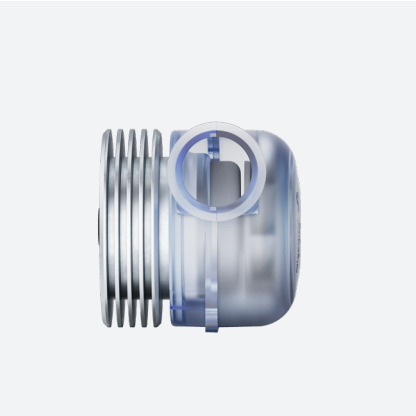
Specification

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 availabe with a inlet nozzle.

SWISS ENGINEERED

CE

REACh Compliant

RoHS III Compliant

Features

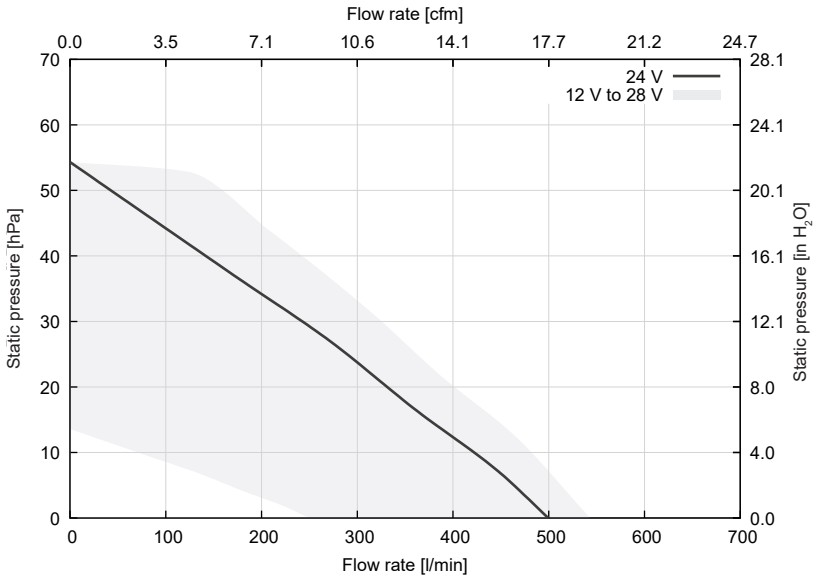
- Static pressure: 54 hPa, freeflow: 500 l/min
- 24 V_{DC} brushless DC-motor
- Speed control and tacho frequency signal
- Small dimensions through slim design
- Options for in- and outlet ports

General Conditions

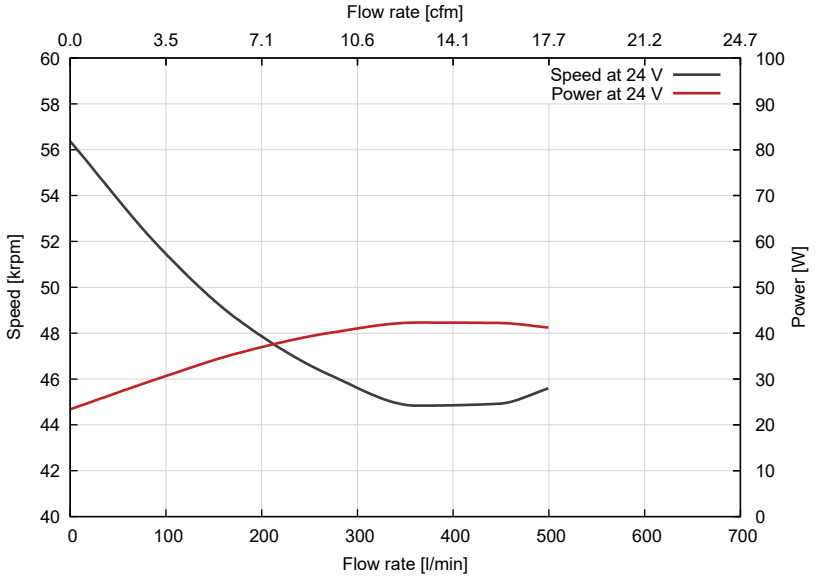
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m³ standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 with standardized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

