

Product Specifications

Model	DZ-117MG					
Pressure specification *1	H		M		L	
Gas *1	Configurable					
Full scale *1 (N ₂ conversion flow rate)	80 SCCM - 2.9 SLM		53 SCCM - 1.7 SLM		11 SCCM - 450 SCCM	
Operating inlet pressure *1	370-750 kPa(A)		240-369 kPa(A)		110-239 kPa(A)	
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	1-100 %F.S.	2-100 %F.S.	2-100 %F.S.	4-100 %F.S.	5-100 %F.S.	10-100 %F.S.
Flow rate accuracy at 25 °C *2 *3	±0.5 %S.P. (20-100 %F.S.) ±0.1 %F.S. (<20 %F.S.)		±0.5 %S.P. (40-100 %F.S.) ±0.2 %F.S. (<40 %F.S.)		±1 %F.S.	
Temperature effect from 25 °C *2 *3	±0.1 %S.P./ °C (10-100 %F.S.) ±0.01 %F.S./ °C (1-10 %F.S.)	±0.1 %S.P./ °C (20-100 %F.S.) ±0.02 %F.S./ °C (2-20 %F.S.)	±0.1 %S.P./ °C (20-100 %F.S.) ±0.02 %F.S./ °C (2-20 %F.S.)	±0.1 %S.P./ °C (40-100 %F.S.) ±0.04 %F.S./ °C (4-40 %F.S.)	±0.05 %F.S./ °C	
Offset / Span stability	±0.5 %F.S./ year		±1 %F.S./ year		±5 %F.S./ year	
Repeatability *2	±0.3 %S.P. (10-100 %F.S.) ±0.03 %F.S. (1-10 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (2-20 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (2-20 %F.S.)	±0.3 %S.P. (40-100 %F.S.) ±0.12 %F.S. (4-40 %F.S.)	±0.3 %F.S.	
Valve type	Normally closed / Piezo actuator					
Step-up flow response time *4 *5	≤ 0.4 sec					
Valve seat leak	< 0.5 %F.S.		< 1 %F.S.		< 2 %F.S.	
Proof pressure	1000 kPa(A)					
Leak integrity	≤ 7 × 10 ⁻¹¹ Pa·m ³ /s(He)					
Wetted material	SUS316L, Ni-alloy, PFA					
Operating temperature	15-60 °C					
Storage temperature	0-80 °C					
Mounting orientation	Attitude insensitive					
Temperature accuracy	±1 °C (15-60 °C)					
Warming up operation	≥ 30 minutes					
Control interface	EtherCAT® Protocol *6					
Power supply	M8 5 pin male connector, 24 VDC ±4 V, Power consumption 4.7 W					

Model	DZ-127MG					
Pressure specification *1	H		M		L	
Gas *1	Configurable					
Full scale *1 (N ₂ conversion flow rate)	2.9 SLM-20 SLM		1.7 SLM-11 SLM		450 SCCM-2.7 SLM	
Operating inlet pressure *1	370-750 kPa(A)		240-369 kPa(A)		110-239 kPa(A)	
Operating differential pressure	≥ 350 kPa(D)		≥ 240 kPa(D)		≥ 110 kPa(D)	
Operating downstream pressure	≤ 53.3 kPa(A)					
Control range	MR-MG number 07, 08 5-100 %F.S.	MR-MG number 09-11 2-100 %F.S.	MR-MG number 07, 08 5-100 %F.S.	MR-MG number 09-11 4-100 %F.S.	10-100 %F.S.	
Flow rate accuracy at 25 °C *2 *3	±0.5 %S.P. (20-100 %F.S.) ±0.1 %F.S. (<20 %F.S.)		±0.5 %S.P. (40-100 %F.S.) ±0.2 %F.S. (<40 %F.S.)		±1 %F.S.	
Temperature effect from 25 °C *2 *3	±0.1 %S.P./ °C (20-100 %F.S.) ±0.02 %F.S./ °C (<20 %F.S.)		±0.1 %S.P./ °C (40-100 %F.S.) ±0.04 %F.S./ °C (<40 %F.S.)		±0.05 %F.S./ °C	
Offset / Span stability	±0.5 %F.S./ year		±1 %F.S./ year		±5 %F.S./ year	
Repeatability *2	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (<20 %F.S.)		±0.3 %S.P. (40-100 %F.S.) ±0.12 %F.S. (<40 %F.S.)		±0.3 %F.S.	
Valve type	Normally closed / Piezo actuator					
Step-up flow response time *4 *5	≤ 1 sec					
Valve seat leak	MR-MG number 07, 08 < 5 %F.S.	MR-MG number 09-11 < 2 %F.S.	MR-MG number 07, 08 < 5 %F.S.	MR-MG number 09-11 < 4 %F.S.	< 10 %F.S.	
Proof pressure	1000 kPa(A)					
Leak integrity	≤ 7 × 10 ⁻¹¹ Pa·m ³ /s(He)					
Wetted material	SUS316L, Ni-alloy, PFA					
Operating temperature	15-60 °C					
Storage temperature	0-80 °C					
Mounting orientation	Attitude insensitive					
Temperature accuracy	±1 °C (15-60 °C)					
Warming up operation	≥ 30 minutes					
Control interface	EtherCAT® Protocol *6					
Power supply	M8 5 pin male connector, 24 VDC ±4 V, Power consumption 4.7 W					

*1 Gas, full scale, and pressure specification can be changed within the specified MR-MG numbers by using dedicated software.

