

Specification

Radial Blower U51HP-024KM-43



General Information

Item	
Product type	Radial blower with integrated electronic motor driver
Part no.	U51HP-024KM-43 U51HP-024KM-42 (option with outlet port only)
Customer	N/A
Project no.	N/A
Modification	Standard product

Description

This compact 24 V_{DC} multi-purpose blower can be used for various industrial pressure and vacuum applications. It provides an integrated brushless driver with set-speed input and tacho output and is optionally available without inlet nozzle.


SWISS
ENGINEERED


Features

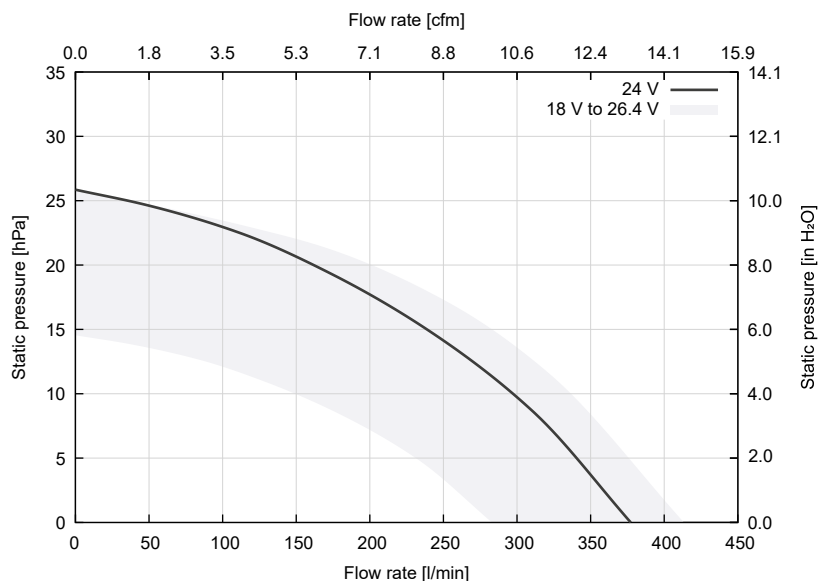
- Static pressure: 26 hPa, freeflow: 380 l/min
- 24 V_{DC} brushless DC-motor
- Analog speed control and tacho frequency signal
- Compact design
- Mounting flange with holes
- Options with or without inlet port

General Conditions

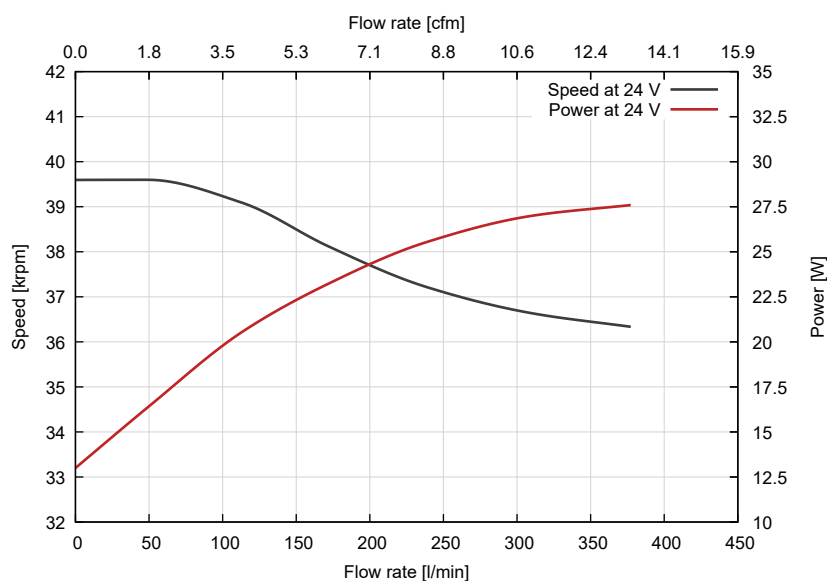
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m³ standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 with standardized 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]	26
Power consumption	[W]	13
Speed	[rpm]	39 600

Shut-Off in Vacuum Operation (Zero Flow Rate)

Static pressure	[hPa]	25
Power consumption	[W]	15
Speed	[rpm]	39 600

Free-Air (Zero Static Pressure)

Flow rate	[l/min]	380
Power consumption	[W]	28
Speed	[rpm]	36 500

Technical Data

Electrical	Unit	Value
Nominal supply voltage	[V _{DC}]	24
Supply voltage range	[V _{DC}]	18 to 26.4
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]	0
Maximum speed	[rpm]	39 600
Maximum acceleration	[rpm/ms]	N/A
Maximum power consumption	[W]	28
Maximum housing surface temperature	[°C]	65
Maximum NTC temperature	[°C]	N/A
Environmental		
Ambient temperature (operating)	[°C]	-20 to 60
Ambient temperature (storage)	[°C]	-20 to 60
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		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)]	31
Leak Tightness		
Maximum leak flow rate	[l/min]	N/A
Mechanical		
Blower weight	[g]	150

⁽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.

