8260 Series

Miniature Premium Mass Flow Controllers/Meters

» 1% digital setpoint accuracy and <1 second response
» High reliability and repeatability
» MultiFlo™ technology
» Digitals are backward-compatible to analog MFCs

Advanced control systems

The 8260 Series mass flow controllers/meters offer state-of-the-art, advanced control systems unequalled in the market today. The underlying algorithms provide the best-in-class accuracy of ±1% set-point. The 8260 Series can meet specifications for any gas over a large inlet/outlet pressure range, over a wide temperature range, and over a large range of flow rates.

MultiFlo™ technology

MultiFlo™

MultiFlo is a proprietary technology available on all Unit digital MFCs. Our MultiFlo technology offers a host of benefits that increase tool uptime, reduce cost of ownership, and improve inventory requirements.

Unit MFCs with MultiFlo are offered in nine standard configurations, each programmable for a set of gases and flow ranges. Combined, the nine standard MFCs cover 85% of the gases and flow ranges used in a typical production fab (from 3 sccm to 30 slm, N_2 equivalent).

MultiFlo is offered with a Configuration Kit which allows OEMs and fab owners to program the MFC for desired gas and flow range anywhere, anytime, and in most cases, without removing the MFC from the module. Calibration does not require surrogate gases and can be completed in just a few minutes. In a recent benchmark study, we were able to cover an entire fab's MFC inventory requirement with only 23 part numbers (nine configurable MFC part numbers and 14 other unique part numbers), significantly reducing the fab's inventory requirements.

MultiFlo™ benefits

- Replacement MFCs are available in only a few minutes
- Nine standard MFC part numbers cover 85% of all applications
- Enables on-site gas and range changes with no surrogate gas requirements
- Enables last minute changes in gas panel inte gration without impacting on-time delivery
- Dramatically reduces inventory requirements
- Increases tool uptime

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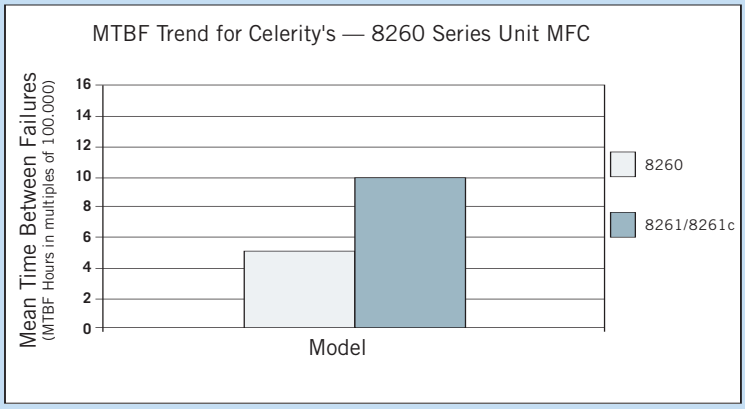


Better by design

Unit MFCs use a valve, sensor, and bypass design which has been perfected from years of research and testing. Unit MFCs are robust, reliable, and field proven.

The Unit solenoid valve has major advantages over other MFC valves (such as piezoelectric valves, which tend to shed particles). Our valve has only one moving part, and only three parts physically in the gas flow path. This results in no particle generation during normal operation. (Other valves, such as piezoelectrics, can release huge amounts of gas during a failure and can overtax abatement systems.)

The 3 sigma guarantee

At Celerity, we stand behind our specifications. While others give only a one or two sigma limits (66.7% or 95%), Celerity guarantees 3 sigma limits, or 99.7% confidence, on critical parameters.

Communications options

All Unit digital products have the ability to communicate via analog, RS485, DeviceNet and PROFIBUS. A variety of connector options are available to meet the interface requirements.

Flexible design

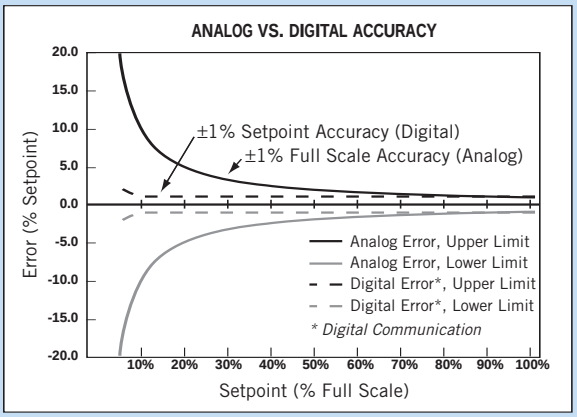
Mechanical connector options are available to support both welded and modular gas system requirements.