*2 Flow rate accuracy and repeatability are guaranteed only for calibration gas and calibration full scale. (Flow rate accuracy: Operating downstream pressure range ≤ 13.3 kPa (A))

*3 Temperature range in which "accuracy" is guaranteed is in accordance with SEMI: E56-0309

*4 Settling time conforms to SEMI Standard E17-1011 Section 4.1.4.(Gas N₂).

*5 Settling time is confirmed in manufacturing calibration condition. Actual response time will be gas, flow and pressure dependent.

*6 EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH in Germany.

· In notation of pressure unit, (A) shows absolute pressure, (D) shows differential pressure. · SCCM, SLM are symbols representing the gas flow rate (ml/min, l/min, at 101.3 kPa).

Model	DZ-114S					
Pressure specification *1	H		M		L	
Gas *1	Configurable					
Full scale *1 (N ₂ conversion flow rate)	80 SCCM - 2.9 SLM		53 SCCM - 1.7 SLM		11 SCCM - 450 SCCM	
Operating inlet pressure *1	370-900 kPa(A)		240-369 kPa(A)		110-239 kPa(A)	
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	1-100 %F.S.	2-100 %F.S.	2-100 %F.S.	4-100 %F.S.	5-100 %F.S.	10-100 %F.S.
Flow rate accuracy at 25 °C *2 *3	±0.5 %S.P. (20-100 %F.S.) ±0.1 %F.S. (<20 %F.S.)		±0.5 %S.P. (40-100 %F.S.) ±0.2 %F.S. (<40 %F.S.)		±1 %F.S.	
Temperature effect from 25 °C *2 *3	±0.1 %S.P./ °C (10-100 %F.S.) ±0.01 %F.S./ °C (1-10 %F.S.)	±0.1 %S.P./ °C (20-100 %F.S.) ±0.02 %F.S./ °C (2-20 %F.S.)	±0.1 %S.P./ °C (20-100 %F.S.) ±0.02 %F.S./ °C (2-20 %F.S.)	±0.1 %S.P./ °C (40-100 %F.S.) ±0.04 %F.S./ °C (4-40 %F.S.)	±0.05 %F.S./ °C	
Offset / Span stability	±0.5 %F.S./ year		±1 %F.S./ year		±5 %F.S./ year	
Repeatability *2	±0.3 %S.P. (10-100 %F.S.) ±0.03 %F.S. (1-10 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (2-20 %F.S.)	±0.3 %S.P. (20-100 %F.S.) ±0.06 %F.S. (2-20 %F.S.)	±0.3 %S.P. (40-100 %F.S.) ±0.12 %F.S. (4-40 %F.S.)	±0.3 %F.S.	
Valve type	Normally closed / Piezo actuator					
Step-up flow response time *4 *5	≤ 0.4 sec					
Valve seat leak	< 0.5 %F.S.		< 1 %F.S.		< 2 %F.S.	
Proof pressure	1000 kPa(A)					
Leak integrity	≤ 7 × 10 ⁻¹¹ Pa·m ³ /s(He)					
Wetted material	SUS316L, Ni-alloy, PFA, PCTFE					
Operating temperature	15-45 °C					
Storage temperature	0-80 °C					
Mounting orientation	Attitude insensitive					
Temperature accuracy	±1 °C (15-45 °C)					
Warming up operation	≥ 30 minutes					
Control interface	DeviceNet™ Protocol *6					
Power supply	Master(DZ-104M) 1PC, Slave(DZ-114S) 1PC:8.2 VA (Slave 4.8 VA/PC) Up to 4 Slaves can be connected					

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*3 Temperature range in which "accuracy" is guaranteed is in accordance with SEMI: E56-0309

*4 Settling time conforms to SEMI Standard E17-1011 Section 4.1.4.(Gas N₂).

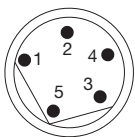
*5 Settling time is confirmed in manufacturing calibration condition. Actual response time will be gas, flow and pressure dependent.

*6 DeviceNet™ is trademark of Open DeviceNet Vendors Association.

- In notation of pressure unit, (A) shows absolute pressure, (D) shows differential pressure. - SCCM, SLM are symbols representing the gas flow rate (ml/min, l/min, at 101.3 kPa).

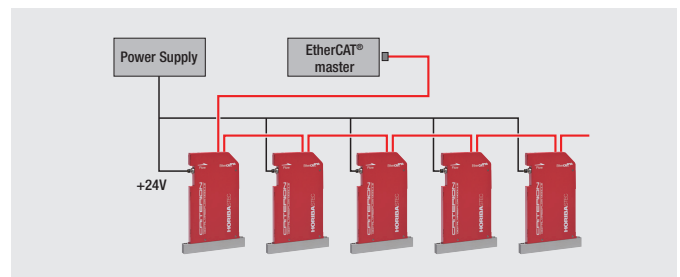
Connection examples

EtherCAT® communication



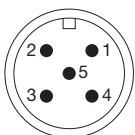
Pin Number	Signal Name
1	V+
2	N.C.
3	Power Common
4	N.C.
5	N.C.

Connector used: M8 5pin male connector



DeviceNet™ communication

Model	DZ-104M
Operating temperature	15 - 45°C
Storage temperature	0 - 80°C
Mounting orientation	Attitude Insensitive
Control interface	Shield type micro-connector (M12), DeviceNet™ Protocol
Connection interface	4 Port interlocking position : Bottom of main body



Pin Number	Signal Name
1	Drain
2	V+
3	V-
4	CAN_H
5	CAN_L

