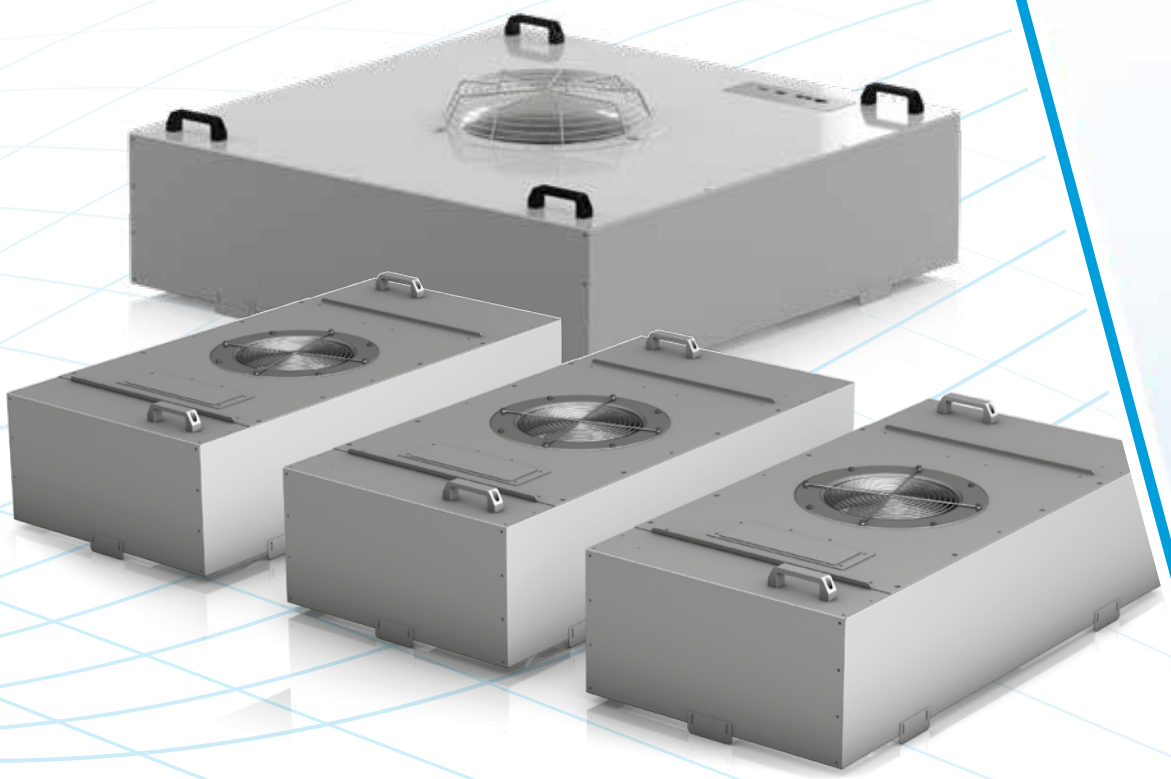
NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK



Fan Filter Units

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK

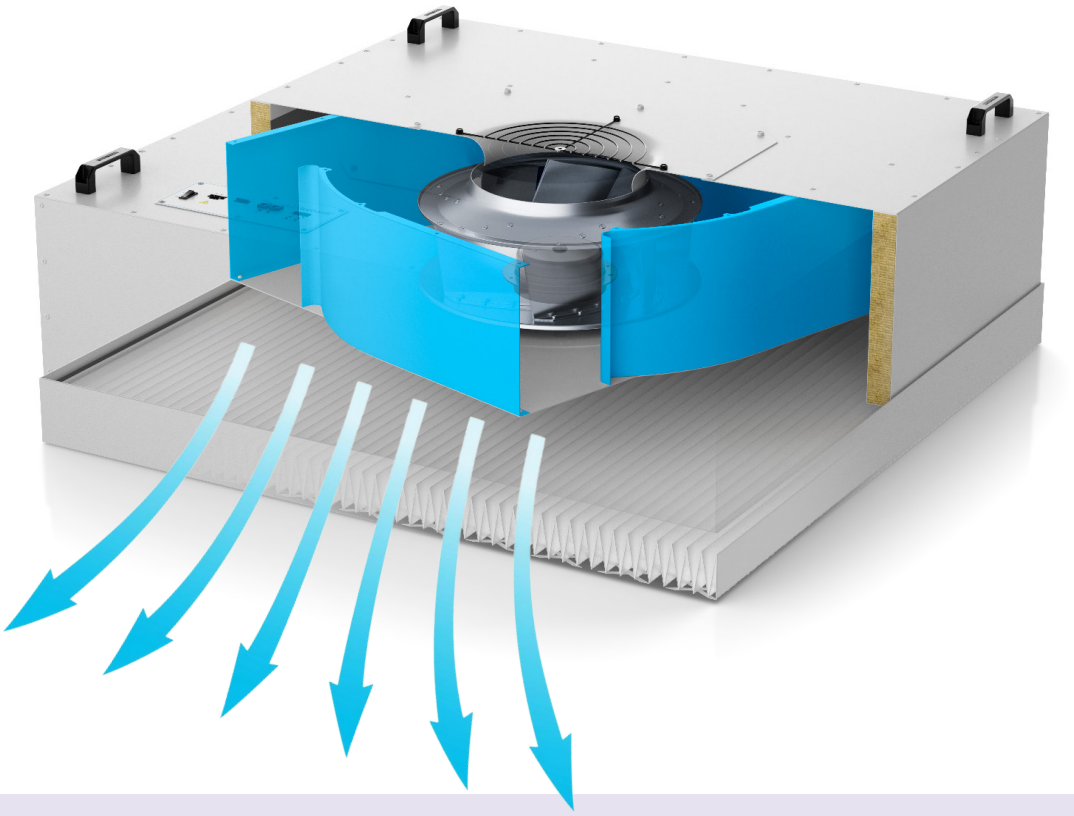
Fan Filter Units

We have designed and developed our FFU precisely so that they match the requirements in clean rooms perfectly.

The heart of the FFU is the motor impeller unit.
All components, such as, for example, inlet nozzles, impellers, motors and the corresponding commutation units to control the motor are adapted specifically to each other to ensure exceptional performance.

FFU's are available:

- as standard or customer-specific versions
- for standard and customer-specific ceiling grids
- for different filter and grid sizes
- as top load or bottom load version
- for fluid or dry seal systems
- for different volume flows and pressure losses
- with minimal vibration and noise emissions
- with a flush-mount external rotor motor
- Change in rotational speed using BUS or control voltage
- for different control systems



Simple handling: Controlling and monitoring of your FFU networks

Easy parameterization and monitoring of your FFU networks via various RS485 interfaces (G-bus/Modbus RTU).

