

BROOKS SMART (DMFC) MASS FLOW METERS AND CONTROLLERS



Brooks Smart (DMFC) Mass Flow Meters and Mass Flow Controllers

Benefits:

- Provides mass flow measurement and control of gases from 0.003 l/min. full scale to more than 30,000 l/min.
- High accuracy, repeatability and immunity to temperature changes improve performance of your process.
- Provided with adaptive control algorithm to ensure fast response, robust and stable control of gas flow applications even under varying process conditions.
- Long term reliability, negligible zero drift ensures reliable measurement and control.
- Fully Customer programmable PID control, I/O's and alarms.
- Microprocessor based Smart electronics.
- Remote selectable Analogue I/O's and digital communication capabilities.
- With digital communications you can operate easily with most Windows based applications which support DDE.
- Thousands of Brooks Smart Mass Flow Meters and Controllers have been installed and operate successfully in a variety of industries under various process conditions.
- Designed, developed, manufactured and supplied by the first ISO-9001 Quality Certified M&C company in the world: Brooks Instrument.



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INTRODUCTION

Brooks Instrument announces the release of the second generation of their Smart Mass Flow Products, models: 5850S - 5864S. The Smart Mass Flow Meters and Controllers (DMFC) are now standard available with adaptive control algorithm to ensure robust and fast control even under varying process conditions. Unsurpassed control settling time, no dead time and other features and enhanced specifications, which are listed in this new product data sheet.

Thousands of Brooks Smart Mass Flow Meters and Controllers (DMFC) have been installed and operate successfully in a variety of industries, including Petrochemical, Food, Semiconductor, Universities and Institutes.

Our commitment to continuous improvement in terms of specification, safety standards and application flexibility, make these Brooks Smart Mass Flow Products leaders throughout industry. Brooks Instrument excels in terms of performance, features, reliability, serviceability and overall perceived quality. The Primary standard calibration equipment at Brooks Instrument to calibrate all of our Smart Mass Flow Products, is certified by our local Weights and Measures Authorities and is traceable to the relevant international standards. This calibration equipment is also available from Brooks. More details wanted? Ask for our Product Data Sheet 1060.

Various calibration gases are available at Brooks Instrument to simulate difficult process applications, conditions from atmospheric to 300 bar pressure are possible. From the beginning, the Smart Mass Flow Products were designed with user safety as one of the most important criteria. The Smart electronics are protected against non-authorized handling.

FIELD PROVEN PERFORMANCE AND RELIABILITY

- Accuracy: $\pm 0.7\%$ of rate and $\pm 0.2\%$ f.s. or $\pm 0.5\%$ of rate and $\pm 0.1\%$ f.s. on request.
- Microprocessor-based, smart electronics.
- Robust adaptive control provides rapid response to varying process conditions, including temperature and pressure changes.
- Analogue I/O and digital communication; via RS-232 point-to-point transmission or RS-485 multi-point interconnection.
- Continuous self-diagnostics for maximum reliability.
- CE certified.
- Can be certified for use in Zone 2 environment according to NEN 3410 and NEN-EN 50014.
- More than 200.000 previous generation models installed & operational worldwide.

FLEXIBILITY

- Designed for easy installation
- Wide range power supply
- Selectable analogue setpoint input/flowrate output signals
- Totalizer function
- Configuration pin compatible with the Brooks "E" and "I" series
- Digital communication up to 38k4 Baud transmission speed selectable
- Self diagnostics and alarm functions via hardware and/or software
- Up to ten (10) sets of different calibration curves programmable
- Wide flow & pressure range

The models are:

Brooks Smart Mass Flow Products				
Mass Flow Controller	Mass Flow Meter	Flow Ranges		
Model:	Model:	Min. f.s.	Max. f.s.	Unit [▲]
5850 S	5860 S	0.003	30	l _n /min.
5851 S	5861 S	20	100	l _n /min.
5853 S	5863 S	100	1000	l _n /min.
	5864 S	18	2160	m ³ _n /h

[▲] Referring to normal conditions: i.e. 0 °C, 1013.25 mbar

PERFORMANCE

Digital communication, via RS485 or RS232, provides access to all of the Smart DMFC's functions, including:

- Accurate Mass Flow measurement and setpoint regulation (controller only), as a percentage and in selectable engineering units
- Flow totalizer
- Temperature
- Operational settings
 - ⇒ Calibration (storage of up to 10 cal. curves)
 - ⇒ PID control setting
 - fast response
 - 'traditional' soft start
 - linear ramp-up/down characteristic
 - adaptive valve control
 - ⇒ Adaptive filtering for signal flow component
- Alarms
 - ⇒ Self-diagnostic
 - EEPROM error
 - database error
 - analogue output error
 - ⇒ Out-of-range indications for
 - setpoint
 - flow
 - valve
 - analogue output
 - ⇒ Environmental errors
 - no gas flow detected
 - power supply outside spec. range
 - ambient temp. outside spec. range
 - high and low flow alarms

HIGH PRESSURE APPLICATIONS

The Brooks models 5850S Smart Mass Flow Controllers, 5860S and 5861S Smart Mass Flow Meters can be used for up to 300 bar (4500 PSI) high pressure applications.

The full scale flow limits @ 300 bar (4500 PSI) operation pressure of the model 5850S Smart Mass Flow Controller are from 100 ml/min f.s. to 10 l/min f.s. (Nitrogen gas equivalent).

These conditions are in combination with an allowable maximum pressure difference of 100 bar (1500 PSI) across the instrument. Other ranges and limits are available on request.

SERVICE ABILITY

The Brooks Smart Mass Flow Meters and Controllers perform continuous self diagnostic routines that immediately identify any problem in the device, the process or the environment. The process variables gas flow, temperature and also environmental variables like sensor, control valve and power supply values are continuously monitored. An alarm situation in detail can be visualised on a screen (by means of digital communication). It is always available as a open collector output signal.

