

## SPECIFICATION

# Micronel Radial Blower

## U51HP-012KM-43



### GENERAL INFORMATION

#### Item

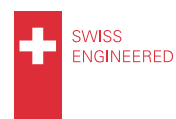
Product type	Radial blower with integrated electronic motor driver
Article no.	U51HP-012KM-43 U51HP-012KM-42 (option with outlet port only)
Manufacturer	Micronel AG
Customer	N/A
Project no.	P19008
Modification	Standard product

### APPLICATIONS

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

### FEATURES

- Pressure: 26 hPa, flow rate: 380 l/min
- 12 V<sub>DC</sub> brushless DC-motor
- Analog speed control and tacho frequency signal
- Compact design
- Mounting flange with holes
- Options with or without inlet port

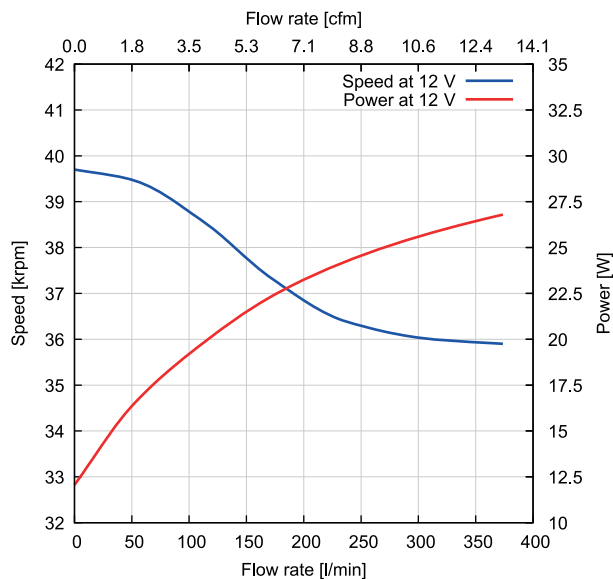
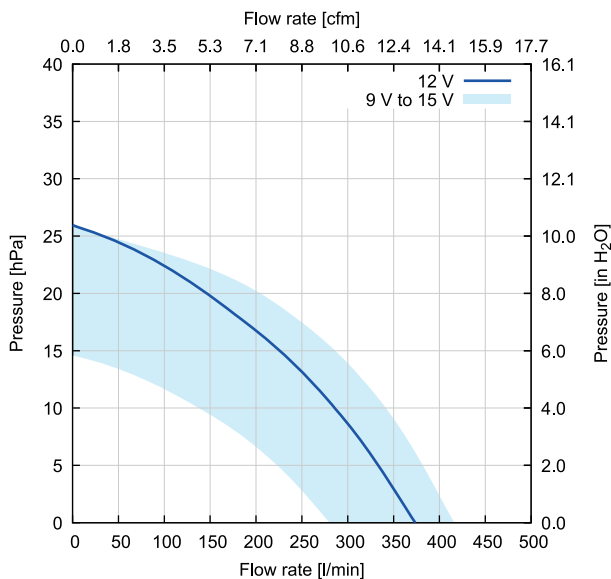


### GENERAL CONDITIONS

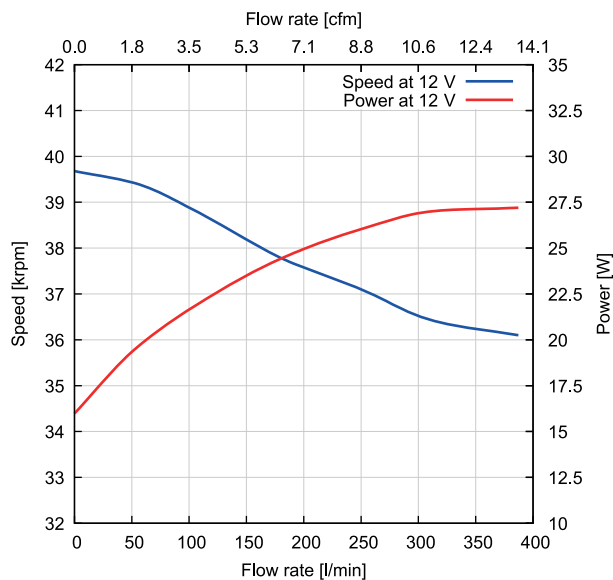
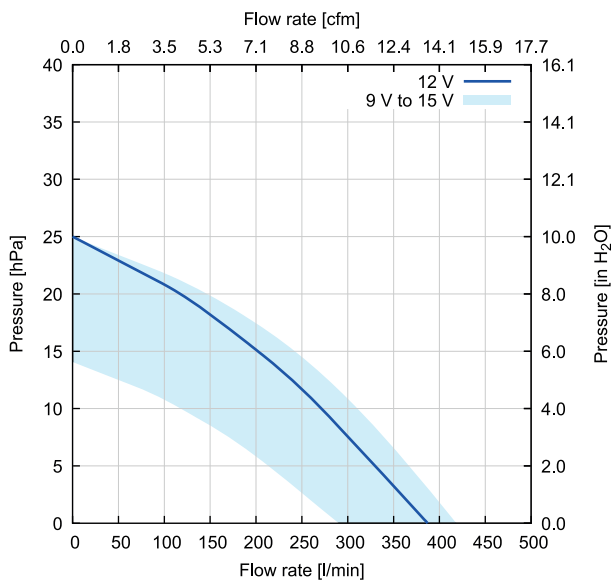
Unless otherwise stated all data are measured at nominal voltage and are valid at 20 °C ambient temperature and 1.2 kg/m<sup>3</sup> standard air density. Values listed are nominal and can vary depending on the installation conditions and due to component tolerances. Test setup according to ISO 5801 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]	26
Power consumption	[W]	12
Speed	[rpm]	39 700