Optional control methods:

- Handheld controller for up to 100 FFUs.
- Mini control center for control of up to 200 FFUs.
- PC control center for control of up to 500 FFUs per Ethernet RS485 gateway.

The Standard FFU

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK

The combination of different standard sizes guarantees that any building shape can be catered for while ensuring the highest possible level of energy efficiency.

Low-Profile FFU Shown

- Flat and space-saving
- Easy to operate



Standard and custom sizes - adaptable to special building requirements

Type of device	Standard dimensions feet	Output in kW max.	Power consumption in A (max.)	Voltage in V	Frequency in Hz	Rotational speed max.	Volume flow at 69 ft/min ft^3/min	Volume flow at 89 ft/min ft^3/min
FFU2020-SSP	2'x 2'	0.26	0.91	208-277	50/60	1,850	266.6	343.1
FFU2030-SSP	2'x 3'	0.26	0.91	208-277	50/60	1,850	400.2	515
FFU2040-SSP	2'x 4'	0.33	1.20	208-277	50/60	1,750	533.8	686.3
FFU2040-SLP	2“x 4“	0.34	1.25	208-277	50/60	1,700	533.8	686.3
FFU3030-SSP	3' x 3'	0.34	1.25	208-277	50/60	1,700	600.3	772.2
FFU3040-SSP	3' x 4'	0.36	1.33	208-277	50/60	1,350	800.5	1,029.4
FFU4040-SSP	4' x 4'	0.32	1.16	208-277	50/60	1,010	1067.7	1,373.2

SSP = Standard Series, Standard Profile
SLP = Standard Series, Low Profile

Aluminum Housing standard
(Stainless Steel and Sheet Metal Housing Options Available)

Fan Filter Units (FFU)

Motor controller and control system



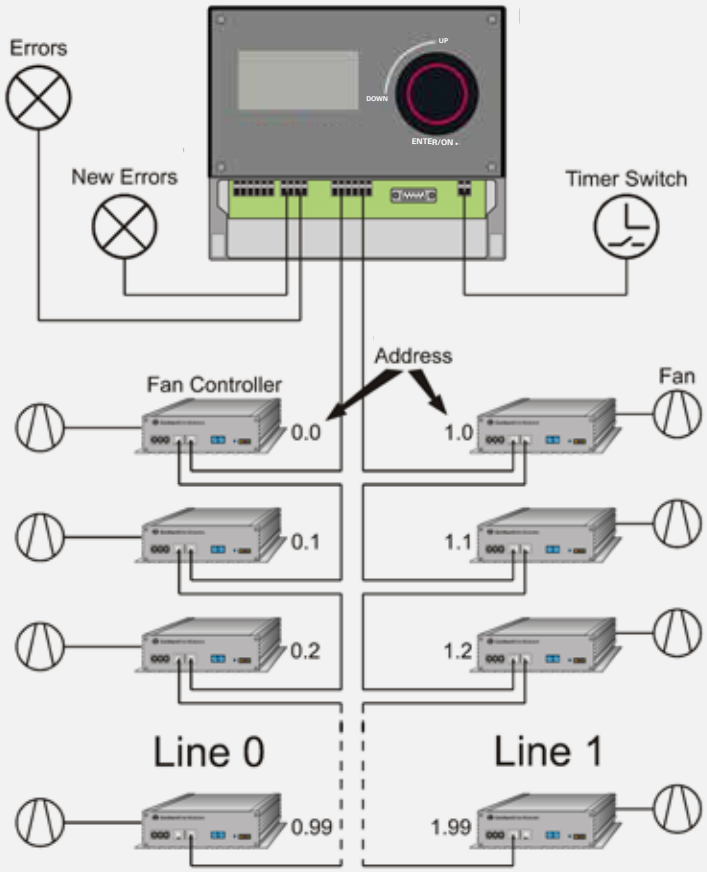
Stationary mini control center allows for the control and monitoring of up to 200 FFUs.

Modbus based systems

- Low system costs
- Easy, quick commissioning on site
- Rapid reaction & responseto multiple commands
- Complete project engineering and programming in the design phase
- Minimum effort to replace components
- Easry network inegration through standardized interface (**RTU**)

LONWORKS based systems

- Rapid reaction to individual commands and faults
- FFU calibration from the clean room
- Hand service tool
- Free network topology
- Digital input modules available
- Temperature sensors available
- Expandable system



