



1579

DIGITAL MASS FLOW CONTROLLER FOR HIGH FLOW RATES

The 1579 is a digital Mass Flow Controller of the latest generation that was developed for many different applications in research and industry. The 1579 is based on proven MKS technology that offers fast controller settling time along with high accuracy over the entire control range. This makes it possible to integrate the 1579 into processes that require the minimum time for stabilization of the process conditions as well as excellent reproducibility.

Because of its compact design, the 1579 may be used in space saving gas panel systems. The electrical connections are made with D-Sub connectors for both Analog and Profibus versions, in conformance with all CE regulations. While MFC applications in research and development typically use local analog power supply/readouts, many industrial applications are moving to digital bus-compatible communications and power distribution. The 1579 meets both of these requirements.

Features & Benefits

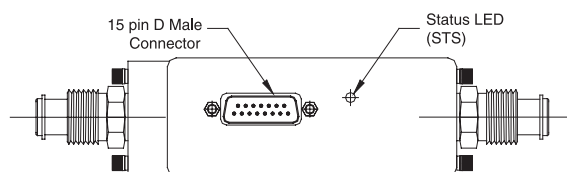
- Full Scale Flow Ranges from 50 slm to 300 slm
- Dual Voltage Power Input; +24 VDC or ± 15 VDC
- Controller Settling Time less than 1 second
- Analog or Analog and Profibus DP Communications
- Diagnostics/Setup Kit available for Analog Communications version
- MultiGas/MultiRange Capability for up to 15 gases
- 1% FS accuracy with % reading optional
- Plug compatible with earlier MKS MFCs
- Compact Design



In 1997, MKS Instruments was the first manufacturer to develop a Profibus standard for Mass Flow Controllers with the 1179A. The 1579 follows this standard with respect to both the interface and the communications. Further advances in digital electronics and flow design have allowed the development of a coordinated product line using digital processing with both analog and digital interfaces ranging from a minimum of flow rate of 0.2 sccm in the 1179B to a maximum of 300 slm in the 1579.

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.

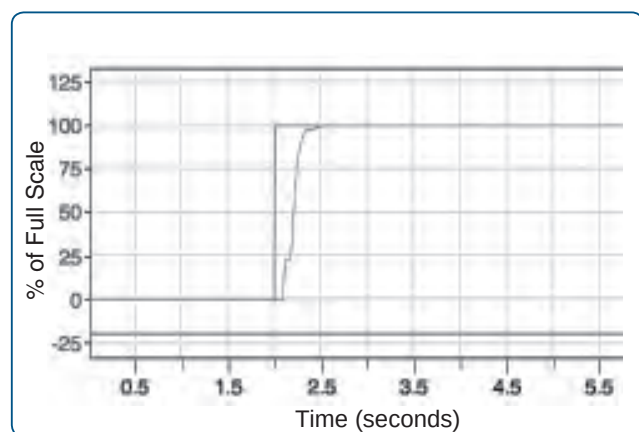


	± 15 VDC Supply	24VDC Supply
1	Reserved	Reserved
2	Flow Signal	Flow Signal
3	Valve Close*	Valve Close*
4	Valve Open*	Valve Open*
5	Supply Common	Reserved
6	- 15 V Supply	24V Common
7	+15 V Supply	+24 V Supply
8	Set point Input*	Set point Input*
9	NC	NC
10	NC	NC
11	Signal Common	Signal Common
12	Signal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

*Not applicable with mass flow meter 579

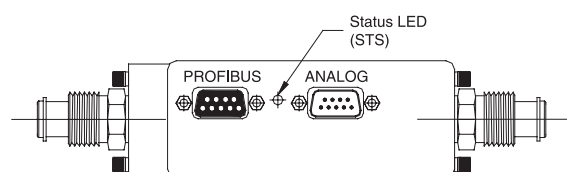
Pinout Analog —

Connector side and pinout of 1579 analog version



Controller Settling Time —

The above graph shows the settling time of the 1579



Analog Connector

	± 15 VDC	24VDC
1	Valve Open/Valve Close*	Valve Open/Valve Close*
2	Flow Signal	Flow Signal
3	+15 V Supply	+24 V Supply
4	Supply Common	Reserved
5	- 15 V Supply	24 V Common
6	Set point Input*	Set point Input*
7	Signal Common	Signal Common
8	Signal Common	Signal Common
9	Reserved	Reserved

