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Gas control in Arc welding

Unlock superior value for welders

An inert atmosphere is needed during welding to displace oxygen and other particles in the air that create defects. To achieve this, a “shielding gas”, inert gases like CO_2 or Argon are pumped into the welding area through the welding torch. For this purpose, pressure regulators are used, but they don’t provide a stable and measured flow rate. If the flow of gas is too low, inadequate shielding generates porosity, oxidation, and weak welds. If the flow of gas is too high, turbulence sucks in air with the same result.

Target customers:

- MIG/MAG, TIG and plasma welding machine manufacturers

Application challenges

1. Gas surges at arc start create weld defects and waste gas
2. Ensuring correct shielding gas flow
3. Complex integration and calibration of sensors + valve + electronics

Sensirion’s solutions

1. Sensirion’s MFC prevents pressure buildup and deliver smooth, laminar gas flow at arc start
2. Sensirion’s MFC actively maintains a constant flow and eliminates waste, regardless of pressure changes
3. Factory calibrated plug & play MFC

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Sensirion sensor solution:

SFC6000D Mass Flow Controller with best price-performance ratio:

Size (LxWxH): 102 x 45 x 20 mm³

Additional sensor features

- Available as mass flow controller or mass flow meter
- Available in plastics or metal body

Other applications

- Plasma cutting
- Spray painting and powder coating
- Additive manufacturing

FAQs

- **Which fittings are available?**
  Downmount, push-in
- **Which communication interfaces are available?**
  Analog voltage, RS485, Modbus RTU, I²C
- **Do I need to periodically calibrate the mass flow controller?**
  No, due to the excellent long-term stability of CMOS technology, recalibration is never required
- **Can humidity damage the mass flow controller?**
  The mass flow controller is fully operational when dealing with non-condensing humidity levels
- **At which pressure range can the SFC6xxx operate?**
  The operational pressure ranges are determined by the flow range of the mass flow controllers. The maximum allowed differential pressure between the inlet and outlet is 7 bar for the 5 slm version, 5.5 bar for the 20 slm version, and 4.0 bar for the 50 slm version. In all cases, the maximum allowed inlet overpressure is 10 bar.

Getting started

EK-F5x

Useful documents

Datasheets, application notes, handling instructions, sample codes, step files, certificates

Related sensors

↗ SFC54xx mass flow controller
↗ SFC53xx mass flow controller

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