IMS

The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System ISO45001.
We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

RoHS COMPLIANT

Applying to the EU RoHS Directive : This products is compliant with the restriction of the designated 10 hazardous substances(*).
(*) lead , cadmium , mercury , hexavalent chromium , polybrominated biphenyls (PBB) , polybrominated diphenyl ethers (PBDE) ,
bis (2-ethylhexyl) phthalate (DEHP) , butyl benzyl phthalate (BBP) , dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP)
Using lead-free soldering : Lead-free soldering is used for mounting components of printed circuit boards.
- Many countries consider the reinforcement of regulations concerning the risk caused by lead to human body and the environment

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Please read the operation manual before using this product to ensure safe and proper handling of the product.

Bulletin: D7MG-AE

Printed in Japan 2207IG00

HORIBA Semiconductor

Differential Pressure Mass Flow Module

D700MG Series

Next Generation Mass Flow Module

Contribute to Etching and Deposition Process at Atomic Level

Gas control in semiconductor manufacturing is one of the most important factors affecting process results. In recent years, as advanced semiconductor devices have evolved to finer and more three-dimensional structures, there has been an increasing demand for improved gas control performance that contributes to improved productivity and yield. HORIBA STEC has developed the D700 as the latest model in the Criterion series, aiming for further customer satisfaction through fluid measurement and control technology.

Fast Response

≤100 msec

State Monitor Function

Provides more internal data to design smarter failure prediction system

Dynamic Repeatability

Tighten the MFC to MFC response time deviation

Better Low Flow Accuracy

e.g. 1 %S.P Accuracy for 5 SCCM F.S. device

Improved Valve Shutoff

PFA Nozzle Equipped Valve
Less than 0.02% F.S.
(10x better vs. D500)

Please check the specifications for details.

STEC Fluid Control Technology

Explore the future Automotive | Process & Environmental | Medical | Semiconductor | Scientific HORIBA

Product Specifications

Model	D717MG					
Gas	Configurable					
Full scale	10 SCCM-10 SLM		5 SCCM-5 SLM		5 SCCM-1 SLM	
Operating inlet pressure	H:350-750 kPa (A) (Configurable)		M:240-450 kPa (A) (Configurable)		L:110-350 kPa (A) (Configurable)	
Operating differential pressure	≥ 350 kPa (D)		≥ 240 kPa (D)		≥ 110 kPa (D)	
Operating downstream pressure	≤ 13.3 kPa (A)	≤ 53.3 kPa (A)	≤ 13.3 kPa (A)	≤ 53.3 kPa (A)	≤ 13.3 kPa (A)	≤ 53.3 kPa (A)
Control range	0.2-100 %F.S.	0.5-100 %F.S.	0.5-100 %F.S.	1-100 %F.S.	2-100 %F.S.	5-100 %F.S.
Flow rate accuracy at 25 °C *1	±1 %S.P. (5-100 %F.S.) ±0.05 %F.S. (0.2-5 %F.S.)	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (20-100 %F.S.) ±0.2 %F.S. (1-20 %F.S.)	±1 %S.P. (50-100 %F.S.) ±0.5 %F.S. (2-50 %F.S.)	±1 %F.S. (5-100 %F.S.)
Temperature error from 25 °C	±0.05 %S.P./°C (5-100 %F.S.) ±0.0025 %F.S./°C (0.2-5 %F.S.)	±0.05 %S.P./°C (10-100 %F.S.) ±0.005 %F.S./°C (0.5-10 %F.S.)	±0.05 %S.P./°C (10-100 %F.S.) ±0.005 %F.S./°C (0.5-10 %F.S.)	±0.05 %S.P./°C (20-100 %F.S.) ±0.01 %F.S./°C (1-20 %F.S.)	±0.05 %S.P./°C (50-100 %F.S.) ±0.025 %F.S./°C (2-50 %F.S.)	±0.05 %F.S./°C (5-100 %F.S.)
Offset/Span stability at 25 °C *2	±0.5 %F.S./year		±1 %F.S./year		±5 %F.S./year	
Repeatability	±0.3 %S.P. (5-100 %F.S.) ±0.015 %F.S. (0.2-5 %F.S.)	±0.3 %S.P. (10-100 %F.S.) ±0.03 %F.S (0.5-10 %F.S.)	±0.3 %S.P. (10-100 %F.S.) ±0.03 %F.S. (0.5-10 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (1-20 %F.S.)	±0.3 %S.P. (50-100 %F.S.) ±0.15 %F.S. (2-50 %F.S.)	±0.3 %F.S. (5-100 %F.S.)
Valve type	Normally closed/Piezo actuator					
Settling time for step up *3	≤ 100 msec					
Overshoot	±2 %S.P. or ±0.5 %F.S. whichever is larger					
Undershoot	±2 %S.P. or ±0.5 %F.S. whichever is larger					
Inlet pressure influence performance *4	±1 %S.P. (5-100 %F.S.) ±0.05 %F.S. (0.2-5 %F.S.)	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (20-100 %F.S.) ±0.2 %F.S. (1-20 %F.S.)	±1 %S.P. (50-100 %F.S.) ±0.5 %F.S. (2-50 %F.S.)	±1 %F.S. (5-100 %F.S.)
Valve sheet leak	< 0.02 %F.S. or 0.015 SCCM (N_2), whichever is larger		< 0.05 %F.S. or 0.015 SCCM (N_2), whichever is larger		< 0.1 %F.S. or 0.015 SCCM (N_2), whichever is larger	
Proof pressure	1000 kPa (A)					
Leak integrity	≤ 5×10^{-12} Pa•m³/s (He)					
Wetted material	SUS316L, Ni-alloy, PFA					
Operating temperature	15-45 °C					
Storage temperature	0-80 °C					
Installation orientation	Attitude insensitive					
Inlet pressure accuracy	±10 kPa (0-1000 kPa (A))					
Temperature accuracy	±1 °C (15-45 °C)					
Warming up operation	≥ 30 minutes					
Control interface	RJ45 connector, EtherCAT® protocol *5					
Power supply	M8 5 pin male connector, 24 VDC±4V, Instantaneous 9.6 W/Normal dissipation 7.0 W					
Weight	1.0 kg					

