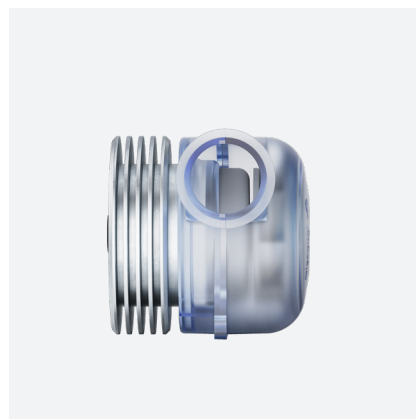


Specification

Radial Blower U51DL-024KK-4



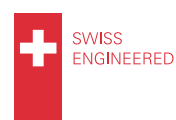
General Information

Item

Product type	Radial blower with integrated electronic motor driver
Part no.	U51DL-024KK-4 U51DL-024KK-42 with outlet nozzle (option) U51DL-024KK-43 with inlet and outlet nozzle (option)
Customer	N/A
Project no.	N/A
Modification	Standard product

Description

This versatile and compact 24 VDC blower is the ideal choice for mobile medical respiration devices. It provides an integrated brushless driver with set-speed input and tacho output and is optionally available with an inlet nozzle.



Features

- Static pressure: 54 hPa, freeflow: 500 l/min
- 24 V_{DC} brushless DC-motor
- Speed control and tacho frequency signal
- Small dimensions through slim design
- Options for in- and outlet ports

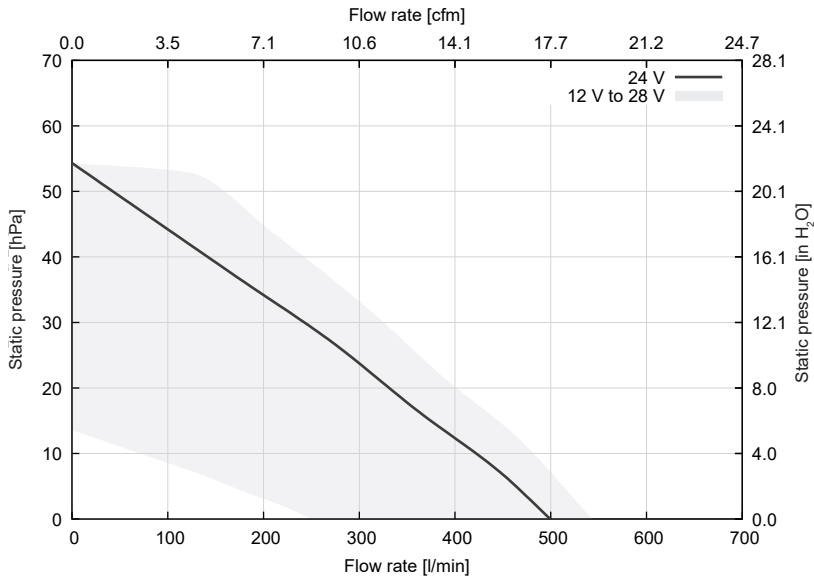


General Conditions

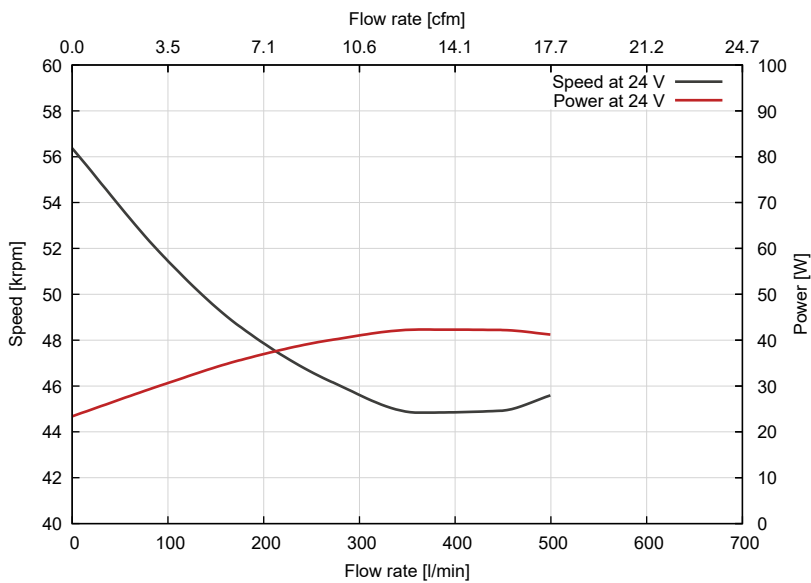
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m³ standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 with standardized 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]	54
Power consumption	[W]	23
Speed	[rpm]	56 400