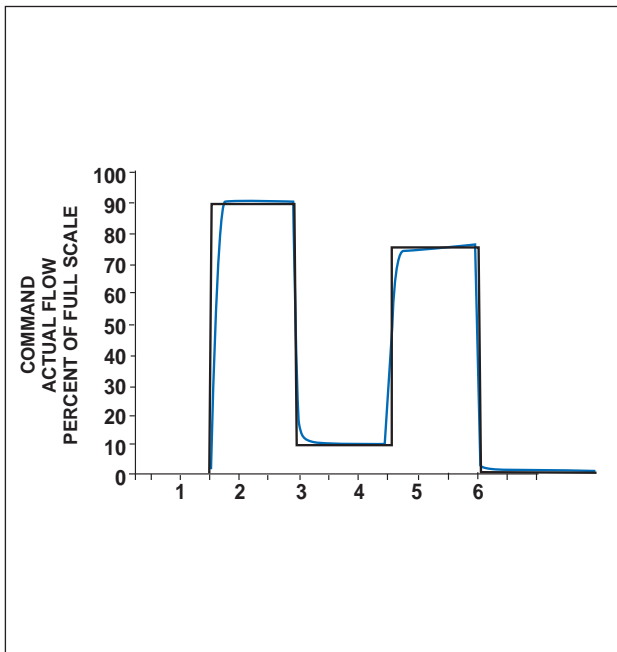


Figure 1: The Response Performance of the Brooks Smart Mass Flow Controllers

BROOKS SMART MASS FLOW CONTROLLERS FAST RESPONSE PERFORMANCE

The curves in Figure 1 depict the M.F.C. output signal and actual transitional flow to steady-state when gas flow enters into a process chamber, under a step response command condition.

Adaptive (optimized) PID control, including fast response to 0.2 sec. and linear ramp-up and/or ramp-down control characteristics.

SELECTABLE VALVE OVERRIDE

Gas handling safety practices must be given consideration in many processes. Since M.F.C.'s are an integral part of many gas systems, it was mandatory to include these practices in the Brooks Smart Mass Flow Controllers design standards.

Independent of command setpoint values the control valve can be fully opened or closed via the valve override feature by simply providing a voltage signal through the interconnection wiring or through digital communication (analogue input overrides digital). This is useful for shutdown or system purge requirements.

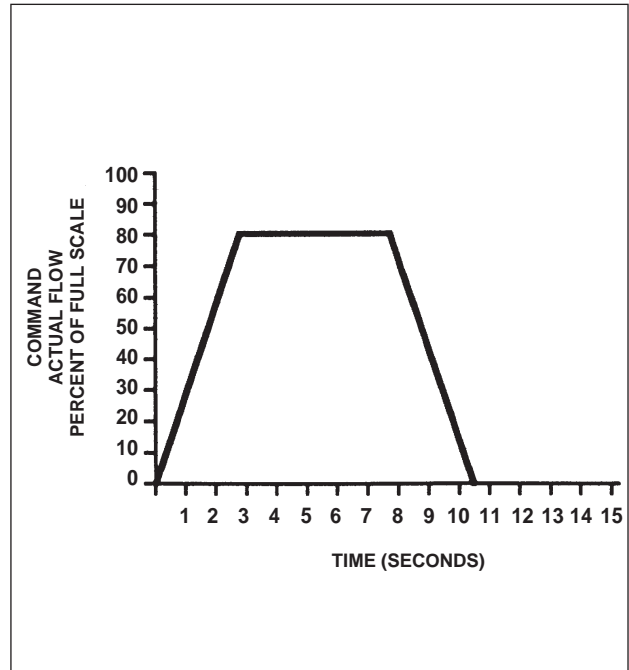


Figure 2: Linear ramp-up and/or ramp-down up from 200% second down to 0.5% per second setpoint change

SELECTABLE SOFT START

Processes requiring injection of gases can be adversely affected by excessive initial gas flow. This abrupt injection of gas can result in process damage from explosion or initial pressure impact. These problems are virtually eliminated with the soft start feature.

Traditional soft start or linear ramp up and/or ramp down (see figure 2) can be factory selected or are available via the Operator Interface.

Linear ramping is adjustable from 200% per second down to 0.5% per second setpoint change. (To be specified at ordering).

AVAILABLE OPTIONS

- The Brooks Smart Mass Flow Meters and Controllers (DMFC) are always available with analogue I/O setting. The models 0152/0154 offer a power supply, read out, control independently or in blending mode and other features. More details wanted? Ask for our Product Data Sheet 0152/0154.

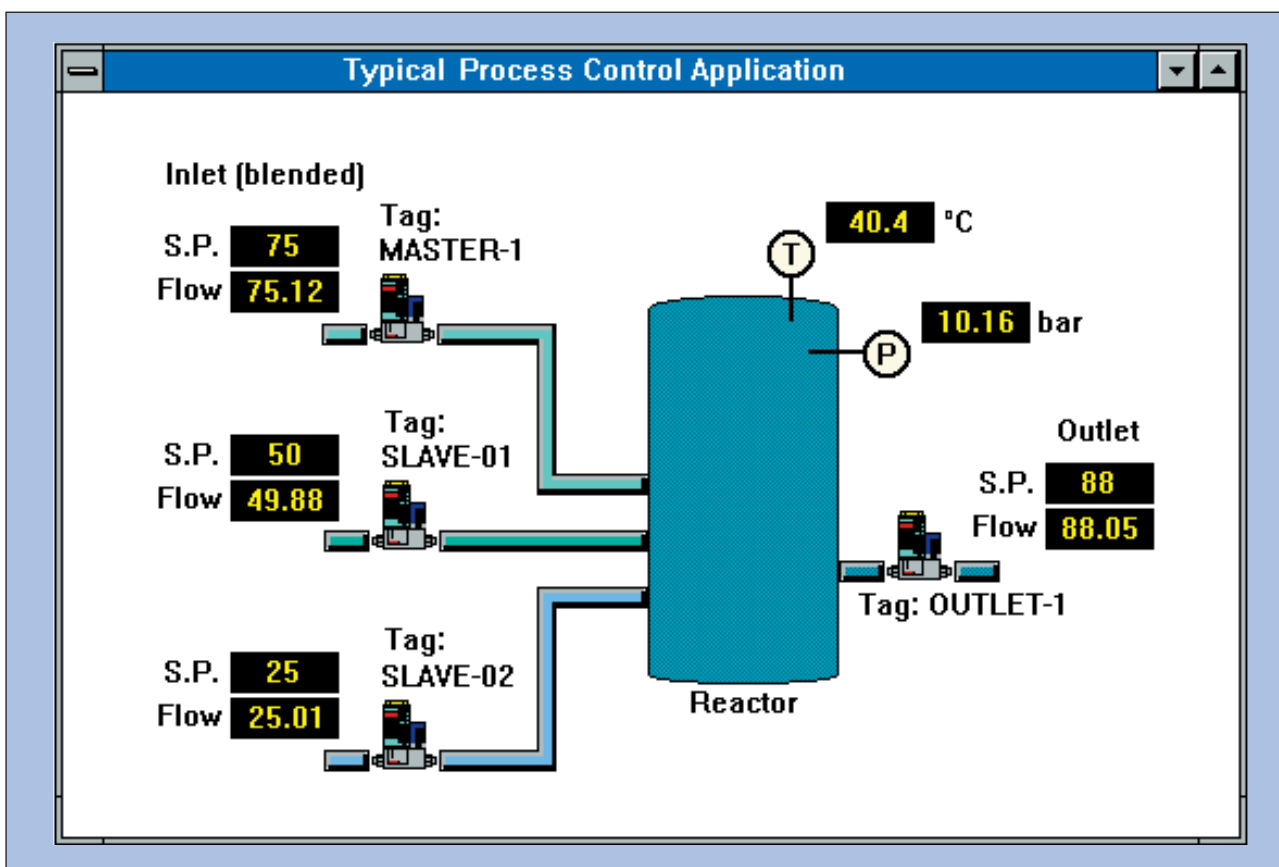


- Standard also suitable for digital communication (either via RS-232 or RS-485) which allows you to also use our Smart Control, model 0160, for user interface function and (re)configuration purposes of the Smart Mass Flow Products.

