



Modular. Stable. Cost-effective. The Ultimate OEM - MFC.

Engineers in the Biopharmaceuticals industry require precise control of the gases used in bioreactors to optimize microbial growth and ensure proper mixing and distribution of the biomass.

In addition, precision burner control is needed in order to produce the glass ampules, vials and bottles that are used to properly package the resulting biopharmaceuticals.





Combining superior physics, high reliability and unparalleled flexibility, RedySmart stands apart from competitive offerings.

RedySmart thermal mass flow devices contain no moving parts and are unaffected by upstream temperature and pressure fluctuations, resulting in exceptional accuracy and repeatability.

With a compact footprint, easy integration onto a cost-effective gas mixing block, and a wide array of communications protocols, Sierra can produce a mass flow meter or controller to meet your specific requirements

Superior Physics for Lifetime No-Drift Warranty

Our Lifetime No-Drift Sensor Warranty is made possible because Redy-Smart employs high-precision MEMS (Micro-Electro Mechanical Systems) technology utilizing an advanced, ultra-stable no-drift CMOS (Complementary Metal Oxide Semiconductor) sensor.

The use of MEMS techniques allow both electronic circuits and mechanical devices to be manufactured on a silicon chip, similar to the process used for integrated circuits.



Making the Ultimate Biopharm OEM Mass Flow Controller

At the macro level, RedySmart can be conceptualized in five core technologies, each of which contributes to unparalleled accuracy, adaptability and reliability.

Gas Mass Flow Sensor Accurate and Reliable MEMS Technology

Our Lifetime No-Drift Sensor Warranty is backed by high-

precision MEMS technology

utilizing an advanced CMOS

rate measurement.

sensor for stable gas mass flow



Modularity

Customize to Needs

An easy-connect communication and power cable system has been designed for ultimate flexibility. Numerous mass flow controllers can be mounted on a single flow block to minimize space in multiple gas mixing applications. Connect hundreds of units via daisychain as needed.





An available local display readout communicates key flow data while each device can be configured in the field with a free software app. Connect to the network through Modbus RTU and analog outputs, industrial ethernet (EtherCAT and Profibus).

Control

Precision Valve

A precision electromagnetic control valve allows the valve seat to assume the exact height above the valve orifice necessary to maintain flow to the set point.



Cutaway View



3 Unit Mixing Block

Advanced Calibration

Each unit is calibrated over its entire flow range using real gas to assure accuracy and repeatability over the life of the device. A fully automated system capable of calibrating hundreds of units at once eliminates any human error during the calibration process.



Auto-Calibration System

REDYSMART HIGHLIGHTS

Modular

Sierra will customize a solution to fit specific application needs for footprint or electrical connections.

Built-in Display (top)

Integrated display shows mass flow rate, totalizer, unit of measure & set point control (controller only).



Operating Status Indication

All devices have a built-in LED status indicator.



Ethernet

Industrial ethernet provides ease of connection to the top of the device with available ProfiNet RT and EtherCAT.

Standard Digital & Analog Outputs

All devices have a digital Modbus RTU and analog interface standard.

Software App

Get efficient device management with our software app:

- View gas mass flow rate & temperature
- Datalogging
- Gas Mixing
- Change set points
- Select measured gas
- Adjust control parameters
- Adjustment/Calibration

Fast Set Point Control

Response times as fast as \pm 80ms.

Communications

Standard Modbus RTU, Optional: EtherCat, Profibus and ProfiNet.

No-Drift Warranty

Lifetime No-drift Sensor Warranty. If drift occurs, instrument will be repaired or replaced free of charge.

Lifetime

ensor

WARRANTY

Warranty

3-year operating warranty.

Bioreactors

In a typical bioreactor, microbes are used to produce pharmaceutically active compounds. Vaccines, blood and/or blood components, allergenics, somatic cells, gene therapies, tissues, recombinant therapeutic protein and living cells are all produced as biopharmaceuticals. Bioreactors require precision mass flow control of the gases used to feed the biomass and to ensure proper mixing and distribution. This ensures healthy fermentation. RedySmart delivers.