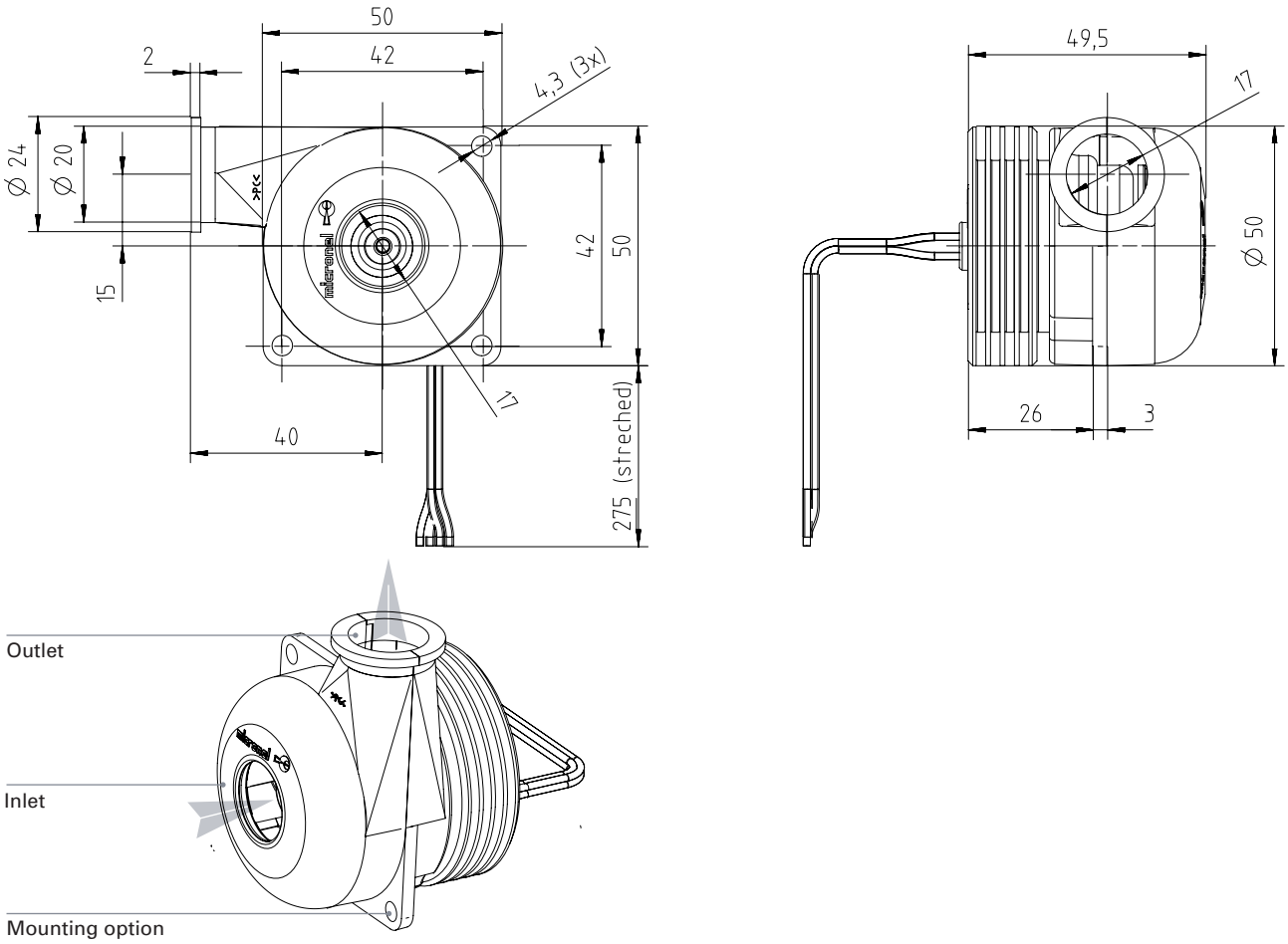
Electrical	Unit	Value
Nominal supply voltage	[V_{DC}]	24
Supply voltage range	[V_{DC}]	12 to 28
Minimum power supply current[1]	[A]	N/A
Maximum start-up time	[s]	N/A
Maximum ripple voltage	[%]	5
Maximum Ratings for Continuous Operation		
Minimum flow rate	[l/min]	N/A
Maximum speed	[rpm]	50000
Maximum 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]	10000
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



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

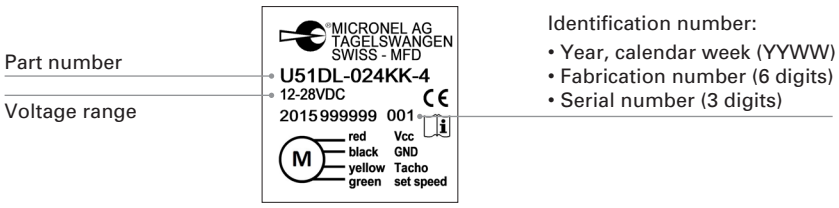
Materials

Components	Material
Blower housing basic article U51DL-024KK-4	Polycarbonate (PC), transparent Flammability: 850 °C / 1 mm (IEC 60695-2-12) Biocompatibility: USP Class VI / ISO 10993
Blower housing option articles U51DL-024KK-42 and U51DL-024KK-43	Acrylnitril-Butadien-Styrol (ABS) black Fulfills UL 94 HB, but not UL listed
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