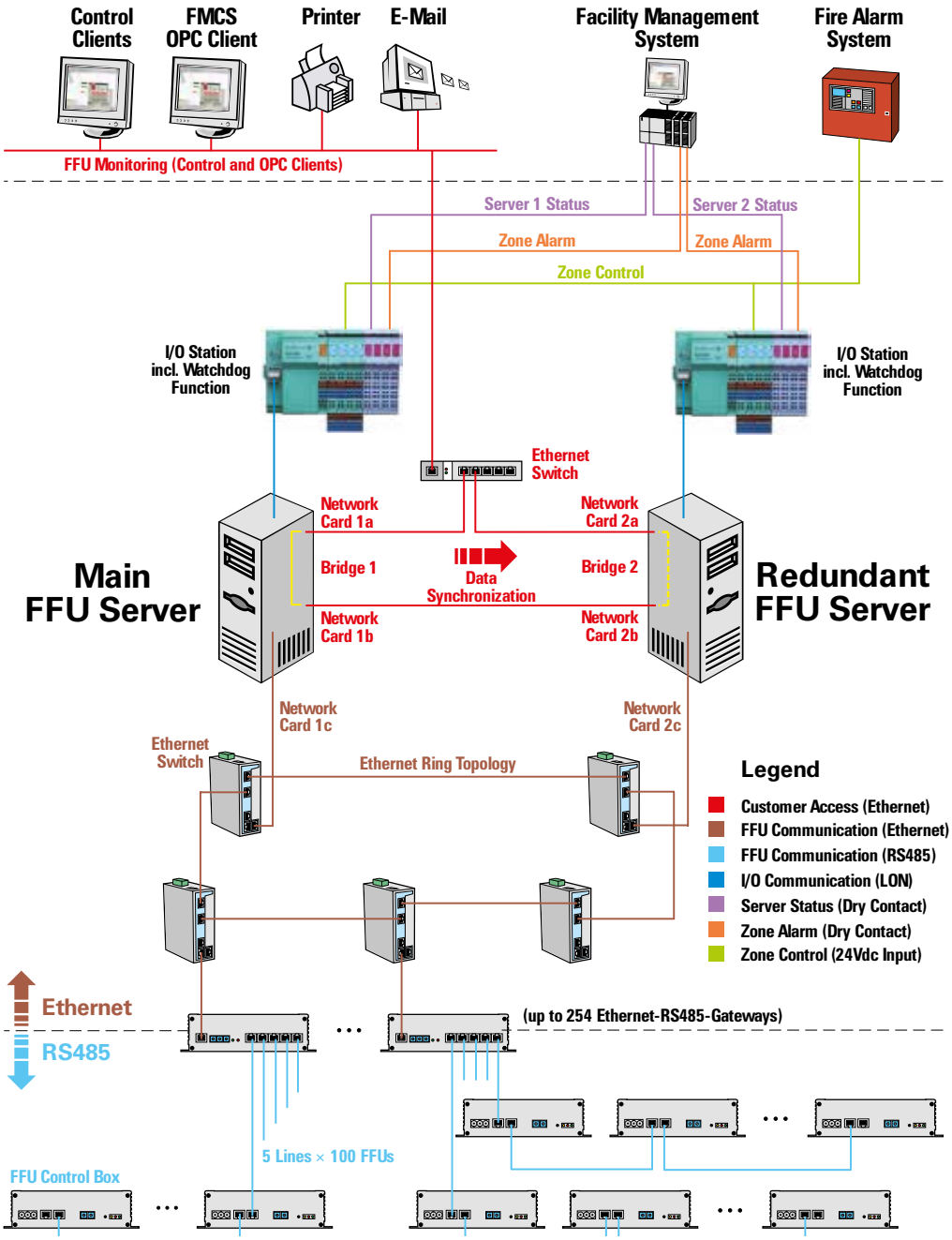
Compare the systems with one another

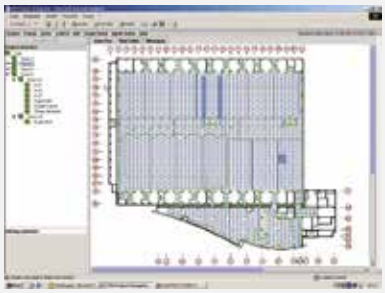
System features	Modbus RTU	LONWORKS
Hardware		
FFU Server PC	+	+
User Client, local or remote through Ethernet	+	+
Several clients	+	+
Network topology	Line topology	Free topology
Fieldbus	RS485	FTT-10A
Physical repeater/ Ethernet Gateway	5 lines	2 or 3 way
Nodes per segment	100	60
Maximum number of FFUs in the network	127000	32000
Network termination	not required	+
Communication		
Communication principle	Master-Slave	Multi-Master
Addressing	Hardware	Neuron - ID

Topology overview

Regardless of whether it's Modbus, a Modbus integration based on Gbus or a combination of both, we will support the network topology you need, taking the requirements into account.
This figure shows the recommended complete FFU Modbus control network topology. The field bus uses Modbus technology in ring topology for the Ethernet part and line topology for the RS485 part.

The Modbus is structured with Gateways with a redundant Ethernet backbone and several FFU lines. Further I/O modules are available for the server connection. The FFU server can be delivered with a redundant server in Hot-standby configuration.





User interfaces:
Example of a background image with a large number of FFUs

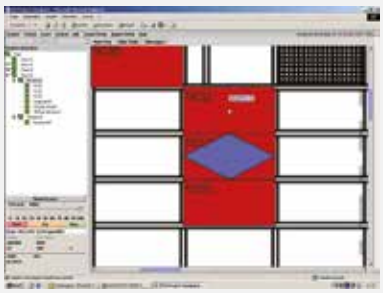
Compatibility of the software using WIN10 Professional 64 Bit

- Ethernet, IP network, HTTP protocol, HTML/XML, Internet Browser (Microsoft®* Internet Explorer®*)
- Registering the run time for each FFU for preventative filter maintenance
- Remote maintenance and configuration using internet connection
- Freely-programmable automatic timer for automatic FFU control (reduction or increase of rotational speed for individual FFUs or groups)
- Event logging (log file for status and changes)



User interface overview with:

- Main level with background image
- Icons for FFUs, digital input and temperature sensor
- Navigation tree



Zoom view with:

- A selected FFU
- Navigation tree
- Control panel
- Status panel

*Microsoft and Internet Explorer are believed to be the trademarks or trade names of Microsoft Corporation.

Characteristics: FFU2020-SSP

NORTEK CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU2020-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, Modbus mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA H14 class (filtration efficiency: 99.995%) with fan guard grille coated in RAL 9010 on the clean room side incl. Scan Test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU2020-SSP

FFU size:
2' x 2'

Dimensions (L x W x H):
22.52 x 22.52 x 14.37 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
1850 1/min

