

Edgewise type fine differential pressure gauge

- Small-size/lightweight type that can be installed anywhere you like
- Unique mechanism less subject to abnormal high pressure inrush
- High-performance silicone rubber diaphragm with small hysteresis
- Band-link mechanism that prevents the pointer from vibrating



Model FR51AHV
(Horizontal scale type)



Model FR51AVV
(Vertical scale type)



Model FR51ACV
(Color-coded horizontal scale type)

<Main application fields>

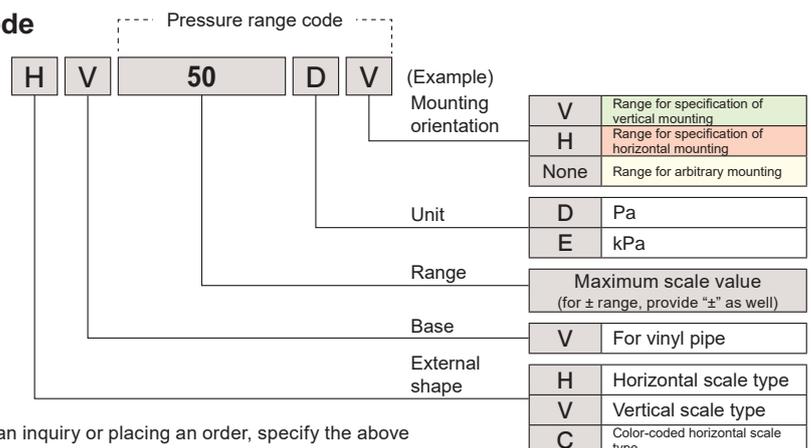
- Part of semiconductor manufacturing equipment
- Negative pressure for dust collector/differential pressure of air conditioner
- Filter pressure loss management
- Precision machine manufacturing line
- General factory management equipment

<Usage>

- Measurement of internal pressure of indoor device
- Detection of clogging of air filter
- Measurement of clogging of bug filter
- Measurement of dynamic pressure at ventilation/exhaust device
- Room pressure measurement in a clean room

Product code

FR51A



*(Refer to pages 114 to 117)

◆When making an inquiry or placing an order, specify the above product code.

- List of products
- WO81
- WO71
- FR51A
- MS99
- MS99S
- MS61A-RA
- QDP33
- EMD8A
- EMD7
- EMT1
- EMTGP1
- EMT1H
- EMT6
- EMP5A
- EMRT1
- HWS15A
- Accessories
- Application
- Precautions
- Maintenance

Specifications

Model	Horizontal scale type		Vertical scale type		Color-coded horizontal scale type	
	FR51AHV		FR51AVV		FR51ACV	
Pressure unit	Pa, kPa		Exterior material	Polycarbonate		
Pressure measurement method	Differential pressure method			Durable vibration	5 to 10 Hz, amplitude of 10 mm, 10 to 50Hz, acceleration of 39 m/s ² (two hours each for three axial directions)	
Pressure-receiving element	Diaphragm		Durable impact	100 m/s ² (six times each for three axial directions)		
Measured gas	Air and noncorrosive gas (liquid cannot be measured)			Compatible pipe	Vinyl pipe or rubber pipe (inner diameter of 4 mm)	
Scale shape	Edgewise shape (scale length: approx. 45 mm)		Base part	Integrated with main body		
Operating ambient temperature	-10°C to +50°C (no freezing allowed)		Base polarity	Indicating high-pressure side and low-pressure side with "H" and "L" marks, respectively, at base part.		
Operating ambient humidity	90% RH or below (no condensation allowed)		Mass	Approx. 90 g		
Instrument body withstanding pressure	50 kPa (refer to page 118)					
Accessories	Mounting nut set					
Pressure range code	Pressure range	Mounting orientation (Refer to below)	Accuracy (Note) (at 23°C)	Pressure-receiving element material	Withstanding pressure of pressure-receiving element (Refer to page 118)	
50 DH	0-50 Pa	Horizontal (specification)	±2.5% FS	Silicone rubber	20 kPa	
50 DV		Upright (specification)				
100 DH	0-100 Pa	Horizontal (specification)				
100 DV		Upright (specification)				
200 D	0-200 Pa 0-300 Pa 0-500 Pa 0-1000 Pa	From horizontal through upright to downward and horizontal				
300 D						
500 D						
1000 D						
2 E						Arbitrary mounting
3 E	0-2 kPa	Arbitrary mounting				
5 E	0-3 kPa					
	0-5 kPa					
+ - 50 DH	-50 to +50 Pa	Horizontal (specification)				
+ - 50 DV		Upright (specification)				
+ - 100 D	-100 to +100 Pa	From horizontal through upright to downward and horizontal				
		Arbitrary mounting				

