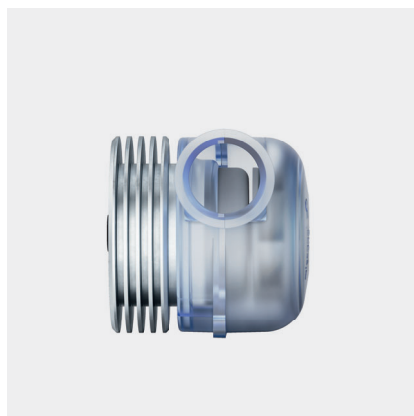


## SPECIFICATION

# Micronel Radial Blower

## U51DL-024KK-4



### GENERAL INFORMATION

#### Item

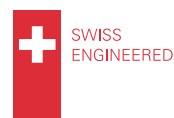
Product type	Radial blower with integrated electronic motor driver
Article no.	U51DL-024KK-4 U51DL-024KK-42 with outlet nozzle (option) U51DL-024KK-43 with inlet and outlet nozzle (option)
Manufacturer	Micronel AG
Customer	N/A
Project no.	N/A
Modification	Standard product

### APPLICATIONS

Radial blower with high power motor and integrated power electronic. Ready to use. Compact and robust designed for any purpose where the space is limited but a high performance is requested.

### FEATURES

- Pressure: 54 hPa, flow rate: 500 l/min
- 24 V<sub>DC</sub> brushless DC-motor
- Speed control and tacho frequency signal
- Small dimensions through slim design
- Options for in- and outlet ports



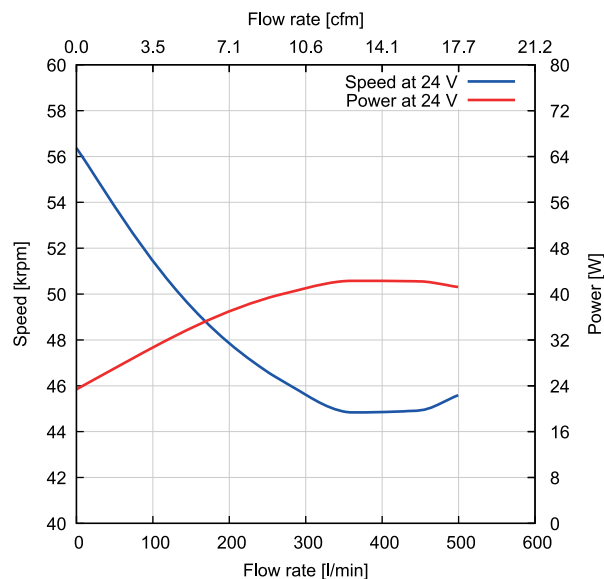
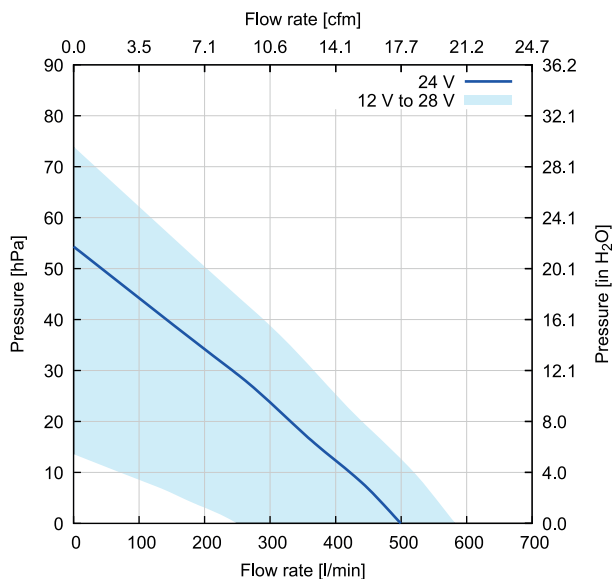
DECLARATION OF  
CONFORMITY  
NON-USE OF  
CONFLICT MINERALS

