



Thermal Mass Controllers/Meters for Gases

# Grylls 5900

## series product information



# Thermal Mass Controllers/Meters

## Grylls 5900 series

The Grylls 5900 series mass flow controllers/meters accurately measures and controls gas flows. The heart of the system is a very Reliable and accurate flow sensor which produces an electric output signal linear with flow rate used for indicating an recording. The Grylls 5900 series mass flow controllers accurately measure and control gas flows fast to command changes, virtually without overshoot. These mass flow controllers provide an exclusive PID control loop, which has been balanced to match unique sensor and valve characteristics. The newly designed High accurate small proportional solenoid valve allow stable operation over a wide variety of flow and pressure conditions. The actual flow dynamics are controlled, resulting in a much smoother transition to steady state flow in the shortest period of time.



### 1. Accurate measurement and control

The 5900 series has high precision and wide control range.

**Accuracy up to ± 1% of full scale**  
**Turndown ratio 50 : 1**  
(optional: 100:1)

### 2. Wide flow range

The 5900 Series can have a full scale flow as low as **2sccm**.

Model 5900 Series can monitor or control gas flows up to **3050 slm**.

### 3. Multiple of Communication Options

Traditional 0-5 Vdc and 4-20mA analog options as well as RS232/RS485 digital communications are available (Modbus RTU protocol).

### 4. Multi-gas/Multi-range Capabilities

The 5900 Series multi-gas and multi-range capabilities. Storage and pre-programming of up to 60 gas calibrations easily permits users to switch between different gasses and ranges on a single device.

### 5. Options

- 1) High pressure rating - up to 1450 psi (g) / 100bar (g)
- 2) Water/dust-resistant: IP65

### 6. Ontology display and buttons

Display of flow rate, total and measuring unit. Defining a set point (5900D series only)

### 7. Grylls UCS software

Efficient device management with the free <Grylls-UCS> software:

- » **View flow rate & cumulative flow**
- » **Change set points**
- » **Change set communication address**
- » **Visualization of measured data**
- » **Adjusting control parameter**
- » **Datalogging**
- » **Change digital / analog communication mode**
- » **Multiple 5900 devices can be controlled at the same time**

### 8. Applications

- |                          |   |                                 |
|--------------------------|---|---------------------------------|
| 1) Semiconductor         | 5) Analytical instruments                       | 9) Experimental apparatus       |
| 2) Photovoltaic industry | 6) Heat treatment                               | 10) Food, Beverage and Pharma   |
| 3) Fuel cell             | 7) Surface treatment                            | 11) Automobile electronics      |
| 4) Vacuum industry       | 8) CHEMICAL, PLASTICS, METAL AND GLASS INDUSTRY | 12) Bioprocessing & Bioreactors |

Note:  
All specifications are 'typical specifications'. For an exact configuration, please contact Grylls for availability.

MODEL NAME	5910/11	5920/21	5930/31
<b>FEATURE</b>			
Standard full scale flow rate (nitrogen equivalent)	2SCCM~31SLM	30SLM ~ 305SLM	300SLM ~ 3050SLM
Accuracy	±1% F.S.	±1% F.S.	±1% F.S.
Turndown ratio	5900 Series 50:1/ (optional:100:1) \ 5901 Series 100:1/ (optional:200:1)		
Repeatability	0.20% of Full Scale		
Linearity	Included in accuracy		
Sensor response time	<300 ms		
Response Time (Settling Time within ±2% F.S. for 0-100% command step)	5910&5920-Series: <1 seconds 5930-Series: <1.5 seconds		
Zero Stability	<± 0.2% F.S. per year		
Temperature Coefficient	Zero: <0.075% of FS. per °C. Span: <1.0% of F.S. shift from original calibration over 10-50°C (50-122°F) range		
Maximum Controllable Flow Rate	103% Full Scale (N2) ,Digital mode only		
Maximum Measurable Flow Rate	110% Full Scale (N2),Digital mode only		

