BROOKS® INSTRUMENT

Beyond Measure

AMF Series

Digital, Ultra-Compact Gas Mass Flow Controllers & Meters

The AMF Series (Advanced Mass Flow) sets a new benchmark in compact, high-performance gas flow control. With a footprint as small as a Post-it® note, AMF delivers advanced diagnostics, enabling predictive maintenance, Ethernet-native communications, and multi-gas configurability in a package designed for space-limited systems. Optimized for lower flow ranges and precise stability, it provides an extremely low leak rate, wide turndown capability, and robust digital connectivity to ensure consistent process quality and uptime. Simplified ordering bundles reduce BOM complexity, adding measurable value for OEMs and end users alike. The AMF Series delivers all the performance you need—without the trade-offs of traditional compact MFCs.

Features	Benefits
Compact, High Performance Design	1" x 3" x 3" small footprint digital MFC designed to fit inside compact gas cabinets without reduction in performance
Superior Valve Technology	Minimum leak-by, wide turndown, fast response and superior corrosion resistant materials reduces overall gas panel cost and increases throughput
Industry-Leading Long-Term Sensor Stability	Increased system uptime and reduced cost of ownership by reducing maintenance and eliminating periodic recipe adjustments and/or recalibrations
Alarms and Diagnostics	Integrated web-based interface and EtherNet/IP communications allow for simple alarm configuration and diagnostics to ensure device is operating within user-specified limits for high process yield and uptime
Pre-Configured Enhancement Bundles	Feature bundles including common upgrades and add-ons to simplify ordering
User Accessible Service Port	Universal USB-C service port allows for simplified installation, start-up, troubleshooting, access to diagnostics and calibration for maximum uptime

Product Specifications

	AMF
Performance	
Full Scale Flow Range (N_2, Eq. 0°C Ref)	0.005 - 27 slpm
Flow Accuracy—17025 Certified Devices (Includes linearity, excludes calibration system measurement uncertainty per SEMI E69)[1]	±0.6% of S.P. (20 - 100% F.S.), ±0.12% F.S. (<20% F.S.)
Flow Accuracy (Includes linearity and calibration system measurement uncertainty per SEMI E69)[1]	±1% of S.P. (20 - 100% F.S.), ±0.2% of F.S. (<20% F.S.)
Control Range (Turndown Ratio)	0.1-100% of Full Scale; 1000:1
Repeatability & Reproducibility	0.25% of S.P.
Linearity	Included in accuracy
Response Time[2]	Step changes ≥5% of F.S.: 0.9 seconds Step changes <5% of F.S.: 5 seconds
Zero Stability	<0.2% F.S. per year
Temperature Coefficient	Zero: <0.03% of F.S. per °C (N_2) Span: <0.05% of S.P. per °C (N_2)
Pressure Coefficient	±0.03% per psi
Attitude Sensitivity	Attitude insensitive when zeroed in new orientation
Ratings	
Operating Temperature Range	0 - 65°C (149°F)
Minimum Pressure Differential (Controllers)	0.5 psid (30 mbar)
Maximum Pressure Differential (Controllers)	150 psid (10 bar)
Leak Integrity (External)	$1x10^{-9}$ atm. cc/sec He
Valve Shut Down (Leak-by)	Standard: <0.01% of F.S. Optional: <0.005 sccm
Maximum Operating Pressure	Controller: 150 psig (10 bar) Meter: 400 psig (27 bar)
Proof Pressure	500 psig (34 bar)
Mechanical	
Valve Type	Normally Closed, Meter
Primary Wetted Materials	316, 316L, 430FR, 17-7PH Stainless Steel, and FKM fluoroelastomers
Diagnostics	
Status Lights	Network, Module
Alarms	See communications manuals for list.
Diagnostic / Service Port	USB Type C

[1] Accuracy at calibration conditions; accuracy spec valid across the full control range.
[2] For F.S. flow rates of 50 sccm or less, response time spec is 2 seconds for step changes ≥5% of F.S.

	EtherNet/IP™
Communication Protocol	
Electrical Connection	1 x 5 pin M8 / 2 x RJ45
Power Max. / Purge	From +14 Vdc to +27 Vdc
Power Requirements Watts, Max.	Meter: 2.2W Controller: 8.5W
Web-based Network Settings Interface	The Default Network Address is 192.168.1.100 EtherNet/IP: Default Network Configuration is DHCP

Product Specifications

Optimize the performance of your MFC by choosing a pre-configured Performance or Premium bundle for simplified ordering. The individual options in the table below are also available separately - simply select the appropriate individual option or enhancement bundle option code when configuring your model code.

