

COPAL ELECTRONICS

Pressure transducer with amp
/PA-860 (Analog voltage output)
/PA-868 (Analog current output)
Electronic pressure switch/ PS86

INSTRUCTION MANUAL

Thank you very much for purchasing our product. In order to derive its desired characteristics and utilize it with high reliability, please thoroughly read this manual and understand the contents before using. Also, please keep this manual and read again when necessary.

Notes to users

Before operating our product, read this manual thoroughly. You may not understand all of the explanations the first time through, but be on the lookout for any special directions.

Caution: This indicates the precaution in handling and/or the risk in misusing.

Caution: Piping

Install the product by screwing the pressure port to the matching fitting. During this operation, put the wrench only to the hexagonal portion and do not give any unnecessary force to the main body and the lead wire.

Caution: Wiring

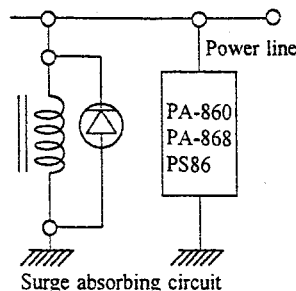
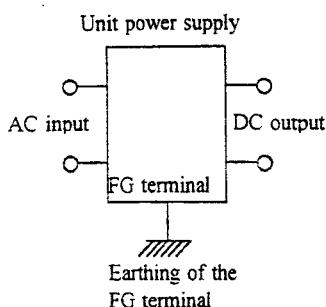
Wiring connection must be done as instructed below without fail.

P / N Wire's color	Connections		
	PA-860	PA-868	PS86
Red	Power(+)	Power(+)	Power(+)
Black	Common	N.C.	Power(-)
White	Analog output	Power(-)	Switch output(+)
Green	--	--	Switch output(-)
Grey	Shield (case)	Shield (case)	--

Never short-circuit the switch output(s) to the other terminals, nor connect them to the low impedance load that would allow the output current over 100mA. These conduct might damage the internal circuitry.

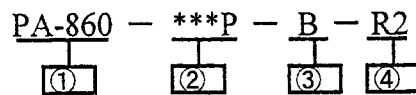
Caution: Handling

- The products can be used for liquids compatible with SUS 316L, Iron, Nickel-plated.
- Never insert a foreign matter except the specified pressure media into the pressure port fitting
- Never take in the over-pressure exceeding the maximum pressure.
- Never short-circuit the switch output to the other terminals, nor connect them to the low impedance load that would allow the output current over 100 mA. These conduct might damage the internal circuitry.
- Use a stable DC power supply for the power source. A surge absorbing circuit (diodes, Varistor, etc.) is necessary if an inductive load such as a relay or solenoid is connected to the power line and/or to the switch output(s). The FG terminal on the unit power supply should be earthed. (Refer to the diagrams below)



1. PART NUMBER DESIGNATION

Please confirm the part number of the product you purchased.



① Part name

PA-860 : Pressure transducer with amp.(Analog voltage output)
PA-868 : Pressure transducer with amp.(Analog current output)
PS86 : Electronic pressure switch

② Rated pressure

503P : 5 [MPa] 104P : 10 [MPa]
204P : 20 [MPa] 354P : 35 [MPa]

③ Protective structure

H : Waterproof cover B : -

④ Shapes of the fitting portion

R2 : R1/4 (PT1/4) G3 : G3/8 (PF3/8)

2. ACCESSORIES

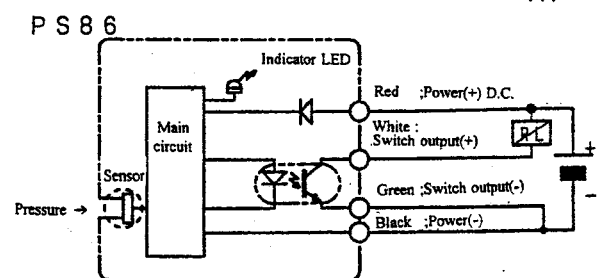
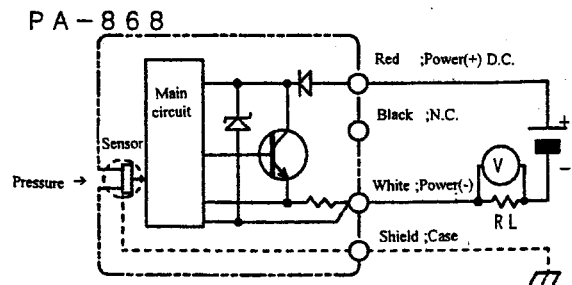
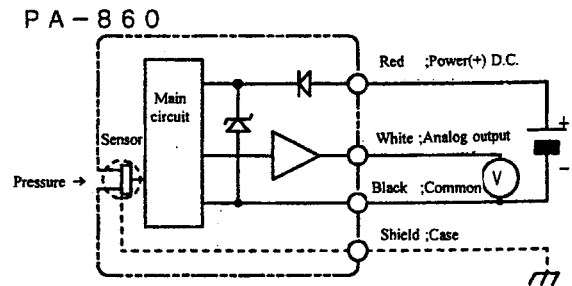
Instruction manual