<b>OPERATING CONDITIONS</b>			
Operating Temperature Range	0-50°C		
Minimum Pressure Differential (Controllers)	2.9psi(d)/0.2bar(d)	Min.: 7.25 psi(d)/0.5bar(d) <100 slm Min.: 14.5psi(d)/1bar(d) >100slm	Min.: 14.5 psi(d)/1bar(d) <500 slm Min.: 43.5psi(d)/3bar(d) >500slm
Maximum Pressure Differential (Controllers)	72.5 psi(d)/5 bar(d)		145 psi(d)/10 bar(d)
Max. operating pressure	435 psi(g)/30bar(g)\Option:Max1450psi(g)/100bar(g)		
Leakage Rate (external)	1x10 <sup>9</sup> atm. cc/sec He		

<b>MECHANICAL</b>			
Valve Type	5900 Series Normally Closed/Optional:Normally Open \ 5901 Series NO Valve		
Primary Wetted Materials	316L Stainless Steel \ Viton seals \ EPDM seals \ Silicone seals \ FFKM seals		
Attitude Sensitivity	May be mounted in any position		
Weight	About 5910:1.25kg / 5911:0.8kg	About 5920:1.9kg / 5921:1.4kg	About 5930:4.1kg / 5931:3.0kg

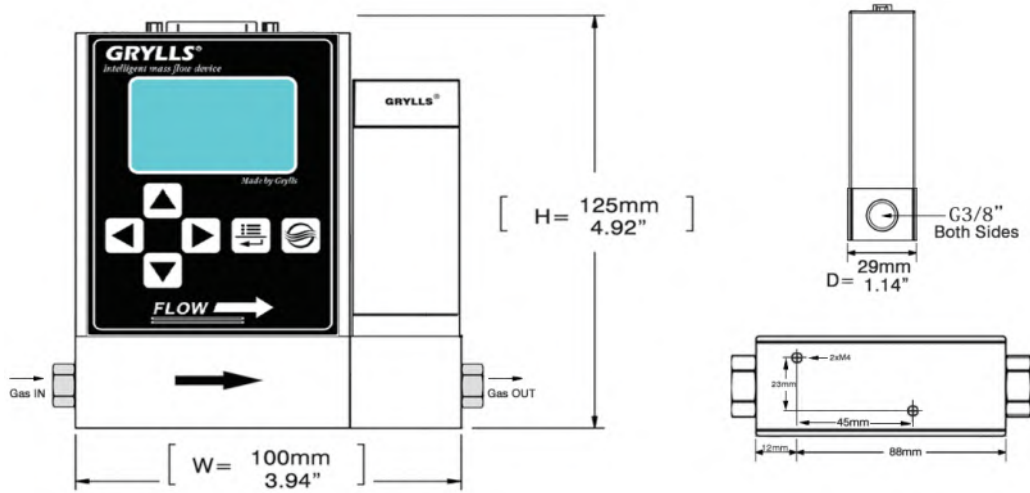
<b>ELECTRICAL SPECIFICATIONS AND INTERFACE</b>			
Electrical Connection	15-Pin Male Sub D-Type (Digital mode only)/9-Pin Male Sub D-Type (Analog mode only)		
Input (Setpoint) Signal (Controllers)	0-5 Vdc / 1-5 Vdc / 0-10 Vdc / 4-20 mA		
Output Signal	0-5 Vdc / 1-5 Vdc / 0-10 Vdc / 4-20 mA		
Digital Communications	RS-232 Serial / RS-485 Serial / Modbus RTU Option: PROFIBUS / EtherNet/IP / DeviceNet /Modbus TCP/IP / EtherCAT / PROFIBUS-DP		
Power Supply Ratings Current Rating	About 12.0w 24Vdc @500 mA/ +15 Vdc @400 mA -15 Vdc @400 mA	About 18.0w 24Vdc @750 mA/ +15 Vdc @600 mA -15 Vdc @600 mA	About 24.0w 24Vdc @1000 mA

Monochrome LCD display  
Integrated multifunction button

1) Set point Flow , 2) Conversion of gas coefficient, 3) PID function, 4) LCD display (flow output, cumulative flow)

