

COPAL ELECTRONICS

DIGITAL PRESSURE GAUGE

PG-200

INSTRUCTION MANUAL Ver.5.1

Thank you for purchasing a
NIDEC COPAL ELECTRONICS CORP. product.
For proper and optimal use of the product, please read this
manual thoroughly before using.
Keep this manual for future reference.

For more detailed information please ask for the
nearest distributor or the following sales center.

COPAL ELECTRONICS

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§ 1. Specification

(1) Model

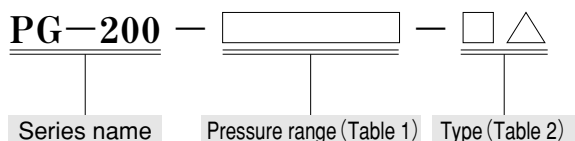


Table 1 (kpa)

	PRESSURE RANGE	MAX PRESSURE	Break-down Pressure	RESOLUTION
102VP	0~—100.0	200	500	0.1
102AP *1	0~100.0	200	500	0.1
102GP	0~100.0	200	500	0.1
103GP	0~1000	1500	2000	1
103GMP*2	0~1.000	1.5	2.0	0.001
101GP	0~10.00	20	50	0.01

* 1 : 102AP...kPa abs * 2 : 103GMP...MPa

- (2) Measurement.....Gauge pressure. (102AP:absolute)
 (3) Indication3-1/2 digits, 000~1999Max, digital LCD display.
 (4) IndicationAround 3 times/sec.
 (5) Accuracy..... $\pm 0.5\%$ F.S. ± 2 digit (at25°C $\pm 5^\circ$ C)
 (6) Temperature characteristics
 at zero point; $\pm 0.05\%$ F.S./°C ± 2 digit (102GP, 103GP, 103GMP, 102VP)
 $\pm 0.1\%$ F.S./°C ± 2 digit (101GP, 102AP)
 in SPAN ; $\pm 0.05\%$ Reading/°C ± 2 digit
 (7) Switching features
 Number of set points2, HI and LO, activatid at upper limit.
 Set range divisions000~1000, HI and LO.
 Setting methodWith trimmer each for HI and LO.

Table 2

	TYPE	SWITCH OUTPUT	OPTIONAL OUTPUT	POWER SOURCE
Panel	—P	HI, LO	—	Internal lithium battery
	—1—P	HI, LO	—	External 5~24 Vdc
	—3—P	HI	Voltage	Same as above *
Stand	—S	HI, LO	—	Internal lithium battery
	—1—S	HI, LO	—	External 5~24 Vdc
	—3—S	HI, LO	Voltage	Same as above *

* See § 3 Terminal Wiring

- Set value indication can be made to time with setting switch.
 Operating accuracyWithin ± 3 divisions from indication value.
 DifferenceWithin 4 divisions, fixed.
 Output systemNPN open collector of 30Vdc and 40 mA at max.
 Operating indication“H” in HI mode or “L” in LO mode at ON output.
 (8) Operating temperature: 0~50°C
 humidity: 35~85%RH, no sweating allowed.
 (9) Storage temperature—20~70°C, with lower humidity than 65%RH.
 (10) Net weightNet weight, panel type: Around 130g.
 Stand-alone type: Around 330g.
 (11) Pressure port.....Panel type: M5 female.
 Stand-alone type: R1/4 (PT1/4).
 (12) AttachmentsOne touch joint (for a tube of 6mm O.D.) and Miniature fitting (for a tube of 4mm I.D.)
 (Panel type only)



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§6. How to use

- (1) Make wiring by following Section 3, "Terminal Wiring."
- (2) Turn the POWER switch on. For the external power type, supply to it the power indicated on the name plate.
- (3) Check to insure that the pressure indication is zero with no pressure applied. The zero indication may be changed slightly with posture of the main body. If the indication is over 5 counts, make zero adjustment with the ZERO adjusting trimmer.
- (4) Make HI and LO settings with the SET switch and HI and LO setting trimmers (see Section 5, step 5) .
- (5) Apply a pressure to the Pressure Gauge. Then it will indicate the measured value.
- (6) If the switch output is on, the Pressure Gauge will show "L" or "H" .

