

Nidec

HANDY MANOMETER

PG-100B Series

Instruction Manual Ver.3.0

Thank you for purchasing
NIDEC COMPONENTS CORP. product.

In order to use the product correctly and most appropriately,
please completely read this manual before use and keep it
for future reference.

For inquiries regarding the product, please contact:

NIDEC COMPONENTS CORPORATION

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Important Information and Warnings



This caution mark indicates a chance of physical damages to the user and/or the product if it is used improperly and/or incorrectly. The damage can be substantial.

[CAUTION]

These products (pressure sensors, pressure switches, pressure gauges, pressure indicators, leakage sensors, etc.) are designed and manufactured as general industrial parts. Therefore, a person with sufficient knowledge and experience shall confirm the conditions and environments described in the catalog, specifications, and instruction manual of each product, check the suitability of the product for the machine, device, or system which you use, and ensure safety before use. These products are not intended to be used for applications particularly requiring high reliability (These include, but are not limited to, nuclear power control, aerospace and military purposes).

The details of warranty shall be as per the descriptions in this document and we shall not be liable for any damage on you resulting from the use of any equipment or device (including control systems) which is not in accordance with this document (hereinafter referred to as "use in violation"). In the case where you resell our products, we shall not be liable for any damage on a third party resulting from use in violation by the third party, and even if we make payment to the third party in connection with such use in violation regardless of the name by which such payment may be called, we may demand the whole amount thereof from you.



- The product is not explosion-proof. Do not use the product in designated areas where explosion-proof specification is required.
- The product is not drip-proof /dust-proof.
- The product is designed for measurement of intended articles and does not feature control functions that ensure security, such as prevention of accidents.

Operating Precautions

(1) The applicable media are gases/liquids compatible with SUS316L.

Materials of the pressure port are SUS316L while those of the attachment are SUS316 and SUS 304. So please be careful about compatibility with applicable media. Use of corrosive fluids may cause injury and/or malfunction of products.

In addition, the product is not explosive-proof. Never use flammable fluid as media.

(2) Maintain the measuring pressure within the pressure range as stated in specifications.

Pressures exceeding the maximum pressure rating may cause product failure.

(3) Be careful not to let any liquid inside the main product.

Liquid leak on the pressure port may cause product failure. So please be careful to remove fluids completely before detaching relevant fitting and/or tube from the pressure port.

(4) Be careful not to mix foreign materials in the pressure port.

Mixing a foreign material in the port may cause product failure or air leakage. If there is a possibility of mixing foreign materials into the port, use the product with a filter.

(5) Be aware of possibilities of accidents related to the strap.

Swinging the product intentionally in the air by holding the strap may result in unexpected accidents, injury or product damage. Be sure to use the product with its main body gripped firmly.

(6) Be careful not to give external shocks to the products.

External shocks such as hitting and dropping may cause product failure.

(7) Installation of attachments

When installing an attachment to the pressure port, the tightening torque should be set at around 1 N·m. Make sure to use "insert ring" (attachment) when you pour liquid into a tube connected with "one-touch fitting" (attachment).

(8) Attention for analog output function using.

No voltage or signal should be applied to the CAL terminal by the faulty wiring. Failure to heed this warning may result in product malfunction or damage to the main body. Moreover, do not lose the battery cover when the analog output function is used.

(9) Caution for handling of protect cover

The protect cover is made of silicon rubber. Never use fluids as media which are not compatible with the silicon rubber. The main purpose of the protect cover is to prevent liquid leak into the main body when the attachment and tube are detached from the product. It doesn't serve as drip-proof, so please wipe off in case any liquid leak takes place.

Maintenance Precautions

(1) Periodic maintenance check should be carried out.

Make sure the product operates normally before using. Unexpected event may cause product failure and affect its basic function..

(2) Do not disassemble or modify the product.

Unauthorized disassembly or modification may result in a malfunction. The product warranty does not cover failures caused by disassembly and/or modification of the product.

(3) The batteries used are AAA manganese dry cells or AAA alkaline dry cells.

Use of batteries other than as stated above may cause product failure.

(4) Insert the batteries to contact the correct positive and negative terminals.

Insertion of the battery in the wrong direction may induce rupture or electrolyte leakage of the battery, resulting in product failure. When the product is intended not to be used for a long period of time, remove the battery from it in order to prevent electrolyte leakage.

(5) Stains on the product should be wiped off with a soft, dry cloth.

Stains on the product should be wiped off with a cloth immersed in a neutral detergent diluted with water and squeezed well; dry with a soft cloth. At this time, be careful not to allow the neutral detergent solution to enter the pressure port and/or main body. Infiltration of the neutral detergent may cause product failure.

