Specification

Radial Blower U97HL-024KK-4

General Information

Item	
Product type	Radial blower with integrated electronic
Part no.	U97HL-024KK-4
Customer	N/A
Project no.	N/A
Modification	Standard product

Description

This versatile 24 V_{DC} blower incorporates a brushless driver with set-speed input and tacho output.

SWISS ENGINEERED

CE

REACh Compliant

RoHS III Compliant

Features

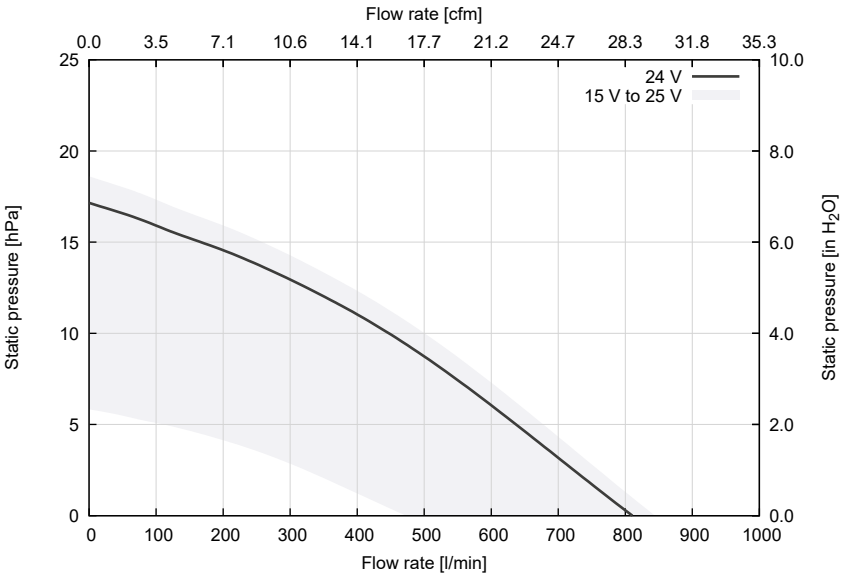
- Static pressure: 17 hPa, freeflow: 800 l/min
- 24 V_{DC} brushless DC-motor
- Speed control and tacho frequency signal
- Mounting holes

General Conditions

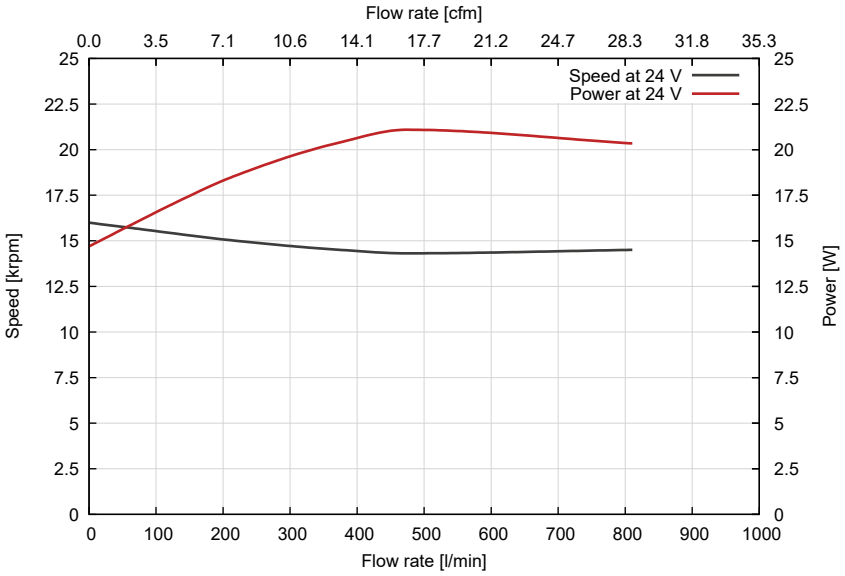
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m³ standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 with standardized inlet and outlet chambers. Tolerances based on specified speed data according to ISO 13348, grade 4: pressure +/-10 %, power +16 %. Tolerances based on constant voltage: speed +/-10 %, pressure +/-21 %, power +33 %. For continuous blower operation please refer to specified maximum ratings. Performance data outside normal operating range plotted for information only.

