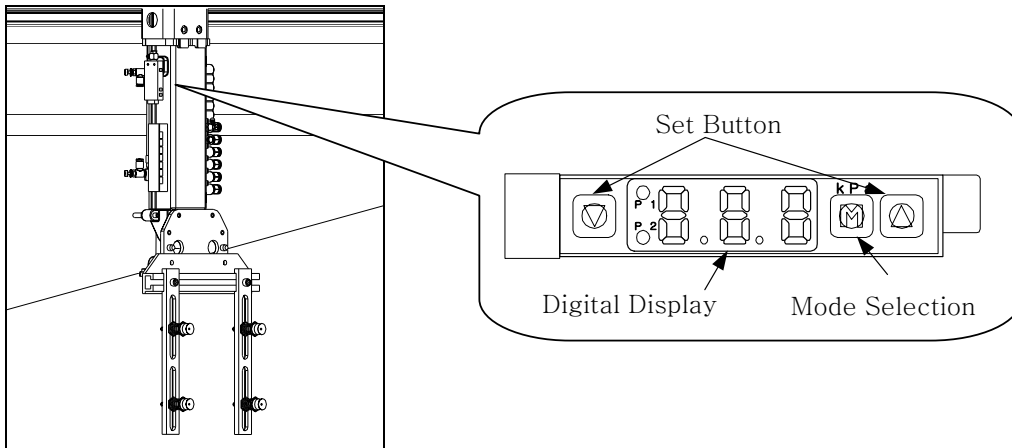


2.1.2 Vacuum Verification Sensor Adjustment





[Main Arm Up/Down]

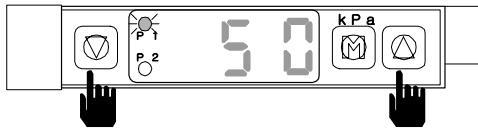
Vacuum Sensitivity Adjustment (Normally not required)



● **STEP 1**



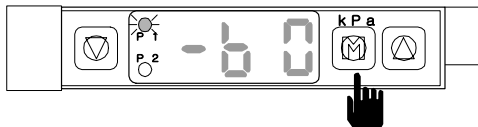
Press  and  at the same time
P1 will blink.


● **STEP 2**



Press  or , set pressure -60(kpa).

● **STEP 3**



Press  more than 1 seconds.
Set up finished, and LED will display current Vacuum pressure.

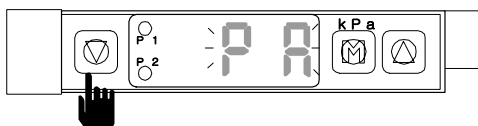


Lock and Unlock for Vacuum Sensor value

Locking Vacuum Sensor Value will prevent setup value from changing by any mistake



Press  more than 3 seconds. "PL" will blink twice and Sensor will lock.



Press  more than 3 seconds "PA" will blink twice and sensor will unlock.

COPAL ELECTRONICS

DISPLAY TYPE CONPOUND PRESSURE SWITCH

PS60

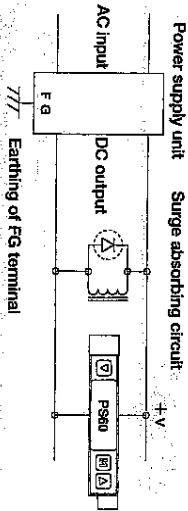
CE marking
(Compliance with EMC Standards)