Output (max):
0.26 kW

Current (max):
1.13 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

Maintenance of the filter:
Filter change on the clean room side/plenum side

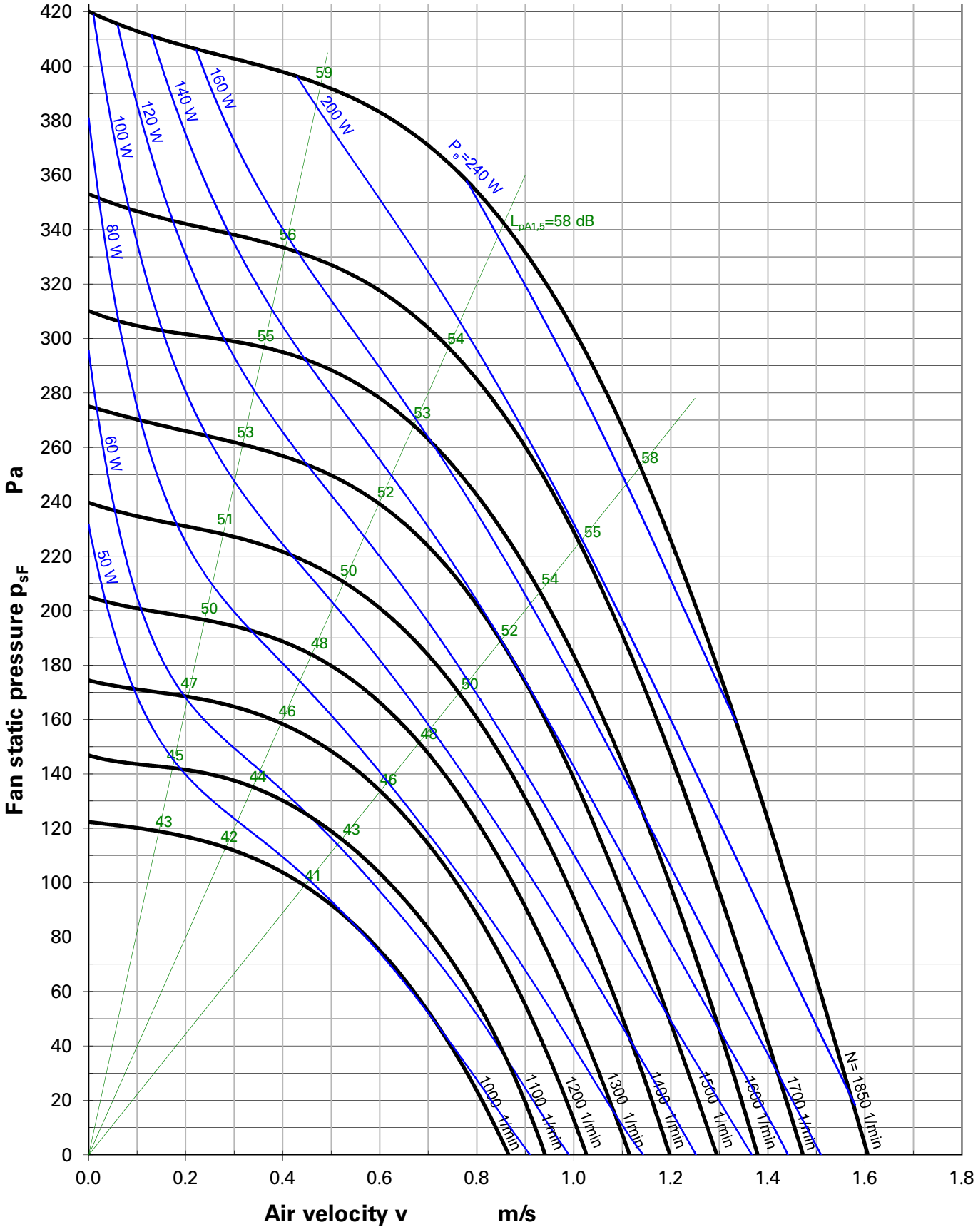
Types of seal:
Fluid seal/dry seal

Others:
fan guard grille coated in RAL 9010 (clean room side)

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)

FFU2020-SSP

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	129.6	259.2	388.8	518.4	648.0	777.6	907.2	1036.8	1166.4	1296.0	1425.6	1555.2
Volume flowrate	ft^3/min	76.3	152.6	228.8	305.1	381.4	457.7	534.0	610.2	686.5	762.8	839.1	915.4

Characteristics: FFU2030-SSP

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU2030-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, Modbus mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU2030-SSP

FFU size:
2' x 3'

Dimensions (L x W x H):
22.52 x 34.33 x 14.37 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
1850 1/min

Output (max):
0.24 kW

Current (max):
1.05 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance (plenum side)

Filter

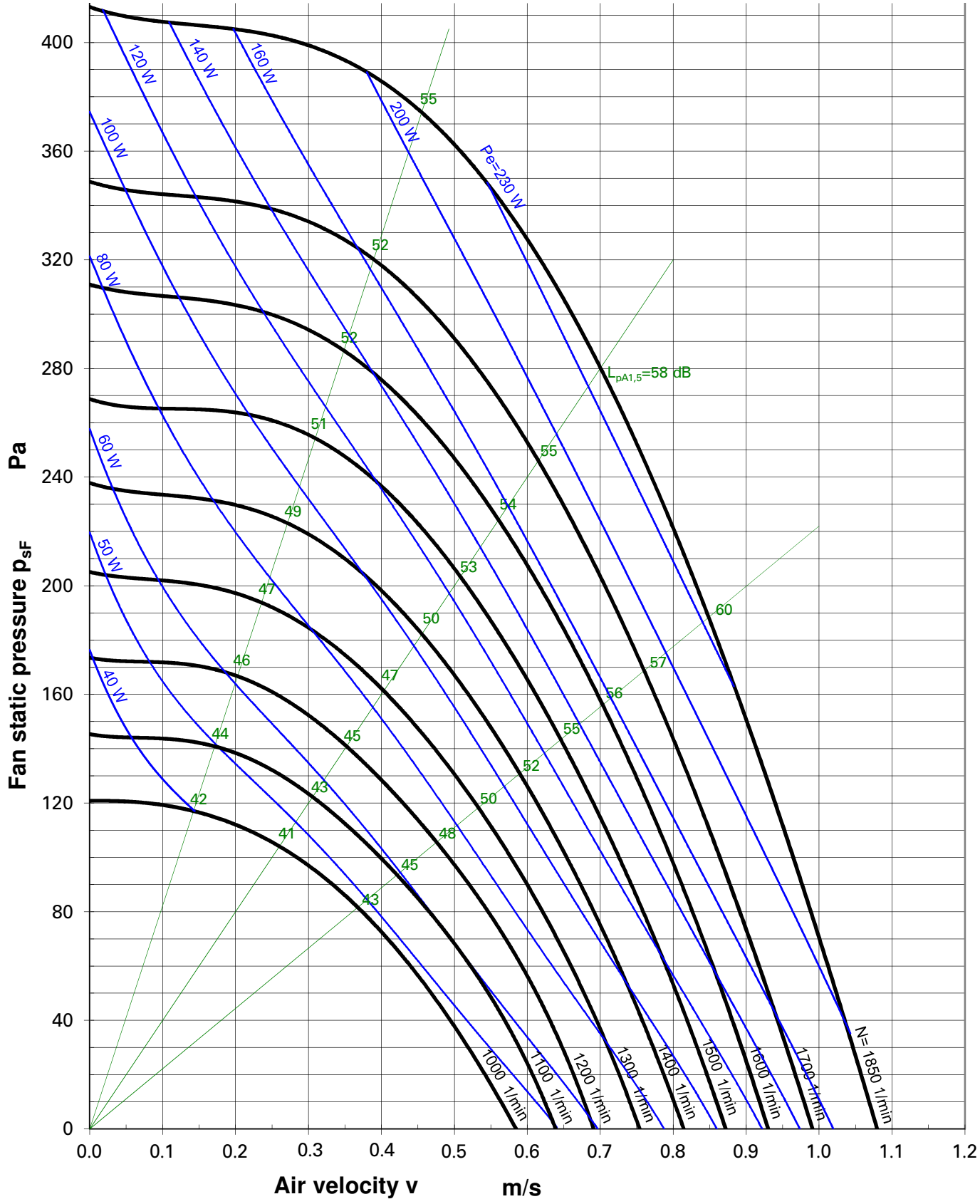
Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

