

MDM3051 Series Datasheet

Micro Sensor Co., Ltd

MDM3051GP Intelligent Pressure Transmitter

Specification

Operation Objects : the liquid, gas and stream

Measurement range:

range3	0-0.2 ~ 7.0kPa(0-20 ~ 715mmH2O)
range4	0-1.0 ~ 37.4kPa(0-96 ~ 3810mmH2O)
range5	0-4.7 ~ 186.8kPa(0-477 ~ 19050mmH2O)
range6	0-17.3 ~ 690kPa(0-0.18 ~ 7kgf/cm ²)
range7	0-51.7 ~ 2068kPa(0-0.525 ~ 21kgf/cm ²)
range8	0-172.3 ~ 6890kPa(0-1.75 ~ 70kgf/cm ²)
range9	0-517 ~ 20680kPa(0-5.25 ~ 210kgf/cm ²)
range0	0-1035 ~ 41370kPa(0-10.55 ~ 422kgf/cm ²)

Output Signal: 4~20mA output with HART[®] digital signal (2-wire)

Power supply : 24V DC supplied outside , (power range 12V~45V)

Resistance Load : $R_{max.}=(E-12)/0.02(\Omega)$

Dangerous Worksite Mounting: Explosion-proof version Exd CT5 ;
Intrinsically version Exia CT5

Temperature range : Media temperature -40 ~ 104
Storage temperature -40 ~ 85
Operation temperature -40 ~ 85
-20 ~ 70 (with indicator);

Relative Humidity : 0 ~ 100%

Overpressure : range < 6.89MPa, (absolute pressure) 0~13.8MPa ; range < 20.68MPa, (absolute pressure) 0~31.2MPa ; range < 41.37MPa , (absolute pressure) 0~51.45MPa. The usual operation pressure is (absolute pressure) 3.45kPa ~FS , the flange could bear 68.9MPa.

Cubage Change : < 0.16cm³

Damper : time constant could be adjusted in 0.2 ~ 32.0s.

Start time : 3s , no need for warming-up

Specification Standard :

(under 316 stainless steel diaphragm and other standard testing condition)

Range Proportion : 40 : 1

Accuracy : range =3、 4、 5

Range ratio from 1 : 1 to 10 : 1, $\pm 0.1\%$ Range

Range ratio from 10 : 1 to 40 : 1 , $\pm 0.05 (1+0.1URL/range) \%FS$,

Range =6、 7、 8、 9、 0

Range ratio from 1 : 1 to 10 : 1, $\pm 0.15\%$ Range

Range ratio from 10 : 1 to 40 : 1, $\pm 0.075 (1+0.1URL/range) \%FS$

Stability : $\pm 0.15\%$ FS in six months

Temperature Effect : range =4、 5、 6、 7、 8

Zero error: $\pm 0.25\%/55$ FS

Total error including range and zero error, $0.5\%/55$ FS

Note : range=3、 9、 0, temperature error is twice.

Overpressure Effect : pressure=140kgf/cm² , the error is $\pm 0.25\%$ FS

Power Effect : $< 0.005\%/V$ output range

Vibration Effect : at any axes, the frequency is 200Hz , the error is $\pm 0.05\%/g$ FS

Resistance Load Effect : as long as the input voltage $> 12V$, no resistance load effect in resistance load area.

Mounting Position Effect : zero error ≤ 0.25 kPa, could be corrected, no effect for range;
flange turning has no effect for measuring object.

Electromagnetism radiation: conform with Standard of IEC801

Construction Standard :

Construction Material : isolated diaphragm and exhaust vavle: 316 Stainless Steel, Hastelloy C, Monel and Tantalum.

O-ring (meet with measuring media): Viton, Nitrile, ethane-propylene.