INSTRUCTION MANUAL Ver.2.0

Important Information and Warnings

- Non-corrosive gases should be used as pressure media if PS60.
- The maximum applicable pressure for the PS60-102R/302R at the time of vacuum break is 500kPa.
- Always carry out wiring work with the power off.
- Press the button more than 3 seconds in the Operation Mode; the panel lock function will be completed and disable to the key operation. Please refer to the following "Panel lock function" and cancel the panel lock function.
- For stability, use a regulated direct current power supply. Surge absorbing devices (diodes, varistors, etc.) are necessary if inductive loads such as relays and solenoids are connected to the same power line as the PS60. Do not wire in parallel to high voltage cables or power lines, or use the same cable ducts which contain high voltage cables or power lines.
- Check fluctuations in power voltage so that the power input cannot exceed the rating. Also please do not give a rapid voltage fluctuation like interlocking the energization immediately after starting and during setting operation. Memory data may disappear, and switch results in a defect of operation.
- Be careful not to apply force to the display area of the main body during piping.
- Use pH neutral detergents to clean the body. Do not use lacquer thinner and other solvents for cleaning.
- Do not use pointed objects such as pens to press the setting buttons on the display panel. Doing so may damage the setting buttons by piercing them.
- Do not put a piece of wire or other long thin object from pressure port. Doing so may damage the internal diaphragm to cause malfunctioning.
- Do not use the product in a place where much steam and/or dust exist or the product may be subjected to direct water or oil splash.
- [Recommended measures against noise interference]
It is recommended to use noise absorbing components (fine filter, surge absorber, etc.) in the power supply terminal of the PS60.

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.

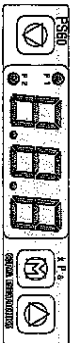


Specifications

Model	102R	302R	103R
Type (Pressure reference)	102R	302R	103R
Rated pressure range	-100~100kPa	-100~300kPa	-0.10~1.00MPa
Maximum pressure	200kPa	600kPa	1.5MPa
Break-down pressure	500kPa	1.0MPa	2.0MPa

Functions

Initial LED Display



All LED flash once.



The Operations Mode (pressure detection) is activated.

Non-display mode (Low power mode)

- When you do not operate any buttons for about 10 seconds, the system will automatically select non-display mode and the LED indicator section will go off. Pressing any key will cause the LED indicator section to come on back again.
- Note 1) The decimal point shown in the figure on the right blinks during non-display mode.
- Note 2) Switch outputs and switch LEDs are operable even during non-display mode.
- Note 3) Error messages will appear during non-display mode.
- For how to select non-display mode, see the description of the initial setting mode.

Conversion factor

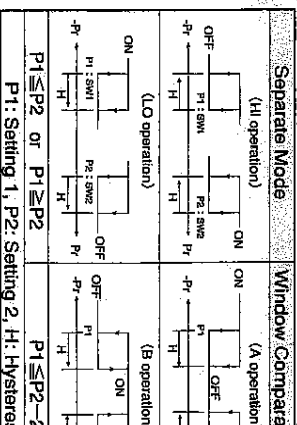
- You can select a conversion factor from the options shown in the table on the right.
- Note 1) Slashed box: No factors options are available due to inappropriate resolution and the number of digits for display.
- For how to set the conversion factor, see the description of the initial setting mode.

Number selected	102R	302R	Pressure range
1 (kPa)	-100~100	-100~300	
2 (MPa)	-75~75	-75~225	
3	-1.00~1.00	-1.00~3.00	
4	-14.5~14.5	-14.5~43.5	
5	-29.5~0.0	-29.5~0.0	["* symbol does not display"]
6	-29.5~0.0	-29.5~0.0	["* symbol does not display"]

Switch working mode

- You can select switch working mode from the options shown in the table below.
- Note 1) In the Separate Mode, SW1 and SW2 work separately.
- Note 2) In the Window Comparator Mode, the minimum value for SW1 and SW2 corresponds to Setting 1 and the maximum value to Setting 2.
- For how to set the switch output, see the description of the initial setting mode.

Output Mode	SW1				SW2			
	Separate	Window Comparator	Separate	Window Comparator	Separate	Window Comparator	Separate	Window Comparator
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Digital filter

- Two different digital filters (25ms and 250ms) are available.
- The digital filters are useful when it is hard to take readings due to too great fluctuations in pressure.
- Note 1) Any selected digital filter will be reflected on the pressure display and switch action.
- For how to set the digital filter, see the description of the pressure setting mode.

Sure Setting Mode

is used to make Setting 1, Setting 2, hysteresis and digital filter setting.

Setting Pressure Setting Mode



Press the **[M]** and **[Δ]** buttons simultaneously in Operators Mode. After switched to Pressure Setting Mode, P1 LED should be blinking to indicate the value for Setting 1.