Performance

Pressure vs. Flow Characteristics



Speed and Power vs. Flow Characteristics



Shut-Off in Pressure Operation (Zero Flow Rate)	Unit	Value
Static pressure	[hPa]	17
Power consumption	[W]	16
Speed	[rpm]	16000

Shut-Off in Vacuum Operation (Zero Flow Rate)		
Static pressure	[hPa]	17
Power consumption	[W]	16
Speed	[rpm]	15500

Free-Air (Zero Static Pressure)		
Flow rate	[l/min]	800
Power consumption	[W]	22
Speed	[rpm]	14600

Technical Data

Electrical	Unit	Value
Nominal supply voltage	[V_{DC}]	24
Supply voltage range	[V_{DC}]	15 to 25
Minimum power supply current [1]	[A]	1
Maximum start-up time	[s]	1
Maximum ripple voltage	[%]	5
Maximum Ratings for Continuous Operation		
Minimum flow rate [2]	[l/min]	0
Maximum speed	[rpm]	17 000
Maximum acceleration	[rpm/ms]	N/A
Maximum power consumption	[W]	24
Maximum housing surface temperature	[°C]	70
Maximum NTC temperature	[°C]	N/A
Environmental		
Ambient temperature (operating)	[°C]	-20 to 45
Ambient temperature (storage)	[°C]	-20 to 65
Relative humidity (non-condensing)	[%RH]	10 to 85
Ingress protection (EN60529)		IP40
Maximum oxygen concentration	[%]	21
Motor		
Type		Brushless direct current motor
Winding insulation class		H, 180 °C
NTC type		N/A
Lifetime		
L10 at 25 °C ambient temperature [3]	[h]	20 000
Acoustics		
Sound pressure level [4]	[dB(A)]	N/A
Leak Tightness		
Maximum leak flow rate	[l/min]	N/A
Mechanical		
Blower weight	[g]	140

[1] Recommended minimum continuous power supply current for proper start-up behavior at nominal voltage. This is an indicative value. Power supply dimensioning, wiring, safety, setup and validation is the customer's responsibility.

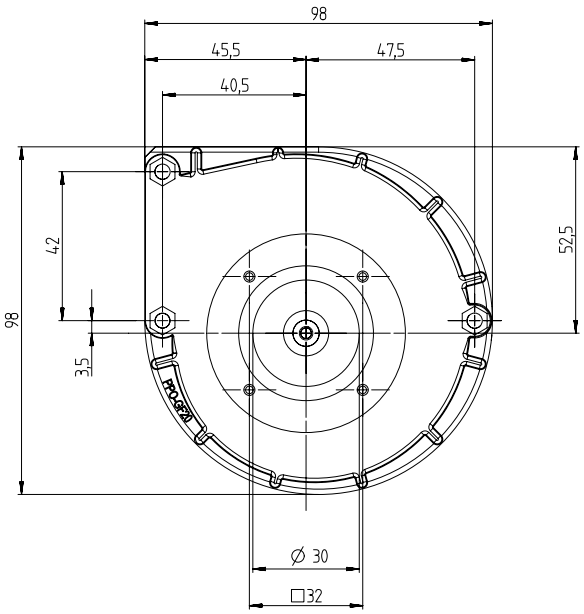
[2] Only legitimate when there is an inlet flow to cool the motor.

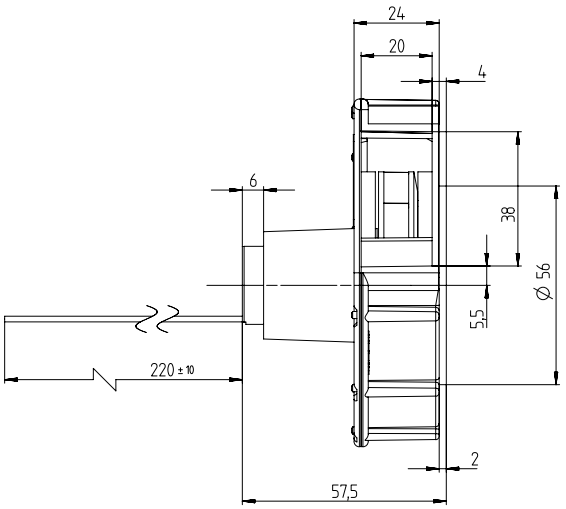
[3] Accelerated aging test at 45 °C ambient temperature, continuous operation, normal cleanliness according to ISO 281. Temperature dependency of liefetime according to IPC-9591: factor 1.5 per 10 °C.

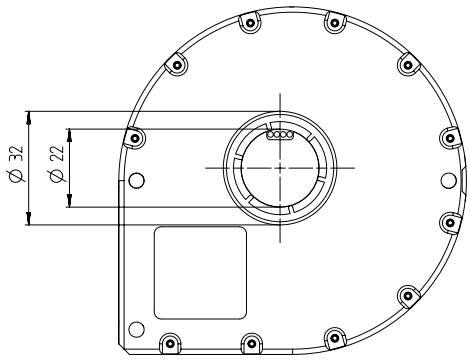
[4] Measured at distance of 1 meter from inlet, with hose connected to inlet and outlet.