Shut-Off in Vacuum Operation (Zero Flow Rate)

Static pressure	[hPa]	51
Power consumption	[W]	23
Speed	[rpm]	56 400

Free-Air (Zero Static Pressure)

Flow rate	[l/min]	500
Power consumption	[W]	41
Speed	[rpm]	45 600

Technical Data

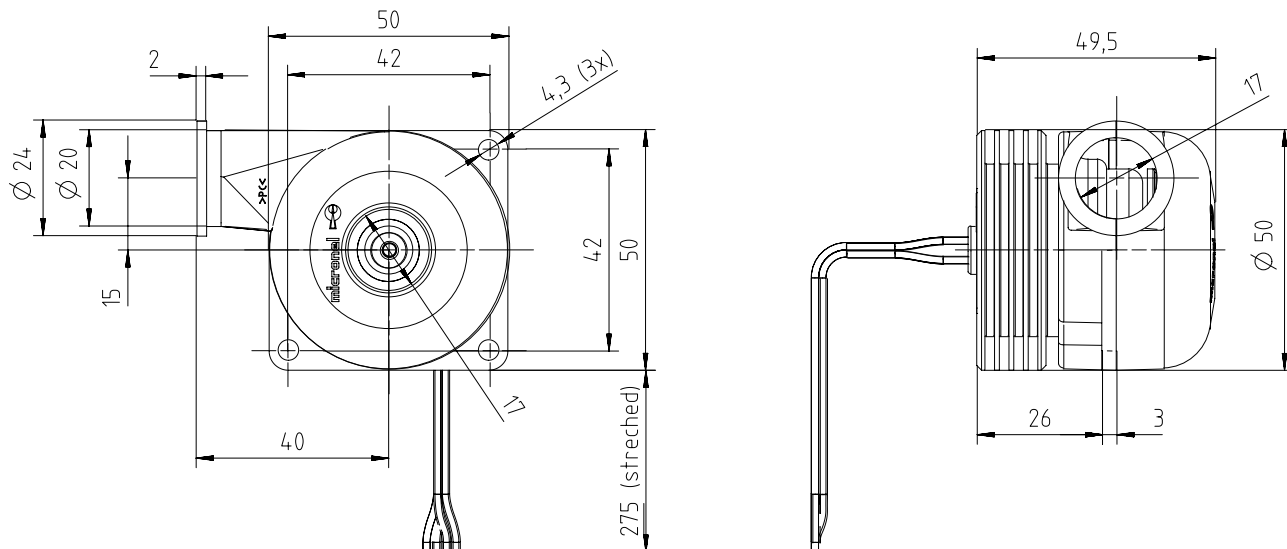
Electrical	Unit	Value
Nominal supply voltage	[V _{DC}]	24
Supply voltage range	[V _{DC}]	12 to 28
Minimum power supply current ⁽¹⁾	[A]	N/A
Maximum start-up time	[s]	N/A
Maximum ripple voltage	[%]	5
Maximum Ratings for Continuous Operation		
Minimum flow rate	[l/min]	N/A
Maximum speed	[rpm]	50 000
Maximum acceleration	[rpm/ms]	N/A
Maximum power consumption	[W]	43
Maximum housing surface temperature	[°C]	75
Maximum NTC temperature	[°C]	N/A
Environmental		
Ambient temperature (operating)	[°C]	-20 to 50
Ambient temperature (storage)	[°C]	-20 to 50
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		F, 155 °C
NTC type		N/A
Lifetime		
L10 at 25 °C ambient temperature ⁽²⁾	[h]	10 000
Acoustics		
Sound pressure level	[dB(A)]	N/A
Leak Tightness		
Maximum leak flow rate	[l/min]	N/A
Mechanical		
Blower weight	[g]	120