Enhancement Bundles

	Base Model	Performance[3]	Premium[4]
Materials of Construction	Welded Sensor	Welded Sensor	
Turndown	250:1	500:1	1000:1
Configured Gas Pages[4]	1	4	4
Valve Shut Off	<0.01% F.S.	<0.005 sccm	<0.005 sccm
FDA/USP Class VI/ADI-Free Elastomers and Certificate	No	No	Yes
2.1 Material Certificate	No	No	Yes
International Calibration Certificate	No	No	Yes

[3] Each bundle can be configured with custom or biotech gases (Air, CO_2, N_2 & O_2); see model code for details
[4] Each bundle can be configured with up to 6 gas pages; see model code for details

Product Approvals Overview

Mark	Agency	Certification	Applicable Standard	Details
CE	CE	EMC Directive 2014/30/EU Directive 2011/65/EU	EN:61326-1:2013	EMC RoHS

Additional Certification and Service Options

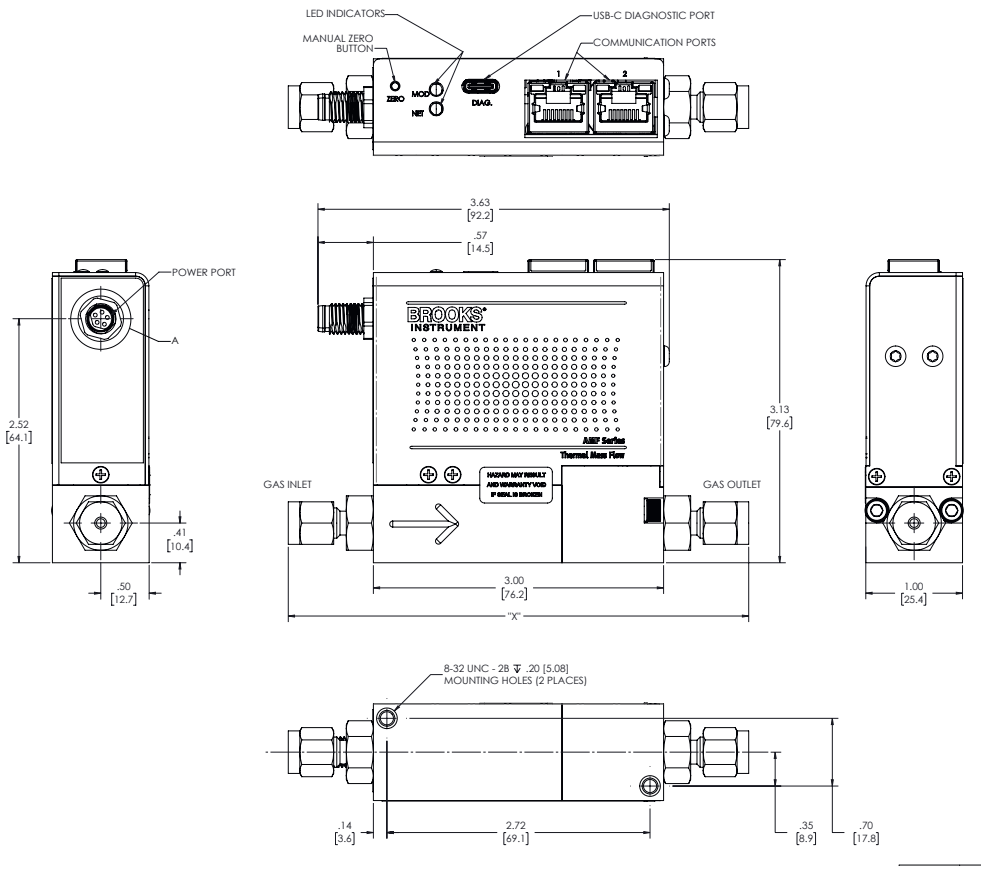
Material Compliance Certifications
Material Certificate 2.1
Material Certificate 2.2
Material Certificate 3.1
Declaration of Compliance 2.1 - O-ring USP Class VI / ADI Free
Declaration of Compliance 2.1 - Elastomer USP Class VI / ADI Free
Declaration of Compliance 2.1 - Elastomer Cure Date / Shelf Life
Declaration of Compliance 2.1 - Surface Roughness

Metrology Certifications
Declaration of Compliance 2.1 - Calibration
Inspection Certificate 3.1 - NIST Calibration
Declaration of Compliance 3.1 - International Certificate of Calibration
ISO 17025 Certification

Additional Services and Certifications
Certificate of Compliance 2.1
Declaration of Compliance 2.1 - Oxygen Cleaning Service
Declaration of Compliance 2.2 - Pressure Test
Certificate of Origin