§7. Handling Note

- (1) Mounting the attachment for panel type
If tightening the attachment to the pressure port, the tightening torque should be around 1 N · m.
- (2) Piping for stand-alone type
For piping, use the hexagonal portion of the pressure port for driving.
- (3) Media to be used
The Pressure Gauge should be used for fluids that cannot corrode the diaphragm of SUS316L, pressure port of SUS 316 and O-ring of fluoro rubber.
- (4) Excessive pressure
The pressure to be measured is within the specified range. Measurement of a higher pressure than the maximum allowable one may cause performance degradation or destruction.
- (5) Internal battery
 1. The battery to be used is an ER6VM lithium one of 3.6V. To have it, order a agency from which you purchased the main body.
 2. The Pressure Gauge will show "BATT" if the battery power decreases. Then replace it immediatery.
 3. Do not "disassemble," "short-circuit," "change," "put into fire," nor "heat" the battery.
- (6) Maintenance
If the Pressure Gauge gets dirty, wipe it off with hardly squeezed cloth containing a neutral detergent. Do not use any thinner and benzine.
- (7) Protection against noises
 1. Noises having mixed in the switch output or power line may cause the Pressure Gauge to change the pressure indication, malfunction or be broken.
Take some measure to put the Pressure Gauge away from power line or use shielded wire. It is effective to ground the Pressure Gauge.
 2. If the switch output has an induction load such as relay or solenoid connected to it, it should have a surge absorber circuit put in it. The relay contacts should have a contact preventive circuit put in it to prevent noises from being generated.
- (8) Prohibition of short-circuiting the switch terminals
Do not short-circuit the switch output terminal to any power terminal. The internal circuit may be broken.

§8. TRANSPORTATION & STORAGE

- (1) The product, which is a precision instrument, must be taken special care not to be damaged by impact nor by being dropped when it is transported and in storage.
- (2) The product must be avoided in storage where is dusty, dripping and vibrated.

§9. WARRANTY

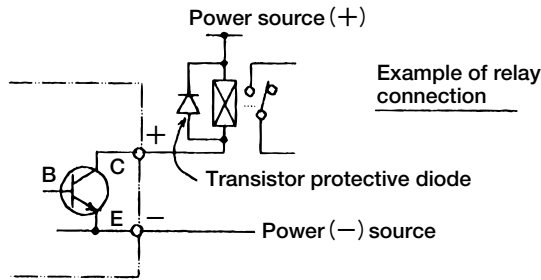
Copal Electronics warrants the product for the period of one year after the date of the customer's receipt. We will repair the troubled products caused by our improper designing and/or production control at our cost. Our warranty is limited to the products only, not on another damage that is caused by the product malfunction.

The following damage/replacement are repaired/taken at the customer's charge;

- (1) Failure or damage caused by unsuitable or wrong usage, modification or repair by the customer.
- (2) Failure or damage caused by disaster or an Act of God.
- (3) Replacement of attachments (Half Union and Barb Joint) .

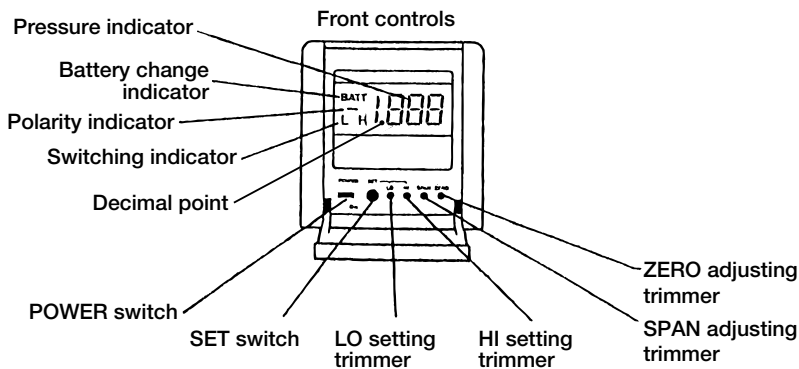
§4. Output Type

Switch output of npn open collector type with 30Vdc and 40mA at maximum.



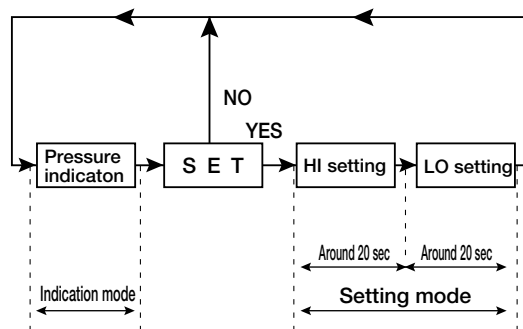
§5. Front Panel Controls and Features

(1) Front panel controls



(2) Description of the features

- | | |
|-----------------------|--|
| 1. Pressure indicator | Shows a pressure value entered to the pressure port. Also shows a set value given with the set switch. |
| 2. Polarity indicator | Shows the negative (—) upon negative pressure. |
| 3. Pressure port | Has a pressure applied. |
| 4. POWER switch | Turns on or off the power to the Pressure Gauge. |
| 5. SET switch | Selects a mode to check a HI or LO set value. If you press the SET switch once, the indication will be automatically changed in the sequence shown below. To check the LO set value, wait for around 20 seconds after pressing the SET switch. |



- | | |
|---------------------------|--|
| 6. HI setting trimmer | Used to adjust pressure to the HI set value that is indicated with the SET switch. |
| 7. LO setting trimmer | Used to adjust pressure to the LO set value that is indicated after the HI setting time has elapsed. |
| 8. SPAN adjusting trimmer | Used to adjust the sensitivity so that the pressure can indicate the full scale with the rated pressure applied to the pressure port. As the trimmer is calibrated, it is sealed up. |
| 9. ZERO adjusting trimmer | Used to adjust the sensor to zero. The pressure indication should be adjusted to "000" with no pressure applied. |

(13)Options (see Table 2)

a. Internal battery

Type...Lithium battery, ER6VM.

