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: ±1%FS max. to the output value at 12 Vdc within the range of 11.4 to 13.2 Vdc. When 24 Vdc drive: ±1%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 Vdc [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

**Conductive connection** 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**

- **Cable with dedicated connector [sold separately]:** 8144688-001 (2 m), 8144688-002 (3 m)
- **MCS side:** SMD20-SRSS-G-TB manufactured by J.S.T.Mfg Co. Ltd.,
- **Counterpart side:** SHR-3N-S-B [housing] and SSH-003GA-P2 [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).

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

---

**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

---

**Multi channel indicator model MOW401A100**

- A flow indicator optimized for the use with MCS100
- 4 open-collector switch outputs
- PS-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

---

**Other product names, model numbers and company names may be trademarks of the respective companies.**

---

**Azbil Corporation**

**Advanced Automation Company**

1-12-2, Kawana, Fujisawa

Kanagawa 251-8522 Japan

URL: https://www.azbil.com

---

**Model MCS100**

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.
**Features of the Model MCS100**

- Measures mass flow rate of air according to standard conditions (20 °C, 1 atm), without temperature and pressure compensation.
- Fast response: 5 ms
- Ultra-small and lightweight, easily installed anywhere
- 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.

**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**

**One-way flow range models**
MCS100A104 [0 to 3 L/min]

**Bidirectional flow range models**
MCS100A100 [−3 to +3 L/min]

< Example of output characteristics >

**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 hazes.
- Measures flow rate of nitrogen supplied to prevent oxidation.
- Useful for replacing an air flow 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.

**Die bonder**

**Pick-up head unit on SMT machine**

**Bidirectional flow measurement**

**Dimensions**

**Units:**
- 5 ms
- 5 mm
- 10 mm
- 10±0.2 mm
- 32.5±0.2 mm
- 34±0.5 mm
- 35.5
- 35.5
- 35.5
- 103±0.2 mm
- 2.1
- 33.5
- 10±0.2
- 5.7
- 5.3
- 33.5
- 0.7
- 17±0.2
- 13.6
- 5.3
- 5.7
- 10±0.2
- MADE IN JAPAN
- J.S.T. Mfg Co. Ltd.
- SM03B-SRSS-G-TB (connector)
- 2-M5 thread depth 4 min.
- SM03B-SRSS-G-TB (connector)
- 2-M5 thread depth 4 mm
- SM03B-SRSS-G-TB (connector)
- 2-M5 thread depth 4 mm

**User Benefits**

- Suitable for installation 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.

**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.