RedySmart™

SIERRA®

Thermal Mass Flow Meters
& Controllers for OEM's

redy smart
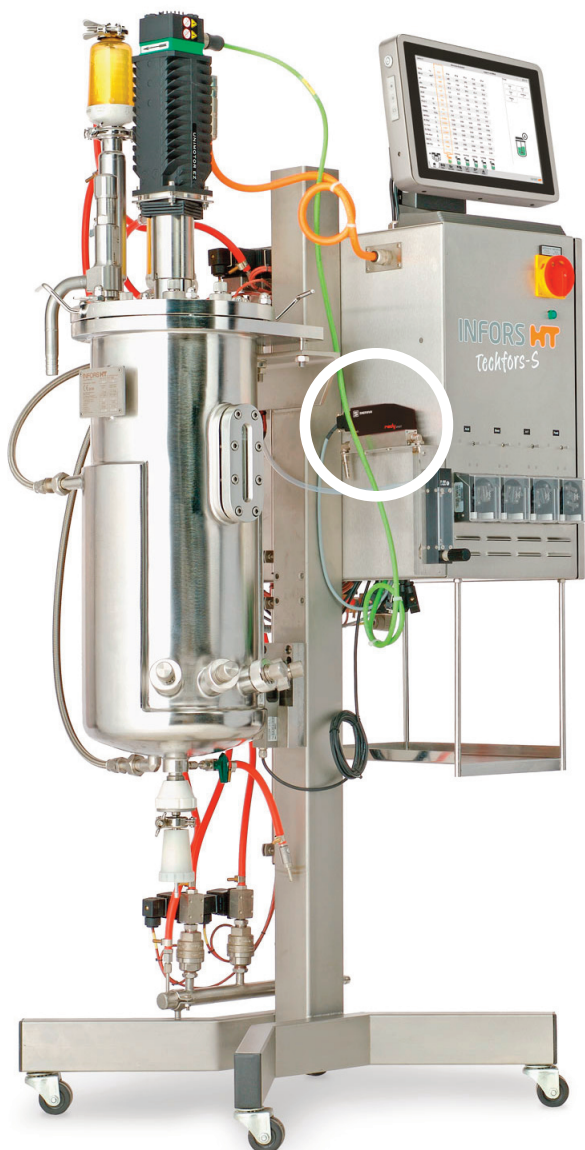
Lifetime
NO-DRIFT
Sensor
WARRANTY

FLOW

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
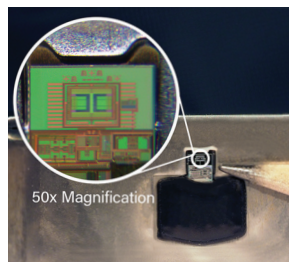
no-drift CMOS (Complementary Metal Oxide Semiconductor) sensor.

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.

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

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.

50x Magnification

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 sensor for stable gas mass flow rate measurement.

Communications
Human & System Interface
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).
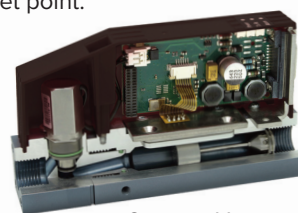
Modularity
Customize to Needs
An easy-connect communication and power cable system has been designed for ultimate flexibility. Numerous mass flow controllers can be mounted on a single flow block to minimize space in multiple gas mixing applications. Connect hundreds of units via daisy-chain as needed.