Filled liquid: Silicon oil

Flange and connector: 316 SS, Hatelloy C and Monel

Bolt: Carbon steel galvanization, 1Cr18Ni9, 0Cr17Ni4CuNb, 42CrMo ;

Electric housing: Aluminium-alloy with low copper

Coat: Polyester epoxy resin

Pressure Leading connector: Flange 1/4-18NPT (taper pipe thread) ;
Port 1/2-14NPT (taper pipe thread)

Electric Connection: using test piece matched to 1/2-14NPT thread cable and connection terminals

Weight: 3.5kg (not including options)

MDM3051AP Intelligent Absolute Pressure Transmitter

Specification

Operation Object : the liquid, gas or stream

Measurement Range :

- range 4 0-2.0 ~ 37.4kPa(0-15 ~ 280mmHga)absolute pressure
- range 5 0-4.7 ~ 186.8kPa(0-0.7 ~ 26.9 psia) absolute pressure
- range 6 0-17.3 ~ 690kPa(0-2.5 ~ 99.4 psia) absolute pressure
- range 7 0-51.7 ~ 2068kPa(0-7.49 ~ 298 psia) absolute pressure
- range 8 0-172.3 ~ 6890kPa(0-24.98 ~ 992.2 psia) absolute pressure

Output Signal : 4~20mA output with HART[®] digital signal (2-wire)

Power Supply : supplied outside 24V DC , (power range 12V~45V)

Resistance Load : $R_{max}=(E-12)/0.02(\Omega)$

Dangerous Worksite Installation : explosion-proof version Exd CT5 ;
intrinsically version Exia CT5

Temperature Range : Media temperature -40 ~ 104
Storage temperature -40 ~ 85
Operation temperature -40 ~ 85
-20 ~ 70 (with digital indicator)

Relative Humidity : 0 ~ 100%

Overpressure : (absolute pressure) in 0~13.78MPa, no damage to transmitter; the max. pressure for flange is 68.9MPa ; the usual operation pressure could be 0~FS kp (absolute pressure)

Cubage Change: < 0.16cm³

Damper : time constant could be adjusted in 0.2 ~ 32.0s

Start time: 3s , no need for warming-up

Specification Standard :

(under 316 stainless steel diaphragm and other standard testing condition)

Range Ratio=40 : 1

Accuracy : Range ratio from 1 : 1 to 10 : 1, $\pm 0.15\%$ Range

Range ratio from 10 : 1 to 40 : 1, $\pm 0.075 (1+0.1URL/range) \%FS$

Stability : $\pm 0.2\%FS$ in six months

Temperature Effect : zero error is $\pm 0.25\%FS/55$

The total error including range and zero errors is $0.5\%FS/55$

Overpressure Effect: pressure=140kgf/cm², the error is $\pm 0.25\%FS$

Power Effect: < 0.005%/V output range

Vibration Effect : at any axis, the frequency is 200Hz , the error is $\pm 0.05\%FS/g$

Resistance Load Effect : as long as the input voltage > 12V , no load effect in load area.

Mounting Position Effect : max. zero error ≤ 0.25 kPa, the error could be calibrated, no effect for the range

The flange turning has no effect for measuring object.

Electromagnetism Radiation : conform with standard of IEC801

Construction Standard:

Construction Material : isolated diaphragm and exhaust valve : 316 SS, Hastelloy C, and Monel;

Flange and Connector : 316 SS, Hastelloy C and Model;

O-ring (meet with the media): Viton, Nitrile, Ethylene-propylene ;

Filled Liquid: Silicon Oil ;

Bolt : Carbon steel galvanization, 1Cr18Ni9、 0Cr17Ni4CuNb、 42CrMo ;

Electric housing : aluminium-alloy with low copper ;

Coat : Polyester epoxy resin

Pressure Leading Connector : Flange $\frac{1}{4}$ -18NPT (taper pipe thread) ;

Connector $\frac{1}{2}$ -14NPT (taper pipe thread)

Electric Connection : using testing piece with $\frac{1}{2}$ -14NPT screw cable and connection terminals

Weight : 3.5kg (not include options)

MDM3051DP Intelligent Differential Pressure Transmitter

Specification

Operation Object : the liquid, gas or stream

Measurement Range :

range3	0-0.2 ~ 7.0kPa(0-20 ~ 715mmH ₂ O)
range4	0-1.0 ~ 37.4kPa(0-96 ~ 3810mmH ₂ O)
range5	0-4.7 ~ 186.8kPa(0-477 ~ 19050mmH ₂ O)
range6	0-17.3 ~ 690kPa(0-0.18 ~ 7kgf/cm ²)
range7	0-51.7 ~ 2068kPa(0-0.525 ~ 21kgf/cm ²)
range8	0-172.3 ~ 6890kPa(0-1.75 ~ 70kgf/cm ²)