**Shut-Off in Vacuum Operation (Zero Flow Rate)**

Static pressure	[hPa]	25
Power consumption	[W]	16
Speed	[rpm]	39 700

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

Flow rate	[l/min]	380
Power consumption	[W]	27
Speed	[rpm]	36 000

**TECHNICAL DATA**

<b>Electrical</b>	<b>Unit</b>	<b>Value</b>
Nominal voltage	[V <sub>DC</sub> ]	12
Voltage range	[V <sub>DC</sub> ]	9 to 15
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]	0
Maximum speed	[rpm]	39700
Maximum acceleration	[rpm/ms]	N/A
Maximum power consumption	[W]	27
Maximum housing surface temperature	[°C]	65
Maximum NTC temperature	[°C]	N/A
<b>Environmental</b>		
Ambient temperature (operating)	[°C]	-20 to 60
Ambient temperature (storage)	[°C]	-20 to 60
Relative humidity (noncondensing)	[%RH]	10 to 85
Ingress protection (EN60529)		IP40
Maximum oxygen concentration <sup>(2)</sup>	[%]	N/A
<b>Motor</b>		
Type		Brushless direct current motor
Winding insulation class		H, 180 °C
NTC type		N/A
<b>Lifetime</b>		
L10 at 25 °C ambient temperature <sup>(3)</sup>	[h]	20000
<b>Acoustics</b>		
Sound pressure level <sup>(4)</sup>	[dB(A)]	33
<b>Leak Tightness</b>		
Maximum leak flow rate	[l/min]	N/A
<b>Mechanical</b>		
Blower weight	[g]	150

<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.

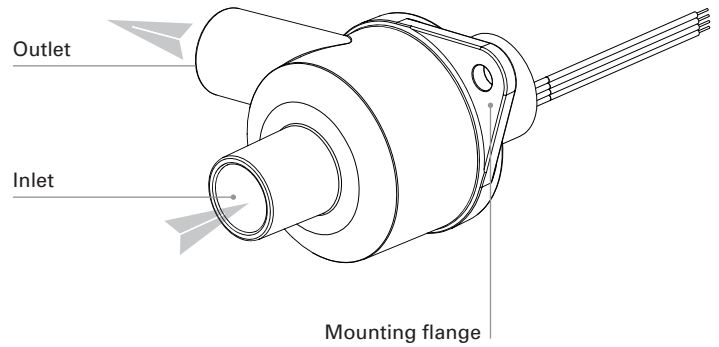
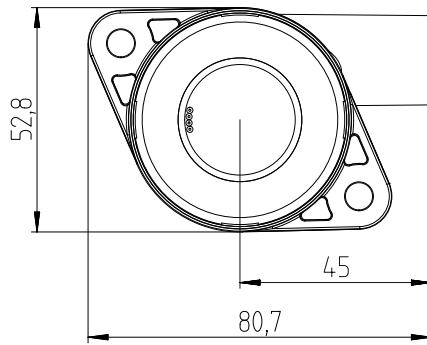
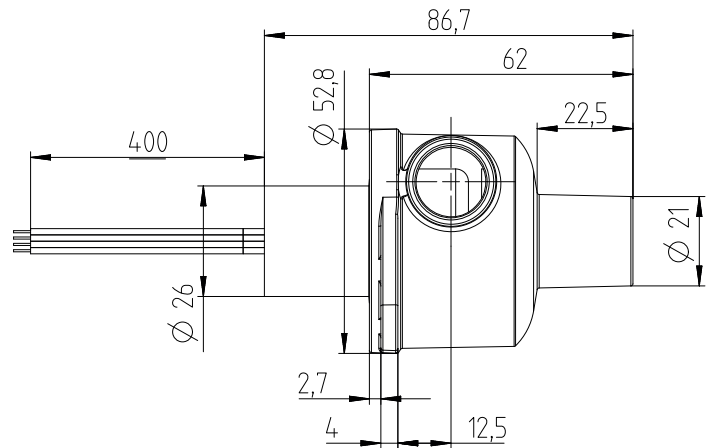
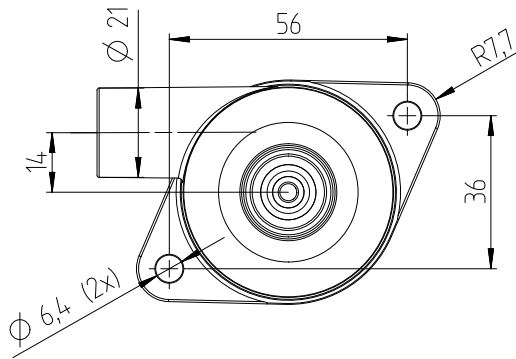
<sup>(2)</sup> Micronel blowers are designed for various levels of oxygen compatibility. Further information available on request.