CrossChek™ metrology system

CrossChek™

Celerity's world-class CrossChek calibration methodology maintains SPC-verified calibration accuracy with ±3 sigma limit (99.7% confidence level) compared to ±1 or 2 sigma limits (67% to 95% confidence level) for other manufacturers.

CrossChek calibration methodology provides ongoing verification of production calibration standards. This ensures consistent and repeatable accuracy performance within ±3 sigma of published specifications. No other flow control company offers the same guarantee.



Digital model 8261 products have an accuracy of ±1% of setpoint, while the analog model 8260 has an accuracy of ±1% full scale. (Accuracy chart reflects primary standard calibration.)

Model description

8260	Analog control	Analog interface
8261 MultiFlo	Digital control	Analog and RS485 interfaces

See the SDS Series datasheet for low vapor pressure products.

24/7 service and support

Celerity is unmatched in the industry for service and support. We have worldwide service locations with calibration, application support, and repair capabilities, operating 24 hours a day, 7 days a week. Celerity's website also provides updated application and technical support.

Visit us at www.celerity.net.

Warranty

- 3 year standard warranty
- Extended warranty option available

8260 Series Miniature Premium Mass Flow Controllers/Meters

Performance

Settling time (0 to 100% full scale)	
Fast start	≤ 1.0 sec (per SEMI E17-91)
Soft start	Response type T (see chart)
Accuracy (±3σ full scale):	
Model 8260	±1% full scale
Model 8261 series:	±0.35% full scale < 35% full scale ±1% setpoint > 35% full sacle
Repeatability	±0.15% full scale
Linearity	±0.5% full scale
Inlet pressure coefficient	0.0025% per psi (N_2)
Ambient temp. coefficient:	
Zero	< 0.05% full scale per °C
Span	< 0.1% full scale per °C
Leak integrity	1 x 10^{-11} atm-cc/sec (He)
Automatic zero	Optional

Operating limits

Standard flow range	3 sccm to 30 slm (N_2 equivalent)
Control range (full scale)	2-100%
Valve leak rate	≤ 1% full scale
Gases	Complete range
Ambient temp. range	0-50°C (32-122°F)
Max. pressure	35 kg/cm^2 (500 psi)
Proof pressure	105 kg/cm^2 (1,500 psi)
Pressure differential range	50 torr to 50 psid
Warm-up period	30 minutes
Mounting position	Any position
Valve	Normally closed or normally open solenoid

Electrical characteristics

Input/Output signal:	
Setpoint input	0-5 VDC linearly proportional to required flow
Output monitor	0-5 VDC linearly proportional to flow rate
Valve off external	TTL signal
Auto shut-off	Setpoint <2% full scale commands valve off
Power input	+15 VDC (100 mA max.), -15 VDC (200 mA max.)
Power consumption	4.5 watts maximum
Mating connector	9 pin "D" AMP745182-2 or equivalent

Mechanical characteristics

Surface finish	4µ inch Ra
Fittings	1/4" VCR® equivalent, downported C, or W seals
Valve position	Downstream/upstream option
Materials:	
Wetted components	316L SS/Duplex SS (per SEMI Spec. Doc. #2249A)
Weight	0.98 kg (2.10 lbs)

Calibration references

Traceability	National Institute of Standards and Technology (N.I.S.T.)
Standard temperature and pressure	0°C and 760 mm Hg

Specifications and features are subject to change without notice.

All specifications reflect nitrogen calibration using Molbloc/Molbox™ transfer standards.

Calibration by primary standards and surrogate gases is available as an additional charge option.

CrossChek™ calibration methodology maintains SPC-verified calibration accuracy with ±3σ limit (99.7% confidence level).

8260 Series Product Configuration

C	8260	High Purity, Metal Seals, Mini-style, Analog Interface (Select Analog Connector Below)
M		High Purity, Metal Seals, Mini-style, Analog Interface (Select Analog Connector Below)
C	8261C	High Purity, Metal Seals, Mini-style, Configurable MultiFlo, Analog Interface (Select Analog Connector Below)
M		High Purity, Metal Seals, Mini-style, Configurable MultiFlo, Analog Interface (Select Analog Connector Below)
C	8261	High Purity, Metal Seals, Mini-style, RS485 Digital and Analog Interface (Select Analog Connector Below)
M		High Purity, Metal Seals, Mini-style, RS485 Digital and Analog Interface (Select Analog Connector Below)

A	Auto Shut-off
X	No Auto Shut-off

F	Fast Start < 1 Second Response
S	5 Second Linear Soft Start
T	6-10 Second Soft Start
V	10-15 Second Soft Start
X	No Valve (Mass Flow Meter)