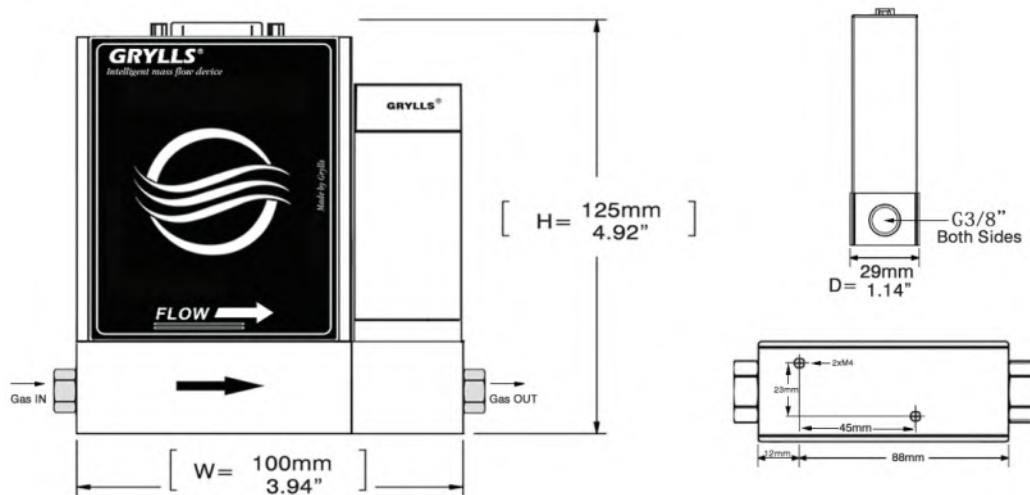
OPERATIONAL	5910/11 Series	5920/21 Series	5930/31 Series
Full-Scale Ranges (N <sub>2</sub> Equivalent)	2 sccm to 10 sccm	30slm to 50 slm	300slm to 500 slm
	10sccm to 50 sccm	50slm to 100 slm	500slm to 1000 slm
	50sccm to 500 sccm	100slm to 150slm	1000slm to 1500slm
	500sccm to 3000 sccm	150slm to 200 slm	1500slm to 2000 slm
	3slm to 10 slm	200slm to 250slm	2000slm to 2500slm
	10slm to 20 slm	250slm to 305slm	2500slm to 3050 slm
	20slm to 31 slm	/	/

**5910D Series Mass Flow Controller**



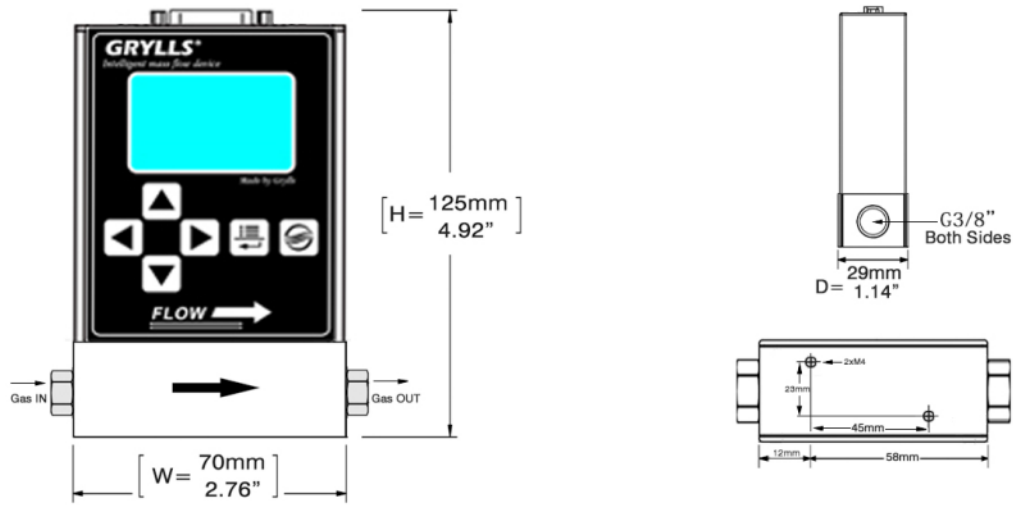
Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	4.92"H x 3.94"W x 1.14"D	G3/8 Female Thread