*1 Flow rate accuracy is traceable only down to 2 SCCM, hence actual gas accuracy not guaranteed below 2 SCCM.
*2 This is guaranteed value under 25 °C and ≤ 1.0×10^{-3} Pa (A).
*3 Setting time is MFC output signal and N_2 gas. Other detail definition follows setting time of "SEMI Standard E17-1011 Section 4.1.4".
*4 Pressure perturbation has to be smaller than 20 % pressure change per second and ±70 kPa/sec (±10 PSI/sec).
*5 EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH in Germany.

Model	D727MG			
Gas	Configurable			
Full scale	10-50 SLM	5-30 SLM	1-7.5 SLM	
Operating inlet pressure	H:350-750 kPa (A) (Configurable)	M:240-450 kPa (A) (Configurable)	L:110-350 kPa (A) (Configurable)	
Operating differential pressure	≥ 350 kPa (D)	≥ 240 kPa (D)	≥ 110 kPa (D)	
Operating downstream pressure	≤ 53.3 kPa (A)	≤ 53.3 kPa (A)	≤ 13.3 kPa (A)	≤ 53.3 kPa (A)
Control range	0.5-100 %F.S.	1-100 %F.S.	5-100 %F.S.	
Flow rate accuracy at 25 °C *1	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (20-100 %F.S.) ±0.2 %F.S. (1-20 %F.S.)	±1 %S.P. (50-100 %F.S.) ±0.5 %F.S. (5-50 %F.S.)	±1 %F.S. (5-100 %F.S.)
Temperature error from 25 °C	±0.05 %S.P./°C (10-100 %F.S.) ±0.005 %F.S./°C (0.5-10 %F.S.)	±0.05 %S.P./°C (20-100 %F.S.) ±0.01 %F.S./°C (1-20 %F.S.)	±0.05 %S.P./°C (50-100 %F.S.) ±0.025 %F.S./°C (5-50 %F.S.)	±0.05 %F.S./°C (5-100 %F.S.)
Offset/Span stability at 25 °C *2	±0.5 %F.S./year	±1 %F.S./year	±5 %F.S./year	
Repeatability	±0.3 %S.P. (10-100 %F.S.) ±0.03 %F.S. (0.5-10 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (1-20 %F.S.)	±0.3 %S.P. (50-100 %F.S.) ±0.15 %F.S. (5-50 %F.S.)	±0.3 %F.S. (5-100 %F.S.)
Valve type	Normally closed/Piezo actuator			
Settling time for step up *3	≤ 100 msec			
Overshoot	±2 %S.P. or ±0.5 %F.S. whichever is larger			
Undershoot	±2 %S.P. or ±0.5 %F.S. whichever is larger			
Inlet pressure influence performance *4	±1 %S.P. (10-100 %F.S.) ±0.1 %F.S. (0.5-10 %F.S.)	±1 %S.P. (20-100 %F.S.) ±0.2 %F.S. (1-20 %F.S.)	±1 %S.P. (50-100 %F.S.) ±0.5 %F.S. (5-50 %F.S.)	±1 %F.S. (5-100 %F.S.)
Valve sheet leak	< 0.1 %F.S.	< 0.2 %F.S.	< 1.0 %F.S.	
Proof pressure	1000 kPa (A)			
Leak integrity	≤ 5×10^{-12} Pa•m³/s (He)			
Wetted material	SUS316L, Ni-alloy, PFA			
Operating temperature	15-45 °C			
Storage temperature	0-80 °C			
Installation orientation	Attitude insensitive			
Inlet pressure accuracy	±10 kPa (0-1000 kPa (A))			
Temperature accuracy	±1 °C (15-45 °C)			
Warming up operation	≥ 30 minutes			
Control interface	RJ45 connector, EtherCAT® protocol *5			
Power supply	M8 5 pin male connector, 24 VDC±4V, Instantaneous 9.6 W/Normal dissipation 7.0 W			
Weight	1.0 kg			

*1 Flow rate accuracy and repeatability of Bin#14-15 are guaranteed only for N_2 calibration gas.
*2 This is guaranteed value under 25 °C and ≤ 1.0×10^{-3} Pa (A).
*3 Setting time is MFC output signal and N2 gas. Other detail definition follows setting time of "SEMI Standard E17-1011 Section 4.1.4".
*4 Pressure perturbation has to be smaller than 20 % pressure change per second and ±70 kPa/sec (±10 PSI/sec).
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