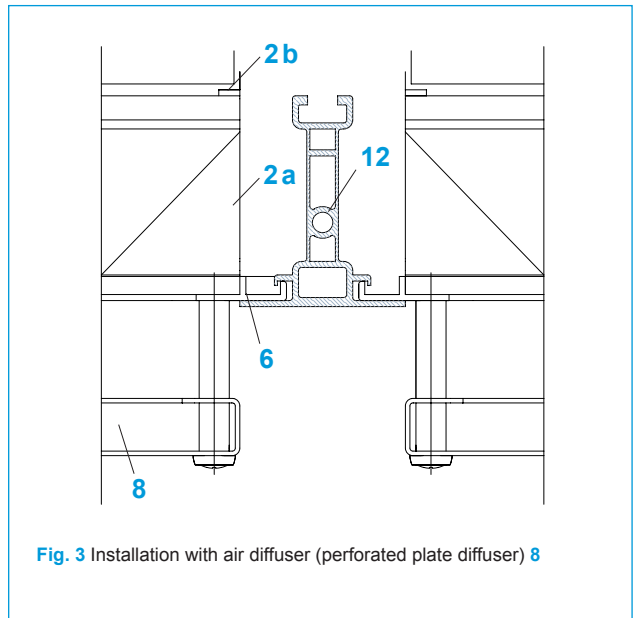


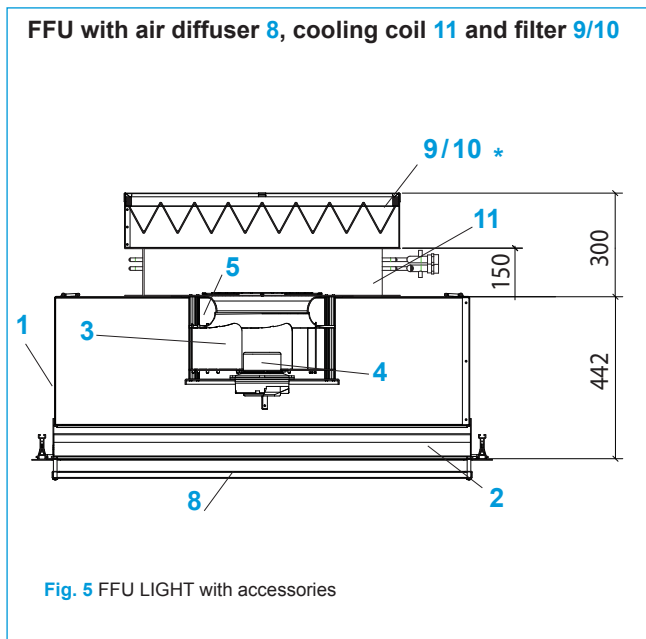
Fig. 3 Installation with air diffuser (perforated plate diffuser) 8

Legend

- | | |
|-----------------|-----------------------------|
| 1 FFU housing | 6 Bearing rail |
| 2 HEPA filter | 7 Terminal box |
| 2a Filter frame | 8 Air diffuser |
| 2b Dry seal | 9 Prefilter |
| 3 Impeller | 10 AMC filter |
| 4 Motor | 11 Cooling coil |
| 5 Inlet nozzle | 12 Ceiling grid UFR-55/70-T |
| 5a Air grill | |

Device Installation

The Installation into the Exyte Technology ceiling grid system → Ultraflex Grid Ceiling is very simple. The installation can take place from the cleanroom, using the ceiling grid system UFR-55/70-T 12 with bearing rails 6 (Fig. 2) and filter cell are installable from the cleanroom side. The ceiling grid system profiles do not need to be sealed. The sealing between the housing and the filter cell frame is done with a dry gasket 2b (Fig. 2 and 3).



Control

FFU LIGHT EC

Based on LON (Local Operating Network) the FFUs are merged to a network system through a special bus-system → Control System DC. This enables a simple and individual speed adjustment and monitoring of each unit, even in complex systems with thousand units.

Power Supply

A plug & play cable system is provided for the power supply. Each unit is connected through the existing terminal box 7, minimizing the installation efforts.