(Note) Accuracy in full span (refer to page121)

◆For use environment, refer to page 118.

Mounting orientation and range

Range for the specification of horizontal and upright mounting

0 to 50 Pa, 0 to 100 Pa, -50 to +50 Pa

It is necessary to specify the mounting orientation (horizontal, upright, and others) at the time of order placement.

Range for mounting orientation arbitrary mounting in the range from horizontal through upright to downward and horizontal

Whole range other than on the left

Can be arbitrarily mounted at an angle in the range from horizontal through upright to downward and horizontal.

FR51A

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

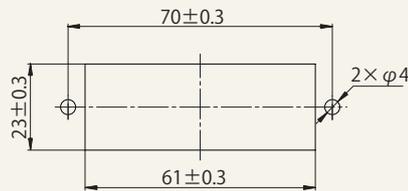
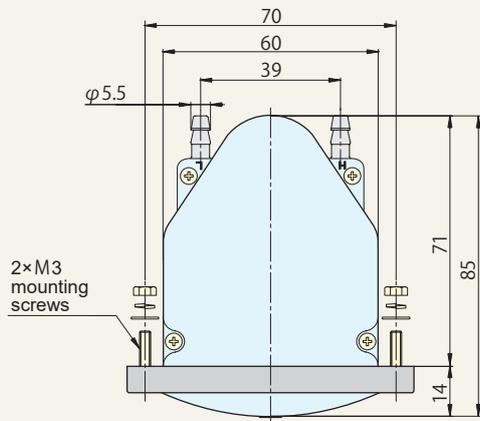
Application

Precautions

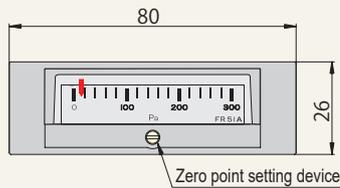
Maintenance

External dimension drawing

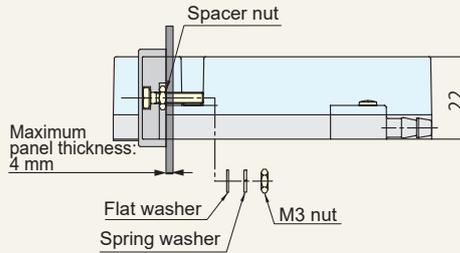
Model FR51AHV (horizontal scale type)



Panel cutting



Zero point setting device



Maximum panel thickness: 4 mm

Flat washer

Spring washer

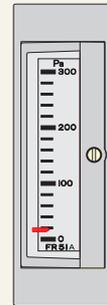
M3 nut



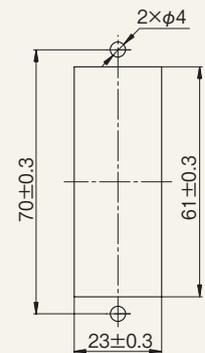
Caution

- Do not remove the spacer nut because doing so may break the gauge.
- M3 nut tightening torque: 0.8 N·m
- Do not tighten to a torque that exceeds the specified value because doing so breaks the instrument body.