<sup>(3)</sup> 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.

<sup>(4)</sup> 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), white
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

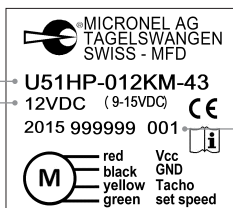
**IDENTIFICATION**

**Label**

Design

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**

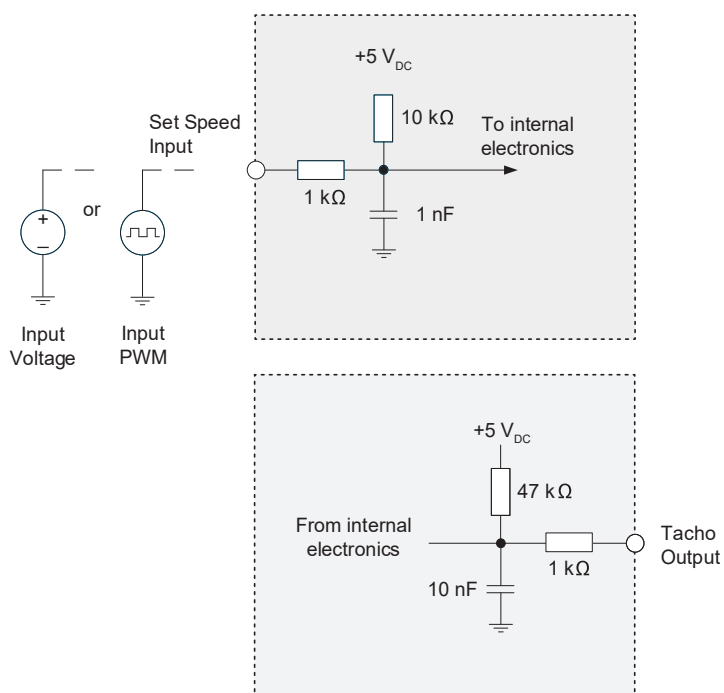
**Integrated Electronic Motor Driver**

Type

Micronel brushless direct current motor driver

Features

- 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

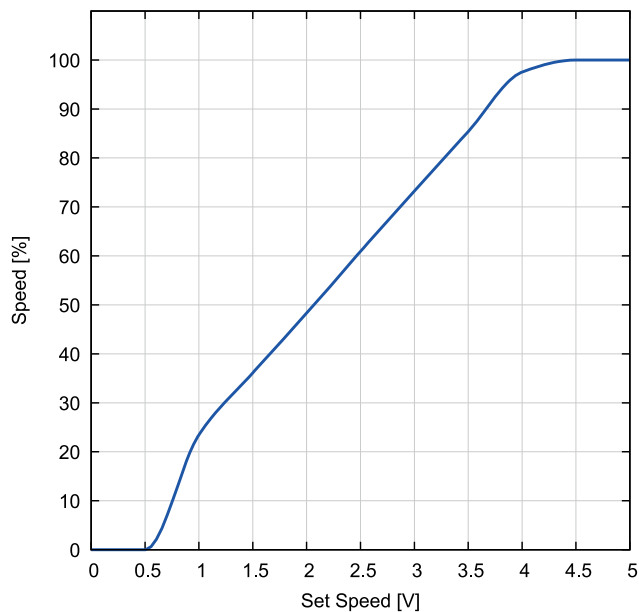
$$n = 60 \cdot f$$

**n** Rotation speed [rpm]

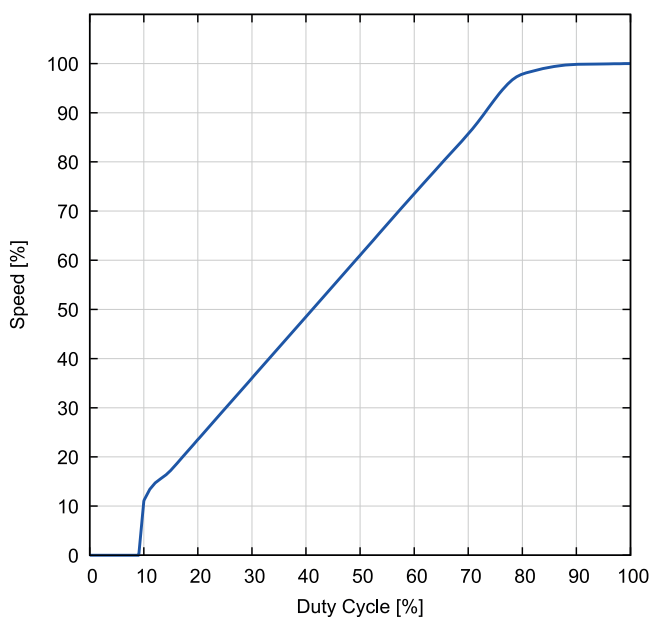
**f** Tacho frequency [Hz]

**ELECTRONIC FUNCTIONS**

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

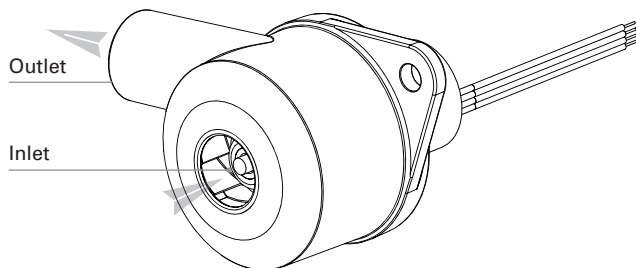