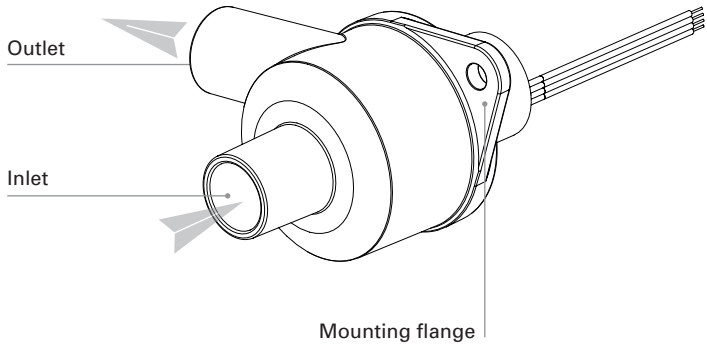
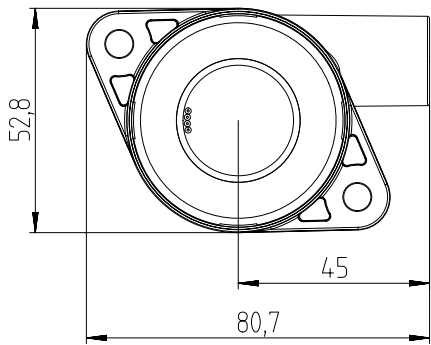
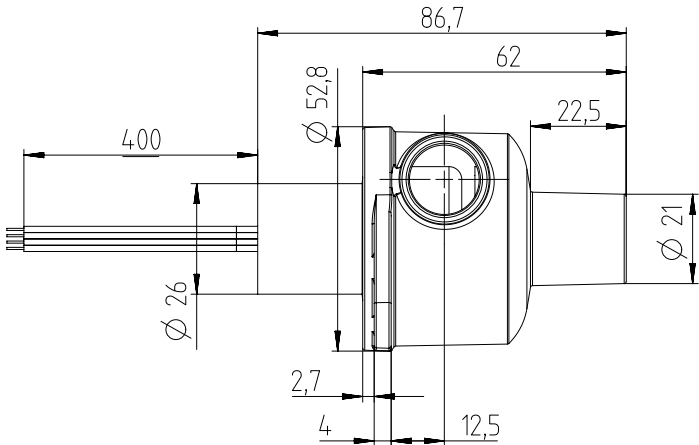
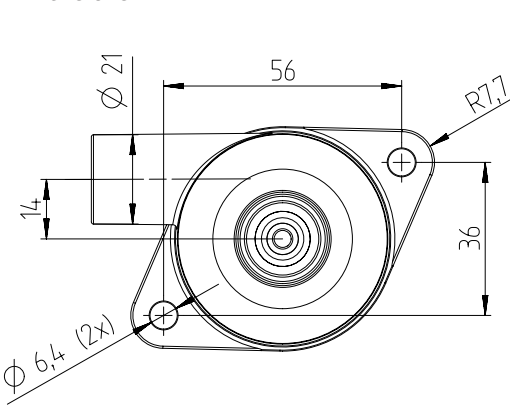
⁽²⁾ Micronel blowers are designed for various levels of oxygen compatibility. Further information available on request.

⁽³⁾ Accelerated aging test at 45 °C ambient temperature, continuous operation 11.5 h ON, 0.5 h OFF, 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 blower axis, 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	Acrylnitril-Butadien-Styrol (ABS), black
Impeller	Polyamide (PA6)
Hub	-
Motor housing	Aluminum
Label	Plastic, 26 x 26 mm Flammability: UL 969
Connector	N/A
Crimp terminal	N/A
Lead wire	Silicone insulated cable Flammability: UL 3239

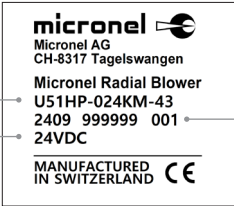
Identification

Label

Design

Part 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 _{CC}	24
2	Black	GND	24
3	Yellow	Tachometer output	24
4	Green	Set speed input	24