===>	===>	Specify Pre-programmed Gas and Full Scale Range (example: Argon="0004" and 30 sccm="030C")
SC10	010C	Configurable MultiFlo. 3-10 sccm N_2 Equivalent
SC11	030C	Configurable MultiFlo. 11-30 sccm N_2 Equivalent
SC12	090C	Configurable MultiFlo. 31-90 sccm N_2 Equivalent
SC13	250C	Configurable MultiFlo. 91-250 sccm N_2 Equivalent
SC14	750C	Configurable MultiFlo. 251-750 sccm N_2 Equivalent
SC15	002L	Configurable MultiFlo. 751-2,000 sccm N_2 Equivalent
SC16	006L	Configurable MultiFlo. 2,001-6,000 sccm N_2 Equivalent
SC17	015L	Configurable MultiFlo. 6,001-15,000 sccm N_2 Equivalent
SC18	030L	Configurable MultiFlo. 15,001-30,000 sccm N_2 Equivalent

4R	1/4" VCR
DW	Downported—W Fitting
DB	Downported—C Seal

H0V	Horizontal or Vertical Mounting Attitude (Standard)
H0S	Horizontal or Side

A	Atmospheric Downstream Pressure
V	Vacuum Downstream Pressure

H	20 Pin "Honda" Cable Adapter (Area) 0-5 VDC
J	9 Pin "D" Cable Adapter Pin 1 to 1 (Unit UDJ9) 0-5 VDC
M	9 Pin "D" Connector (UDM9) 0-5 VDC
O	9 Pin "D" Pigtail Cable UDS with Interconnected Grounds (UDO9)
Q	9 Pin "D" Connector UDS with Interconnected Grounds (UDQ9)
S	9 Pin "D" Connector (Unit UDS9) 0-5 VDC (8261 only)
W	9 Pin "D" Cable Adapter UDS with Interconnected Grounds (UDW)
Y	9 Pin "D" Cable Adapter UDM Pin-out (UDY) 0-5 VDC
Z	9 Pin "D" Pigtail Cable UDM Pin-out (UDZ9) 0-5 VDC

XXXX	Customer Special Request (CSR) Consult Factory

O	Normally Open
C	Normally Closed (Standard)
X	No Valve (Mass Flow Meter)

S	Standard (Valve Downstream)
B	Buffered (Valve Upstream) (8260 only)
X	No Valve (Mass Flow Meter)

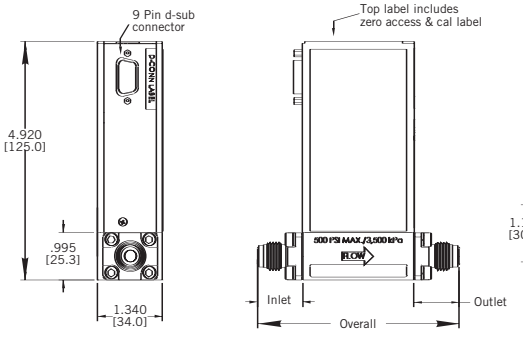
A	Auto-Zero Enabled
X	Auto-Zero Disabled

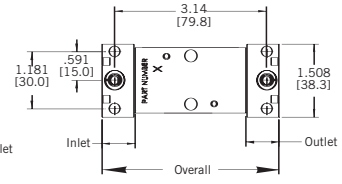
04E	4µ inch Ra Finish (Standard)

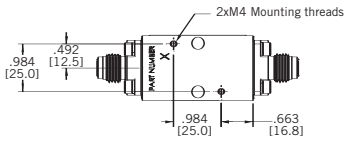
00	0°C Reference Calibration (Standard)
XX	Custom Reference Calibration (20°C=20)

Example:

C	8260	A	F	0013	100C	4R	H0V	A	M	XXXX	C	S	X	04E	00







Fitting type	Overall	Inlet	Outlet
1/4" VCR Male	4.17 in./105.9 mm	0.94 in./23.9 mm	0.94 in./23.9 mm
Downported 'C' Bore	3.66 in./93.0 mm	0.68 in./17.3 mm	0.68 in./17.3 mm
Downported 'W'	3.66 in./93.0 mm	0.68 in./17.3 mm	0.68 in./17.3 mm

X.XX = dimensions in inches
[XX.X] = dimensions in millimeters

NOTE: For dimension drawings of products not listed here, please visit our website at www.celerity.net. Click on "products & solutions", on "technical data", on "Unit MFC drawings", then select the product drawing file to download the pdf.

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UNIT

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