

# PRODUCT INFORMATION

# DIGITAL MANOMETER

Wide pressure range from 200 Pa to 50 MPa.  
Equipped with high-accuracy sensor  
excellent in pressure-proof performance.

**DM-3700**  
*Digital Manometer*



## ■ Overview

- Sensors available for differential pressure, gauge pressure, pressure/vacuum, and absolute pressure. The absolute pressure and pressure/vacuum are optional.
- Covers wide range from 200 Pa (Micro) to 50 MPa (Extremely High).
- Comparators, Auto-Zero, Reading Holds, etc.
- ISO/IEC 17025 calibration required by TS16949 available.
- External sensor optionally available, which allows shorter piping to the DUT.
- Portable and fixable with dedicated brackets.
- Multi-power supply: 100 to 240 VAC

## ■ Features

	Description
Digital Display	0000 to ±9999
Comparator Output	5 outputs: Limits (HH, HI, LO, LL) and GO
8 Channels	8 individual programmable comparators
Reading Holds	The reading can be held at any time.
Peak value hold / Bottom value hold	The peak value in pressure rise and the bottom value in pressure drop can be held.
Auto-Zero	With the current value set to zero, pressure changes after that can be displayed.
Analog Output	The analog voltage corresponding to the Pressure Range is output. (Amplifier optionally available)
Digital Output	BCD output board is optionally available. Data can be transferred to external equipment.
Keyboard Lock	The keyboard can be locked to prevent false operation.

## ■ Specifications

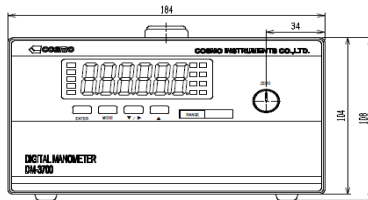
		Standard	
Sensor Type		Differential Pressure	Gauge Pressure
Measuring Media		Air / Non-corrosive gas	Air, Non-corrosive gas, Liquid (Not corrosive to wetted material)
Sensing Element		Beryllium copper	SUS630 SUS303 O-ring: Fluorine rubber
Transducer		Inductance type	Capacitance type
Accuracy *2	Accuracy	±0.15 % of F.S. ±1digit *1	
	Temperature Characteristic at Zero Point	±0.03 % of FS/°C	
	Span Temperature Characteristic	±0.03 % of FS/°C	
Proof Pressure		Less than 50 kPa: 10 x F.S. 50 kPa or more: 5 x F.S.	Less than 10 MPa: 2 x F.S. 10 MPa or more: 1.5 x F.S.
Maximum Line Pressure		2 x Proof pressure	–
Response Time		380 ms Max. (99 % of F.S.) *3	110 ms Max. (99 % of F.S.)
Digital Display		0000 to ±9999	
Sampling Time		200 ms	
Comparator Output		HH, HI, GO, LO, LL (Relay contact output)	
Analog Output		The analog voltage 1, 2 or 5 VDC corresponding to the Pressure Range is output. (5 and 10 VDC are optionally available.) Ripple: Within 10 mV peak to peak	
BCD Output		Option (Open collector, TTL)	
Power Source		100 to 240 VAC multi-power supply ±10 %, 50/60 Hz 1.0 A	
Operating Temperature		5 to 40 °C	
Pressure Inlet Port		Rc1/8	
Size		184 (W)×108 (H)×232 (D) mm	
Weight		3.5 kg	
Panel-Cut Size		181.5 (W) x 101(H) mm	

\*1. Accuracy of drip-proof model: ±0.25% of F.S.±1digit

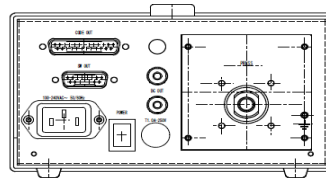
\*2. Linearity, repeatability, and hysteresis are included.

\*3. The response time in the range of 0 to 200 Pa is approx. 540 ms.

## ■ External Appearance



Front Panel



Rear

## Cosmo's ISO/IEC 17025 Calibration



### What is ISO/IEC 17025?

ISO/IEC 17025 is an international standard providing the general requirements for testing and calibration capabilities. The calibration certificates issued by ISO/IEC 17025 accredited Cosmo Group Calibration Laboratory, Cosmo Instruments, are the global standard with high reliability.