Electronic Functions

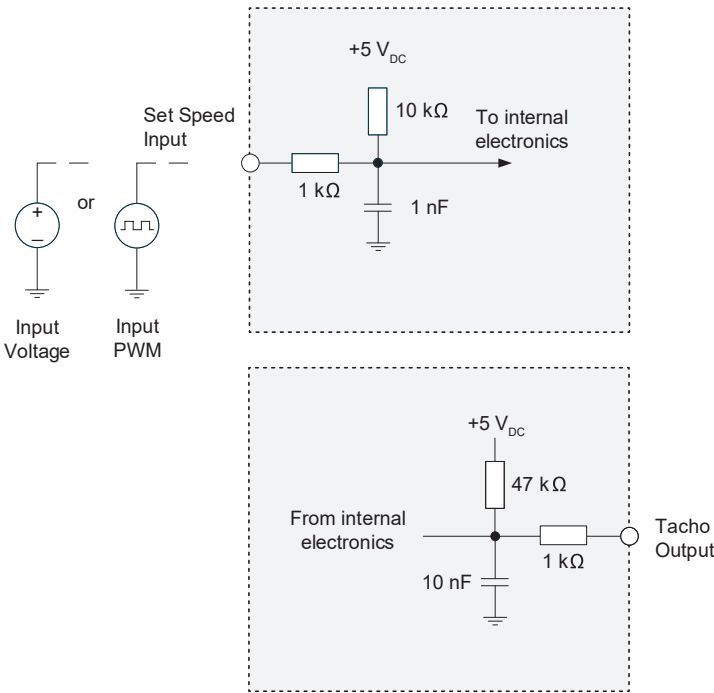
Integrated Electronic Motor Driver

Type

Features

Brushless direct current motor driver

- Integrated speed control (PWM)
- Tachometer frequency signal
- Over temperature protection
- Locked rotor protection
- Hall fault protection
- Over current protection



Speed Control Input

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

Tachometer Output

Tachometer frequency:
1 pulse per revolution

$$n = 60 \cdot f$$

n Rotation speed [rpm]

f Tacho frequency [Hz]

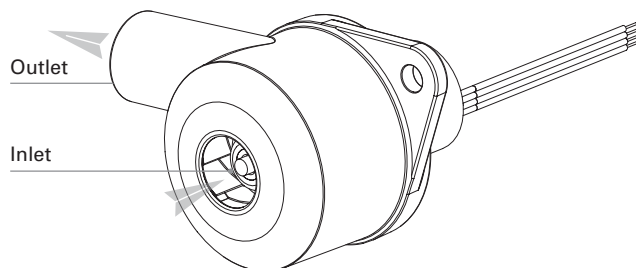
Electronic Functions

Set Speed Input Voltage [V _{dc}]	Operation Mode
Set Speed not connected	Blower speed at 100 %
Set Speed to ground	Stop
0.0	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 PWM [%]	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 to 90.0 (after start-up)	Blower speed depending on duty cycle
90.0 to 100.0	Blower speed at 100 %

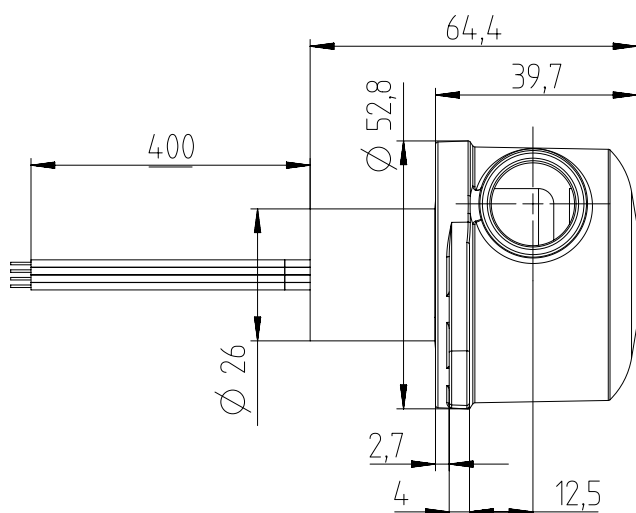
Frequency 10 kHz – 60 kHz; (TYP 20 kHz)

Options for Inlet and Outlet Connections*



Article no. with options	Inlet	Outlet
U51HP-024KM-42		●
U51HP-024KM-43	●	●

* The drawings show **U51HP-024KM-42**.



Note



Handle in power-off conditions only!
No application of forces on inlet and out-
let ports! Read operating manual!



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