1579A

Digital Mass Flow Controller for High Flow Rates

The 1579A is a high flow, elastomer sealed Mass Flow Controller (MFC) well suited for a wide variety of applications requiring flow control capability from 50 slm to 300 slm Full Scale, N_2 equivalent. The 1579A incorporates digital flow control electronics along with a well proven, patented, thermal sensor and mechanical design.

This MFC is available with either analog or digital (Profibus) I/O. The digital control electronics utilize MKS control algorithms providing fast and repeatable response to set point.

The 1579A has settling times of <1 second and set point accuracies below 1% of Full Scale that outperform those of other typical high flow MFCs. Precise control is maintained down to 2% of the 1579A configured Full Scale flow range.

Both analog and Profibus versions incorporate a flexible power system that allows either ±15 VDC or +24 VDC power supplies to be used. This allows the user to choose the most effective method of powering the unit for his application. Additionally, the analog variant of the 1579 is equipped with a digital interface that provides access to setup functions and diagnostics through the use of proprietary software.

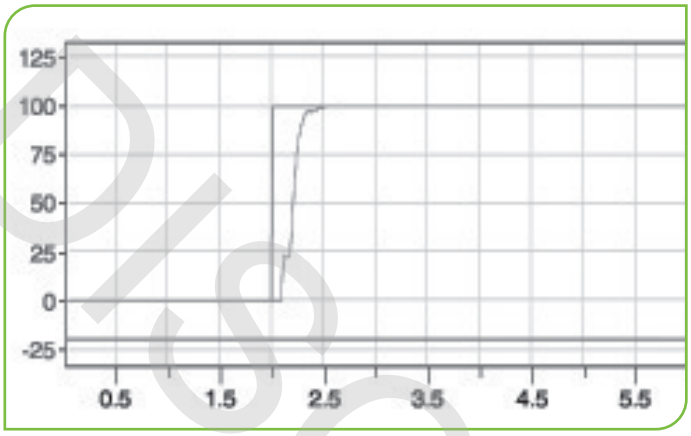
Continuing development of both electronics and flow design have enabled MKS Instruments to develop and produce a compact, robust device with excellent accuracy and settling time.

Product Features

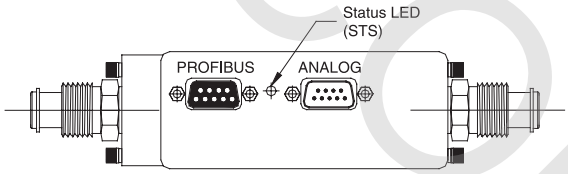
- Full Scale flow ranges from 50 slm to 300 slm
- Dual voltage power input; +24 VDC or ±15 VDC
- Controller settling time less than 1 second
- Analog or analog and Profibus DP Communications
- 1% Full Scale accuracy with % reading optional

Key Benefits

- Compact design
- Multi-gas/Multi-range capability for up to 15 gases



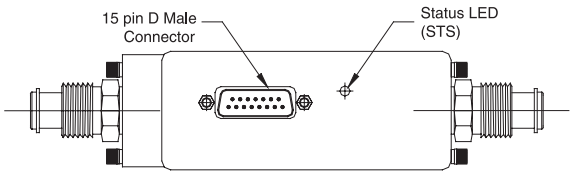
Controller Settling Time — The above graph shows the settling time of the 1579



Pin	Analog ±15 VDC	Analog 24 VDC	Profibus
1	Valve Open/Valve Close*	Valve Open/Valve Close*	NC
2	Flow Signal	Flow Signal	NC
3	+15 V Supply	+24 V Supply	RXD/TXD - P
4	Supply Common	Reserved	CNTR - P
5	-15 V Supply	24 V Common	DGND
6	Set Point Input*	Set Point Input*	VP
7	Signal Common	Signal Common	NC
8	Signal Common	Signal Common	RXD/TXP - N
9	Reserved	Reserved	NC

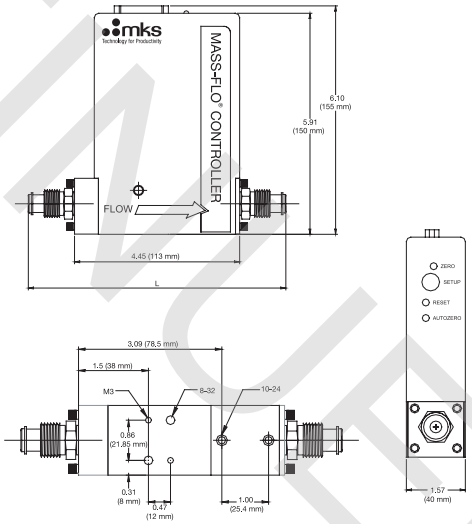
**Not applicable with mass flow meter 579*

