

Summary of General Specifications

Applicable gas	Air, Nitrogen, Oxygen Fluid conditions for use with oxygen : Supply pressure 50 kPa or less, Concentration 95% or less Gas must be dry not containing any corrosive components (chlorine, sulfur, acid), also any dust or oil mist.*1
Response	5 ms max. (95 % response to a step state flow rate changing)
Output signal	1 to 5 Vdc (non-linear characteristics, refer to the standard output characteristics graph), allowable load resistance 10 kΩ or more
Operating temperature range	0 to 50 °C (for both ambient temperature and gas temperature)
Storage temperature	-10 to +60 °C
Operating humidity range	10 to 80 %RH (no condensation allowed)
Operating pressure range	-100 to +200 kPa (Range for assured pressure characteristics: -70 to +200 kPa)
Pressure resistance	300 kPa
Power supply voltage	12 to 24 Vdc, Ripple: 5 % max. at 12 Vdc drive and 10 % max. at 24 Vdc drive.*2
Power fluctuation range	When 12 Vdc drive: ±2 %FS max. to the output value at 12 Vdc within the range of 11.4 to 13.2 Vdc. When 24 Vdc drive: ±2 %FS max. to the output value at 24 Vdc within the range of 21.6 to 26.4 Vdc.
Current consumption	12 mA max. at 24 Vdc
Dielectric strength	500 Vac (1 min) or 600 Vac (1 sec) between each external connector terminal and body
Insulation resistance	50 MΩ (500 Vdc megger) between each external connector terminal and body
Connection type	M5 female (brass insertion), tightening torque 2.5 N·m max.
Material	Parts exposed to gas: PPS resin, ceramic (printed wiring board) and brass (connecting part) Cover: PC (Polycarbonate) resin
Mounting conditions	When using the mounting holes of body, use M3 screws and tighten with 0.6 N·m max. torque.
Vibration resistance	10 to 55 Hz, 1.5 mm peak-to-peak amplitude, 2 hours each in XYZ directions
Weight (mass)	9 g
Electronic connection (Dedicated connector connection)	Cable with dedicated connector (sold separately): 81446888-001 (2 m), 81446888-002 (3 m) MCS side: SM03B-SRSS-G-TB manufactured by J.S.T.Mfg Co. Ltd., Counterpart side: SHR-03V-S-B (housing) and SSH-003GA-P.2 (contact) manufactured by the same company.

*1 Install a filter in upstream side of this device to trap the dust or oil mist of 10μm or larger.

*2 When used at 24 Vdc drive, the output change may occur within ±1 %FS max. after flowrate stabilization in the vicinity of measurement range upper limit flowrate (the amount of drift after 500 s from the flowrate stabilization).

Model lineup (Absolute maximum flow rate is limited to ±12L/min in all models)

One-way flow range models	MCS100A104: 0 to 3L/min MCS100A112: 0 to 500mL/min MCS100A116: 0 to 5L/min MCS100A120: 0 to 10L/min
Bidirectional flow range models	MCS100A100: -3 to +3L/min MCS100A108: -500 to +500mL/min MCS100A128: -10 to +10L/min

* Please refer to the Specs sheet (CP-SS-1833) for detailed product specifications for each model number.

Accessories

Multi channel indicator model MCW401A100

- A flow indicator optimized for the use with MCS100
- 4 open-collector switch outputs
- RS-232C communication with PC or PLC can be used to set parameters or to view instantaneous flow rates and switch status on each channel
- 4 types of window comparator mode for pick-up & placement applications, and hysteresis mode suitable for general flow monitoring applications.
- Compatible MCS100 models: MCS100A100, MCS100A104, MCS100A108, MCS100A112, MCS100A120, MCS100A128



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<https://www.azbil.com/products/factory/order.html>

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Azbil Corporation

Advanced Automation Company

Yamatake Corporation changed its name to Azbil Corporation on April 1, 2012.

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URL: <https://www.azbil.com>

1st Edition : Mar. 2003-MO
6th Edition : Oct. 2019-SO

azbil

Thermal

Mass Flow Sensor

Model MCS100



Model MCS100 is a small mass flow sensor with fast response, made possible by a built-in **azbil MEMS sensor**, millions of units of which have been shipped.

With its combination of a thermal MEMS sensor and a flow path with low pressure loss, the MCS100 can measure air flows under **10L/min** with a fast **5 ms** response.



Measures mass flow rate



Fast response 5 ms!