Burner Control

High accuracy and stable gas mass flow rate control are critical to ensure precise temperature control and the highest quality glass used for pharmaceutical packaging, such as ampoules and vials. RedySmart provides an accurate, stable and highly modular cost-effective solution for this application.

gas sources E.g. oxygen & Natural gas

CENTRAL CONTROL AT PC OR AT ANALYSIS ELECTRONICS/PLC

SPECIFICATIONS

Accuracy

- Two versions are available:
- Standard: ±1.0% of full scale
- High Accuracy: up to \pm 0.3% of full scale $\pm 0.5\%$ of reading

Repeatability

 \pm 0.2% of full scale (according to SEMI standard E56-0309)

Gases

Air, N_2 , O_2 are standard. Other non-toxic, non-corrosive gases available upon request.

Operating Pressure

3 - 160 psia (0.2 - 11 bara)/GSC with valve type 4.5 and 8: max. 120 psia (8 bara)

Operating Temperature

32 - 122°F (0 – 50°C)

Response Time

Meter (GSM): ± 80ms⁽³⁾; Controller (GSC): ± 500ms⁽³⁾ ³depending on device configuration & according to SEMI standard E17-1011, 5-100% of range under optimized conditions

Input Power

24 Vdc (18 - 30 Vdc), 15 Vdc on request



		Length	n (inch)		Length of fitting		
Type/Body	A	в	с	D ⁽¹⁾	D ⁽²⁾	Р	
GSM/¼"(MFM)	3.7	3.43	0.98	2.72	3.41	We offer a range of	
GSM/½"(MFM)	5.7	3.43	1.38	3.11	3.57	different inlet/ outlet fittings.	
GSM/¼»(MFC)	4.88	4.61	0.98	2.72	3.41		
GSM/½"(MFC)	6.69	4.61	1.38	3.11	3.57		
GSM/½"(MFC) valve type 8	7.34	5	1.38	3.13	3.57		

¹Standard version

²Profinet RT/EtherCAT version

FITTINGS

COMPRESSION			PUSH-IN FOR POLYTUBE			VCO [®] & VCR [®] ALTERNATIVES		
Туре	Body Size	Max. Flow (SLPM)	Туре	Body Size	Max. Flow (SLPM)	Туре	Body Size	Max. Flow (SLPM)
1/8" SS	1⁄4"	5	1/4" Brass	1⁄4"	50	1/4" SS	1⁄4"	50
1/4" SS	1⁄4"	50	6mm Brass	1⁄4"	50	1/2" SS	1/2"	480
1/4" Brass	1⁄4"	50	8mm Brass	1⁄4"	64	VCO [®] & VCR [®] are registered Trademarks of Swagelok		
6 mm SS	1⁄4"	50	3/8" Brass	1⁄2"	300			
8 mm SS	1⁄4"	50	1/2" Brass	1/2"	480			
3/8" SS	1⁄2"	300	12mm Brass	1/2"	480			
3/8" Brass	1⁄2"	300						
1/2" SS	1⁄2"	480						
1/2" Brass	1⁄2"	480						
8 mm SS	1⁄2"	300						
12 mm SS	1⁄2"	480						



sierrainstruments.com global email: info@sierrainstruments.com

NORTH AMERICA

5 Harris Court, Building L / Monterey, CA 93940 / USA ph 800.866.0200 / 831.373.0200

EUROPE

Bijlmansweid2 / 1934RE Egmond aan den Hoef / The Netherlands ph +31 72 5071400

ASIA-PACIFIC

Second Floor Building 5 / Senpu Industrial Park 25 Hangdu Road Hangtou Town / Pu Dong New District Shanghai, P.R. China Post Code 201316 ph +8621 5879 8521/22