3. ADJUSTMENT OF SWITCHING PRESSURE

① Electronic pressure switch/ PS86

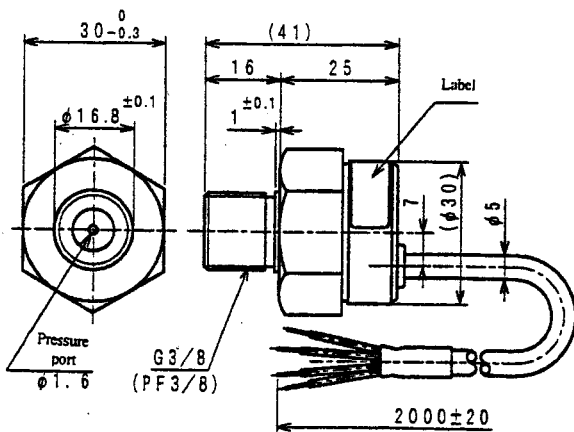
- Get the appropriate hysteresis is value by adjusting the hysteresis adjustment trimmer.
- Apply the pressure you desire the switch to be turned on and get the switchig point by adjusting the trimmer.
(The Red LED lights up when the switch 1 turned "ON".)
- Repeat the above procedures for a couple of times and get the exact point.

4. INTERNAL ELECTRICAL SCHEMATICS

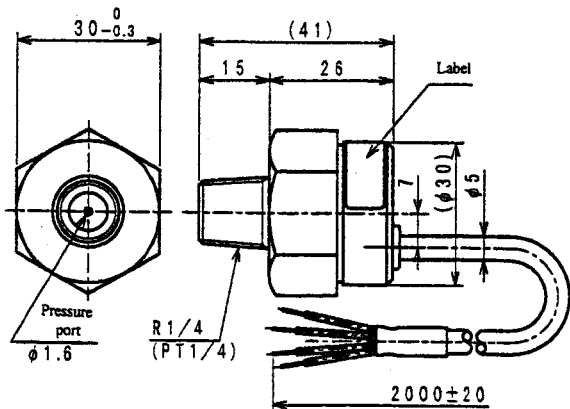


5. OUTLINE DIMENSIONS

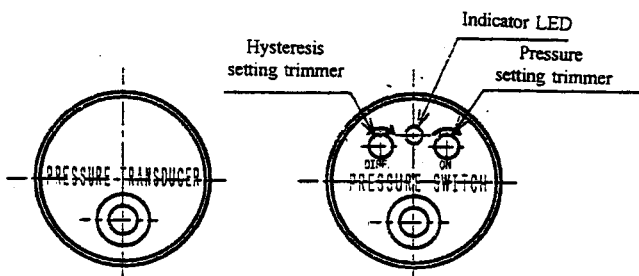
① Fitting G3 (G3/8)



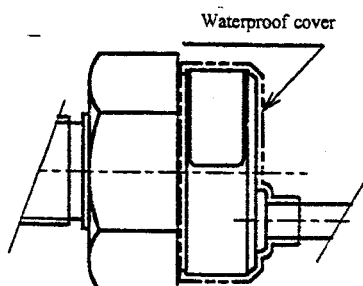
② Fitting R2 (R1/4)



③ Rear



④ Waterproof cover (-H-)



6. LEADING PARTICULARS

6.1 General specifications

Item	Specifications
Operating temp. range	-15~75℃
Compensated temp. range	0~50℃
Operating humidity	35~85%RH(non sweating allowed)
Storage temp	-20~80℃
Media	Non corrosive oil
Enclosed liquid	Silicone oil
Cable	3 core-shielded cable(PA-860,PA-868) 4 core-shielded cable(PS86)
Protective structure	IP65(-H-), IP-54(-B-)
Weight	Approx. 170g

6.2 Power

Item	Specifications
Supply voltages	10.8V-26.4V (Include ripple)
Dissipation current	15mA Max. (PS86) 10mA Max. (PA-860)

6.3 Switch output (Only PS86)

Item	Specifications
No. of output(s)	1
Output	open collector
Setting method	Adjustable trimmer
Setting range	10 ~ 105% of rated pressure
Display	Red LED lights up (When output is ON)
Accuracy	±3%FS(0~50℃, ref. temp. 25℃)
Hysteresis	Approx 1 ~ 10% of set point
Setting method of Hvs.	By Adjustable trimmer Fixed
Switching capacity	35VDC 100mA max.

6.4 Analog Output (Only PA-860)

Item	Specifications
Output voltages	1~5 V
Zero Voltages	1±0.05 V
Span Voltages	4±0.05 V
Linearity / Hysteresis	±0.5%FS
Thermal error	Zero ±0.05%FS/℃ Span ±0.05%FS/℃

6.5 Analog Output (Only PA-868)

Item	Specifications
Output currents	4~20 mA
Zero Voltages	4±0.1 mA
Span Voltages	16±0.1 mA
Linearity / Hysteresis	±0.5%FS
Thermal error	Zero ±0.05%FS/℃ Span ±0.05%FS/℃
Load resistance	500 ohm max.

7. Warranty

Copal Electronics warrants the products 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. But we understand repairing costs resulted from the following matters are out of our responsibility.

- (1) Trouble and damage caused by mishandling or careless usage against the handling manual
- (2) Trouble and damage caused by improper remodeling, adjustment or repair
- (3) Trouble and damage caused by natural disaster, fire or any other irresistible force
- (4) Replacement of maintenance or consumption parts (e.g. O-ring)

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

Copal Electronics Co., Ltd.
Nishi-Shinjuku Kimuraya Bldg., 7-5-25
Nishi-Shinjuku, Shinjuku-ku, Tokyo 160-0023, Japan