Ultra-small, lightweight, install anywhere



Bidirectional flow range

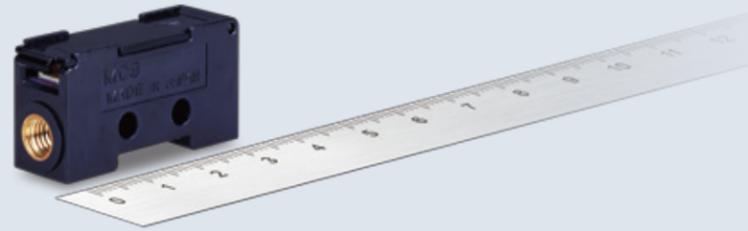


Low power consumption



Any mounting position is OK

Features of the Model MCS100

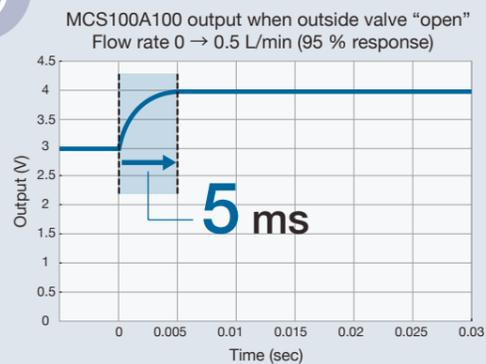


Measures mass flow rate of air according to standard conditions (20 °C, 1 atm), without temperature and pressure compensation.

Ultra-small and lightweight, easily installed anywhere

Fast response: 5 ms

Bidirectional flow range



Low power consumption (12 mA max. at 24 Vdc)

Any mounting position is OK, and there is no need for a straight pipe section.

Recommended Applications and Benefits

Control of suction flow rate in gas detectors, air sampler, etc.

- Measures the mass flow rate intake of the pump, without effects from temperature fluctuation, or changes in atmospheric pressure.
- Operates on battery power on handheld equipment.



Control or monitoring of supply flow rate for oxygen concentrators, etc.

- Useful for control of oxygen flow rate from compressor, without effects from fluctuation in room temperature or altitude.
- Useful for replacing from a float meter.



Monitoring of purge or cooling flow rate for wire bonders, etc.

- Measures flow rate of air supplied to eliminate heat haze.
- Measures flow rate of nitrogen supplied to prevent oxidation.
- Useful for replacing a float meter or pressure gauge.



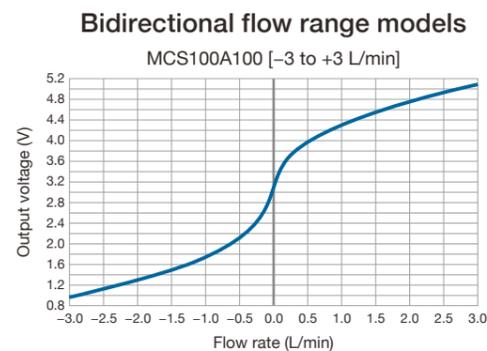
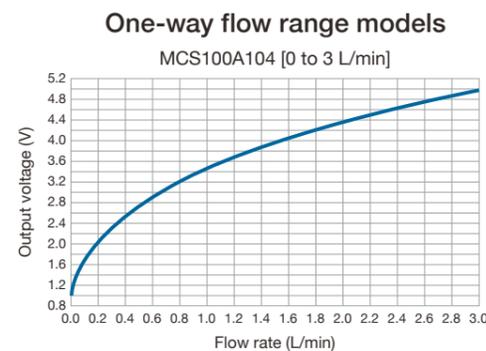
Pick-up and placement detection of miniature electrical or optical devices

- Can be installed close to the pick-up nozzle.
- Fast response is suitable for pick-up detection.
- Measures slight differences in flow rate which cannot be detected by pressure sensors.
- Not affected by fluctuation in suction pressure, thanks to mass flow measurement.
- Clogged or crushed nozzle is detectable by analog output.

User Benefits

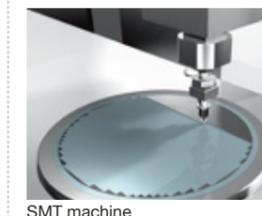
- Suitable for the applications where there are frequent changes in fluid condition (temperature, supply pressure, or altitude)
- Suitable for a variety of flow measurements in areas such as laboratory and various industry applications
- Detects slight flow rate differences
- Suitable for fast tact time applications
- Detects flow direction
- Suitable for battery-driven use on handheld devices
- Easy installation and space saving

Flow Range Line-up

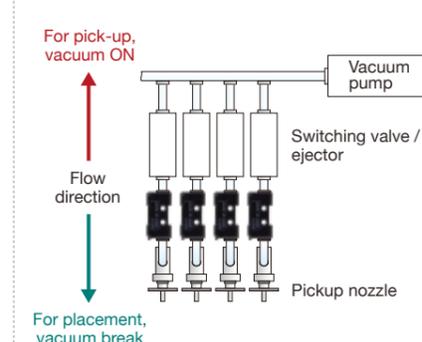


< Example of output characteristics >

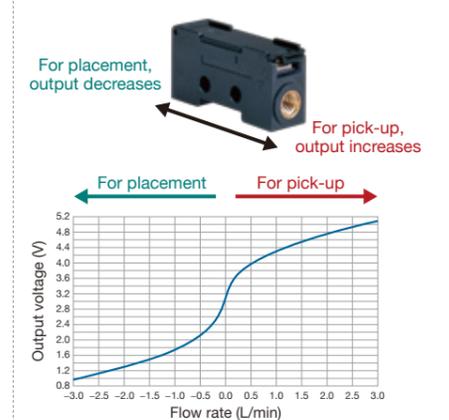
Die bonder



Pick-up head unit on SMT machine



Bidirectional flow measurement



Dimensions