More details wanted? Ask for our Product Data Sheet 0160.

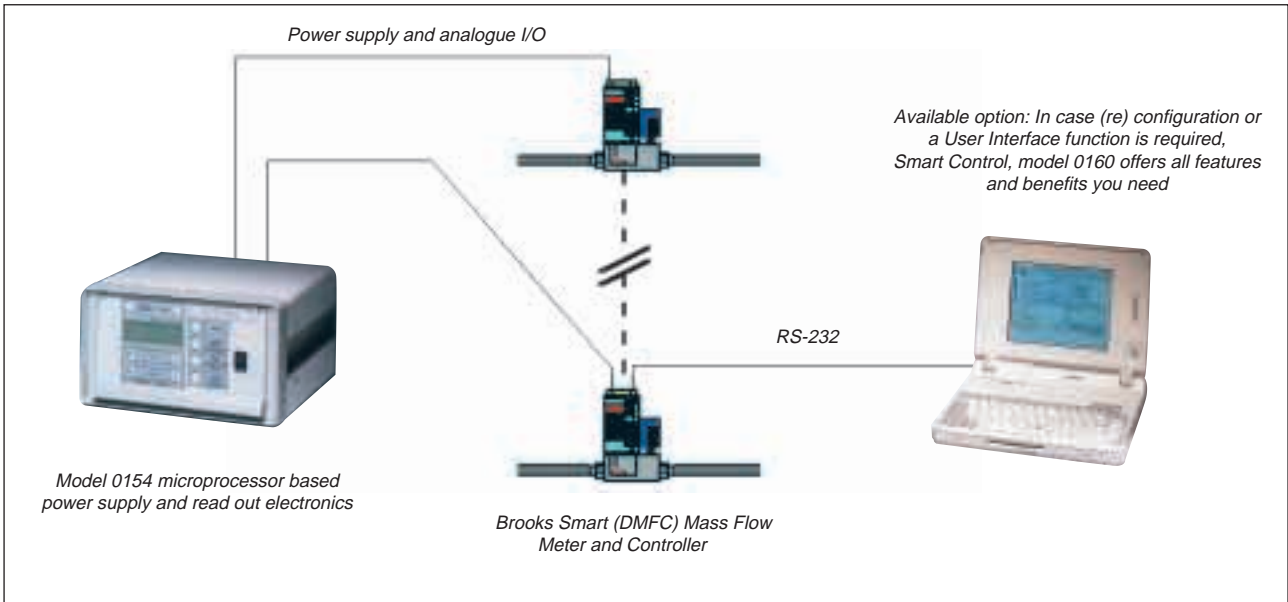
- The Smart DDE, model 0162 is a powerful Dynamic Data Exchange software product from Brooks Instrument. It allows you to make bi-directional links between your Windows-based applications and the Brooks Smart Mass Flow Products.

More details wanted? Ask for our Product Data Sheet 0162.



Any Windows based programs can be used to link information via Smart DDE, model 0162 bi-directionally to the Brooks Smart Mass Flow Products

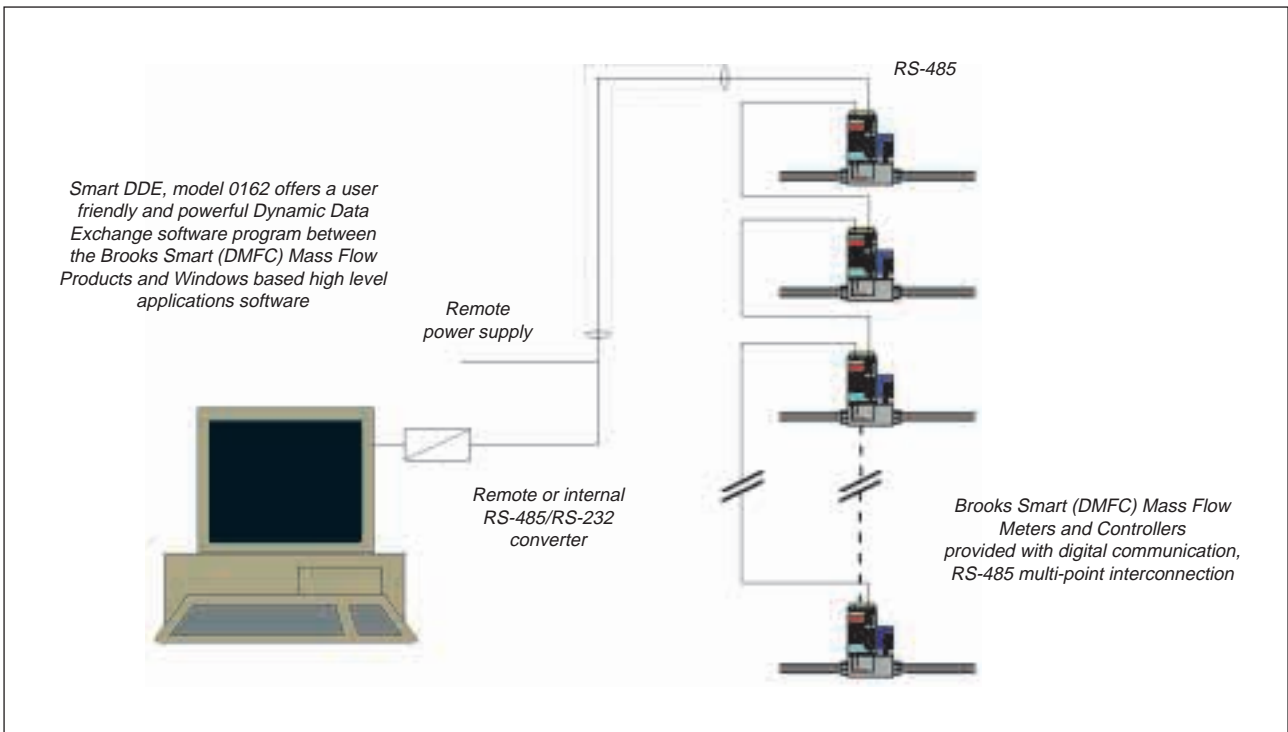
TYPICAL INSTALLATIONS



Brooks Smart (DMFC) Mass Flow Meters and Controllers multi-channel, analogue I/O's operated by model 0154.
 The model 0154 microprocessor based electronics, provides power supply and analogue I/O to the DMFC's.