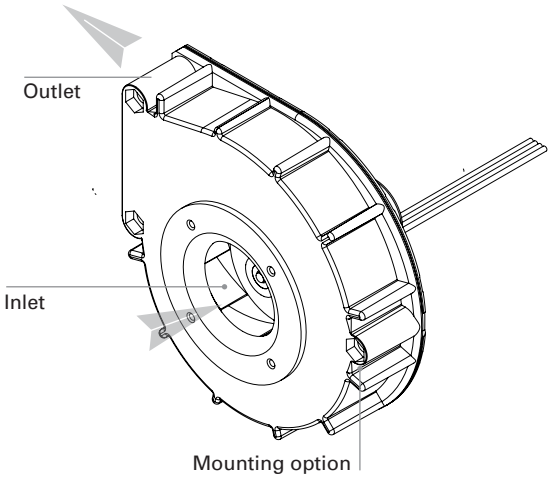
Drawings

Dimensions in mm









Orientations	
Direction of rotation	Counter-clockwise (view on inlet)
Mounting position	Any direction

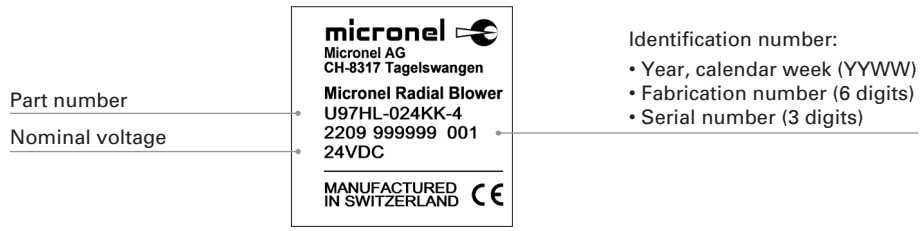
Materials

Components	Material
Blower housing	Polyphenylenoxide (PPO)
Impeller	Polysulfone (PSU)
Hub	N/A
Motor housing	N/A
Label	Plastic
Connector	N/A
Crimp terminal	N/A
Lead wire	Silicone insulated cable Flammability: UL 3239

Identification

Label

Design



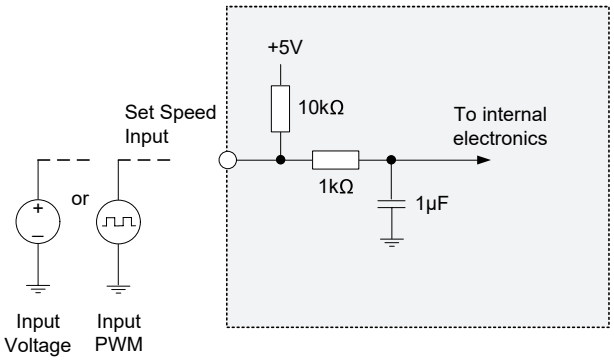
Blower Pinout

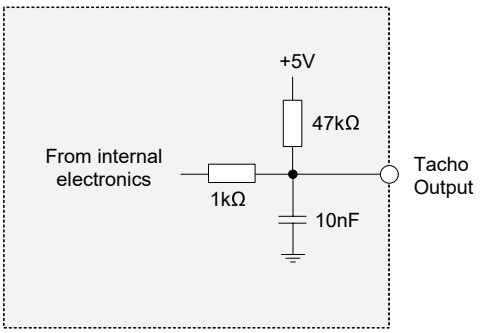
Color	Description	AWG
Red	V_{cc}	24
Black	GND	24
Yellow	Tachometer output	26
Green	Set speed input	26

Electronic Functions

Integrated Electronic Motor Driver

Type	Sensored brushless direct current motor driver
Features	• Integrated speed control (PWM / voltage / resistor) • Tachometer frequency signal • Locked rotor protection • Over current protection





Speed Control Input

The blower speed can be controlled by PWM. See „Set Speed Input“ table for further details.

Tachometer Output

Tachometer frequency:
1 pulse per revolution

n = 60 • f

n Rotation speed [rpm]
f Tacho frequency [Hz]

Electronic Functions

Set Speed Input Voltage [V_{DC}]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0	Stop
0.1 to 0.9	Not defined, blower might run or stop
1.0	Minimum start-up
1.0 to 4.5	Blower speed depending on input voltage
4.5 to 5.0	Blower speed at 100 %

Set Speed Input PMW [%]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0	Stop
0.1 to 9.0	Not defined, blower might run or stop
10.0	Minimum start-up
10.0 to 90.0	Blower speed depends on duty cycle
90.0 to 100.0	Blower speed at 100 %

Frequency 10 kHz – 60 kHz; (typical 10 kHz)
5 V_{DC} PWM Voltage (high signal)

Handle in power-off conditions only!
Read operating manual!

Please see separate accessories list or contact Micronel Sales for a full list of options and accessories.

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