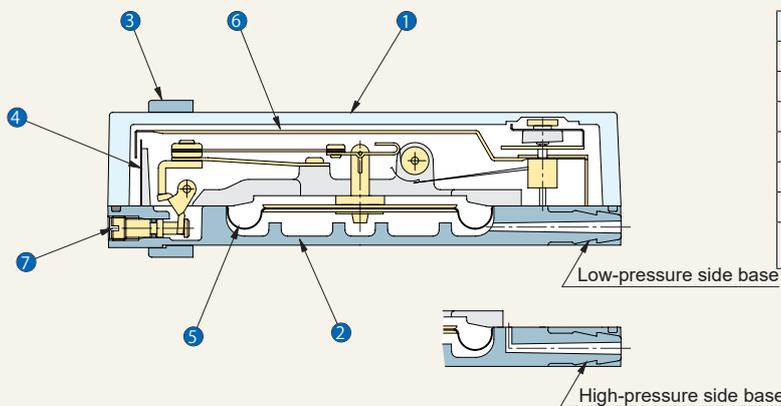
Model FR51AVV (vertical scale type)



The external dimensions of model FR51AVV are same as those of model FR51AHV.



Overview of structure



Number	Name
1	Transparent cover
2	Base
3	Grill
4	Scale plate
5	Diaphragm
6	Pointer
7	Zero point setting device

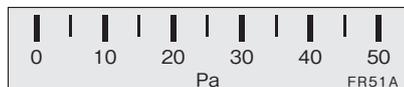
Low-pressure side base

High-pressure side base

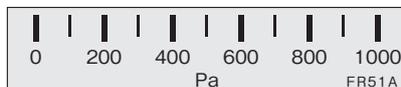
FR51A List of scales

Model FR51AHV/CV (horizontal scale type)

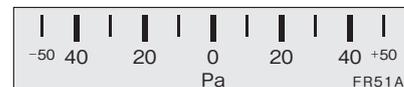
Biased pressure range



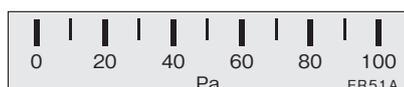
Pressure range	Minimum scale
0-50 Pa	5 Pa



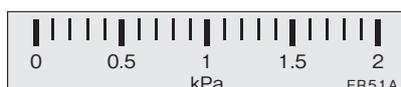
Pressure range	Minimum scale
0-1000 Pa	100 Pa



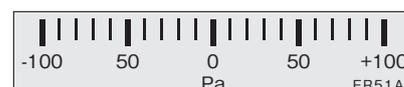
Pressure range	Minimum scale
-50 to +50 Pa	10 Pa



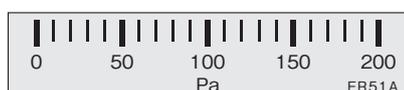
Pressure range	Minimum scale
0-100 Pa	10 Pa



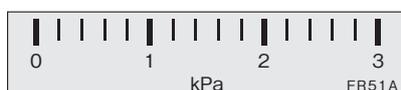
Pressure range	Minimum scale
0-2 kPa	0.1 kPa



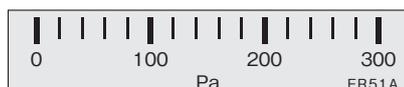
Pressure range	Minimum scale
-100 to +100 Pa	10 Pa



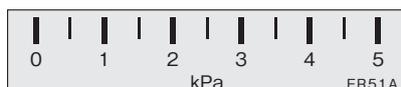
Pressure range	Minimum scale
0-200 Pa	10 Pa



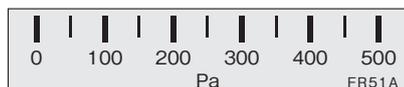
Pressure range	Minimum scale
0-3 kPa	0.2 kPa