Product Dimensions

AMF Dimensions

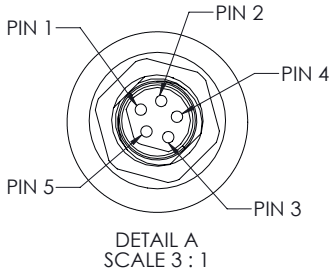


Fittings - Dimension "X"

Fitting	mm / inch
1/8" Tube Compression	120.9 / 4.76 *
	95.5 / 3.76 **
1/4" Tube Compression	126 / 4.96 *
	95.5 / 3.76 **
3/8" Tube Compression	129 / 5.08 *
	95.5 / 3.76 **
3mm Tube Compression	124.8 / 4.91 *
	98.9 / 3.89 **
6mm Tube Compression	126.8 / 4.99 *
	95.7 / 3.77 **
10mm Tube Compression	129.8 / 5.11 *
	95.6 / 3.76 **
1/4" VCR	122.2 / 4.81
1/4" VCO	122 / 4.8
1/4" NPT	124.92 / 4.92

* With nut hand tight

** Length from tube locating shoulder fitting



Pinout Table

Pin	Wire Color	Function
1	Brown	V+
2	White	NC
3	Blue	Common
4	Black	NC
5	Grey	NC

Model Code

Code Description	Code Option	Option Description
I. Base Model Numbers	AMF	Advanced Mass Flow
II. Function	M	Meter
	C	Controller
III. Body Size	C	Compact
IV. I/O Communication	7	EtherNET/IP
V. Enclosure / Finish	S	Standard IP40
VI. Mechanical Connection	1A	Without adapters, 7/16" - 20 UNF
	1B	1/4" tube compression
	1C	1/8" tube compression
	1D	3/8" tube compression
	1E	1/4" VCR
	1F	1/4" VCO
	1G	1/4" NPT
	1H	6mm tube compression
	1J	10mm tube compression
	1Y	3mm tube compression
VII. O-Ring Material	A	FKM
	J	FDA/USP Class VI and ADI Free - FKM
VIII. Valve Seat	A	None (meter only)
	B	FKM
	J	FDA/USP Class VI and ADI Free - FKM
IX. Valve Type / Turndown	0	None (meter only)
	1	Normally closed (<0.01% F.S. leak rate / 250:1 turndown)[5]
	2	Normally closed (<0.005 sccm leak rate / 500:1 turndown)
	3	Normally closed (<0.005 sccm leak rate / 1000:1 turndown)
X. Bypass Size Max Flow[6]	A	None
	C	10 ccm
	K	55 ccm
	L	80 ccm
	M	120 ccm
	N	170 ccm
	P	230 ccm
	Q	310 ccm
	R	410 ccm
	S	590 ccm
	T	855 ccm
	U	1225 ccm
	V	1815 ccm
	W	2915 ccm
	X	4500 ccm
	2	7000 ccm
	3	10475 ccm
	4	17500 ccm
	5	27000 ccm
XI. Orifice Size	A	No orifice
	B	0.0013"
	C	0.002"
	D	0.003"
	E	0.004"
	F	0.0055"
	G	0.007"
	H	0.01"
	J	0.014"
	K	0.02"
	L	0.0292"
	M	0.042"
	N	0.0625"
	P	0.0938"

[5] For F.S flow rates of 50 sccm or less, leak specification is 0.005 sccm

[6] Nitrogen equivalent 0°C sccm flow rate

Model Code

Code Description	Code Option	Option Description
XII. Enhancement Bundle[7]	A	Standard (none)
	Q	Performance Bundle with Custom Gas Selection[8]
	R	Premium Bundle with Custom Gas Selection[8]
	S	Biotech Performance Bundle[9]
	T	Biotech Premium Bundle[9]
XIII. Gas Pages	1	Standard Single Calibration
	2	2 Gas Pages
	3	3 Gas Pages
	4	4 Gas Pages
	5	5 Gas Pages
	6	6 Gas Pages
XIV. OEM Code	AA	Standard
XV. Certifications	1	Safe Area
XVI. Model Revision Level	A	Initial Release

[7] See "Enhancement Bundles" section for included features and certs.
[8] Can select 1-6 gas pages with any available gas.
[9] Limited to 4, 5, or 6 gas pages (Gas pages 1-4: Air, CO_2, N_2 & O_2)

Sample Model Code

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
AMF	C	C	7	S	1A	A	B	1	C	A	A	1	AA	1	A

Service and Support

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required. For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

CUSTOMER SEMINARS AND TRAINING

Brooks Instrument can provide customer seminars and dedicated training to engineers, end users, and maintenance persons. Please contact your nearest sales representative for more details. Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

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