### Mutual Recognition Arrangement (MRA)

MRA is a multinational agreement for mutual recognition. The calibration results of MRA accredited calibration institutions are equally acknowledged by all mutual recognition organizations and are valid worldwide. This system is called One-Stop-Testing. Cosmo Group Calibration Laboratory has been accredited by MRA. Our ISO/IEC 17025 calibration certificates are the evidence of our technical competence and fairness.

### Strengths of MRA Accredited Laboratory

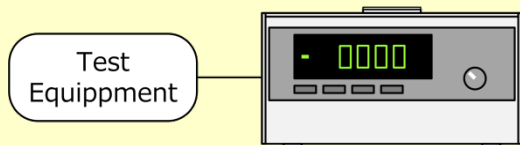
One-Stop-Testing eliminates duplicate tests. As a result, cost will be reduced and delivery time will be shortened. That contributes to customers' smoother international business transactions.

## ■ Applications

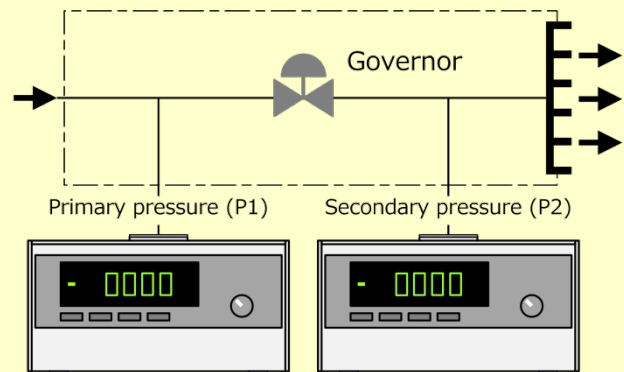
### Pressure Measurement

#### ■ Measuring the pressure inside of test equipment/furnace

- ▶ Inspecting the pressure gauge daily
- ▶ Monitoring the pressure inside of piping or container
- ▶ Measuring the pressure when the relief valve is open or closed
- ▶ Measuring the pressure inside of clean room
- ▶ Controlling the pressure inside of tank



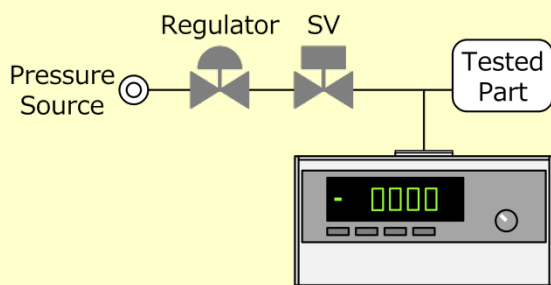
#### ■ Controlling the governor pressure of gas pressure burner