Output Signal : **linearity output**: 4~20mA output with HART[®] digital signal (2-wire);

Square root output :input pressure in 1.0%~100%, the output has square root relationship with differential pressure; in 0%~0.1%, the output has linearity relationship with differential pressure section; no step in output 4~20mADC with HART[®] digital signal(2-wire) ,the user could choose linearity output or square root output according to operation worksite.

Power supply : 24V DC supplied outside , (power range 12V~45V)

Resistance Load : $R_{max.}=(E-12)/0.02(\Omega)$

Dangerous Worksite Mounting: explosion-proof version Exd CT5 ;

Intrinsically version Exia CT5 ;

Temperature range :	media temperature	-40 ~ 104
	Storage temperature	-40 ~ 85
	Operation temperature	-40 ~ 85
		-20 ~ 70 (with indicator) ;

Relative Humidity : 0 ~ 100%

Overpressure Limit :be acted(absolute pressure)0~13.76MPa to any side of transmitter, no damage to transmitter; the max. pressure on flange is 68.9MPa ; the usual operation pressure should be in 3.45kPa~FS (absolute pressure)

Cubage Change : < 0.16cm³

Damper : time constant could be adjusted in 0.2 ~ 32.0s.

Start time : 3s , no need for warming up

Specification Standard :

(under 316 stainless steel diaphragm and other standard testing condition)

Range Ratio=40 : 1

Accuracy :

range =3、 4、 5
Range ratio from 1 : 1 to 10 : 1, ±0.1%Range
Range ratio from 10 : 1 to 40 : 1 , ±0.05 (1+0.1URL/range) %FS ,
Range =6、 7、 8
Range ratio from 1 : 1 to 10 : 1, ±0.15%Range
Range proportion from 10 : 1 to 40 : 1, ±0.075 (1+0.1URL/range) %FS

Stability : $\pm 0.15\%$ FS in six months

Temperature Effect : range =4、 5、 6、 7、 8

Zero error: $\pm 0.25\%$ FS /55

Total error including range and zero error, $0.5\%/55$ FS

Note : range=3, temperature error is twice.

Overpressure Effect : pressure=140kgf/cm² , the error is $\pm 0.25\%$ FS

Static Pressure Effect :linearity output, zero error: static pressure=140kgf/cm² ,range=4,5,

the zero error is $\pm 0.25\%$ FS , range=3、 6、 7、 8, $\pm 0.5\%$ FS

range error : range=4, 5, 6, 7, 8, the error is $-1\pm 0.25\%$ FS/6.89MPa , range=3,

the error is $-1.5\pm 0.25\%$ FS. This is the system error, the transmitter could be

adjusted according to actual static pressure before mounting to reduce the

error.

Power Effect : $< 0.005\%/V$ output range

Vibration Effect : at any axes, the frequency is 200Hz , the error is $\pm 0.05\%/g$ FS

Resistance Load Effect : as long as the input voltage $> 12V$, no load effect in resistance load area.

Mounting Position Effect : zero error ≤ 0.25 kPa, could be corrected, no effect for range;

flange turning has no effect for measuring object.

Electromagnetism radiation: conform with Standard of IEC801

Construction Standard :

Construction Material :

Isolated diaphragm and exhaust valve: 316 Stainless Steel, Hastelloy C, Monel and Tantalum.

Flange and Connector : 316 SS, Hastelloy C, Motel ;

O-ring (meet with measuring media): Viton, Nitrile, ethane-propylene.