(In addition, a number of other functions are standard available). Please note that digital communication via RS-232 point-to-point transmission or RS-485 multi-point interconnection are available in case of (re) configuration, or other user interface purposes.

TYPICAL INSTALLATIONS



Multi-channel, p.c. system operated configuration with virtually unlimited number of connected Brooks Smart (DMFC) Mass Flow Meters and Controllers. A (remote) power supply and multi-point

interconnection can drive up to 32 devices per COM port. With help of our Smart DDE, COM 1...COM 9 are selectable.

PERFORMANCE SPECIFICATIONS

Flow Accuracy ± 0.7% of rate and ± 0.2% f.s. at calibration conditions
or ± 0.5% of rate and ± 0.1% f.s. at calibration conditions, on request

Repeatability ± 0.25% of rate

Rangeability 50:1 (within specified accuracy)

Controllability 100:1 (i.e. total operating range)

Stability Less than ± 0.5% of rate per year

Temperature Effect Less than 0.015%/°C of rate shift from original calibration over 0 - 70°C

PHYSICAL SPECIFICATIONS

Materials of Construction Wetted parts stainless steel with Viton®, Buna-N®, PTFE/Kalrez® or EPDM seals or elastomers

Mechanical Connections NPT(F), Tube compression, VCR and VCO Option: Flanged DIN- or ANSI type available; (please refer to ordering information on page 10)

Electrical Connections 15-pins D-type connector (goldplated contacts) with 3 m or 6 m cable

SPECIFICATIONS

- Certification*
- CE certified
 - Can be certified for use in Zone 2 environment according to the NEN 3410 and NEN-EN 50014. To be specified at ordering.

Ranges and pressure ratings

Brooks Smart Mass Flow Products					
Mass Flow Controller	Mass Flow Meter	Flow Ranges			Pressure Rating
Model:	Model:	Min. f.s.	Max. f.s.	Unit	
5850 S	5860 S	0.003	30	l _N /min.	100/300 bar (1500/4500 PSI)
5851 S	5861 S	20	100	l _N /min.	100/300* bar (1500/4500 PSI)
5853 S	5863 S	100	1000	l _N /min.	100 bar (1500 PSI)
	5864 S	18	2160	m ³ /h	1 1/2" -100 bar (1500 PSI) 2"+3" -85 bar (1250 PSI) 4"+6" -70 bar (1000 PSI) 8" -50 bar (730 PSI)
* 300 bar (4500 PSI) 5861S on request					

Setpoint Input * Voltage: 0 - 5 Vdc or 1 - 5 Vdc input impedance > 2000 Ohm minimum
or : 0 - 20 mA or 4 - 20 mA 250 Ohm impedance

Analogue Outputs * Voltage: 0 - 5 Vdc or 1 - 5 Vdc 2000 Ohm
and : 0 - 20 mA or 4 - 20 mA Max loop resistance 375 Ohm

Alarm (TTL) Open Collector Output, signal grounded when activated. Max. 30 Vdc, 25 mA. Or via communication port, when used digitally.

*Digital Communication** RS-232 or RS-485* Baudrate 1200, 2400, 3600, 4800, 7200, 9600, 19k2, 38k4* (Default: RS-232, Baudrate 9600)

Power Supply Mass Flow Meters Models 5860 S, 5861 S, 5863 S and 5864 S:
+ 24 Vdc (± 10%) @ 80 mA
to + 15 Vdc (± 5%) @ 90 mA

Power Supply Mass Flow Controllers to Models 5850 S, 5851 S and 5853 S
+ 24 Vdc (± 10%) @ 140 mA
to + 15 Vdc (± 10%) @ 185 mA

Note: + and -15Vdc power supply is available on request
With valve override function actuated: the power supply specifications are:
+15 Vdc @ 285 mA or
+24 Vdc @ 370 mA

Temperature Ambient and process gas: 0-70 °C (32-158 °F).

Leak Integrity Outboard: 1 x 10⁻⁹ mbar l/sec. Helium

Security If self-diagnostics detect a failure, the alarm mode will be activated (Open Collector Output via the connector). The cause of the failure is available if the digital communication is connected. To prevent "unauthorized" setting or reranging of span or zero, these functions are only accessible via the Brooks User Interface, model 0160, or using Smart DDE, model 0162.

Warm up time < 10 minutes; 1% F.S. accuracy. Performance within specifications: 45 minutes.

Damping Damping from 0 to 10 seconds is possible for the analogue flowrate output signal(s) *

Response Standard response of the flow output signal 1 sec. Response of better than 0.2 sec. is on request.

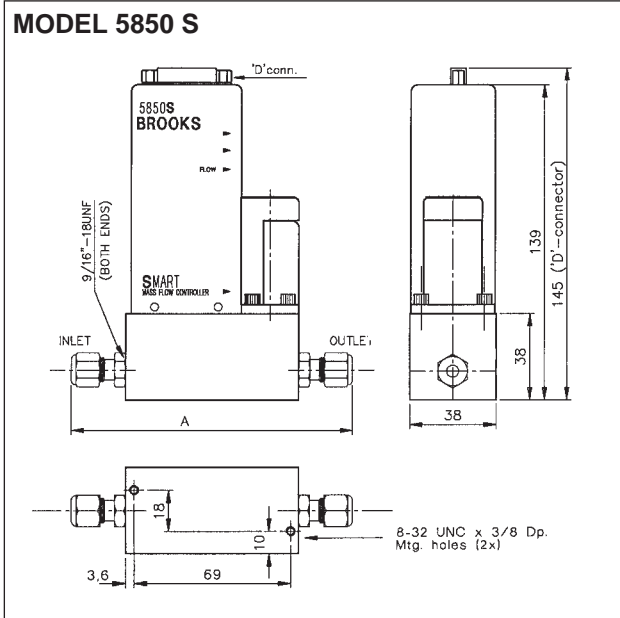
Settling Time Standard 1 sec. Settling time of better than 0.2 sec. is possible (to within 2% full scale of final value) for any command (setpoint) step; virtually without any dead time, over- or undershoot.
Model 5853S 3 sec. (1 sec. optional).

* Factory selectable: To be specified at ordering.