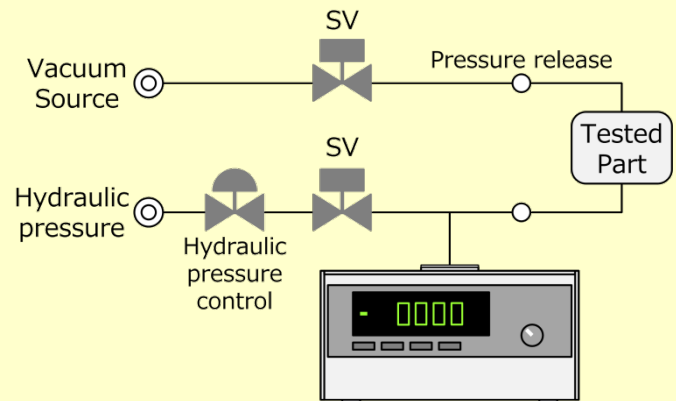
### Leak Measurement

#### ■ Gauge pressure decay method

- ▶ Leak test of factory piping



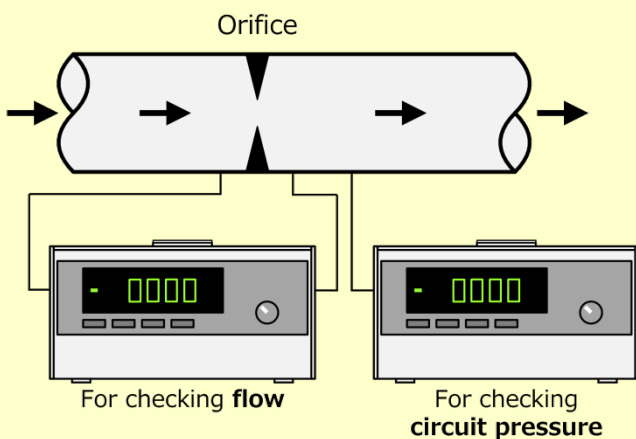
#### ■ Gauge pressure (hydraulic pressure) decay method



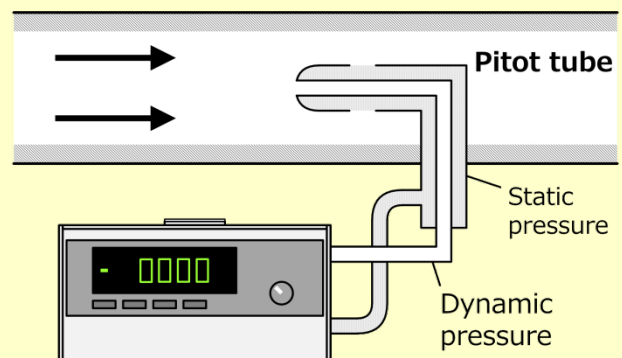
### Flow Measurement

#### ■ Measuring orifice flow

- ▶ Checking blockage of piping

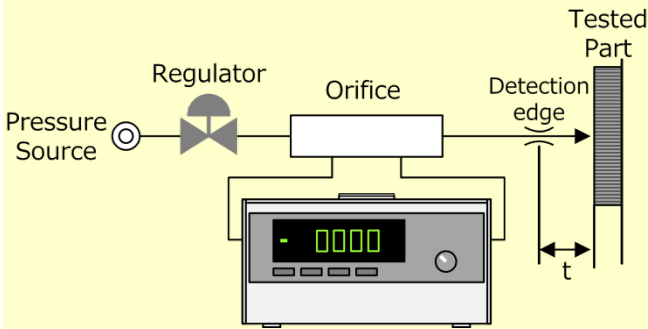


#### ■ Measuring air velocity and flow rate through pitot tube

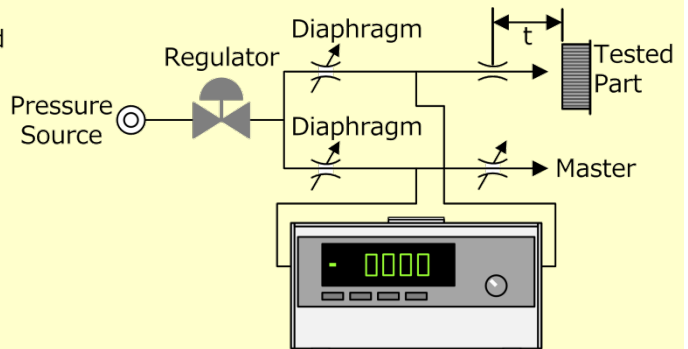


## Dimension Measurement

### ■ Measuring flatness with flow rate micrometer



### ■ Measuring with back pressure (differential pressure) micrometer



## ■ Introduction of Features

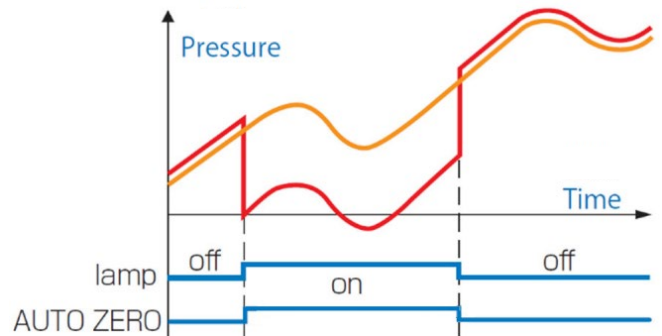
### Comparators

- 8 comparators can be programmed. (8 channels)
- The comparators output 5 levels (HH, HI, GO, LO, LL) of contact signals.
- Relay contact output.
- The LEDs (P1, P2, P3) corresponding to the selected channel light up.