**5910 Series Mass Flow Controller**



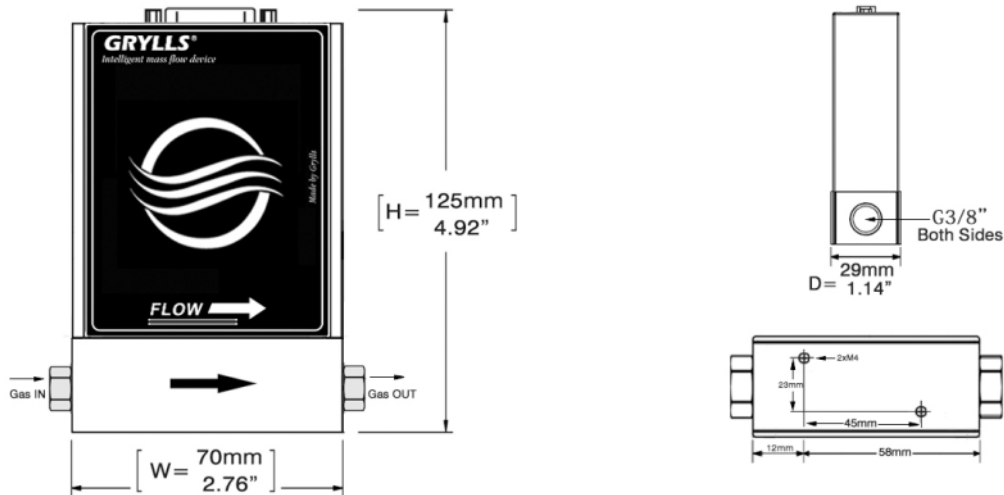
Electrical Connection	Mechanical Dimensions	Process Connections
DB9 male /DB15 female	4.92"H x 3.94"W x 1.14"D	G3/8 Female Thread

**5911D Series Mass Flow Meter**



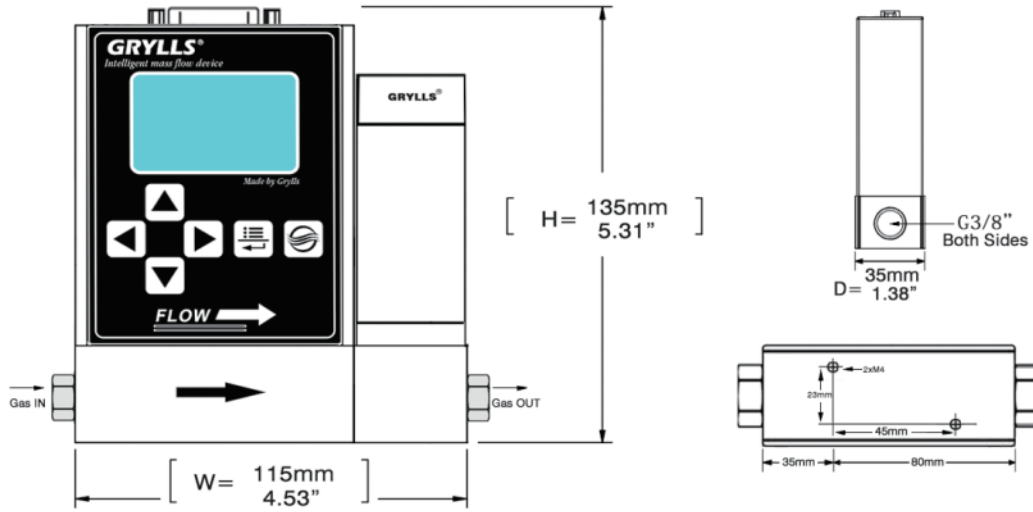
Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	4.92"H x 2.76"W x 1.14"D	G3/8 Female Thread