Filled liquid: Silicon oil

Bolt: Carbon steel galvanization, 1Cr18Ni9, 0Cr17Ni4CuNb, 42CrMo ;

Electric housing: Aluminium-alloy with low copper

Coat: Polyester epoxy resin

Pressure Leading Connector : range=3、 4、 5, $1/4$ -18NPT

Electric Connection: using test piece matched to $1/2$ -14NPT thread cable and connection terminals

Weight: 3.5kg (not including options)

MDM3051HP Intelligent High Static Pressure(Flow) Transmitter

Specification

Operation Objects : the liquid, gas and stream

Measurement range: range4 0-1.0 ~ 37.4kPa(0-96 ~ 3810mmH₂O)

range5 0-4.7 ~ 186.8kPa(0-477 ~ 19050mmH₂O)

range6 0-17.3 ~ 690kPa(0-0.18 ~ 7kgf/cm²)

range7 0-51.7 ~ 2068kPa(0-0.525 ~ 21kgf/cm²)

Output Signal : Linearity output : 4~20mA output with HART[®] digital signal (2-wire);
Square root output: input pressure in 1.0%~100%, the output has square root relationship with differential pressure; in 0%~0.1%, the output has linearity relationship with differential pressure sections; no step in output 4~20mADC with HART[®] digital signal(2-wire) , the user could choose linearity output or square root output according to operation worksite.

Power supply : 24V DC supplied outside , (power range 12V~45V)

Resistance Load : $R_{max}=(E-12)/0.02(\Omega)$

Dangerous Worksite Mounting: explosion-proof version Exd CT5 ;
intrinsically version Exia CT5 ;

Temperature range : media temperature -40 ~ 104
Storage temperature -40 ~ 85
Operation temperature -40 ~ 85
-20 ~ 70 (with indicator);

Relative Humidity : 0 ~ 100%

Static Pressure and Overpressure Limit :

max. operation static pressure : 31.2MPa

max. security static pressure:44.1MPa

single side max. pressure: 31.2MPa

pressure beared by flange : 68.9MPa

the usual operation pressure: 3.45kPa~FS (absolute pressure)

Cubage Change : < 0.16cm³

Damper : time constant could be adjusted in 0.2 ~ 32.0s.

Start time : 3s , no need for warming up

Specification Standard :

(under 316 stainless steel diaphragm and other standard testing condition)

Range Ratio=40 : 1

Accuracy : Range ratio from 1 : 1 to 10 : 1, $\pm 0.1\%$ Range

Range ratio from 10 : 1 to 40 : 1 , $\pm 0.05 (1+0.1URL/range) \%FS$;

Stability : $\pm 0.15\%FS$ in six months

Temperature Effect : range =4、 5、 6、 7

Zero error: $\pm 0.25\% FS /55$

Total error including range and zero errors, $0.5\%/55 FS$

Overpressure Effect : zero change after adding 31.2MPa single side pressure ;

range4 : < $\pm 1.0\%FS$

range5 : < $\pm 2.0\%FS$

range6、7 : $< \pm 5.0\%FS$

Static Pressure Effect : static pressure=31.2MPa , zero error $< \pm 0.25\%FS$, range error : $-1.0 \pm 2.5\%FS/6.9MPa$, this is the system error, the transmitter could be adjusted according to the actual measurement pressure before mounting.

Power Effect : $< 0.005\%/V$ output range

Vibration Effect : at any axes, the frequency is 200Hz , the error is $\pm 0.05\%/g$ FS

Resistance Load Effect : as long as the input voltage $> 12V$, no load effect in resistance load area.

Mounting Position Effect : zero error ≤ 0.25 kPa, could be corrected, no effect for range; flange turning has no effect for measuring object.

Electromagnetism radiation: conform with Standard of IEC801

Construction Standard :

Construction Material :

Isolated diaphragm and exhaust valve: 316 Stainless Steel ;

Flange and connector: 316 SS ;

O-ring (meet with measuring media): Viton, Nitrile, ethane-propylene.

Filled Liquid: Silicon Oil

Bolt: Carbon steel galvanization, 1Cr18Ni9, 0Cr17Ni4CuNb, 42CrMo ;

Electric housing: Aluminium-alloy with low copper

Coat: Polyester epoxy resin

Pressure Leading Connector: Flange 1/4-18NPT (taper pipe thread) ;
Port 1/2-14NPT (taper pipe thread)

Electric Connection: using test piece matched to 1/2-14NPT thread cable and connection terminals

Weight: 3.5kg (not including options)