⁽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⁾ Lifetime test at 25 °C ambient temperature, Ø 6.52 mm orifice at outlet, continuous operation, normal cleanliness according to ISO 281. Temperature dependency of lifetime according to IPC-9591: factor 1.5 per 10 °C.

Drawings

Dimensions in mm



Outlet

Inlet

Mounting option

Orientations

Direction of rotation

↻ Counter-clockwise (view on inlet)

Mounting position

Any direction

Materials

Components

Material

Blower housing

Polycarbonate (PC), transparent
 Flammability: 850 °C /
 1 mm (IEC 60695-2-12)
 Biocompatibility: USP Class VI / ISO 10993

Impeller

Polyamide (PA 6), white

Hub

Brass

Motor housing

Aluminum
 anodised, natural colour

Label

PET

Connector

N/A

Crimp terminal

N/A

Lead wire

PVC
 Flammability: UL 1007

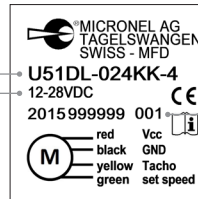
Identification

Label

Design

Part number

Voltage range



Identification number:

- Year, calendar week (YYWW)
- Fabrication number (6 digits)
- Serial number (3 digits)

Blower Pinout

Pin	Color	Description	AWG
1	Red	V _{CC}	24
2	Black	GND	24
3	Yellow	Tachometer output	24
4	Green	Set speed input	24

Electronic Functions

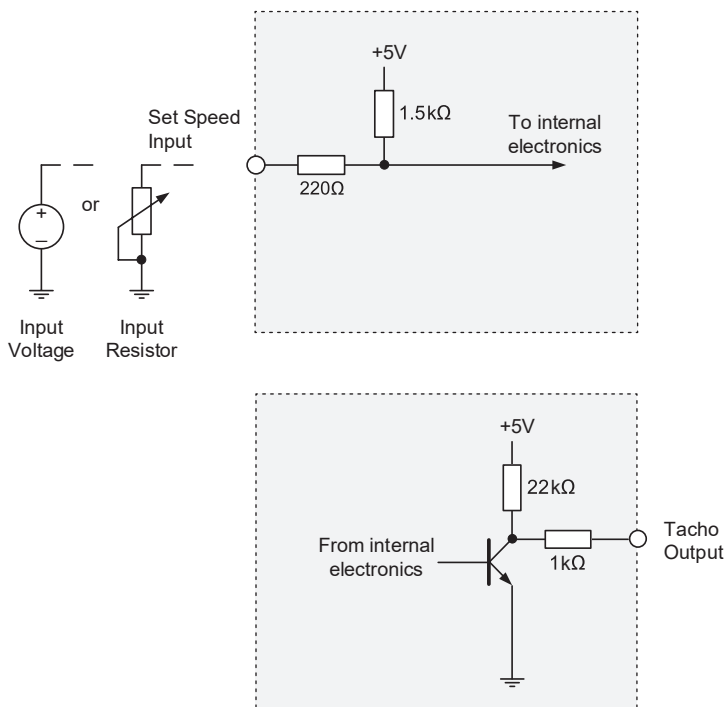
Integrated Electronic Motor Driver

Type

Sensorless brushless direct current motor driver

Features

- Integrated speed control (voltage/resistor)
- Tachometer frequency signal
- Locked rotor protection
- Thermal protection



Speed Control Input

The blower speed can be controlled either by input voltage or input resistor value. See „Set Speed Input“ table for further details.