**5910 Series Mass Flow Meter**



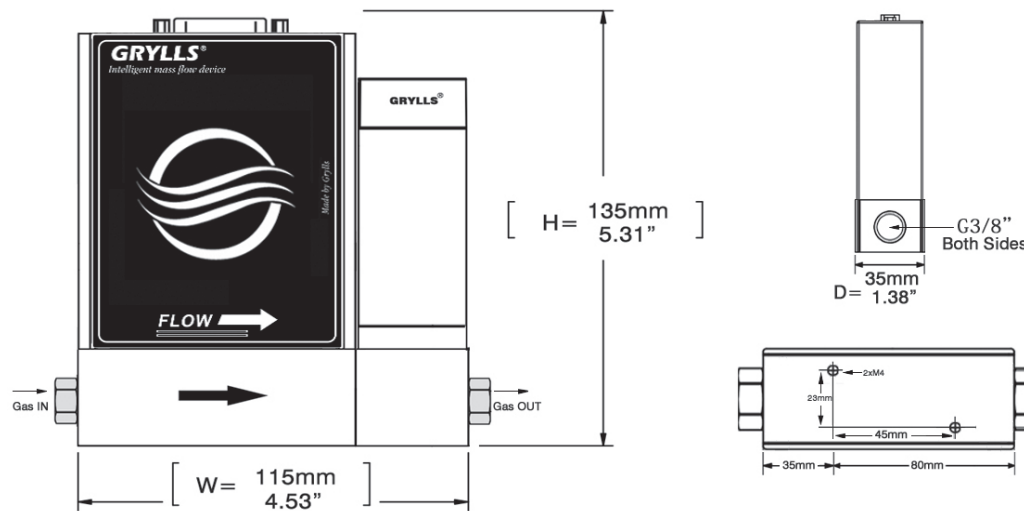
Electrical Connection	Mechanical Dimensions	Process Connections
DB9 male /DB15 female	4.92"H x 2.76"W x 1.14"D	G3/8 Female Thread

**5920D Series Mass Flow Controller**



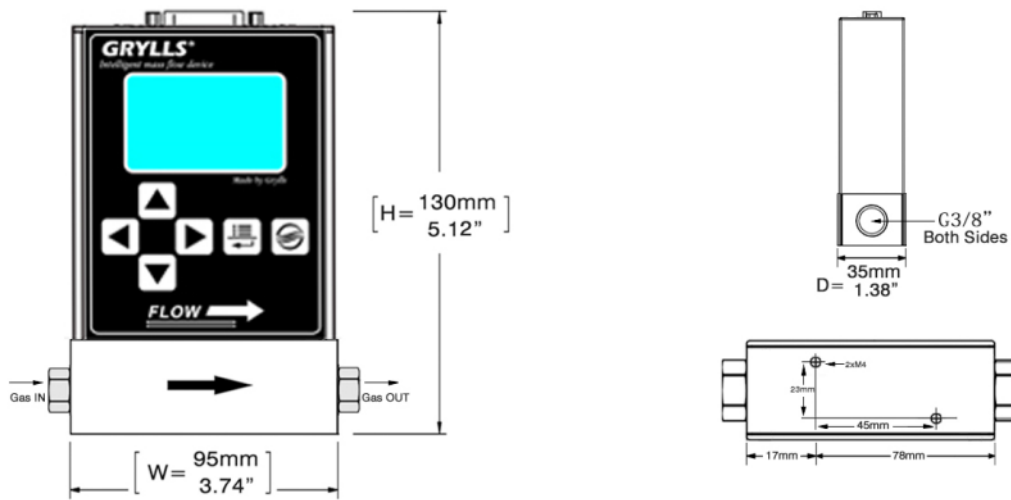
Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	5.31"H x 4.53"W x 1.38"D	G3/8 Female Thread