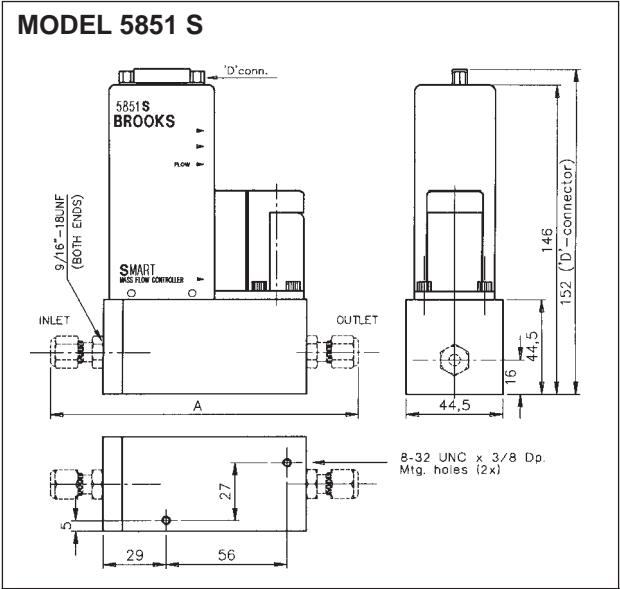
WARNING

Do not operate this instrument in excess of the specifications. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.

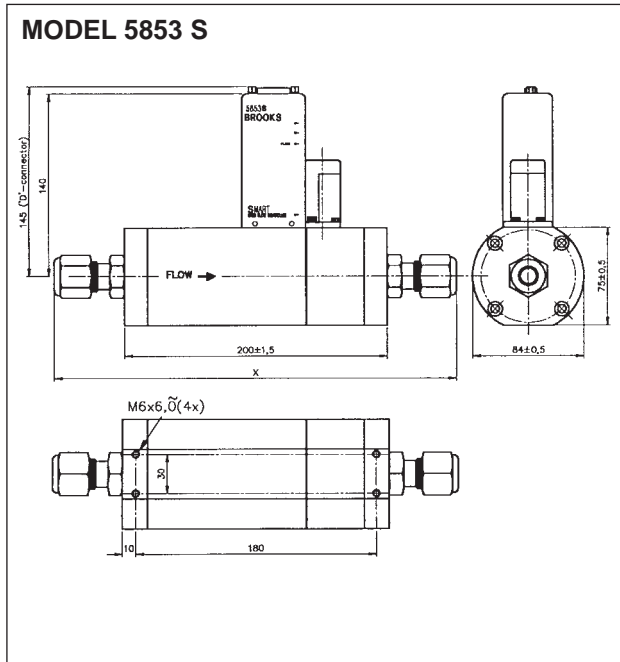
DIMENSIONAL DRAWINGS Smart Mass Flow Controllers



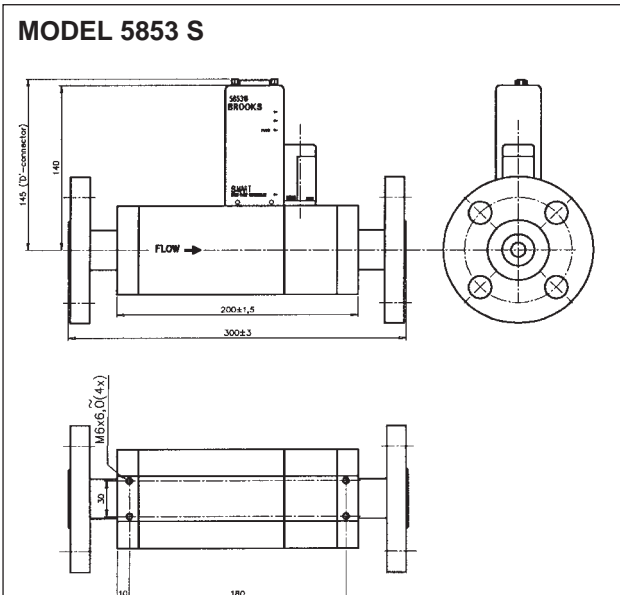
CONNECTIONS	A (mm)	inches
9/16-18 UNF	76	2.99
1/4" Tube compression	128	5.04
1/8" Tube compression	123	4.84
1/4" VCR.	124	4.88
1/4" VCO.	116	4.57
1/4" NPT	117	4.61
6 mm Tube compression	128	5.04



CONNECTIONS	A (mm)	inches
9/16-18 UNF	94	3.70
1/4" Tube compression	145	5.71
1/8" Tube compression	149	5.87
1/4" VCR.	142	5.59
1/4" VCO.	134	5.31
1/4" NPT	135	5.31
6 mm Tube compression	145	5.71
10 mm Tube compression	149	5.87