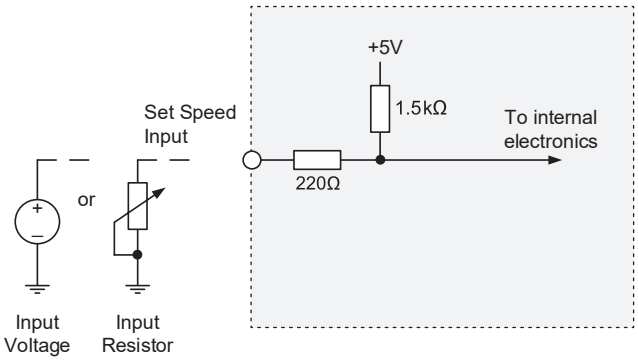
Blower Pinout

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

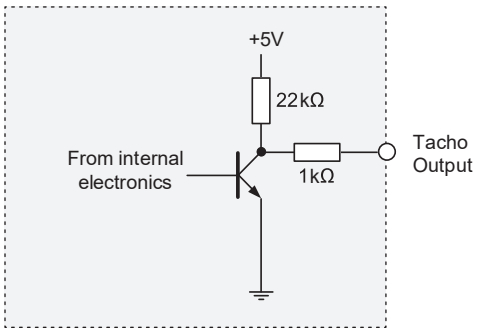
Integrated Electronic Motor Driver

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 • f

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

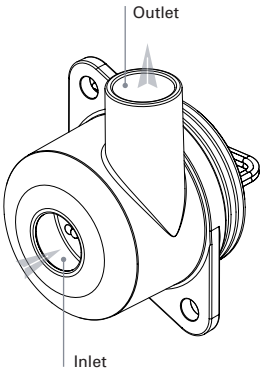
Electronic Functions

Set Speed Input Voltage [V_{DC}]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0 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 %

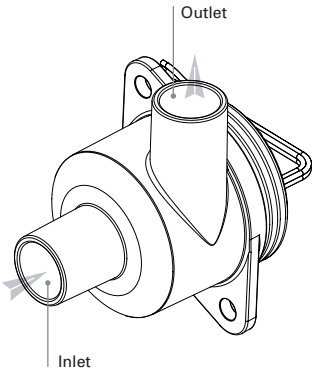
Set Speed Input Resistor [kΩ]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0 to 0.4	Stop
0.4 to 1.2	Not defined, blower might run or stop
1.2	Minimum start-up resistance
1.2 to 7.5	Blower speed depending on resistor value
> 7.5 or open input	Blower speed at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

Options for Inlet and Outlet Nozzles

Micronel Radial Blower U51DL-024KK-42



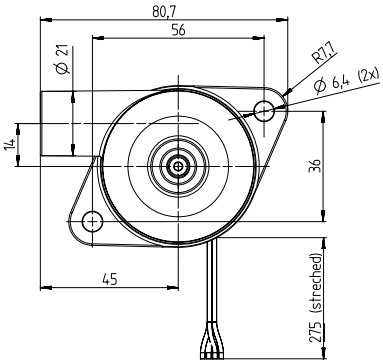
Micronel Radial Blower U51DL-024KK-43

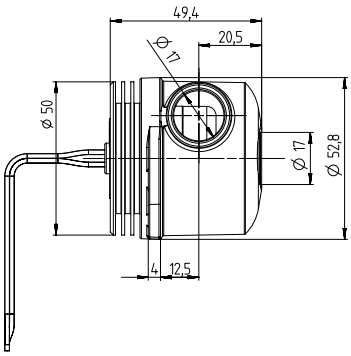


Article with options	Inlet nozzle	Outlet nozzle
Radial Blower U51DL-024KK-4		
Radial Blower U51DL-024KK-42		●
Radial Blower U51DL-024KK-43	●	●

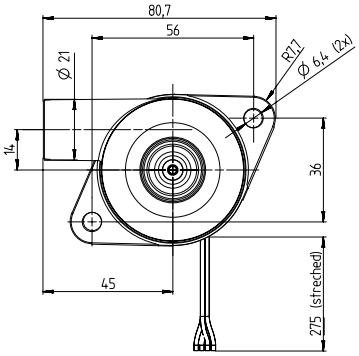
Options for Inlet and Outlet Nozzles

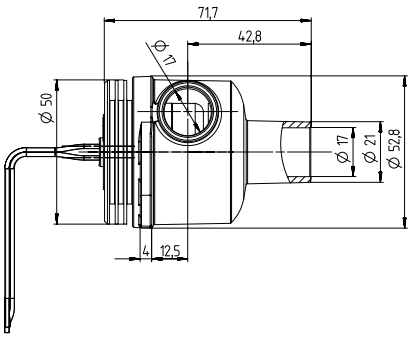
Micronel Radial Blower
U51DL-024KK-42





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.

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