Pinout Profibus — Connector side and pinout of 1579 Profibus version



Pin	±15 VDC Supply	24 VDC Supply
1	Reserved	Reserved
2	Flow Signal	Flow Signal
3	Valve Close*	Valve Close*
4	Valve Open*	Valve Open*
5	Supply Common	Reserved
6	-15 V Supply	24V Common
7	+15 V Supply	+24 V Supply
8	Set Point Input*	Set Point Input*
9	NC	NC
10	NC	NC
11	Signal Common	Signal Common
12	Signal Common	Signal Common
13	NC	NC
14	NC	NC
15	Chassis Ground	Chassis Ground

Pinout Analog — Connector side and pinout of 1579 analog version



Dimension - L	inches	mm
Swagelok 8 VCR	7.20±0.06	183±1.52
12 mm Swagelok	6.77±0.06	172±1.52
½" Swagelok	6.77±0.06	172±1.52
Swagelok 4 VCR	6.87±0.06	174.5±1.52
Swagelok 8 VCO	6.85±0.06	174±1.52
DN16KF	6.37±0.06	162±1.52

Dimensional Drawing — Note: Unless otherwise specified, dimensions are nominal values in inches (mm referenced).

Specifications

Full Scale Flow Ranges (N_2 in slm)		50, 100, 200, 300 slm
Maximum Inlet Pressure		100 psig
Normal Operating Pressure Differential (with atmospheric pressure at the MFC outlet) **50, 100 slm** **200 slm** **300 slm**		• 17 to 40 psid • 27 to 40 psid • 40 to 49 psid
Control Range		2 to 100% of Full Scale
Accuracy (including non-linearity, hysteresis and non-repeatability; referenced to 760 mmHg and 0°C)		±1% of Full Scale
Repeatability		±0.5% of Full Scale
Resolution		0.1% of Full Scale
Temperature Coefficients	**Zero** **Span**	• <0.05% of Full Scale /°C • <0.10% of Full Scale /°C
Warm-Up Time		<30 min
Controller Settling Time		<1 s typical
Pressure Coefficient		±0.02% of Reading/psi
Normal Operating Temperature Range		15°C to 40°C (59°F to 104°F)
Input Voltage Required		20.5 to 30 VDC
Maximum Current		300 mA
Set Point Command Signal		0 to 5 VDC from <20 kΩ
Output Signal		0 to 5 VDC into >10 kΩ
Connector Types	**Analog** **Profibus**	• 15-pin Type "D" male • 2 x 9-pin Type "D" male (analog) and female (Profibus)
Wetted Materials **Optional (Seals and Valve Seat)**	**Standard**	• 316L S.S.T, Nickel, Viton® • Buna-N, Neoprene®, Kalrez®
Leak Integrity	**External** **Through Closed Valve**	• <1 x 10^{-9} scc/sec He • <0.1% of Full Scale
Fittings (compatible with)	**Standard** **Optional**	• 8 VCR® male • 8 VCO® male, DN 16 KF, 1/2" Swagelok®, 12 mm Swagelok, 4 VCR® male (for 50 slm only)
Compliance		CE

Ordering Information

Ordering Code Example: 1579A01332LR1BVXX	Code	Configuration
Model		
1579A Mass-Flo Controller	1579A	1579A
Gas To Be Calibrated For: (SEMI Gas Code) See table for additional options		
Helium Argon Hydrogen Nitrogen Oxygen	001 004 007 013 015	013
Full Scale Range of Calibrated Gas*		
50 slm 100 slm 200 slm 300 slm	51L 12L 22L 32L	32L
Fittings (compatible with)		
Swagelok 8 VCR male Swagelok 8 VCO male ½" Swagelok 12mm Swagelok DN 16KF Swagelok 4 VCR (for variant 51L only)	R G S M D V	R
Valve		
Normally closed	1	1
Connector		
Analog 15-pin Type D Digital Profibus DP	B 4	B
Seal Materials**		
Buna-N Kalrez Neoprene Viton	B K N V	V
Firmware (Profibus only)		
Unless otherwise specified, MKS will ship firmware revision current to date.	XX	XX
Optional Accessories		
Diagnostics Adapter Kit (to use the proprietary Diagnostics Port) Mounting Plate 1-Channel Power Supply and Readout Unit with RS-232 2-Channel Power Supply and Readout Unit with RS-232	DMC-Support Y-5150166 PR4000S PR4000F	
Cabling for 1579A:		
CB147-12-10 to connect 1579 9-pin Type "D" to PR4000, 246 CB259-5-3M to connect 1579 15-pin Type "D" to 246, PR4000		

** Max. 300 slm N_2 equivalent*

SEMI Gas Code	Name	Symbol	Maximum Full Scale, slm	Flow Rate
001	Helium	He	300	32L
004	Argon	Ar	300	32L
007	Hydrogen	H_2	300	32L
008	Air	--	300	32L
013	Nitrogen	N_2	300	32L
015	Oxygen	O_2	300	32L
019	Chlorine	Cl_2	200	22L
025	Carbon Dioxide	CO_2	200	22L
028	Methane	CH_4	200	22L
029	Ammonia	NH_3	200	22L
039	Silane	SiH_4	100	12L
042	Acetylene	C_2H_2	100	12L
110	Sulfur Hexafluoride	SF_6	50	51L

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