Pressure range	Minimum scale
0-300 Pa	20 Pa



Pressure range	Minimum scale
0-5 kPa	0.5 kPa



Pressure range	Minimum scale
0-500 Pa	50 Pa

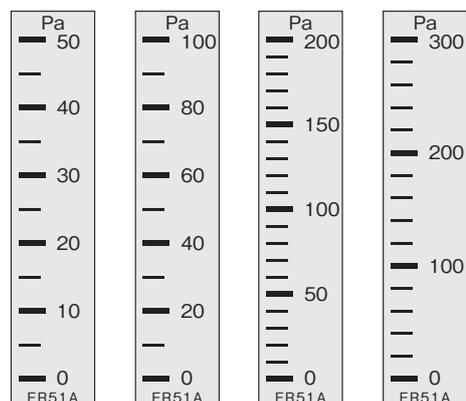
Color-coded horizontal scale



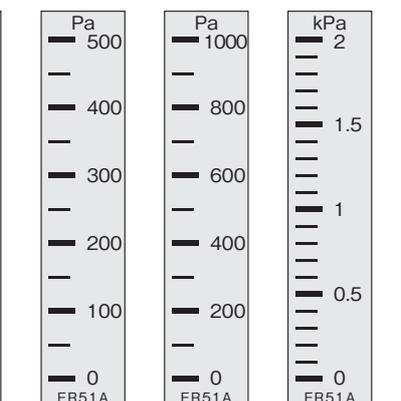
Pressure range	Color coding
Biased pressure range target	Green 0 50%FS Yellow 75%FS Red

Model FR51AVV (vertical scale type)

Biased pressure range

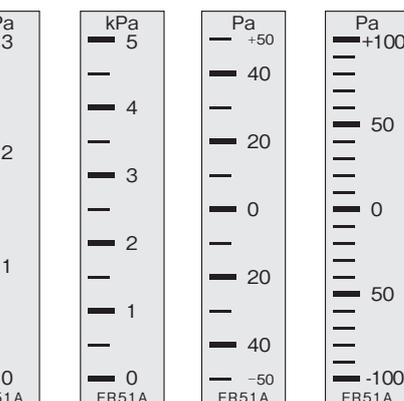


| Pressure range |
|----------------|----------------|----------------|----------------|----------------|----------------|
| 0-50 Pa | 0-100 Pa | 0-200 Pa | 0-300 Pa | 0-500 Pa | 0-1000 Pa |



Pressure range	Pressure range	Pressure range
0-2 kPa	0-3 kPa	0-5 kPa

Zero center range



Pressure range	Pressure range
-50 to +50 Pa	-100 to +100 Pa

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EMRT1

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Warranty

Warranty period

The warranty period for our product is one (1) year from delivery to the location specified by the orderer who makes a direct transaction with us.

Scope of warranty

If any failure or defect attributable to us becomes clear during the above warranty period, we will repair the product or supply a substitute product free of charge. However, even during the warranty period, we will exclude the product from the scope of the warranty if the failure or defect corresponds to any of the following:

- (1) The failure or defect was caused by an unreasonable condition, environment, handling, or usage not mentioned in the instruction manual, specifications, and our product catalog.
- (2) The failure or defect was caused by a factor other than our product.
- (3) The failure or defect was caused by a modification or repair conducted by a party other than us.
- (4) The failure or defect was caused by an event that could not be foreseen at the scientific and technical levels at the time of product shipment from us.
- (5) The failure or defect was caused by an external factor not attributable to us, such as acts of God and disasters.

Please note that the warranty mentioned here means the warranty for our individual product, and damage provoked by a failure or defect of the product is excluded from the scope of the warranty.

*This warranty is valid only in Japan.

Application and usage

Our products are designed and manufactured as general-purpose instruments for general industries.

Therefore, our products are not intended for the following uses, and our products used in such a manner are outside the scope of application.

- (1) Equipment that is anticipated to greatly affect lives and properties, such as nuclear power generation, aviation, railways, marine vessels, vehicles, and medical devices
- (2) Utilities that include electricity, gas, and service water
- (3) Use in outdoor locations and under similar conditions or environments other than those stipulated in the instruction manual
- (4) Usage to which considerable safety consideration and attention equivalent to (1) and (2) above need to be given

Service

Scope of service

Because the product price does not include service expenses, such as the dispatch of engineers, we will separately charge for the expenses in the following cases:

- (1) Instruction for installation and adjustment and a witnessed test run
- (2) Maintenance inspection, adjustments, and repairs
- (3) Technical guidance and technical education
- (4) Witnessed inspections of products at our factory

<<Note>> The product specifications and information in this catalog are subject to change without prior notice for product improvement or other reasons.

● For order placement, contact

General agent  **Manostar Shop Co., Ltd.**

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TEL. +81-78-621-7000 FAX. +81-78-621-7788

Manufacturer  **Yamamoto Electric Works Co., Ltd.**

1-2-3 Nishishiriike-cho, Nagata-ku, Kobe City, Hyogo 653-0031
TEL. +81-78-631-6000 FAX. +81-78-631-6020