Setting pressure value

Setting 1 (P1)



The P1 LED should be blinking.
Use the **[Δ]** or **[▽]** button to select a value for Setting 1 (P1).
(The values: **050** for 102R and **050** for 103R have been set in the factory.)
(Note 1) The setting can only be made within the allowable display range.
(Note 2) The setting should meet $P1 \leq P2 - 2H$ when Window Comparator Mode is selected.

Setting 2 (P2)



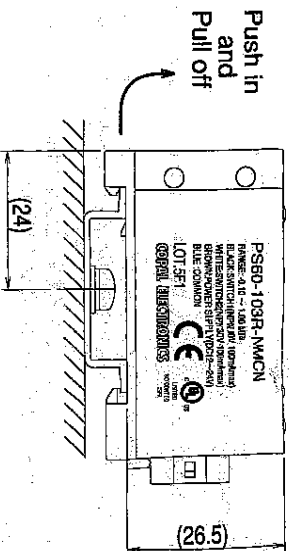
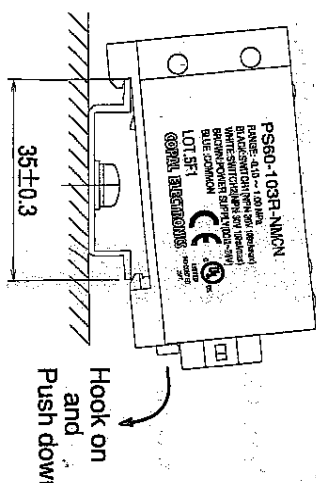
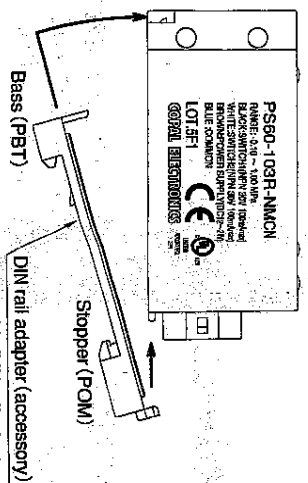
The P2 LED should be blinking.
Use the **[Δ]** or **[▽]** button to select a value for Setting 2 (P2).
(The values: **050** for 102R and **050** for 103R have been set in the factory.)
(Note 1) The setting can only be made within the allowable display range.
(Note 2) The setting should meet $P1 \leq P2 - 2H$ when Window Comparator Mode is selected.

Hysteresis (H) setting



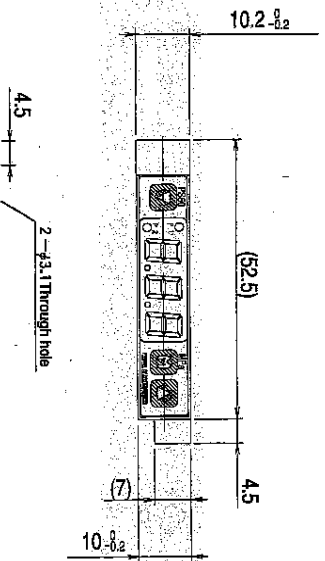
The P1 and P2 LEDs should be blinking.
Use the **[Δ]** or **[▽]** button to set the hysteresis (H).
(The values: **00** for 102R / 302R and **00** for 103R have been set in the factory.)
(Note 1) The setting should be 30 counts or less.
(Note 2) The setting should meet $P1 \leq P2 - 2H$ when Window Comparator Mode is selected.

DIN rail attachment

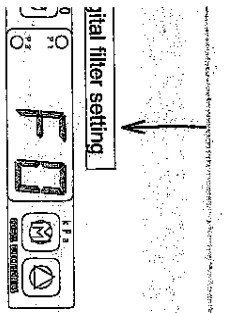


Outline Dimensions (Unit: mm)

PS60



Connector: 2.5mm pitch / 4pole (10P)
Pwr. JST (XAF-04V-1)



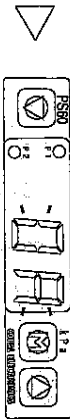
Use the ∇ or \triangle button to set the digital filter.
F0: No filter, **F1**: 25ms filter, **F2**: 250ms filter
 (The value **F0** has been set in the factory.)

