

Specification

Radial Blower U85MX-024KE-4



General Information

Item

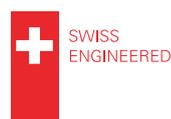
Product type	Radial blower with integrated electronic motor driver
Part no.	U85MX-024KE-4 U85MX-024KE-41 with inlet port (option) U85MX-024KE-42 with outlet port (option) U85MX-024KE-43 with inlet and outlet port (option)
Customer	N/A
Project no.	N/A
Modification	Standard product

Description

The versatile, high-power blower can be widely used for industrial or medical applications, where highest vacuum or pressure performance is needed, i.e. for cough therapy, dental suction, vacuum handling and many more.

Features

- Static pressure: 123 hPa, freeflow: 860 l/min
- 21 V_{DC} brushless DC motor
- Analog speed control and tacho frequency signal
- Highly efficient, quiet operation
- Aluminium heat sink
- Mounting flange with holes

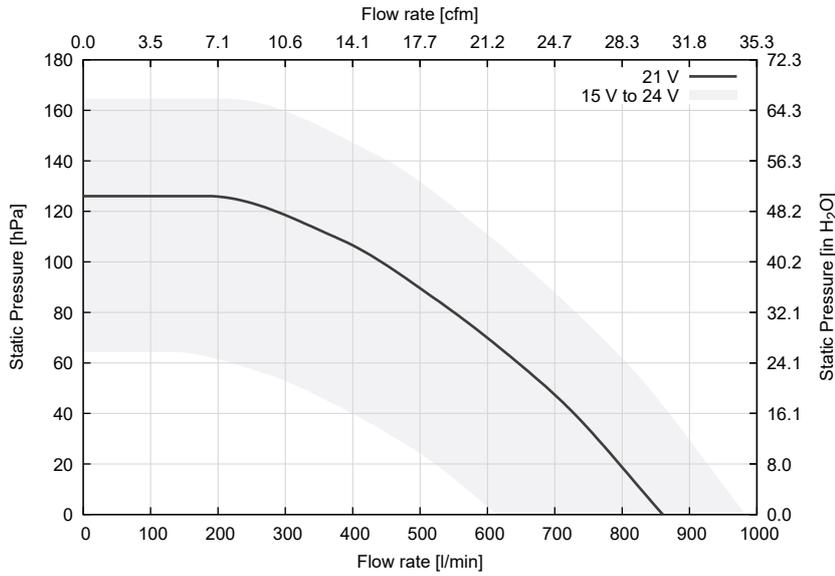


General Conditions

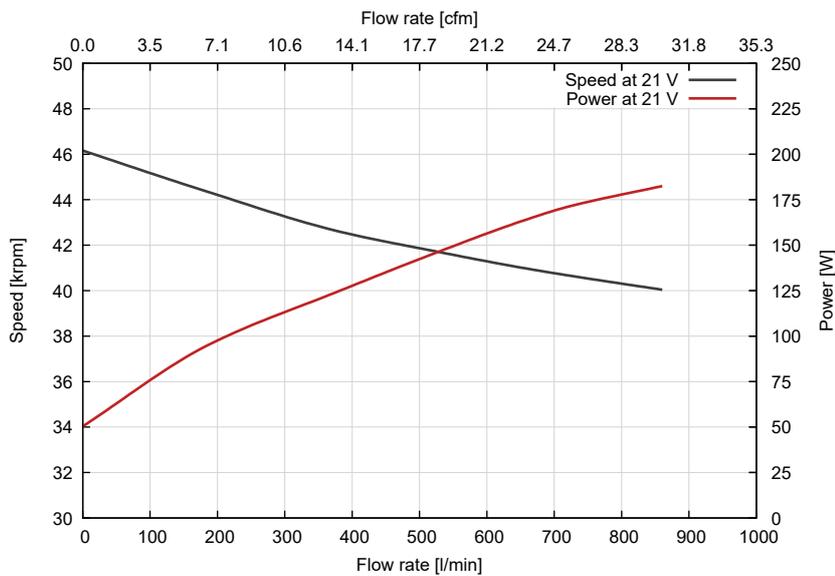
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m³ standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 with standardized 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]	123
Power consumption	[W]	51
Speed	[rpm]	46160