Frames:
Frame made of extruded, anodized aluminium, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	194.4	388.8	583.2	777.6	972.0	1,166.4	1,360.8	1,555.2	1,749.6	1,944.0	2,138.4	2,332.8
Volume flowrate	ft^3/min	114.4	228.8	343.3	457.7	572.1	686.5	800.9	915.4	1,029.8	1,144.2	1,258.6	1,373.0

Characteristics: FFU2040-SSP

NORTEK CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU2040-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, Modbus mini control center, Modbus PC visualization or Modbus handheld

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU2040-SSP

FFU size:
2' x 4'

Dimensions (L x W x H):
22.52 x 46.15 x 17.52 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
1750 1/min

Output (max):
0.33 kW

Current (max):
1.45 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

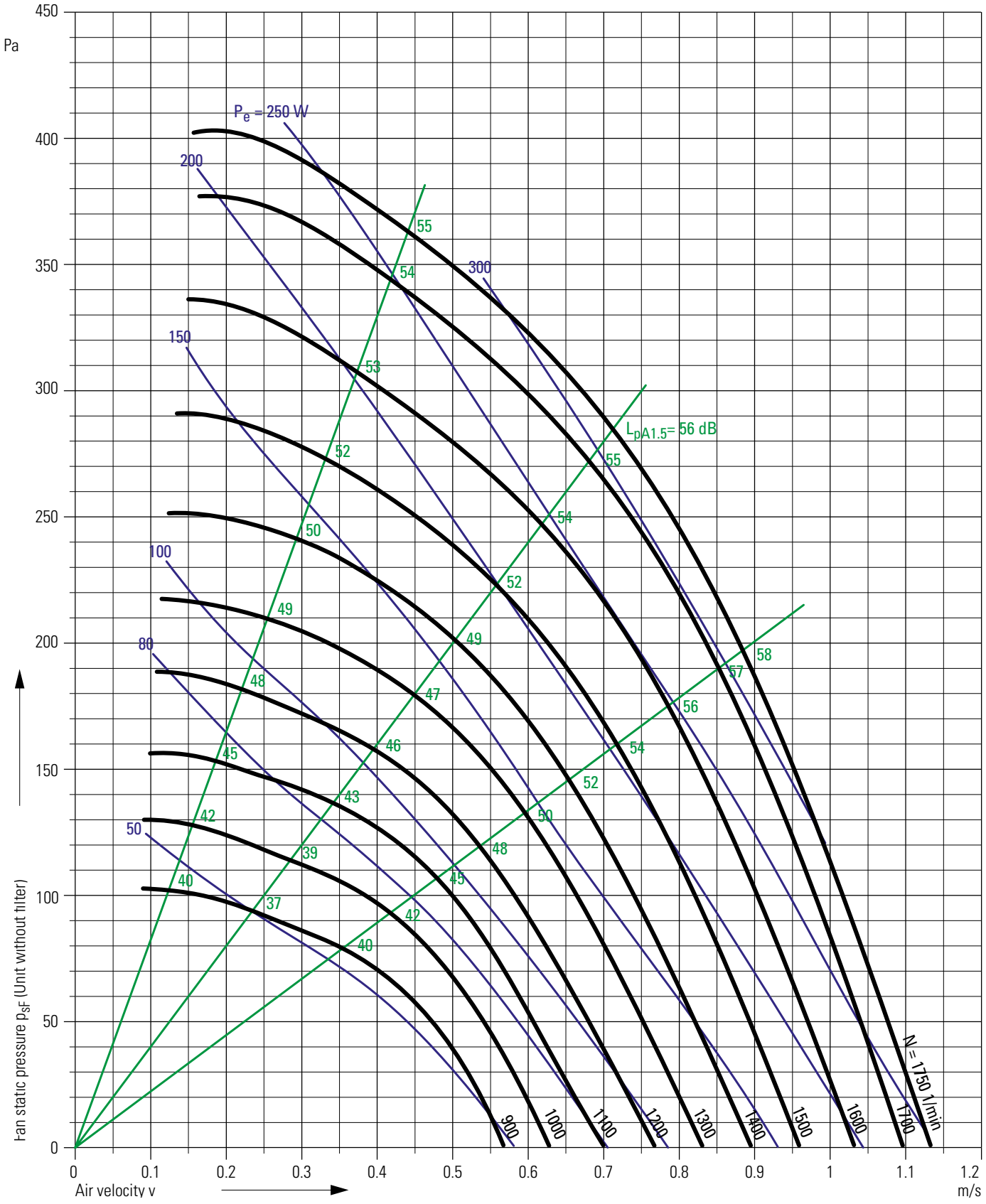
Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

Frames:
Frame made of extruded, anodized aluminium, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0	.8	0.9	1.0	1.1	1.2
Volume flowrate m^3/h		259.2	518.4	777.6	1,036.8	1,296.0	1,555.2	1,814.4	2,073.6	2,332.8	2,592.0	2,851.2	3,110.4	
Volume flowrate ft^3/min		152.6	305.1	457.7	610.2	762.8	915.4	1,067.9	1,220.5	1,373.0	1,525.6	1,678.2	1,830.7	

Characteristics: FFU2040-SLP

NORTEK CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU2040-SLP (Low-Profile)

Easy to install low-profile housing for installation in extremely low plenums.

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, Modbus mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU2040-SLP

FFU size:
2' x 4'

Dimensions (L x W x H):
22.52 x 46.14 x 15.16 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1 ~