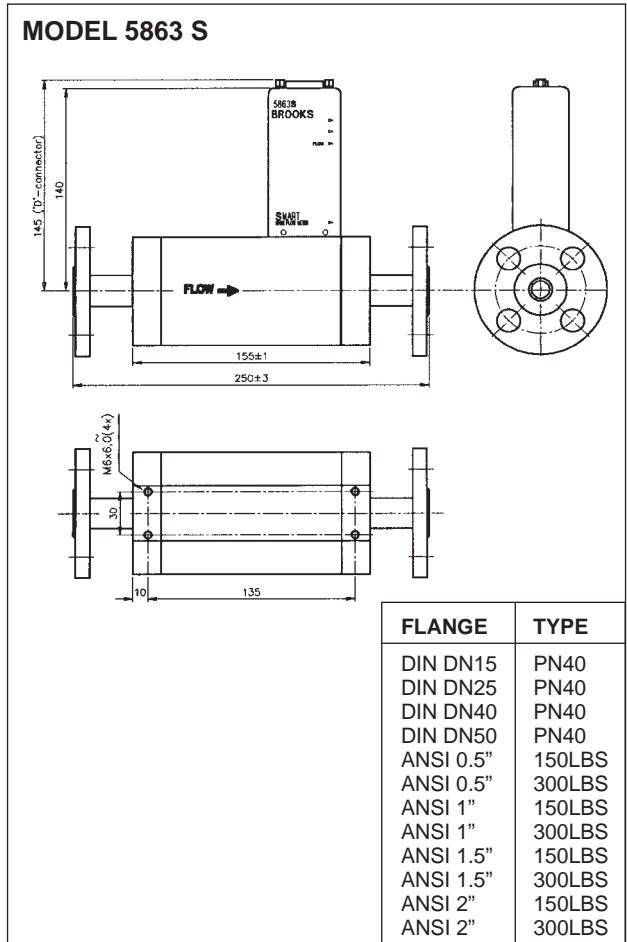
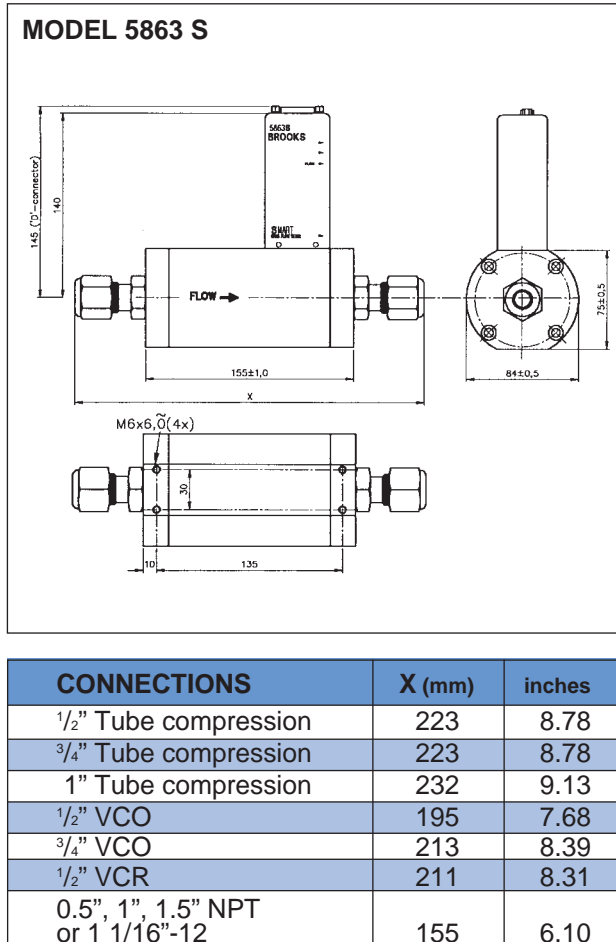
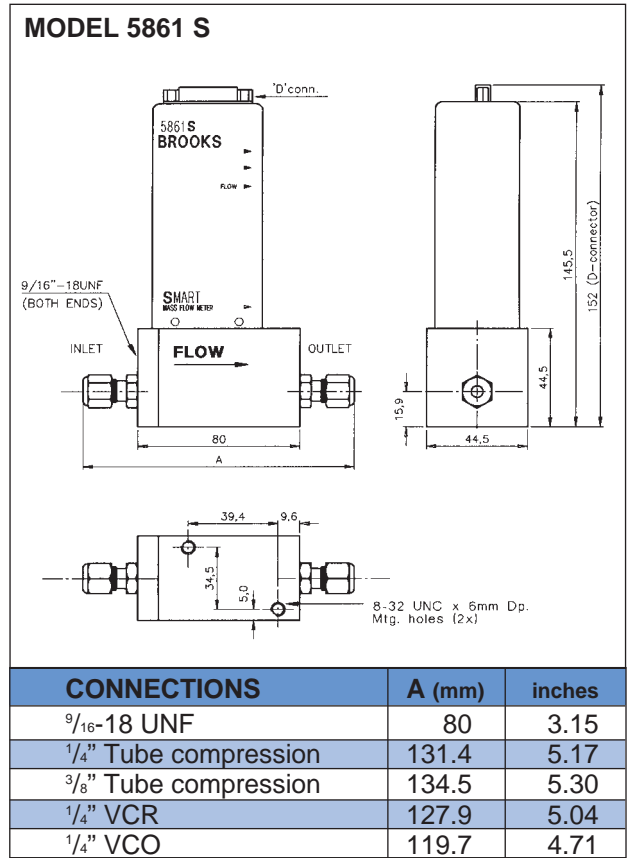
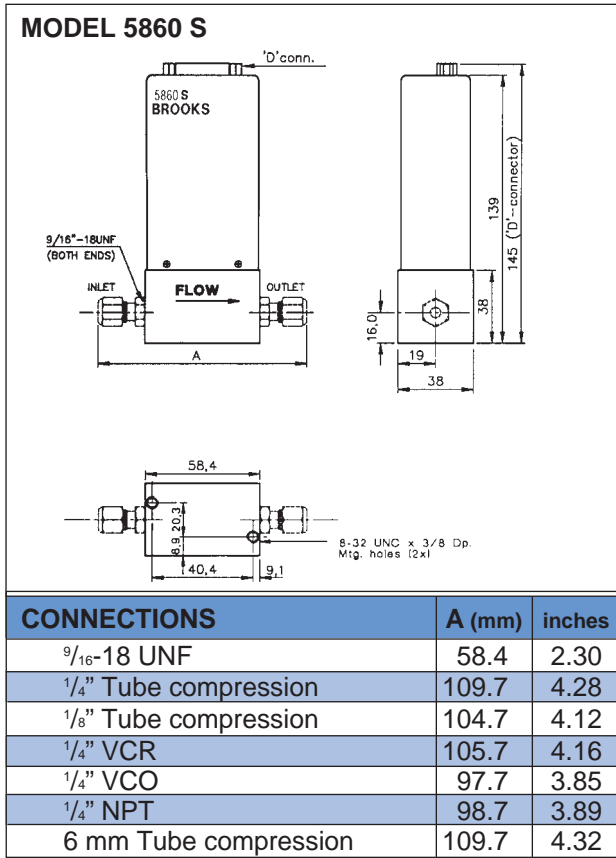


CONNECTIONS	X (mm)	inches
1/2" Tube compression	268	10.55
3/4" Tube compression	268	10.55
1" Tube compression	277	10.91
1/2" VCO	240	9.45
3/4" VCO	258	10.16
1/2" VCR	257	10.12
0.5", 1", 1.5" NPT or 1 1/16"-12	200	7.87



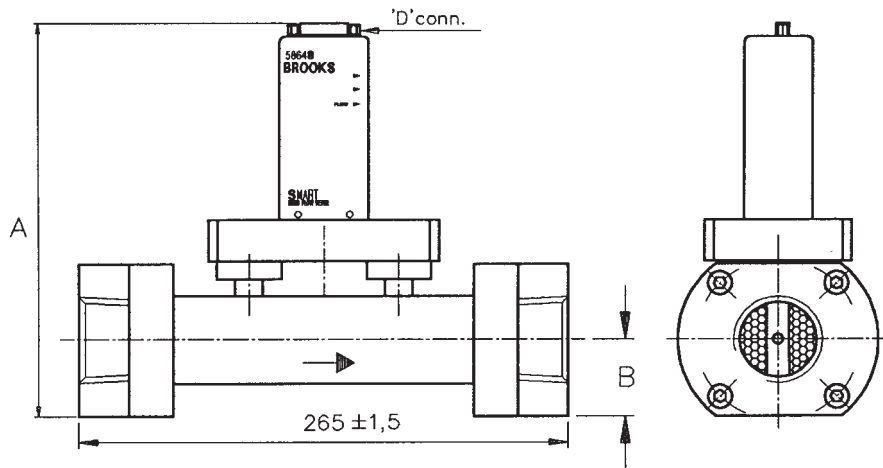
FLANGE	TYPE
DIN DN15	PN40
DIN DN25	PN40
DIN DN40	PN40
DIN DN50	PN40
ANSI 0.5"	150LBS
ANSI 0.5"	300LBS
ANSI 1"	150LBS
ANSI 1"	300LBS
ANSI 1.5"	150LBS
ANSI 1.5"	300LBS
ANSI 2"	150LBS
ANSI 2"	300LBS