### GENERAL CONDITIONS

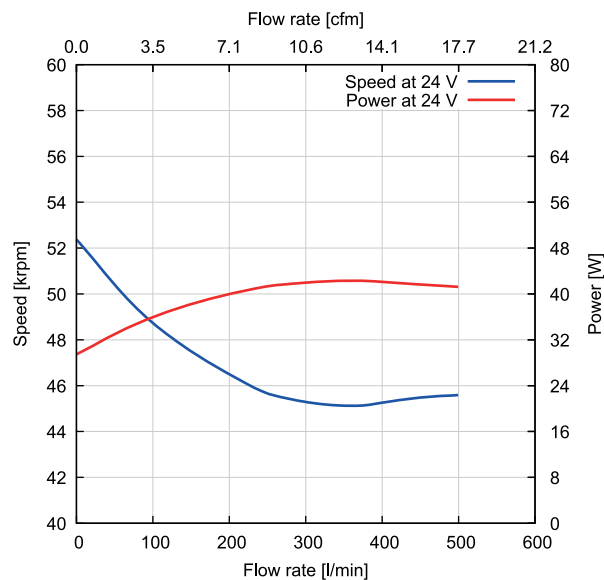
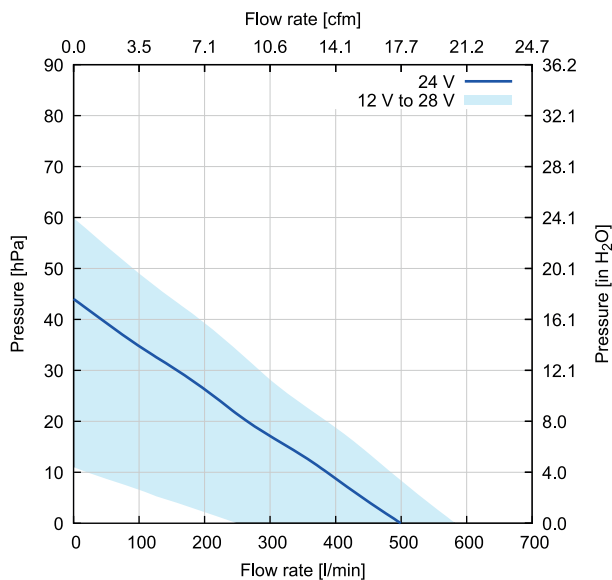
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m<sup>3</sup> standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 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 Operation at Outlet**



**Vacuum Operation at Inlet**



**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]	44
Power consumption	[W]	30
Speed	[rpm]	52 400

**Free-Air (Zero Static Pressure)**

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

**TECHNICAL DATA**

<b>Electrical</b>	<b>Unit</b>	<b>Value</b>
Nominal voltage	[V <sub>DC</sub> ]	24
Voltage range	[V <sub>DC</sub> ]	12 to 28
Minimum power supply current <sup>(1)</sup>	[A]	N/A
Maximum start-up time	[s]	N/A
Maximum ripple voltage	[%]	5
<b>Maximum Ratings for Continuous Operation</b>		
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
<b>Environmental</b>		
Ambient temperature (operating)	[°C]	-20 to 50
Ambient temperature (storage)	[°C]	-20 to 50
Relative humidity (noncondensing)	[%RH]	10 to 85
Ingress protection (EN60529)		IP40
Maximum oxygen concentration	[%]	N/A
<b>Motor</b>		
Type		Brushless direct current motor
Winding insulation class		F, 155 °C
NTC type		N/A
<b>Lifetime</b>		
L10 at 25 °C ambient temperature <sup>(2)</sup>	[h]	10 000
<b>Acoustics</b>		
Sound pressure level <sup>(3)</sup>	[dB(A)]	66
<b>Leak Tightness</b>		
Maximum leak flow rate	[l/min]	N/A
<b>Mechanical</b>		
Blower weight	[g]	120