(6) Caution for storage of protect cover

Please store the protect cover in a cool and dark place if it is to be stored. Ultraviolet rays exposure may make the quality of the cover deteriorate. Please replace the protect cover with new one in case color of it changes or the visibility of the display deteriorates.

Bundled Items

· Attachments ※

One-touch fitting : SSPC6-M5	1 piece
Insert ring : WR0640	1 piece

· Strap	1 piece
· Operating instructions (This manual)	1 sheet
· AAA dry cell (The service life of the batteries that come with the product is not guaranteed.)	2 cells
· Protect cover (with product)	1 piece

※Refer to a maker's homepage for the details of an attachment. NIHON PISCO CO.,Ltd. : <http://www.pisco.co.jp/>

Model Number Designation

PG-100 B -103R -M X1 T

(1) (2) (3) (4) (5) (6)

(1) Model number	: PG-100
(2) Available media	: B (Gases/Liquids compatible with SUS316L)
(3) Pressure range	: 102R, 103R, and 102A.
(4) Indication unit	: Blank (kPa) M (MPa) H (mmHg)* W (With unit switching function)**
(5) Inspection report	: Blank (Not attached) X1 (Inspection report attached) X2 (Inspection report and calibration certificate attached)
(6) Certificate	: Blank (Not attached) T (Traceability certificate attached)

* ... For particular application. The application is necessary for buying this model.

** ... Foreign sales. The application is necessary for buying this model.

Specifications

Model	PG-100B		
Pressure range	102R	103R	102A
Type	Gauge		Absolute
Rated pressure	-100~100kPa (-750~750mmHg)	-100~1000kPa (mmHg undisplayable)	0~100kPa abs. (mmHg only available for W type)
Max. pressure	200kPa	2000kPa	200kPa abs.
Indication system	3-1/2-digit LCD		
Resolution	1digit		
Indication unit	kPa, MPa, mmHg, in.Hg, mmAq, psi, bar*		
Function	Zero adjustment, Hold, Offset, Auto power off, Unit switching		
Indication accuracy (at 25°C)	±0.5%F.S.±2digits		
Indication accuracy (at 25±25°C)	±1.0%F.S.±2digits	±2.0%F.S.±2digits	
Available media	Gases/Liquids compatible with SUS316L		
Operating temp.	0°C to 50°C (No freezing)		
Operating humidity	15 to 85% RH (No condensing)		
Driving power	3 VDC, AAA dry cell x 2		
Pressure port	M5 female screw (P=0.8)		
IP protection	IP40 (IEC standards) **		
Outer dimensions	55 (W) × 16.9 (D) × 110 (H)		
Weight	Approx. 100g		
Battery service life	Approx. 1,000 hours		
Analog output (at 25°C)			
Power supply	5±0.5V DC, 5mA maximum, External supply		
Output voltage	±1.000V		
Output accuracy	±10mV (Indicated value standard)		

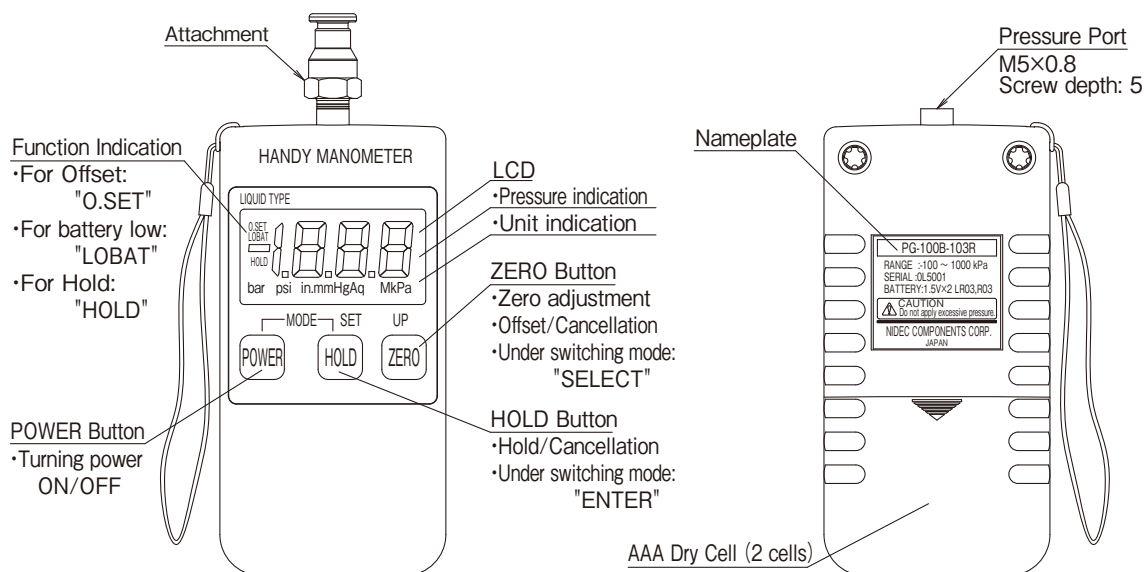
*Only W type can switch all display unit.