DIMENSIONAL DRAWINGS Smart Mass Flow Meters



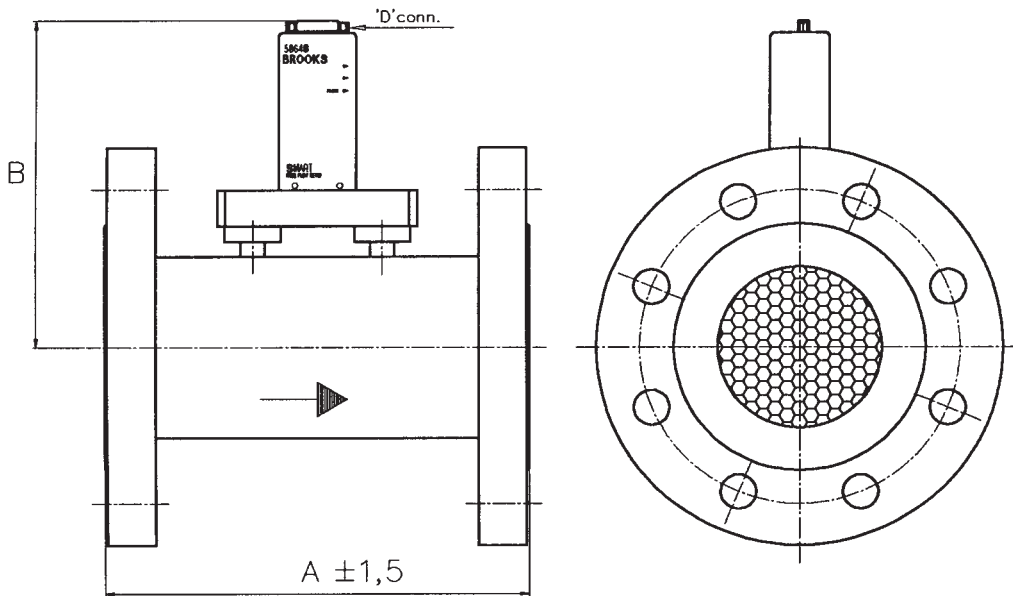
DIMENSIONAL DRAWINGS *Smart Mass Flow Meters*

MODEL 5864 S



CONNECTIONS	A (mm)	inches	B (mm)	inches
1.5" NPT	216.5	8.52	42.5	1.67
2" NPT	227.5	8.95	47.5	1.87

MODEL 5864 S



CONNECTIONS	A (mm)	inches	B (mm)	inches
3"	265	10.04	195	7.68
4"	265	10.04	207	8.15
6"	315	12.40	235	9.25
8"	315	12.40	260	10.24

**BROOKS SMART MASS FLOW PRODUCTS
MASS FLOW METERS/CONTROLLERS**

<i>DESCRIPTION</i>	5860S/BA 5860S/BC	MASS FLOW METER	F.S. FLOWRANGES N ₂ : 0.003 - 0.008 l _n /min. : 0.008 - 30 l _n /min.	
	5861S/BD		: 20 - 100 l _n /min.	
	5863S/BE 5863S/BF 5863S/BG 5863S/BH 5863S/BJ 5863S/BK 5863S/BL 5863S/BM 5863S/BN		: 100 - 200 l _n /min. : 200 - 300 l _n /min. : 300 - 400 l _n /min. : 400 - 500 l _n /min. : 500 - 600 l _n /min. : 600 - 700 l _n /min. : 700 - 800 l _n /min. : 800 - 900 l _n /min. : 900 - 1000 l _n /min.	
	5864S/BO 5864S/BP 5864S/BR 5864S/BS 5864S/BT 5864S/BU		: 18 - 80 m ³ _n /h. (1,5") : 60 - 140 m ³ _n /h. (2") : 140 - 320 m ³ _n /h. (3") : 240 - 540 m ³ _n /h. (4") : 540 - 1250 m ³ _n /h. (6") : 970 - 2160 m ³ _n /h. (8")	
	5850S/BA 5850S/BC	MASS FLOW CONTROLLER	F.S. FLOWRANGES N ₂ : 0.003 - 0.008 l _n /min. : 0.008 - 30 l _n /min.	
	5851S/BD		: 20 - 100 l _n /min.	
	5853S/BE 5853S/BF 5853S/BG 5853S/BH 5853S/BJ 5853S/BK 5853S/BL 5853S/BM 5853S/BN		: 100 - 200 l _n /min. : 200 - 300 l _n /min. : 300 - 400 l _n /min. : 400 - 500 l _n /min. : 500 - 600 l _n /min. : 600 - 700 l _n /min. : 700 - 800 l _n /min. : 800 - 900 l _n /min. : 900 - 1000 l _n /min.	
	<i>MECHANICAL CONNECTIONS</i>	1A	WITHOUT ADAPTORS (9/16"-18" UNF)	(5850/51/53 AND 5860/61/63)
		1B	1/4" TUBE COMPRESSION FITTINGS	(5850/51 AND 5860/61)
		1C	1/8" TUBE COMPRESSION FITTINGS	(5850/60)
		1D	3/8" TUBE COMPRESSION FITTINGS	(5851/61)
		1E	1/4" VCR	(5850/51 AND 5860/61)
		1F	1/4" VCO	(5850/51 AND 5860/5861)
		1G	1/4" NPT	(5850/51 AND 5860/61)
		1H	6mm TUBE COMPRESSION FITTINGS	(5850/51 AND 5851/61)
		1J	10mm TUBE COMPRESSION FITTINGS	(5851/61)
		1Y	1/2" BSP (F)	(5853/63)
		1Z	1" BSP (F)	(5853/63)
		2A	1 1/16"-12SAE/MS	(5853/63)
		2B	1/2" TUBE COMPRESSION FITTINGS	(5853/63)
		2C	3/4" TUBE COMPRESSION FITTINGS	(5853/63)
		2D	1" TUBE COMPRESSION FITTINGS	(5853/63)
		2E	1/2" NPT(F)	(5853/63)
		2F	1" NPT(F)	(5853/63)
		2G	1 1/2" NPT(F)	(5853/63)
		2H	1/2" VCO. (100L _n /min max).	(5853/63)
		2J	3/4" VCO	(5853/63)
2K		1/2" VCR.(100L _n /min max.)	(5853/63)	
2L		DIN DN15 PN40	(5853/63)	
2M		DIN DN25 PN40	(5853/63)	
2N		DIN DN40 PN40	(5853/63)	
2O		DIN DN50 PN40	(5853/63)	
2P		ANSI 1/2" - 150lbs	(5853/63)	
2R		ANSI 1/2" - 300lbs	(5853/63)	
2S		ANSI 1" - 150lbs	(5853/63)	
2T		ANSI 1" - 300lbs	(5853/63)	
2U		ANSI 1 1/2" - 150lbs	(5853/63)	
2V		ANSI 1 1/2" - 300lbs	(5853/63)	
2W		ANSI 2" - 150lbs	(5853/63)	
2X		ANSI 2" - 300lbs	(5853/63)	
3A	2"NPT	(5864)		
3B	ANSI 3" - 150LBS	(5864)		
3C	ANSI 3" - 300LBS	(5864)		
3D	ANSI 3" - 600LBS	(5864)		
3E	DIN DN80 - PN40	(5864)		
3F	DIN DN80 - PN64	(5864)		
3G	DIN DN80 - PN100	(5864, MAX. 85 BAR (1250 PSI))		