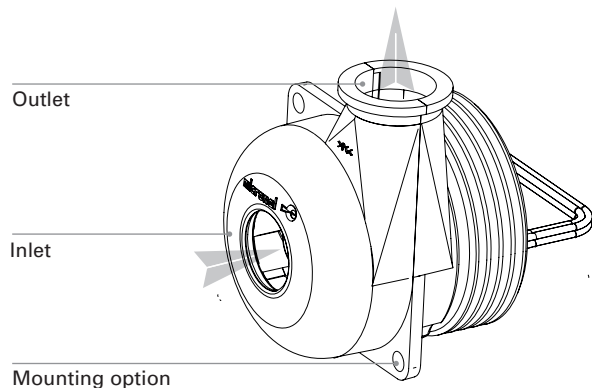
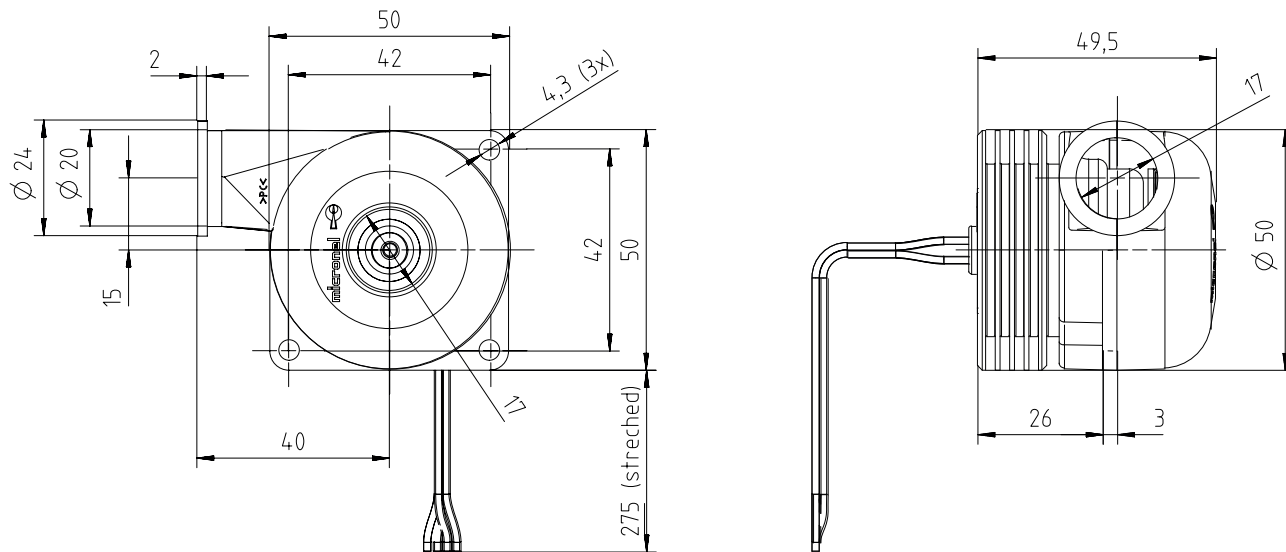
<sup>(1)</sup> Recommended minimum continuous power supply current for proper start-up behavior at nominal voltage. This is an indicative value. Power supply dimensioning, wiring, safety, setup and validation is the customer's responsibility.

<sup>(2)</sup> 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.

<sup>(3)</sup> Measured at distance of 1 meter from inlet, with open 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	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

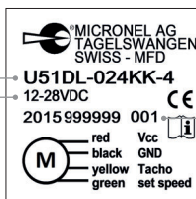
**IDENTIFICATION**

**Label**

Design

Article number

Nominal voltage



Identification number:

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

**BLOWER PINOUT**

Pin	Color	Description	AWG
1	Red	V <sub>CC</sub>	24
2	Black	GND	24
3	Yellow	Tachometer output	24
4	Green	Set speed input	24