Set Speed Input PWM [%]	Operation Mode
Set Speed not connected	Blower speed at 100 %
Set Speed to ground	Stop
0.0	Stop
0.1 to 9.0	Not defined, blower might run or stop
10.0 to 90.0 (after start-up)	Blower speed depends on duty cycle
90.0 to 100.0	Blower speed at 100 %



**PWM-Frequency**  
 10 kHz – 60 kHz; (typical 20 kHz)

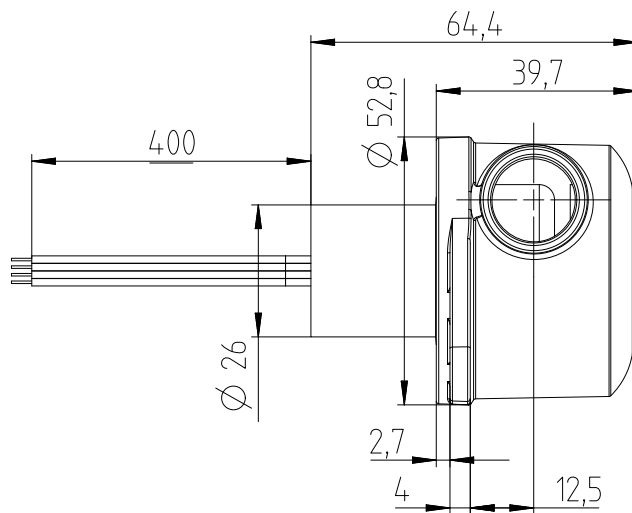
**OPTIONS FOR INLET AND OUTLET CONNECTIONS\***



Article no. with options	Inlet	Outlet
U51HP-012KM-42		●
U51HP-012KM-43	●	●

\* The drawings show **U51HP-012KM-42**.

## OPTIONS FOR INLET AND OUTLET CONNECTIONS\*



Handle in power-off conditions only!  
No application of forces on inlet and  
outlet ports!  
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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