MECHANICAL CONNECTIONS (CONTINUED)	4A	ANSI 4" - 150LBS	(5864)
	4B	ANSI 4" - 300LBS	(5864)
	4C	ANSI 4" - 600LBS	(5864)
	4D	DIN DN100 - PN16	(5864)
	4E	DIN DN100 - PN40	(5864)
	4F	DIN DN100 - PN64	(5864)
	5A	6" ANSI - 150 lbs	(5864)
	5B	6" ANSI - 300 lbs	(5864)
	5C	6" ANSI - 600 lbs	(5864)
	5D	DIN DN 150 - PN 16	(5864)
5E	DIN DN 150 - PN 40	(5864)	
5F	DIN DN 150 - PN 64	(5864)	
6A	ANSI 8" - 150LBS	(5864)	
6B	ANSI 8" - 300LBS	(5864)	
6C	DIN DN200 - PN10	(5864)	
6D	DIN DN200 - PN16	(5864)	
6E	DIN DN200 - PN25	(5864)	
6F	DIN DN200 - PN64	(5864, MAX. 50 BAR (730 PSI))	
9Z	SPECIFY		
O-RING/VALVE SEAT MATERIAL	A	VITON	
	B	BUNA	(NOT FOR 5853)
	C	PTFE/KALREZ	(KALREZ FOR VALVE SEAT)
	D	KALREZ	(NOT FOR 5853)
	E	PTFE/EPDM	(EPDM VALVE SEAT)
	F	PTFE	(PTFE VALVE SEAT)
	Z	SPECIFY	
VALVE TYPE	0	METER ONLY	(NO VALVE)
	1	NORMALLY CLOSED	(5850/51 SERIES, 100 BAR (1500 PSI))
	2	NORMALLY CLOSED	(PRESS.DIFF. >2BAR (30 PSI) 5853 SERIES, 100 BAR (1500 PSI))
	3	NORMALLY CLOSED	(PRESS.DIFF. <2BAR (30 PSI) 5853 SERIES, 100 BAR (1500 PSI))
	4	NORMALLY OPENED	(5850/51 SERIES, 100 BAR (1500 PSI))
	5	NORMALLY CLOSED	(300 BAR (4500 PSI), 0.1 - 10 l _n /min. N ₂)
	9	SPECIFY	
ELECTRICAL INPUT/OUTPUT	INPUT		OUTPUT
	A	0-5Vdc	0-5 Vdc (incl. RS232, 9600BDS)
	B	4-20mA	4-20 mA (incl. RS232, 9600BDS)
	C	0-20 mA	0-20mA (incl. RS232, 9600BDS)
	D	1-5Vdc	1-5 Vdc (incl. RS232, 9600BDS)
	E	DIGITAL COMM.	DIGITAL COMM. AND 0-5 V
	F	DIGITAL COMM.	DIGITAL COMM. AND 4-20 mA
	G	DIGITAL COMM.	DIGITAL COMM. AND 0-20 mA
	H	DIGITAL COMM.	DIGITAL COMM. AND 1-5 V
	I	DIGITAL COMM.	DIGITAL COMM. ONLY
	Z	SPECIFY	
COMMUNICATION/BAUDRATE	B	RS232	
	C	RS485	
	1	38400	Baud
	2	19200	
	3	9600	
	4	7200	
	5	4800	
	6	3600	
	7	2400	
	8	1200	
INTERCONNECTION CABLE	A	NO CABLE	
	B	MATING CONNECTOR ONLY	
	C	3m ROUND CABLE	
	D	6m ROUND CABLE	
	E	3m ROUND CABLE INCL. COMMUNICATION CABLE	
	F	6m ROUND CABLE INCL. COMMUNICATION CABLE	
	Z	SPECIFY	
ENHANCEMENTS	A	STANDARD RESPONSE : 1 SEC.	
	B	FAST RESPONSE (SPECIFY VALUES ...SEC.)	
	C	LINEAR RAMP (SPECIFY VALUES ...%/SEC.)	
	D	DAMPING (SPECIFY VALUES SEC.)	
CALIBRATIONS	0	UNCALIBRATED	
	1	STANDARD CALIBRATION INCLUDED	
	2	STORAGE OF MULTIPLE CAL. CURVES	
	9	SPECIFY	
POWER SUPPLY INPUT	A	± 15 Vdc	
	B	+ 24 Vdc	
	Z	SPECIFY	
AREA CLASSIFICATION	1	SAFE AREA	
	2	CERTIFIED FOR USE IN ZONE 2	
	9	SPECIFY	
5850S/BC 1H C 1 F B 3 C A 1 B 2 ← TYPICAL MODEL NUMBER			

BROOKS LOCAL AND WORLDWIDE SUPPORT

Brooks Instrument provides sales and service facilities around the world, ensuring quick delivery from local stock, timely repairs, and local based sales and service facilities.

Our dedication to customer service and support extends to our direct sales force, who are well trained, experienced and equipped. These flow specialists provide consultation and support, assuring successful applications of the Brooks flow measurement and control products.

Calibration facilities are available in local sales and service offices. The primary standard calibration equipment to calibrate the mass flow products is certified by our local Weights and Measures Authorities and traceable to the relevant international standards.

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 mass flow 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.

TRADEMARKS

BrooksBrooks Instrument Division, Emerson Electric Co.
Kalrez.....DuPont Dow Elastomers.
Mf.....Brooks Instrument Division, Emerson Electric Co.
VCO.....Cajon Co.
VCR.....Cajon Co.
Viton.....DuPont Dow Elastomers



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