Tachometer Output

Tachometer frequency:
3 pulses per revolution

$$n = 20 \cdot f$$

n Rotation speed [rpm]

f Tacho frequency [Hz]

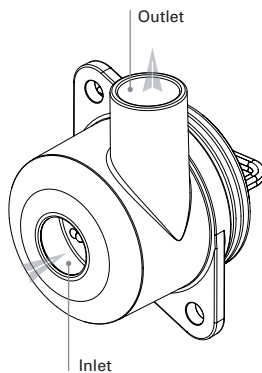
Electronic Functions

Set Speed Input Voltage [V_{bc}]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0 to 0.5	Stop
0.5 to 2.0	Not defined, blower might run or stop
2.0	Minimum start-up voltage
2.0 to 4.4	Blower speed depending on input voltage
4.4 to 5.0	Blower speed at 100 %

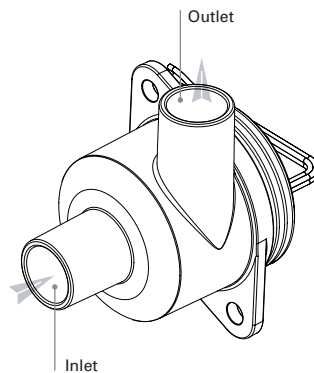
Set Speed Input Resistor [$k\Omega$]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0 to 0.4	Stop
0.4 to 1.2	Not defined, blower might run or stop
1.2	Minimum start-up resistance
1.2 to 7.5	Blower speed depending on resistor value
> 7.5 or open input	Blower speed at 100 %

Options for Inlet and Outlet Nozzles

Micronel Radial Blower
U51DL-024KK-42



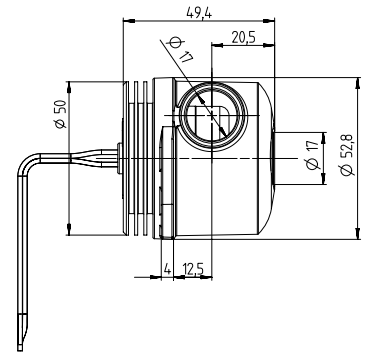
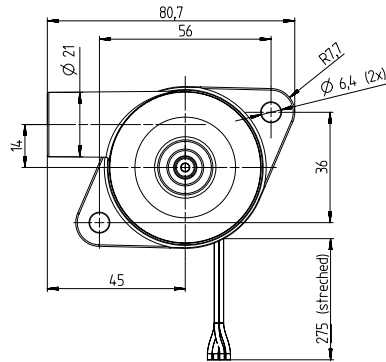
Micronel Radial Blower
U51DL-024KK-43



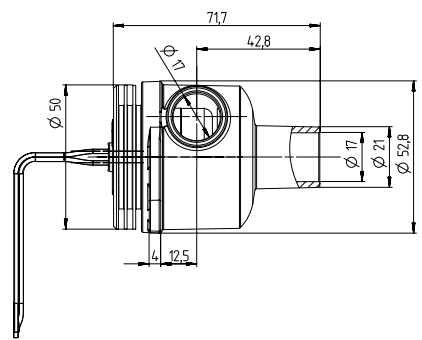
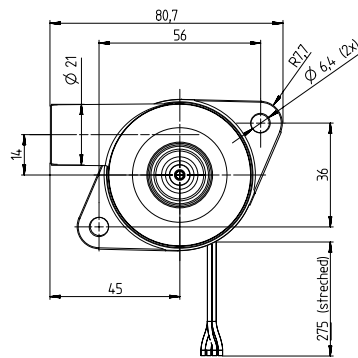
Article with options	Inlet nozzle	Outlet nozzle
Radial Blower U51DL-024KK-4		
Radial Blower U51DL-024KK-42		●
Radial Blower U51DL-024KK-43	●	●

Options for Inlet and Outlet Nozzles

Micronel Radial Blower
U51DL-024KK-42



Micronel Radial Blower
U51DL-024KK-43



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.

All data are subject to change without advanced notice.
© 2023 by Micronel AG. All rights reserved.