**ELECTRONIC FUNCTIONS**

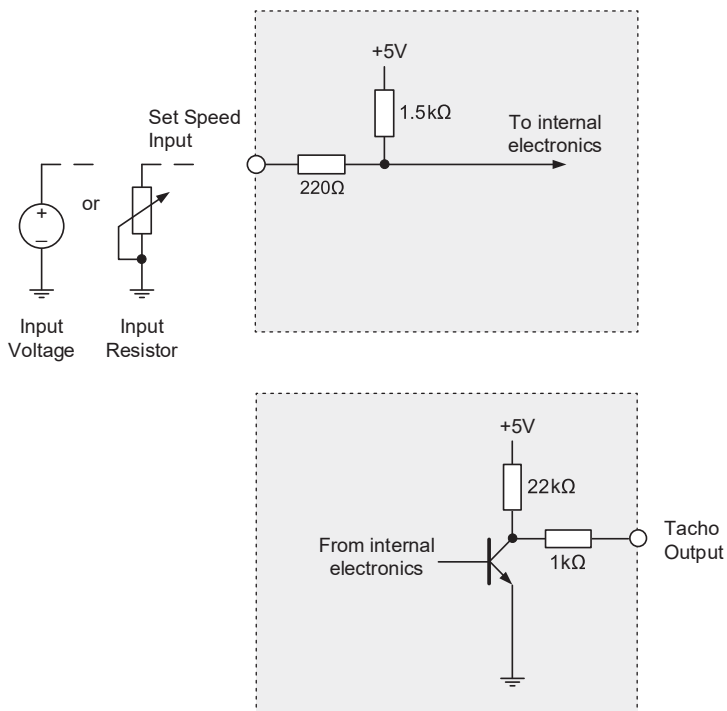
**Integrated Electronic Motor Driver**

Type

Micronel slotted brushless direct current motor driver

Features

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



**Speed Control Input**

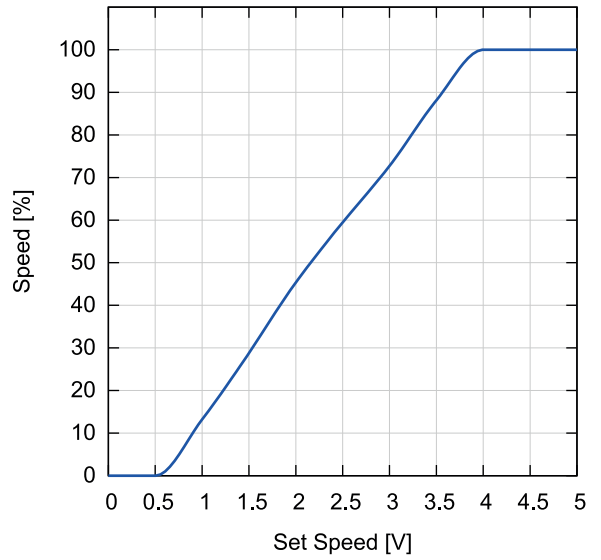
The blower speed can be controlled either by input voltage or input resistor value. See „Set Speed Input“ table for further details.

**Tachometer Output**

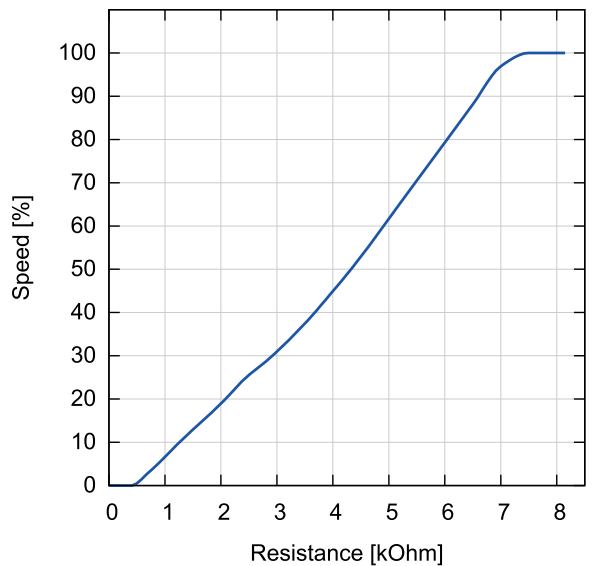
Tachometer frequency:  
3 pulses per revolution  
**n = 20 · f**  
n Rotation speed [rpm]  
f Tacho frequency [Hz]