Profibus Connector

NC
NC
RXD/TXD - P
CNTR - P
DGND
VP
NC
RXD/TXP - N
NC

*Not applicable with mass flow meter 579

Pinout Profibus —

Connector side and pinout of 1579 Profibus version



Specifications

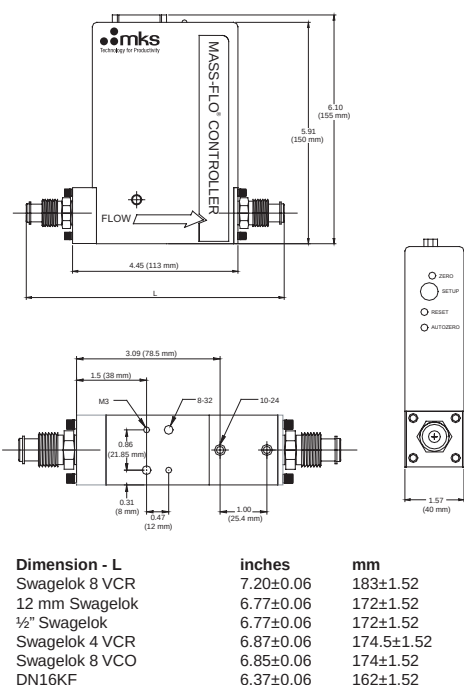
Flow Range Full Scale (N ₂ in slm)	50, 100, 200, 300 slm
Max. Inlet Pressure	100 psig
Normal Operating Pressure Differential (with atmospheric pressure at the MFC outlet)	
50, 100 slm	17 to 40 psid
200 slm	27 to 40 psid
300 slm	40 to 49 psid
Control Range	2 to 100% of F.S.
Accuracy (including non-linearity, hysteresis and non-repeatability; referenced to 760 mmHg and 0°C)	±1% of F.S.
Repeatability	± 0.2% of F.S.
Resolution	16 Bit
Temperature Coefficients	
Zero	< 0.05% of F.S. /°C
Span	< 0.10% of F.S. /°C
Warm-Up Time	< 30 min
Controller Settling Time	< 1 s typical
Pressure Coefficient	± 0.02% of Rdg/psi
Normal Operating Temperature Range	15°C to 40°C (59°F to 104°F)
Input Voltage Required	20.5 to 30 VDC
Max. Current	300 mA
Set Point Command Signal	0 to 5 VDC from < 20 kOhm
Output Signal	0 to 5 VDC into > 10 kOhm
Connector Types	
Analog	15-pin Type "D" male
Profibus	2 x 9-pin Type "D" male (analog) and female (Profibus)
Wetted Materials	
Standard	316L S.S.T, Nickel, Viton®
Optional (Seals and valve seat)	Buna-N, Neoprene®, Kalrez®
Leak Integrity	
External	< 1 x 10 ⁻⁹ scc/sec He
Through closed valve	< 0.1% of F.S.
Fittings (compatible with)	
Standard	8 VCR® male
Optional	8 VCO® male, DN 16 KF 1/2" Swagelok®, 12 mm Swagelok® 4 VCR® male (for 50 slm only)
Compliance	CE



Ordering Information

SEMI Gas Codes

SEMI Gas Code	Name	Symbol	Maximum FS, 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 ₂ H ₂	100	12L
110	Sulfur Hexafluoride	SF ₆	50	51L



Dimensional Drawing —

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

Ordering Code Example: 1579A01332LR1BVXX

Code	Configuration
1579A Mass-Flo Controller 579A Mass Flow Meter	1579A
Gas To Be Calibrated For: (SEMI Gas Code) See table for additional options	
Helium Argon Hydrogen Nitrogen Oxygen	001 004 007 013 015
Full Scale Range of Calibrated Gas*	
50 slm 100 slm 200 slm 300 slm	51L 12L 22L 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
Valve	
Normally closed For 579A (MFM)	1 3
Connector	
Analog 15-pin Type D Digital Profibus® DP	B 4
Seal Materials	
Buna-N Kalrez® Neoprene® Viton®	B K N V
Firmware (Profibus only)	
Unless otherwise specified, MKS will ship firmware revision current to date of order	XX
Optional Accessories	
Diagnostics Adapter Kit (to use the proprietary Diagnostics Port) Mounting Plate 4-Channel Power Supply and Readout Unit with RS-232 8-Channel Power Supply and Readout Unit with RS-232 1-Channel Power Supply and Readout Unit with RS-232 2-Channel Power Supply and Readout Unit with RS-232	DMC-Support Y-5150166 647C4R0N 647C8R0N PR4000S PR4000F
Cabling for 1579A:	
CB147-12-10 to connect 1579 9-pin Type "D" to PR4000, 186, 246, 167, 647 CB259-5-3M to connect 1579 15-pin Type "D" to 246, PR4000, 186, 167, 647	

* Max. 300 slm N₂ equivalent



1579 - 1/18
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