**5920 Series Mass Flow Controller**



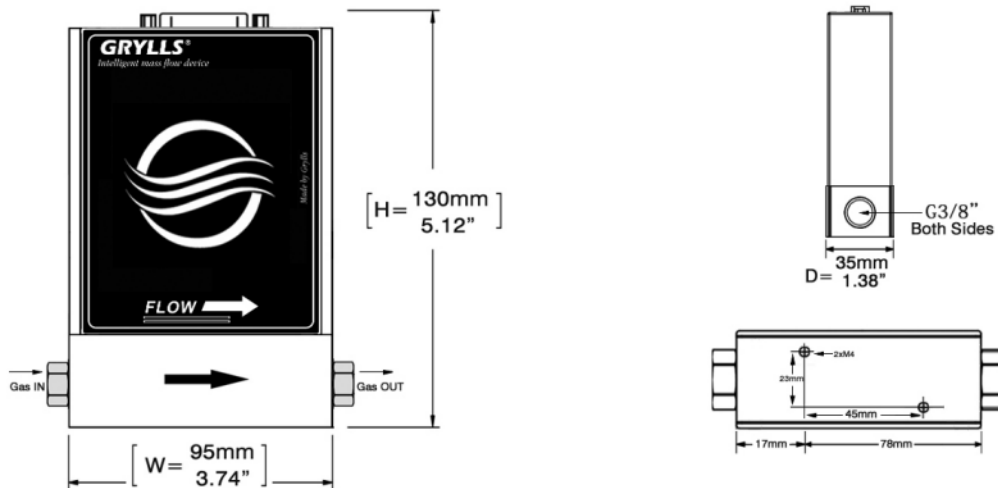
Electrical Connection	Mechanical Dimensions	Process Connections
DB9 male /DB15 female	5.31"H x 4.53"W x 1.38"D	G3/8 Female Thread

**5920D Series Mass Flow Meter**



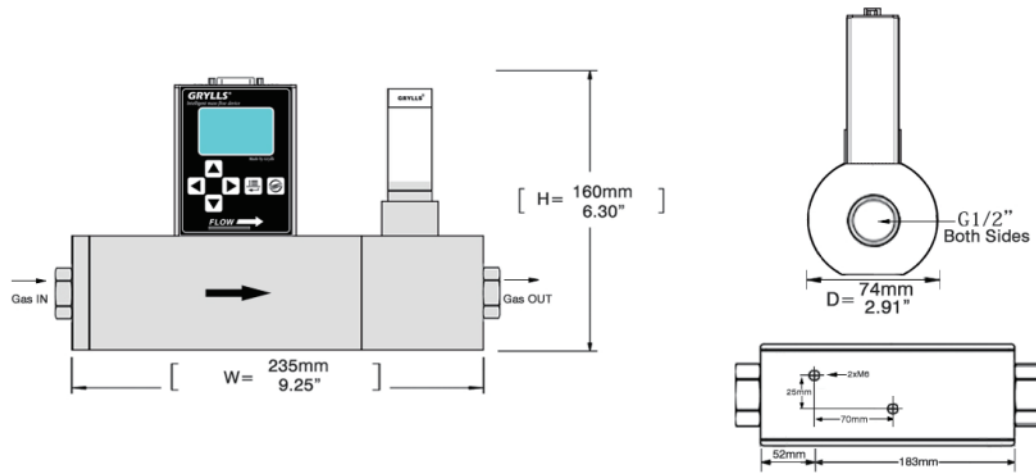
Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	5.12"H x 3.74"W x 1.38"D	G3/8 Female Thread

**5920 Series Mass Flow Meter**



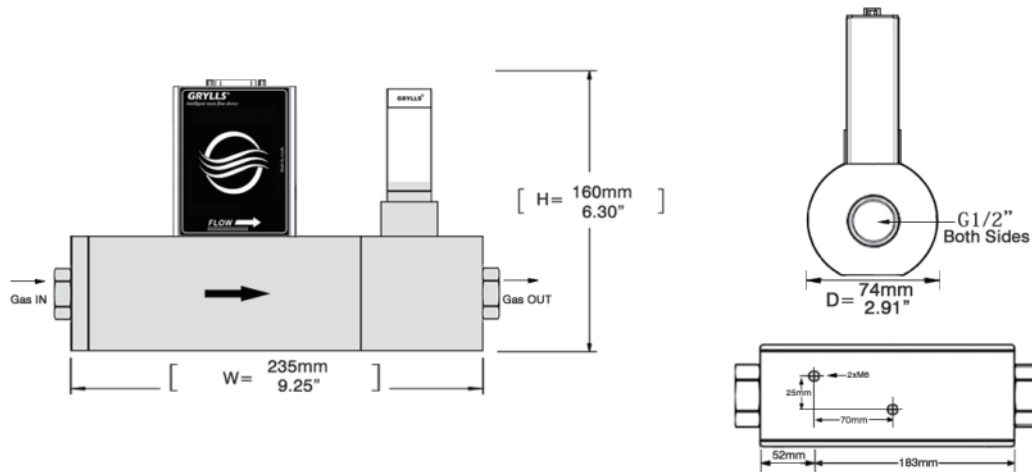
Electrical Connection	Mechanical Dimensions	Process Connections
DB9 male /DB15 female	5.12"H x 3.74"W x 1.38"D	G3/8 Female Thread