**ELECTRONIC FUNCTIONS**

Set Speed Input Voltage [V <sub>DC</sub> ]	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 depends on input voltage
4.4 to 5.0	Blower speed at 100 %

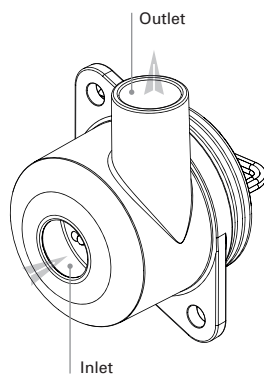


Set Speed Input Resistor [kΩ]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0.0 to 0.4	Stop
0.4 to 1.2	Not defined, blower might run or stop
1.2	Minimum start-up resistance
1.2 to 7.5	Blower speed depends on resistor value
> 7.5 or open input	Blower speed at 100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

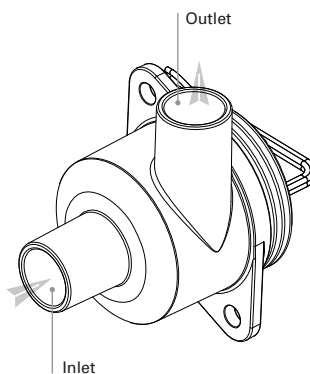


**OPTIONS FOR INLET AND OUTLET NOZZLES**

Micronel Radial Blower U51DL-024KK-42



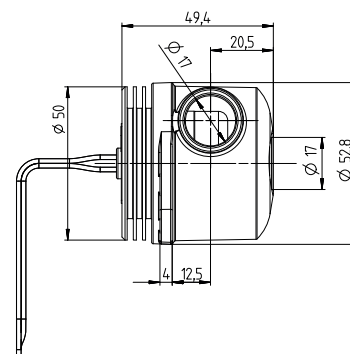
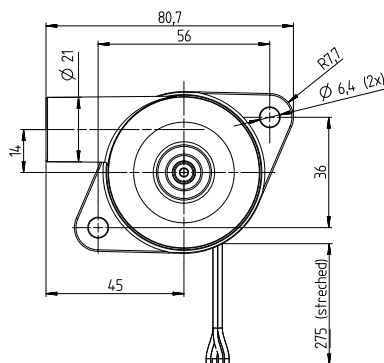
Micronel Radial Blower U51DL-024KK-43



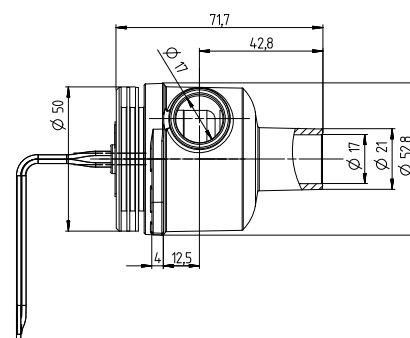
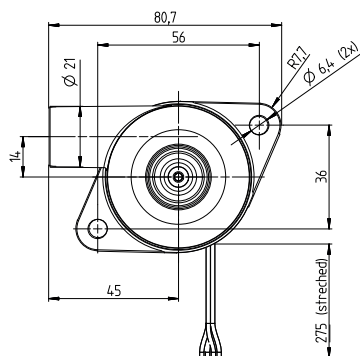
Article with options	Inlet nozzle	Outlet nozzle
Radial Blower U51DL-024KK-4		
Radial Blower U51DL-024KK-42		●
Radial Blower U51DL-024KK-43	●	●

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.  
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