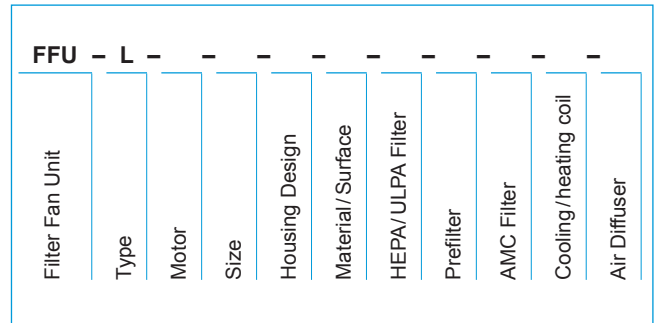
Fig. 4 FFU LIGHT

* FFU 1206 Prefilter 500 x 500 mm
FFU 1212 Prefilter and Cooling coil 750 x 750 mm

Key Features

- Reasonably priced FFU suitable for turbulent airflow cleanroom areas with low requirements regarding the noise level
- FFU sizes fit in ceiling grid size
 - 1200 mm × 1200 mm
 - 1200 mm × 900 mm
 - 1200 mm × 600 mm
- Low power consumption
- Low weight
- Easy operation, low maintenance effort
- Applicable for individual workstations or entire cleanroom facilities
- Aluminium housing (standard)
- Filter cell classes H13 to U17 (standard H14)
- Installed radial fan:
 - Motor with internal wired thermal contacts
- FFU LIGHT AC with single-phase external rotor motor, volume flow adjustable through → Control System AC
- FFU LIGHT EC with electronically commutating external rotor motor, volume flow adjustable through → Control System DC
- Minimized power supply installation effort due to plug & play cable system
- Easy device installation from below (cleanroom side) with bearing rails, optionally installation from top (plenum side)
- Optional components: Prefilter, AMC filter, Cooling coil/heating coil and air diffuser on the cleanroom side
- Flexible installation, if production conditions are changing

Type Designation



Type	
L	LIGHT
Motor	
EC/LR	EC-Motor with LON RS485-interface
EC/LF	EC-Motor with LON FTT10A-interface
Size (ceiling grid)	
1212	1200 mm × 1200 mm
1209	1200 mm × 900 mm
1206	1200 mm × 600 mm
Housing Design	
T	Installation in dry ceiling with bearing rails
Material/Surface	
AU	Aluminium untreated (standard)
Filter	
O	Without
H14	Standard filter class
Optional	Filter classes H13, U15, U16, U17
Prefilter	
O	Without
Optional	
G4	Filter class G4
—	Special filter class
AMC Filter	
O	Without
A	With AMC filter
Cooling/heating coil	
O	Without
Optional	
LK	With cooling coil
LE	With heating coil
Air diffuser	
O	Without
Optional	
LV	With air diffuser

Submittal Text

FFU LIGHT EC

___ pcs. of FFU-LIGHT-EC consisting of:

- Housing with fan fixture
- High performance radial fan with backwards curved blades.
The impeller is directly connected with the driveshaft of the external EC motor. The motor is maintenance free. Fan impeller and motor are statically and dynamically balanced.

Technical Data

Component size 1200 mm × 1200 mm

Air-flow _____ m³/h
 Length × width 1132 mm × 1132 mm
 Height without filter 350 mm
 Weight per FFU 21 kg
 Operating voltage 200–277 V/1 ph, 50/60 Hz
 Speed min./max. 300–1304 1/min
 Nominal power 370 W
 Nominal current 1,8–1,3 A

Component size 1200 mm × 900 mm

Air-flow _____ m³/h
 Length × width 1132 mm × 832 mm
 Height without filter 350 mm
 Weight per FFU 19 kg
 Operating voltage 200–277 V/1 ph, 50/60 Hz
 Speed min./max. 300–1304 1/min
 Nominal power 370 W
 Nominal current 1,8–1,3 A

Baugröße 1200 mm × 600 mm

Air-flow _____ m³/h
 Length × width 1132 mm x 532 mm
 Height without filter 350 mm
 Weight per FFU 16 kg
 Operating voltage 200–277 V/1 ph, 50/60 Hz
 Speed min./max. 300–1304 1/min
 Nominal power 370 W
 Nominal current 1,8–1,3 A