Shut-Off in Vacuum Operation (Zero Flow Rate)

Static pressure	[hPa]	114
Power consumption	[W]	48
Speed	[rpm]	45760

Free-Air (Zero Static Pressure)

Flow rate	[l/min]	860
Power consumption	[W]	183
Speed	[rpm]	40040

Technical Data

Electrical	Unit	Value
Nominal supply voltage	[V _{DC}]	21
Supply voltage range	[V _{DC}]	15 to 24
Minimum power supply current ⁽¹⁾	[A]	10
Maximum start-up time	[s]	2.6
Maximum ripple voltage	[%]	5

Maximum Ratings for Continuous Operation

Minimum flow rate	[l/min]	80
Maximum speed	[rpm]	45 000
Maximum acceleration	[rpm/ms]	N/A
Maximum power consumption	[W]	160
Maximum housing surface temperature	[°C]	65
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 ⁽²⁾	[%]	21

Motor

Type	Brushless direct current motor
Winding insulation class	F, 155 °C
NTC type	TDK NTCG164KF104F R ₂₅ = 100 kΩ +/- 1 % B _{25/100} = 4508 K +/- 1 % -40 to 125 °C

Lifetime

L10 at 25 °C ambient temperature ⁽³⁾	[h]	20 000
---	-----	--------

Acoustics

Sound pressure level ⁽⁴⁾	[dB(A)]	45
-------------------------------------	---------	----

Leak Tightness

Maximum leakage pressure drop over 15 sec.	[hPa]	N/A
--	-------	-----

Mechanical

Blower weight	[g]	390
Rotor weight	[g]	29.9
Rotor moment of inertia	[g · cm ²]	38.4

⁽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.