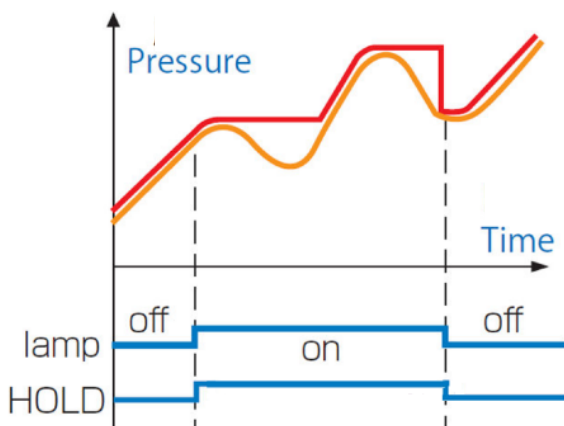
### Auto-Zero

- With the current value set to zero, relative pressure changes can be measured.
- Convenient to check pressure variation.

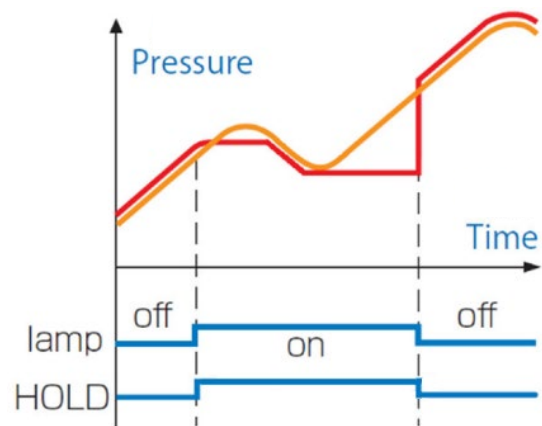


### Peak Value Hold and Bottom Value Hold

- The peak value in pressure rise and the bottom value in pressure drop can be held.



Peak Value Hold



Bottom Value Hold

## Model

DM-3700(A.B.C.D)

A, B and C in the model notation are mandatory.

### Example of model notation:

DM-3700(100KD.N.VA)

- Differential pressure 100 kPa
- Internal pressure sensor
- 125 VAC with 3 m power cable

	Category	Code	Description
A	Pressure Range		See the "Pressure Ranges" below.
B	Sensor	N	Internal pressure sensor (Standard)
		S1	External pressure sensor
		S2	External pressure sensor with drip-proof (Gauge pressure only) *1
C	Sensor Cable Length	L1	3 m (Standard)
		LX1	1 m
		LX5	5 m
		LX10	10 m
	BCD	D1	Open collector
		D2	TTL output
	Analog Output	F1	Analog output F.S. 5 V
F2		Analog output F.S. 10 V	
Display Digits *2	Q	Change of the minimum display digit (Only for the ranges that include 1)	
Mounting Brackets	P	Mounting Brackets	
D	Power Cable (Standard accessory)	VA	125 VAC 3m power cable
		VE	250 VAC 2 m power cable
		VK	250 VAC 2 m power cable (Mandatory for Chinese customers)

\*1. Accuracy of S2 model:  $\pm 0.25\%$  of F.S.  $\pm 1$  digit.

\*2. The analog output is amplified to 10 V. However, not available for V100KG and X100KG.