Lifetime NO-DRIFT Sensor WARRANTY

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
NIST-Traceable
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 ± 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.
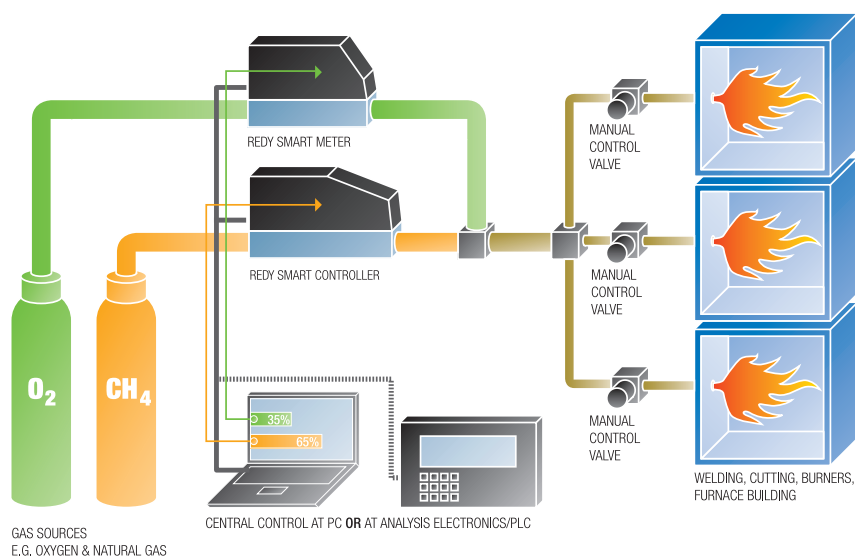
Warranty
3-year operating warranty.

Lifetime NO-DRIFT Sensor 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.

REDY SMART METER

REDY SMART CONTROLLER

MANUAL CONTROL VALVE

MANUAL CONTROL VALVE

MANUAL CONTROL VALVE

O₂ CH₄

35%
65%

GAS SOURCES
E.G. OXYGEN & NATURAL GAS

CENTRAL CONTROL AT PC **OR** AT ANALYSIS ELECTRONICS/PLC

WELDING, CUTTING, BURNERS, FURNACE BUILDING

SPECIFICATIONS

Accuracy
Two versions are available:
• Standard: ±1.0% of full scale
• High Accuracy: up to ± 0.3% of full scale ±0.5% of reading

Repeatability
± 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)

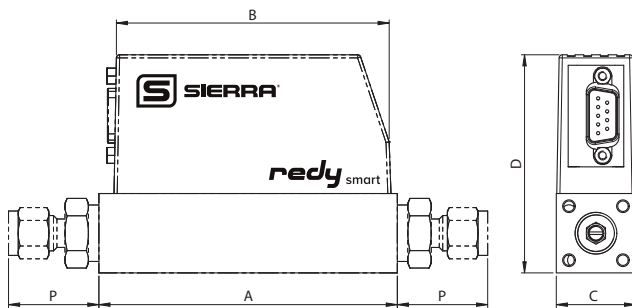## Operating Temperature
32 - 122°F (0 − 50°C)

Response Time
Meter (GSM): ± 80ms[3]; Controller (GSC): ± 500ms[3]
[3]depending 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

FOOTPRINT

| Type/Body | Length (inch) | | | | | Length of fitting |
	A	B	C	D[1]	D[2]	P
GSM/¼"(MFM)	3.7	3.43	0.98	2.72	3.41	We offer a range of different inlet/ outlet fittings.
GSM/½"(MFM)	5.7	3.43	1.38	3.11	3.57	
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	

[1]Standard version

[2]Profinet RT / EtherCAT version

FITTINGS

| COMPRESSION | | | PUSH-IN FOR POLYTUBE | | | VCO® & VCR® ALTERNATIVES | | |
Type	Body Size	Max. Flow (SLPM)	Type	Body Size	Max. Flow (SLPM)	Type	Body Size	Max. Flow (SLPM)
1/8" SS	¼"	5	1/4" Brass	¼"	50	1/4" SS	¼"	50
1/4" SS	¼"	50	6mm Brass	¼"	50	1/2" SS	½"	480
1/4" Brass	¼"	50	8mm Brass	¼"	64			
6 mm SS	¼"	50	3/8" Brass	½"	300	VCO® & VCR® are registered Trademarks of Swagelok		
8 mm SS	¼"	50	1/2" Brass	½"	480			
3/8" SS	½"	300	12mm Brass	½"	480			
3/8" Brass	½"	300						
1/2" SS	½"	480						
1/2" Brass	½"	480						
8 mm SS	½"	300						
12 mm SS	½"	480						

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