Point Adjustment

Issue indication at the time of pressure release in the pressure port to "zero"

3-point adjustment

Ensure indication to "zero" when the pressure port is released.
 Pressure port to the atmospheric pressure first.
 and ∇ buttons simultaneously in the Operation mode.
 If is released from each button, **0.00** blinks twice.

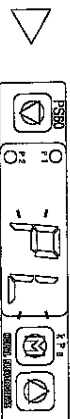


Zero-point adjustment is completed when **0.00** light goes out.
 Zero-point adjustment value is not erased even if the power supply is turned off.

Protection

Panel lock function

Lock function is used to lock the key operation in order to prevent from being accidentally changed.
 The panel lock function, press ∇ button more than 3 seconds.
 If is twice and the buttons are locked.
 The panel lock function, press \triangle button more than 3 seconds.
 If is twice and the buttons are locked.

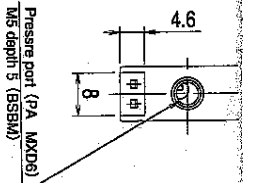


Panel lock function is not erased even if the power supply is turned off.

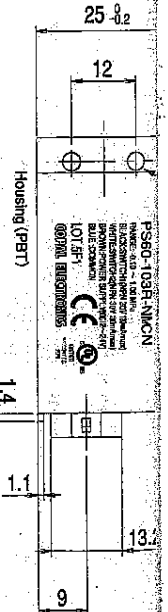
Band Installation

ng

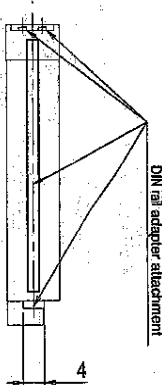
When a available joint to the pressure port, hold the base section of the main body and make sure that the tightening force is uniform (M5 female) or less.
 Do not directly hold the case only when tightening. Also, do not use the wrench to any other part than the port tightening. Such handling may cause a breakage of the switch.



Pressure port (PA, M4X0.8)
 M5 depth 5 (BSBM)

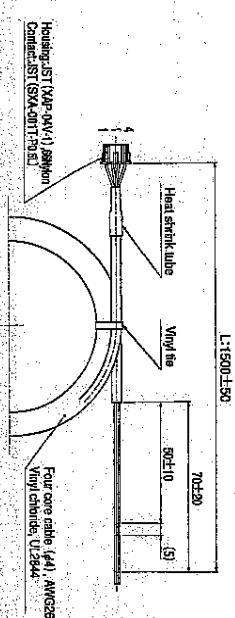


Housing (PB17)



DIN rail adapter attachment

Pin No.	Color	Connection
4	black	OUT 1
3	white	OUT 2
2	brown	24V
1	blue	0V



Warranty

This product can be covered by one-year warranty. COPAL ELECTRONICS warrants that any part of the product which proves to be defective due to the design and/or manufacturing of COPAL ELECTRONICS within one year from the date of delivery will be repaired or replaced, free of charge. Note that the warranty will only be applied to the product alone, not to damages induced by any failure of the product.

- The warranty will not be applied in any of the following cases:
- ① Failure and damage caused by improper use not conforming to the instruction manual or negligent handling.
 - ② Failure and damage caused by inappropriate modification, adjustment or repair.
 - ③ Failure and damage caused by natural disaster, fire or other act of God.

Model Numbers

PS60 - 102 R - NMCN

Pressure range
 102: -100~100KPa
 302: -100~300KPa
 103: -0.1MPa~1.00MPa

Switch output type
 N: NPN open collector
 P: PNP open collector

Fitting port type
 M5 female screw

COPAL ELECTRONICS

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

Nishi-Shinjuku Kinuraya Bldg., 7-5-25
 Nishi-Shinjuku Shinjuku-ku Tokyo 160-0023, Japan Phone: (03) 3364-7055