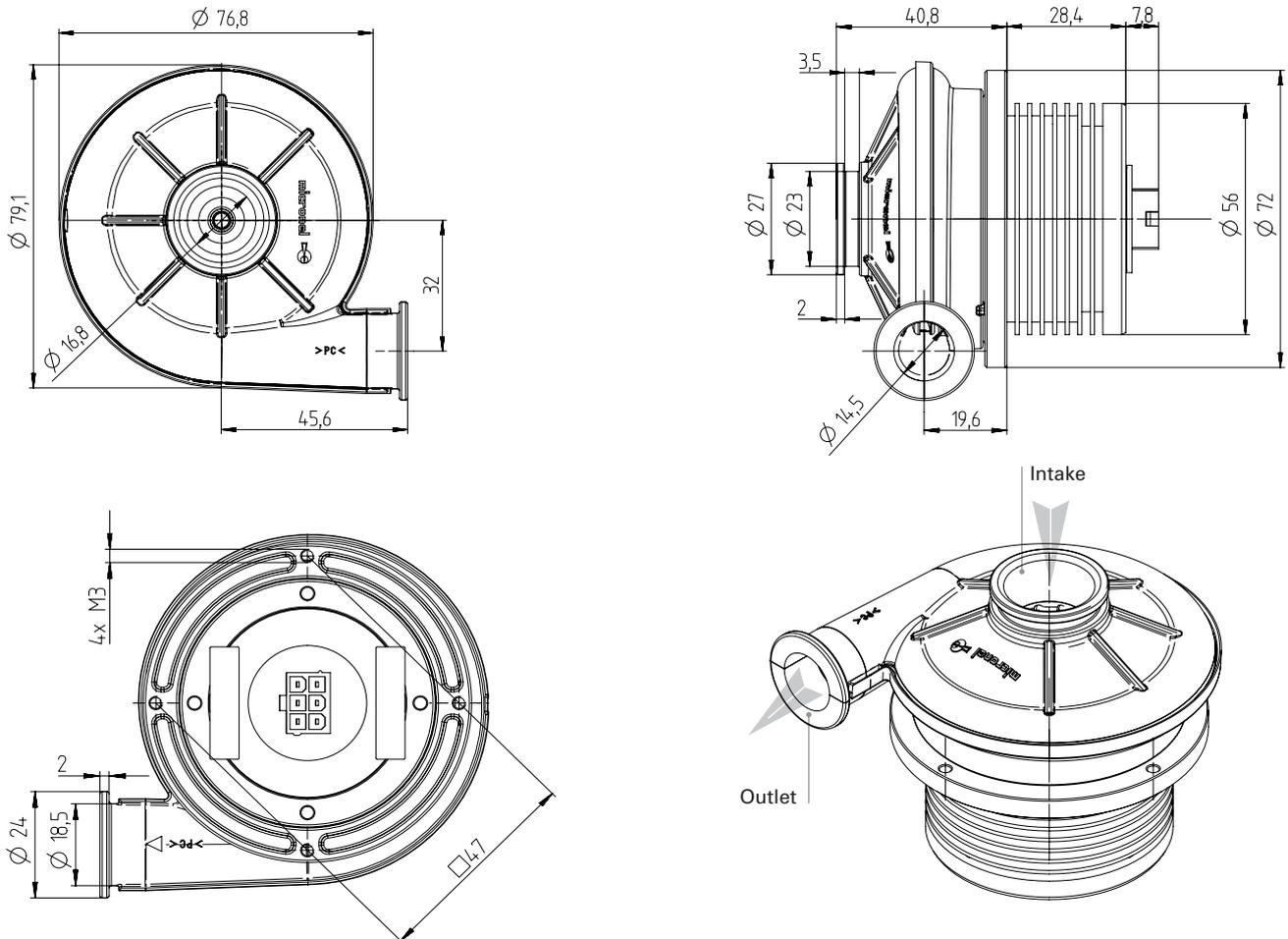
⁽²⁾ Micronel blowers are designed for various levels of oxygen compatibility. Further information available on request.

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

⁽⁴⁾ Measured at distance of 1 meter from inlet, with open inlet, outlet connected to breathing tube and 4 mm orifice in sound cancellation box at 1 kPa.

Drawings

Dimensions in mm



Orientations

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

Materials

Components	Material
Fan housing	Polycarbonate (PC) Flammability: 850 °C / 1 mm (IEC 60695-2-12) Biocompatibility: USP Class VI / ISO 10993
Impeller	Polyamide (PA6)
Hub	Stainless steel
Motor housing	Zinc die cast Aluminum, anodized, natural color
Label	Polyester, Flammability: UL 969
Connector	Molex 46015-0603 Flammability: UL 94V-0
Crimp terminal	-
Lead wire	-

Identification

Label

Design

Part number
Nominal voltage

U85MX-024KE-4
21VDC 2426 999999 001

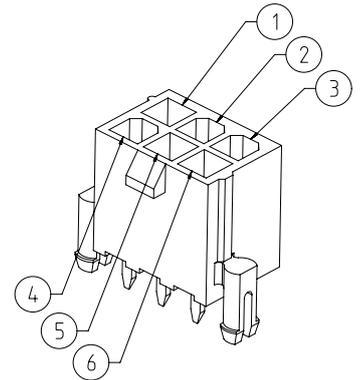
micronel
Micronel AG | CH-8317 Tagelswangen
MANUFACTURED IN SWITZERLAND

Identification number:

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

Blower Pinout

Pin	Color	Description	AWG
1	-	GND	-
2	-	Tachometer output	-
3	-	NTC	-
4	-	V _{CC}	-
5	-	Set speed input	-
6	-	NTC	-