**5930D Series Mass Flow Controller**



Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	6.30"H x 9.25"W x 2.91"D	G3/8 Female Thread

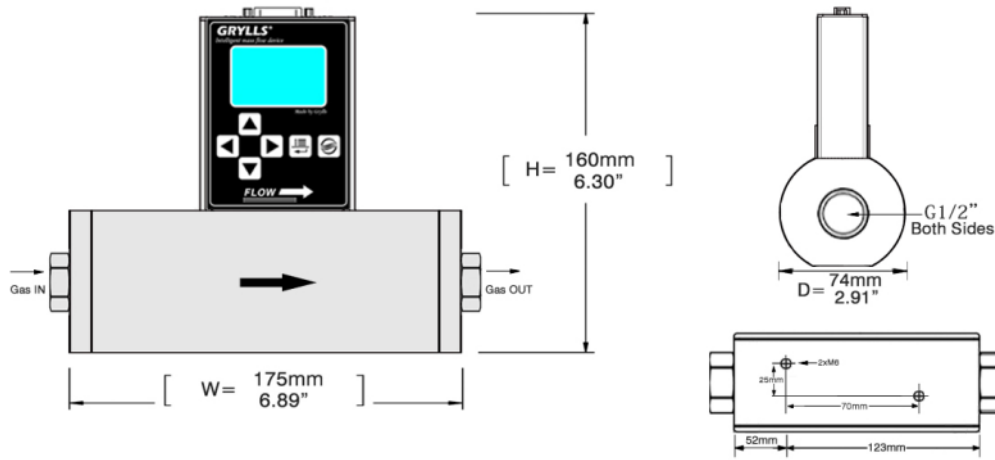
**5930 Series Mass Flow Controller**



Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	6.30"H x 9.25"W x 2.91"D	G3/8 Female Thread

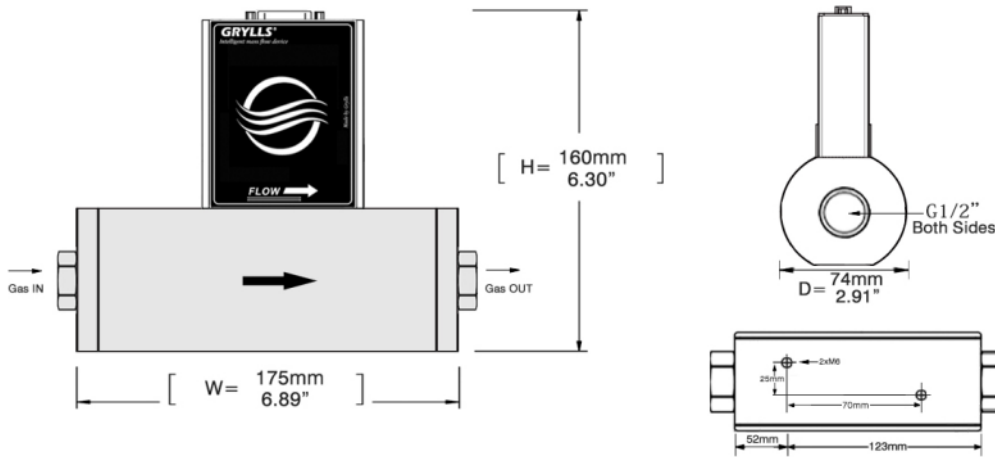


**5930D Series Mass Flow Meter**



Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	6.30"H x 6.89"W x 2.91"D	G3/8 Female Thread

**5930 Series Mass Flow Meter**



Electrical Connection	Mechanical Dimensions	Process Connections
DB15 male connector	6.30"H x 6.89"W x 2.91"D	G3/8 Female Thread