## Pressure Ranges

### Standard

Range Code	Sensor	Measurement Range	Range Code	Sensor	Measurement Range
2PD	Differential pressure	0 to 200 Pa	5MG	Gauge pressure	0 to 5 MPa
5PD	Differential pressure	0 to 500 Pa	10MG	Gauge pressure	0 to 10 MPa
1KD	Differential pressure	0 to 1 kPa	20MG	Gauge pressure	0 to 20 MPa
2KD	Differential pressure	0 to 2 kPa	50MG	Gauge pressure	0 to 50 MPa
5KD	Differential pressure	0 to 5 kPa	V2PD	Vacuum differential pressure	-200 Pa to 0
10KD	Differential pressure	0 to 10 kPa	V5PD	Vacuum differential pressure	-500 Pa to 0
20KD	Differential pressure	0 to 20 kPa	V1KD	Vacuum differential pressure	-1 kPa to 0
50KD	Differential pressure	0 to 50 kPa	V2KD	Vacuum differential pressure	-2 kPa to 0
50KG	Gauge pressure	0 to 50 kPa	V5KD	Vacuum differential pressure	-5 kPa to 0
100KD	Differential pressure	0 to 100 kPa	V10KD	Vacuum differential pressure	-10 kPa to 0
100KG	Gauge pressure	0 to 100 kPa	V20KD	Vacuum differential pressure	-20 kPa to 0
200KG	Gauge pressure	0 to 200 kPa	V50KD	Vacuum differential pressure	-50 kPa to 0
500KG	Gauge pressure	0 to 500 kPa	V50KG	Vacuum gauge pressure	-50 kPa to 0
1MG	Gauge pressure	0 to 1 MPa	V100KD	Vacuum differential pressure	-100 kPa to 0
2MG	Gauge pressure	0 to 2 MPa	V100KG*1	Vacuum gauge pressure	-100 kPa to 0

### Pressure/Vacuum

Range Code	Sensor	Measurement Range	Range Code	Sensor	Measurement Range
X2PD	Differential pressure	0 to $\pm 200$ Pa	X50KD	Differential pressure	0 to $\pm 50$ kPa
X5PD	Differential pressure	0 to $\pm 500$ Pa	X50KG	Gauge pressure	0 to $\pm 50$ kPa
X1KD	Differential pressure	0 to $\pm 1$ kPa	X100KD	Differential pressure	0 to $\pm 100$ kPa
X2KD	Differential pressure	0 to $\pm 2$ kPa	X100KG*1	Gauge pressure	0 to $\pm 100$ kPa
X5KD	Differential pressure	0 to $\pm 5$ kPa	X200KG	Gauge pressure	-100 to 200 kPa
X10KD	Differential pressure	0 to $\pm 10$ kPa	X500KG	Gauge pressure	-100 to 500 kPa
X20KD	Differential pressure	0 to $\pm 20$ kPa	*1 Option Q "Display Digits" is not available. Use the differential pressure model.		

Since the lowest calibration point for all the Cosmo products is -90 kPa, the guaranteed range is down to -90 kPa as well.

The contents in this document are as of April 2023. The specifications are subject to change without notice.

## Cosmo Instruments Co., Ltd.

2974-23 Ishikawa, Hachioji, Tokyo 192-0032 Japan

China: Cosmo (Shanghai) Trading Co., Ltd. Shanghai, Tianjin, Guangzhou, Chongqing, Changchun, and Wuhan	+86-(0)21-6575-6880
Korea: Cosmo Korea Co., Ltd.	+82-(0)32-623-6961
Taiwan: Taiwan Cosmo Instruments Co., Ltd.	+886-(0)2-2707-3131
Malaysia: COSMOWAVE SDN.BHD.	+60-(0)3-51626677
Thailand: Cosmowave Technology Co., Ltd.	+62-(0)21-89328750
Indonesia: Pt. Cosmowave	+62-(0)21-42900043
Vietnam: Cosmowave Technology Co., Ltd.	+84-(0)24-37876085

<http://www.cosmo-k.co.jp/>

Phone: +81-(0)42-642-1357 Fax: +81-(0)42-646-2439

India: Cosmo Instruments India Pvt. Ltd. Head Office South Zone Regional Office, Chakan Office, Chennai Office, Gujarat Office	+91-(0)124-421-0946
Germany: Cosmo EU Solutions Technology GmbH	+49-(0)212-383671-71
USA: Cosmo Solutions Technology, Inc.	+1-248-488-2580
Mexico: Cosmo De Mexico Monterrey Office	+52 (472) 117-2157 +52 (81) 1104-2479
Brazil: Tex Equipamentos Eletronicos Ind. Com. Ltda.	+55-(0)11-4591-2825
Australia: Industrial Research Technology Pty. Ltd.	+61-(0)412-176-674