Electronic Functions

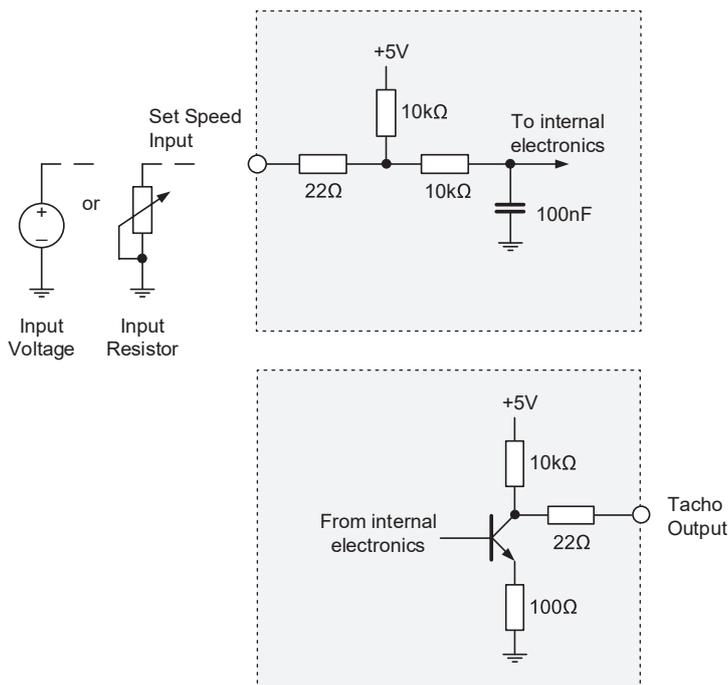
Integrated Electronic Motor Driver

Type

Sensorless brushless direct current motor driver

Features

- Integrated speed control (Voltage / Resistor)
- Tachometer frequency signal
- Locked rotor protection
- No polarity protection



Speed Control Input

The blower speed can be controlled by either 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]

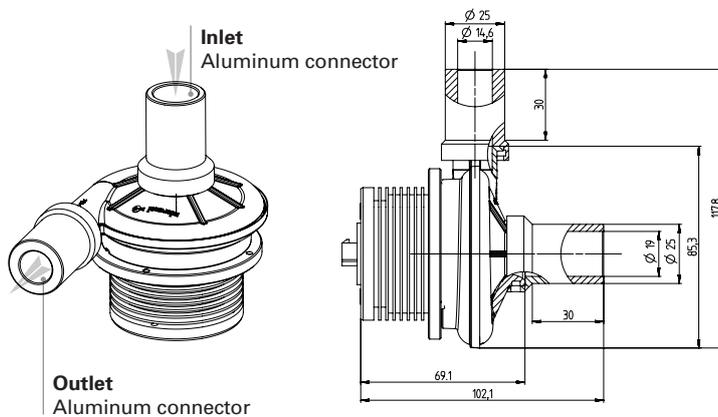
f Tacho frequency [Hz]

Electronic Functions

Set Speed Input Voltage [V _{DC}]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
< 0.0	Not allowed
0.0 to 0.2	Stop
0.2 to 1.5	Not defined, blower might run or stop
2.0	Minimum start-up voltage
1.0 to 4.0	Blower speed depending on input voltage
4.0 to 5.0	Blower speed at 100 %
> 5.0	Not allowed

Set Speed Input Resistor [Ω]	Operation Mode
Set speed not connected	Blower speed at 100 %
Set speed to ground	Stop
0 to 500	Stop
500 to 4300	Not defined, blower might run or stop
6700	Minimum start-up resistance
4300 to 35000	Blower speed depending on resistor value
> 35000 or open input	Blower speed at 100 %

Options for Inlet and Outlet Connections*



Part no. with options	Inlet	Outlet
U85MX-024KE-4		
U85MX-024KE-41	●	
U85MX-024KE-42		●
U85MX-024KE-43	●	●

* The drawings show inlet and outlet connectors. Both options are independent of each other.

No application of forces on connectors allowed!

Accessories

Not included!



Micronel Connector-Set M450X-527A9

Suitable for blower

Micronel Radial Blower
U85MX-024KE-4



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.