Frequency:
50/60 Hz

Rotational speed (max.):
1700 1/min

Output (max):
0.34 kW

Current (max):
1.5 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

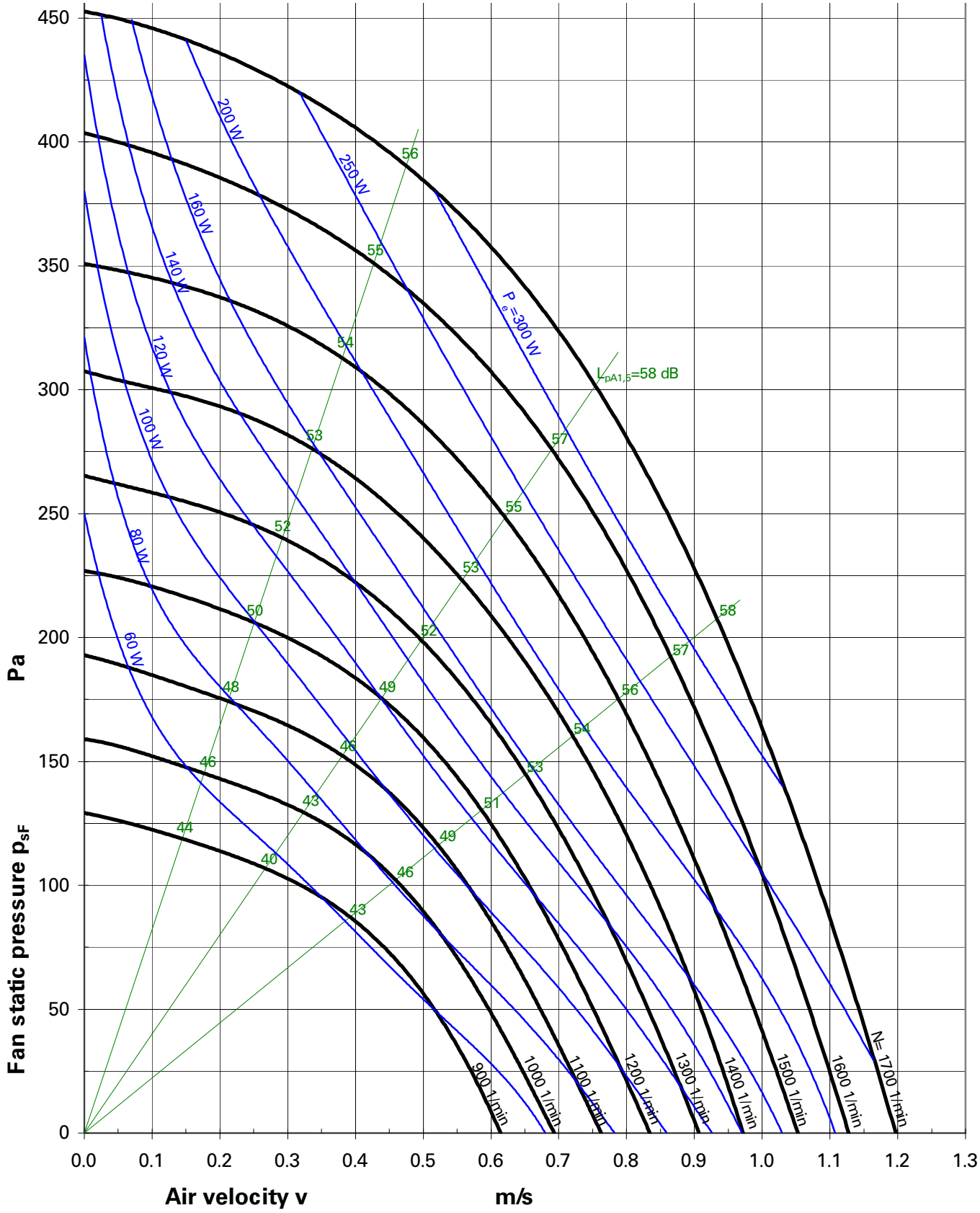
Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

Frames:
Frame made of extruded, anodized aluminium, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	259.2	518.4	777.6	1,036.8	1,296.0	1,555.2	1,814.4	2,073.6	2,332.8	2,592.0	2,851.2	3,110.4
Volume flowrate	ft^3/min	152.6	305.1	457.7	610.2	762.8	915.4	1,067.9	1,220.5	1,373.0	1,525.6	1,678.2	1,830.7

Characteristics: FFU3030-SSP

NORTEK™ CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU3030-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU3030-SSP

FFU size:
3' x 3'

Dimensions (L x W x H):
34.33 x 34.33 x 15.16 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
1700 1/min

Output (max):
0.34 kW

Current (max):
1.50 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

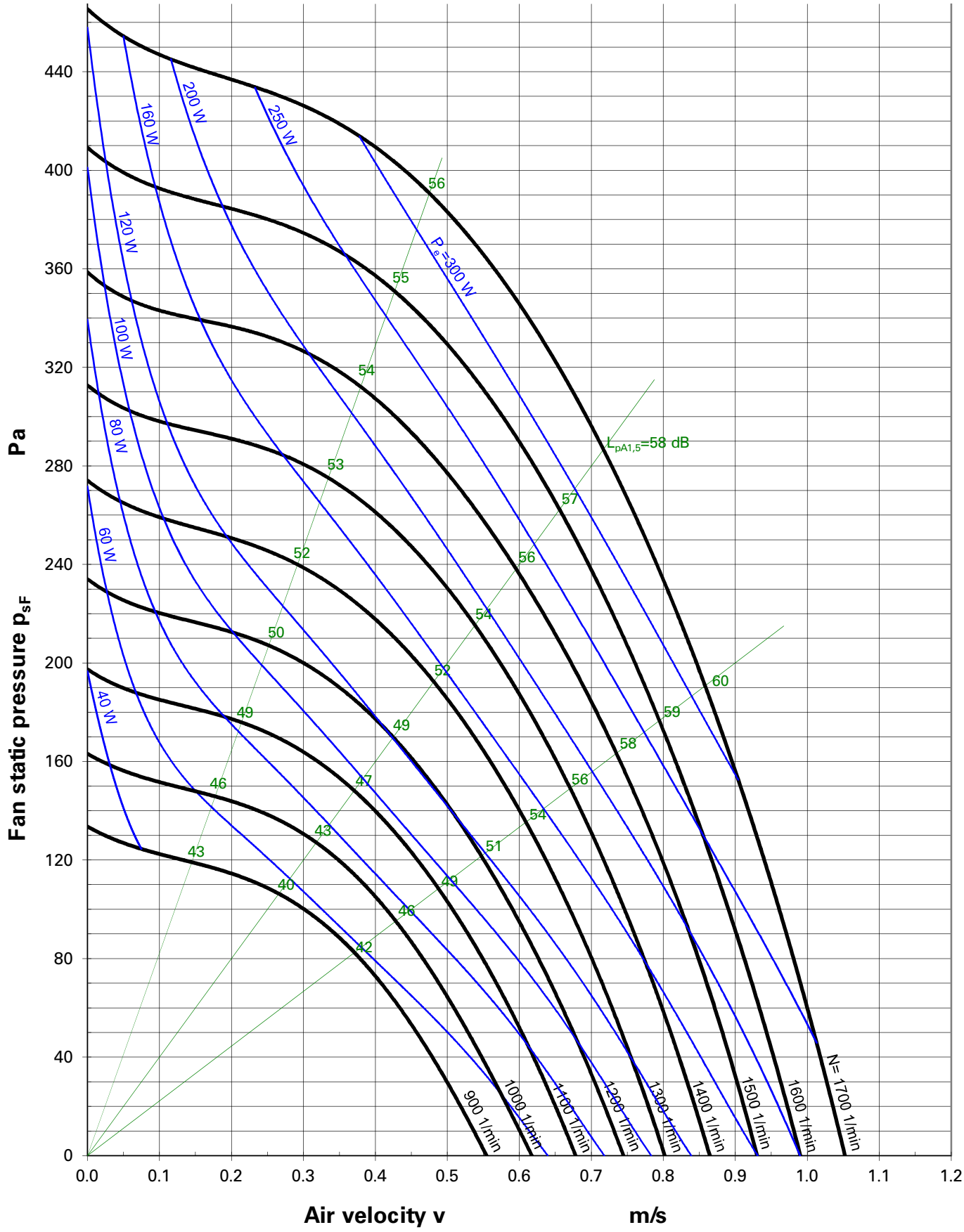
Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