** Out-of-specification when the analog output function is used.

Pressure range	Unit switching function (Only for -W model)						
	kPa	MPa	mmHg	in.Hg	mmAq	psi	bar
102R	○	○	○	○	—	○	○
103R	○	○	—	○	—	○	○
102A	○	○	○	○	—	○	○

"—" means undisplayable.

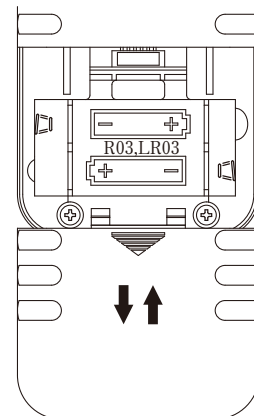
Name of Each Part



Operation Method/Functional Explanation

[Insertion of Batteries]

Slide the battery cover on the back of the product body downward to open the cover. Insert the batteries in the direction as illustrated, check that the batteries are correctly and firmly in place, and slide the battery cover again to close.



[Operation Method]

(1) Turning the power ON

With the power turned off, press the **POWER** button under open air atmospheric pressure, and check that the minimum digit for the pressure indication is within 0 ± 10 digits. (For the pressure range “102A”, 100 (kPa abs.) will be displayed when the power button is turned on under atmospheric pressure.)

(2) Zero adjustment

After turning on the power, if a difference is detected between the zero values in open air atmospheric pressure, press the **ZERO** button for three seconds or longer and performs the zero adjustment. (The zero adjustment function is invalid in 102A range, because it is based on an absolute vacuum.)

(3) Measurement

When pressure is applied, the measured value is displayed on the LCD.

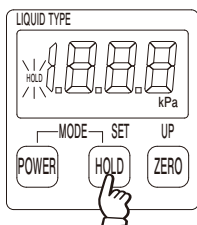
(4) Turning the power OFF

With the power turned on, press the **POWER** button to turn off the power. When the auto power off function is activated, the power is turned off according to the preset time.

[Functional Explanation]

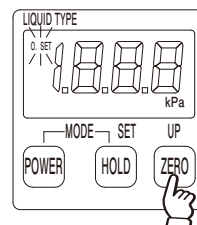
(1) Hold

When pressure is applied, the measured value is displayed. Press the **HOLD** button to retain the pressure value displayed at that time. At this time, the “HOLD” mark is displayed on the LCD. Press the button again to cancel the hold.



(2) Offset

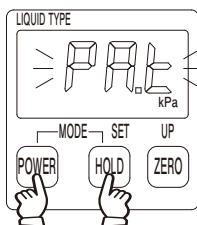
When the pressure exceeds $\pm 1\%FS$, press the **ZERO** button for three seconds or longer to enable subsequent indication of variations with the zero value set to 0. At this time, “0.SET” is displayed on the LCD. Press the **ZERO** button for three seconds or longer again to return the indication to the previous display. (The offset function is invalid in 102A range, because it is based on an absolute vacuum.)



(3) Switching of auto power off function

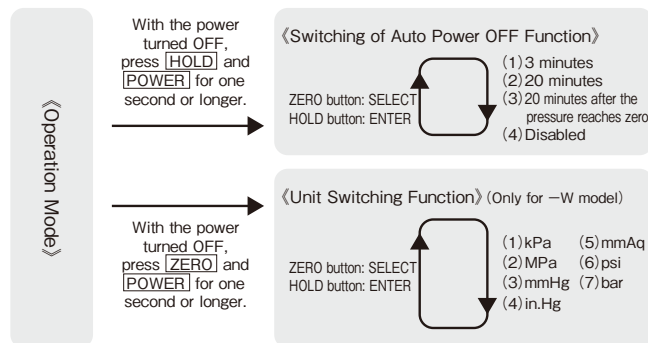
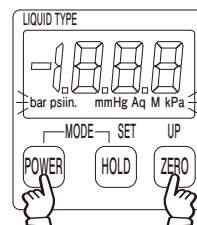
With the power turned off, press the **POWER** button for one second or longer while pressing the **HOLD** button to set the mode to the switching mode of the auto power off function. Choose the mode from four modes including [“P3”: 3 min.], [“P20”: 20 min.], [“PA”: 20 min. after the pressure reaches zero], and [“PoF”: Disabled].