Serviceable time...One year (9000 hours) , continuously operable.

Has a battery change indicator BATT.

b. External power source

Input voltage5~10 or 10~24 Vdc(see Table 2).

Current consumption...Less than 20mA.

c. Analog voltage output

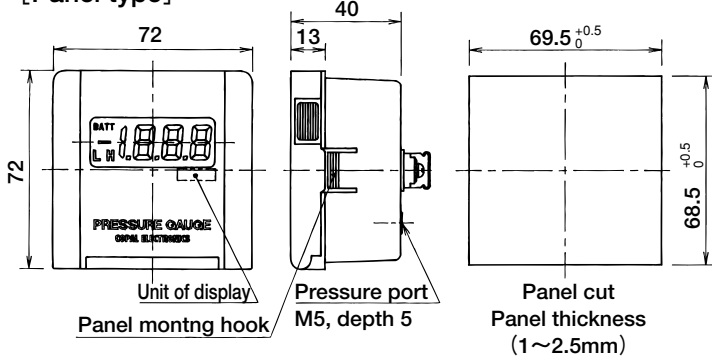
Output voltage0~1V,not isolated.

Accuracy.....±5%F.S.,which is added to main accuracy.

Load resistanceHigher than 1 kohm.

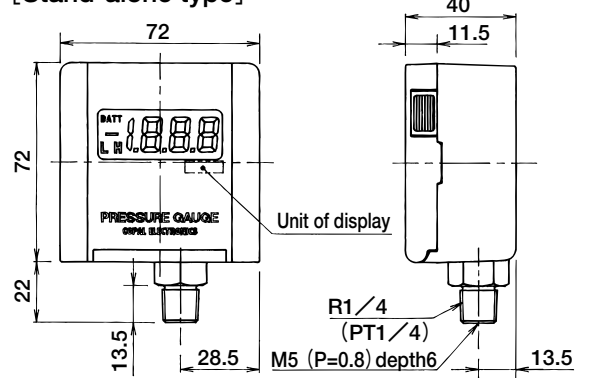
§2. Exterminal Dimensions tolerance(±0.5mm)

[Panel type]



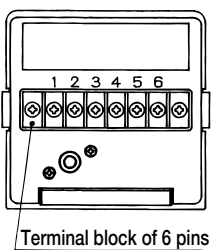
- (1) Mounting onto panel
Cut a hole out as shown in the panel cut drawing above. Forcibly put the main body into the cut hole. The hook will fix the main body to the panel.
- (2) Removing out of panel
Draw the main body out of the panel while nipping the hook between your thumb and middle fingers.

[Stand-alone type]

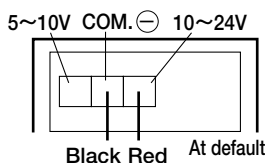


§3. Terminal Wiring

[Panel type]



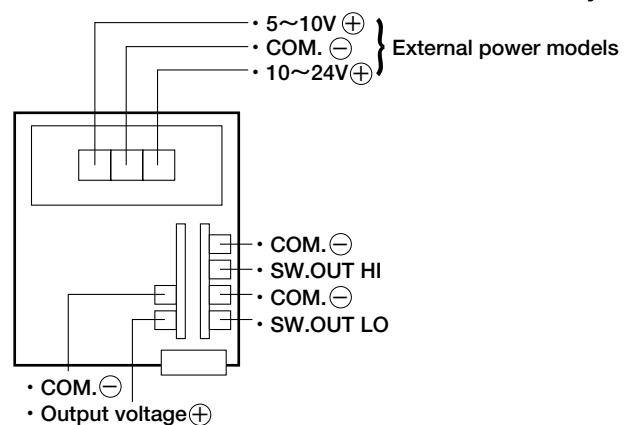
	1	2	3	4	5	6
Battery (-P)	Switch output HI (+)	Switch output LO (-)	Switch output HI (+)	Switch output LO (-)	—	
Exterminal power (-1-P)	Switch output HI (+)	Switch output LO (-)	Switch output HI (+)	Switch output LO (-)	Power source (+)	Power source (-)
Exterminal power (-3-P)	Voltage output (+)	Voltage output (-)	Switch output HI (+)	Switch output LO (-)	Power source (+)	Power source (-)



The external power models have power voltage of 10-24 Vdc set at default. To operate your Pressure Gauge with 5-10 Vdc, change the internal terminal block wiring.

[Stand-alone type]

Proceed on the PC board inside the main body.



Select one of the terminal blocks for connection depending on the power voltage. Do not apply any voltage exceeding the voltage range. For output wiring, use thinner wire than AWG26.