Frames:
Frame made of extruded, anodized aluminium, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	291.6	583.2	874.8	1,166.4	1,458.0	1,749.6	2,041.2	2,332.8	2,624.4	2,916.0	3,207.6	3,499.2
Volume flowrate	ft^3/min	171.6	343.3	514.9	686.5	858.1	1,029.8	1,201.4	1,373.0	1,544.7	1,716.3	1,887.9	2,059.6

Characteristics: FFU3040-SSP

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU-3040-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type:
FFU3040-SSP

FFU size:
3' X 4'

Dimensions (L x W x H):
34.33 x 46.14 x 17.52 in (incl. Filter, without accessories)

Housing material:
Aluminium/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
1350 1/min

Output (max):
0.365 kW

Current (max):
1.60 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

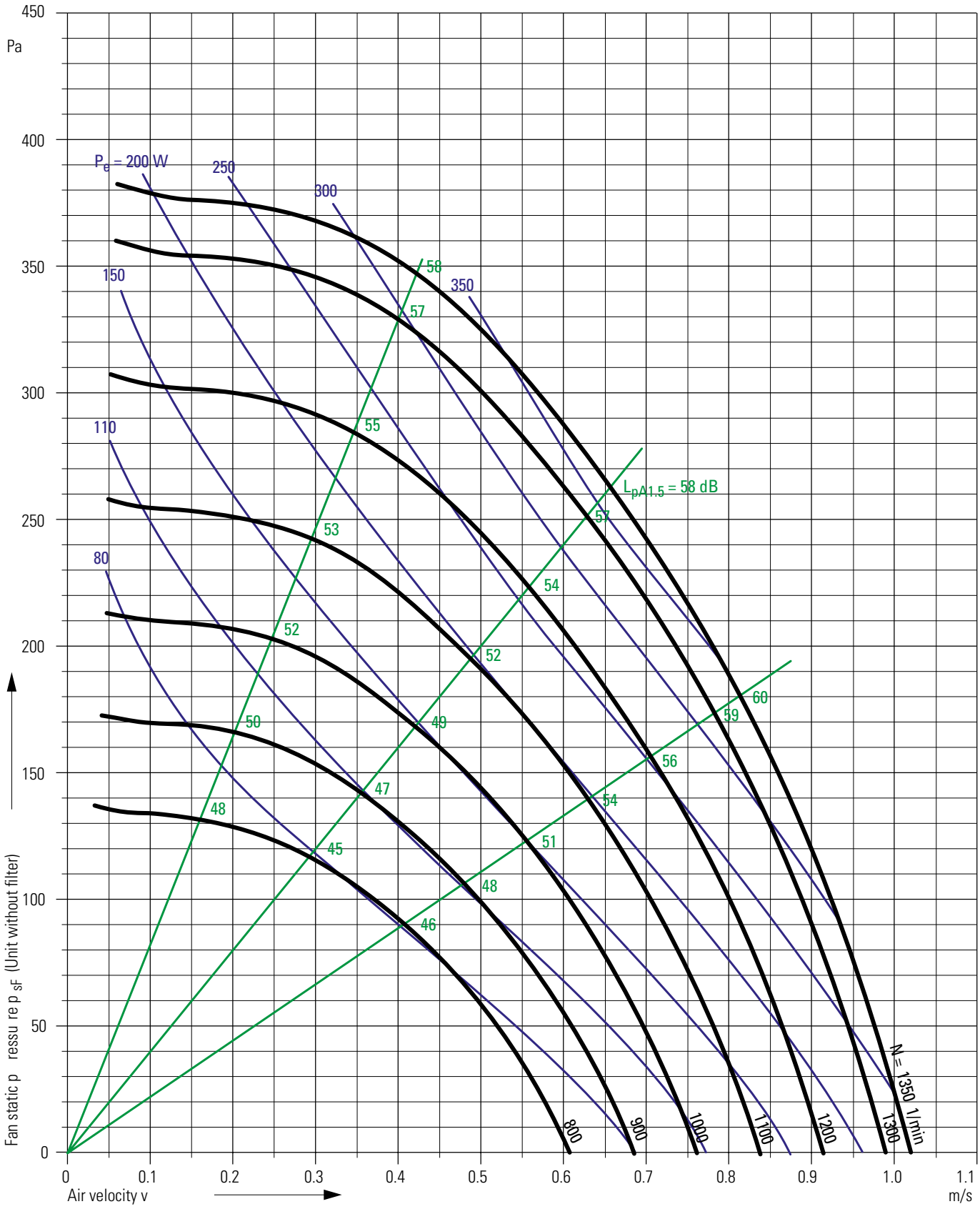
Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

Frames:
Frame made of extruded, anodized aluminium, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0. 7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	388.8	777.6	1,166.4	1,555.2	1,944.0	2,332.8	2,721.6	3,110.4	3,499.2	3,888.0	4,276.8	4,665.6
Volume flowrate	ft^3/min	228,8	457.7	686.5	915.4	1,144.2	1373.0	1,601.9	1,830.7	2,059.6	2,288.4	2,517.2	2,746.1

Characteristics: FFU4040-SSP

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK

Type: FFU4040-SSP

Housing made of aluminum (optional sheet steel or stainless steel). Sound-insulated version (fire class A1).

Motor impeller unit consisting of a high-performance centrifugal impeller with backward curved blades (impeller made of galvanized steel sheet with aluminum blades, riveted) fitted on the rotor of a BLDC external rotor motor (230 V/50 Hz, Protection class IP 44, designed in accordance with Class F, but classified in accordance with Class B (non UL) and Class A (UL). Direction of rotation RD. statically and dynamically balanced according to DIN ISO 1940, G = 2.5.

The rotational speed of the motor is infinitely adjustable through the commutation unit which is integrated into the housing, with different communication interfaces, Protection Class IP 20 (Modbus, alternatively LONWORKS). Scope of delivery including GST i18 Wieland plug for power supply, attached ready to plug in, without any connecting cable.