Operational Data

Air velocity _____ m/s
 Power consumption _____ W
 Allowed sound pressure level. _____ dB(A)

HEPA Filter

- Class H14
- Class _____
Filter height _____ mm

Housing Material

- Aluminium untreated (standard)

Ceiling profile grid-ceiling

- UFR-55/70-T

Optional

- Prefilter according to DIN EN 779 for coarse particle separation, incl. frame made of aluminium, untreated
Filter class
 G4

- AMC filter for the separation of gaseous and air pollutant substances, Adapter frame standard made of aluminium (the AMC filter must be specified).
- Heating coil
- Cooling coil
made of copper tubes, aluminum fins and an aluminum frame
Cooling coil for FFU 1212 1209 1206

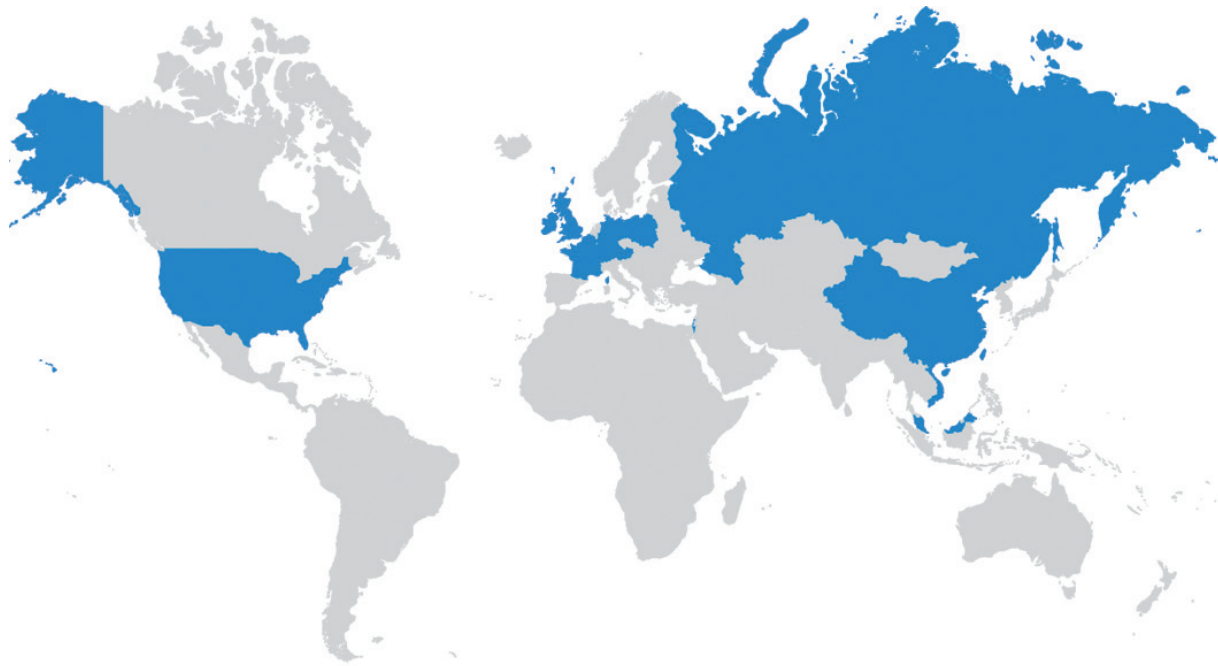
Air-flow	2300	1750	1165	m ³ /h
Air inlet temperature	23,0	23,0	23,0	°C
Air outlet temperature	19,5	19,2	20,0	°C
Pressure loss airside	15	9	16	Pa
Water inlet temperature	14,0	14,0	14,0	°C
Water outlet temperature	18,0	18,0	18,0	°C
Pressure loss waterside	5,9	4,1	2,1	kPa
Sensible capacity	2,7	2,2	1,1	kW
Water quantity	600	500	300	l/h
- Air diffuser, cleanroom side, includes mounting hardware design:
 - Aluminium perforated plate, anodized
 - Steel perforated plate, galvanized with powder-coating, RAL _____
- Swirl outlet

Manufacturer
Type

Exyte Technology GmbH
FFU-L-EC-_____-_____-_____-_____-_____-_____-

Notes

Local Support Wherever You Need Us



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