Press the **ZERO** button to select the mode and press the **HOLD** button to enter the mode. While the switching mode is activated, if any button operation is not made for 20 seconds, the mode shifts to the measurement mode at the preset value displayed at that time. In the initial state, [“P3”: 3 min.] is set.



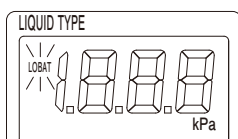
(4) Unit switching function (Only for -W model)

With the power turned off, press the **POWER** button for one second or longer while pressing the **HOLD** button to set the mode to the unit switching mode. While the unit indication is blinking, press the **ZERO** button to select the mode and press the **HOLD** button to enter the mode.



(5) Battery replacement timing

When the battery voltage is low, “LOBAT” is displayed on the LCD. Replace the batteries. The batteries are two AAA dry cells. The used batteries should be discarded according to the instructions of the respective local governments. After replacing the batteries, be sure to perform the zero adjustment. (See Operation Method(2). But excluding 102A range.)



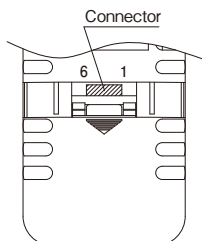
(6) Excessive pressure error

When pressure exceeding 130% of the rated pressure is applied, the indication will start to blink. Check the source pressure, and use the product within the range of the rated pressures.

Analog Function

Open the battery cover on the back of the main body and insert the pre-wired connector according to the table shown below. After applying external power, press the **POWER** button to turn on the power. Be sure to use the product with the batteries removed. The mode will not switch to the analog output mode unless the batteries are removed.

Connector No.	Description
1	External power input (5V)
2	Analog output terminal ($\pm 1V$)
3	GND
4	CAL
5	CAL
6	CAL



Manufacturer	Housing	Contact	Wire gauge
JST Mfg. Co., Ltd.	ZHR-6	SZH-002T-P0.5	AWG28~26
		SZH-003T-P0.5	AWG32~28

Analog voltage as indicated will be output to the analog output terminal.

Pressure range, rated pressure and output voltage are shown to the table below.

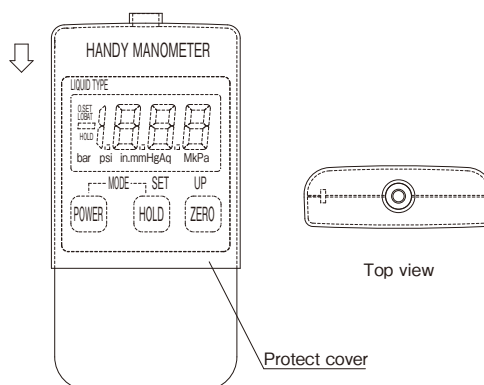
No voltage or signal should be applied to the CAL terminal since it is for adjustment use only.

Failure to heed this warning may result in product malfunction or damage to the main body.

Pressure range	Rated pressure [kPa]	Output voltage [V]	
102R	-100.0~100.0	-1.000~1.000	※Unit : kPa abs.
103R	-100~1000	-0.100~1.000	
102A	0.0~100.0 ※	0.000~1.000	

Attachment of protect cover

Please attach the protect cover to the main body from top side (the side of pressure port) to the end completely. Be careful about the front side of the cover. Strap can't be attached with the protect cover on the main body.



Periodical Calibration

If you would like to calibration request, please contact the sales office where you purchased.

Warranty and Disclaimer

- The warranty period of these products is one year after delivery to a designated place. The warranty mentioned here is limited to the warranty of a delivered product itself, and it does not cover consumables such as batteries. Each product has its own specifications such as durability (pressure cycles). Therefore, check with each service office.
- If a failure or damage of the product occurs during the warranty period, for which we are responsible, we will promptly replace or repair the product free of charge. The warranty mentioned here means the warranty of the product itself and does not cover any damage induced by a failure of the product.
- The warranty does not cover when any of the following items is applicable:
 - The failure is caused by conditions, environments, or handling not described in the catalogue and agreed specifications and other documents.
 - The product has been modified, adjusted, or repaired by a person/company other than our company after delivery.
 - The failure cannot be foreseen by the scientific and technological knowledge at the time of delivery.
 - The failure is caused by force majeure such as disasters.