Control and monitoring or the FFU is possible through different control systems, for example, mini control center, Modbus PC visualization or Modbus handheld.

Terminal filter of HEPA/ULPA class, frame made of extruded, anodized aluminum, with fan guarded coated in RAL 9010 on the clean room side, including Scan test (other filter classes are possible as an option).

Maintenance or removal of the filter with a fluid seal on the clean room side (optionally removal of the filter with dry sealing is possible on the plenum side).

Further accessories are available as options.

The delivery does not include any incidentals, fixing materials or cabling materials. Installation and commissioning are not included in the scope of delivery. Suitable for ceiling grid provided by the customer.

Manufacturer: Nortek Cleanroom Solutions

SPECIFICATION

Fan Filter Unit (FFU)

FFU type
FFU4040-SSP

FFU size:
4' x 4'

Dimensions (L x W x H):
46.14 x 46.14 x 17.52 in (incl. filter, without accessories)

Housing material:
Aluminum/steel plate/stainless steel

Sound insulation:
Foam

Coating:
according to RAL/no coating

Drive

Type of drive:
BLDC motor (brushless DC)

Voltage:
208 - 277 V, 1~

Frequency:
50/60 Hz

Rotational speed (max.):
010 1/min

Output (max):
0.37 kW

Current (max):
1.62 A

Electronics:
Modbus RTU/LONWORKS

Maintenance of the MLE:
Maintenance on the clean room side/maintenance on the plenum side

Filter

Maintenance of the filter:
Filter change on the clean room side/plenum side

Types of seal:
Fluid seal/dry seal

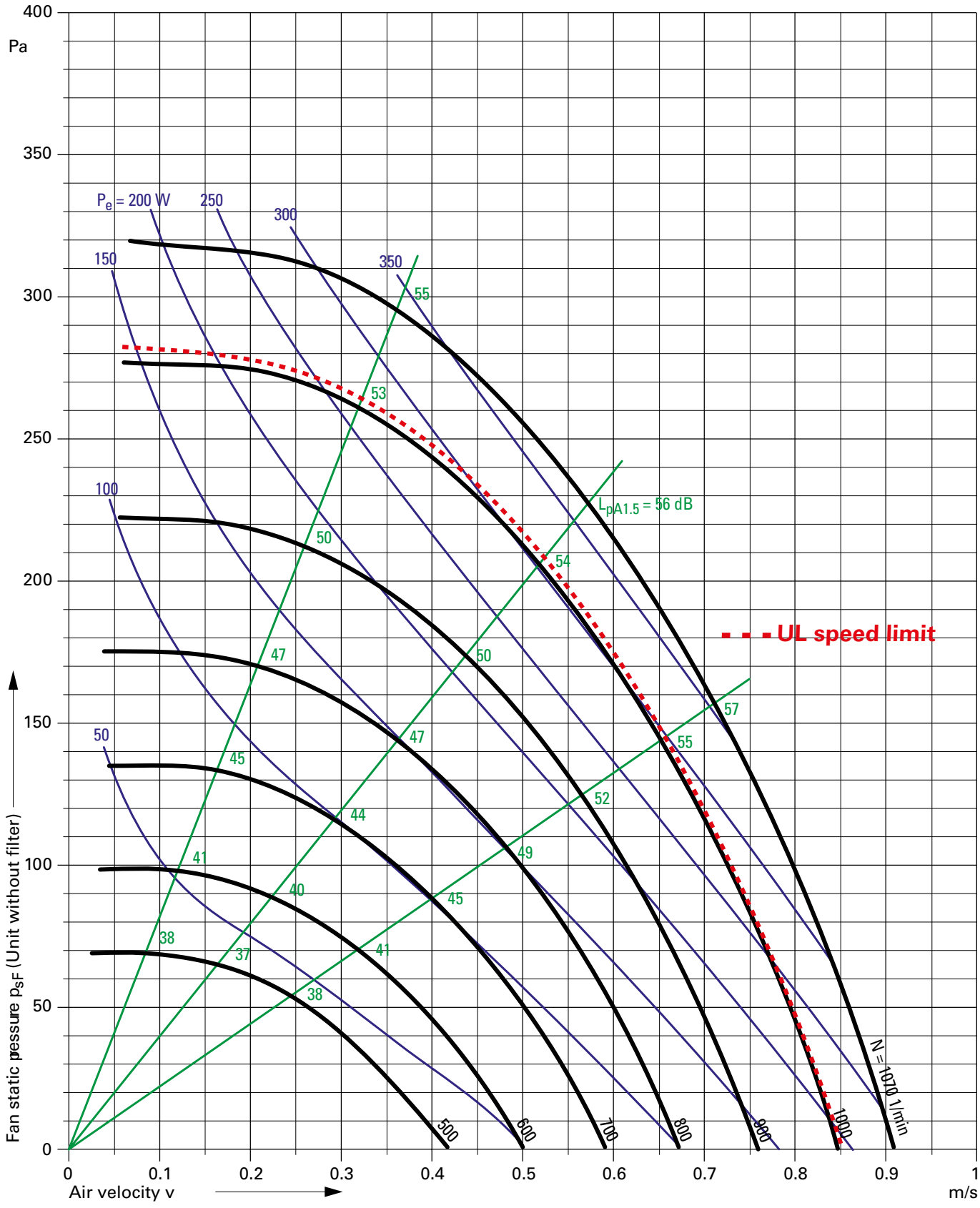
Frames:
Frame made of extruded, anodized aluminum, uncoated

Others:
fan guard grille coated in RAL 9010 on the clean room side

Filter classes:
E10 (filtration efficiency 85% – permeability 15%)
E11 (filtration efficiency 95% – permeability 5%)
E12 (filtration efficiency 99.5% – permeability 0.5%)
H13 (filtration efficiency 99.95% – permeability 0.05%)
H14 (filtration efficiency 99.995% – permeability 0.005%)
U15 (filtration efficiency 99.9995% – permeability 0.0005%)
U16 (filtration efficiency 99.99995% – permeability 0.00005%)
U17 (filtration efficiency 99.999995% – permeability 0.000005%)

FFU4040-SSP

NORTEK™
CLEANROOM SOLUTIONS
CLEANPAK



Air Velocity	m/s	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2
Volume flowrate	m^3/h	518.4	1,036.8	1,555.2	2,073.6	2,592.0	3,110.4	3,628.8	4,147.2	4,665.6	5,184.0	5,702.4	6,220.8
Volume flowrate	ft^3/min	305.1	610.2	915.4	1220.5	1,525.6	1,830.7	2,135.8	2,440.9	2,746.1	3,051.2	3,356.3	3,661.4